

**Public and Private Service Provision of Solid Waste Management in  
Kampala, Uganda**

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## **LIST OF ABBREVIATIONS**

SWM – Solid Waste Management

SWC – Solid Waste Collection

WDR – World Development Report

WB – World Bank

PHA – Public Health Act

KCC – Kampala City Council

KCCA – Kampala Capital City Authority

MSW – Municipal Solid Waste

CHOGM – Commonwealth Heads of Government’s Meeting

CBOs – Community Based Organizations

NGOs – Non Governmental Organizations

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“ ... When you are discouraged thinking all is lost. Count your blessings, name them one by one. It will surprise you what God hath done.”

# **CHAPTER 1: INTRODUCTION**

## **1.1 Background: public and private provisioning in solid waste management**

In growing urban centres in Africa, solid waste management<sup>1</sup> (SWM) remains one of the most conspicuous and challenging environmental problems (Spaargaren et al., 2005). This has attracted intense debates from scholars and practitioners on how to best organize SWM, especially in relation to whether it should be provided by the public sector or private sector. The situation is made more complicated since different activities within the SWM system fall into different categories (Post, 2004). For example, the sale of recyclables resembles a purely private good<sup>2</sup>, while the cleaning of major roads and public areas falls into the category of collective (public) goods, and house-to-house collection of waste is positioned somewhere in between these extremes because it has the nature of a so-called joint use or merit good<sup>3</sup> (Post et al., 2003; Post, 2004). Embarking on the road to the privatization of solid waste collection was largely based on the fact that it is possible for generators of garbage to pay for their waste collection and safe disposal and that probably private companies would provide such service better (and more efficient) than the public sector.

In most cases public sector provision takes the form of providing solid waste collection services free of charge and raising general revenues through other ways

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<sup>1</sup> We study SWM from the “perspective of local authorities” (Baud, 2004: 6). Baud (2004) talks of two perspectives in the study of SWM. First, the perspective of local authorities that includes the collection of domestic solid waste and transportation and disposal of solid waste (usually in dump sites), the focus of this study. The second perspective is a more environmentally oriented view of urban SWM that includes reuse, recycling and recovery activities, and safe disposal of waste.

<sup>2</sup> Cointreau-Levine (1994), however, argues that while recycling has historically been treated as a private good in most countries, in the past two decades industrialized countries have slowly changed their perspective on environmental awareness, thus recognizing that everyone benefits from recycling as a public good. It is argued that through recycling, foreign exchange is saved, natural resources are conserved, industrialization is promoted, and waste disposal is minimized.

<sup>3</sup> A merit good is under consumed if provided by a market mechanism, because individuals typically consider how the good benefits them as individuals rather than considering the benefits that consumption generates for others in society. Merit goods or services can be offered on the ability to pay principle.

(Oduro-Kwarteng, 2001). But even when it is free of charge, residents have to make some effort to take the waste to a point of collection. From a personal point of view, it is cheaper to dump garbage anywhere (as long as no one is seeing you) than carrying it to a collection point that may prove costly in terms of time. This means that even when solid waste collection service is free, there has to be strict enforcement of laws to ensure that people don't litter. The externalities associated with solid waste provide a strong argument for government intervention in relation to SWM.

The main arguments for private provision are that the hierarchical bureaucracy is inherently inefficient and that the introduction of market mechanisms and actors can substantially enhance the efficiency of public service delivery (Hood, 1991). Critics of the public sector also argue that the public sector is self-servicing, resulting into opportunism and dishonest behaviour by employees, clients and politicians as they substitute their own goals and preferences over efficiency and productivity considerations of the service (Larbi, 1999). The assumption is that there are benefits in terms of efficiency and effectiveness in exposing public sector activities to market pressures and in using markets to serve public purposes. It is widely believed that by comparison, non-competitive provision leads to inefficiency, services don't correspond to consumer preferences and the given level of resources is not used optimally (Batley, 2001). The same arguments as outlined above were used to make a case for privatization of SWM.

As of today, the contribution by the private sector in solid waste service provision is a common phenomenon in most cities in developing countries (Kassim et al., 2006). The following privatization types are common for SWM in developing countries (Cointreau-Levine, 1994; Ogu, 2000; Post, 2004): (1) Contracting: whereby a

municipality awards a contract to one or more firms to provide services. Service contracts are used for waste collection, transportation, and landfill management. (2) Concession: whereby a municipality gives an enterprise the right to build and operate a waste facility. Concessions are commonly awarded for transfer stations, landfill development, recycling plants, and incinerators. (3) Franchise: where a local government has the authority to give exclusive franchise to a qualified private firm for the right and responsibility to provide service to customers within a zone. In return for such an exclusive franchise, the private firm pays a license fee to the government. The firm subsequently charges their customers appropriate fees to cover the cost of service. The fees charged may be regulated by ceilings fixed by municipal ordinance. Local government retains responsibility to monitor the performance of private firms having franchise agreements, and to regulate user charges and also retains the right to renew or revoke licenses in accordance with pre-established criteria (Cointreau-Levine, 1994). (4) Open competition: whereby a municipality registers or licenses a number of enterprises as 'approved service providers' and then encourages the approved providers to compete freely to provide a defined range of services. Open competition is often used for industrial waste collection. Private sector involvement in Kampala has vacillated from franchising, contracting to open competition.

As already highlighted, there are in general potential benefits of private provision. However, governments (and the societies they represent) often see improving outcomes in service delivery as a public responsibility (WDR, 2004), a view endorsed by the millennium development goals (MDGs). For instance, it may not be possible for SWM to be left to be handled by the private sector alone, because it has strong external effects. It

is to some extent a non-exclusive and non-rivalled service; that is, once it is provided to some portion of the community, it benefits the overall public welfare and any resident can enjoy the benefit of the service without diminishing the benefit to anyone else (Kironde et al., 1997; Massoud et al., 2004; WDR, 2004). It is not always feasible to exclude from service those who do not pay, since public cleanliness and safe waste disposal are essential to public health and environmental protection (Cointreau-Levine, 1994). A central solid waste collection system (for instance through the use of communal containers, also known locally as skips) comes in focus here, because once it is provided to some portion of the community, it benefits the overall public welfare. The service is also non-rivalled, meaning that any resident can enjoy the benefit of the service without diminishing the benefit to anyone else (Ndandiko, 2010; Oduro-Kwarteng, 2011).

Further, market systems do not provide incentives to ensure that private businesses take into account the social and long term costs and benefits of their activities, referred to as externalities. For example, solid waste disposal can have significant negative spill overs on society if it is not performed according to standard. In the absence of stringent control and enforcement it might not be advisable to let the private sector provide the activity; hence, the reason why such a service requires public provision (Ndandiko, 2010). Further, solid waste services will be under-supplied if markets alone are left to determine their provision (Oduro-Kwarteng, 2011).

In addition, potential consumers do not enter the market with equal resources, yet equity is often one of society's objectives (WDR, 2004). It is often believed to be the role of the state to ensure that goods and services are equitably distributed between members of a society in a fair and just manner. For instance, if a service like waste collection

would be left to the market, consumers from the low income areas who are incapable of paying may miss out on the service since the private providers will only target profitable areas. Markets may not achieve socially acceptable levels of equity (Batley, 2001; Ndandiko, 2010).

These theoretical arguments related to market failures call for government intervention, but they don't necessarily call for public provision (WDR, 2004). They provide fundamental reasons for both private involvement and public intervention in the provision of SWM. Two things are worth mentioning here, which often are ignored in public-private theoretical debates but nevertheless are important in urban environmental infrastructure provisioning to which this thesis pays attention.

First, private involvement sometimes is meant to refer to formal private companies, yet in developing countries the informal sector plays a big role in SWM (Klundert et al., 1995; Medina, 2005; Scheinberg, 2011). Specific socio-economic conditions prevail in many poor countries, including high population, economic activity concentration in urban areas leading to migration of rural population to urban areas, insufficient funds leading to SWM systems being run poorly and operating at low standards (Kironde et al., 1997; Spaargaren et al., 2005). This may include unreliable, inadequate coverage with open dumping as the only disposal method available (Cointreau-Levine, 1994). Insufficient collection, uncontrolled street collection points and improper disposal in open dumps allow room for informal refuse collectors to operate (Wilson et al., 2006). This is typically the case in SWM in Uganda. Batley (2001) refers to this as informal or unintended privatization where the failure of public solid



waste provisioning leads individuals or a group of individuals to step in to make up the deficiency in service provisioning and in turn earn a living.

Second, public intervention in SWM is commonly meant to refer to decentralized municipal SWM but does not include public spending on special events in which city beautification is emphasized, with upgrading of waste management services given special consideration. This for instance was the case when Uganda hosted the Commonwealth Heads of Government Meeting (CHOGM) in November 2007. The opportunity offered by these events to attract extra funds for community improvements motivates politicians to bid for hosting such special events. This provides an argument for public, rather than private action.

Clearly, many of these observed changes and dynamics have had effects on solid waste management, but have so far received only limited attention in research on urban and environmental governance, especially in developing nations. This study mainly addresses the changes and dynamics in the situation of household waste collection and disposal in Kampala. Household waste removal is one of the key factors in ensuring the health and safety of the population, but is surprisingly often neglected in rapidly growing cities of the third world (Doan, 1998). By providing theoretical and empirical evidence on these issues, this thesis will make a scientific contribution to the governance and solid waste management literature as far as developing countries are concerned.

The remainder of this chapter is organized as follows. The next section describes the setting of solid waste management in Kampala, followed in section 3 by the characterisation of solid waste and the existing policy framework. Section 4 introduces the problem of the study and the study objectives. Subsequently, an overview is provided

of the study area (section 5), the various data sources collected and used throughout this dissertation (section 6) and the contribution of this study to the wider literature (section 7). Finally, the other chapters that make up this dissertation are introduced .

## 1.2 Solid waste management in Kampala

The newly appointed Executive Director of Kampala Capital City Authority (KCCA<sup>4</sup>) Jennifer Musisi Semakula has been tasked with transforming the capital to become a modern city. The newly elected Lord Mayor of Kampala Elias Lukwago also campaigned on the platform of modernizing the city. In an interview with local daily newspapers, the Executive Director reveals how the management of solid waste is a big challenge facing Kampala and has therefore made garbage collection priority number one<sup>5</sup>. In fact, currently (2011) hardly a month passes without the press highlighting issues of poor solid waste management in Kampala. This is because the management of solid waste is a major public health and environmental concern in Kampala. For instance, the problem of flooding in Kampala's poor neighbourhoods is often blamed on garbage that blocks the drainage system. Diseases such as malaria and outbreaks of cholera, especially in wet seasons, are often indirectly attributed to poor solid waste management (SWM) in Kampala. The concern is serious, particularly in a capital city like Kampala, which is a commercial and administrative city and a gateway to the country for diplomats, businessmen and tourists. Poor visual appearance of Kampala may have negative impacts on official and tourist visits and foreign investment.

For one to appreciate the challenges Kampala city faces in relation to solid waste management, it is good to start with appreciating the changes that have occurred over time and the current state of solid waste organisation in Kampala. Under what can be

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<sup>4</sup> Kampala Capital City Authority (KCCA) is the legal entity, established by the Uganda parliament. KCCA is responsible for the operations of the capital city of Kampala in Uganda. It replaced the former Kampala City Council (KCC). For the purposes of this thesis, we will mainly be referring to KCC since the study was carried out when the KCC was still in charge and when the status of Kampala had not changed (for further explanations of these changes see section 5).

<sup>5</sup> *New Vision* 29<sup>th</sup> May 2011, We must have order in Kampala; 11<sup>th</sup> May 2011 Red pepper – Jennifer Musisi reveals her vision for Kampala.

labelled the old system (see Figure 1.1 below), Kampala City Council had the statutory requirement of collection, storage and disposal of waste. Communal containers (skips) were placed in specific locations or stationary bunkers<sup>6</sup> were constructed for households to receive garbage at any time of the day, especially in richer areas (Mugagga, 2006). However, not sufficient skips and bunkers were placed and constructed, respectively, in the city; a situation that encouraged open dumping in unauthorised places. Alternatively, households used paid individuals (informal collectors) to transport garbage to the skip, and Kampala City Council (KCC) trucks would subsequently transport the garbage to the official dump site. It should be noted that the distance to the skips was quite far and informal collectors would also dump garbage in unauthorized places as long as no one was seeing.

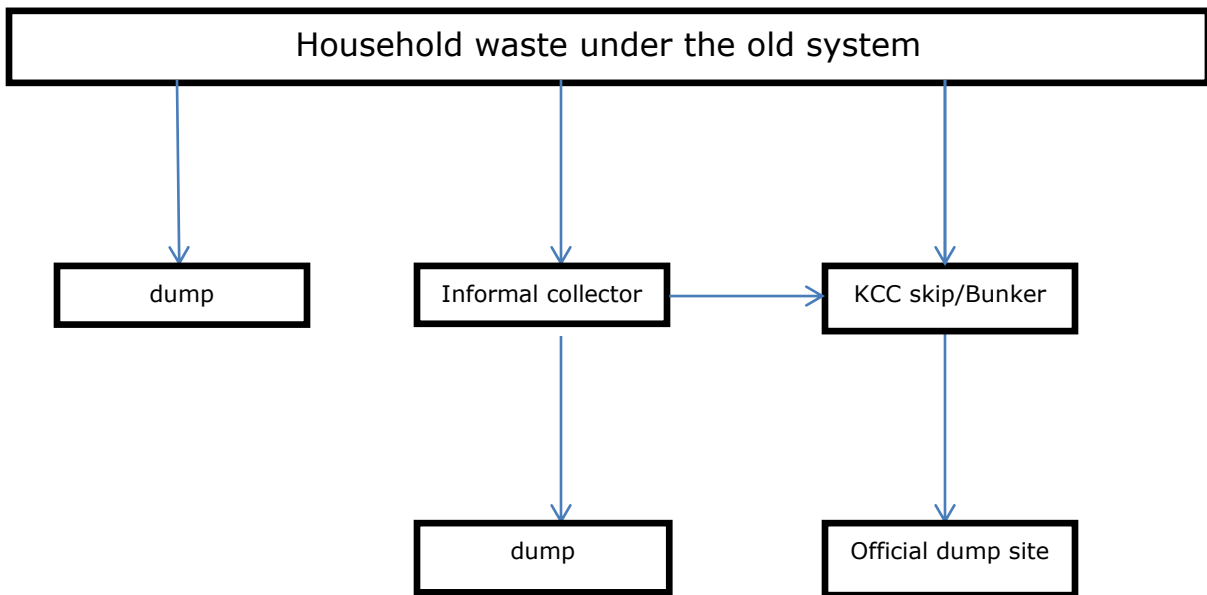


Figure 1.1: Household waste under the old system of SWM

<sup>6</sup> Bunkers were placed in a few areas of the city, especially in government estates where civil servants used to live, like Bugolobi flats. The old system predominantly used the system of communal containers (skips).

In the new system (see Figure 1.2 below), which was introduced after the formal privatization of SWM around the year 2000, communal containers were largely withdrawn (and bunkers neglected) except in a few areas. After a pilot test of the feasibility of contracting services in Makindye division in 2001, it was decided to have skip-less refuse collection service in communities, with skips only restricted to institutions and markets (KCC, 2002; Mugagga, 2006). Formal private firms became dominant in waste collection, sometimes displacing informal collectors. Officially, 30 private companies are registered by Kampala City Council (KCC) to collect waste in any division of the city as long as they get customers. Private companies collect garbage from private homes or institutions and are paid directly by these homeowners/institutions. Previously, KCC entered into formal contractual arrangements with private companies whereby the latter provided services for which they would be paid from local government sources (contracting out). KCC also awarded private companies a limited monopoly via competitive bidding in a defined area for a limited time. In this arrangement firms were allowed to charge residents, but KCC would pay a lump sum to private collectors to meet the costs of collecting garbage from poor households who cannot afford to pay. Despite the existence and dominance of the private sector, Kampala city council did not withdraw from collection of waste as planned, citing lack of capacity by private sector providers among other reasons. It is still involved in the collection and transportation of waste to the dumpsite. Informal collectors are still widely prevailing, sometimes working with KCC and often a cause of illegal dump sites in the city. In fact, indiscriminate dumping still exist especially in high density residential areas. Typically, private firms are motivated by profit and due to KCC's lack of capacity to manage all the

waste there are still many uncovered households who practice “self-provision.” Community based organizations (CBOs) are also involved in collection of waste from households, but due to their lack of capacity, they also contribute to the illegal dumpsites in the city (Tukahirwa, 2011).

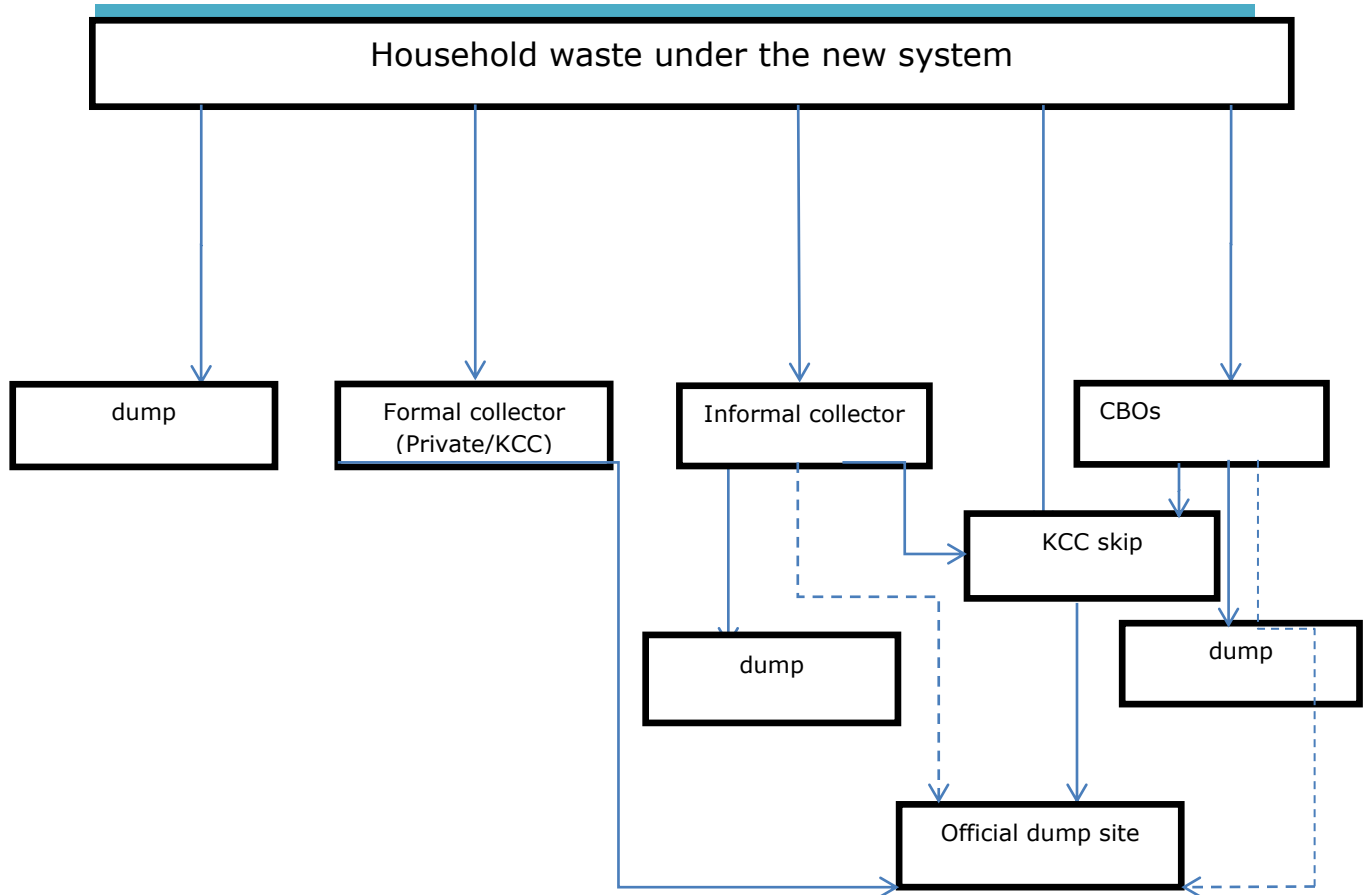


Figure 1.2: Household waste under a new system of SWM

As Figures 1.1 & 1.2 show, the main actors in solid waste management are KCC (the public body responsible for Kampala city, recently renamed into KCCA), the formal private sector with private sector firms licensed to carry out the business of solid waste collection, the informal private sector in the form of refuse collectors who agree with

individual households and small business owners (shops) to collect their solid waste, and Community Based Organizations (CBOs). This study does not address the activities and contributions of CBOs, because they have been addressed in another, related study (which was also part of the Partnerships for Research on Viable Environmental Infrastructure in East Africa (PROVIDE) project; (See Tukahirwa, 2011).

### **1.3 Solid waste characteristics and overview of the policy and legal framework for SWM in Kampala**

The monthly generation of solid waste in Kampala is estimated at 42,000 tonnes of which only 15,000 tonnes are deposited at the Kiteezi landfill (KCC, 2006). The rest either remains uncollected or is disposed of using other means. Five broad groups have been identified as sources of solid wastes in Kampala city (KCC, 2006). These are individual households, institutions, commercial establishments, industries and road sweepings. Of these, this study mainly focuses on domestic waste. Domestic waste has a relatively high moisture content and is relatively dense. Table 1.1 below reveals the general waste composition in Kampala (KCC, 2006).

Table 1.1: General Waste Composition in Kampala.

Type of solid waste	% (2001)	% (June 2006)
Paper & board	5.4	10.6
Glass	0.9	1.8
Metal	3.1	0.4
Plastic	1.6	11.8
Organics	83.5	74.0
Construction		1.4
Street Debris	5.5	

Source: KCC, 2006<sup>7</sup>

The responsibility for providing a waste collection and disposal service to the citizens of Uganda rests with the Ministry of Local Government. The authority to operate this service is passed to KCC under legislation contained in the Urban Authorities Act of 1964 and the Local Government Act 1997. The National Environment Management Authority (NEMA) is the institution mandated to coordinate, monitor and supervise environmental management in Uganda. NEMA is a semi-autonomous body that works closely with lead agencies including local government departments in charge of environment. In Kampala, collection and transportation of solid waste is a responsibility of the divisions under the Medical Officer of Health and supervised by the Senior Principal Assistant Town Clerk (see Figure 1.3 below). The centre is responsible for management of the sanitary landfill, whose operations have been contracted out. The constitution of the Republic of Uganda (2005), under the chapter of land and environment, outlines the importance of the protection of environment. The constitution further provides guidelines on sustainable development. The guiding principles adopted include: living within our environmental limits without compromising the ability for the future generations to enjoy the same later, ensuring a healthy society and using appropriate technologies. The Public Health Act (PHA) of 1964 defines the role of urban

<sup>7</sup> The study commissioned by KCC does not provide data for construction waste in 2001 and street debris waste in 2006. Another study has been commissioned by KCC that will probably release latest informative information on SWM in Kampala including types of waste generated but the study findings are not yet out.



authorities and their communities as regards to solid waste handling and disposal. This act covers all the health issues that arise due to poor management of solid waste. The Urban Authorities Act 1964 and the Local Government Act 1997 allow KCC to collect revenues to finance the service provided. The Local Government Act (1997) also operationalizes the country's decentralisation policy, assigns roles and responsibilities to each level in the Local Government hierarchy and details out the role of stakeholders. Section 5 of the Public Health Act, Cap.281, empowers all local authorities, such as the City Council, to take all lawful, necessary and reasonably practical measures to safeguard and promote public health. It is also a duty of a local authority to maintain its area in a clean and sanitary condition at all times and to prevent the occurrence of any nuisance. Section 55 of the Public Health Act, Cap.281 defines nuisance as including un-collected garbage, among others.

In the year 2000, the Kampala solid waste management ordinance was enacted. The ordinance provides a legal framework for the operation of private sector service providers in SWM, for the charging of service fees to the population of Kampala, and for penalties. According to the KCC Solid waste Management Ordinance 2000 and the Solid Waste Management Strategy, December 2002, as revised in 2006, the collection, transportation and disposal of garbage are the responsibility of Kampala City Council (KCC), now KCCA, and its divisions. KCC is required through its agents, servants or licensed collectors to ensure that solid waste (garbage) is collected and conveyed to treatment installations or approved disposal sites to the extent required to satisfy both public health and environmental conservation requirements. According to section 20 (d) of the Solid Waste Management ordinance, 2000, it is an offence for a person to scatter or

litter solid waste at any private or public property. Section 5 (1) of the ordinance also prohibits depositing of waste on private property, public street, roadside, or in a ditch, river, stream, lake, pond, channel or in a park, excavation or any other place where it may be or become a public health nuisance. Section 4(4) of the National Environment (waste management) regulations (S.1.No 52/1999) states that: “A person who generates domestic waste shall sort the waste by separating hazardous waste from non-hazardous waste in accordance with the methods prescribed under sub-regulation”. Section 5 of the same regulation requires a generator of domestic waste with or without a license issued under these regulations, to dispose non-hazardous waste in an environmentally sound manner, in accordance with by-laws made by a competent local authority. Section 6 (6) provides for a person or organisation in the business of transporting or storage of waste to apply to the Authority for a licence for the transportation of waste or a licence for the storage of waste, within ninety days after the commencement of the Regulations. Section 7 (2) also states that a person granted a licence to transport waste shall ensure that: a) The collection and transportation of waste is conducted in manners that will not cause scattering of the waste; b) The vehicles, pipelines and equipment for the transportation of waste are in such a state as not to cause the scattering of, or the flowing out of the waste or the emitting of noxious smells from the waste; c) The vehicles for transportation and other means conveyance of waste follow the approved scheduled routes from the point of collection to the disposal site or plant.

However, enforcement of these regulations have been challenged with weak punitive measures. For example anybody contravening sections of the Solid Waste Management Ordinance or sections of the Waste Management Regulations is only liable,

on conviction, to imprisonment for a term of not more than six months or to a fine of not less than three hundred and sixty thousand shillings. Both penalties don't improve or repair the state of the degraded environment (WaterAid, 2011).

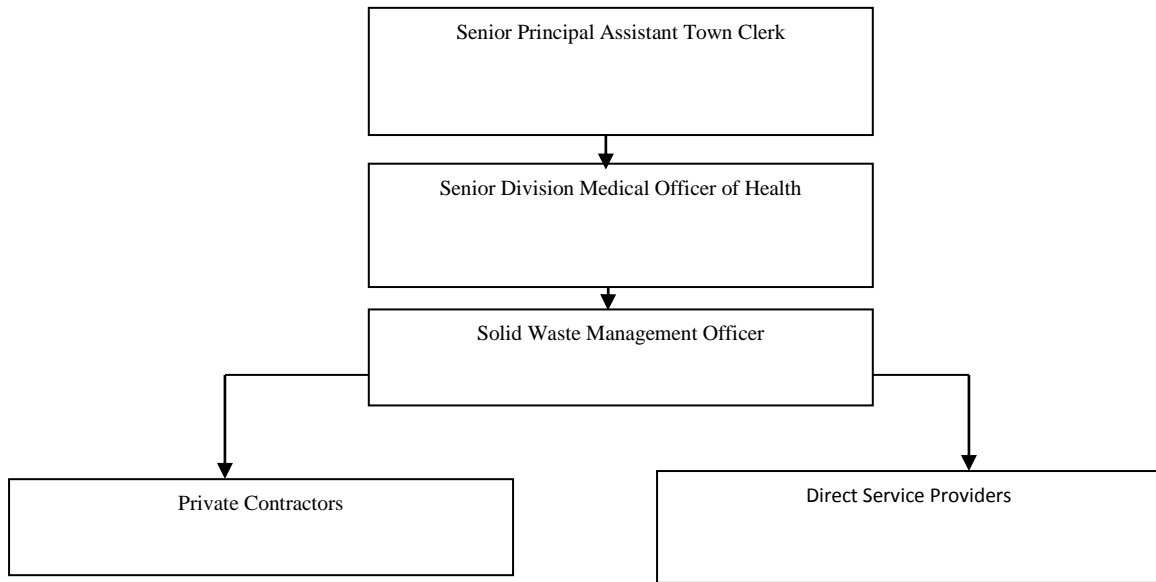


Figure 1.3: The current organizational arrangement of solid waste management in Kampala

#### 1.4 Problem statement and study objectives

The way solid waste management is organized in Kampala and the challenges being faced are in many ways similar to other cities in the developing world (Achankeng, 2004; Afon, 2007; Awortwi, 2004; Ahmed et al., 2004; Schubeler, et al., 1996; Cointreau-Levine, 1994; Karanja, 2005; Kaseva et.al, 2005; Kassim, 2006; Tadesse, et al., 2008; Medina, 2005; Scheinberg, 2011; Oduro-Kwarteng, 2011; Ndadiko, 2010). Hence, the search for ways to upgrade waste management systems has always been an on-going

effort in many cities in the developing world. In East Africa, the past decade has witnessed the implementation of policies and reform initiatives, including the involvement of many actors (formal and informal), in SWM. Despite that, many urban centres are still facing major SWM problems (Karanja, 2005; Spaargaren, et al., 2005; Mugagga, 2006; Nkya, 2004; Okot-Okumu, et al., 2011). Even where successes have been registered, the question is whether these successes or positive effects in SWM can be sustained for a long time (Golooba-Mutebi, 2003; Kaseva, et al, 2003; Kassim, 2006). The persistent solid waste problems have created a desire for empirical studies to inform urban governance policies and strategies (e.g. Baud et al., 2004; Spaargaren et al., 2005). Along with other studies in SWM in Sub-Saharan Africa scholars have focussed on the performance of solid waste management (Obirih-Opareh et al., 2002; Post et al., 2003; Kassim, 2006; Kaseva et al, 2005; Awortwi, 2004) without getting into deeper analysis. These studies reveal many challenges faced in solid waste management. For instance, solid waste collection is based on the house-to-house system mainly used in rich areas, while the central container system is applied to the remaining areas that are not easily accessible (Obirih-opareh et al., 2002). Other scholars (e.g. Post et al., 2003) argue that the introduction of cost recovery in low income neighbourhoods have incited many, especially poor, households to either engage in free rider practices or to opt out of the service with detrimental effects for public health. It is also noted that government bodies are generally reluctant to create partnerships with informal sector enterprises. Yet studies show that such partnerships can deliver good quality waste management services in terms of the use of more appropriate technologies and closer links with the community (Baud, 2004). Further, it is noted that problems of SWM hinge on the lack of private sector

capacity and enforcement of regulations as major constraining factors to performance (Oduro-Kwarteng, 2011). This is not unlike what the WDR (2004) report says about why too often urban services fail to serve poor people because these services are inaccessible or prohibitively expensive. But even when these services are accessible, they are often dysfunctional, unresponsive to the needs of a diverse clientele, and failing innovation to increase productivity, according to the World Development Report (WDR, 2004).

A number of detailed academic studies have been done on SWM in East Africa including: Majale (2011), who focuses on institutional arrangements in urban centres; Oberlin (2011), who focuses on the role of households in SWM; and Tukahirwa (2011), who focuses on the role of NGOs and CBOs. Other existing literature has often focused on descriptive analysis of the solid waste management activities of the various actors and their contributions to sustainable development (see Baud et al., 2004, Karanja, 2006; Kassim, 2006). Baud et al. (2004) broadened the research scope to include issues like equality, coverage, affordability and environmental concerns. It is surprising that issues of cost efficiency and service effectiveness have not been given more attention, especially since the concern of SWM practitioners is on how to manage it efficiently and effectively. Recent research has to some extent dealt with whether there is a difference in the relative efficiency of private and public service providers, with SWM being one of the cases studies (e.g. Ndadiko, 2010). Although literature on the organization of SWM is large and growing, detailed analysis on service effectiveness is lacking. In this study, we basically assessed the contributions of different solid waste management services to a cleaner environment, especially of the household and neighbourhood. Cleaner neighbourhoods largely depend on the quality of waste collection. We used customer

satisfaction as a proxy for quality of services rendered. This was complemented with data on service coverage. We used this approach because clients are usually in a better position to assess the quality of the services than governmental organizations or private companies involved in service provisioning. This study therefore, takes into account the perceptions and interests of service recipients/consumers, which are often neglected and not given much emphasis in previous research.

Further, while studies have examined private sector participation in SWM in East Africa (e.g. Kaseva et al., 2005; Kasim, 2006; Karanja, 2005), they have not consistently analysed and compared public and private sector effectiveness in solid waste collection. Few studies (if any) have devoted significant attention to the analysis of methods and technologies of disposal of solid waste. Similarly, few studies have been devoted to the analysis of the informal sector as one of the actors at the primary level of solid waste collection (Medina, 2005). Besides, little systematic knowledge exists of the actual contribution of informal sector providers to solid waste improvement.

Against this background the main objective of this study is to assess the public and private provision of SWM in Kampala. We assess the contribution of the various actors in the collection and transportation of solid waste and assess the extent to which the various policies and interventions have addressed the challenges of solid waste collection and transportation in Kampala.

In specifying this main objective, four specific objectives are the central focus of this study:

1. To compare the operations and discuss the effectiveness of public and private provision of solid waste collection in Kampala.
2. To analyse the effects of removing a number of large containers used in the collection and transportation of solid waste (“skips”) in Kampala.
3. To assess how the informal sector co-exists with the formal sector in solid waste collection in Kampala.
4. To investigate whether environmental improvements – and especially those related to solid waste – materialised during the 2007 Commonwealth Heads of Government Meeting (CHOGM) in Kampala, and whether these improvements endured afterwards.

### **1.5 Description of study area**

This study focuses on Kampala, the capital city of the Republic of Uganda (see Figure 1.4 below). The history of Kampala can be traced back to 1600s when it was established as the Capital of Buganda Kingdom<sup>8</sup>. It served as a political and administrative capital until 1893, when the British declared Uganda their protectorate and transferred the capital to Entebbe. It turned again into the capital city in 1962 at Uganda’s independence. Kampala is located in Central Uganda, on the northern shores of Lake Victoria, bordering with Wakiso district to the North, East, West and South-West, while Lake Victoria is in the South East; it covers an area of 195sq.km. Kampala has five divisions<sup>9</sup> namely:

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<sup>8</sup> Buganda Kingdom is one of the several kingdoms in Uganda that existed during the pre-colonial era. It was also the most organized with centralized structures to the extent that the British used the Kiganda system of administration in other areas that were put under the British colonial administration. The headquarters of Buganda Kingdom was Kampala and with Buganda Kingdom playing a big role in helping the British consolidate their rule in other parts of Uganda, Kampala further developed to become the main administrative and commercial city for the whole of Uganda.

<sup>9</sup> With new changes under the Kampala Capital City Authority, divisions have become municipalities.

Makindye division, Kawempe division, Kampala Central division, Lubaga division and Nakawa division (see Figure 1.5).



Figure 1.4: Map of Uganda showing where Kampala is located

Kampala has approximately a night population of between 1.2 million to 1.5 million people. The day population is estimated at close to 3 million people, of which 15.4% live in informal and unplanned settlements. 40% of the households engage in urban agriculture, which contributes a lot to the accumulation of waste (Auditor General,



2010). The colonial state developed Kampala as an administrative center and this accelerated the migration of the rural population, who came looking for opportunities. Later, the urbanization rate surpassed the absorptive capacity of the city to provide services such as housing; safe water; drainage; and solid waste management (Mukwaya, 2004).

Despite its proximity to the equator, it has a tropical climate rather than a typical equatorial climate. The modified climate is due to the high altitude, long distance from the sea, relief and proximity to the large water mass of Lake Victoria (Matagi, 2002). The topography of the city is characterized by a series of low lying hills with flat hill tops. Kampala was originally built on seven hills but now has expanded to include 46 hills. These hills are surrounded by a network of wet valleys which are covered by papyrus swamps.

Kampala has had a unique administrative structure in Uganda. It has been the only urban authority designated as district. However, it has recently changed status. Under the Kampala City Bill (2009), the city is now regarded simply as located in Buganda Kingdom, but with a special status under the control of the Central government. This change is intended to streamline the status of Kampala as the capital city of Uganda and spells out its administration to ease provision of effective administration in the city and to address the appalling conditions of its infrastructure.

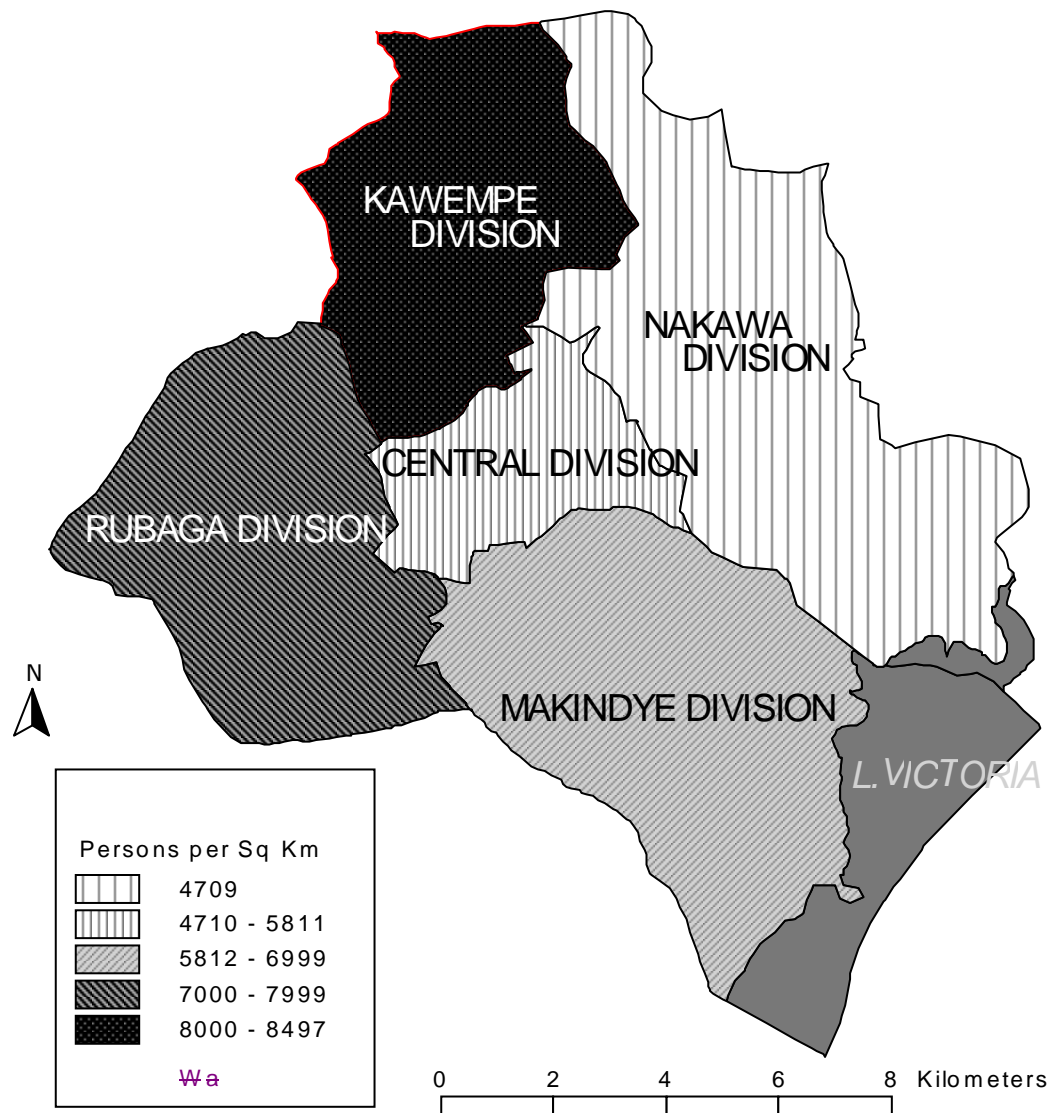


Figure 1.5: Kampala city and its divisions

## 1.6 Data

This sub-section gives an overview of how data was collected in this research. The details of the methodology are described in each chapter. Official data bases on waste in

Kampala are deficient as they are not comprehensive (Auditor General, 2010). For instance, the number of households and institutions visited by private collectors is not known to KCC and the divisions. In addition, the divisions lack data on number of households served, number and capacity of private collectors and the composition of solid waste stream. Therefore, field research was adopted as a major complement to the available data.

The specific research objectives, as outlined previously, are addressed on the basis of six surveys that were undertaken between May 2007 and November 2010. Table 1.2 below provides a detailed overview of the major contents of these data sets and where these data were collected. The first two surveys collected data related to the perceptions of residents of Kampala on solid waste management before and after Kampala hosting the CHOGM event. The third survey tested the perceptions of people before and after the implementation of the privatization policy in solid waste management. The fourth survey was meant to capture the perceptions of residents of Kampala in relation to the removal of communal containers in most household areas of Kampala. The fifth was a large survey that was intended to capture the different actors in solid waste management and how they co-exist with each other. The sixth and last survey was a small survey among the informal waste collectors that was meant to capture why they have stayed in the business of solid waste collection despite the presence of the formal collectors (KCC and private companies).

Ideally, impact assessment studies require longitudinal data. But such longitudinal data is lacking since not many studies have been carried out in Uganda in the area of solid waste management. In the absence of such data, we used memory and reflexive

comparisons. Because garbage management in Uganda and other developing countries are hot issues of emotional debate and discussion that sticks into the memory of many urban residents, such research methodologies are possible.

The respondents were randomly selected from the citizens (and/or clients of service providers) of Kampala depending on the willingness to answer questions in questionnaires. Whereas the original target was to get data that is representative for Kampala, the realities on the ground during the process of data collection couldn't allow us to attain our objective fully. If the targeted respondent was not available (mostly the working class) or not interested to be interviewed, we would move to the neighboring household. However, to capture the views of the people located in rich neighborhoods, we carried out interviews over the weekends when they are mostly at their residences. There were also many respondents who were not part of the target group because we were mainly interested in respondents who had lived in Kampala for a long time. In such cases also we would move to the neighboring household. The sampling strategy chosen therefore may not allow us to claim that the data collected is fully representative of Kampala.

The questionnaires were interviewer-administered to ensure that we interviewed the right people who have lived in Kampala for a long time and therefore were knowledgeable about the (changing) state of solid waste management in the city over the years. But interviewer-administration of the questionnaires also made sure that the respondents understood the questions and that no bias occurred in terms of illiteracy or education level.

The quantitative data sets were complemented with qualitative information collected from interviews with key respondents, especially managers of KCC and private sector companies, informal waste collectors, and policy makers. At various points throughout this research, use is made of secondary data provided by KCC complemented by additional research findings provided by other researchers in the East African region (See Golooba-Mutebi, 2003; Okot-Okumu et al., 2011, Tukahirwa, 2011; Oberlin, 2011, Majale, 2011).

Table 1.2: Description of data sets constructed for this research

Data set code	DS1	DS2	DS3	DS4	DS5	DS6
<b>Survey description</b>	<b>Household survey (CHOGM)</b>	<b>Household survey (CHOGM)</b>	<b>Household survey (Privatization)</b>	<b>Household survey (Skips)</b>	<b>Household survey (Performance)</b>	<b>Informal collectors survey</b>
<b>Year of study</b>	2007	2008	2008	2008	2009	2010
<b>Sample size</b>	454	447	383	301	475	30
<b>Division</b>	Kawempe, Kampala Central	Kawempe, Kampala Central	Kawempe, Kampala Central	Kawempe, Nakawa	Kawempe, Nakawa	Kawempe, Nakawa
<b>Type of data collected</b>	Perceptions on seriousness of SWM : littering & illegal piles of waste, nuisance from solid waste transfer points, smell of solid waste, solid waste collection from households	Perceptions on seriousness of SWM : littering & illegal piles of waste, nuisance from solid waste transfer points, smell of solid waste, solid waste collection from households	Perceptions of solid waste management (Same as in DS1 & 2) and choice of disposal method (bring to skip, door-to-door, bell ringing, open dumping)	Perceptions to use of skips; their appropriateness, distance, effectiveness, cleanliness around the skip, skip change frequency .	Household characteristics, waste characteristics, frequency of garbage collection, where service providers go, whom do they serve, changes in service provision, satisfaction with services rendered, fees collected	Household characteristics, incomes, fees charged, working relationship with other providers, technologies used and working conditions

## 1.7 Contribution of this research

This study is part of the Partnerships for Research on Viable Environmental Infrastructure in East Africa (PROVIDE), which aimed to carry out research for a transition towards sustainable waste water and solid waste infrastructures in East African

cities. In an effort to address SWM in particular and sanitation in general, scholars have developed ideas on what has become known as ‘mixed modernities’ or the Modernized Mixtures Approach (MMA) (see Spaargaren et al., 2005; Van Vliet et al., 2010; Oosterveer et al., 2010; Scheinberg, 2011) . The MM Approach contends that problems related to environmental infrastructures in developing countries have much to do with the models of modernization and urban development applied so far. Such (western) modernization models are mostly conceived as monolithic or one dimensional, making strong assumptions on homogeneity of households, density of households, degree of urbanization, (financial) accessibility of services, availability of advanced technologies, and the like. Yet the actual situation in East African cities and neighbourhoods often deviates from these assumptions, and so do existing urban environmental infrastructures. The literature on SWM in developing countries show that small scale, flexible, low-technological and decentralized approaches have flourished widely as opposed to the large scale, uniform, centralized and high-tech approaches of the western systems. But these existing approaches or models in urban centres of developing countries have not proved to be able to solve problems around sanitation and solid waste. The MMA contends that a solution might be found in combining the best of both paradigms into new configurations that take into account the specific local conditions of developing countries. Developing and accessing the modernised mixtures approach (MMA) means taking the best features out of both paradigms, combine them into hybrid solutions and evaluate to what extent that leads to better alternatives. In other words, developing and 'testing' a mix of scales, strategies, technologies, payment systems and decision making structures that

better fit specific local situations in urban centres of developing countries (Spaargaren et al., 2005).

The aim of the project is to contribute to the knowledge base for MMA, which can be used in the future by researchers and policy makers in the area of urban environmental infrastructure. Within the PROVIDE framework and the Modernized Mixtures Approach, this study investigates pro-poor modernized mixtures in the form of public-private mixes of solid waste collection and transportation. Private refers then to both formal collectors and informal collectors of solid waste. Informal sector (collectors) involvement is often thought to be appropriate for slum conditions and for conditions in unplanned neighbourhoods. High income areas would then better be served by private sector waste collection and low and middle income areas, who may lack the economic power to pay for private services of the formal sector, would then preferably be served by the public sector. This study will investigate and assess such claims.

At a broader level, the study provides a deeper understanding of the co-existence of the various actors in solid waste collection and transporting and of the performance of the initiatives and policies so far implemented in solid waste management in Kampala. To summarize, the research presented in this thesis contributes to the literature in four main ways. First, by analysing public and private provisioning of solid waste collection, this study contributes to the debate on the benefits of privatization of urban service delivery. Second, the study contributes to a better understanding of choices made by households after communal containers (skips) commonly used for solid waste collection were removed in Kampala. Third, new evidence is provided in this dissertation to be able to better understand the informal sector, the reasons for the existence of informal

collectors in solid waste collection, and their co-existence with the formal sector. Lastly, a contribution is made to the emerging academic discipline of mega-events and their environmental legacies by presenting evidence of the environmental legacies of hosting CHOGM in Kampala.

### **1.8 Outline of the thesis**

This thesis is divided into six chapters. Chapter two compares the operations and discusses the effectiveness of public and private provisioning of solid waste collection in Kampala. Chapter three analyzes the effects of removing large containers, popularly known as skips, on the collection and transportation of solid waste in Kampala. Chapter four examines how the informal sector and the formal sector co-exist in solid waste collection in Kampala. Chapter five investigates whether performance improvements – and especially those related to solid waste – materialized during the 2007 Commonwealth Heads of Government Meeting (CHOGM) in Kampala, and to what extent they endured afterwards. Finally in chapter six, the conclusions of this study are formulated and their implications for further study and for policy making and management of solid waste in Kampala and beyond.



**CHAPTER 2: THE OPERATIONS AND EFFECTIVENESS OF  
PUBLIC AND PRIVATE PROVISION OF SOLID WASTE  
COLLECTION SERVICES IN KAMPALA<sup>10</sup>**

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<sup>10</sup> A version of this chapter has been published as: Katusiimeh, M.W., A.P.J. Mol and K. Burger, The operations and effectiveness of public and private provision of solid waste collection services in Kampala, *Habitat International* (2011), doi:10.1016/j.habitatint.2011.10.002)

## **Abstract**

This paper compares the operations and discusses the effectiveness of public and private sector provision of solid waste collection in Kampala, Uganda. Household data suggest that the private sector is more effective than the public sector. Private sector companies provide services like container provision and providing timely and fixed collection time tables. Contrary to popular perception, fees charged by private companies are moderate. Public sector clients are charged fees even when the service is supposed to be free. Clients of private sector providers are more satisfied than those of public sector providers. It is, however, revealed that while the public sector serves mainly the low incomes, the private sector serves mainly the rich. In spite of these notable differences, clients of both public and private sector perceive the problem of solid waste management (SWM) in Kampala to be very serious. The effectiveness of public and private sector operations in solid waste collection in Kampala is hampered by lack of transparency. Given the situation of open competition for clients involving both public and private sector in Kampala, it is possible the public sector can operate effectively if they start commercial services officially like their private sector counterparts. This calls for a formal public-private partnership where the public and private sector can work together with the public sector dominating poor and marginalized areas while the private sector concentrates on rich neighbourhoods.

**Key words:** Solid waste collection, privatization, effectiveness, Kampala, Uganda, Households.

## **2.1 Introduction**

It is widely acknowledged that most cities in developing countries face challenges of poor solid waste management (SWM) resulting into major problems relating to public health and environmental pollution. Hardly a month passes without the press highlighting garbage complaints from city residents and reporting on heaps of uncontrolled garbage, roadsides littered with refuse, streams blocked with garbage leading to flooding and the presence of many illegal disposal sites (Matagi, 2001). The situation is made worse with rapid urbanization taking place and slums growing at an alarming rate.

In the 1980s, public sector monopoly of solid waste management (SWM) in urban cities was blamed for the mess citing inadequate financial resources and lack of management and technical skills. Public sector monopoly according to the World Bank also impedes the efficient allocation of resources and obstructs the functioning of markets (WDR, 2005). The World Development Report (2004) had earlier argued that too often services fail poor people because they are inaccessible or when accessible they are dysfunctional, extremely low in technical quality and unresponsive to the needs of the clients. The report also cites lack of innovation and widespread corruption as evidence to problems with public sector delivery of services.

Many analysts of urban environmental infrastructure in developing countries buoyed by the emergence of the new public management (NPM) model contended that without the discipline of competition, the public sector would not provide effective services. The public sector was criticized for being run under an old administrative

model (the classical Weberian type of administration) that was characterized as slow, hierarchical, not cost-efficient, inflexible and not citizen oriented (Hood, 1991; Hughes, 2003). This situation was further exacerbated by growing mistrust of the people in governments who were seen as mired in corruption (Doan, 1998). Dissatisfaction with the quality and reliability of services and the inefficiencies and even corruption of public sector operators made private sector participation attractive (Annez, 2006). The thinking was that privatization would not only solve failures of public ownership (Shirley & Walsh, 2001), but the public would benefit from the introduction of private sector management practices (Stren, 2001).

Many developing countries reshaped their urban systems and environmental infrastructure policies to reflect the new management thinking so as to implement elements of the NPM model. Reforms implemented in most urban areas in Uganda in the 1990s were based on NPM principles, especially promoted by international donors such as the World Bank. The water and sanitation reforms in Uganda gained momentum along the NPM lines. As early as the mid-1990s, the Uganda government recognized the limited capability and capacity of local authorities to provide adequate sanitation and solid waste management (SWM) to urban communities (Tukahirwa et al., 2010). The absence of sufficient funds for them to operate SWM services properly reinforced the argument for stronger private sector involvement. The desire to move in this direction was already spelled out in various policy documents including the influential World Bank sponsored urban environmental sanitation project (Mugagga, 2006). Privatization is a key component of reforms introduced in SWM in developing countries. In Kampala, in order to institutionalize private sector participation, the Kampala City Council (KCC) solid

waste management Act was enacted in the year 2000. As a result, like in many other countries in the developing world, the public and private sector co-exist in SWM. However, despite the active involvement of both public and private sectors, major problems still remain as far as SWM is concerned. For instance only 40% of the garbage that is generated in Kampala is transported to the official dumpsite at Kiteezi (KCC, 2006). The purpose of this paper therefore, is to compare the operations of the public and private provision of solid waste collection in Kampala and discuss their effectiveness.

## **2.2 Methodology**

Solid waste management (SWM) in this study is meant to mean solid waste collection. When we refer to the private sector, we restrict ourselves to the analysis of the private firms that are formally registered and recognized by KCC.

To compare the operations of public and private provision of solid waste collection, data collection among clients of public sector (KCC) and private firms in Kampala was done through a quantitative survey carried out between January and May 2009 in the divisions of Kawempe and Nakawa. The questionnaire was administered to 475 respondents. Among the 475 respondents who responded to the questionnaire, 56% are served by KCC (12%) and the private sector (44%). The analysis is limited to these respondents. The survey captured the socio-economic characteristics of respondents, frequency of solid waste collection, perceptions and satisfaction with present solid waste services, payment dynamics and services rendered by private and public sector.

Data collection took place through a structured, interviewer-completed questionnaire to make sure respondents understood the questions and that no bias occurred in terms of illiteracy or education level. To ensure representativeness, a stratified random sampling strategy was followed, in which random sampling of respondents in the parishes selected involved targeting all income groups. If the sampled respondent was not available, not interested, or not part of the target group, the interviewer would move to the next random sampled respondent in that cluster. Given the difficulty of eliciting income and expenditure information, low-income households were defined as those that reside in poor neighborhoods characterized by high population densities. Areas were classified as high income if they had low population densities and where neighborhoods are well planned.

Interviews with key participants like the KCC waste managers (10), managers of private firms (15), workers of both KCC (10) and private firms (15), the residents especially local council leaders (6) and opinion leaders (10) were conducted. The aim was to get explanations on the operations and effectiveness of public and private sector in SWM in Kampala.

The data through qualitative methods was transcribed and qualitatively analyzed. Survey data was analyzed descriptively where we derived frequencies and percentages. We used an independent sample t – test to check for the mean differences and to check whether or not there are significant differences in the scores.

## **2.3 Results and discussion**

### **2.3.1 Public and private sectors operations in SWM in Kampala**

For long, Kampala local government had the monopoly of being responsible for collection, storage and disposal of waste by statutory requirement. Communal containers (skips) were placed in specific locations for households to bring garbage at any time of the day especially in rich areas (Mugagga, 2006). However, an insufficient number of skips were placed in the city which created a situation that encouraged open dumping in unauthorized places. Alternatively, households paid individuals (informal collectors) to transport garbage to the skip which Kampala City Council (KCC) trucks would take to the official dump site. Informal collectors were needed because the distance to the skips was quite far but informal collectors would also dump in unauthorized places as long as no one was watching.

The strategic framework for reform (SFR) of 1997 however, proposed that SWM be privatized with private firms collecting refuse directly from beneficiaries at a fee, KCC subsidizing the low income areas in the short term and then later withdrawing completely (KCC, 2002; KCC, 2006). After formal privatization set in around the year 2000, communal containers were largely withdrawn. After the pilot refuse collection service was implemented in order to test the feasibility of contracting services in Makindye division in 2001, it was recommended to have skip-less refuse collection service in communities, with skips restricted to institutions and markets (KCC, 2002; Mugagga, 2006). As a result of the implementation of the policy, the most observable change in the SWM sector in Kampala is the increased involvement of the private sector.

Officially, 30 private companies are registered by Kampala City Council (KCC) to collect waste in any division of the city. Private companies collect garbage from private homes or institutions and are paid directly by these home-owners and institutions. Previously, KCC entered into formal contractual arrangements with private companies whereby the latter provided services for which they would be paid from local government sources through contracting. Firms like Nabugabo-Shauri Yako Joint Venture and Bisons Consult International were awarded contracts in 2001. KCC also awarded private companies a limited monopoly via competitive bidding in a defined area for a limited time. In this arrangement firms were allowed to charge residents, but KCC would pay a lump sum to private collectors to meet the costs of collecting garbage from poor households that cannot afford to pay. For example, in the central division of Kampala, garbage collection was taken over by Nabugabo Enterprises. In Kawempe division, NOREMA and Hilltop private companies were given contracts to manage the collection of solid waste. In Makindye division, Homeklin Ltd. was contracted. These arrangements were abandoned by KCC due to its lack of capacity to manage the contracting system and lack of capacity and transparency on the part of private firms. As a result, Kampala city council did not withdraw from collection of waste as planned. It is still involved in the collection and transportation of waste to the dumpsite. Records at Kiteezi dumping site in 2009 indicate that KCC is responsible for 87 thousand (about 27%) tons of garbage dumped compared to the private sector's 237 thousand tons (73%). By the time of carrying out this study, KCC operated alongside the private firms in many ways commercially providing solid waste services to Kampala residents. Private



companies and KCC have widely scattered clients all over the city openly competing for customers.

### **2.3.2 Socio-economic and demographic characteristics of respondents**

We asked for respondents of their educational status, the ownership of the house where they stay and the quantity of waste generated. We also classified their income category (see table 2.1 below for details of percentage scores). It was discovered that the rich, not surprisingly perhaps, are served by mainly private firms while most of the low income households are served by KCC. There is a significant difference in the scores for KCC (M=2.1, SD=0.7) and private sector (M=1.4, SD=0.5);  $t(8.5)$ , P=0.000.

KCC serves the people with relatively little education (primary and secondary). Private firms serve those with higher education (tertiary). There is a significant difference in the scores for KCC (M=3.3, SD=0.6) and private sector (M=3.9, SD=0.4);  $t(-8.4)$ , P=0.000.

For the estimates of the quantity of waste produced in the household per week in Kg, we found out that there was a significant difference in the scores for KCC (M=3.5, SD=0.7) and private sector (M=3.8, SD=0.4);  $t(-5.1)$ , P=0.000. These results suggest that private firms serve those with relatively more garbage than KCC confirming earlier results that private firms serve the rich. Studies show that rich households generate higher quantities of waste than the poor and that income level is a determining factor for domestic solid waste generation rates (Boadi et al., 2003; Kaseva et al., 2005).

For house ownership, there was a significant difference in the scores for KCC (M=2.0, SD=0.6) and private sector (M=1.6, SD=0.7);  $t(3.3)$ ,  $P=0.001$ . These results suggest that most clients of private firms live in their own houses unlike clients of KCC who are mainly tenants. House ownership is associated with being rich.

Table 2.1: Socio-demographic characteristics of respondents

Variable	Public sector	Private sector
	Percentage	Percentage
<b>Income category</b>		
High income	18	67
Medium income	55	30
Low income	27	3
<b>Educational level</b>		
Primary	11	1
Secondary	53	15
Tertiary	36	84
<b>House ownership</b>		
Owner	13	46
Tenant	80	47
Government House	2	4
Caretaker	5	3
<b>Quantity of waste (kg)</b>		
3-5	15	1
6-10	25	16
Above 10	65	83

Generally, the results as revealed in the socio-economic characteristics of respondents reveal that private firms target the rich who have the economic means to pay consistently for their services. This is an indication that private firms are more effective

in serving the rich. This is not surprising as the finding is in line with those of many earlier studies. For instance, according to Spaargaren et al. (2005), the pressure for profit maximization forces the private sector to seek rents from serving mainly the highest income areas or fully paid services leaving poor and marginal areas or low income people under the responsibility of under-resourced local authorities.

### **2.3.3 Services provision**

We compared the responses of private sector and public sector clients in respect to service provision particularly in the provision of containers and frequency of collection of waste from households.

#### **2.3.3.1 Container provision.**

85% of KCC clients provide their own containers (mostly self-provision) while most (65%) clients of private firms indicate they receive containers from their service providers. The private sector providing containers can be seen not only in terms of customer care but also to bind the customer to the provider. Many of the containers are well labelled especially bins indicating which firm supplies them to clients. This means that the private sector is more effective in providing services like container provision unlike the public sector especially when public sector (KCC) communal containers (skips) were removed in many neighbourhoods in preference for the door-to-door collection system.

### **2.3.3.2 Frequency of collection of waste from households**

Respondents were also asked how public and private providers compare in frequency of garbage collection. There was a significant difference in the scores for KCC (M=2.9, SD=1.1) and private sector (M=3.5, SD=0.9);  $t$  (-3.7), P=0.000. These results suggest that there are clear differences on frequency of garbage collection between private firms and KCC. Surprisingly, the majority (51%) served by KCC indicates that waste is collected daily unlike those of private firms (1%) contradicting results of similar studies (Obirih-Opareh, et al., 2002). Two reasons could explain this difference. First, KCC has a large majority (38%) of customers that are shop keepers as compared to private sector's 22%. The house in which they live works as a shop at the same time and typically is near the road or market places with easy access for KCC vehicles that mainly collect market waste. Second, most low income households, (KCC mainly serves low income households) have no good waste storage containers. This fact coupled with the lack of appropriate in-house storage facilities and the high decomposition rate makes most low income households dispose of waste daily (Boadi et al., 2003). The high income households have onsite storage facilities and most contract with waste collectors that have fixed collection time tables. This finding is similar to findings from other related studies (Kaseva et al., 2005; Okot-Okumu et al., 2011) (See Table 2.2).

Table 2.2: Frequency of collection of waste from households

Frequency	Public	Private
	Percentage	Percentage
Daily	51	11
Thrice	14	44
Twice	27	31
Once	6	14
Less frequently	2	0

### 2.3.4 Payments for solid waste collection

All private firm clients pay for solid waste collection unlike for KCC where 76% of the clients pay. This payment pattern is particularly strange since KCC officially does not charge customers. The field interviews, however, indicated that most KCC customers pay and the money ends up with KCC solid waste management supervisors and drivers of their vehicles. This finding could be the reason why they pay lower fees (Mean = 22,102, SD = 21,824) per month compared to private firm customers (Mean = 31,382, SD = 18,709) as the service is already subsidized. Both public (68%) and private (59%) clients consider fees paid to be moderate. When asked about how often payment to the service providers is done, both public and private customers indicate once a month. However, a large percentage of KCC clients pay weekly unlike those of private firms.

### 2.3.5 Satisfaction with service provision

In this study, satisfaction was used as a proxy for quality of services provided. Customer satisfaction is seen as a key performance indicator in any business and to measure effectiveness of services rendered. Thus it was important to ask Kampala residents to

compare and contrast their level of satisfaction with the present situation of SWM. First, the perceptions of both private and KCC clients are compared on SWM problems in the neighborhood as this may have an effect on the general satisfaction of services rendered. There were no significant differences in the scores for KCC and private sector for all three variables tested (solid waste collection, littering of solid waste and nuisance of transfer points). Results suggest that both public and private firms' customers perceive the problem of solid waste collection, illegal piles of waste to be very serious. In a related question, both KCC and private firms clients indicated mainly personal health and littering of waste as the most urgent problem related to SWM.

#### **2.3.5.1 Satisfaction with the present situation of SWM**

As already noted, we asked Kampala residents to compare their level of satisfaction with the present situation of SWM in terms of frequency of garbage collection from their households, vehicles used, frequency of collection from the neighborhood and enforcement of law. In terms of frequency of garbage collection from their households, there was a significant difference in the scores for KCC ( $M=3.1$ ,  $SD=1.1$ ) and private sector ( $M=3.8$ ,  $SD=0.8$ );  $t (-5.1)$ ,  $P=0.000$ . These results suggest that clients of private firms are more satisfied than clients of KCC. This tends to confirm the earlier observation that a characteristic of low income people (mostly served by KCC) is to dispose of their waste daily and not necessarily collected by KCC all the time. When not collected by KCC, it is dumped in the illegal sites in the neighborhood and left there to rot and become a nuisance. This observation is in line with the Auditor General (2008) report that

faults KCC for irregular solid waste collection in many poor neighborhoods and markets causing pollution and health problems. In terms of satisfaction with the vehicles used, there was no significant differences in the scores for KCC (M=3.0, SD=0.9) and private sector (Mean=3.3, SD=0.9);  $t (-2.0)$ , P=0.040. These results suggest that clients of both KCC and private sector are not satisfied with the vehicles used. This result is because of the use of uncovered trucks that litter garbage and the use of old vehicles and those unsuitable for waste collection. Clients were also asked about their level of satisfaction with the frequency of garbage collection in their neighborhood. The distinction between household frequency and neighborhood frequency is important because of the co-existence of different methods of collecting waste. These are door-to-door collection of waste by the service provider and the communal collection (either a car coming and residents deposit garbage in the truck or communal collection sites exist). There was a significant difference in the scores for KCC (M=2.9, SD=1.2) and private sector (M=3.7, SD=1.0);  $t (-5.1)$ , P=0.000. Results suggest that private sector clients are more satisfied than their public sector (KCC) counterparts as regards to frequency of collection in the neighbourhood. In terms of satisfaction with enforcement of law to ensure compliance with the solid waste management ordinance, there was no significant difference in the scores for KCC (M=2.7, SD=1.1) and private sector (M=2.2, SD=1.2);  $t (2.6)$ , P=0.011. These results suggest that clients of both private and public sector indicate that issues of enforcement by KCC to ensure compliance with the solid waste ordinance are not taken seriously. They are in agreement that KCC has not done a good job (see table 2.3 below for percentage scores). This finding is in line with the Auditor General's report on solid waste management in Kampala and the findings in another related study (See Oberlin,

2011). According to the Auditor General (2010), KCC largely failed to establish a solid waste management system to manage garbage collection from 2002 through 2007. The report notes the failure to conduct solid waste management awareness, to enforce the solid waste management by laws like failure to punish those who illegally dump waste, to supervise and monitor the activities of private agents licensed to collect waste and, lastly, to ensure that solid waste is transported properly and conveyed to official dump sites. In all the variables tested those served by private sector are more satisfied than their counterparts (clients of KCC).

Table 2.3: Satisfaction with service provision

Satisfaction with service provision	Public	Private
<b>Frequency of garbage collection from household</b>	<b>%</b>	<b>%</b>
Poor	29	6
Moderate	31	27
High	40	67
<b>Satisfaction with vehicles used</b>		
Poor	34	20
Moderate	29	37
High	37	43
<b>Frequency of garbage collection in neighbourhood</b>		
Poor	40	12
Moderate	27	28
High	33	60
<b>Enforcement of the law</b>		
Poor	40	65
Moderate	35	16
High	25	19



### 2.3.6 Explanations

Data above show that generally private sector services are more appreciated compared to their public sector (KCC) counterparts. In spite of that observation, household data reveals the situation of solid waste management in Kampala is still a great concern. This is backed up by official statistics from KCC that show that service coverage of solid waste collection services is at 40% (KCC, 2006). Interviews with solid waste managers of private firms and KCC managers reveal lack of transparency as the main reason as to why solid waste collection is not performing effectively despite the public and private sectors being actively involved.

First, senior KCC officials in Kampala were reluctant to embrace fully the agenda of privatization by arguing that outsourcing of solid waste collection service providers was expensive and that local firms did not have the necessary human, technical and financial resources to provide a better service than had been provided by the public sector (Golooba-Mutebi, 2003). Some senior KCC officials still hold this view. While this might be true, interviews reveal that KCC officials are also motivated by a desire to continue their benefits from the chaos under a public run SWM, which allows for rent seeking<sup>11</sup>. When solid waste collection was partially contracted out in 2003 (a partnership between KCC and Bisons Consult), the partnership was undermined by KCC with irregular and delayed payments and inaccurate assessments that led to the underpayment for the company's services. The company eventually withdrew from the contract<sup>12</sup>. While this could be attributed to lack of financial resources by KCC<sup>13</sup> to pay the contractors and

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<sup>11</sup> Interview with KCC Solid Waste Engineer July 12<sup>th</sup> 2007

<sup>12</sup> Interview with Bisons General Manager, 12<sup>th</sup> March 2008.

<sup>13</sup> As argued by one of the KCC officials and some private sector company managers.

lack of capacity in form of monitoring staff having few transportation resources, telephones or mobile communication equipment, most respondents, including KCC officials, attributed this to the ‘sabotage’ of the new reforms, especially the contracting out method of solid waste collection, in order to create ‘rent seeking’ opportunities where the officials could benefit. This point is given more credence by the failure of KCC to get out of the business of solid waste collection and transportation, as was planned initially (KCC, 2002). KCC reneged on its promise to contract out service delivery to private firms, and only focus on supervising operations. This is especially so with money continuing to be allocated for solid waste collection. These findings are in agreement with (Post, 2004) who argues that there is often strong opposition to privatization from groups that stand to lose from the reform.

Second, the activities of waste management are funded through the annual budget allocation and the official policy is that KCC doesn’t charge user fees directly from the residents. While this is sometimes adhered to, often times KCC collectors especially ‘refuse supervisors’ charge residents at lower rates compared to their private collector counterparts. KCC still dominates solid waste collection in certain areas and most surprisingly in neighborhoods with rich settlements. In fact KCC and private firms collide sometimes especially where they work in the same area<sup>14</sup>. Those residents who prefer KCC say its services are cheaper than those of the private companies. This hidden and unfair competition demoralizes private sector service providers<sup>15</sup> developing feelings of uncertainty on their part and holding back for fear and doubt about KCC’s intentions.

Third, a number of private garbage collectors such as BINIT, NABUGABO,

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<sup>14</sup> Minutes, Public Health Department MIN PHC 36/07/2004

<sup>15</sup> Interview with KCC Solid Waste Engineer July 12<sup>th</sup> 2007

UPDEAL, NOREMA, HOME CLEAN, and ESKOM are operating without permits from KCC (Auditor General, 2010). Although known to the divisional authorities, they had not signed agreements with the council for allowing them to operate. Despite the absence of the signed contracts, Kawempe division, by June 2007 had an outstanding amount of Shs.225 million (USD 98,597) payable to contractors (Auditor General, 2010). In early 2008, the same companies signed a memorandum of understanding (MOU) with Kawempe division to collect solid waste on very unclear terms. For instance, it was not clear who was to meet the costs of waste collection, how much the private collectors would be paid as a result of the work done, and based on what indicators the division shall monitor and evaluate the performance.<sup>16</sup> The MOU was agreed upon and signed without making their details available to the council and without the involvement of the solid waste engineer<sup>17</sup>. Lack of transparency in the award of contracts has the potential to demoralize those who could have been willing to invest to improve solid waste management in the city.

Forth, as a result of lack of transparency, there is lack of trust between the major players in the SWM business (public sector, private sector and the general public). The private sector is suspicious of KCC intentions and found KCC unreliable<sup>18</sup>, while on the other hand, the private companies hope to benefit from secrecy, have not been transparent to reveal their incomes and expenditures to KCC, which is one of the reasons given as to

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<sup>16</sup> Solid waste engineer-Kawempe's letter to the Senior principal Assistant Town Clerk Kawempe division on the MOU between NOREMA (U) Ltd AND Kawempe division July 8, 2008

<sup>17</sup> In the minutes of the meeting of the Education, Sports and Health Policy Committee, the solid waste management engineer submitted the requirements and proposals that were not taken into consideration (under looked.)

<sup>18</sup> Several interviews conducted with private sector managers reveal that it is because of KCC breaking promises and not living to their word in the contracting business.

why KCC stops paying and subsidizing private contractors<sup>19</sup>. The public (consumers of services), are also not always cooperative especially when it comes to paying for solid waste collection and assisting law enforcers in dealing with those who litter solid waste or who fail to abide by the solid waste laws and regulations. Sometimes, local council leaders have sabotaged enforcement work by the private firms claiming they were not consulted<sup>20</sup>. The relationship between private firms is also not good as cases of unfair competition between rival firms, especially between Nabugabo Enterprises, Global Investments Limited and Bin IT, sometimes end up in physical fights and court cases<sup>21</sup>. The Town Clerk of Kampala sometimes resorts to putting up a public notice warning private garbage collectors and the general public that KCC had no running contract with any private garbage collecting firm and no private collector should claim to have exclusive rights of collecting garbage in any part of the city. Situations like these increase operating and transaction costs because of the uncertainty in the business of solid waste management.

## **2.4 Conclusions**

The main objective of the research which underlies in this paper was to compare the operations and discuss the effectiveness of public and private provision of solid waste collection. The case of Kampala, with regard to public and private provision of solid

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<sup>19</sup> Interview with KCC Engineer July 12<sup>th</sup> 2007

<sup>20</sup> In the minutes of the Education, sports, and health policy committee, members pointed out that the garbage contractors instituted guards to control careless dumping but they were not known to the local leaders and they couldn't work because of that as local leaders refused to cooperate with them.

<sup>21</sup> John Eremu & James Kabengwa reports in the *New Vision* 25<sup>th</sup> February 2009 which was confirmed in interview with the manager of the private firm, Great Waste and Recycling Foundation, that a row over private firms on accusations of sabotaging each other's operations had an effect of putting on hold the importation of 20 modern garbage trucks over allegations that Nabugabo Updeal intends to burn them.

waste collection, reveals that problems and challenges continue over the state of solid waste management as evidenced by the perception that the problem of SWM is still very serious. Yet, in general, results from this study confirm the belief that the private sector is more effective than the public sector. The results further confirm the suspicion that private sector providers mainly serve the rich and that they are more innovative as compared to their public sector counterparts. The private sector clients are much more pleased than their public sector counterparts with the services provided. To a big extent, the findings of this study are in agreement with the WDR (2004) that asserts that the strength of the private sector lies in its customer responsiveness and innovativeness. However, the effectiveness of solid waste collection is hampered by corruption and lack of transparency involving both the public and the private sector.

This study generates the much needed data to suggest planning and policy recommendations for Kampala and other cities with similar conditions. Given the situation of competition, it is possible the public sector can operate effectively too if they officially start commercial services. The challenge is how to maintain cost recovery among the poor without leading them to opt out of the services with disastrous consequences for the environment. Tailoring private sector participation to socio-economic circumstances, deepening efforts to promote competition, and introducing mechanisms to ensure that low income households have access to affordable services may be the solution to the problems in providing services in low income countries. This calls for a formal public-private partnership where the public and private sector can work together with the public sector dominating poor and marginalized areas while the private sector dominate rich neighbourhoods.



**CHAPTER 3: PRIVATISATION OF WASTE COLLECTION  
SERVICES AND THE REMOVAL OF PUBLIC CONTAINERS IN  
KAMPALA.**

## **Abstract**

This paper analyzes the effects of removing a number of large containers used in the collection and transportation of solid waste (“skips”) in Kampala. Household survey data reveal that the commercial services attract clientele, not only of former users of skips, but also of households that formerly dumped their garbage. We find a strong association of skips with lack of cleanliness. The dissatisfaction with the skip system and appreciation of the current system of door-to-door collection was most notably recorded in high-income areas and by high-income households. On average the privatised system was preferred, but when differentiated by income we find that households with lower income and education prefer the old skips.

**Key words:** Communal containers, Solid waste collection, Privatization, Kampala



### **3.1 Introduction**

Two methods of solid waste collection are popular in developing countries. One is the use of communal containers (skips) by public providers, the other is house to house collection by private service providers. The latter method allows private providers to collect fees for their services. Their services may also take the form of announcing the arrival of a truck in a residential area upon which residents can bring their waste out to a truck (for a fee). It is typically applied in high income areas (Obirih-Opareh, 2002), while public collection of household waste through communal containers is traditionally done in low-income areas and in areas with market activities. In the latter case, market participants are sometimes charged a fee. Next to the two methods of collecting solid waste, a third method of disposal is important, namely that of private households by themselves, either through burning, burying or through dumping the waste on piles in the neighborhood.

A viable private sector service provision cannot emerge as long as free public containers are available. The removal of the containers creates room for the private sector, but may deprive many households of a cheap way of disposing of their waste. These households may resort to environmentally less attractive ways of disposal.

Research and analysis on methods and technologies of disposal of solid waste is rare as most literature focuses on the role of public, private and public-private partnerships in the delivery of services. Studies on the disposal of waste highlight the environmental and health problems associated with the use of public skips and how they could lead to environmentally unsound practices within the areas concerned (Achankeng, 2004; Obireh-Opareh et al., 2002; Agunwamba, 1998; Boadi et al., 2004). They cite the lack of collection points and containers, and the corresponding distance people have to

travel to dispose of their waste encourages illegal dumping. Another problem relates to uncertainty about the responsibilities for cleaning collection points because the truck drivers and those working for private contractors just lift containers, without cleaning litter and spillage. The unreliable collection schedules resulting in large heaps of solid waste and attendant stench of decaying organic wastes which exposed communities to risks of disease epidemics and also waste containers are too high for children to access properly. When not collected regularly, old waste heaps provide breeding grounds for dangerous animals such as rodents and snakes. In addition, communal collection systems put a high burden on the local government (Obirih-Opareh, 2002; Doan, 1997; Tamura, 2007, Oteng-Ababio, 2010).

Communal containers are often completely in the hands of the city authorities or partly outsourced to private waste company to lift the containers and take these to the dump site (Tamura, 2005, Demanya, 2006). Refuse collection vehicles evacuate the containers at frequent intervals, usually daily or every second day, to remove accumulated waste. The principal advantage of this method of collection is that it reduces considerably the number of sources from which waste has to be collected. Also in low-income communities characterized by limited access for refuse collection trucks, door to door collection is not economically feasible and only a communal container system is viable.

This paper deals with the effects of removing a large number of communal containers, known as skips, from areas in Kampala around the year 2002. We describe how the transition of skips to commercial providers was appreciated by households, and

highlight how this transition affected the informal service providers that used to take waste from households to the skips.

In Kampala, before privatization of solid waste collection, the official way of collecting garbage from households was the use of communal containers. Skips were supplied by the Kampala City Council (KCC). Out of the estimated need of 800 skips, only 529 were in place by 2006 and in various forms of deterioration ( KCC, 2006). By 2008, most skips had disappeared and only remain with institutions such as schools, hospitals and markets.

The pilot refuse collection service implemented in order to test the feasibility of contracting services in Makindye division in 2001 with funding from the Uganda First Urban Project recommended having skip-less refuse collection service in communities, with skips only restricted to institutions (KCC, 2002). Plans to implement a cost recovery mechanism was instituted in which slums and other disadvantaged communities that cannot afford to pay for the service were to be subsidized. In order for the cost recovery to work in Kampala it was deemed necessary that “all community skips be withdrawn so that communities are served by a skip-less mobile truck system” (KCC, 2002). The number of skips kept gradually falling and bad ones were not repaired by KCC.

In this paper we try to answer the question if the removal of skips as a means of collecting waste has been a good decision from the perspective of households. We do so by first investigating the choices made by households after removal of some of the skips. We then investigate the opinions held by households as to the erstwhile skip-based services and their present service provider. In particular we focus on their evaluation of the service as such, and of other aspects such as cleanliness of their neighborhoods. As a

switch to private sector services also entails payments of fees, we try to adjust the evaluations for the possible effects that the level of fees might have. We report on survey results held in Kampala. The surveys detail the households' responses to the change in system, and their perceptions as to costs, and environmental effects. Households that were interviewed gave their views on skips, and on the present services. Clearly skips are associated with filth, stench and other negative aspects. The present conditions are considered better, but we show that this view is only held by high-income areas.

In the next section we elaborate a theoretical model of household decision making on ways to dispose of its household waste. The model highlights the role of one particular method, that of using skips and shows the consequences of its abandonment. We then present data and methods of investigation in section 3.3. In the fourth section, we present survey data on the actual choices made by households before and after the removal of skips and the analysis of these data to arrive at the conclusions, which are discussed in section 3.5.

### **3.2 Theoretical considerations**

We first discuss the household perspective. They faced a situation where garbage disposal required the household to take the garbage to a nearby skip. Depending on the distance, the household may decide whether or not to do so. They may also hire a person to take the garbage there. The alternative is to throw the waste in the surrounding area or burn it. So the effort involved is related to the distance to the skip, or – if they choose not use it – to the time involved in disposing of waste otherwise. Cash costs involved are none, unless someone is hired to take the garbage to the skip.

On the benefits side, the household will prefer the use of a service to take the waste far from the household over a situation in which the household has to endure the smell of decaying or burning waste nearby. Only for households that live near to the skip will the situation be different. If the skip is there, they may use this, but meanwhile they have to endure the externalities of the skip.

Households not only benefit from what they do themselves, they are also affected by what their neighbours do. If these choose to dispose of waste in their back yard, it may harm the households around them and lower the incentives of the latter to choose cleaner technologies.

To highlight the main trade-offs, consider the following model: The household maximizes a utility function with arguments cleanliness, time and costs. The utility is maximized by deciding on where to take the garbage and whether or not to hire a person or company to take it.

Figure 3.1 sketches the possibility set, ranging from doing nothing with no (environmental) benefits to dumping the waste in the street (little costs involved, little benefit), to taking the waste to a nearby heap, or a skip or incurring higher costs and having the garbage properly disposed of. If the household's indifference curves (between spending money or effort, and enjoying clean surroundings) are as drawn in blue dotted lines (more to the left) in Figure 3.1, the optimal choice would be take the garbage to a nearby heap. If additional costs are of less importance to a household relative to additional benefits, the indifference curve would run more horizontally, as the solid red lines more to the right, and a paid collection service comes into the picture. Households whose costs are high, due to high opportunity costs of their time, can hire persons to take

the garbage out to a pile or a skip. The possibility set indicates the cheapest solution for the household to use any of the technologies.

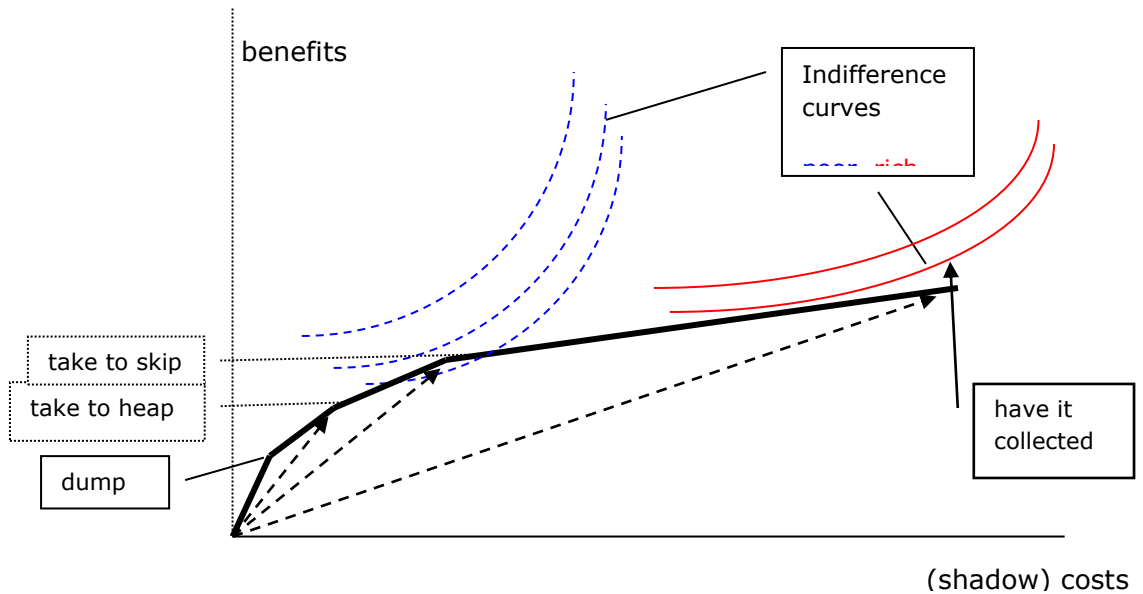


Figure 3.1 Preferences and possibilities for poor (blue, dotted) and rich (red, solid)

As the costs involved in using any of the possibilities will change with the distance, some households will have a possibility curve that clearly favours one option (say, households close to skips) while others may not have any feasible option apart from dumping. Feasible options for a household are those that are not cancelled out by nearby alternatives. Consider a case where skips are close to a household. This shifts the corresponding kink in the possibilities curve to the left. If the point shifts far enough to the left, heap will be cancelled as a relevant option: the household will then be either dumping or using skips. The same may occur if informal workers would offer cheap services to take

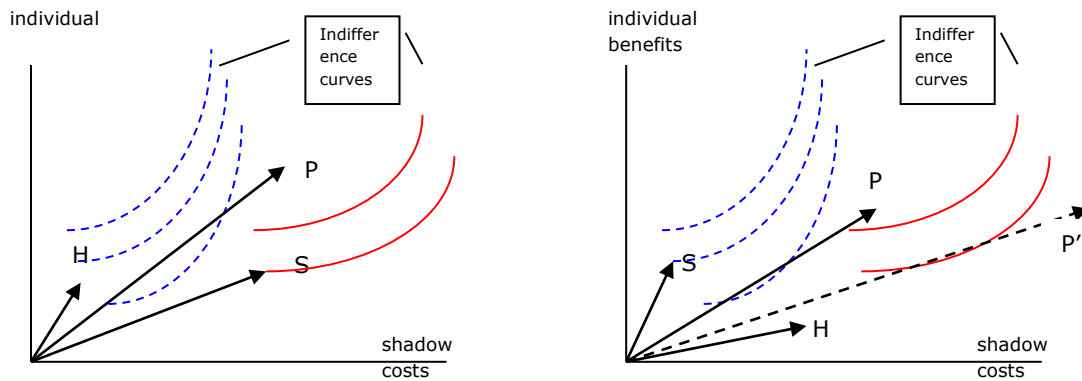


Figure 3.2a and 3.2b: Preferences for disposal around the House (H), Skip (S) or Private service (P, P') with varying costs: a) Skips far away; b) little space/time.

garbage out to skips. Similarly, private sector services may compete with skips only if costs are low or benefits high enough, such that the benefits/costs ratio exceeds that of using skips.

Households may find themselves in quite different positions: some may be close to collection points, other households far away, some people may easily dispose of waste in their own yard and time, others may have limited space and time to do so. This difference in possibilities is likely to be greater than differences in the felt benefits, or in the trade-off between benefits and costs. Figure 3.1, thus only puts one possible shape of the possibility curve for one specific “type” of household.

Some households will see the opportunities as in Figure 3.2a, with large distances to public collection points; other households as in Figure 3.2b, with larger costs for own disposal.

Introduction of private services, and/or the removal of skips lead to various transitions, depending on the location of the household and its preferences. In Figure 3.1, without a private sector, skips are a preferred option by both the poor and rich; in figure

3.2a, skips are used by rich, and home solutions by the poor; in figure 3.2b, only skips would be used. Now if skips are removed, and private services are offered, rich households in Figure 3.1 shift to P (private), while poor households may divide themselves over P and other solutions. In Figure 3.2a, the same will apply, while in Figure 3.2b, almost all households will shift to private sector services. Empirically therefore, the abolition of skips can lead to more demand for both private services and for home-based solutions.

### **3.2.1 Private sector supply response**

Supply of waste collection services by the private sector involves an element of fixed costs for equipment and administration. In addition fixed costs are involved in the collection activities themselves in the form of costs of the driver and trip to the waste dump site. The latter aspect provides an incentive to get the truck as full as possible before setting off to the dump site. The former aspect regulates the number of trucks, the frequency of service per week, and the fee to be charged. With a low frequency, more garbage per household is collected per visit, which makes the hands more productive, reduces the time to get a full truck, and thereby leads to highest earnings per day. Increasing the frequency may lower the turn-over per worker and lead to higher costs per household. Adding more trucks and clients simply multiplies the problem, without complicating it any further. But the administrative overhead can be spread over more clients, thus reducing the costs per client. Firms with more trucks can therefore charge lower fees, and firms with less frequent visits per household can so too. In neighbourhoods with dense housing, travel time is reduced which also reduces costs per household.



If, therefore, a limited number of customers were served by the private sector under the skips-regime (typically the well-off, less densely populated areas), the removal of the skips opens the door to a group of customers that can be served at lower costs per client. This is because more customers can share the costs of overhead, and they may be more densely settled. On the other hand the cost of collecting the fees may be higher.

Figure 3.2b shows the effects. If skips are still present while private sector services are introduced, their per unit costs will be high, leading to position P' rather than position P. Same benefits are achieved but at higher costs. For rich households the best choice will then be to go for private services, but the poorer households will continue to use skips. Removal of the skips will expand demand for private sector services, leading to lower costs, and will shift point P' to where point P is. This makes the costs lower for all households and brings private services within reach of poorer households. Another reason why the attractiveness may rise is that collection services will typically be offered to the neighbourhood as a whole rather than to individual households separately. The more households make use of effective services, the more benefits will be felt by individual households because of the externalities of garbage collection.

In the following sections of this paper, we provide the needed information: What did erstwhile skip-users choose, and how is this related to their original position as to use of skips (with or without paid services) and to their income. How many non-skip users also shifted to using private sector services? We also seek to find corroboration of the shape of the possibility set: can we verify that – on average - higher benefits can be obtained only at increasingly higher costs? We try to distil this information from data on fees that are paid, and the alleged quality of the service experienced by the households.

### **3.3 Data and methods of investigation**

Data collection among urban residents in Kampala was done in three rounds of survey. The first survey (DS3) was administered to 383 respondents in Kampala (204 in Kampala central division and 179 in Kawempe division). This survey captured the distribution of residents who possibly used different methods of solid waste collection before and after privatization. This was meant to capture the behaviour of the residents as to the choice of disposal system after the reduction in the number of skips in Kampala and the introduction of private sector waste collection. The distinction before-after was implemented by asking questions about the period 1996-2001 and the period 2002-2007. The second survey (DS4) was administered to 301 respondents (185 in Nakawa division and 116 in Kawempe division). Residents were able to indicate the level of satisfaction (by a score of 1 to 5) in relation to the collection frequency, appropriateness of the use of skips, distance to the where the skip is/was placed, cleanliness of the neighbourhood, effectiveness of skips. The last survey (DS5) was administered to 475 respondents (315 in Nakawa division and 160 in Kawempe division). This survey captures income bracket of the household, education of the respondents not captured by other surveys to help us explain the perceptions of the people before and after the use of skips. The perceptions of people on the performance of different agents in solid waste collection in Kampala was captured. Here, questions related to the different methods of solid waste collection also in comparison with skips were asked.

All the surveys took place through a semi-structured questionnaire. The interviewer administered the questionnaire in person. This was meant to make sure we

interviewed the right people who already lived in Kampala when skips were widely used and to take care that that no bias occurred in terms of literacy or educational level. But the interviewer-administration was also to make sure we interviewed respondents who were knowledgeable about the changing state of solid waste management collection methods. The respondents were randomly selected from various parishes but depending on who agreed to be interviewed. All the surveys were carried out in 2009 at different times and with different respondents in three divisions out of five divisions of Kampala namely Kawempe division, Nakawa division and Kampala Central division. The divisions in Kampala are similarly composed of mixed populations in terms of income category apart from a few areas where there is a concentration of only rich people or poor people. The same methods of data collection were applied in all surveys as described above and since different questions (relevant for this paper) were asked in different but related surveys, we analysed them separately. We believe the data are reliable because similar questions from the three surveys produced almost similar results. We also got a high positive response rate with 75% of whom we approached accepting to be interviewed.

In addition to surveys, interviews were carried out with the service providers (Kampala city council officials (5), private sector managers (7), informal refuse collectors (30), leaders of CBOs in solid waste collection (3), Local council officials (5)) as to their perception of solid waste collection and particularly the use of skips and non-use of skips. This helped us to understand better the data from the survey. All income categories were included (high income, medium income and low income). Given the difficulty of eliciting their income and expenditure, we defined in the first survey low-

income households as those that reside in areas or poor neighbourhoods characterized by high population densities; medium income households are residing in those places in Kampala that are the unplanned neighbourhoods but inhabited by relatively rich people. We classified high income areas as areas with low population densities, and where neighbourhoods are well planned.

### 3.4 Empirical findings

#### 3.4.1 Choice of method of waste disposal before and after privatization

Column 2 of Table 3.1 shows the distribution of users before and after privatization (we restricted us to those that also answered the question on 2002-07 period): In the period 1996-2001, 143 households used skips, 58 used services to take their garbage to the skip (these are mostly the people in richer areas) and 92 households dumped their garbage on (informal) piles. After commercialization of solid waste collection, the use of skips diminished, but did not disappear: out of the 143 households that answered the question, about half (75) of the original users continued to use skips.

**Table 3.1:**

Table 3.1: Households by disposal system used in 1996-2001 and by system used in 2002-2007

Choice made in 1996-2001	Choice made in 1996-2001		Choice made in 2002 – 2007					
	Households		Skip	Bell Sys	Bring to collect point	Door to door	Piles	Other
<b>Skip</b>	47%	<b>143</b>	75	18	23	22	4	1
<b>Bell system</b>	1%	<b>4</b>	1	2	0	1	0	0
<b>Bring to collect pt.</b>	19%	<b>58</b>	4	6	8	39	0	1
<b>Door to door</b>	2%	<b>6</b>	1	0	1	4	0	0
<b>Piles</b>	30%	<b>92</b>	7	11	6	30	38	0
<b>Totals</b>	<b>100%</b>	<b>303</b>	<b>87</b>	<b>37</b>	<b>38</b>	<b>96</b>	<b>42</b>	<b>2</b>
<b>Percentages</b>		<b>100%</b>	29%	12%	13%	32%	14%	1%

Source: own survey (DS3)

This can be explained by the use of skips that are still provided to market places and major institutions and their use by households living close to places where they are placed. Some old dilapidated skips are also still in existence in some parts of the city and residents still dump in and around them. The other former skip users divided themselves over a bell-system, where a bell is rung to announce the arrival of the collection vehicle; a system where someone calls at the door to take it to the collection point [‘bring to collect pt.’], or a door-to-door collection system, in which garbage is collected at the door and then taken to a vehicle. Clearly, very few households shifted from using skips to dumping the garbage onto piles. On the contrary: many households that used to dump their waste onto piles, are now paying for collecting their waste mainly using private collection systems. The households that now use neighbourhood piles to dump their waste typically did so in the past as well. They may have little alternative open to them.

When categorized by income level of the area where the household lives, we see that richer areas typically used skips with paid services to take the waste there: 37%. In the medium and poorer areas this was only 8%. Use of piles in the neighbourhood occurred equally in all areas (around 30%). After the removal of skips, those households that used paid services (see ‘bring to collect pt.’ in Table 3.1 above) continued to do so, but now this amounted to a private sector service. The households that brought the garbage to the skips themselves formed a minority in the richer areas (30% compared with over 60% in the other areas), but did not show a very particular pattern in their choice of new provider: about half of them had still access to skips (same percentage in other areas), others switched to door-to-door collection. This latter service was adopted less in the middle income and poorer areas, where a bell-ring and door-to-container

system was favoured more. This latter service is typically rendered by the informal collectors.

Somewhat surprisingly, therefore, we see that

- a) many households who used the skips before, still do so now and
- b) that the other former skip users typically switched to private sector services: hardly any household reverted to dumping.
- c) Households in poorer areas now make more use of informal services and a bell-ringing system; those in richer areas now use door-to-door collection by the private sector.
- d) Many households that relied on dumping, now switched to paying private commercial providers for solid waste collection services.

Thus the scope for commercial services has expanded enormously, not just to former skip users but also to those that did not use any service before. Under the skip-regime, the only substantial form of 'privatization' was that households paid to have garbage taken to collection points. In all, less than 21 per cent used some form of paid service. In more recent years, 57 per cent use paid services, many of them (32%) a door-to-door collection system.

Determinants of the choices include the level of income (proxied by the classification of the neighbourhood). In addition, we can think of the nature of the households as a possible determinant. Many households occupy a house that is also used as small enterprise, mostly a shop. As shops generate more or different waste, this may

affect the choice of provider. As mentioned above, other important characteristics are the distance to skips and the time and space for own disposal of waste. These variables are not known from the survey. The income level of the area captures the shadow costs of time somewhat. Location can also be related to the length of stay in Kampala of a household. The longer the stay, the better located a household can be. And if households previously chose to resort to dumping or other home-based solutions for waste disposal, this is likely to indicate that skips were too far away. Referring back to Figures 3.1 and 3.2, these variables relate to the horizontal position of the disposal methods. Richer households, and those that are longer in Kampala, may find it more easy to access private sector services, and those that dumped waste before should not now rationally choose for a skip. The vertical position also matters and the appreciation of the service may matter for its choice. Ideally we should use a variable that indicates how any method is rated, including methods not actually chosen. This is not available. Using the rating of the chosen method would amount to circularity in the explanation of the choice. What we can do, is to include the rating of the former service. This was typically a service that may now be abandoned. The lower the rating was for the old service, the stronger (possibly) the incentive to switch to another method.

Table 3.2: Multinomial logit of choice of provider in 2002-2007, model A

	skip	Car+bell	Collect Container	Dump
<b>Dumped before</b>	<b>-2.24</b>	0.09	-0.73	<b>2.62</b>
<b>High income area</b>	<b>-1.47</b>	<b>-4.43</b>	<b>-1.01</b>	<b>-0.69</b>
<b>Residential</b>	<b>-1.22</b>	<b>-0.98</b>	<b>-1.80</b>	<b>-0.89</b>
<b>Rating service before</b>	0.20	<b>0.65</b>	0.73	<b>0.11</b>
<b>Length of stay in Kampala</b>	<b>-0.05</b>	<b>0.05</b>	<b>-0.03</b>	<b>-0.06</b>
<b>Constant</b>	<b>1.94</b>	<b>-1.90</b>	<b>-0.72</b>	<b>-0.91</b>

N=283; pseudo-R2=0.26; option 4 (collect by car) was the basis. Bold coefficients are significantly different from zero (10%).

We estimate two models, one with all of the above explanatory variables (model A), and one in which the previous choice is omitted (model B). The dependent variable in both cases is the choice of provider in the period 2002-2007, i.e. after privatization. The appropriate model for such a choice is a multinomial model, which relates the odds of choosing a particular provider to household characteristics. The results of the estimation of model A are given in Table 3.2.

To apprehend the model, we simulated with the estimated model to see the probabilities of choosing a particular provider. To this end, we use various values for the original position in which the household may find itself: dumped waste before rather than used skip; being in high income area; being a residential household rather than a shop too.

Table 3.3: Probabilities of choices simulated for stereotype households (model A)

<b>Dump before</b>	High inc	Residential	Skips	Car + bell	Collect Container	Collect Car	<b>Dump</b>
<b>0</b>	0	0	0.51	0.18	0.18	0.11	<b>0.02</b>
<b>0</b>	0	1	0.41	0.18	0.08	0.31	<b>0.02</b>
<b>0</b>	1	0	0.38	0.01	0.21	0.37	<b>0.03</b>
<b>0</b>	1	1	0.21	0.00	0.06	0.70	<b>0.02</b>
<b>1</b>	0	0	0.08	0.28	0.12	0.16	<b>0.36</b>
<b>1</b>	0	1	0.05	0.23	0.04	0.35	<b>0.32</b>
<b>1</b>	1	0	0.04	0.01	0.11	0.40	<b>0.44</b>
<b>1</b>	1	1	<b>0.02</b>	<b>0.00</b>	<b>0.03</b>	<b>0.65</b>	<b>0.30</b>



Table 3.3 shows that a major factor for the use of skips or dumping is whether this was done before. The variable indicating whether a household dumped the waste before is assumed to capture rather permanent elements like distance to any facility. Income makes a difference for the other options: high income households typically choose collection of waste at the door and with a vehicle, while poorer households go for option 2, a vehicle comes in the neighbourhood and rings a bell. The choice between door-to-door system and having waste taken to a container is related to the nature of the house: shopkeepers go for a container, while residential households go for a private collection service.

The effect of length of stay in Kampala is to move households away from use of skips or dumping towards any of the commercial services. Twice as long a stay in the city reduces the probabilities of skips or dump by half. A similar effect is found for the rating that households gave to the old situation, but here also the collection by a vehicle is affected. The better the rating of the old service was, the more households go for option 3, collect for a container and option 2, the bell system.

Earlier choice for dumping may not be exogenous to the household. If it represent accessibility of other options it may well be, but if it is a deliberate choice it is not. To verify the forces leading to such choice, the model was also estimated without the variable indicating earlier choice. Results are in the appendix, and the resulting simulation of effects of income-area and being residential rather than a shop are in the Table 3.3A below.

Table 3.3A: Probabilities of choices simulated for stereotype households (model B)

high inc	Residence	Skips	Car + bell	Collect container	Collect Car	Dump
0	0	0.41	0.20	0.16	0.13	0.09
0	1	0.30	0.20	0.07	0.32	0.10
1	0	0.30	0.01	0.19	0.39	0.12
1	1	0.16	0.00	0.06	0.69	0.09

Table 3.3A shows that a choice for dumping is hardly influenced by income or residence considerations. Apparently this had more to do with the specific location of the household. The choice for commercial services (collect-car) is strongly dependent on whether households live in high-income areas or are residents only (i.e. not have shops). Typically the contribution of either is around 25% to the probability of choosing this service. This goes at the cost of skips and containers in the case of residents, and at the cost of skips and a bell system in the case of high-income areas. These effects also resulted from model A.

In this model B, length of stay came out as significant only in inducing a choice away from dumping, indicating that indeed households may become better situated over time. The variable rating previous service levels (again) induced households to switch toward to cheaper solutions of skips (including paying to take it there) or bell-ring system rather than dumping or commercial services.

Thus, the empirical results confirm the theoretical model: richer households choose for private sector services. We show below that these carry higher fees but also bring higher levels of service. The results also confirm that a higher appreciation of the earlier method leads to a choice that resembles the earlier method. The old situation was one out of three: skips, a skip-based transport service or dumping. Households that were happy with this, now choose for skips, a skip-based service or (new) a bell-ring system.

Households that disliked it, now choose more private sector services. In terms of Figure 3.1 and 3.2, a lower appreciation is represented by lower points (or arrows), with smaller benefits at a given level of costs.

### 3.4.2 Relation between fees and service level

Figure 3.1 suggests that more benefits come at increasingly higher costs. This can be shown empirically. We equate ‘benefits’ with level of satisfaction about the current system, and ‘costs’ with the fees that must be paid for these benefits. This can be an underestimation, as non-paid costs in terms of household time or effort are not accounted for.

Tracing the average levels of satisfaction and the average fees paid for the groups, distinguished by provider, we can generate the following Figure 3.3.

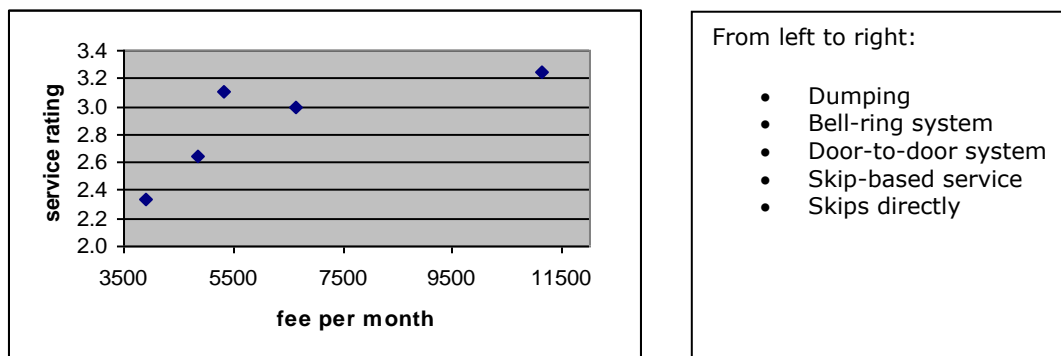


Figure 3.3: Mean scores on service by mean fees paid

Higher fee payments lead to higher levels of satisfaction with service rendered by the collection system, in this case ranging from mere dumping on the down-left side to (market) containers on the right. The three systems on the left are collection systems for residential households, while use of skips (directly or via collection at the door) is more for small enterprises, as we have seen in the choice-model above. Note that these ratings are provided by the users, i.e. by the households that have chosen for these methods. This will bias their appreciation upwards. As we will see below, skips are actually not rated highly by the public. The high ratings for skips of Figure 3.3 are, nevertheless relevant for those that use these skips. Users of say the door-to-door system will appreciate their service-of-choice, and may hold much lower appreciation of skips.

### **3.4.3 Rating of old skips**

We noted in the estimation of Table 3.2 above that the rating of the earlier situation (where no private services were offered) mattered considerably for the present choice. Households who rated the old situation low, were more inclined to go for private sector services now. We therefore take a closer look into these ratings in this section. Question is what aspects of the earlier situation contributed to the overall rating and in particular whether fees matter for the rating.

To this end we use a survey (DS4), held in Kampala in 2009. Households were asked about their rating of the skips before privatization. Only interviewees were selected that had lived long enough in Kampala to have experience with the skip system.

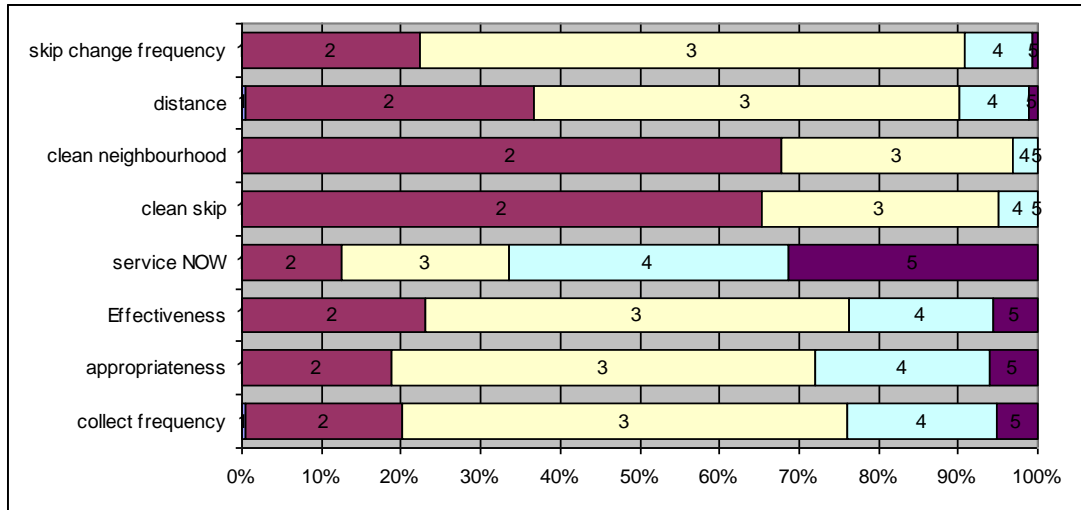


Figure 3.4: Distribution of ratings of aspects of skips from 1 to 5 (best) (and of the present service method)

Figure 3.4 gives the summary outcomes of answers to evaluatory questions on the conditions with skips. People were asked to rate on a scale of 1 to 5 (5 being the best) their appreciation of various aspects of the skip system. Going from bottom to top of Figure 3.4, we see that collection frequency was rated average with 20% score of 2, 45% scoring 3, and the rest better than 3 (scores of 1, very bad, were not given). The same score was given to the appropriateness of skips, and their effectiveness as a collection system. On top of the Figure, somewhat worse rating is given to the distance people had to go to reach the skips (37% scoring 2) and the frequency with which the skips were emptied. The overriding feeling against skips is clearly is the rating for cleanliness: 65% or more of respondents found the immediate surroundings of skips unclean, and the same held for their own neighbourhood. The results are in line with Tadesse et al. (2008) for Mekelle city, Ethiopia. In their study, when households were asked whether or not they would agree with the placement of waste containers nearer to their houses, 69%

responded ‘no’ and 31% said ‘yes’ revealing that there is strong resistance against waste facilities such as containers to be placed within a short distance of dwelling areas (houses). This then led to the score for the present system, without skips in this survey, that came out as rather favourably and is shown in the middle of Figure 4: more than 60% rated “the service you are receiving without skips” better than average (score 4 or 5). When asked whether the skips should be brought back, 74% answered ‘no’.

The rating given to the skip’s performance is influenced by the respondent’s income, as indicated by the neighbourhood he or she lives in: the higher the income category (category 1), the lower the score.

Table 3.4: Average scores (from 1 to 5=best) on old skip’s performance by income area

	High	Medium	Low
Frequency Garbage Collection	<b>2.85</b>	3.11	<b>3.35</b>
Appropriateness Of Skip	<b>2.90</b>	3.23	<b>3.33</b>
Effectiveness Of Skip	<b>2.82</b>	3.12	<b>3.25</b>
Cleanliness Around Skip	<b>2.21</b>	2.50	<b>2.46</b>
Cleanliness Neighbourhood	<b>2.20</b>	2.40	<b>2.46</b>
Walking Distance To Skip	2.65	2.80	<b>2.76</b>
Freq Skip Renewal	2.80	2.88	<b>2.96</b>
Current System	<b>4.53</b>	3.59	<b>3.40</b>
Should Skips Return? (% No)	<b>92</b>	<b>67</b>	<b>65</b>

**bold:** significantly different from medium column; N=102, 94, 83 resp.

**source: own survey (Skips Kampala) 2009**

Table 3.4 shows that the respondents in the high income neighbourhoods are significantly less positive about the skips, and more favourable about the current system, and strongly against the return of skips. Differences between middle and low income areas are minor,

but frequency of garbage collection in poor income regions is evaluated significantly better.

Skips score particularly low on cleanliness. This reduces their effectiveness in rendering benefits to the users: whereas their waste is transported, the hinder they experience from it is not diminished much. In addition, the efforts they have to make are still considerable, given the low score on the walking distance: apparently skips are rather far away. This may explain why in Table 3.1 so many non-users of the skips are recorded.

The current system (i.e. with private firms collecting waste) is considered much better in the rich areas, but in middle-income and notably in poor areas the differences in scores for the skip system and the current system are minor.

Thus, we can conclude that the current system is serving the richer areas much better than the old skip-based system, while the other income categories are not significantly better off.

In the larger survey conducted in March 2009 in Kampala (DS5) we can distinguish between the effects of the area and those of the household income itself.

We do so by means of an ordered logit model. In this model the rating of skips services (from a low 1 to a high 5) is related to explanatory variables by means of the following model: let the latent (unobserved) variable indicating the preference be  $y$ , and be related to explanatory variables  $x$  by

$$y = \sum \beta_j x_j + \varepsilon$$

We observe a score  $k$  ( $k=1$  to  $5$ ) according to

$k = 1$  if  $y < \alpha_1$

$k = 2$  if  $\alpha_1 < y < \alpha_2$

$k = 3$  if  $\alpha_2 < y < \alpha_3$

$k = 4$  if  $\alpha_3 < y < \alpha_4$

$k = 5$  if  $y > \alpha_4$

Thus, the alphas that are estimated in the ordered logit model, indicate the levels at which a household with characteristics indicated by  $x$ , changes from one score to the next.

As explanatory variables  $x_j$  we use

- residing in a high-income area (incatego\_1)
- income bracket of the household (income)
- education level of the household head (educlev1)
- division (5=Kawempe; 3=Nakawa)
- if respondent is neither head nor spouse (head\_3)

Evaluatory variables (on a scale of 1 to 5) are

- rate the appropriateness of skips when they were there (rate skip)
- opinion on the service receiving with skips (skip service)
- opinion on the service receiving without skips (without skip)
- rate the cleanliness of the neighbourhood at the time when skips were around (cleanliness)



The means and standard deviations of these variables are:

	Mean	St. Dev.
Rate skip	2.83	<b>1.022</b>
Skip service	2.72	<b>0.954</b>
Without skip	3.01	<b>1.155</b>
Cleanliness	2.61	<b>0.923</b>
Incatego_1	0.37	<b>0.479</b>
Income	4.41	<b>1.469</b>
Educ level	3.50	<b>0.668</b>
Division	3.77	<b>0.968</b>
Head_3	0.17	<b>0.377</b>
Cost now	<b>0.04</b>	<b>0.173</b>

### Results of the estimation:

	Rate skip	cleanliness	Skip service	Without skip
incatego_1	-0.43	<b>0.44</b>	0.29	<b>0.24</b>
Income	-0.28	<b>-0.18</b>	-0.09	<b>0.49</b>
Educ level	-0.30	<b>-0.29</b>	-0.31	<b>0.22</b>
Division	-0.44	<b>-0.45</b>	<b>-0.27</b>	<b>0.14</b>
Head_3	<b>0.61</b>	<b>0.74</b>	<b>1.08</b>	<b>0.32</b>
alpha_1	-7.12	<b>-6.02</b>	<b>-4.83</b>	<b>-2.92</b>
alpha_2	-4.20	<b>-3.06</b>	<b>-2.63</b>	<b>1.02</b>
alpha_3	-2.85	<b>-1.33</b>	-0.98	<b>2.81</b>
alpha_4	-0.88	-0.31	1.09	<b>3.87</b>
alpha_5				<b>6.24</b>
Pseudo R2	0.075	0.042	0.030	<b>0.077</b>
N	<b>381</b>	<b>416</b>	<b>371</b>	<b>406</b>

bold coefficients are significantly different from 0 at 10% level

source: own survey (public-private SWC providers Kampala), 2009

The interpretation of these results can be shown by using the first estimation. Skips are rated lower in high income areas, and additionally by high income earners, and those with higher education. The value (of y) obtained by combining the effects of income category, income bracket, education level, division and the nature of the respondent (head\_3) is important for the link with the rating. If the value is below -7.12 the lowest rating is

given, and one needs a value of about 3 more (to -4.20) to generate a rating of 2, and again 1.45 more (to -2.85) to see a rating of 3 etc.

The cleanliness around skips, however, has more to do with income than with the neighbourhood: in richer areas it is considered cleaner, but less so by richer households. The system without skips is appreciated particularly by households in the higher income brackets. The estimation shows the effects of income to be substantial: a move from income bracket 4 to 6 (i.e. from 0.2-0.5 million to over 1 million Ush, the two most populated brackets in the sample) leads to a change in the ratio of negative-positive scores (below and above 3) of the rating of the skips from  $42/27=1.6$  to  $56/17=3.3$  and of the rating of the present system from  $36/38=0.9$  to  $18/62=0.3$ . Figures 3.5 a) and b) show the effects.

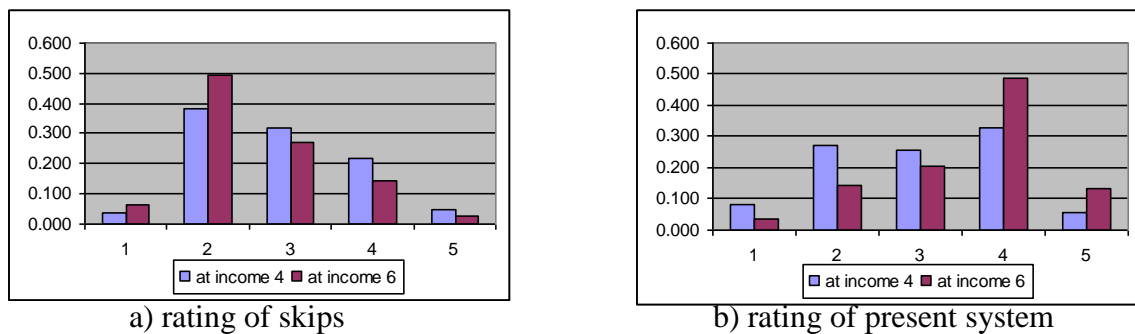


Figure 3.5: Frequency distribution of ratings for two income

In fact, households that are in the poorer areas, are not rich themselves and do not have high levels of education, typically rank the skip system as good or better than the system without skips: with income in bracket 2 (50-100 thousand USh) and education not beyond primary school, more than 50% of the households rate skips at levels 4 or 5.

#### **3.4.4 Effects of fees on the ratings**

The strong effects of income on these ratings suggests that the fees may play an important role. Is it that households prefer skips for their low or zero fees and that commercial collection system may score better on quality, but score low in appreciation because the high fees annihilate the benefits? If so, this would mean that households who pay higher fees now for private collection services rank the virtues of skips higher than those who pay lower fees. And it could imply that those who pay higher fees show less appreciation for the current system. We investigate both.

There is some, not particularly strong, statistical evidence to this effect. To investigate both aspects, we must logically confine ourselves to those who actually pay a fee now. This is obviously a select group, and we need to take this into account; hence we used the Heckman 2-step selection model. Results are in Table 3.7.

Table 3.7: Effect of collection fees on rating of systems

	of skips		of present system	
	Coef	Z	Coef	Z
<b>incatego_1</b>	-0.167	-1.11	-0.093	<b>-0.54</b>
<b>income</b>	-0.103	-1.41	<b>0.175</b>	<b>2.40</b>
<b>educlevl</b>	<b>-0.277</b>	-1.99	-0.114	<b>-0.79</b>
<b>division</b>	<b>-0.275</b>	-4.43	<b>0.134</b>	<b>1.96</b>
<b>costnow</b>	<b>1.650</b>	1.98	-0.787	<b>-1.20</b>
<b>_cons</b>	<b>5.298</b>	8.61	<b>2.776</b>	<b>5.54</b>
<b>selection equation</b>				
<b>incatego_1</b>	<b>0.407</b>	1.85	0.300	<b>1.58</b>
<b>income</b>	<b>0.201</b>	2.74	<b>0.167</b>	<b>2.41</b>
<b>educlevl</b>	<b>0.365</b>	2.58	<b>0.356</b>	<b>2.62</b>
<b>division</b>	<b>-0.168</b>	-2.10	<b>-0.244</b>	<b>-3.51</b>
<b>_cons</b>	<b>-0.852</b>	-1.71	-0.361	<b>-0.71</b>
<b>/athrho</b>	-0.146	-0.37	<b>-1.895</b>	<b>-4.99</b>
<b>/lnsigma</b>	-0.061	-1.31	<b>0.194</b>	<b>3.69</b>
<b>Rho</b>	-0.145	-0.37	<b>-0.956</b>	<b>-29.12</b>
<b>sigma</b>	<b>0.941</b>	21.46	<b>1.214</b>	<b>18.99</b>
<b>lambda</b>	-0.136	-0.37	<b>-1.161</b>	<b>-12.76</b>
N	392		405	
<b>censored</b>	<b>97</b>		<b>97</b>	

After the selection effect is accounted for, and with inclusion of the fee (*costnow* records the cost per month in million Shs) the income effect on the rating of skips itself has become weaker and is no longer significant. Higher income has a positive effect on paying for waste collection *per se* however. If higher fees are paid, the rating of skips improves. Note that the model is not the same as in the case of ordered logits: we now have a linear regression model (rather than the ordered logit) to represent the influence on rating.

The right hand side of the table shows the effects on the rating of the current system. The significant and positive coefficient of income shows that its effect is

maintained. The fees paid (as expressed by *costnow*) have a negative (but not significant) effect on the level of satisfaction with the current system.

The data thus provide little evidence on the effects of fees on the evaluation of the systems: the higher the present fees, the more the old system may be preferred and the less the present system seems to be appreciated. But no strong effects of the fees resulted from this analysis.

### **3.5 Conclusion**

We can conclude from the analysis related to the choices made and the perceptions after most of the skips were removed, that the major alternative to skips was the use of the commercial services, mainly private sector's services. This choice was made not only by former skip-users but also by many who previously dumped the waste on open piles or on the road. When asked to rate the skips system, the respondents in the surveys indicated a strong association of skips with lack of cleanliness. The lack of satisfaction with the skip system (and appreciation of the current system) was most notably recorded in high-income areas. On average the present system was much better evaluated.

Elaborated further with the help of another survey, we found that the evaluation of skips is affected by not only the income level of the neighbourhood but also by household income and education. In addition, we found a weak positive effect of the current fees paid. We also found symmetrical effects on the evaluation of the present system: most appreciated by high income, better educated households. The effects of income are strong enough to render the evaluation of the skips system equal, if not superior to the current system for the households with lower income and education and outside the rich areas.

Theory as derived in Figures 1 and 2, suggests that the removal of skips would affect welfare of households in two ways: one is the removal of the option of using skips, which would decrease welfare of those that used it; the other is the enabling of private sector services being offered to these households. Many households (50 percent) did not use the skips before. Instead they resorted to private ways of disposal including dumping. The removal of many of the skips not only induced the former skip-users to switch to commercial services, but also enabled many non-users of skips to avail of these services. The lowest benefits are derived from mere dumping and many households have chosen to abandon this practice in exchange for commercial solid waste collection services, typically much more expensive. In poorer areas, they chose in particular the systems using car + bell ringing. This involves some efforts of the household members themselves too. In richer areas, the most popular choice is door-to-door collection with a truck. These households were often using paid services before to take the garbage to the skips. But also quite a number had no recourse to skips, and their removal, by enabling private sector services to emerge, led them to switch from private ways of disposal to making use of these services.

Formerly many households paid people to take their waste to collection points, including the skips. This was particularly so for households that also run small businesses. Typically informal workers were offering these services. These households continued to do so, though some shifted to using commercial services, especially those of the (formal) private sector. The advent of the (formal) private sector thus led to a decrease of the demand for informal services. The evaluation by households of the waste disposal services before and after the removal of skips shows that richer households are

clearly pleased with the removal, but that poorer households, particularly those with low levels of education do not feel better served than they were before.

The results of this study have implications for other urban towns in Uganda and other developing country towns that have opened the door for private sector services provision, where free public containers are largely used and where the use of informal collectors is dominant. An appropriate mix of public and private service could be useful especially if public provisions can be strengthened for the second stage of waste collection among the low income communities. This will enable low income communities to dispose of garbage cheaply and possibly eliminate illegal dumps – with environmental benefits for the community but at a cost of formal private sector expansion.





**CHAPTER 4: CO-EXISTENCE OF FORMAL AND INFORMAL  
WASTE COLLECTION IN KAMPALA.**

## **Abstract**

We analyse how the informal collectors and the formal sector co-exist in solid waste collection in Kampala. We rely on household surveys and a small survey among the informal collectors in Kampala. Findings suggest that informal collectors play a substantial role in the first stage – collecting solid waste from the households, notably from poorer segments of the population. This is not the ‘dualist’ aspect of poor earnings but actually made possible by them escaping control on where to deposit the waste. Employing a simple technology, and bringing the waste no farther than the nearest unofficial ‘collection point’, they provide services at low cost to the households, but much less so to the community (environmentally of little use). If public provisions can be made for the second stage in waste collection, this may trigger even more supply of small-scale collecting services, a combination that may prove cost effective.

## 4.1 Introduction

Developing countries have so-called informal sectors, which are important forms of income activities providing employment to many people (ILO, 2002). The informal sector consist of small scale, often not state-registered or even illegal, industries and service providers that sell goods and services, and seem to form an economy of its own. This informal sector is distinct from the more formal industries and services that are larger, better organized, richer and officially recognized by state authorities.

Also within solid waste management (SWM) a formal and informal sector can be distinguished. The formal sector consists of public service providers and private companies, while the informal sector consist of individuals or small unregistered 'firms' that are active as waste pickers, waste collectors, itinerant buyers and recyclers (Furedy, 1995; Wilson et al, 2009; Nzeadibe et al., 2010).

In this paper we focus on a specific group of informal SWM actors, namely the informal collectors. Their position is different from that of, say, waste pickers and recyclers, in that these latter groups often grow parallel to the quantity of waste collected by the formal sector. Informal collectors, on the other hand, are typically in a zero-sum game with (formal) private sector waste collectors for their clientele.

We will argue, however, that while this is the case for competition between informal collectors and formal private collectors, this may not be true vis-à-vis formal public collectors. The reason is that public waste collectors are not faced with the need to go from door to door to collect money (and waste), but typically employ a technology that involves collecting waste at some distance from the household door. They use

containers or depots to collect household waste, which is then brought to an official dumpsite or treated otherwise. This leaves room for informal collectors, who take the garbage from the household to the container or collection point. The choice of this collection system then leaves room for informal collectors, who are then ‘structurally’ linked to a collective-container based system.

If private sector collection is introduced when free containers are still around, private companies must compete with a collective mode of collecting waste that brings lower fees for households, which could make formal private services unattractive. This has been the reason for Kampala to remove many of the collective containers (skips) in the city when private collectors were introduced.

So, this paper investigates the nature of and relations between formal and informal waste collectors, focusing on two questions: Does the informal sector in the SWM business only consist of poor workers that can find no other job and who serve only the poor households that cannot afford formal service providers? And do informal sector waste collectors function in close dependency with – rather than separation from – the formal sector, with which it competes for clients and to which it offers services and goods? In the next section, we explore the theoretical debates on the informal sector in relation to urban SWM in developing countries. Subsequently, the methodology of the study is outlined, followed by a presentation and analysis of the results. Finally, the paper ends with a conclusion.

#### **4.2 Informal sector in urban solid waste management in developing countries.**

Klundert et al. (1995) define the informal sector as the unregistered, unregulated or casual activities carried out by individuals or/and families or community enterprises that engage in value-adding activities on a small scale with minimum capital input.

The informal economy in developing countries has been a subject of theoretical debates dominated by the dualist school, the structuralist school and the legalistic school. The dualist school first popularized by International Labor Organization (ILO) in the 1970s argued that there are two distinct urban economies (the poor/informally/unemployed vs. the rich/formally employed). The ILO 1972 report on income and employment thus coined the marginal, poor, “informal” sector of the economy, which produced goods and created employment and income for the poor. Whereas formal enterprises were characterized by large-scale production, incorporation, and the use of capital intensive technology, the ILO indicated that informal enterprises involved small scale production, family ownership and labor intensive techniques. The informal sector mainly articulates small scale performance and is somehow isolated from the formal sector (Ngiba et al., 2009; Michael, 2011).

The structuralist school gives another view of the informal sector, but does not exclude or undermine the contributions of the dualist school (Michael, 2011). The structuralist school argues that formal and informal sectors are linked to one another and the informal sector is subordinate to the formal sector (Chen et al., 2004; Michael, 2011). The informal sector is an integral component of total national economies, rather than a marginal appendix to them (Beneria, 1989). Formal and informal firms are often

dynamically linked as many informal enterprises have production or distribution relations with formal enterprises (direct production of goods and services), and supply them inputs, finished goods or services either through direct transactions or via sub-contracting arrangements. Many formal enterprises hire wage workers under informal employment relations as a way of reducing labour costs (Chen, 2005; Michael, 2011). According to the structuralist school, the formal economy always enjoys a dominant power relationship over the informal economy (Ngiba et al., 2009), and can develop favorably because of and thanks to the informal sector.

The legalist school argues that the underlying reason why many citizens in emerging democratic, market systems do not participate in the formal economy is because the institutional structures or the rules of the game prevent them from doing so. The barriers to participation in the formal political and economic systems include: obtaining a business license, hiring employees, knowing and complying with applicable government rules and regulations, obtaining a loan, paying taxes, enforcing a contract, and so forth (Kuchta-Helbling, et al., 2000).

These three theories help us to understand the situation of informal solid waste collection in Kampala and how the informal waste collectors co-exists with the formal waste collection sector.

The informal sector encompasses a wide range of areas of informality -- economic and social, covering business activities, employment, markets, settlements and neighborhoods, each of which has implications for public policy (Furedy, 1995). SWM is no exception to this pattern. In fact SWM in many low- and middle-income countries is

sometimes driven by the informal sector (Nzeadibe et al., 2010; Scheinberg et al., 2010 & 2011) to the extent that in many cities more wastes are dealt with informally than managed formally (Furedy, 1995). Our application of “informal sector” is to the activities of unlicensed individuals or group of individuals who are engaged in collecting waste from the households, or what Medina (2005) refers to as “informal refuse collectors.”

Little systematic knowledge exists of the actual role that informal providers play in collecting waste and on how they co-exist with formal private companies and the public sector. Most studies into the informal sector in SWM look at the roles of unregistered, unregulated and casual family/community enterprises and individuals in recycling of waste and in thus adding value to recovered waste materials (Taylor, 1999; Klundert et al., 1995; Fahmi, 2005; Nas et al., 2004; Wilson et al., 2006; Sudhir et al., 1997; Rogerson, 2000; Wilson et al., 2009, Baudouin et al., 2010, Nzeadibe et al., 2010; Scheinberg 2010 & 2011). Accordingly, few studies have been devoted to the analysis of the actors in the informal sector involved at the primary level of solid waste collection (Medina, 2005). The few studies available don't provide details on the characteristics of informal collectors and why they exist despite the presence of formal collectors. We highlight the contributions of these few studies below.

Informal initiatives play an important role in the collection of solid waste, the primary sub-system of waste management (Van Horen, 2004; Afon, 2007). Informal waste collection from households is a source of employment for the operators and fulfils a demand for the residents. The collection technology used by the informal collectors is

quite basic (Doan, 1998): they gather household trash in small buckets or baskets which they carry from household to household and they use either a wheel-barrow or a simple push cart to transport collected waste to the designated intermediate collection point built by the city in each neighborhood. At these intermediate collection points municipal trucks can then pick up the trash and transport it to the dumpsite or landfill, usually located outside the city limits (Doan, 1998). Chekole (2006) shows that in Ethiopia the informal solid waste collecting actors operate in their immediate geographical and social space and therefore have more chance to be competitive and retain their customers. This is not unlike what Tukahirwa and colleagues (2011) find for Kampala. The informal waste collection does not impose any transaction costs on the formal system, nor does it represent any financial costs to the public sector (Van Horen, 2004). Though the direct household environment looks clean where informal collectors operate from, the outside environment is worse off as operators more than incidentally dispose collected waste at unofficial places, leading to the development of clandestine waste dumpsites (Afon, 2007; Oberlin, 2011). According to Van Horen (2007), the informal sector therefore exists not only as a survival strategy for the very poor, but it also fills gaps that exist due to the inefficiencies of the formal system (Wilson et al., 2009).

In other studies, the economic impact of the informal sector was found to be significant as the average waste picker earns much more than the prevailing minimum wage (Nzeadibe et al., 2010). Privatization threatens the sustainability of garbage collector communities by removing access to their economic asset, waste garbage (Fahmi, 2005; Fahmi et al., 2010). As far as partnering with the formal sector is concerned, members of the informal sector may be reluctant to enter into formal



arrangements with other MSW stakeholders and to comply with commercial registration requirements. According to Taylor (1999), many informal workers aspire upward professional mobility, looking upon their current waste related job as only transitional.

### **4.3 Setting and data**

In Kampala, the capital city of Uganda, SWM is the responsibility of the Kampala City Council (since 2011 the Kampala Capital City Authority, KCCA) and its divisions. KCC is required to ensure that solid waste (garbage) is collected and conveyed to treatment installations or approved disposal sites (Auditor General, 2010). The resources committed to solid waste management (SWM) by KCC proved insufficient and in the 1990s privatization was introduced (among other reasons) to attract sufficient finances. Privatization is seen as important in the general process of improving and modernizing urban waste management systems.

In order to institutionalize the active participation of other, non-public service providers, regulations were formulated pertaining to SWM with a view of promoting and enhancing partnerships between the city council and other private service providers. A case in point is the KCC Solid Waste Management Ordinance (2000). However, none of these regulations considers the informal sector as an active and worthy actor and partner in SWM. In fact, section 20 of the KCC Solid Waste Management Ordinance (2000) defines as an offence for someone to collect, transport, remove or dispose refuse at a fee without a valid permit. Notwithstanding the absence of legal support, in Kampala the informal sector is active in the business of solid waste collection, supplementing the

efforts of KCC and the formal private sector. And the World Bank recognizes the contribution of the informal sector as alternative service providers that can help to serve the poor (WDR, 2004).

In order to analyze why informal collectors keep in the business of solid waste collection, we examined the relationship and linkages between the informal refuse collectors and other (formal) actors in the solid waste collection business, namely KCC and private firms. For that we examined both the demand side (clients/customers) and the supply side (informal and formal collectors). On the demand side, we investigated: fees charged and income categories of clients served and client satisfaction of services. On the supply side, we investigated the earnings of informal refuse collectors, the future plans of informal providers, relationships between formal providers and informal providers, and the legal existence of the latter.

A survey of urban citizens of Kampala was carried out in the divisions of Kawempe and Nakawa. Kawempe is the poorest of Kampala's five divisions (Habyarima et al., 2007), while Nakawa is the biggest division with concentrations of rich neighborhoods. Given the difficulty of eliciting income and expenditure, we defined low-income households as those that reside in poor unplanned neighborhoods (parishes) characterized by high population densities; medium income households are those residing in unplanned or semi-planned neighbourhoods with mixed densities. We classified high income households as those households situated in areas with low population densities, and where neighborhoods are well planned. We randomly selected respondents in selected parishes. If the targeted respondent was not available or not interested to be interviewed, we would move to the neighboring household. In total, the

questionnaire was administered to 475 respondents in Nakawa division (315 over 11 parishes) and Kawempe division (160 over 9 parishes) (details in Table 4.1). Among the 475 households who responded to the questionnaire, 21% indicated they are served by informal sector providers. The rest is served by KCC (12%), the formal private sector (44%), and community-based organizations (CBOs) (1%), or found themselves ways of disposing garbage (22% ‘self-provisioning’) (Figure 4.1).

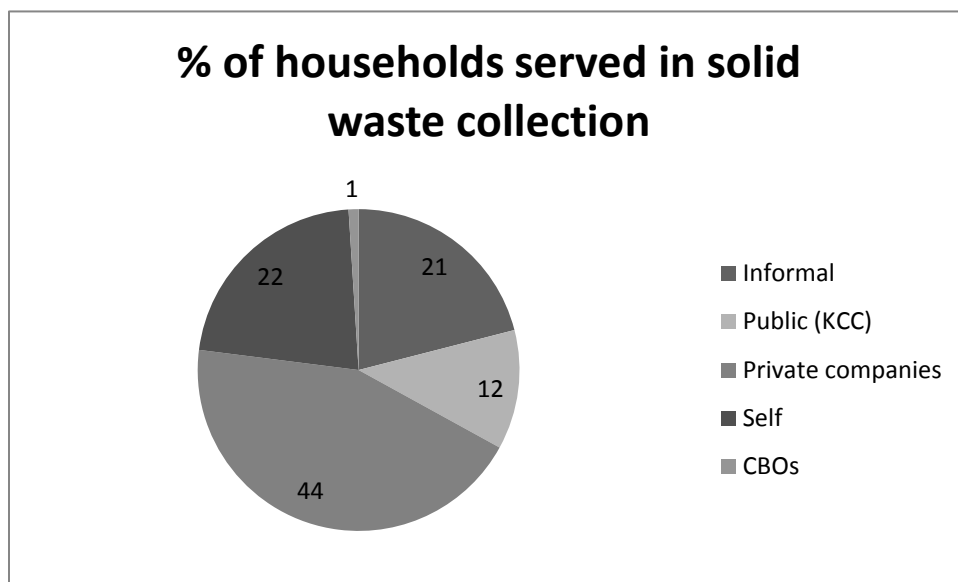


Figure 4.1: Actors in solid waste collection

Source: Own survey.

In addition, an interview guide with standardized semi-structured questions was used to conduct interviews with thirty (30) informal service providers in Nakawa division. It is important to stress that no information or estimation exists of the total number of informal refuse collectors and therefore we cannot claim representativeness. The informal refuse collectors were interviewed in 11 of the parishes where we carried out the study (Luzira, Naguru 1, Bukoto, Kiwatule, Kiswa, Ntinda and Kyanja parishes

in Nakawa division, and Mulago 1, Mulago 11, Wandegeya and Mpererwe in Kawempe division). These interviews were especially carried out in the morning when informal waste collectors are bringing waste at the waste collection centers.

KCC waste managers (5) and formal private sector providers (7) were also interviewed to find out whether they have any working relationship with informal refuse collectors. We also interviewed local council officials (5) in the areas we carried out the study from.

**Table 4.3: Study areas**

Nakawa Division (N=315)			Kawempe Division (N=160)		
Parish	N	Income category	Parish	N	Income category
<b>Bugolobi</b>	25	Mixed	Mulago 1	34	Mixed
<b>Kyanja</b>	33	High	Mulago 11	14	High
<b>Ntinda</b>	43	High	Kikaya	27	Mixed
<b>Banda</b>	42	Low	Mpererwe	8	High
<b>Naguru 1</b>	14	Mixed	Komamboga	32	Mixed
<b>Nakawa 1</b>	29	Mixed	Kifumbira	8	Low
<b>Bukoto</b>	19	Low	Makerere 11	20	Mixed
<b>Kiwatule</b>	23	Mixed	Wandengeya	8	Mixed
<b>Mbuya</b>	31	Low	Kazo Angola	9	Mixed
<b>Luzira</b>	29	High			
<b>Kiswa</b>	27	High			

## **4.4 Results and discussion**

### **4.4.1 Characteristics of informal waste providers in Kampala**

As pointed out earlier, we carried out a small survey among 30 informal waste collectors. All the interviewed informal refuse collectors are males. This is not unlike what Nzeadibe et al., (2010) found out in Lagos Nigeria that informal solid waste activity is a predominantly male occupation. The average age of the informal refuse collectors is 32.3 years, with 45 being the eldest and 25 the youngest informal waste collector. 38% of the interviewed collectors had acquired secondary education ranging from standard one up to standard four, 19% with no schooling at all and 43% having completed primary (elementary) level. This is similar to the findings of Afon (2007) and Nzeadibe et al., (2010). The collection technology used by the informal collectors in Kampala is quite basic. Informal refuse collectors collect garbage in small buckets, loose containers, cardboard boxes, gunny bags and polythene bags and they carry garbage from household compound to the nearby collective center/dumping site using either a wheel-barrow or a bicycle that they own. Informal collectors don't provide containers to their clients. One respondent (informal refuse collector) had acquired a motorcycle. Most (90%) use their own startup capital as they don't need much capital to start-up business. Few borrowed money from relatives and micro finance institutions. All waste collectors have no disposal permit and they are not registered. There are several illegal dump sites where they dump the garbage, mostly 50 to 300 meters from the clients households. In fact, much of what is collected by the informal waste collectors ends up in illegal dump sites. Their services amount therefore to moving the waste, rather than removing it. Informal refuse collectors have no standard method of charging fees on the waste collected and the

respondents (clients) indicated that fees are collected mostly per service or per week. The amount of money collected from clients depends on the quantity of waste in question and the bargaining power of the informal refuse collector and the client. Informal collectors charge per service between UGX 300 – 2000, but most informal collectors charge UGX 500 per service, similar to what Oberlin (2011) found out in Dar-es-salaam Tanzania. Apart from 6 respondents who never answered the question, all informal collectors have been in the business of solid waste collection between 1-5 years. All view it as a weekly and year round activity, meaning there are no seasonal breaks.

#### **4.4.2 Income category of service recipients**

The dualist theory of informal sector claims that the informal waste collectors cater for a customer base that is not able to pay high prices for high quality services. In other words, the informal sector serves the poor. In order to ascertain this claim we asked respondents (clients) of all income categories which service provider collects waste from their household. By service providers we mean whether they are served by the formal sector (KCC and private companies) or informal sector (particularly informal collectors) or not at all (self-provisioning).

The results show that informal refuse collectors serve parishes of all income categories, similar to other service providers (Figure 4.2). Therefore, informal service provisioning is not at all restricted to low income areas. The results of an independent sample t-test indicate that there were no significant differences between KCC and informal refuse collectors, but there were significant differences between formal private

sector and informal refuse collectors. These results suggest that there is no difference by income category between respondents served by informal refuse collectors and KCC but formal private companies clearly favour high income groups. Figure 4.2 shows the shares of the 3 income categories for the 4 types of waste collection service provision.

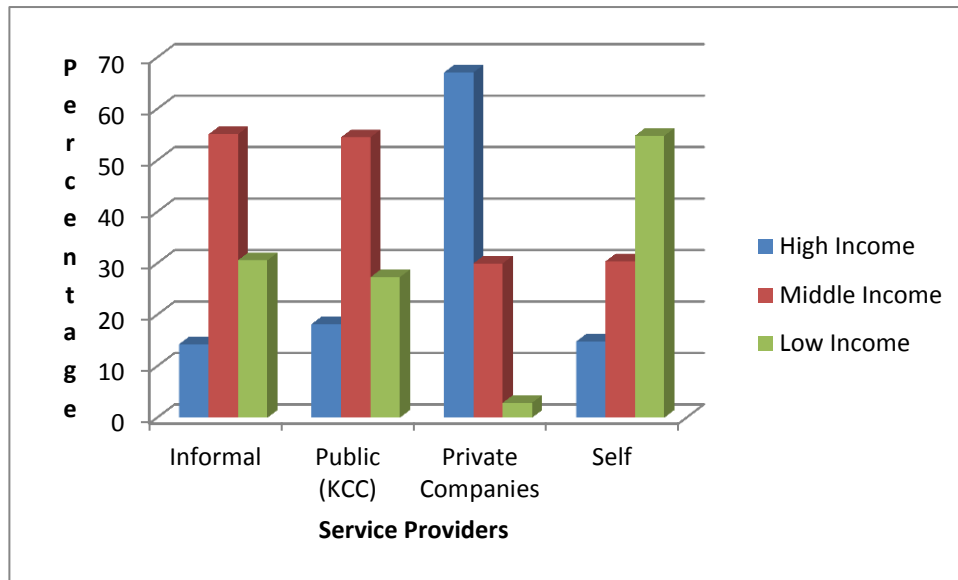


Figure 4.2: Service providers and the percentage of households they serve in terms of income category.

The differences between clients served by informal refuse collectors and KCC on one hand and the formal private sector (companies) on the other hand might be due to costs (fees paid) involved. Fees paid by households to either KCC or formal private sector are significantly higher than those paid to informal collectors. Mean values are 28 thousand shilling a month for private sector, over 13 thousand for KCC, and only 8 thousand for the informal collectors' services. Figure 4.3 shows that most clients (53%)

served by informal refuse collectors pay below UGX 5000 (USD 2) a month indicating that compared to other service providers, they provide services at lower rates.

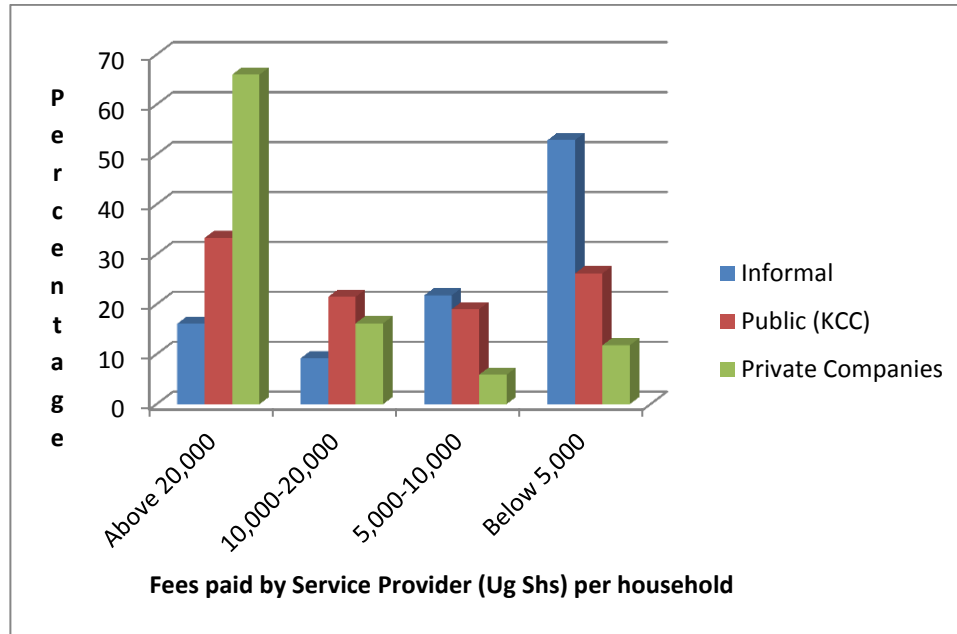


Figure 4.3: Fees paid per month by service provider.

From the above data on fees paid and income category of the service providers that collect waste from households it can be concluded that the informal sector serves all income categories, but especially the middle income and low income. But they do not necessarily serve only the poor as the dualist theory may want us to believe. The fees charged for solid waste collection by the informal sector collectors on average are low compared to those of the formal sector as Table 4.2 below shows.



Table 4.2: Average cost of solid waste collection services per provider, as rendered to clients in UGX per month.

Income category	Private sector	Public sector	Informal collectors	Overall
High Income	126,275	40,789	14,250	42,805
Middle Income	42,973	25,217	6,664	22,593
Low income	6,875	20,000	2,710	5,775
Overall	56,711	36,008	7,021	31,349

While the average fee charged by informal services is 7,021 (see Table 4.2), in poor areas this is only 2,710, against 14,250 in rich areas. But informal providers fees in rich areas are on average still below the private sector fees in poor areas.

It should be noted that the fees charged by informal collectors are low, not necessarily because the clients served are poor but because of other factors. Through observation and interviews with informal refuse collectors, several reasons explain why informal refuse collectors charge lower rates compared to other service providers. First, informal refuse collectors are mainly paid for transportation service of waste to the collective collection centers because they don't have the capacity to transport garbage to the official dumpsite. Interviews with informal refuse collectors reveal that they mostly dump garbage in what they call "gazetted collection centers"<sup>22</sup>. KCC trucks and sometimes trucks of formal private companies (paid by KCC) pick the garbage from these collective collection centers, especially after people in the neighborhood complain about nuisance. Second, informal refuse collectors don't provide containers to households for storing garbage unlike the private sector (66%) or KCC (16%). Third, informal refuse collectors work mostly in their own neighborhood or in familiar neighborhoods and they don't incur transport costs. This situation privileges them to be more accepted and

<sup>22</sup> What they call gazetted collection centers, are illegal dump sites mostly at places where communal containers popularly known as "skips" used to be placed before they were removed.

competitive within their community rather than any other enterprise because they are known in these communities and they have knowledge on income levels and thus know what they can charge. This is what Oberlin (2011) refers to when she argues “ .... waste pickers have personal relationships with households. The personal relationship might be established as a result of being in the same neighborhood and thus they interact frequently which enables mutual understandings, and eases communication between households and waste pickers” (Oberlin 2011: 126). This means that higher trust levels of a household in services of a provider, makes access to the services of that service provider more likely (Tukahirwa et al., 2011). Clients of informal providers also pay cash mostly on a daily or weekly basis, as compared to clients of KCC and formal private sector who have more long term contracts (Figure 4.4). This advantages informal refuse collectors as their payment schedules are more flexible for households with irregular incomes.

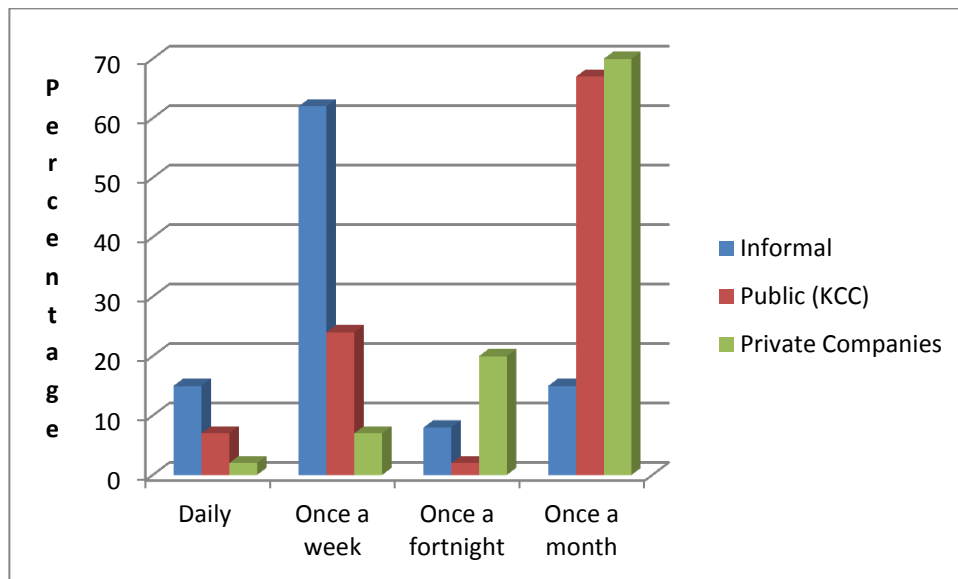


Figure 4.4: Payment regimes per waste collection service provider

The flexibility in payment schedules is more significant when the frequency of garbage collection from households is taken into account. Figure 4.5 reveals that the frequency of informal sector garbage collection at households is comparable to private sector garbage collection, but lower than public sector collection.

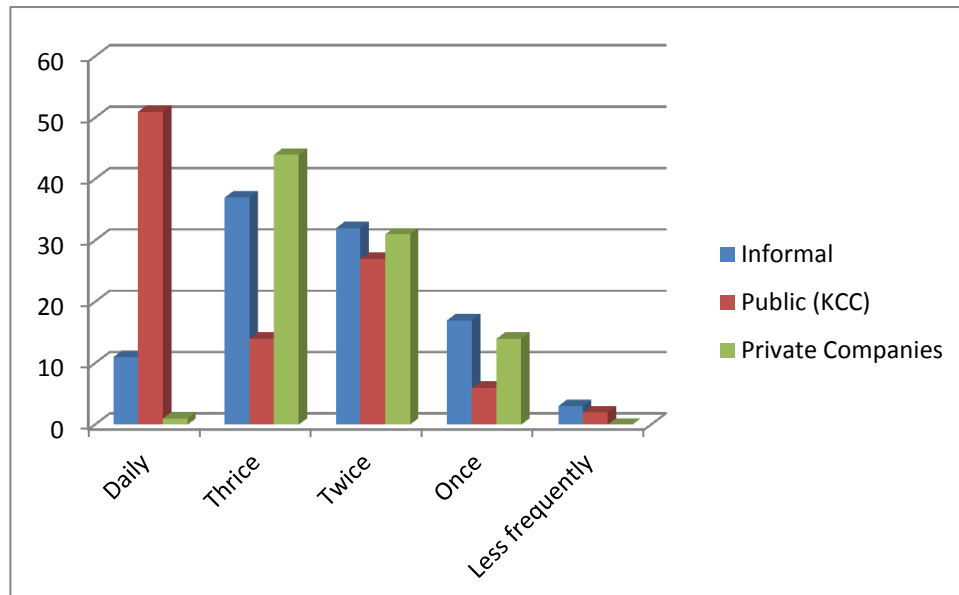


Figure 4.5: Frequency of solid waste collection at households per service provider

While it is clear that informal refuse collectors serve the poor, surprisingly too some 14.3% serve the rich and 55.1% serve the medium income areas (Figure 4.2). Through observation and interviews with informal refuse collectors and their clients, several reasons explain why informal refuse collectors serve also high income and medium income households. First, especially at the high and medium income households collection of waste is done in accordance with spontaneous needs. Clients know where the informal collectors stay and have their telephone numbers and call informal collectors whenever there is need. Second, informal refuse collectors use simple technologies like

wheel barrows and bicycles and therefore are able to navigate through the narrow roads and in difficult terrain in the unplanned and semi-planned settlements, where big trucks of the formal providers cannot easily come. In addition, informal collectors use cheap containers like wooden boxes and broken jerry-cans that can easily be accessed by their customers. Formal providers sometimes insist that customers possess metallic bins and polythene bags, which are either regarded as expensive or are not preferred.

#### **4.4.3 Quality of services provided**

The assumption from informal sector theories, especially the dualist theory, stresses that there would be a marked quality difference between services provided by the formal sector compared to those provided by the informal sector. We used customer satisfaction (on a Likert scale of 1 (=not satisfied) to 5 (=very satisfied)) as a proxy for quality of services. We asked respondents (clients) to rate their satisfaction of the services rendered by service providers. An independent sample t-test was conducted to compare the satisfaction of respondents who receive the services of the informal refuse collectors and those of other service providers. There are no significant differences in the scores for KCC (M=3.13, SD=1.1)<sup>23</sup> and informal sector (M=3.04, SD=1.1) (t=0.472, P=0.638). However, there are significant differences in the satisfaction scores for private contractors (M=3.85, SD=0.86) and informal refuse collectors (M=3.04, SD=1.1) (t=6.7 P=0.000). The results suggest no big difference in satisfaction levels of respondents served by informal refuse collectors and KCC. But formal private companies/contractors seem to

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<sup>23</sup> M= mean; SD= Standard Deviation; t=Difference between the mean or average scores of two groups; P=Probability Values

provide a superior<sup>24</sup> service to their clients, compared to other providers notably informal refuse collectors and KCC (Figure 4.6). Note that these are user-scores, so there may be some degree of selection bias.

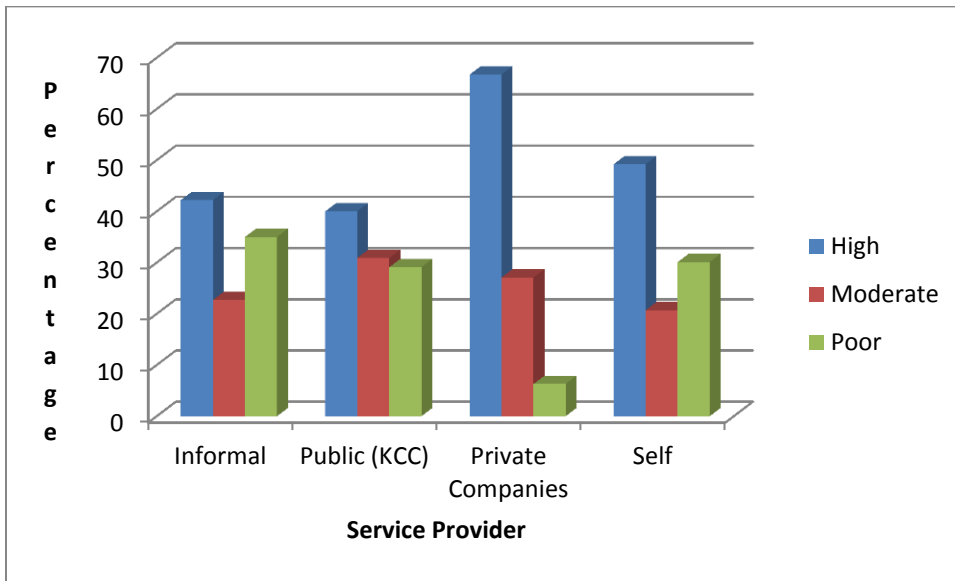


Figure 4.6: Satisfaction with the service rendered by service providers

#### 4.4.4 Incomes earned by informal refuse collectors

It is claimed in the dualist theory that informal sector workers earn low wages compared to those who work in the formal sector and that they will be looking for an opportunity to transit from the informal sector to join the formal sector for better working conditions. Our findings reveal that, in terms of incomes earned, informal refuse collectors who serve low income and middle income households earn in the range of UGX 105,000 – 140,000 (USD 40-70 USD) a month. This figure is calculated based on the number of customers daily served (15-20) times the average monthly fee per household of UGX 7000. This

<sup>24</sup> Measured on these lickert scales: Poor (1-2), Moderate (3), High (4-5).

payment received by informal refuse collectors is higher than what KCC and private companies pay their workers. KCC workers (truck loaders of garbage) are recruited to earn 3000 Uganda shillings per day and assuming they work daily, their total income is 90,000 Uganda shillings (USD 45). Workers for KCC are not always paid in time; sometimes they get to seven months in arrears<sup>25</sup>. Formal private sector companies pay their employees in the range of 3000 – 5000 a day, totaling to between 90,000 – 150,000 (USD 50-70) a month. Those employed in the formal sector and those in the informal sector do not receive additional benefits, such as insurance and medical care. But interviews reveal that employees in the formal sector enjoy some degree of job security. Informal refuse collectors spend little costs on collection equipment, only on bicycle repairs and on some occasions on buying sacks. This means that informal refuse collection is potentially a economically lucrative activity, at least compared to those who work in comparable formal organizations as KCC and private sector companies, contrary to what the dualist school hypothesizes.

While informal sector waste collectors do the job year round, they regard it as a part – time activity, mostly working in the morning and evening hours. The rest of the time is spent on other income generating activities to supplement their incomes from garbage collection. Around 30% of the interviewed respondents are involved in sorting of materials for reuse and recycling purposes. Sorting of garbage for material reuse and selling this to recycling companies is a major source of income outside the payment received for collecting and transporting material from household. The respondent who sort garbage earn UGX 50,000 – 100,000 per month (USD 35 – 50) from the sale of

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<sup>25</sup> City council of Kampala – letter to the Senior Principal Assistant Town Clerk Kawempe division from the solid waste engineer, Monday, April 21, 2008.

recyclable items, recovered from the collected household garbage but also from the dumpsites or communal collection centers operated by KCC or formal private companies. This finding contradicts results of earlier studies (e.g. Wilson et al., 2009) that income generated from sorting and recycling collected materials is more important to the informal sector than waste collection servicing.

While recycling is not a big business in Kampala, recently small scale recycling companies have mushroomed and informal sector providers take advantage by supplementing their incomes from recyclable materials. This business is not exclusive to informal waste providers. Even those who work for the formal sector, especially for KCC, have time and opportunities for such additional income generating activities. For example, the sale of banana peelings is emerging as a business also for formal collectors in Kampala. The peelings are sold mainly to small scale farmers who keep some cows to supplement their incomes by milk sales. Waste paper is mainly sorted to be sold to food vendors for charcoal stove lighting. Plastic recycling has picked up and is now a source of income for (in)formal collectors in Kampala with many recycling companies springing up to recycle plastics. Informal refuse collectors interviewed also were involved in “boda-boda” (bicycle taxi) business, brewing alcohol, shoe-shining, running a bar, running a kiosk and other casual work activities like compound cleaning and fetching. They revealed that they earn with these activities almost the same amount of money as with solid waste collection, except for *boda-boda* business and running a bar which earns more (but require investments).

#### **4.4.5 Future plans of informal sector collectors**

The dualist theory argues that the informal economy is seen as a labor reservoir and training facility in that workers were supposed to first enter the informal sector and then enter the formal protected sector after they had improved their skills. This is to some extent true with the situation of informal refuse collectors in Kampala city. For example, 76% of the informal refuse collectors are not sure of what the future holds, inevitably considering looking at informal refuse collection as a temporary pre-occupation. Some wish to work for established companies or KCC if the pay is right and there is an opportunity. Others say they are accumulating money to apply and go for further studies and acquire land in the villages for agricultural purposes. Other respondents see the job as too tiresome and dangerous at a risk of acquiring diseases like stomach aches, diarrhea, malaria during wet season, body cuts and bruises, fever and constant back ache. The situation is compounded by lack of protective clothing's like gumboots and gloves. On the other hand, 36% of the respondents tended to talk about the freedom that their occupation gave them and to have settled into the business as a long-term career and would want to continue in the business of solid waste collection. They argue that solid waste collection is a permanent business with more and more people generating waste every day and therefore a sure business opportunity, the experience acquired and having established themselves in the business and to some it is the only source of income. Some talked of their future plans like forming an association or company with counterparts to purchase a truck to ease collection and transport garbage to the dump site and acquire more capital to expand as there no other jobs available. However, one principal limitation they face is the lack of access to credit services. While they indicated they don't need



much money to start the business of solid waste collection, when it comes to considerations for expanding on the business informal refuse collectors borrow from their relatives and friends and some from existing micro finance institutions. Accessing loans from banks and micro finance institutions is a very complicated issue for informal refuse collectors. The standards set are high and informal refuse collectors cannot easily meet the criteria for consideration. These include, but are not limited to: having a business, belonging to loan groups, being identified and recommended by local council officials, ability of weekly loan repayments, the need of property as security. In any case some are semi-illiterate and find it difficult to understand the dynamics related to dealing with accessing and managing loans. We lack data to compare with the situation of formal sector as regards to their future plans but we can conclude as far as this point is concerned that, there is not so much in support of the dualist theory. The informal collectors are looking elsewhere for other job opportunities and not necessary to work with the formal sector providers or formalizing their business.

#### **4.4.6 Links between the formal sector and informal collectors**

The structuralist school of thought believes that the informal and formal sector are linked to one another with many informal enterprises, supplying inputs, finished goods or services to the formal sector, either through direct transactions or via sub-contracting arrangements. Our findings in Kampala indicate that there appears to be some linkages, mainly with KCC. For example, over 50% of the informal refuse collectors have some form of cooperation and contact with KCC. Collaboration with KCC takes the form of informal refuse collectors pulling funds for fuel to be used on KCC trucks to transport

garbage to the dumpsite; KCC enforcement staff helping informal refuse collectors to recover their money from “stubborn” customers not willing to pay; and informal sectors collectors working with KCC or formal private companies on a part time basis in loading garbage on vehicles or transporting waste to the collection centers. Interviews with managers of private sector companies revealed that informal refuse collectors are also used by private companies, though on a rare basis. One third of the informal sector respondents revealed that they have little or no collaboration with formal sector providers. This is partly due to the perceived illegality of the informal sector activities by formal service providers. In a few instances informal refuse collectors have paid bribes to law enforcement officers and policemen for fear of being arrested for dumping in illegal sites. Informal refuse collectors are accused of being responsible for littering and illegal piles of waste. Informal refuse collectors accuse KCC and formal private companies to have taken advantage of their desperate situation because of the high unemployment rates to keep the pay at lower levels. Few cases of conflict were noted, especially in cases where private sector collectors encroach on the territory of the informal providers, much to the annoyance of the latter. The formal providers, especially private firms, also accuse informal refuse collectors of charging (too) low fees that make their services less competitive. In all, there is not much evidence in support of the structuralist view on the informal sector: although they may be collaborative at times, there appears to be little structural interdependency between informal and formal collectors. Sub-contracting arrangements are non - existent.

There is, however, a form of structural co-existence between public and informal service providers. The formal sector leaves room for the informal sector to serve

households in those case where physical collection is difficult for the formal sector or where it becomes economically unfeasible. In addition, the public service of collecting waste through collective containers (skips), the access to which cannot be charged, leaves room for informal service providers to take garbage from households to those collection points. As long as such free public services are provided, the informal service providers can make a decent living.

#### **4.4.7 Legal recognition**

The legalist school of the informal sector implies that formal businesses abide by the stipulated rules and regulations and that informal firms resemble their counterparts, the only difference being that they are not registered. However, solid waste collection in Kampala shows a more complex picture. Similar to the informal waste collectors formal operators sometimes work without licenses, but they are allowed to do their business including transporting garbage to the dumpsite, according to the report of Ugandan government Auditor General (2010). The report further says that KCC has also failed to establish a proper mechanism for regulating the operations of private collectors. Most of the private collectors have no capacity to adequately collect and transport refuse to the landfill, according to the National Environment (Waste Management) Regulations. For instance, most vehicles that transport garbage to the disposal site loose waste on their way, there are no approved scheduled routes from the collection point to the disposal site, and the personnel involved in the collection and transportation of garbage are not provided with adequate protective and safety clothing. In Kampala therefore, the definition of formal is quite different from what the legalist school suggests. In Kampala, formal collectors are defined as those that have in principle legal existence by being

registered with a public body (KCC) and that transport waste to the final disposal site in Kitezi; informal collectors are those that have no legal existence through registration at KCC. The informal collectors take advantage of the lack of seriousness in enforcement of laws by KCC and the vagueness of who is legally allowed or not allowed in the business of solid waste collection. Clients may not easily distinguish formal and informal collectors as both are allowed to operate.

From the data and analysis made, there are two expected scenarios. First, if the formal private sector (private companies) is encouraged and facilitated, especially with the public sector withdrawing from solid waste collection, it is highly likely that the informal collectors will be pushed out of business. This observation is in line with the WDR (2004). Informal collector are regarded as competitors and private collector will demand stronger enforcement. In a push to maximize profits, private collectors will also try to employ their own staff to go door-to-door to collect waste, unless coverage targets are defined in such a way that they can be met with the services of ‘small independent providers’. In this way, the private companies may have the incentive to encourage the involvement of ‘small independent providers’ typically the informal collectors. But if the public sector expands providing free services by placing public containers, it is likely that the activities of the informal sector will expand too. The public containers enable informal collectors to deposit their garbage in environmentally friendly places and ensure that they remain competitive vis-a-vis private sector collectors.

## 4.5 Conclusions

The informal collectors distinguish themselves from the formal waste collectors by providing 'first-line' services only, taking garbage away from households, but not taking this all the way to the dumpsite. As the opportunities for restricting themselves to this stage are typically enhanced by KCC that offers (free-access) communal waste container services, informal collectors can be seen as structurally linked to the formal public sector. Informal providers provide a cheaper, but low-level service, and more often than the formal sector collectors they serve poor households. But not to the extent and exclusivity claimed by dualist scholars.

The fairly large market share of informal collectors can be explained by their competitiveness vis-à-vis the formal private sector: their fees are substantially lower than private sector fees. The informal providers are competitive because they provide less waste storage equipment, have little collection equipment (and thus investments), and do not transport waste over long distance. But not because labor costs of informal sector collectors are lower. In fact, the informal collectors exploit the lapse in enforcement of environmental regulation. Their continued role, next to public service providers, is possible because they fill a niche in taking garbage from the households to (legal) collection points or illegal dumping places at lower costs and/or in localities that cannot be physically served by the formal sector.

Recent years have shown a relative withdrawal of the public sector from waste collection. This led to an increase of households being served by formal private services. From an environmental point of view this is an improvement. Yet, poorer households also increasingly become to rely on private waste collection arrangements. If such

services are only offered by formal private waste collectors, costs for poor household will be unaffordable. The widespread use of informal providers is an affordable alternative for poorer household, and if public provisions are made for the second-stage in waste collection, this may even be environmentally sustainable. This combination may prove an cost-effective and environmentally sound way to move waste from poorer households to decent dumpsites, more effective than by public services alone and cheaper than by private services alone.

**CHAPTER 5: ENVIRONMENTAL LEGACIES OF MAJOR EVENTS.  
SOLID WASTE MANAGMENT AND THE COMMONWEALTH  
HEADS OF GOVERNMENT’S MEETING (CHOGM) IN  
KAMPALA<sup>26</sup>.**

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<sup>26</sup> A version of this paper was published as Katusiimeh M.W & A.P.J Mol, Environmental legacies of major events. Solid waste management and the Commonwealth Heads of Government’s Meeting (CHOGM) in Kampala, African Studies Quarterly 12(3) 2011.

## **Abstract**

Important political, cultural or sports events can accelerate improvements in environmental policy and performance. This study investigates whether environmental improvements – and especially those related to solid waste – materialized during the 2007 Commonwealth Heads of Government meeting (CHOGM) in Kampala, Uganda, and whether these improvements lasted well after that event. A quantitative survey was used to investigate the state of solid waste management before, during and after CHOGM, measured through the perceptions of urban residents. Interviews and documents were used to interpret survey results. The study concludes that additional resources and institutional changes in solid waste management in the line up to CHOGM, resulted in considerable improvements. Some of these effects on solid waste management lasted to at least one year after hosting the CHOGM event. In addition, CHOGM lifted the differences in perceptions of solid waste management between the city centre and peripheral divisions.

**Key words:** Solid Waste Management, CHOGM, Uganda, Major Events,



## 5.1 Introduction

In November 2007 Kampala hosted the biennial Commonwealth Heads of Government meeting (CHOGM). All 53 heads of governments of the Commonwealth nations grouped together for one week (23<sup>rd</sup> November to 30<sup>th</sup> November 2007), to discuss matters of common interest. In preparation of this CHOGM meeting Kampala was upgraded: roads were repaired and improved (sometimes at the costs of small shops adjacent to the roads), graffiti was removed, buildings were upgraded, and solid waste management was improved. The national Uganda government as well as the Kampala City Council (KCC) spent significant resources in this urban upgrading. And this is not unlike what other large cities hosting similar major events have experienced, whether it were political meetings of heads-of-states (such as Earth summits, UN general assembly meetings), major sports events (such as Olympic Games, or World cups), or large cultural festivals (such as Live Aid concerts, World Expos). But do such urban upgrading and improvement efforts have an impact, and if so; does the impact last beyond these events?

This study investigates whether environmental improvements – and especially those related to solid waste – materialized during the 2007 CHOGM meeting in Kampala continued, and whether they lasted until at least one year after that event. As with many Sub-Saharan African cities (See Owusu, et al., 2010; Baudouin et al., 2010; Kaseva, et al., 2005; Karanja, 2005; Awortwi, 2004; Spaargaren, et al., 2005) for a long time Kampala has experienced many problems related to solid waste management (Golooba-Mutebi, 2003; Tukahirwa et al., 2011; Okot-Okumu et al., 2011). These problems are related but not limited to lack of access of solid waste services by especially the poor communities (Obirih-Opareh et al., 2002; Post et al., 2003; Tukahirwa et al., 2011), reluctance to create partnerships with major actors like CBOs and informal enterprises

(Baud, et al., 2004; Tukahirwa, et al., 2010; Baudouin, et al., 2010) and disorganized, unregulated and not sufficiently supervised SWM operations, resulting into heaps of garbage on the streets (Karanja, 2005; Tukahirwa et al., 2010). It was hoped that CHOGM would be more than a temporal improvement of solid waste collection and treatment; that the improvements in solid waste management would become institutionalized, such that Kampala would not fall back to the old, pre-CHOGM, situation. So, the central research question that motivated this study is whether and to what extent there are environmental legacies (of at least one year) related to solid waste management from hosting the 2007 CHOGM; or in other words: to what extent have CHOGM-induced environmental reforms become institutionalized in solid waste management in Kampala city?

After providing an overview of the literature on the major events and their legacies, the paper reports on empirical survey research carried out in Kampala on solid waste perceptions, investigating temporal and spatial differences of solid waste management following the CHOGM event.

## **5.2 Major events and their environmental legacies**

### **5.2.1 Mega and major events**

Hallmark or mega-events are short-term events of fixed duration. The British sociologist Maurice Roche (1994: 1) has laid out the critical characteristics that define mega-events:

“Mega-events (...) are short term events with long-term consequences for the cities that stage them. They are associated with the creation of infrastructure and event facilities often carrying long-term debts and always

requiring long-term use programming. In addition, if successful, they project a new (or renewed) and perhaps persistent and positive image and identity for the host city through national and international media, particularly TV, coverage. This is usually assumed to have long-term consequences in terms of tourism, industrial relocation, and inward investments.”

What defines certain events as ‘mega’ is that they are ‘discontinuous’, out of the ordinary, international and simply big in composition. They have the ability to transmit promotional messages to billions of people via television and other developments in telecommunications. Mega-events attract large international audiences and have an international composition (Horne & Manzenreiter, 2006). Defined as events that achieve sufficient size and scope to affect whole economies and receive sustained global media attention, ‘mega-events’ include the World’s Fairs; the World Cups in soccer, rugby and cricket; the larger regional sports gatherings (e.g. European championships, Asian Games, Pan-American Games); and the Olympic Games (Gold & Gold, 2008). But mega-events can also have a more economic or political character, such as United Nations general assembly conferences, Earth Summits, special World Trade Organization meetings and other political gatherings where a considerable number of heads of state and government gather together and draw large scale media attention. Often, these mega events are organized in more wealthy locations, as – once awarded – primary responsibility for financing and organizing the event then rests with the host. But also the African continent knows its mega-events: the 1995 Rugby World Cup, the 2002 Earth Summit in Johannesburg (also known as Rio +10), the

2003 Cricket World Cup and the recently held World Soccer Cup 2010, all in South Africa. South Africa is the first African nation to host an event of such magnitude like the Football World Cup, prompting former South African President Thabo Mbeki to pronounce that this was not a South African event but an African one (Pillay et al., 2008). South Africa with a GNI per capita of USD 5,570 (World Bank, 2009) is economically richer than most developing nations especially on the African continent and has the capabilities to host such mega events. It is often characterized as one of the most developed under the developing countries. For example, approximately USD 52 billion was spent on preparations to host the soccer World Cup, especially on infrastructure development in South Africa. But more often significant events in the African region are what we would call major events, rather than mega-events, having a less dramatic budget and a less global audience like African football championships, African Union (AU) meetings and other important summits. In Uganda approximately UGX 300 billion (USD 100 million) (almost the equivalent to one tenth of the annual revenue collections in the 2006/2007 fiscal year) was spent on CHOGM preparations (Auditor General, 2008). With a GDP of \$42 billion it is unlikely that Uganda – or any other African nation with a similar size of its economy – can host mega events of the magnitude like Soccer World Cup, but it can host something major as the CHOGM.

In December 2003, the Commonwealth Heads of Government meeting in Abuja, Nigeria, decided that Uganda would host the 2007 CHOGM. This decision was reaffirmed at the 2005 CHOGM in Malta. CHOGM have been held before on the

African continent: in Zambia (1979), in Zimbabwe (1991) in South Africa (1999) and in Nigeria (2003). Since 2003, Uganda started preparing a meeting that would bring 53 heads of government of the Commonwealth of Nations together, to consult, share experiences and deliberate on issues of pan-commonwealth and international significance. Her Majesty the Queen of England attended, Prince Charles visited and participated in a number of civil society events and the CHOGM was preceded by two (2) weeks of activities. There was a Business Forum attended by more than 200 young people from 45 countries, peoples forum attended by 1500 delegates from 59 countries (including non-commonwealth members) and the Foreign Ministers Forum meeting. Uganda had not hosted a major international meeting at the magnitude of CHOGM. Although considerably smaller in participants, (media) audience, and budget than mega-events, it shared with mega-events the international character and media coverage, the still considerable investments (for Uganda), and the national self-confidence and civic pride.

### **5.2.2 Major events and the environment**

As the range of festivals and major events has grown over the years, their impacts have increasingly come under scrutiny. Various evaluations and more in-depth studies have found that large scale events have a variety of potential impacts, including economic, social, cultural, political, physical and environmental ones (Impacts 08 – Langen & Garcia, 2009). The high-profile nature of such events generates the analysis of their favorable consequences, such as increases in tourism, economic performance, urban infrastructural improvements, or the more intangible benefits of civic pride,

“boosterism”, and international image building (e.g. Hall, 1992; Hiller, 1998). There is however, growing skepticism over the extent to which hosting events results into significant developmental impacts (Pillay et al., 2008; Andranovich et al., 2001; Lenskyj, 2001). The argument of these skeptics is that while there are some positive legacy impacts, it may be intangible and ambiguous (Pillay et al., 2008). According to Hiller et al., 2000: 440, “such events are often seen as no more than public relations ventures far removed from the realities of urban problems and challenges.”

Once a city has been chosen as the site for a major event, the event begins to take on a life of its own. The urgency and goal orientation of the project within tight timelines may require that normal procedures be set aside. Sometimes, the urgency overrides the traditional participatory planning processes (Pillay et. al, 2009). Concerns over (construction) deadlines and external requirements, as well as the desire to maximize international impact, means that event preparation and operation become an absolute (national) priority. Furthermore, for the sake of a successful event, people are urged to pull together and to minimize criticism in the face of need for cooperation.

Research and analysis on most major events is piecemeal and fragmentary, with a strong focus on (i) western, industrialized countries/cities where most major events take place; (ii) the favorable economic, infrastructural and tourism effects (e.g. Hiller 1998, 2000; Teigland, 1999; Moragas et al., 2003; Roche, 2006; Impacts 08 – Langen & Garcia, 2009). There is surprisingly little of scholarship on the role of major events in developing countries; on the impact of event-related developments on low-income communities (e.g. Schimmel, 2006), either in wealthy or developing countries; and on the short and longer term environmental consequences and legacies of major events (e.g.

Mason & Beaumont-Kerridge, 2004; Hayes and Karamichas, 2006), especially in relation to the former two points.

The environmental legacies of major events and the sustained improvement in the quality of life for local/city communities have recently become more popular themes for research (Del Corpo, & Dansero, 2007; Close, Askew and Xin, 2007; Collins et al., 2009; Raj and Musgrave, 2009; Mol, 2010; Karamichas, 2011; Mol and Zhang, 2011). However, the evidence for sustained environmental improvements following major events remains limited, anecdotal and restricted to sports events such as the Olympics. Constructing positive environmental legacies, instead of only capturing the economic rewards, involves the inclusion of event (re)constructions (both physical and institutional) into long term sustainable development strategies, as happened with the Sydney and Beijing Olympics (Mol, 2010). Key to constructing environmental legacies is the institutionalization of environmental upgrading activities and strategies, so that these last well beyond the event. For example, it can be hypothesized that city authorities work more efficiently and effectively after hosting a major event, that physical infrastructure is improved, and that people have increased expectations and demand after having experienced how good it is to live in a clean city. But such hypotheses have hardly been tested with empirical research, especially not with respect to developing countries and non-sporting events.

### **5.3 Data and methods of investigation**

To investigate whether major political events in developing countries construct positive environmental legacies, we analyzed solid waste management improvements during and

after the CHOGM in Kampala. Through a quantitative survey urban citizens of Kampala were asked on their satisfaction with the way solid waste collection and transportation was organized and implemented. Purposive sampling (Kothari, 2005) was used because we had to verify that the respondent met the criteria for being in the sample. To be selected for the study, a respondent should have stayed in Kampala city and in the same place of residence since the beginning of 2006 until one year after CHOGM. Respondents were selected from two (out of five) pre-selected Kampala divisions: Kawempe division and Kampala Central division. Kampala Central division is the major business district, is at the centre of Kampala, has also poor slum areas and was the location of most of the CHOGM events. Kawempe division is at some distance from the city centre, has a mixed population and was less central as a location for CHOGM events (Figure 5.1).

Data collection took place through a (mostly) structured and self-completion questionnaire, using a five-point likert scale for the closed questions. Self-completion was meant to make sure that we interviewed the right people who have lived in Kampala since 2006 and therefore were knowledgeable about the (changing) state of solid waste management in the city over the years. But self-completion of the questionnaire also made sure that the respondents understood the questions and that no bias occurred in terms of illiteracy or education level.

Survey interviews were carried out in two rounds. The first round was carried out in March 2008 (only four months after CHOGM) and the second round of interviewing was carried out in October 2008 (one year after CHOGM). During the first round of interviewing (March 2008) questions were asked on the perceived solid waste



management situation before CHOGM (early 2006), during CHOGM (November 2007) and four months after CHOGM (March 2008). During the second round of interviewing (October 2008), respondents were asked how they felt about the solid waste management situation in early 2006 (before CHOGM), November 2007 (at CHOGM), March 2008 (shortly after CHOGM) and October 2008 (one year after CHOGM). A total of 500 respondents were randomly selected in the first round (March 2008), of which 454 respondents answered the questionnaire. In the second round (October 2008), 447 respondents were randomly selected and 410 questionnaires were returned. To ensure representativeness, we followed a stratified random sampling strategy, in which random sampling of respondents in the parishes selected involved targeting all income groups (neighborhoods) and areas near and far away from where the CHOGM event was held. If the sampled respondent was not available or not interested or not part of the target group (those who had not come to Kampala 2 years before the CHOGM event), we would move to the next random sampled respondent in that cluster. Table 1 below depicts descriptive statistics of the two surveys.

Figure 5.1: Kampala city and its divisions with the location of the CHOGM event (the red dot)

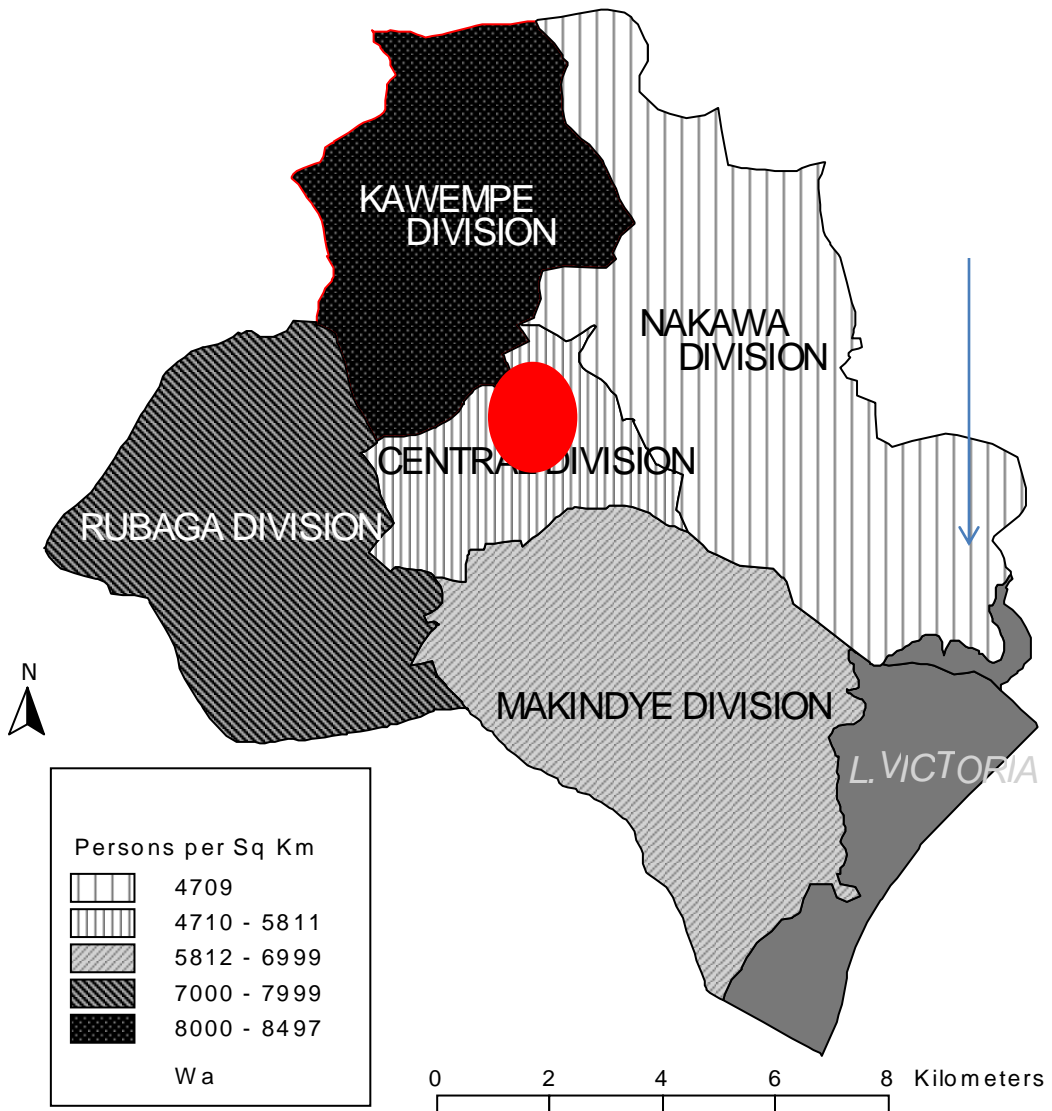


Table 5.1: Descriptive statistics on solid waste management, two surveys

Solid waste management variables	1 <sup>st</sup> survey (March 2008)			2 <sup>nd</sup> survey (October 2008)		
	Obs**	Mean**	S.D**	Obs	Mean	S.D
Littering & illegal piles of waste, 2006*	448***	4.3	0.98	410	4.2	<b>1.06</b>
Littering & illegal piles of waste, 2007	451	1.4	0.83	410	2.2	<b>0.95</b>
Littering & illegal piles of waste, 2008 March	450	2.9	1.13	410	3.1	<b>1.02</b>
Littering & illegal piles of waste, 2008 October	-	-	-	409	3.6	<b>1.348</b>
Nuisance solid waste transfer points, 2006	448	4.2	1.10	410	3.8	<b>1.14</b>
Nuisance solid waste transfer points, 2007	451	1.3	0.76	409	2.2	<b>0.92</b>
Nuisance solid waste transfer points, 2008 March	450	2.7	1.15	409	3.0	<b>1.04</b>
Nuisance solid waste transfer points, 2008 October	-	-	-	410	3.4	<b>1.26</b>
Smell of solid waste, 2006	448	4.3	1.13	409	4.1	<b>1.54</b>
Smell of solid waste, 2007	451	1.4	0.78	409	2.1	<b>1.08</b>
Smell of solid waste, 2008 March	450	2.8	1.12	406	3.0	<b>1.17</b>
Smell of solid waste, 2008 October	-	-	-	408	3.5	<b>1.41</b>
Solid waste collection from households, 2006	447	3.7	1.30	407	3.7	<b>3.42</b>
Solid waste collection from households, 2007	449	2.0	1.42	406	2.3	<b>1.01</b>
Solid waste collection from households, 2008 March	448	2.9	1.37	403	2.8	<b>1.22</b>
Solid waste collection from households, 2008 October	-	-	-	402	3.1	<b>1.22</b>
Solid waste collection from enterprises, 2006	448	3.9	1.01	405	3.1	<b>1.25</b>
Solid waste collection from enterprises, 2007	451	2.3	1.65	406	2.0	<b>1.09</b>
Solid waste collection from enterprises, 2008 March	450	3.0	1.22	405	2.5	<b>1.06</b>
Solid waste collection from enterprises, 2008 October	-	-	-	406	2.8	<b>1.23</b>
Street sweeping, 2006	441	3.9	1.53	406	3.3	<b>1.38</b>
Street sweeping, 2007	445	2.0	1.52	406	2.2	<b>1.30</b>
Street sweeping, 2008 March	443	3.3	1.59	405	2.7	<b>1.25</b>
Street sweeping, 2008 October	-	-	-	<b>406</b>	<b>3.0</b>	<b>1.37</b>

\* 2006 = before CHOGM; 2007 = during CHOGM; 2008 March = four months after CHOGM; 2008 October = 1 year after CHOGM\*\* Obs = no. of observations/respondents; mean = mean score on a likert scale of 1 to 5; S.D.= standard deviation; \*\*\* Some of the questionnaires returned had missing values. This explains the decline in the number of observations in both the first and second survey.

In addition to the survey, monthly data were collected of recorded solid waste mass brought to the central Mpererwe Sanitary Landfill during 2006 – 2008 and also for 2009 and early 2010. Formal and informal in-depth face-to-face interviews were held with a number of KCC officials (5), division officials (10) and licensed service providers (15). Other techniques of data collection included document review, especially official letters, policy documents, and correspondences. This material was later used to interpret survey results.

The data analysis centered around the assessment of the (temporal/semi-permanent) effects of CHOGM on solid waste management, measured through the perceptions of urban residents. In addition, geographical differences were analyzed between the Central division and Kawempe division, in relation to the distance from the CHOGM event. The data were analyzed using percentages and non-parametric tests: Wilcoxon signed rank test and Wilcoxon-Mann-Whitney test. *Wilcoxon signed-rank test* (one sample median test) allowed us to test whether a sample median differs significantly from a hypothesized value. Specifically, the test was used to determine whether there is a significant difference in median in littering and illegal piles of solid waste, nuisance from solid waste transfer points, smell of solid waste, solid waste collection from enterprises and street sweeping before CHOGM, during CHOGM and after CHOGM.

Before moving to the results, first, we report on a test whether results are affected by recall bias or by time differences between the 1<sup>st</sup> and 2<sup>nd</sup> survey. We checked whether the respondents of the first survey (organized in March 2008) value the quality of the environment four months after CHOGM the same as the respondents of the second survey (organized in October 2008) value the quality of the environment four month after CHOGM. For this the Wilcoxon signed rank test was used. The low Z values and p-values > 0.05 in Table 5.2 show that the first survey respondents value the solid waste management situation four month after CHOGM not

statistically different from how the second survey respondents value the solid waste management situation four month after CHOGM. This implies that questionnaire results have not been not affected by a recall bias or by time differences.

Table 5.2: Recall bias between first and second survey for solid waste management four months after CHOGM, using Wilcoxon signed rank test

	Z-value	P-value
Littering & illegal piles of waste	0.059	<b>0.953</b>
Nuisance from solid waste transfer points	-0.234	<b>0.815</b>
Smell of solid waste	-0.228	<b>0.820</b>
Solid waste collection from households	0.053	<b>0.958</b>
Solid waste collection from enterprises	-0.084	<b>0.933</b>
Street sweeping	<b>0.645</b>	<b>0.519</b>

Second, since the respondents of the first survey value the quality of the environment the same as the respondents in the second survey, we analyzed them together. Both Kawempe and Central divisions are put together. In other words we pool across locations and across surveys.

## 5.4 CHOGM and its effects on solid waste management

### 5.4.1 Solid waste management before CHOGM

For long, Kampala experienced many problems of solid waste management (KCC, 2006). For example, Kampala failed to have regular city-wide collection of waste, resulting in accumulation of solid waste in drainage channels and along roads in especially poor neighborhoods. Irregular collection was also caused by irregular payment for the collection of solid waste by citizens. Lack

of capacity of the Kampala City Council (KCC) and private contractors increased the amount of small scale informal solid waste service providers. Unfortunately, these many small players were not registered, supervised or regulated by authorities, resulting in confusion, animosity and differentiated charges. Disorganized, unregulated and not sufficiently supervised solid waste collection and transportation by (private) solid waste collectors lead also to illegal dumping (Tukahirwa et al., 2010).

Solid waste transportation trucks were not covered as they ferried solid waste through the city. Light solid waste was often blown by winds and spread along the way while inconveniencing other road users or, in extreme cases, causing road accidents. Mesh nets when used, were often burnt by fire in the solid waste. KCC and private contractors used old vehicles, and a lot of money was spent on repair and maintenance of this fleet.

Though Kampala City Council (KCC) has contracted solid waste collection and treatment to private firms since the late 1990s, KCC still is in business of collecting and transporting part of the city garbage to the disposal site. As a result, private contractors are de-motivated as there is hidden – and sometimes unequal – competition between the private contractors and the public sector. KCC's main formal tasks are to supervise, contract out, enforce the law and sensitize the population on solid waste. But there were no instituted monitoring and evaluation mechanisms for the performance of the new privatized solid waste management system.

It is against this background of relatively poor solid waste management that CHOGM was held in Kampala city in 2007, and improvements were made to upgrade the solid waste management infrastructure.

### **5.4.2 Preparing for CHOGM**

As a host country, Uganda Government was mandated to put in place facilities that meet requirements of the commonwealth Secretariat which were in accordance with the specifications contained in the Guidelines and the budget on the organization of CHOGM. To fulfill that objective, the government of Uganda through the Ministry of Finance, Planning and Economic Development provided around UGX 300 billion (USD 100 million) for hosting CHOGM (Auditor General, 2008). The Ministry of Local Government was assigned the responsibility of the beautification of the Kampala-Entebbe road corridor. The responsibility was aimed at improving the road corridor reserve and the general ambience of Kampala city and Entebbe municipality. Effective interventions started in June 2007 with various interventions. The total amount of money that was allocated and released to the Ministry of Local Government to cater for the beautification of Kampala amounted to UGX 6,327,568,145 (approximately USD 3 million). Part of this included extra funds for – among others – upgrading waste management services. Other activities in line with beautification of Kampala included among others: installing security lights, repair of roads and pedestrian walkways, working on pavements and drainages, beautification of parks and open spaces, landscaping and greening of the road reserves, removal of kiosks, planting trees and grass, removal of signage and unsightly structures. As already highlighted, SWM was a key component on the beautification of Kampala. In fact KCC received budget support from the National CHOGM Preparatory Fund through the Ministry of Local Government for solid waste management. Contracts worth Uganda shillings 193,964,521 (approximately USD 100.000) were made with four garages for the repair of refuse trucks in an attempt to boost the garbage collection exercise ahead of the CHOGM meeting (Auditor General, 2008). These additional funds were related, but not limited, to: refuse collection from generation and storage points and transportation to the disposal site; implementation of acceptable standards;

provision and maintenance of personnel, vehicles, containers and other equipment for solid waste management service; design and implementation of a billing and revenue collection system (for all categories of clients); ensuring adequate cost recovery and sustainability of the service; publicity, sensitization and marketing of the service; and assistance in enforcement and compliance with the solid waste ordinance. The city's five (5) divisions also received UGX 6,000,000 (approximately USD 3000) per month from June 2007 to December 2007 (Office of the Auditor General,2008). In total about UGX 400 million (USD 200,000) was spent on SWM related services for the CHOGM preparations. This amount was in addition to the KCC annual budget for SWM of around UGX 1.4 billion (USD 600,000) (KCC, 2006). Before CHOGM, neither KCC nor the central government released any money to the districts for solid waste management. KCC (the employer) on behalf of the five Kampala divisions also initiated sealed bids from eligible bidders for the execution of solid waste management services around CHOGM. For these so-called CHOGM contracts, the bidding document was prepared, based on the government of Uganda's Public Procurement and Disposal of Public Assets Act, 2003. The method of procurement was by National Competitive Bidding (NCB). Invitation for bids was open to eligible bidders, from eligible countries. An invitation for bids was advertised in the main national newspapers. According to the Public procurement and Disposal Compliance Check Report (KCC, 2007), the Ministry of Local Government and the Ministry of Works and Transport handled CHOGM procurements in the areas of beautification, roads, drainage, street lighting and toilets, of which solid waste management was a key component. KCC took part in the evaluation process of the solid waste tenders. The companies contracted to manage solid waste collection and transportation in the two investigated divisions were: Nabugabo, TERP Group and ESCOM joint venture in Kampala Central division, and Hilltop Enterprises and NOREMA in Kawempe



division. The providers were directly paid by the Ministry of Local Government for these CHOGM contracts, which ran from June 2007 to November 2007.

As already noted above, as part of the beautification of Kampala, KCC advanced extra funds for fuel and the Ministry of Local Government for repairing of KCC trucks. Fuel, a key ingredient in solid waste management, was sufficiently available during CHOGM to transport garbage to the dump site, while it was often not sufficiently available before CHOGM. After CHOGM, the amount of fuel allocated to KCC refuse trucks again became scarce. On average 990 liters of diesel was monthly allocated for KCC refuse trucks after CHOGM, compared to approximately 4500 liters which was claimed KCC needed, resulting in underutilization of both the trucks and workers.

Efforts were made to involve as many public and private stakeholders as possible in solid waste management around CHOGM. The central and local government worked together harmoniously, unlike before CHOGM. In addition, community-based organizations (CBOs), non-governmental organizations (NGOs) and other private sector organizations were actively involved. A formal contract was negotiated between the Ministry of Local Government and the private sector, through KCC. Several meetings with private sector stakeholders resulted in the formation of the Kampala Solid Waste Management Association, whose objectives were to cooperate with government to improve solid waste management practices like carrying out sensitization and publicity with respect to keeping Kampala clean.

#### **5.4.3 Perceptions of solid waste management practices and environmental effects**

The questionnaire that was administered addressed solid waste management practices and environmental effects before, during and after CHOGM. Six indicators were used, measured by

the perceptions of residents: littering and illegal piles of solid waste, nuisance of solid waste transfer points, smell of solid waste, solid waste collection from households, solid waste collection from enterprises, and street sweeping.

In Table 5.3 A below the perceptions of all respondents in the two Kampala divisions are compared between before and during CHOGM on six solid waste items, using Wilcoxon signed rank test. The results in Table 5.3 A indicate that the median value of the six variables for the period before CHOGM are statistically significantly ( $P < 0.001$ ) different from those during CHOGM. Z is a measure of the magnitude of the effect; the larger Z the larger the difference of the values between 'before' and 'during' CHOGM. Hence, on all variables solid waste management during CHOGM was better than solid waste management before CHOGM, according to the respondents.

We also compared perceptions of solid waste management during CHOGM with solid waste management four months after CHOGM. Table 5.3 B below indicates that the median value of all six variables during CHOGM are statistically significantly ( $p < 0.001$ ) different from those after CHOGM. This means that there was significantly better solid waste collection and less related environmental nuisance during CHOGM, compared to solid waste collection and solid waste nuisance four months after CHOGM. The considerable amount of money and resources advanced to KCC for the cleanup of Kampala, referred to as the "rescue garbage collection operation", did give positive solid waste management and environmental effects during CHOGM.

To analyze solid waste management legacies of CHOGM we compared the solid waste management situation before CHOGM with the solid waste management situation after CHOGM. Without any lasting environmental legacy the situation before and after CHOGM would be similar in terms of perceived solid waste management. The results in Table 5.3 C indicate that the

median value for the six solid waste variables for before and four month after CHOGM are statistically ( $p < 0.001$ ) different. In other words, the state of solid waste management before and four months after CHOGM is statistically different, with better functioning solid waste management and less environmental effects four months after CHOGM than before. This first indication of a solid waste management legacy of the 2007 CHOGM major event is further strengthened by taking a larger time span of one year for investigating post-CHOGM effects (Table 5.3 D). The median values of the six solid waste management variables for the period before CHOGM are statistically significantly ( $p < 0.001$ ) different from those one year after CHOGM. This implies that one year after CHOGM solid waste management was still significantly better than before CHOGM. Or to put it differently: solid waste management improvements achieved during (and because of) CHOGM did become institutionalized to some extent and lasted well beyond this major event.

Table 5.3: Results of Wilcoxon signed rank test for before CHOGM, during CHOGM and after CHOGM

Variables	A		B		C		D	
	Results of Wilcoxon signed rank test for before CHOGM and during CHOGM (1 <sup>st</sup> and 2 <sup>nd</sup> survey)		Results of Wilcoxon signed rank test for during CHOGM and four months after CHOGM (1 <sup>st</sup> and 2 <sup>nd</sup> survey)		Results of Wilcoxon signed rank test comparing before CHOGM with Four month after CHOGM (1 <sup>st</sup> and 2 <sup>nd</sup> survey)		Results of Wilcoxon signed rank test comparing before CHOGM with one year after CHOGM (2 <sup>nd</sup> survey)	
	N	Z	N	Z	N	Z	N	Z
Littering and illegal piles of waste	858	25.264***	860	-22.596***	857	22.198***	409	7.899***
Nuisance from solid waste transfer points	857	24.740***	858	-21.610***	856	22.472***	410	5.377***
Smell of solid waste before privatization	857	24.894***	856	-22.042***	853	21.622***	408	6.849***
Solid waste collection from households	852	18.729***	850	-13.039***	848	15.627***	447	6.006***
Solid waste collection from enterprises	851	17.202***	855	-12.274***	851	14.536***	402	4.102***
Quality of street sweeping	847	16.616***	848	-12.753***	844	13.283***	406	4.305***

\*\*\* All the Z – values were significant at 5% level of significance

#### **5.4.4 Assessment of environmental legacy institutionalization**

Is this environmental legacy fully institutionalized and thus constant over time? In order to measure whether the positive CHOGM effect wears down or stays constant over time the Z values (a measure of the magnitude of the effect) of ‘before CHOGM – four month after CHOGM’ need to be compared with the Z values of ‘before CHOGM – one year after CHOGM’. Table 4 shows that the Z values ‘before CHOGM – one year after CHOGM’ are lower than those of ‘before CHOGM – four month after CHOGM’. Since the Z values here represent the degree of disparity between before and after CHOGM it can be concluded that solid waste management practices four month after CHOGM were better than those one year after CHOGM. The fact that over time Z values are declining for all variables implies some erosion of the CHOGM-effect. Obviously, CHOGM-induced improvements have not been fully institutionalized in solid waste management. However, still, one year after CHOGM, solid waste management was still significantly better than before CHOGM. These findings are consistent with collected solid waste data recorded at the Mpererwe Sanitary Landfill. During January – October 2006 the average monthly amount of solid waste brought to the landfill was 13,817 tonnes. In the 10 months directly preceding CHOGM (January – October 2007) this average monthly amount increased to 18,961 tonnes of solid waste, to decrease to an average monthly amount of 16,685 tonnes of solid waste for the months January – October 2008 (after CHOGM). The amount of solid waste recorded at the Mpererwe Sanitary Landfill increased slightly to an average monthly 17,113 for the months November 2008 – September 2009. It increased further to an average monthly 19,154 for the months of October 2009 – March 2010.

Table 5.4: Comparing the Z values from the Wilcoxon signed rank test ‘for before – four months after CHOGM’ and ‘before CHOGM – one year after CHOGM’ (N=410, 2nd survey)

	Z-values* (2 <sup>nd</sup> survey)	
	Before and four months after CHOGM	Before and one year after CHOGM
Littering & illegal piles of waste	14.059	7.899
Nuisance from solid waste transfer points	12.370	5.377
Smell of solid waste	12.679	6.849
Solid waste collection from households	9.868	6.006
Solid waste collection from enterprises	8.255	4.102
Street sweeping	9.974	4.305

\* all the z-values were significant at 5% level of significance

How to explain this environmental legacy of CHOGM and the watering down of that legacy? In our in-depth interviews we came across three reasons that contribute to an explanation for this legacy. First, the office of the solid waste engineer was institutionalized in all divisions in Kampala to handle the day to day business of solid waste collection. Before CHOGM, solid waste management was handled by health inspectors at the division level and even then, the posts were vacant in most of KCC divisions. The medical department did not give solid waste management much priority due to the urgent and highly demanding health care responsibilities of the divisions (KCC, 2002). The fact that separate solid waste management offices were created formed a good start for institutionalizing solid waste management at the division level, while it was formerly only articulated as such at the city level by KCC. Division solid waste management engineers, for example, began to streamline activities to ensure that CHOGM standards were maintained. The fact that some divisions are copying best practices learnt from CHOGM, such as transparent procurement processes and zoning of divisions, is related to the establishment of the division solid waste management offices. But there is also constant (political) opposition. A case in point is Kawempe division, where a solid waste management committee was established to manage private contractors around and after CHOGM. This effort was frustrated by politicians

engaged with the NOREMA and Hilltop private companies, which both had signed a memorandum of understanding with Kawempe division to collect and transport waste without any competition from other service providers.

Second, relations between KCC and the five divisions have been improving. The evidence here is that KCC supplements the divisions' finances to improve the collection and transportation of garbage, a process that started with CHOGM. After CHOGM, KCC disbursed a sum of 7 – 12 million Uganda shillings (USD 4000 – 6500) per month to the four divisions (except the central division which is perceived to be richer in resources by KCC) for solid waste collection and transportation. Although, money transfer is sometimes delayed, with substantial consequences for solid waste management, this delegation of solid waste management resources and authority to the division works better than the centralized process before CHOGM.

Third, the new equipment and vehicles acquired especially by the private sector contractors in the months leading to CHOGM (in anticipation of money from the National CHOGM Preparatory Fund) enlarged their capacity and improved service, also in areas further away from the city. Compactor trucks, though allegedly disadvantageous, were purchased by NOREMA and Nabugabo Updeal Joint Venture for serving Kawempe division and were still in operation one year after CHOGM. Residents have also noted an improvement in the way garbage is transported to the dump site. KCC vehicles that were not functioning before CHOGM were repaired and this boosted the garbage collection exercise after CHOGM. These material improvements, caused by additional CHOGM budgets, contributed to positive environmental legacies well after CHOGM.

But there were also institutional discontinuities after CHOGM. For instance, the Kampala Solid Waste Management Association, formed just before CHOGM (see above), became inactive four months after CHOGM and never met to put into practice what they had agreed to achieve, according to members of the association. Public and private sector sensitization and publicity

with respect to keeping Kampala clean subsided a bit. And most importantly, the central government provided lower attention and resources to solid waste management after CHOGM. KCC and her divisions has taken full responsibility of solid waste management again with little central government support, quite comparable to the situation before CHOGM. Most of the so-called CHOGM-contracts with private waste collectors were not continued under the same (favorable) conditions after CHOGM.

#### **5.4.4.1 Geographical differentiation of environmental legacies**

As earlier mentioned, the two divisions of Kampala were selected especially due to the geographical differences between the two vis-à-vis the CHOGM location. To examine whether CHOGM impacts on solid waste management in the Central division differed significantly from those in Kawempe division, the Wilcoxon-Mann-Whitney test was used. The results (Table 5.5 A below) show that differences between people's perception of solid waste management between Central division and Kawempe division are only statistically significant before CHOGM. Only for one variable (smell of solid waste) a difference can be noted during CHOGM and one year after CHOGM ( $p < 0.05$ ). This means that significant differences in the status of solid waste management between Central division and Kawempe division existed before CHOGM. But during and up until one year after CHOGM overall significant differences between the two divisions are not observable. This implies that CHOGM had a leveling effect between the two divisions. While originally the differences were big, CHOGM leveled that difference.



#### **5.4.4.2 Impact on geographical distance with respect to CHOGM location**

To determine the impact of geographical distance with respect to CHOGM, divisions are not a very precise categorization. There are areas in Kampala Central that are far away from the city centre (and from the CHOGM events), and there are areas in Kawempe division, such as Makerere University and Wandegeya, that are near the place where CHOGM enrolled. In order to determine more precisely the effect of distance to CHOGM, the respondents of both divisions were re-categorized in those living close to where CHOGM events took place, and those living far away from CHOGM events. Again, a Wilcoxon-Mann-Whitney test was used to compare both categories of respondents. The results in Table 5.5 B below show that for before CHOGM, during CHOGM as well as one year after CHOGM there are statistically significant differences ( $p < 0.05$ ) between people's perception of solid waste management between areas close to the CHOGM event location and areas far away from the CHOGM location. This means that solid waste management differs between areas close to CHOGM and areas far away from CHOGM. However, some striking differences are observed between the three points in time. For example, the Z values before CHOGM are higher than those during CHOGM in all the six variables of waste management. This implies that before CHOGM, there was a large disparity between areas close to CHOGM and areas far away from CHOGM as far as solid waste management is concerned. This disparity substantially diminished during CHOGM. However, one year after CHOGM the disparity is gaining momentum again depicted by the increasing Z-values for all solid waste management variables (except solid waste collection from enterprises). It can also be noted that in some aspects of solid waste management, the disparity has increased to levels higher than it was before CHOGM (e.g. street sweeping). Overall if we compare parishes close to CHOGM with those located far away from CHOGM, the leveling effect of CHOGM seems to fade away one year after CHOGM. According to KCC officials this might be explained by the

fact that – under growing scarcity of government funding – private companies concentrate on areas that are densely populated and rich (those closer to the CHOGM areas). The richer parishes pay more and contractors enjoy economies of scale in densely populated areas, as compared to areas far away from the CHOGM location, which have scattered homesteads.

Table 5.5: Results of the Two-sample Wilcoxon rank sum test depicting the differences in solid waste management between Central division and Kawempe division around CHOGM & also between areas close to and areas far away from CHOGM

Variables	A			B		
	Two-sample Wilcoxon rank sum test depicting the differences in solid waste management between Central division and Kawempe division around CHOGM			Two-sample Wilcoxon rank sum test depicting the differences in solid waste management between areas close to and areas far away from CHOGM		
	Before CHOGM	During CHOGM	One year after CHOGM	Before CHOGM	during CHOGM	One year after CHOGM
<b>Littering and illegal piles of waste</b>	4.031 (0.000)	1.499 (0.134)	1.556 (0.120)	9.488 (0.000)	2.206 (0.027)	4.400 (0.000)
<b>Nuisance from solid waste transfer points</b>	5.113 (0.000)	0.468 (0.640)	1.215 (0.224)	10.011 (0.000)	1.712 (0.087)	7.852 (0.000)
<b>Smell of solid waste before privatization</b>	3.665 (0.000)	3.665 (0.000)	2.350 (0.019)	8.951 (0.000)	2.248 (0.025)	4.841 (0.000)
<b>Solid waste collection from households</b>	5.168 (0.000)	-0.261 (0.794)	2.405 (0.016)	11.510 (0.000)	1.709 (0.000)	12.624 (0.000)
<b>Solid waste collection from enterprises</b>	2.742 (0.006)	-0.560 (0.576)	0.349 (0.727)	9.779 (0.000)	8.325 (0.000)	3.438 (0.000)
<b>Quality of street sweeping</b>	<b>3.849</b> <b>(0.000)</b>	<b>-1.432</b> <b>(0.152)</b>	<b>1.527</b> <b>(0.127)</b>	<b>10.910</b> <b>(0.000)</b>	<b>7.839</b> <b>(0.000)</b>	<b>13.446</b> <b>(0.000)</b>

A - (Z values; p values between brackets; 2<sup>nd</sup> survey, N=410); B - (Z values; p values between brackets; 2<sup>nd</sup> survey, N=410)

It can be concluded that CHOGM, as a major event, had a leveling effect between Kawempe division and the Central division of Kampala, which lasted for at least a year. The leveling effect of CHOGM lasted shorter between areas nearby and areas far away from the CHOGM locations. This suggests that innovations of CHOGM or new standards to some extent spread across Kampala city. This might be explained by the sensitization campaigns through various media during CHOGM. Poorer areas seemed to have learnt how to better manage their garbage, even when KCC and the private collectors do not reach them. From interviews conducted and through observations, it was revealed that most people living in areas far away from the CHOGM locations have learnt to burn the garbage and some have now their own 'incinerators'. In places like Katanga in Kawempe division, near Makerere University, the community started to become self-organized in cleaning the area and it appears to be working well. This community initiative started immediately after CHOGM and remained very popular according to interviews with the local and opinion leaders in the area. It is also worth noting that the new equipment of private collectors enabled them to reach areas that were formerly poorly or not served and that transportation capacity was still large one year after CHOGM. For example private contractors, notably NOREMA and Nabugabo Updeal Joint venture, acquired compactors trucks that are able to load more garbage than the tipper trucks that they were previously using.

## **5.5 Conclusions**

Although CHOGM was not a mega-event (in terms of massive infrastructure construction, masses of people attending, and intense global media coverage), for Uganda and Kampala it was a major event with international visibility. Hence, significant efforts were made by the Uganda and Kampala authorities to invest in the city in the road towards CHOGM 2007. Solid waste management was one of the main areas that received additional resources and

faced institutional changes. This resulted in considerable improvements in solid waste management practices and effects during CHOGM, as could be expected. But there are still clear positive solid waste management legacies one year after hosting a major event like CHOGM, related to among others new institutional arrangements and material improvements.

As solid waste management often differs throughout metropolitan cities in developing countries and major events are not equally spread over these cities one can expect that environmental legacies are unequally distributed over the city. Following CHOGM, we found that there are no longer significant different perceptions in solid waste management between Central and Kawempe divisions. Central division and Kawempe division are perceived as equally clean (or equally dirty), suggesting that solid waste management innovations are gradually spreading across divisions. In a more fine-tuned comparison between citizens living close to places where the CHOGM events took place and locations more peripheral to CHOGM, the distinction in solid waste management started to fade somewhat during CHOGM, but there are signs of a reemerging distinction, indicating the erosion of leveling effects.

However, this does not dispute the fact that, one year after CHOGM, solid waste management was perceived to be still significantly better than before CHOGM. Hosting cities – also those in developing countries – can secure positive future environmental effects of major events, at least up until one year after the event concludes. What happens after one year is up for further study. One could speculate that at least some of the institutional innovations that were installed through CHOGM will continue to contribute to positive environmental legacies. But compared to mega-events such as the 2010 soccer World Cup, major events as CHOGM lack major infrastructural works and a truly global audience, limiting its environmental legacies in the further future.



## **CHAPTER 6: DISCUSSIONS AND CONCLUSIONS**

## **6.1 Introduction**

This study has been conducted in the context of the PROVIDE programme that addresses the need for sustainable and accessible infrastructures for sanitation and solid wastes in East Africa. In line with the PROVIDE division of tasks, this thesis investigates public and private provisioning of solid waste management in Kampala.

As already noted in the introduction to this thesis, a growing number of cities in Africa face the challenge to provide their populations with water supply, sanitation and solid waste services. Improving urban environmental infrastructure is therefore high on the development agenda. Uganda is among the countries that have focused on improving urban environmental infrastructure in an attempt to realize the millennium development goals (MDGs). Solid waste management (the focus of this study) has undergone major changes since the late 1990s in Kampala, as part of an attempt to modernize urban environmental infrastructure to improve on the quality of life of urban residents. Before the changes, Kampala enjoyed the urban administration's monopolistic statutory requirement of collection, storage and disposal of waste. But faced with a growing population in the city coupled with inadequate resources, KCC could no longer manage the growing volume of waste produced. A case in point was the inadequate supply of communal containers (skips) and trucks, that led to accumulation and overflowing of garbage as well as emergence of illegal dumping sites.

Realizing the daunting challenge of keeping the city free of accumulating and rotting garbage, KCC embarked on a policy reform that led to the enactment of the solid waste management ordinance (2000) which ushered in formal private involvement in collection and transportation of wastes to the landfill. But even with privatization of solid waste management, the public sector has remained in the business of collecting garbage and sometimes released big sums of money in the name of beautification of Kampala, when major events took place in the city. Together, these initiatives and dynamics in SWM justify the



relevance of this thesis. The performance of these reform strategies and interventions and of the various actors in addressing the challenge of solid waste management in Kampala is worth to be examined. More specifically, the study addressed the following four research questions:

- How do the operations and performance of the public sector in the provision of solid waste collection in Kampala compare to those of the private sector?
- What is the impact of the removal of solid waste communal containers (skips) in Kampala on households and on private sector provision of services?
- How does the informal sector co-exist with the formal (public and private) sector in solid waste collection in Kampala?
- What are the environmental legacies of Kampala hosting CHOGM in relation to solid waste management?

The organization of SWM revolves around the achievement of efficiency and effectiveness. The major reason why private sector participation was introduced in SWM was to improve its efficiency and effectiveness. Several scholars in the field of urban governance have consequently studied SWM in view of ascertaining whether the involvement of the private sector would indeed lead to increased efficiency (e.g. Ndadiko, 2010) with the results indicating that private involvement in local service delivery may not imply the attainment of superior levels of efficiency. Others, such as Baud et al., (2004), have broadened the scope of service effectiveness analysis by including issues like equality, coverage, affordability and environmental concerns. Or they have explored and found out the role of different actors in SWM and how they relate to each other (Karanja, 2005; Tukahirwa, 2011). Or have questioned the sustainability of private sector in SWM (Kassim, 2006), assessed the institutional arrangements in urban centres (Majale, 2011) or have opened up the black box at household level and found out the role of households in SWM (Oberlin, 2011). The framework in this thesis centred around examining the effectiveness of solid waste

management as measured through service quality and customer satisfaction, which has not been researched in any detail in previous studies.

This thesis contributes in four ways to the international literature and knowledge on solid waste management in developing countries. First, survey data showing – for various types of household – the roles that services of public and private providers, including informal providers play, the exact services they provide and the fees charged, are provided. Second, a choice based approach to explaining household decisions as to the type of provider, with an application to evaluating the collection technologies that characterize public and private collection systems is introduced and quantified in this study. Third, the study contributes to a theory on the dynamics of coexisting public and private collection systems, including the informal providers. Specifically, new evidence has been generated through this study on how to understand the informal sector in solid waste collection by analysing the reasons for the existence of informal collectors in solid waste collection and how they co-exist with the formal sector. Lastly, data showing how SWC services have changed over time, and in particular how they responded to a major event like CHOGM are provided. In the process, the study adds to the emerging academic discipline of mega events and their legacies, by presenting evidence of the environmental (in particular solid waste management) legacies of Kampala when hosting CHOGM.

In the remainder of the chapter, the main findings and policy conclusions are discussed. In section 6.2 we summarize and discuss the answers to the above research questions in the context of solid waste management literature. Section 6.3 discusses the policy implications and governance relevance of the findings. In section 6.4 some of the limitations of the study are presented and areas for further study are identified.

## **6.2 Synthesis of the main study findings**

A major discussion in the literature on urban services is related to the effectiveness of public versus private provisioning of these service. This discussion extends also to the field of solid waste collection. Among the key difficulties in measuring effectiveness in solid waste collection in developing countries is the lack of data on waste being collected, households being served, fees being charged and environmental effects being imposed. One of the main strategies followed in this study to deal with this lack of official waste handling data, was to measure household satisfaction through questionnaires. Household data on satisfaction with solid waste services, as obtained in this study, suggest that the private sector is more effective than the public sector in solid waste collection. Private sector companies provide services like container provision and they work according to timely and fixed collection time tables. Often such findings of better performance of private sector in service provisioning is attributed to competition, which encourages service providers to adopt customer friendly strategies that are also cost effective. These findings are in agreement with the WDR (2004) assertion that the strength of the private sector lies in its customer responsiveness and innovativeness. Contrary to popular perception, this study found that fees charged by private companies are moderate. In addition, public sector clients in Kampala are charged fees even when the service is supposed to be free, pointing to corrupt dealings and lack of transparency in solid waste governance. Generally all clients of the private and public sector solid waste collection services indicate that the situation of SWM has improved after the involvement of the private sector. This finding is similar to other studies carried out immediately after the private sector became involved in SWM (See Goloba-Mutebi, 2002; Kassim, 2006). However, there is still concern about the situation of SWM, as evidenced by illegal dumping of waste and lack of seriousness on the part of the local authority to enforce laws and regulate the SWM sector. This is similar to the observations by Oduro-Kwateng (2011) that weak regulatory practices

affect the performance of SWM. In conclusion, the findings of this study on the comparison of the operations and effectiveness of public and private sector provision of SWM services generates the much needed data to inform future interventions in SWM practices for Kampala and other cities with similar conditions. It suggests a formal public-private partnership where the public and private sector can work together, with the public sector dominating poor and marginalized areas and the private sector dominating the richer ones.

One of the measures in the privatization of solid waste management in Kampala was the removal of communal containers (skips), which played a major role in solid waste collection practices before privatization. The skips were important not only to households and formal public waste collection providers but also to informal collectors. This study assessed the impact of the removal of solid waste communal containers (skips) on households perceptions and on the performance of private providers of solid waste management services in Kampala. The removal of skips resulted in an increased use of commercial services in solid waste collection, mainly performed by the private sector. The respondents in the surveys indicated a strong association of skips with lack of cleanliness, similar to findings of other studies (Agunwamba, 1998; Achankeng, 2004; Oberlin, 2011). The lack of satisfaction with the skip system (and appreciation of the current system) was most notably recorded in high-income areas. In contrast, in poor areas the skips were appreciated, despite concern about the unreliable collection schedules of skips by KCC. Our findings indicate that informal waste collectors collect waste from households to transport it to the transfer stations. These informal waste collectors are therefore involved at the very first point of collection of waste from households. This resembles findings of other studies (for example Oberlin, 2011) that show that when skips are present many households pay people (informal workers) to take their waste to collective collection points, including these skips. The advent of the (formal) private sector and the removal of the skips by KCC to facilitate private sector development in solid

waste management led to a decrease in the demand for informal services. The evaluation by households of the waste disposal services before and after the removal of skips shows that richer households are clearly pleased with the removal, but that poorer households, particularly those with low levels of education, do not feel better served than they were before. Perhaps that is why poor households feel the skips should return (c.f. Oberlin, 2011). The return of the skip might prevent these households and informal collectors from resorting to other, less sustainable and less healthy methods of getting rid of their wastes (illegal dumping). By the same token, the return of the skip might jeopardize the development of private solid waste collection, which seems to have contributed to higher levels of satisfaction with solid waste collection services, especially in richer areas. Any return of skips need to take these contrasting piece of evidence into account, for instance by including geographical specificities in a return of the skip (e.g. only in some areas, and not city-wide). The findings of this study acknowledge the differences between low income neighbourhoods and high income neighbourhoods and therefore the need to devise different strategies to enable all areas to be served properly.

The informal sector did play a role in solid waste collection arrangements where skips prevail. But as the informal sector has a much wider reach in solid waste collection, this study paid ample attention to the existence of the informal collectors and how they co-exist with the formal providers in solid waste services in Kampala. This proved especially relevant as limited systematic knowledge is available on the informal sector in solid waste collection. Informal collectors distinguish themselves from the formal waste collectors by providing ‘first-line’ services only, taking garbage away from households, but not taking this all the way to the landfill. The informal sector avoids regulation more than large formalized private firms and public organizations. Regardless of these differences, the informal sector is structurally linked to the formal public sector and it provides a cheaper, but lower rated level of service

provisioning, and especially (but certainly not exclusively) to poorer households. The fairly large market share of informal collectors relative to the formal private sector is related to their competitiveness: their collection fees are substantially lower than private sector fees. Yet, the incomes that the informal collectors derive from their business is comparable to what they could earn in other occupations. The informal providers are able to ask lower fees because they provide less packaging material, have little equipment (and thus investments), and do not carry waste very far, thus reducing transport costs and time. In fact, informal service providers exploit the lapse in the enforcement of environmental regulation. The persistence of the informal collectors can be attributed to the poor enforcement of regulations by city officials, but also by the returns to the providers of the service and the fact that they are cheaper, often quite reliable, and they fill a niche for some households, where public and private service providers do not serve some neighborhoods. The persistence of the informal collectors is further attributed to the incomes they get from the business which is comparable to others who work in the similar business (both formal private and public). The findings of this study contribute to the debates on the desirability and relevance of the informal sector to SWM and on urban development policies (Nzeadibe et al., 2010) in developing countries.

Most of the studies in solid waste management in developing countries investigate solid waste management as a continuous activity, basically applying a comparative static framework. In this study, attention was also paid to sudden disruptions and the effects these have on levels of service provision in later periods. The Commonwealth Heads of Government Meeting (CHOGM), which took place in Kampala in 2007, is such a major one-time event that de-routinized solid waste collection practices and structures and it was taken as a case study to investigate whether such events might have positive environmental legacies (in our case in terms of better solid waste collection). Although CHOGM was not a mega-event (in terms of huge infrastructure construction, masses of people attending the event

globally, and intense global media coverage), for Uganda and Kampala it was a significant event with international visibility. Hence, significant efforts were made by the Uganda and Kampala authorities to invest in the city on the road towards CHOGM 2007. Solid waste management was one of the main areas that received additional resources and faced institutional changes. This resulted in considerable improvements in solid waste management practices during CHOGM, as could be expected. In investigating the legacies and effects after CHOGM interesting results could be noted. One year after CHOGM, solid waste management was perceived to be still significantly better than before CHOGM. This is attributed to the institutionalization of good practices and innovations in SWM after Kampala hosting CHOGM, such as streamlining the office of the solid waste engineer, improving the relations between central government and the local government (KCC), and the new equipment acquired by both public and private sector. In a fine-tuned comparison between citizens living close to places where the CHOGM events took place and locations more peripheral to CHOGM, it was found that this distinction in solid waste management started to fade somewhat during CHOGM, but there were signs of a reemerging distinction, indicating the erosion of leveling effect brought about by CHOGM. Generally, the findings in chapter five disprove the arguments of skeptics of hosting mega/major events who argue that such events are often seen as no more than public relations ventures far removed from the realities of urban problems and challenges (Hiller et al., 2000; Pillay et al., 2008).

Altogether, this research has shown the dynamics involved in the public and private provisioning of solid waste services. The reform initiatives introduced have had an impact on the general organization of SWM. What clearly comes out of this study are the challenges faced in public and private provisioning of solid waste services. It is also clear that certain policies like privatization if not well thought out could end up being not helpful to some sections of the population especially the marginalized ones.

This study is placed in the wider unending debate on public and private provisioning of services. Both qualitative and quantitative methods of data collection and analysis were used. These were data that could be drawn from household surveys while other data came from interviews and observation. Combining both methods allowed the study to benefit from the flexibility of qualitative methods to do an intensive examination of the cases as well as from the advantage of generalizing the findings to other urban authorities in East Africa. Our results contribute to the partnership paradigms and the knowledge base of Modernized Mixtures Approach (MMA). This research proves that the modernized Mixtures Approach is viable to help identify and design urban environmental infrastructural solutions that are adapted to specific local conditions.

### **6.3 Policy implications**

This study is part of and contributes to the academic research programme (PROVIDE), that has examined alternative approaches to the challenges developing countries face in the fields of sanitation and SWM. The alternative approaches are brought together under the framework of the Modernized Mixtures Approach (MMA). The MMA aims to combine existing socio-infrastructural paradigms in both the developed and the developing world so that hybrid solutions are constituted which better fit the specific local situation in developing countries, but at the same time perform superior compared to the current paradigms. In contributing to this program, this research has looked into issues of public and private provision of solid waste collection services and the performance of policies aimed at addressing solid waste management challenges in Kampala. In this light, strategies can be proposed for long term sustainability of reformed SWM which make combination of existing public systems, private systems, informal systems, or NGO-based systems. These combinations, or hybrids are relevant for developing cities that face the same conditions like Kampala.



Chapter 2, 3 and to some extent 4 contribute to the on-going policy debate on how the poor can be served under the changing nature of service provision in urban areas where the private sector is dominant. To produce better SWM practices, the private sector and public sector have to collaborate. The results of the study indicate it is possible and even beneficial for the public sector and the private sector to work alongside each other in the urban provision of SWM services. There is need for institutional reforms to strengthen the relationship of the public sector and the private sector. The challenge is how to maintain cost recovery within the system (so that little public money is spent on solid waste collection) among the poor and the middle income without leading them to opt out of the services with disastrous consequences for the environment. Tailoring private sector participation to specific local conditions and groups, deepening efforts to promote competition so that collection fees are lowered, and introducing mechanisms to ensure that low income groups have access to affordable solid waste collection services may partly be the solution to the problems in urban provisioning of services in low income countries. In this regard, these reforms could take advantage of the strengths of the private sector as identified by this study (innovation and customer responsiveness) and the strength of the public sector with its ability to address equity and market failure (WDR, 2004).

Next to hybrid arrangements or collaborations between public and private sectors in solid waste collection and transportation, collaboration or hybrid arrangements between formal and informal services can be beneficial. The findings from chapter 4 underscores the importance of urban governments withdrawing completely from the primary collection service and putting containers in locations to facilitate the work of informal house-to-house waste collectors. This could also help the poor as they appear uncomfortable with the present system of door-to-door collection arrangement, as chapter 3 reveals. This could be based on the *de facto* informal arrangement between the informal waste collectors and the urban

authorities. Government officials could adopt this ad hoc and informal arrangement for three reasons. Firstly, it is possible to reduce costs of waste collection operations by abandoning the door-to-door collection service by the public sector and concentrate only on transporting the containers to the final dumping site. Secondly, informal waste collectors are capable of collecting more waste from households than the municipal trucks operators using their simple technologies. They have better physical access to household in the unplanned areas and slums. Thirdly, it is a possibility to create job opportunities for individuals who are engaged in solid waste collection on their own initiative. For these reasons it may trigger an increase in the number of informal solid waste collecting enterprises offering environmentally friendly services. Consequently, an appropriate mix of public and informal private services could be useful especially if public provisions could be strengthened for the second stage of waste collection (secondary collection points) among the low income communities, to enable them to dispose of garbage cheaply and possibly eliminate illegal dump sites. This may offer environmental benefits to the community. This kind of modernized mixtures, where large scale and highly technological solid waste services, typical of public and formal private sector, mixes with small scale technological solutions of the informal sector, could be a solution to the solid waste problem facing many African cities, notably for the poor. Such systems could improve accessibility and could be ecologically sustainable, improving environmental performance of urban infrastructure in the long run and thus help in achieving the Millennium Development Goals (MDGs). This recommendation is akin to what is alluded to in the WDR (2004), which calls for recognizing ‘independent service providers’ and enabling them to partner with formal public and private operators. It is also important to ensure that the regulatory framework enables contracting and working arrangements with informal collectors.

The findings from chapter five underscore the importance of hosting major events in cities of the developing world. The evidence of SWM improvement at least for one year points to a possibility of a sustainable improvement in the quality of life if there is massive investment of infrastructure in preparation to host major events. The key challenge is the institutionalization of environmental upgrading activities and strategies so they last well beyond the event. City governments should not only focus on hosting events, but also pay much more attention to the post event legacies and put in place mechanisms to ensure that major event benefits are sustained.

Generally, the study shows that the private sector is becoming dominant. Private sector dominancy potentially gives responsibilities to the public sector. City authorities responsible should actively play their major roles and work hand in hand with their partners (the private sector). Strengthening the public sector's capacity to safeguard standards and protect the public from the negative consequences of private provision of solid waste services is vital. The environmental standards, legislation and contractual obligation should be enforced and upheld.

#### **6.4 Limitations and suggestions for further research**

This findings of this study are based mainly on household surveys and information from the demand side. For example, in chapter two we only compared public and private provision of solid waste collection services from the household perspective. We could not measure service efficiency for public and private sector in SWM due to lack of data from the supply side (providers). The co-existence of public and private providers in an organized framework provides opportunity for such a study. Future studies could take time to get data to measure the efficiency of public and private actors in SWM because empirical research on the

relative merits is still inconclusive. The conclusions from such a study could ignite debate on policy changes especially in developing countries.

Based on our analysis in chapter four, we suggest further in-depth analyses (perhaps a longitudinal study) should be done to document and understand the activities of the informal sector in solid waste collection by conducting a large survey targeting the informal collectors to estimate the size of the informal sector and the socio-economic and demographic characteristics. It is also important to determine the informal sector's level of flexibility in the labour market and establish whether there is a substantial movement of labour between formal and informal sectors in solid waste collection. Further, this work is focused on a single city, yet in related studies (Oberlin, 2011) within the PROVIDE program, informal waste collectors were found to be existing and active in other cities, like Dar-es-salaam. Future research could contribute to multi-city comparative studies on this phenomenon to be able to explain similarities and variations across space and to make definitive statements about the character and importance of informal waste sector.

In chapter five, we analyse the environmental legacies as a result of hosting a major event (CHOGM) that led the central government to inject a substantial amount of money towards SWM improvements. It is important for future research to look into a question of sustainable ways of financing solid waste management services in developing cities like Kampala.

Lastly, new changes in the administration of Kampala have been effected with the transformation of Kampala City Council to a Kampala Capital City Authority where the central government will be more visible in the affairs of management of the city as opposed to the previous system where Kampala was operating like any other local government. The impact of this change in relation to service delivery needs to be studied in comparison with the way the old Kampala City Council was handling the state of affairs in SWM.

For long term solutions of waste management problems in cities like Kampala, strategies need to look beyond collection of waste. Waste management is much more than simple collection and dumping or destruction of waste. It includes waste minimization, waste separation, transport, disposal, destruction, and recycling. It includes also the actors, people and organizations involved in these processes. Yet to many urban managers and politicians, waste management still only implies collection and disposal or dumping of waste. For example, the continued production of cheap and readily available Low Density Polythene (LDP) material (sometimes given out free of charge by shop keepers) and the rural - urban influx of unprocessed food along with non-consumable materials such as banana stems, maize stalks, non-edible vegetable stems call for new strategies by municipal authorities to minimize the production of waste. Future studies could examine the different policies required to promote waste reduction, recycling and reuse within or outside households for sustainable development.

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## **Summary**

Following the largely unimpressive performance of the public sector in the provision of solid waste services in many cities of African countries, the search for alternative strategies for addressing this challenge became inevitable. One of the strategies is the involvement of the private sector in solid waste management. As of today, the contribution by the private sector to solid waste service provision is now a common phenomenon in most cities in developing countries. However, SWM cannot be easily left to be handled by the private sector alone because it has strong external effects and markets may not achieve socially acceptable levels of equity. Therefore, public intervention is necessary for example in form of regulation of the private sector. Public intervention has sometimes involved governments allocating huge sums of money for beautification of cities especially when major events are hosted in those cities with upgrading of waste management services given a special consideration. Even without government involvement, a proportion of people who make a living from activities in the informal sector have played a big role in solid waste management in many cities in the developing world.

Despite the active involvement of many actors in SWM and the policies and initiatives introduced and implemented in recent decades in East Africa, many urban centres are still facing major problems. Even where successes have been registered, the question is whether that success can be sustained for a long time. This study addresses the situation of household waste collection in Kampala. It is one of the key factors in ensuring the health and safety of the population. This study is part of the Partnerships for Research on Viable Environmental Infrastructure in East Africa (PROVIDE), towards sustainable waste water and solid waste infrastructures in East African cities. It contributes to the PROVIDE project by addressing issues of governance and management of solid waste in Kampala. The study's contribution is a deeper understanding of the various actors in solid waste collection and the performance of

the interventions and policies so far implemented in the solid waste management sector in Kampala. Specifically, the study compares the operations and assesses the effectiveness of public and private provision of solid waste collection in Kampala; examines the effect of removal of communal containers popularly known as ‘skips’ in Kampala; examines how the informal sector co-exists with the formal sector in solid waste collection in Kampala and lastly examines the environmental legacies related to solid waste management from hosting the 2007 CHOGM event in Uganda.

Chapter two compares the operations and discusses the effectiveness of public and private sector provision of solid waste collection in Kampala, Uganda. Household data suggest that the private sector is more effective than the public sector. Private sector companies provide services like container provision and providing timely and fixed collection time tables. Contrary to popular perception, fees charged by private companies are moderate. Public sector clients are charged fees even when the service is supposed to be free. Clients of private sector providers are more satisfied than those of public sector providers. It is however, revealed that while public sector serve mainly the low incomes, the private sector serves mainly the rich. In spite of these notable differences, clients of both public and private sector perceive the problem of solid waste management (SWM) in Kampala to be very serious. The effectiveness of public and private sector operations in solid waste collection in Kampala is hampered by corruption and lack of transparency.

Chapter three examines the impact of the removal of communal containers (skips) in Kampala. From the analysis related to the choices made and the perceptions after most of the skips were removed, the major alternative to skips was the use of the commercial services, mainly private sector’s services. When asked to rate the skips system, the respondents in the surveys indicated a strong association of skips with lack of cleanliness. The lack of satisfaction with the skip system (and appreciation of the current system) was most notably

recorded in high-income areas. On average the present system was much better evaluated. We found that the evaluation of skips is negatively affected by not only the income level of the neighbourhood but also the household income and education level. In addition, we found a weak positive effect of the current fees paid. The effects of income are strong enough to render the evaluation of the skips system equal, if not superior to the current system for the households with lower income and education and outside the rich areas. The removal of many of the skips not only induced the former skip-users to switch to commercial services, but also enabled many non-users of skips to avail of these services. The lowest benefits are derived from mere dumping and many households have chosen to abandon this practice in exchange for commercial solid waste collection services, typically much more expensive. Formerly many households paid people (informal workers) to take their waste to collection points, including the skips. These informal workers continued to do so, though some shifted to using commercial services especially (formal) private sector. The advent of the (formal) private sector thus led to a decrease of the demand for informal services. The evaluation by households of the waste disposal services before and after the removal of skips shows that richer households are clearly pleased with the removal, but that poorer households, particularly those with low levels of education do not feel better served than they were before.

Chapter four addresses the co-existence of formal and informal providers in solid waste collection in Kampala. Study findings show that the informal collectors distinguish themselves from the formal waste collectors by providing 'first-line' services only, taking garbage away from households, but not taking this all the way to the dumpsite. They avoid regulation more than large firms. As the opportunities for restricting themselves to this stage are typically enhanced by KCC that offers (free-access) container services, informal collectors can be seen as structurally linked to the formal public sector. And the informal providers provide a cheaper, but lower rated level of service, and more often (but certainly not

exclusively) to poorer households. The fairly large market shares of informal collectors can be explained by their competitiveness vis-à-vis the formal private sector: their fees are substantially lower than private sector fees. The informal collectors can do so as they provide less packaging material, have little equipment, and do not carry waste far. In fact they exploit the lapse in enforcement of environmental regulation. Their continued role next to public service provision is explained by them filling a niche in taking garbage from the households to collection points, while earning incomes at par with alternative occupations.

Chapter five examines the environmental legacies of major events in cities of the developing world. The Commonwealth Heads of Government Meeting (CHOGM) in Kampala is taken as a case study. Although CHOGM was not a mega-event (in terms of infrastructure construction, masses of people attending, and intense global media coverage), for Uganda and Kampala it was a major event with international visibility. Hence, significant efforts were made by the Uganda and Kampala authorities to invest in the city in the road towards CHOGM 2007. Solid waste management was one of the main areas that received additional resources and faced institutional changes. This resulted in considerable improvements in solid waste management practices during CHOGM, as could be expected. As solid waste management often differs throughout metropolitan cities in developing countries and major events are not equally spread over these cities one can expect that environmental legacies are unequally distributed over the city. Following CHOGM, we found that there are no longer significant different perceptions in solid waste management between Central and Kawempe divisions. Central division and Kawempe division are perceived as equally clean (or equally dirty), suggesting that solid waste management innovations are gradually spreading across divisions. In a more fine-tuned comparison between citizens living close to places where the CHOGM events took place and locations more peripheral to CHOGM, the distinction in solid waste management started to fade somewhat during

CHOGM, but there are signs of a reemerging distinction, indicating the erosion of leveling effects. However, this does not dispute the fact that, one year after CHOGM, solid waste management was perceived to be still significantly better than before CHOGM.

Generally, this research has shown the dynamics involved in the public and private provisioning of solid waste services. The reform initiatives introduced have had an impact on the general organization of SWM. What clearly comes out of this study are the challenges faced in public and private provisioning of solid waste services. It is also clear that certain policies like privatization if not well thought out could end up being not helpful to some sections of the population especially the marginalized ones. Finally, in agreement with the modernized mixtures approach, we can derive the conclusion that SWM initiatives and reforms are likely to have a positive impact if all actors and stakeholders are involved. The mixture of actors and strategies are required for solid waste management to improve for instance an appropriate mix of public and private service (formal and informal).

## **Samenvatting**

Na weinig indrukwekkend prestaties van de publieke sector inzake afvalverwerking in veel Afrikaanse steden, werd gezocht naar alternatieve strategieën ervoor. Een van de strategieën is het betrekken van de particuliere sector bij de afvalverwerking. Tegenwoordig is de particuliere sector een normale partner in die dienstverlening in de meeste steden in ontwikkelingslanden. Afvalverwerking kan echter niet zonder meer worden overgelaten aan de particuliere sector. Het heeft sterke externe effecten en marktwerking levert doorgaans niet het sociaal aanvaardbare niveau van gelijkheid van toegang tot zulke diensten. Overheidsinterventie is daarom gewenst, bijvoorbeeld in de vorm van regulering van die marktwerking en de particuliere sector. Dergelijke interventie heeft er soms uit bestaan dat de regering enorme bedragen besteedde ter verfraaiing van steden, vooral wanneer belangrijke evenementen in die steden werden gehouden. Hierbij kreeg het ophalen van afval even bijzondere aandacht. Maar zonder de betrokkenheid van de overheid, is een deel van de bevolking in de informele sector van veel steden in ontwikkelingslanden toch al actief in het ophalen en afvoeren van afval.

Ondanks de actieve betrokkenheid van vele partijen bij de afvalverwerking en ondanks de initiatieven die zijn genomen in de afgelopen decennia, hebben veel stedelijke centra in Oost-Afrika nog steeds grote problemen. En waar successen zijn geboekt, is het maar de vraag of dat succes kan worden volgehouden. Deze studie richt zich op het ophalen van huishoudelijke afval in Kampala. Het is een van de belangrijkste factoren voor de gezondheid en de veiligheid van de bevolking. Deze studie is onderdeel van de Partnership for Research on Viable Environmental Infrastructure in East Africa (PROVIDE), dat mikt op duurzame infrastructuur voor afvalwater en afvalstoffen in Oost-Afrikaanse steden. De bijdrage van dit proefschrift ligt op het gebied van bestuur en beheer van afvalverwerking in Kampala. Het mikt op een beter begrip van de diverse actoren in de afvalinzameling en het nut van

interventies en het beleid voor deze sector in Kampala. In het bijzonder worden in de studie de activiteiten en de doeltreffendheid van openbare en particuliere afvalinzameling in Kampala vergeleken; wordt het effect van de verwijdering van communale containers, in de volksmond bekend als ‘skips’, onderzocht ; en bezien hoe de informele sector kan samengaan met de formele sector bij de afvalinzameling in Kampala en tot slot wordt onderzocht wat het Oegandese gastheerschap van CHOGM in 2007 heeft betekend voor het milieu in Kampala, in het bijzonder de afvalverwerking.

Hoofdstuk twee vergelijkt de activiteiten en bespreekt de doeltreffendheid van publieke en private dienstverlening inzake afvalinzameling in Kampala. Enquêtegegevens van huishoudens suggereren dat de particuliere sector effectiever is dan de publieke sector. Particuliere sector bedrijven bieden extra service, zoals het verschaffen van afvalcontainers en het aanhouden van vaste ophaaltijden. In strijd met de gangbare opinie, zijn de tarieven van particuliere bedrijven gematigd. Klanten van de publieke sector worden om vergoedingen gevraagd ook al wordt de service verondersteld gratis te zijn. Klanten van particuliere aanbieders zijn meer tevreden dan die van publieke aanbieders. Er wordt echter duidelijk gemaakt dat waar de publieke sector voornamelijk de lage inkomens bedient, de particuliere sector voornamelijk de rijken als klant heeft. In weerwil van deze opmerkelijke verschillen zien de klanten van zowel de publieke als de particuliere sector het huisvuil als een ernstig probleem in Kampala. De doeltreffendheid van de activiteiten van de publieke en private sector inzake afvalinzameling wordt beperkt door corruptie en gebrek aan transparantie.

Hoofdstuk drie onderzoekt de impact van het weghalen van gemeenschappelijke containers (skips) in Kampala. Uit de analyse van de keuzes en de percepties van huishoudens na de verwijdering van de meeste skips, kwam naar voren dat het voornaamste alternatief voor hen was om gebruik te maken van commerciële diensten, voornamelijk van de particuliere sector. Gevraagd het skip-systeem te beoordelen, gaven de respondenten in de



enquêtes aan skips in sterke mate te associëren met gebrek aan reinheid. Een geringe tevredenheid met het skip-systeem (en waardering voor het huidige systeem) werd met name aangetroffen in gebieden met een hoog inkomen. Het huidige systeem werd gemiddeld veel beter gewaardeerd. We vonden dat de waardering van skips niet alleen negatief werd beïnvloed door het inkomensniveau van de buurt, maar ook door inkomens- en opleidingsniveau van het huishouden. Bovendien vonden we een zwak positief effect van de tarieven die nu werden betaald. De effecten van inkomen zijn sterk genoeg om de waardering van skips gelijk te maken aan die van het huidige systeem, zo niet hoger, voor de huishoudens met lagere inkomens en opleiding en woonachtig buiten de rijke gebieden. De verwijdering van veel van de skips ging niet alleen gepaard met overschakeling naar gebruik van commerciële diensten, maar stelde ook veel niet-gebruikers van skips hiertoe in staat. De laagste waardering wordt gegeven aan louter dumping en vele huishoudens hebben besloten deze praktijk te verruilen voor commerciële afvalinzameling, hoewel meestal aanzienlijk duurder. Voorheen betaalden vele huishoudens mensen (informele dienstverleners) om hun afval naar inzamelpunten te brengen, zoals naar de skips. Deze informele werkers bleven dit doen na verwijdering van de skips, hoewel sommigen overstapten naar met name de (formele) particuliere sector. De komst van de (formele) particuliere sector heeft dus geleid tot een daling van de vraag naar informele diensten. De beoordeling door de huishoudens van de ophaaldiensten vóór en na verwijdering van de skips laat zien, dat rijkere huishoudens duidelijk tevreden waren over de verwijdering, maar dat armere huishoudens, met name die met lage opleidingsniveaus, zich niet beter bediend voelden dan voorheen.

Hoofdstuk vier gaat in op de co-existentie van formele en informele aanbieders van huisvuilophaaldiensten in Kampala. De bevindingen tonen aan dat de informele inzamelaars zich van de formele bedrijven onderscheiden door het verstrekken van 'eerstelijns-diensten', waarbij het vuilnis weliswaar van huishoudens wordt weggebracht, maar niet helemaal naar

de vuilstort. Zij negeren de verordeningen die dit verbieden vaker dan grote ondernemingen. De mogelijkheden om zich tot dit eerstelijnsdeel van afvalverwerking te beperken verbeteren meestal wanneer KCC een (gratis) containerservice aanbiedt, en informele inzamelaars kunnen aldus worden gezien als structureel verbonden met de formele publieke sector. Deze informele dienstverleners bieden een goedkoper, maar lager gewaardeerd niveau van service, en doen dit vaker (maar zeker niet uitsluitend) aan armere huishoudens. Het vrij grote marktaandeel van informele inzamelaars kan worden toegeschreven aan hun concurrentievermogen ten opzichte van de formele particuliere sector: hun tarieven zijn aanzienlijk lager dan die van de particuliere sector. De informele inzamelaars kunnen dit doen aangezien zij minder verpakkingsmiddelen (afvalzakken of -emmers) aanbieden, zelf weinig uitrusting hebben, en het afval niet ver weg brengen. Zij gedijen in feite bij het niet handhaven van de milieuwetgeving. Hun structurele rol naast de publieke dienstverlening valt te zien als het innemen van een niche door het vuilnis van de huishoudens naar de inzamelpunten te brengen, en tegen een inkomen dat op vergelijkbaar is met alternatieve banen.

Hoofdstuk vijf onderzoekt de milieu-erfenis van grote evenementen in steden van de derde wereld. De vergadering van de regeringsleiders van het Gemenebest (CHOGM) in Kampala is als een casestudie genomen. Hoewel CHOGM niet een mega-evenement was in termen van infrastructuur, mensenmassa's, en mediabelangstelling, was het voor Oeganda en Kampala een belangrijke gebeurtenis met internationale zichtbaarheid. Vandaar dat de autoriteiten in Oeganda en Kampala zich hebben ingespannen om te investeren in de stad in de aanloop naar CHOGM 2007. Afvalverwerking behoorde tot de belangrijkste sectoren die extra middelen ontvingen en met institutionele veranderingen werden geconfronteerd. Dit resulteerde in aanzienlijke verbeteringen in de praktijk van afvalinzameling tijdens CHOGM, zoals verwacht kon worden. Aangezien afvalinzameling al vaak binnen grote steden in ontwikkelingslanden verschilt en grote evenementen niet gelijkmatig verspreid over deze

steden, viel te verwachten dat de gevolgen ervan voor het milieu ook ongelijk zijn verdeeld over de stad. Na CHOGM vonden wij echter dat er niet langer significant verschillende percepties waren inzake afvalverwerking tussen de wijken Central Division en Kawempe. Central Division en Kawempe werden als even schoon (of even vuil) gezien, wat suggereert dat de verandering in het afvalinzamelingbeleid zich geleidelijk over de wijken heeft verspreid. In een nadere vergelijking tussen burgers die dicht bij de plaatsen wonen waar de gebeurtenissen van CHOGM zich afspeelden en meer perifere locaties, viel te zien dat het verschil in afvalinzameling tijdens CHOGM wat vervaagde, maar in 2009 waren er tekenen van een hernieuwd onderscheid, wat betekent dat de effecten afnemen. Dit laat echter onverlet, dat een jaar na CHOGM de afvalinzameling nog steeds aanzienlijk beter is dan vóór CHOGM.

In meer algemene zin heeft dit onderzoek de dynamiek laten zien van publieke en private dienstverlening inzake afvalinzameling. De initiatieven hebben een duidelijke invloed gehad op de algemene organisatie van afvalverwerking. Wat uit deze studie duidelijk naar voren komt, zijn de uitdagingen waar de publieke en particuliere dienstverlening voor staan. Ook is duidelijk geworden, dat bepaalde beleidslijnen zoals privatisering, indien niet goed doordacht, uiteindelijk verkeerd kunnen uitwerken op sommige delen van de bevolking, vooral de gemarginaliseerde groepen. Tenslotte kunnen we, in overeenstemming met de ‘modernized mixtures’ benadering van PROVIDE, concluderen dat de hervormingen van de afvalinzameling een positief effect kunnen hebben wanneer alle actoren en belanghebbenden erbij worden betrokken. Verbetering van afvalinzameling, bijvoorbeeld in een gepaste mix van publieke en private dienstverlening (formele en informele), vergt een combinatie van actoren en strategieën.

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Mesharch W. Katusiimeh was born on May 26<sup>th</sup>, 1977 in Ngoma Kagango Sheema district in Western Uganda. He earned a BA degree in Political Science (2000) and an MA in Public Administration and Management (2004) both from Makerere University, Kampala, Uganda. From 2000, he has taught Political Science and Public Administration at Uganda Christian University, Makerere University and Kyambogo University. In 2007 he started his PhD studies at Wageningen University sponsored by INREF through the PROVIDE Project of Wageningen University. During this time, he followed his PhD program and completed course work at the Mansholt Graduate School of Social Sciences (MG3S) now Wageningen School of Social Sciences (WASS). Results of his PhD research have been presented at several international conferences, and some submitted and published as journal articles. His areas of research interest include urban and environmental governance, civil society in governance and local government administration.

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**Mesharch W. Katusiimeh**

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