

**TOWARDS SUSTAINABLE MANAGEMENT OF URBAN SOLID WASTE: A STUDY
OF THE NAIROBI CITY COUNCIL-PRIVATE SECTOR COLLABORATION IN
THE MANAGEMENT OF SOLID WASTE** 9

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DECLARATION

This project paper is my original work and has not been presented for examination in any other university.




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This Project paper has been submitted for examination with our approval as university supervisors



DR. PAUL N. MBATIA



PROF. PRESTON CHITERE

To My Parents Harriet and Japhet Ikiara,

You always inspire us to stand tall. Thank you for your enduring love and support.

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TOWARDS SUSTAINABLE MANAGEMENT OF URBAN SOLID WASTE A STUDY OF NAIROBI CITY COUNCIL-PRIVATE SECTOR COLLABORATION IN THE MANAGEMENT OF SOLID WASTE

ABSTRACT

This project paper explores the crisis of solid waste disposal in the city of Nairobi, with the aim of finding out the status of Nairobi City Council's waste disposal services, the strategies city residents have adopted to cope with the crisis as well as factors that influence disposal practices. The study also aims to understand the nature of the city council-private sector collaboration, determining the prospects that this holds for the sustainable management of solid waste and the implications of the current approaches on the relationship between the city residents and the council. The study therefore, seeks to answer four key questions: How adequate are the city council waste disposal services and what strategies have the residents adopted to cope with the crisis? What factors influence waste management practices? What is the form and nature of the Nairobi City Council-private sector collaboration and what prospects does this collaboration hold for the sustainable management of solid waste? and finally, what are the likely implications of the current solid waste management approaches on the relationship between the residents and the local authority.

The report is based on field surveys carried out in Ngumba and BuruBuru Estates in Nairobi, three private waste management companies and the Nairobi City Council. It utilises both qualitative and quantitative data collected using a combination of structured and unstructured questionnaires as well as direct observational methods for the household surveys and the key informant technique for the Private Waste management companies and the Nairobi City Council.

The study established that due to shortage of finances, financial mismanagement and administrative incompetence, the Nairobi City Council has failed to offer service to the middle-income estates in Nairobi, thus precipitating the current crisis. This has diminished public confidence in the council and resulted in very poor relations between the council and the residents. Consequently, residents are less willing to pay council rates and levies, further inhibiting collection of revenue, and perpetuating the cycle of financial scarcity and poor service. Inevitably, the city council has conceded its inability to deliver efficient services and sought to encourage private sector participation. Currently, the role of the city council is that of sector regulator while the private companies operate independently.

To cope with the crisis most residents have adopted the services of private waste management companies. Choice of disposal method however, is mainly determined by the need for expedient service and cost of services and low-income households therefore, tend to be less adaptable to the use of private sector services, opting instead for alternative methods such as burning and dumping in garbage pits and heaps. Optimal performance by the private companies, however, is limited by numerous intra-sector problems and their service to households is associated with delivery problems.

The study concludes that the private sector holds certain promise for the improved management of solid waste in Nairobi. However, it can not effectively replace the city council, nor can it solely resolve the crisis. Inevitably, a tri-sector approach, including the private sector, the city council and community-based organisations is imperative for sustainable management of solid waste in Nairobi to be attained.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Over-urbanisation and its associated problems is a global phenomenon that has not spared cities in the developing world. The challenge for Third World cities, however, is made greater by their increasing inability to plan for and mobilise resources to cater for the specific demands of their rapidly increasing populations on a sustainable basis. There is growing consensus that the city of Nairobi, like many other African urban centres, is gradually succumbing to the pressure of population growth that is both uncontrolled and unplanned for (See UNCHS. 1998 and 1999). Inevitably, this pressure impacts on the ability of the available administrative structures and resources to adequately cater for the social welfare of the residents. The crisis of solid waste disposal in the city of Nairobi is one of the more visible symptoms of this deepening urban crisis. Although not a unique problem to Third World cities, the escalation of the problem in the city of Nairobi, once known as the "*city in the Sun*" due to its cleanliness and freshness, is of definite concern for development due to its implications for the environment and city planning, particularly in the area of sanitation, health, aesthetics as well as the general social welfare of the residents.

As far back as the year 1999 the United Nations Commission on Human Settlements (UNCHS) estimated that the city of Nairobi generate on average 1000 tons of solid waste¹ daily from

¹ Liyai (1988) has defined 'solid waste' as all the waste arising from human and animal activities that are normally solid and are discarded as useless or unwanted. It has variously been referred to as refuse or garbage and may include industrial and domestic refuse that is both toxic and non-toxic. 'Solid waste' as used in this study refers to all products and by-products of human activity that are considered of no further utility and that are discarded on the surface as undesirable. These exclude refuse in liquid, gas and sludge form.

households, business premises, and industries (UNCHS, 1999). Of the total waste generated, the city sanitation department was only able to collect and dispose of 400 tons per day (UNCHS, 1999), leaving an estimated 600 tons to accumulate, or be disposed of by other means. In a city where the rate of urbanisation was estimated at 23.6% in 1990 (UNCHS 1998) and expected to cross the demographic threshold of 50% by the year 2010, then the magnitude of the problem cannot be over-estimated. Population projection for Nairobi for the period 1980-2000 for instance, indicates a population of 1,162,000 in 1985, while the 1999 population and housing census estimated that the population of Nairobi had risen to 2,143,254 (Republic of Kenya, 2001). Trends in refuse yield for the period 1958-1985 concurrently, are indicative of a rapid shift in accumulation, rising from 65,979 tons in 1958 to 89, 850 in 1960 and 136,805 in 1985 (Liyai, 1988). This fluctuation in production has definite correlation to the city council's inability to cope and is a clear indicator of the looming crisis of solid waste disposal in the city.

The problem of solid waste disposal is not exclusive of any neighbourhood in the city, being ubiquitous in the business, industrial and residential neighbourhoods. While less prevalent in the Central Business District, the problem is seen to permeate the residential estates, with varying magnitude of intensity between the higher and lower income neighbourhoods. The greatest crisis, however, is distinctive in the informal settlements. Various studies have noted this disparity in garbage collection, with the more affluent neighbourhoods having the bulk of their garbage collected, while the lower-income neighbourhoods receive minimal service or are totally neglected (UNCHS, 1989; Liyai, 1988 and Nairobi City Convention, 1993). In a city where the 65% of the population live in the informal settlements that cover 5% of the total area of the city (Kikaya, D. in Kenya Times. October 2001:17), this problem is greatly pervasive

both in geographical spread as well as magnitude. There is therefore growing need for a comprehensive understanding of the nature, magnitude and trends in addressing this problem; issues that are the core concern for this study.

The overt manifestation of this neglect has been described variously:

Everywhere, the public systems ensuring disposal of waste have either completely broken down or where it still exists, it is not functional for various reasons, leading to overflowing dustbins, spillage, goats and chicken scavenging, bottomless bins, wind blowing garbage all over (Liyai, 1988).

Garbage, sullage and human waste are disposed of indiscriminately...there are no pits to throw litter and instead...scattered all over right from the doorsteps. Even if people want to burn this garbage... no convenient place to do so because the houses are so close (Ikiara, 1993).

The indiscriminate disposal of garbage portrayed above has led to mounds of uncollected litter in alleys, roadsides (often entire roads are blocked by garbage) and open spaces. The assault on the city's aesthetics is obvious, with the sensory affront from putrid garbage heaps that attract flies, mosquitoes, rats and other vermin. Domestic animals scavenge on the garbage mounds, scattering it indiscriminately and human scavengers commonly known as *Chokora* scavenge for re-useable and recyclable items from the waste. All these, plus the multiplier effect of the wind in the open spaces ensures that the garbage is not restricted to the designated and usually illegal dumping sites.

Various studies have given insight to the cause of this predicament. Among other suggestions, Research papers presented during the regional workshop on privatisation and financing of municipalities in the Eastern African sub-region (Naivasha, April 1998) in particular captured,

inter alia, the following - Lack of management capacity by the municipal/city councils, unplanned additional population without corresponding expenditure, existing bureaucracy within central government and lack of financial accountability as well as an endemic financial crisis due to insufficient revenue both from within and from central government (UNCHS, 1988). The gradual national economic decline, further, has repercussions for the central government and the private citizen's ability to meet their obligations to the council. Indeed, poverty is roundly appreciated as a prime factor in the decay and underdevelopment of Third World urban centres (Gugler, 1997; Getachew, 1991; Bradshaw and Noonan, 1997). This study attempts to trace the inter-relationships between these factors and explores the way this interplay impacts on solid waste management. Inevitably, the solid waste crisis has consequences for the environment and by extension city residents. Beyond the stench the assault on the city's aesthetics, the spread of disease-causing pathogens is seen to directly accrue from unhygienic environments (Ikiara, 1993; Mwangi, 2000; Sibiya, 1981; UNCHS, 1989). Further, it is seen to result in the pollution of the air, ground and surface water, particularly due to the toxic and hazardous industrial waste and the clogging of storm drains among other problems.

Over the years, the waste disposal problem has attracted the attention of the government, the private sector, NGOs (both local and international), international organisations, local citizen groups and private citizens and various efforts have been directed towards clearing the city of the waste. All efforts have had varying impact on the problem and the duration of the intervention has also differed, with some being ad hoc or period, and others more long term. Taking the cue from other cities, both in the developed world and in Africa, the Nairobi City

Council has, since 1997, sought private sector partnership and collaboration in the collection and disposal of solid waste. By the year 1998, it is estimated that there were 30 small companies owned by private households that are engaged in waste collection in Nairobi (UNCHS 1998). Despite the large agglomeration of companies vying for the waste disposal business, however, industrial and domestic waste management has remained a serious environmental concern nation-wide. Daily refuse collection by the City Council and private companies is estimated at 600 tons, which represents a mere 45% of the estimated daily waste generated. Disposal² by both the council and waste collection companies remains largely limited to the central business district, and the up-market residential areas. The extent and reason behind the residents' adoption of the privatised services as well as the choice of areas of operation by the private companies is relevant to the understanding of the collaboration efforts currently being adopted and therefore of concern to this study.

With the above scenario in mind, there is clear indication that the prospect for resolution of the solid waste crisis through privatisation has imminent limitations. While the government continues to attribute the problem to "inadequate finances and resources, and low participation by both individuals and private companies" (Republic of Kenya, 2001), it is evident that there is an array of other factors that culminate in the current state of waste mismanagement. It is notable for example, that community-level mobilisation to address the crisis has been largely spontaneous and non-sustained. Moreover, whereas some estates have fully adopted privatisation to cope with the growing frustration from the lack of effectual city council service,

² Disposal in this sense and as referred to in this study refers to the consolidation, storage, collection, transportation and deposition of solid waste from the point of production to the dumpsite designated by the city council or the residents themselves. This definition precludes any further treatment of the waste after disposal in the dumpsites.

others have either hesitantly embraced it, or totally ignored it. Consequently, in as much as the most glaring failure seems to emanate from the formal authorities, it is apparent that the city residents themselves have not performed to the maximum in the war against dumping. This study therefore, seeks to explore the coping mechanisms of households in the city of Nairobi in the absence of reliable council services and, further to seeks understanding of the dynamics at play in the adoption and sustainability of private sector-Nairobi City Council collaboration towards solid waste management. It is further concerned with the following questions: What prospect does the city council- private sector collaboration hold for the management of the problem? Does the collaboration, as presently conceived, constitute a sustainable solution? If so, what form should it take, and if not, what are the alternatives?

Sustainable urban development as defined by Hall (1993:22) is "a form of development today which guarantees the continuing development potential of cities and urban populations in future generations; and indeed the continuing potential of the planet in which they live (Hall, 1993 in Zamberia 1999:12-13). In line with this definition, this study defines sustainable management as that intervention by all relevant stakeholders that provides relevant and harmonious long-term solutions for the identification, mobilisation, administration and maintenance of the resources essential for a viable solid waste management process. Essentially therefore, the study will seek to unearth the underlying implications of the current interplay of processes in the management of solid waste in Nairobi within the broader institutional relationships between the city residents and the formal administrative structures that govern it.

1.2 Problem Statement

The challenge of urbanisation with the related themes of over-urbanisation and urban bias has been well-documented (Gugler, 1997; Bradshaw and Noonan 1997; Mathéy, 1999, UNCHS.1989 and 1999). It is estimated that more than 1.5 billion people live in cities and towns of developing countries of Asia, Oceania, Africa, Latin America, and the Caribbean and are projected to increase to more than four billion in less than a generation. This represents two thirds of the of the world's urban population (Gugler, 1997). Given that these Third World countries are the poorest sectors of the world economy, with economies burdened by a debt crisis estimated at US \$ 1.35 trillion (World Bank, 1991 in Chawla, 1997) and rapidly spiralling, the ability of national governments to cater for the social welfare of their citizens is facing stiff challenge. This has direct implications for urban problems, not excluding that of solid waste management.

In addition to the difficulties of adjustment by national and local governments in these countries, private citizens too have to cope with the rapidly diminishing services that hitherto had been provided by municipal authorities and by extension the national government at minimal cost to the citizens. The problem in the city of Nairobi can therefore be assessed within the perspective of a community in transition as one media commentator summed up:

...Nairobians themselves must rethink their waste disposal habits. The problem of garbage disposal has for a long time been seen as one belonging to the (Nairobi City) council. The residents will dump their waste at any spot on their estates...and fold their hands...waiting for the council to come and clean their mess. Usually their attitude is rooted in the belief that since they pay for the services, they have a right to expect the council to deliver. But on the other hand, they fail to realise that the council they look up to has never been well known for service delivery (East African Standard, August 2, 2001).

Urbanisation has been recognised as a period of transition with imminent social problems (Vago, 1996). The current strategy by the city council to cope with the problem through collaboration with the private sector, as is the case in other cities of the world, must therefore be viewed from the same perspective. It is also necessary to interpret it to mean that the process has to weather the force of resistance from various sectors if it is to establish itself as a sustainable alternative in the city of Nairobi. Further, it has to be suitably incorporated within the broader policies of economic decentralisation, democratisation, economic liberalisation and more specifically that of sustainable cities. So far, Kenya has made little meaningful progress in these efforts despite numerous policy efforts towards this end.

Vago (1996) argues that as long as two or more components of a social system are incompatible, the equilibrium of the social system is upset, leading to social change. Strains can be identified in population imbalances, anomie, certain forms of scarcities, role conflicts, inconsistencies between the ideas and the real, conflict of values and status anguish. In the case of the City of Nairobi, clearly, where there is a gap between community needs and the supply by the relevant institution, communities evolve coping mechanisms. Logically, it can be assumed that they recognise the need as having not been met to the level of the individual community sector's expectation. The level of need presumably will influence the coping mechanisms that each group adopts, dependant on the resources available to them, their specific social circumstances and the particular ability to act in these circumstances.

In most urban centres, it is broadly recognised that the low-income groups, among other marginalised communities, suffer the most from exclusion from the mainstream services

provided by cities (UNCHS, 1989 and 1999). On the same breath therefore, it can be argued that it is easier for the more affluent to adopt and sustain the management of solid waste through the services of the private companies. As you move away from the centre, there is likely to be more resistance with differing coping strategies being adopted. The disparity in the different communities' specific socio-economic circumstances, their peculiar perceptions of their situation, the specification of their need and the resources available to them, all affect their capacity to adjust. These also influence their adoption of the contemporary and emerging opportunities or mitigate this adoption. These arguments are relevant to the problem of solid waste management in the city of Nairobi.

This study therefore, intends to focus, *inter alia*, on the perceptions of households with regard to their specific domestic waste management problem and their coping mechanisms; with a view to assessing the reception and adaptability of privatisation as a supplement or alternative to the Nairobi City Council's waste management services. It further seeks to understand the form and nature of the emerging collaboration between the private sector and the Nairobi City Council, with the primary aim of identify the obstacles that could impede the privatisation process and the effects that the current process is likely to have on the institutional reciprocity between the three sectors. The study therefore seeks to answer the following questions:

1. How adequate are the city council's waste disposal services and what strategies have the residents adopted to cope with the situation?
2. What are the factors that influence waste management practices?

3. What form and nature does the Nairobi City Council-private sector collaboration take and what prospects does this collaboration hold for the sustainable management of solid waste?
4. What are the likely implications of the current solid waste management approaches on the relationship between the residents of Nairobi and the local authority?

1.3 Objectives

The main premise for this study is that the lack of adequate services by the Nairobi City Council in the area of solid waste disposal has varying implications for different residents in the city of Nairobi, depending on their location and income. Consequently, adjustment from the state controlled management to privatisation takes different forms in different neighbourhoods, with varying capacities for adoption and sustainability. Further, these implications and the efforts towards adjustment have linkages to emerging social and institutional relationships that feed back into the process of change and adjustment.

The broad objective of this study therefore, is to find out the strategies the residents have adopted to cope with the crisis, the form and nature of the Nairobi City Council-private sector collaboration, the prospects for adoption or rejection of the privatised services on a sustainable basis, and the implications the evolving phenomena has on the institutional reciprocity between the city residents and the council.

Specifically, the study will focus on the following objectives:

1. To find out the extent of the adequacy of Nairobi City Council's waste disposal services and how city residents are coping with the situation.

2. To find out what factors influence waste disposal practices by the residents.
3. To explore the form and nature that the Nairobi City Council-private sector collaboration is taking and the prospects that this collaboration holds for the sustainable management of solid waste in Nairobi
4. To explore the likely implications of the current solid waste management approaches on the relationship between the residents of Nairobi and the local authority.

1.4 Rationale

The effects of urbanisation and its associated theme of over-urbanisation have been well documented. Since the 1970's and particularly in the 1980's, the shift has been more on the effect of Third World debt crisis and its implications for development in the developing countries, especially those of the sub-Saharan Africa, Asia and Latin America. Recently (1980's and 1990's) there has been a shift towards the statist and more recently the state-civil society partnership in the provision of social services due mainly to the inability of the state to meet these needs (Bradshaw and Wallace, 1996; Mbatia, 1996; Zamberia, 1999). Studies in global inequalities and dependency also clearly point to the impact of global trends on national and local governments (Bradshaw and Wallace, 1996, Lipson, 1988; Ghai and De Alcantara, 1990; Hoogvelt, 1997). These studies to a large extent do account for the declining economy of Kenya, which consequently impact on affiliated institutions such as the Nairobi City Council.

Concomitant with the above arguments, this study finds basis in the following considerations:

- (a) Beyond succumbing to the vagaries of the micro and macro-level economic influences, local communities and institutions are gradually evolving and adopting survival strategies to cope

with the increasing scarcities of social services. Of relevance to this study are the forms of these strategies as well as their counter impact on the relationships between the social and administrative institutions themselves. This study therefore, presents an interesting opportunity to study the global economic phenomena as it impacts on a specific area of development and consequently, to lead to a more micro-level understanding of how local institutions are adjusting to these trends

(b) That the problem of solid waste has reached epidemic proportions in the city of Nairobi has clearly been demonstrated in the introductory part of this study. This analysis argues that control of the crisis is not dependent on the section of the population that is reasonably well served by the city council and the private sector companies and that has broadly been recognised as the more affluent sector of the population. Instead, it is dependent on the larger population that is either neglected or proportionately less effectively served by these two services. This can be accounted for by the 65% of the population that lives in the informal settlements and a relatively large and often unrecognised proportion of the population that does not live in the "slums" as officially designated, but in the less affluent neighbourhoods of the city. This latter proportion forms the bridging population in terms of adoption of the emerging strategies, particularly as it spreads from the centre to the peripheral neighbourhoods of the city.³ This study therefore, aims to focus on both the sector that has fully adopted the services of the private companies and one that has hesitantly or partially done so. These two sectors will derive information that can provide

³ In this respect it is pertinent, as the World Bank stresses, that the poor bear the greatest burden of institutional failure. (That) demands for bribes and unofficial fees for services hit the poor the hardest (World Bank. In Daily Nation. Sept 19, 2001.40)

direction on how to gradually integrate the non-conforming sector. This is particularly important for the wider replication of the strategy in the city.

(c) Unlike the cities of the west that have for several years now adopted privatisation of municipal services, this is a relatively new and still emerging approach in the developing world. Experience from the West has shown that this transition is not entirely seamless. Cities such as Toronto, Edmonton, Kingston and Hamilton in the West as well as cities in South Africa have all recorded cases of resistance to privatisation in one form or another. This factor points to a need for a clear understanding of the socio-economic and institutional dynamics that would inhibit or enhance solid waste management at a sustainable level. This study, in its limited form hopes to contribute towards such an understanding.

(d) At the theoretical level, it is evident that much of the study on solid waste management has been limited to structural and institutional capacities, mostly for purposes of planning (Liyai, 1988, Mbugua, 1980, Sibanda, 1980). Many others have looked at refuse (solid, liquid and gaseous) from the perspective of health and environmental pollution (Ikiara, 1993; Truneh, Sibiya, Bomba, Munyimbiti and Getachew, 1981, Mwangi, 2001). These have provided a valuable basis for the understanding of the unhygienic environments and the need for a broad-based community participation in managing the problem. Studies on the institutional and structural incapacity of the Nairobi City Council with respect to its legal and contractual obligations have also been widely enumerated (Nairobi City Convention, 1993; UNDP, 1996; Makibia, 1974). Much of the data quoted in the literature (UNCHS, 1989) are derived from non-governmental organisations and citizen groups. This study

therefore, intends to focus on the solid waste problem, not only from the perspective of the providers and consumers of the service, but also from within the macro-level theoretical framework within which it manifests itself. In this way, the study hopes to bridge the gap between the socio-economic perspective of the crisis and the structural framework upon which this is dependent and accordingly perpetuated.

1.5 Scope of the Study

This research is an exploratory study that is concerned with the status of solid waste management in the city of Nairobi. It centres on the inadequate services offered by the city council, exploring their shortfalls and the recently emerging collaboration with the private sector, in an attempt to harness private resources to minimise these shortfalls. While recognising the diversity of the non-state actors in the privatisation process, this study restricts itself to the activities of the commercial sector, represented by the private solid waste management companies.

To corroborate the above discussions, the study is grounded on a theoretical understanding of four major themes, commencing with discussion on the crisis of urbanisation as it impacts on the solid waste crisis in Nairobi. Other relevant themes include the global debt crisis and its implication for the delivery of solid waste services, the role of the state and the civil society in development and the emergence of privatisation and its relevance for the current Nairobi City Council-Private sector collaboration.

Collection of field data was restricted to three sources: the residential neighbourhoods, the private waste disposal providers and the Nairobi City Council. In the broadest terms, a neighbourhood can be defined as a cluster of residents right around one's own home (Herson and Bolland, 1990 in Andranovich and Riposa, 1993), with some dimension of homogeneity based on ethnicity, housing type, market values or social and cultural values (Andranovich and Riposa, 1993). This study, while considering these as common characteristics of a neighbourhood, defines a neighbourhood as a residential estate as defined by the boundaries of the Nairobi City Council and identified by the residents of the estate themselves. This study restricts itself to neighbourhoods within two residential estates within the lower- to middle income neighbourhoods of Nairobi; namely Ngumba and Buruburu Estates. These formed the basis for a comparative assessment of disparities as well as similarities in the management of solid waste. For purposes of this study the private sector refers to all parties, whether individual, community-based or corporate, that are involved in solid waste management other than the city authorities and central government agencies, and whose primary motivation is profit. This study, however, was restricted to three private waste management companies, namely Evabo, PIK-A-KAN and Danbeat Enterprises. The statistical and descriptive data collected from the two sectors were analysed at the end of the field research to form a conclusive assessment of the private sector – city council collaboration in solid waste management. Due to limitations of time and resources, the research was restricted to the study of the city of Nairobi, while the coverage of the private sector service providers was limited to those providing services within the selected neighbourhoods. The study of the city council was restricted to an understanding of its role in the management of solid waste and the privatisation process.

CHAPTER TWO

LITERATURE REVIEW

Through extensive literature review, this chapter explores significant social and economic factors associated with the emergence and perpetuation of the solid waste management crisis and concomitantly those that aggravate it. In this chapter, it is contended that the crisis of solid waste management in the city of Nairobi, as in many other Third World cities, is rooted in the broader problem of over-urbanisation. The rapid rate of urban population growth and the resultant expansion of city boundaries have occurred in the absence of commensurate evolution of institutional capacity to cater for social services such as solid waste management. The solid waste management crisis itself is a reflection of both the broader micro and macro socio, political and economic environment in which it is manifest. At the micro level, the Nairobi City Council is unable to offer services due to inadequate financing and the lack of institutional capacity to cope. At the macro-level a weak state, characterised by a fragile economy that is largely impacted by the global economic recession, has negatively affected both institutional and domestic-level expenditure on social services such as waste management, further exacerbating the crisis. The emergent collaboration between the Nairobi City Council and the civil society through privatisation of waste management services is an attempt to find a solution to the deepening crisis in the city of Nairobi.

On the basis of the outlined arguments, Section 2.1 of this chapter, therefore, broadly explores the crisis of rapid urbanisation before focusing on the problem of urbanisation and municipal management in the city of Nairobi in Section 2.2. Section 2.3 then explores issues of financing for municipal services as an integral concern in the management of solid waste. In Section 2.4,

I will focus on the impact of the global economic recession on the provision of municipal services in Kenya and in Section 2.5 I will explore issues of the state-civil society collaboration in development. Section 2.6 centres on the privatisation of public infrastructure in Kenya. Arising from conclusions drawn from the above discussions, section 2.7 will therefore provide a theoretical framework for the study, and Section 2.8, will comprise the hypothesis for the study. Operationalisation of study concepts is presented in Section 2.9.

2.1 The Crisis of Rapid Urbanisation

The problem of solid waste in Nairobi can best be understood within the general framework of urbanisation and its associated challenges in the context of Third World development. There is general consensus among scholars of urban development and development agencies that rapid agglomeration of populations in urban areas, particularly in the Third World countries, poses serious challenges to the general development and social welfare of the urban areas (Todaro, 1995; Mbugunje, 1968; Gugler, et al. 1997; UNCHS, 1989, Vago, 1996). Todaro (1995) for example, argues that one of the most significant of all post war demographic phenomena, and the one that promises to loom even larger in the future, is the rapid growth of cities in the developing countries. UNCHS (1989) indicates that in 1950, less than 300 million people lived in towns and cities in the developing countries. By 1985 however, this number had increased to 1.1 billion. The rate of population increase is estimated to be 50 million people a year, in which case the urban population of the developing countries is expected to reach 2 billion within a period of one decade. Two thirds of the world's urban population was expected to be living in the developing countries of Africa, Asia, Latin America, the Caribbean and Oceania by the year

2000 (UNCHS, 1989). As Gugler (1997) points out, the sheer numbers involved, coupled with the poverty of these five regions make for a difficult transition.

Compared to the urban centres of the industrialised countries, it is argued that Africa has relatively low levels of population density as well as urbanisation (Gugler, 1997). Nevertheless, Gugler's claims of a difficult transition are born out by the demographic, economic and human development indicators for the developing countries, which point out consistently high population growth without commensurate rise in real income per capital. This can be interpreted to explain the correspondent declining quality of life as implied by the high mortality rates indicated in Table 1.

Table 1: Demographic, Economic and Human Development Indicators for Large Developing Countries

Region/ Country	Total pop.	Annual Population Growth Rate %		Urban Pop % of Total pop		Urban pop growth rate %		Real GDP per capita (US\$)*	Infant Mortality per 1,000 life births
	1993	1960-93/	1993-2000	1960	1993	1960-63	1993-2000	1993	1993
China	1,196.4	1.8	1.0	19	29	3.1	3.8	2,330	44
India	901.5	2.2	1.8	1.8	26	3.4	3.0	1,240	81
Kenya	26.4	3.6	3.1	7	26	7.6	6.0	1,400	69
Tanzania	28.0	3.1	2.8	5	23	8.2	5.9	630	85
Ghana	16.4	2.7	3.0	23	35	4.0	4.5	2,000	80
Guatemala	10.0	2.9	2.9	32	41	3.6	4.1	3,400	48
Summary									
Developing Countries	4,299	2.2	1.8	22	36	3.8	3.5	2,696	70
Industrial countries	1,209	0.8	0.4	6.1	7.3	1.4	0.7	15,136	13
World	5,508	1.9	1.5	34	44	2.7	2.5	5,428	63

Source: UNDP (1996), Human Development Report (1996) adopted from *Gugler et al.*, (1997).
 *Real GDP is based on conversion of GDP in terms of purchasing power parity.

From the data presented in Table 1, we note that the urban population in the developing countries realised a dramatic increase of 14% in the thirty three years between 1960 and 1993, rising from 22% to 36%. By contrast, the population in the industrialised countries rose by a mere 1.4% to stand at 7.3% in 1993 up from 6.1% in 1960. Unlike the rapid rise in urban population, real GDP for the developing countries in 1993 stood at US\$ 2,696 compared to that

of the Industrialised countries, which stood at US\$ 15,136. Kenya's real GDP for the same period is nearly half the recorded average for the developing countries, standing at only US \$1400, while the rate of urban growth is nearly double the global average for the developing countries. For Kenya, the dramatic rise in urban population by the year 1993 far outpaced the total population growth rate, which had fallen from 3.6% in 1960 to 3.1 in 1993. The rapid pace of population growth, particularly in the urban areas, without commensurate rise in economic growth, can be construed to explain the increased constraints the national governments face in planning for and meeting the demands of the urban populations. This has adverse implications for human development as indicated by the high rates of infant mortality. Kenya's infant mortality rate in 1993, for example, stood at 69, a mere 1 digit less than the global average for the developing countries. Taking into consideration the astronomical rise of the urban population, it is then logical to concur with *Gugler's* (1997) conclusion that the impact of the poor economic performance has had adverse and equally dramatic impact on human development in the urban areas.

The thesis of over-urbanisation has been put forward to explain the phenomenon of rapid urbanisation globally. It implies the belief that "a particular developing country has too high a proportion of its population residing in cities where high densities are considered detrimental to health and general well-being. More importantly, over-urbanisation is often indicative of the fact that the urban population of a nation is too large in relation to the extent of its economic development"(Vago, 1996). Moreover, it is represented in the great disproportion between the cost of urban growth, the maintenance of proper facilities for urban dwellers and the earning capacity of the people congregated in the cities (Hoselitz, 1957 in Mobugunje, 1968). The latter

argument succinctly denotes the decay in Kenya's urban centres, of which the solid waste crisis is a symptom. However, as Zamberia (1999) stresses "the central characteristics of the urban problem is not the scale of population growth but the scale of the mismatch between the demographic change and institutional change." He argues that "this mismatch is between the speed with which population has concentrated in particular urban centres and the very slow pace with which societies have developed the institutional capacity to cope with this"(Zamberia, 1999: 5). Certainly, the pace of population growth in Kenya's urban centres with concomitant increase in solid waste generation has rapidly outstripped the municipal authorities' ability to cope resulting in the current crisis. Privatisation of solid waste disposal can therefore be construed as an emerging response to this dilemma.

Various theories have emerged to explain the emerging phenomena of over-urbanisation. The most prominent among them include the theories of modernisation, urban bias and economic dependence. In reviewing studies by proponents of the urban bias theory such as Lipton (1977, 1984 and 1973), Nolan and White (1984); Seers (1977); Byres (1979); and Herring and Edwards, (1983), Bradshaw and Noonan (1997) highlight the argument that many underdeveloped nations implement investment, tax pricing, and other policies that disproportionately favour cities. This bias has consequently created a disparity between country and city with respect to consumption, wages and productivity levels. These in turn translate into higher standards of living for urban citizens and draw migrants from poorer rural areas. While the above theory may account for this disparity, urban scholars have not been unanimous in their conclusion on this perspective (Bradshaw and Noonan, 1997). Dependency and world systems theorist postulate that foreign investment reduces the amount of land available to

farmers, forcing migration to urban areas. Additionally, they argue that resettlement in urban areas creates industry that may attract rural migrants (Bradshaw and Noonan, 1997). Modernisation scholars such as Berlinas (1997) on the other hand, assert that urban expansion is part of transition from a traditional agrarian society to modern industrial nations and is accordingly a positive feature that should be encouraged (Bradshaw and Noonan, 1997). Clearly, as we note from the disparity in these approaches, urbanisation has negative attributes as represented by the solid waste crisis, but it can also result in positive attributes if appropriately directed, as postulated by the modernisation scholars.

One factor singled out as having profoundly altered arguments on the Third World urbanisation and development is the global debt crisis and the Structural Adjustment Programmes (SAPs) instigated International Monetary Fund. These are perceived as having increased the level of social, political and economic stress on national and local government, resulting in even greater pressure of over urbanisation in developing countries (Bradshaw and Noonan 1997). The latter arguments, which are discussed in greater detail in subsequent sections of this review, are considered integral to the understanding of the crisis of urbanisation in the city of Nairobi. Subsequent assertions on the inability of the city council to meet its obligation of service delivery to its citizens and the need to seek private sector collaboration to a large extent find bearing in this argument. So too do arguments for the private citizens' willingness and capacity to adopt private sector service as a viable and sustainable solution to the solid waste problem.

The solid waste problem is only one of several problems associated with Third World Urbanisation. Other associated problems include *inter alia*, those of widespread unemployment,

underemployment and misemployment (Gugler, 1997), overcrowding and increased demand for urban housing with commensurate proliferation of informal (squatter) settlements. Concomitant problems include environmental degradation, exacerbated popular pressures on political systems, inadequacy of social services such as water and sanitation, health and education facilities, as well as problems of spatial planning and development (Gugler et al., 1997, UNCHS, 1998; Mobugunje, 1968; Gugler and Gilbert 1981). Despite the divergent arguments on the causes and manifestation of the urban crisis, this study, in agreement with Marxian thinking, posits that there is a dialectical relationship between the macro and micro level factors posited in the preceding theories. This study seeks to unearth the nature of these relationships. Section 2.2 consequently attempts to further the understanding of the nature and impact of the crisis of urbanisation in the city of Nairobi

2.2 Problems of Over-urbanisation and Municipal Management in Nairobi

Like other Third World cities, the city of Nairobi is gradually succumbing to the crisis of over-urbanisation. According to census statistics, Kenya's population increased from 5.4 Million in 1948 to 15.3 million in 1969 and to 21.4 million in 1989. The intercensal population growth rate for Kenya according to the 1989 census was 3.4 percent per annum. At this rate, the population was estimated to increase to 30 million by the year 2000 (Republic of Kenya, 1994). Of the 21.4 million population registered in 1989, 19 percent lived in urban areas (Central Bureau of Statistics, 1984). The intercensal growth rate for urban areas however, was much higher than the national growth rate at 4.8 percent per annum. As a result, the population of Nairobi for the same period was estimated to have soared from 827, 775 in 1979 to 1,324,570 in

1989 (Central Bureau of statistics, 1984), and was attributed primarily to rural urban migration (Republic of Kenya, 1993).

While the spiralling rate of urbanisation connotes problems for development, arguments by UNCHS (1998) and Bradshaw and Noonan, (1997) that rapid urbanisation is not inherently a negative prospect for development need to be revisited. It can be appreciated that there are imminent advantages relating to the growth of economic activity itself, namely agglomeration and external economies. A large population can also provide a consumer and taxable base large enough to support efficient local administration with its own cluster of urban function and service. The regional workshop in the privatisation and financing of municipal services in the Eastern Africa sub region in 1998 however raised concern with the manner in which urbanisation is taking place in East Africa, and how this mitigates against the above economic prospects. First, the population largely comprises unskilled labour. This pits the city against a surplus labour force with limited skills (UNCHS, 1998). This means that many workers are unemployed or underemployed, while some who are fully employed produce goods or services that can even be judged to contribute little to social welfare or what Gugler (1997) describes as misemployment.⁴ What is of ultimate relevance in the case of Nairobi however, is the fact that while contributing little to the municipal revenue, this sector of the population is an immediate consumer of the municipal services, adding to the stress on the already over-stretched municipal resources. Second, the municipal councils which started off as colonial administrative institutions were never fundamentally transformed into development institutions to cater for the

⁴ Gugler (1997) identifies the following as being among those engaged in misemployment: beggars, criminals, political hangers-on in the entourage of the influential, bureaucrats in a welfare state and a substantial number of public administrators.

growing population (UNCHS, 1998, UNDP, 1996). Makibia (1974), for example, notes that the role of the town clerk is still defined in the same way as in the colonial government and uses the same manual. Third, the existing revenue collection machinery is generally ineffective and what little is collected has in some cases, been mismanaged. Additionally, municipalities are financially weak and survive primarily on assistance from the central government, which increases its leverage over the municipalities (UNCHS, 1998).

Arising from the above, municipalities in East Africa, Nairobi included, are faced with a governance crisis characterised by “ Progressive weakening of public capacity, ... brought about by a combination of state over – extension, delayed adjustment to changed external economic circumstances, natural events and poor management” (UNCHS, 1998). Consecutive reports on the problems of the Nairobi City Council have documented myriad constraints to the administrative system of the city council which impact negatively on the delivery of social services to the residents of Nairobi. Two reports, the UNDP Sector Review on Capacity Building for Metropolitan Governance of Nairobi (1996) and the Nairobi City Council Report and Recommendations of the Nairobi City Council Convention (1993) can be viewed as the most comprehensive attempts at reviewing the problems of the City. The two reports identify, *inter-alia*, the following constraints for the city: lack of a national urban strategy and policy for Kenya, lack of (and inability to adhere to) proper planning, pervasive lack of professionalism among staff and low calibre of elected leaders. In addition, there is endemic corruption, interference by the state and poor revenue generation that is monitored audited and accounted for poorly. On the other hand, the private sector is also blamed for low participation in the

management of city affairs. UNDP (1996) specifically notes that there is limited and unplanned private sector participation and partnership. Whether this is by design or due to lack of facilitation is a question that can be further explored

Privatisation imposed upon the above outline jumbled background provides a direct challenge for adoption and sustainability, with possible conflict, which might negatively impact on the provision of social services. An important thesis of this study therefore, is that analysis of the problems of over-urbanisation in the City of Nairobi, and any other strategies to address the problem, must take a multi-sectoral approach. It is therefore necessary to look at the emerging relationships between the key players but within the wider environment of their actions. The study therefore seeks to explain the dynamics of these relationships based on the factors intrinsic and extrinsic to their specific sectors.

A study of the environment and manifestation of the solid waste crisis in Nairobi, however, cannot assume exclusivity of its characteristics. A look at other urban centres in East Africa reveals definite characteristics of the crisis not at variance with those of Nairobi. These characteristics further go to indicate that data collected from this study can provide useful indicators for the management of the crisis within other East African cities as well.

A review of the situation in Uganda for example, shows that since the 1970's, the efficiency of municipalities in delivering services declined and garbage collection came to a near stand still, with residents resorting to private means of disposal. In the face of persistent political and economic instability over the next one and half decades, municipal services all but collapsed.

Presently, garbage collection is limited to high residential neighbourhoods, with the following distribution of households without regular garbage collection; Jinja (70%), Kampala (80%) Mbale (94%) and Mbarara (50%) (UNCHS, 1996). In Tanzania it is estimated that a total of 1,929 tonnes of waste is generated daily from domestic, commercial institutional and market centres in Dar-es-Salaam alone (UNCHS, 1998). Before privatisation, the city council was only able to dispose of minimum 2-4% of the waste generated daily. This shortfall was particularly devastating in the City centre and market sites. Although little data are available on other towns in East Africa studies in Mombasa and Nakuru in Kenya, Jinja and Kampala in Uganda, and Mwanza in Tanzania, indicate similar crisis in waste management (UNCHS 1998). So also do cities of other parts of developing world from Cajamarca and Lima in Peru through Abidjan, Accra and Douala in West Africa, to Yogyakarta and Ujung Pandang in Indonesia (SANDEC News No 2, Oct, 1996 and No 4, January, 1999).

Despite emerging privatisation, Kenya continues to face similar challenges. One important component of the problem within the council itself is the lack of refuse collection equipment. The Nairobi City Council has a bare 180 thousands dustbins, 447 standard container cubicles, 18 refuse vehicles, 13 slide loaders, 2 bulk bin vehicles, 3 high ratio compactors and 1 tractor shovel, to service an estimate population of 2 to 2.5 million (Republic of Kenya, 1996). This is a daunting task. A field survey by Esho (1997) reported that a proportionately large amount of this meagre equipment is often out of service. Much of it is also unserviceable due to, among other reasons, the dysfunctional allocation of tasks at the city hall (Liyai, 1988), and over-reliance on donor funding both for the purchase and maintenance of the equipment. In most cases, the equipment purchased is unsuitable for the purpose to which it is applied, which

accounts for innumerable cases of breakdown (Mwangi, 2001). These account for the limited number of equipment in the service of the city as indicated by the data on vehicles and other equipment in Table 2.

Table 2: Availability and Serviceability of Vehicles and Other Equipment- 1996.

Vehicles	In operation	Under repair/ workshop	Total
Vehicles	18	18	36
Wheel loaders	2	1	3
Bulldozers	-	3	3
Track shovels	-	1	1

Source: Esho, L. Field survey 1997 in UNCHS, Review of Municipal Services and Private Sector in East Africa

The data in Table 2 indicates that during the year, there was no single bulldozer or track shovel in operation. This implies that garbage collection relied on the manually manipulated tools, which can be construed to contribute to the exacerbated levels of garbage accumulation all over the city. At the same time, only half of the other equipment is in operation and this further implies problems for general operation of the service. These limitations raise two core concerns for individual households; that of limited waste storage capacity and more garbage in the households (Liyai, 1998), raising possibility of indiscriminate dumping. Out of the sample studied by Liyai (1988) only 3.5% was served daily by city council services. 38.6% was served once a week, 11.4% twice a week and 0.9% after a month; while 8.8% was served twice a month and 36.8% served irregularly. While these data indicate a gross inadequacy of garbage collection it is silent of the vast majority that has 0% rate of collection. It is also silent on the

many who do not necessarily dump (or wish to dump) garbage but who are equally aggrieved by the lack of effective service. This study aims to address this knowledge gap by looking at alternative strategies adopted by the city residents as well as their perspectives in respect of this service gap. An understanding of the incapacity of local municipalities, however, is not complete without exclusively considering an important underlying cause; that of endemic financial shortfalls. This is the subject of the discussion in section 2.3.

2.3 Financing Municipal Services: A Debilitating Problem

One factor that is indicated as largely responsible for the inefficiency of urban public services is the failure of municipalities to raise sufficient funds to service the rapidly soaring population (Republic of Kenya, 2001; Government of Kenya Sessional Paper No 1, 1986). In fact, most of the 100 local authorities and 39 county councils, including Nairobi and Mombasa, which constitute the highest population, are operating with deficit budgets (UNICEF/GOK, 1989). On the one hand, it has been argued that the Nairobi City Council, like its counterparts in the East African region such as Kampala, Jinja and Dar-es-salaam and Mwanza, does not have the benefit of handling major urban services that generate much of the national revenue (UNHCS, 1998). This limits resources available to the council and inhibits its ability to meet its obligations to the residents. On the other hand, it is evident that the council is unable to access numerous potential tax-payers, particularly the self-employed and the informal (*Jua Kali*) sector, which makes up a sizeable, percentage of service users. Nairobi and Mombasa for example, provide among other services, public health care, water, education, housing and social

services, most of which they charge on ratepayers. These ratepayers, however, account for less than 10 % of the resident populations (UNCHS, 1998).

A look at other sources of city council revenue negates the notion that there are limited sources of municipal revenue. There are numerous other sources of revenue for the municipal councils which include land rates on property owned by individuals, companies or the government and rates on developed properties. Fees and charges levied include premise, licenses, occupational licenses, services or facilities such as ambulance and survey fees as well as goods or documents supplied such as water and sewerage, building approvals and transfer fees. Cess and royalties, return on investments, grants and donations from the government as well as short term borrowing through bank drafts are additional sources. Service charge on employees and companies resident in municipalities was also levied until its withdrawal in the 1998/99 fiscal year. In addition, local authorities may finance capital programmes through the local government loans authorities', domestic banks and housing finance institutions, stock issues, capital grants and external loans from international agencies (UNCHS 1998).

Despite the lengthy list of income sources, serious shortfalls are recorded. For example, two thirds of the revenue is collected from land rates. Unfortunately, the council has relied so heavily on this source, raising rates so high that many people now default due to inability to pay. Collections on services such as schools and health care are frustrated by the fact that the rich prefer private facilities. Thus, non-ratepayers benefit most from subsidised services. Besides, the fees paid in these facilities is too low to cover the cost of services; taking for example that health and education, which are the two single largest expenses for the Nairobi

City Council at K£ 10,476,300 and K£ 4,137,500 per annum respectively (UNICEF et al, 1989). Under-charging of rates and their infrequent review, coupled with inefficient collection, have all contributed to massive budget deficits. The city of Nairobi for example has an average annual deficit of 14 % (UNCHS, 1998). All the other local authorities were projected to record a deficit of Ksh 504 million in the fiscal year 2000 / 2001 (Republic of Kenya, 2001). What is evident from the preceding data is that the existing pool of resources has not been aggressively harnessed. Involvement of the private sector can therefore be seen as an attempt to harness alternative resources for the waste management sector where the city authority has failed.

Two salient components of the municipal financial crisis are worth noting. First, the bigger rate defaulter is the government. As at 1998 its arrears with the Nairobi City Council stood at Ksh 1.2 billion but paradoxically, the government is helping the council with foreign loan repayment (See UNCHS, 1998). This raises doubt of the capacity of the same government to enforce compliance from other sectors. Second, in Nairobi, it is increasingly becoming difficult to raise rates, licences and other fees due to the council's failure to deliver services. Besides the cat and mouse game with small traders evading payment, formal organised objections began to emerge when the residents of Karen and Langata neighbourhoods through the Karengata Association, obtained a court order to prevent the council from levying fees (UNCHS, 1999). This incident has strong overtones regarding collection of revenue, and implies strong motive for preference of private sector services. These are key issues that this study explores.

Another important problem affiliated to the issues raised earlier on corrupt practices, and lack of prudent accounting for funds collected by the city council is one of the inordinately large

proportion of Nairobi City Council revenue expended on a bloated workforce. The number of employees at the council shows an astronomical rise from 12,162 in 1986 to 18,818 in 1993 with a commensurate increase in payroll expenditure from Ksh 324,709,080 to Ksh 810,591,000 over the same period (UNDP, 1996).⁵ Ironically, the entire amount of revenue collected from rates, goes into paying staff emolument and benefits, and that accounts for 87 % of the total revenue (UNDP, 1996). There is therefore a massive imbalance in budgetary allocation to other areas. Worse, UNDP (1996) notes that this establishment is bloated by under-utilised lower cadre staff who are irregularly recruited and sustained for political expediency at the expense of professional staff necessary to steer the council policies and operations.

The result of these financial constraints, particularly in the face of dwindling support from central government has meant that fewer resources are being allocated to social services. In spite of the increase in the rate of solid waste accumulation, total expenditure on garbage removal for the fiscal year 1994/95 and 1995/96, for example, indicates a decline of over 8.5% from Ksh 22,344 (000) to Ksh 20,444 (000). Expenditure on individual vital services also declined proportionately as indicated in Table 3.

⁵ See UNDP (1996) for a detailed review of the problems of the city and proposed remedies.

**Table 3: Expenditure on Public Health by the Nairobi City Council
1991 / 92 – 1995 / 96 (Ksh 000)**

	1991 / 92	1992 /93	1993 /94	1994 /95	1995 /96
Cleaning and administration	6,5054	89,116	101,498	26,616	29,856
Cleaning-General	11,628	15,930	18,136	126,996	122,238
Refuse Removal	10,796	14,790	16,838	22,344	20,444
Conservancy	48	66	76	1,492	286
Total	87,526	119,902	136,548	177,448	172,824

Source: Nairobi City Council (provisional) in GOK Economic Survey 1996

* Original figures converted from K£(000) to Ksh(000)

From statistics in Table 3, we note that between 1993/94 and 1994/95, expenditure on cleaning and administration dropped by 73.8%. Similarly, expenditure on cleaning-general, refuse removal and conservancy fell by 3.8%, 8.5% and 80% respectively between the year 1994/95 and 1995/96. These trends can be expected to continue, with a crippling effect on the city services, as the national economy weakens due to the global economic recession. It implies that as the national resources dwindle under the recession, the central government is less able to meet its development objectives to the local authorities. The echo effect is felt on the ground, as the Nairobi City Council becomes gradually unable to fund social services such as garbage collection and sanitation. Inevitably, this macro-environment must be appreciated if we are to form a more in-depth understanding of the solid waste crisis in the city of Nairobi.

2.4 Impact of the Global Economic Recession on the Provision of Municipal Services in Kenya

In spite of consistent articulation of the role of local authorities in the provision of infrastructure and services to urban centres (Republic of Kenya Sessional Paper. No 1, 1996; No 1, 1994 and No 1, 1986), there has been little progress in raising revenue for the necessary infrastructure to sustain these endeavours as indicated in Table 3. Emerging studies on dependency, the global economic recession, the Third World debt crisis and more specifically the debt repayment crisis and related structural adjustment programmes (SAPs) have argued that these have put enormous strain on Third World economies, with serious repercussion for the health and well being of the citizens (Bradshaw et al., 1992; Chawla, 1997; Ghai and De Alcantara, 1990; Zamberia, 1999; Lipson, 1988; Ndegwa, 1997; Mbatia, 1996). Bradshaw and Noonan (1997) have further argued that the International Monetary Fund (IMF) sponsored SAPs account for the increased over-urbanisation, inhibiting economic growth and the physical quality of life. Accordingly, the primary concern is that Third World cities continue to grow at a time when financing for city services are being curtailed and when the growing number of poor desperate people require various services. Indeed, Structural Adjustment Policies are blamed for directly inhibiting urban areas from adequately supporting their populations (Bradshaw and Noonan, 1997).

The debt crisis, which is pervasive in Asia, Africa and Latin America can be traced back to the 1970's when these continents borrowed heavily from international banks to finance domestic development programmes. They received strong encouragement and inducement by the cold war between America and the former Soviet Union, as well as funding from off-shore financial institutions that thrived due to the rise in oil prices and the oil embargoes of 1973 and 1979 (Lipson, 1988). Consequently, Third World countries had by 1991 accumulated a whopping US

\$ 143.2 billion worth of debts by 1989 (Chawla, 1997). The debt crisis has continued to increase in magnitude as interest on commercial loans continue to grow and new loans mature, introducing new principles into the repayment budget. Consequently, the economies of these countries continue to deteriorate in the face of declining market prices for agricultural products, which comprises the largest share of export earnings for developing countries (Lipson 1988). By the 1980s, 40 % of African governments (Kenya included) could not support their economies and had turned to the IMF for balance of payment support. About 20 of them had received World Bank Structural Adjustment Loans. To date, Africa's debt is larger than the total output as measured by Gross National Product (GDP) (Lipson, 1988).

Kenya's external debt currently stands at Ksh 396.8 billion (World Development Report in Daily Nation, September 19,2001). It is largely characterised by a high share of multilateral and bilateral debts, which account for over two thirds of the total long-term debt, standing at 62.9% and 30.7% of the total debt respectively. The government's external service debt in the 1999/2000 financial year alone amounted to Ksh 42.8 billion. Of this amount, principal payment accounted for Ksh 32.9 billion, while 9.9 billion was interest payment (Central Bank of Kenya Annual Report, 1999). The enormity of this debt burden is clearly evident when juxtaposed against government revenue. During the 1999/2000 fiscal year, the government's revenue, exclusive of grants amounted to only Ksh 177 billion or 22.8% of GDP. In addition, the government had to service a domestic debt of Ksh 22.1 billion in an economy characterised by slow economic performance and declining external trade (Central Bank of Kenya Annual Report, 1999). The impact of this debt burden on the government's fiscal operations is that the 1999/2000 budget projected a deficit of Ksh 4.0 billion (0.5% of GDP). This had to be met

through stringent fiscal restraint. Indeed, during the year, there was an overall budget surplus of Ksh 1.9 billion (Central Bank of Kenya Annual Report, 1999). The bravado of this achievement notwithstanding, there is need to question at what cost this surplus was attained.

The price of budget cuts is obviously paid for through cuts in social services and other development programmes. The radical reduction in cleaning, sanitation and waste management services at the Nairobi City Council (see Table 3) are a clear reflection of this. Helleiner (1993) also sees another direct cost of the debt overhang as the reduced maintenance of the existing public (as well as private) capital stock, both human and physical, scarcities of critical materials, slashed budgets, or both. These prevent the normal offset to depreciation and contribute to a growing cumulative backlog of required repairs and rehabilitation (Helleiner, UNICEF, 1993), among other shortfalls. These characterise gradual inability by the public sector to deliver effective service which, in effect, has constrained the public sector to seek civil society collaboration in the delivery of services such as solid waste management. Inevitably therefore, privatisation of public enterprises and services is associated with the International Monetary Fund and World Bank-negotiated Structural Adjustment Programmes (SAPs) imposed on debtor countries to spur economic growth and sustain debt repayment. Structural Adjustment Programmes aim to introduce economic stabilisation guidelines and conditionalities whose centrepieces are fiscal and monetary constraints (Lipson, 1988). The logic of structural adjustments is two-fold: to correct economic imbalances and to introduce institutional reforms essential to achieving sustainable and balanced growth. These are usually facilitated through structural adjustment loans from the World Bank and the IMF. These loans typically contain stringent conditionalities. In Kenya, some of these conditionalities include imposing financial

discipline which reduces wastage of resources; reducing state intervention in essential services and marketing and divestiture and privatisation of state corporations (Lipson, 1988). These conditionalities inevitably limit or eliminate certain public subsidies, thus introducing the principle of cost sharing (Lipson, 1988), a principle feature of the current collaboration between the city council and the private sector in Nairobi.

Parallel to the declining public sector capacity and also directly and indirectly associated with the effect of declining global economic trends and the SAPs on the provision of services is the increasing citizen ability to cope. Increasingly, there is growing consensus that the poor are being severely penalised to repay national debt as governments extract every return from their weak economic position to make debt repayment (Bradshaw and Wallace, 1996). Scholars have argued that instead of improving the welfare of the countries on which they are imposed, SAPs have had adverse effects on the Third World countries (Bradshaw et al; 1992; Mbatia, 1996 and Ghai and de Alcantara, 1990). Bradshaw et al (1992) for example, posit that SAPs have had adverse impact on the life and livelihood of people, directly and indirectly impeding economic growth as well as balanced urbanisation. At the same time, real incomes of workers have fallen which effectively erodes their standard of living (Ghai and de Alcantara, 1990), further inhibiting their capacity to pay for basic services, amid declining service from public institutions. Ultimately, the decline in overall development, health, education and nutrition impacts most on the poor and socially vulnerable groups because this stratum of the society is more dependent on public services than other members of the society. Adverse changes, therefore, have greater impact on them (UNICEF/Kenya Economic Association, 1989).

The above arguments are corroborated by evidence of overall declining economic performance in Kenya. According to the United Nations Development Programme report released in June 2000, Kenya's income per Capita declined from US \$ 355 in 1990 to US \$ 334 in 1998 (UNDP Report in Daily Nation, June 29,2000), with adverse effect on personal incomes of private citizens. To aggravate matters for the poor, the overall distribution of this meagre income has gradually become skewed in favour of the rich. In 1969 for example, the poorest 40% of Nairobians received 17.2% of the total income. This declined to 15.1% in 1974 and 14.3% in 1985. Conversely, the share for the richest 30% went up from 50% in 1969 to 63.1% in 1974 and 63.0% in 1985 (UNICEF/Kenya Economic Association, 1989). The situation for the poorer strata is further aggravated by rising unemployment, particularly in the urban areas. Between 1980 and 1985 for example, in sub-Saharan Africa, unemployment is estimated to have expanded by about 10% (Ghai and De Alcantara, 1990).

Given the above facts, it is evident that the impact of the global economic crisis is a looming contributor to the economic crisis at both national and local government levels, and an important factor in the Nairobi City Council increased incapacity to meet its service obligations to its residents. At the same time, its impact is not manifested equally on all strata of society, which implies that the capacity by different members of the society to cope amid the crisis and their capacity to embrace the services of the private companies differs. A significant aspect of this study therefore is to find out how the social and economic status of people influence their coping mechanisms in the current solid waste crisis and how these consequently impact and are impacted upon by the process of privatisation of solid waste management. At the same time, it

aims to find out the significance of their socio-economic status on their capacity to adjust and adopt privatisation as a sustainable alternative waste management strategy.

Besides impacting on the economic and social aspects of the society, the impact of SAPs on polity is an important dimension in any attempt to understand the dynamics of service delivery in developing countries. In encouraging state divestiture in public enterprises thereby promote privatisation and cost-sharing for services, SAPs have been considered as instrumental in reducing state control over vital sectors of the economy. In doing so, SAPs have been blamed for weakening state legitimacy, leading to confrontations between the state and the non-state sectors (Ghai and De Alcantara, 1990). As Ng'ethe and Kanyinga (1992) have argued, there is emerging competition for space between the two as the private sector gradually begins to take over some of the roles previously dominated by the state. They argue that "... as more space is allocated to civil society and the state's poor development records are challenged by its citizens, the retention of the state's political legitimacy is put at stake"(Ngethe and Kanyinga, 1992 in Mbatia, 1996:63). Conflict and competition is bound to occur when there is change in the traditional and often perceived roles of the two sectors. In line with this, various studies have addressed three pertinent questions: Does the state have a role to play in development? What is the role of the civil society? Is state-civil society collaboration necessary and viable? These questions, as discussed in the Section 2.5, are essential to the understanding of the current as well as emerging collaboration between the Nairobi City Council, which is the delivery arm of the central government and the civil society.

2.5 State-Civil Society Collaboration in Development

Beyond the dependency school as discussed in Section 2.4, scholars have shifted focus to the role of the state in development. Proponents of the statist, state-in-society and state-civil society perspectives in development have consequently made various arguments on the role of the two sectors in development. But what constitutes a state? Max Weber's widely quoted definition gives the meaning of the state as:

“...an organisation, composed of numerous agencies, led and co-ordinated by the state's leadership (executive authority) that has the ability or authority to make and implement the binding rules for all the people as well as the parameters of rule-making for other social organisations in a given territory, using force if necessary to have its way”. (Max Weber, 1964: 156) in Migdal (1988:19).

The opposite of the state then, is the non-state or civil society. Cohen and Arato (1990) define civil society as

“the sphere of social interaction that comprises the intimate sphere (family), associational life, social movements and forms of public communication operating in the arena of organised non-state, non-market sector with origins in both the modern and traditional bases in society (Cohen and Arato, 1990 in Zamberia (1999:42).

This definition comprised a vast sector, but of specific concern for this study is the intimate sphere (family) and the organised non-state. A relevant part of the non-state that is excluded in Cohen and Arato's definition is the private or commercial sector, whose motivation is primarily profit. In this study this constitutes the micro enterprises involved in solid waste management.

Since Kenya's independence in 1963, the role of social development has been explicitly allocated to the government, with central government funding development projects through the various government ministries. The ministry is the umbrella body through which government policy and information flows to the local authority and vice versa from the City Council to the

government. It is also responsible for advocating for the public to the Treasury (UNDP, 1996), as well as the crucial role of implementing and supervising development projects, ranging from water and sanitation, to medical services and education, among others, a role that it continues to play to a considerable degree. Local authorities, including the Nairobi City Council, were therefore established through the Local Government Act of 1963, under the jurisdiction of the Ministry of Local Government, to meet such obligations. Before the advent of privatisation the government, through the Nairobi City Council has been solely responsible for providing solid waste services to the residents of Nairobi. The state's role in development has therefore been pervasive and presumed in development (Migdal, 1988).

The central role of the state means that development of any sector, including that of solid waste, is highly dependent on the efficiency of the state. This is important, both at the level of project formulation, funding, and implementation as well as policy, planning and administration. Consequently, Migdal (1988) argues that the capacity of the state to deliver development depends on the strength of the state itself. He therefore, categorises states as strong or weak on the basis of their "... capability to penetrate society, regulate social relationships, extract resources and appropriate or use resources in determined ways"(Migdal 1988.4). The ability or inability to perform those tasks defines a weak from a strong state. It is generally recognised that the efficacy of weak states in facilitating development is eroded and Kenya has been criticised along the criteria set out by Migdal, as a weak state (Migdal, 1988; Bradshaw, 1993 in Mbatia 1996). Mbatia (1996) in a study of the provision of health care by the state in Kenya, for example, notes that although the Kenyan state has a high capacity to extract substantial resources for health care, it has hopelessly failed to appropriate them efficiently to improve the

quality of public health-care (Mbatia, 1996: 45). While concurring with this argument, it is necessary to review it from the perspective of solid waste mismanagement. An important argument presented in Section 2.3 is that the Nairobi City Council has failed considerably in both the extraction and appropriation of resources necessary for solid waste management. The capacity of the central government to formulate policies and provide funding as well as legislation that supports appropriate management of solid waste has similarly been noted as lacking. Indeed, excessive interference by the central government has been pointed out as significantly hindering the performance of the City Council. An apt summary of this predicament is provided by Chazan (1998) in the argument that the central government organs have failed in many of their economic roles. They have failed to use their revenues judiciously, have distorted their distribution system, regulated production in ways that have reduced output, and formulated policies with many urban, gender and industrial biases, thereby further restraining economic prospects (Chazan, 1998 in Mbatia, 1996).

The weak state thesis has similarly found support by various scholars, who attribute much of the failure of Third World development and their massive economic distress on the failure of the state (Bradshaw, 1993 and Chazan, 1988). Deriving from their study of the state and NGOs in the delivery of basic services in Kenya, Kanyinga and Ng'ethe (1992) further argue that economic recessions, domestic economic and political problems, as well as the general effect of SAPs all have reduced the state's capacity to deliver services. Thai (1987: 83) for example, observes that "public enterprises are now widely regarded as having failed to fulfil the goals set for them." In this study, the core concern is that the state has failed, through its policy and financial planning to effectively cater for waste disposal. This failure has increased pressure,

both from the citizens, the donor community, as well as from within the government (and the City Council itself) to privatise. Involvement of the civil society is therefore, seen to have increased gradually with the state's inability to deliver development (Bradshaw, 1993 in Zamberia (1999); Mbatia 1996; Kanyinga and Ng'ethe, 1992). The result is the intervention of NGOs and, as in the case of the solid waste crisis, the micro-enterprise sector as well.

The state on the other hand has been viewed as highly reliant on the civil society for its effectiveness. Various scholars (Putnam, 1993; Nugent, 1993) even imply a synergetic relationship between the two. This implies that the state-civil society relations strengthen state institutions and effective state institutions in turn, create an atmosphere that allows civic operations to flourish (Putnam, 1993 and Nugent 1993 in Zamberia, 1999). Migdal looks at this interaction as a situation where the state operates in and is influenced by the society in which it operates; an argument that gives form to his reference to States-in-Society (Migdal, 1993). Consequently, effective development depends, not just on the effectiveness of each of the sectors, but on the harmonious interaction between the two. The resolution of the solid waste crisis in the city of Nairobi therefore requires an effective central government that draws effective policies and enforces them in an environment that is conducive to private sector participation. The private sector on the other hand needs to operate in an environment that is receptive and in tune with the central government regulations. Therein lies the synergy between the sectors. A major concern for this study is the nature of relationships that exist within the environment of the solid waste crisis, particularly given that the city council has failed to deliver on its promises.

Nyang'oro (1993) sees a possible reaction to the prevalent discontent in the exit option that is influenced by either apathy or disillusionment, particularly on the part of the civil society. According to Nyang'oro, exit entails investment from areas of state control to areas where it becomes possible for individuals and groups to work outside the state (Nyang'oro, 1993 in Mbatia, 1996). Exit in the arena of public services may mean withdrawal from use of the service. The counter effect is that the population that is able to pay rates such as those of health and sanitation withdraw their levies, with adverse effect on the state revenue and consequently the service delivered to the more needy. Evidence of this is indicated in the area of health (Mbatia, 1999) and in the case of municipal services, the Karengata Association withdrawal of levies from the City Council (UNCHS, 1998). At another level Kanyinga and Ng'ethe (1992) argue that in the politics of development space, there is unease by the state due to competition from the private sector. This puts strain and suspicion in the emerging collaboration. This theme of conflict is inherent in this study as I attempt to uncover the way in which the two parties relate in the space of waste management. Kanyinga and Ng'ethe however, argue that the state will continue to be the senior partner in this competition. Its role may even expand in the area of policy formulation and regulation (Aseto and Okelo, 1997; UNCHS, 1998). This implies that even in the event of full private sector participation, the presence of the state will always be necessary.

What is evident from these preceding debates, particularly as they feature in the area of solid waste disposal and as articulated by Pfammatter and Schertenleib (1996) is that the co-existence and interdependency of the two sectors demand formulation of institutional frameworks that will enhance operational efficiency. Setting up this framework, inevitably, involves the

deliberate collaboration between the state and the private sector. Further it is appreciated that once these frameworks are in place and effectively so, cities can evolve effective mechanisms for sustainability of their cities and the associated environment. David Morris (1982) provides a strong case for successful collaboration between the two sectors in his study of the American self-reliant cities. Although it is evident that this kind of collaboration can be result oriented, there is no pre-cast formula on how to achieve positive results. It therefore becomes prudent to assess the origin and motivation of the current collaboration in the city of Nairobi as represented in the privatisation of solid waste management services. Section 2.6 therefore, discusses the privatisation of public infrastructure in Kenya, the challenges it encounters and the benefits as well as foreseeable shortcomings that may ensue in the solid waste management sector.

2.6 Privatisation of Public Infrastructure in Kenya ✓

Privatisation has been defined as "the sale of government assets to private citizens"(Aseto and Okelo, 1997). It is however seen to extend beyond this definition to involve the opening up of the state monopolies to competition (Aseto and Oyugi, 1997). The conceptual application of this definition, however, is rather ambivalent. As noted at the Regional Workshop on Privatisation and Financing of Municipalities in the Eastern African Sub-Region (1988), privatisation has been understood as taking different forms. Among them are contracting, leasing out tasks and responsibilities to private sector firms, commercialisation of services by municipal departments or parastatals, and the complete transfer of responsibilities for providing the services to private sector firms, who set up their own prices (UNCHS, 1988). Privatisation of solid waste in the city of Nairobi has primarily focused on sub-contracting by the City

Council of garbage collection and sanitation services to private firms, while some private sector enterprises operate independently. One company, the Kenya Refuse Handlers for instance is officially licensed as a private waste collection company and is officially contracted by the Nairobi City Council to maintain sanitation of the city's central business district.⁶ Other private sector companies serve industries, institutions, commercial establishments and the high and middle- income residential areas on a commercial basis

The current debate in most developing countries is: Should governments privatise public concerns? The principal government agenda for privatisation in Kenya is clearly articulated in the government's Sessional Paper Number 1 of 1986. In this sessional paper, the government attempts to promote policy formulations "that encourage involvement of the private sector in the provision of facilities and services; either as a partner or as the principal agent"(GOK Sessional Paper No 1, 1986.30). Through this approach, partnership between government agencies and private firms is seen to offer a promising approach for the development of urban and industrial sites, construction of residential housing, building of public utility infrastructure, or the leasing and operation of public facilities and services (Ibid). Through the sessional paper the government also encourages the mobilisation of additional resources for urban infrastructure that supports productive activities. This was perceived as a promising strategy for strengthening the financial capacity of local authorities; particularly those pertaining to maintenance of services and facilities (GOK. Sessional Paper No. 1, 1986).

⁶ Research findings at the UNCHS sponsored workshop on Municipal Services in Eastern Africa. Naivasha, indicate that this is the only company licensed as a waste collection company. All others are registered as private enterprises.

The public enterprise reform programme of the government has an even more focused agenda for privatisation. It aims to, *inter alia*, expand the private sector in the economy by shifting more of the responsibility for production and delivery of products and services from the public to the private sector. This is expected to offer numerous advantages including creating a more level playing field by eliminating preferential treatment and increased monopoly rights, thereby enabling the private sector to enter the areas of activity of the public enterprise on an equitable basis. It also aims to reduce the demand of the public enterprises on the exchequer so as to improve the use of scarce resources. Consequently, it is expected to enhance the returns on these resources by achieving greater efficiency in both private and public enterprises due to greater responsiveness to market signals and commercial criteria. In addition, privatisation is expected to reduce the base of ownership and enhance capital market development, while improving the regulatory environment by selecting more economically rational means. The latter is expected to reduce conflict of interest between the regulatory and commercial functions of public enterprise. The extent to which these have been achieved is the subject of much needed research.

Kenya started its privatisation programme in 1992. It initially targeted non-strategic parastatals, which had become plagued by inefficiency and survived on subsidies and transfers from the central government (Aseta and Okelo, 1997).⁷ These institutions are generally perceived as having become a fiscal drain on the exchequer, leading to the deterioration of social services. Municipal Councils such as the Nairobi City Council typify this inefficiency. Privatisation as

⁷ During the 1997-1984 fiscal year for example, 16 major agricultural and agri-based corporations made estimated losses of about \$183 million at 1986 exchange rates. Consequently, the government had to spend large sums of money to bail them out (Aseta and Okelo, 1997, 24)

advocated by the on-going collaboration with the private sector is seen as a viable solution to this predicament. It can also be interpreted as a social force in reaction to changing consumer demands and the state's response to an increasingly critical and more pro-active civil society. The strategy of the city council-private sector partnership therefore, follows on the heels of the privatisation of other municipal services such as water, markets, toilets and bus parks.

At face value, privatisation does appear to be a panacea for the inefficient, debt-burdened local councils. However, application of the principle needs to be treated with caution. As the World Bank (1997) reiterates, its success depends on how well the chosen private sector arrangements fits local circumstances. Additionally, it hinges on whether the regulatory environment is suitable, and how well the reforms respond to the concerns of those affected (World Bank, 1997). Thus, the merits and demerits of privatisation must be clearly analysed from a localised and sector specific perspective before appropriate policies can be formulated and a viable strategy defined.

The popularity of privatisation can be seen to derive from numerous benefits associated with it. According to Michel and Warrick (1997) privatisation establishes an arms-length relationship between the service provider and short-term political pressures, while limiting intervention by powerful interest groups. One delimiting factor in the operational efficiency of the Nairobi City Council is the excessive control by the Central Government and undue interference from political interest groups. These limit entrepreneurship and curb efficiency; two factors that are presumed in the private sector. Michel and Warrick (1997) however, caution that in situations where commercialisation and corporatisation options are adopted, it has proved virtually

impossible to keep politics at bay while the government is the owner, regulator and operator. The current privatisation formula with the Ministry of Local Government controlling the City Council and the services partially sub-contracted to the private sector would lend credence to this caution.

Privatisation is expected to result in increased efficiency in investment, management and operation. These can derive from four areas: Commitment to cost-covering tariffs essential for infrastructural maintenance and expansion; improved incentives for operational efficiency (especially with profit in mind, lower cost-overruns, low staffing, adaptive technology, and enhanced revenue collection); the opportunity to tap competitive discipline; and access to management expertise and technology which is essential for commercial enterprise. These are obvious advantages that are lacking in the Nairobi City Council. Concern that staff may lose their jobs in the event of privatisation is however a key concern that can bring the government sector and private investors in direct conflict. It has however been argued that the benefits derived from privatisation far outweigh the loss and that improved financial returns would even ensure higher salaries for those who remain (Nellies, 1999). A review of 28 divested firms in Egypt further corroborates this. It reveals that privatisation resulted in increased sales (71 % of sample), increased earnings (68%), increased average earnings (68%), increased average salary for workers (96%), and a decline in both short and long-term debt (82%) (Nellies, 1999). This factor nevertheless, does not negate the possibility of direct opposition from the state corporations.

A major presumption in the privatisation debate is that it will unequivocally hand over the specific sectors to competent private enterprises. One concern as expressed by Nellies (1999) is that transitionally weak economies may not deliver on privatisation as they usually turn over mediocre assets to people lacking the incentives, skills and resources to manage them well (particularly the wily and well-connected). One of the more outward causes of apprehension in Kenya's privatisation and one that has been the subject of overt public debate is the transparency with which state corporations are being divested. In a country that is noted for endemic corruption Nellies concerns are quite pertinent. Another inherent and related cause for apprehension is the existence of too many supervising state officials becoming interested more in extracting rents, selling licences, permissions and protection to the firms rather than enforcing policy (Nellies, 1999). Currently, it is not clear the nature or calibre of the enterprises that are venturing into the solid waste business, or whether there is indeed promise of improved performance. In fact, Nellies (1999) argues that in situations where the degree of competition has remained unchanged before and after privatisation, efficiency may not be guaranteed. This study, in its limited scope, hopes to shed light into this area.

The issue of competitive and independent pricing by the private firms has also raised concern for the affordability of the divested services (Galah and Shirly, 1994; UNCHS, 1998; Zurbrugg, 1999). One of the arguments for public enterprise is the fear that the private sector will exploit consumers where there is a monopoly or oligopoly power. As Galah and Shirly succinctly put it "divestiture may lead not only to more efficient operation, but also to more efficient exploitation of consumers" (Galah and Shirley, 1994). In fact, the issue of pricing and affordability has been a core concern for both development agencies and scholars (UNCHS,

1998; Zurbrugg, 1999. Aseko and Okelo, 1997). This is a prime concern for this study as it ultimately affects the universal adoption and sustainability of waste management strategies. As indicated in Chapter 1, the solid waste crisis is worst manifested in the less affluent areas of the city. Conversely, most private enterprises, ostensibly due to commercial considerations, operate in the more affluent neighbourhoods. Given the disparity in incomes between the high and low-income citizens in Nairobi, there is strong indication that income is an important consideration in the privatisation debate. This means that whatever privatisation strategy is adopted must be sensitive to pricing, without negating provision of service to the poor neighbourhoods. UNCHS (1998) even proposes consideration for cross subsidising of tariffs for the lower income neighbourhoods. An essential component of this study therefore, is the implication of income differentials in the adoption of privatised services and their implications for the long-term sustainability of the privatisation strategy as currently defined.

Privatisation is seen as a possible solution for the endemic shortage of finance for development as it encourages tapping of funds from the private sector. Michel and Warrick (1996) for example, note that US \$ 70 million, for Cote D'Ivoire's Independent Power Project (PI) is funded from private sources. The World Bank has also laid strong emphasis on this; putting particular emphasis on privatisation as a means of reducing government expenditure and indebtedness, and the external debt burden. In contradiction, the World Bank also seeks to promote privatisation as a signal that stimulates foreign direct investment (Michel and Warrick, 1996). This agenda puts question to the intention to reduce the mounting external debt and lend credence to local fears that privatisation would only offload public enterprises to foreigners. It would discourage citizen participation in matters that directly affect them, and inhibit pursuit of

serious and sustainable home-grown solutions to the problem. Such inclination may create apathy among the citizens, which would be a direct block to sustainable development. The agenda for the World Bank notwithstanding, it has been argued that the government of Kenya may have agreed to privatise just as a reluctant response to this kind of external pressure, in which case it is seen as privatisation with no real commitment (Aseta and Okelo, 1997). Should this notion hold true, then the institutional commitment to the formulation and moderation of policies and practices that will see privatisation as a sustainable strategy in the area of solid waste management would be threatened.

As with most developing countries, Kenya faces specific challenges that inhibit private investment and that directly impact on investment in the area of solid waste. First, the presence of small markets raises concerns of affordability and payment risks for investors. This also has linkages to low incomes, and poor economies as well as a traditional lack of payment for infrastructural services that may affect cost-recovery tariffs (Michel and Warrick, 1996). In preceding parts of this review, we have noted the declining national economy and real personal incomes of Kenyans. Based on people's real income and the prevailing poverty levels, it becomes necessary to ask the question: Are the people ready for privatisation? If so, how wide is the market that is both sensitised enough and able to adopt the strategy? An important component of this study therefore, is to look at the way these influence both the adoption of the privatised services and the capacity of the private enterprise to set up and operate the waste management services. Second, Michel and Warrick (1996) argue that the existing potential for mobilising local capital has not been harnessed. While the current collaboration of the Nairobi City Council and the private sector can be said to be an attempt at doing so, it is prudent to

question how far attempts have been made to involve local communities in finding localised solutions to the solid waste crisis. This inevitably raises the question whether these local solutions may not be more practical in the long-term resolution of the problem than the current strategy may be. Lessons from other developing countries indicate that alternative and relevant local solutions can be found to cost-effectively tackle the problem.

A cross-cultural study of private sector management of solid waste management in Third World cities by Roger Pfammatter and Roland Schertenleib (1996)⁸ provides valuable lessons on alternative strategies being adopted in poor economies. They note that these countries have found viable localised methods of solid waste disposal that are sensitive to the socio-economic and infrastructural aspects of the communities for which they are adopted. In some cities for example, people use the communal storage/bring system case, whereby the households carry waste to communal storage points. In china for example, citizens carry refuse to a 'mobile' collector with a handcart or in a tricycle. An alternative method, the Door-to-Door Collection with Handcarts is also widely used in cities such as Burkina Faso, while Indonesia uses tricycles. It is then brought to collection points for transfer to larger transport vehicles. It is particularly effective in low-income areas with narrow streets, low generation rates and low wages. The two methods above utilise cheap and locally available technology, a very important aspect of sustainable technology that can be easily adopted to deal with the cost aspect of the crisis in low-income areas. Indeed the suggestion to use "*mikokoteni*" (the local handcart) for garbage collection has been severally proposed for the Nairobi City Council, but never seriously

⁸ Pfammatter and Roland Schertenleib (1996) for the Swiss Federal Institute for Environment Science and Technology studied the cities of Cucuta (Colombia), Cajamarca and Lima (Peru), La Paz (Bolivia), Ougadougou (Burkina Faso), Abidjan (Cote d'Ivoire), Accra (Ghana), Douala (Cameroon), Karachi (Pakistan), Shanghai (China), Pandang (Indonesia), and Cirebon, Yogyakarta and Surabaya (Malaysia).

followed up on. Some countries like Indonesia have also managed to incorporate the extremely poor sector of the society such as human scavengers into garbage management. Their activities consequently help in the recovery of valuable resources, reduction of waste quantities and income generation for the poorest sector of the community. A lesson such as this bears consideration in Nairobi as it promises both social and economic integration of a group that is considered a pest and a security threat.

Such activities, as recognised by Pfammatter and Schertenleib (1996) can be achieved both through community-based models and micro-enterprises. The community-based model, which is outside the scope of the current study, has been the subject of much NGO attention, while little has been done to study the micro-enterprise sector. Both options are tentatively co-existent in Nairobi, and need harmonious integration and regulation. The departure point of such harmony is information on their particular prospects and viability for different neighbourhoods. This study hopes to contribute to such an understanding.

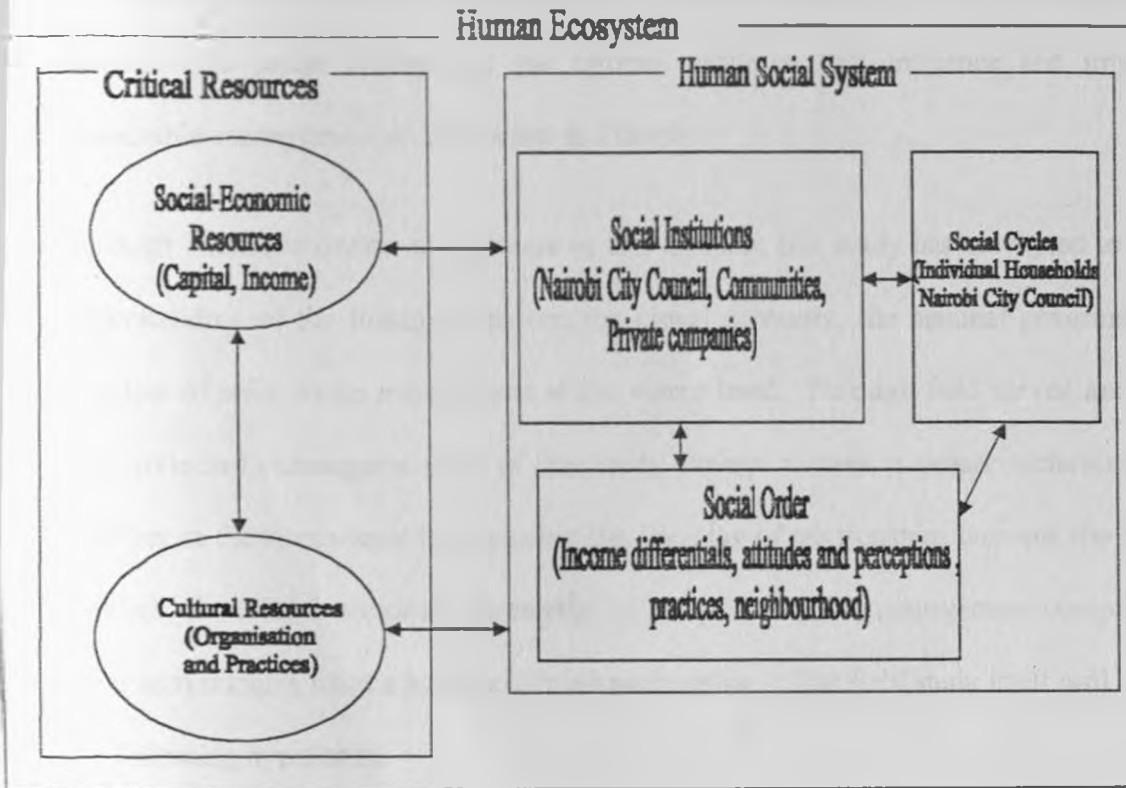
2.7 Theoretical Framework

This study is based on the theory of human ecology. Studies in ecology recognise that natural systems, evolved over millennia, are being threatened by the technological development initiated by the industrial revolution and the resultant population explosion (Jarry and Jarry, 1995). Important indices include environmental degradation, including pollution of land and water, thus upsetting the natural balance of many smaller systems. Studies in human ecology centre on the application of ecological principles to the understanding of the spatial distribution

of social groups and the relationships among them, while studies in urban ecology, with its origins in the Chicago school in the 1920's, specifically, focuses on the city in terms of the social characteristics of areas and neighbourhoods.

To better understand the problem of solid waste management in Nairobi, this study utilises the Human Ecosystems Model (HEM). The HEM, developed by Machlis, Force and Burch (1997) is the most useful model for this study as it is able to combine the benefits of the ecosystems models, which typically only incorporate absolute human energy consumption and transformation, with the social processes that influence energy use (Luzadis et al, 2002). The HEM explicitly focuses on humans in its human ecosystems model. According to Burch and Grove (1999), the model provides a basis for using a systems approach by describing the internal behaviour of a system and the interactions with external systems. It also provides a basis for examining different types of system change by clarifying relationships between social and biophysical patterns and processes (Machlis and Burch, 1997 in Luzadis et al , 2002). Specifically, the key elements in the model include critical resources, particularly social-economic resources including income and capital as well as cultural resources such as organisational capacity and practices. It also includes social institutions represented in this case by the Nairobi City Council and the local communities and focusing on their resource management, and finally, the social cycles associated with the two as well as the social order emanating from the income differentials, attitudes, perceptions and practices in the specific neighbourhoods. With specific focus on the study of solid waste in Nairobi, Figure 1 represents a loose adoption of the human ecosystems model as represented by Machlis, Force and Burch (1997).

Figure 1: Theoretical model



Source: Adapted from Machlis, Force and Burch (1997) Human Ecosystems Model as reproduced by Luzadis et al (2002:90).

As noted in preceding literature, population pressure and expanding city boundaries, amid dwindling personal and institutional resources as well as the declining institutional capacity to cope have led to the phenomenon of declining social services, and the problem of solid waste disposal in particular. The individual social systems are consequently evolving and inevitably undergoing differentiation in order to cope with the changing environment. This means that roles, attitudes, and practices at the community level are changing and the institutional structures and resource management strategies to manage this change are shifting alongside the interdependent relationship between these institutions. In line with the human ecosystems

model, therefore, this study explores the institutions of the Nairobi City Council and the residential neighbourhoods of BuruBuru and Ngumba, and attempts to understand the interplay between this social system and the critical resources, that influence and impact on the sustainable management of solid waste in Nairobi.

Through extensive review of literature in this Chapter, this study has attempted to bring about understanding of the linkages between the global economy, the national government and the problem of solid waste management at the macro level. Through field survey and analysis of data collected, subsequent parts of this study attempt to seek a deeper understanding of the problem at the micro-level by exploring the interplay of relationships between the Nairobi City Council, the Private sector as represented by the private waste management companies and the local communities from a household level perspective. The field study itself will be guided by the following hypothesis.

2.8 Hypothesis

The survey research will mainly be concentrated at three sectors: the household, the private waste collection companies and the City Council. Consequently the survey is based on the following hypothesis:

HYPOTHESIS 1: That household income influences waste disposal practices by households.

HYPOTHESIS 2: That the poor relationship existing between the city residents and the city council influences resident's willingness to pay rates and levies due to the council.

Hypothesis 1 and 2 will be tested through the variable-based approach

2.7 Operationalisation of Concepts

Household Income – Household income refers to the average earnings due to the respondent per month.

Waste Disposal practices- Waste management practices refer to the methods that households apply in the elimination of the household generated solid waste.

Poor relationship – Poor relationship refers to the respondent's assessment of the quality of their association with the city council.

Willingness to pay Rates and Levies- Willingness to pay rates and levies refers both to the actual payment of city council rates and levies as well as the resident's expressed level of readiness to pay.

CHAPTER THREE

METHODOLOGY

This study utilises data from various sources; including the Nairobi City Council, private households in BuruBuru and Ngumba estates and private waste management companies operating within the two estates. It applies both qualitative and quantitative methods of data collection and analysis. This chapter outlines the methodology applied in this study. Section 3.1 outlines the units of analysis and observational units of the study, while Section 3.2 gives a description and justification of the area of study. Section 3.3 provides a summary of the strategies used during sampling of respondents and Section 3.4 details the sources of data and techniques of data collection. Section 3.5 defines the methods used to analyse the data and, finally, Section 3.6 reports on problems that were encountered during the process of data collection.

3.1 Units of Analysis and the Observation Units

A unit of analysis as defined by Singleton et al. is "the entities (objects or events) under study. "It is what or who is to be described or analysed" (Singleton et al., 1993:69). An observation unit on the other hand is "an element or aggregate of elements from which information is collected"(Babbie, 1995:195). It may or may not be the same as the Unit of analysis. This study focused on 3 units: The household, the Nairobi City Council and the Private Waste collection Companies. The observation unit for the household was the male or female head of the household. The observation unit for the city council was a key official of the department of environment, while that of the private companies was a key administrator of the company.

3.2 Description and Justification of the Area of Study

Ngumba and BuruBuru Estates, which are the two neighbourhoods selected for this study are representative of the middle income estates of Nairobi. We have previously noted in Chapter 1 and 2 of this study that the crisis of solid waste in Nairobi is less apparent in the high income neighbourhoods than it is in the middle and low income neighbourhoods. This study focuses, however, focuses on the middle income neighbourhoods rather than the low-income neighbourhoods for two reasons: One, the garbage crisis in the low-income neighbourhoods has been investigated in its various dimensions by various studies (see Ikiara, 1993; Mwangi, 2001). They have also been the centre of attention for many NGO activities such as UNICEF, WHO, and numerous community-based organisations, both on a continuing and ad hoc basis. This study therefore focuses on the less-well investigated middle income neighbourhoods which face similar problems but which have not enjoyed commensurate external intervention or study. Two, low-income neighbourhoods are considered among the less advantaged groups in society. Intervention by the non-state is therefore not usually on a commercial basis, which largely precludes investment by the private garbage collection companies, particularly in the form that they currently take. This makes this study more relevant for less economically distressed neighbourhoods as represented by the two estates under investigation.

Nairobi province is divided into eight divisions that are zoned within the areas of Nairobi North, South, East and West. As indicated by Figures 2 and 3 the two estates represented in this study are located on the Eastern side of the City (See Appendix 4 and 5), which, as noted in Chapter 2 of this study, has the most wide-ranging manifestation of the solid waste crisis, making it more

relevant than any other area for study. Familiarity with the two estates chosen for the study indicates a viable case of similarity and contrasts which make it suitable for this study. Ngumba estate is located in Kasarani division, which is on the outer fringes of the city. It is a relatively smaller estate in comparison to BuruBuru, without most of the usual infrastructural amenities such as paved roads, street lighting and garbage collection by the city council. In addition, it lacks uniformity of housing structure, bearing a mix of flats, maisonettes and bungalows, as well as informal housing structures. The estate does not receive the services of garbage collection from the city council. It therefore provides a good model to study the emergence of the private sector in a community with heterogeneous socio-economic circumstances. BuruBuru Estate is located in Makadara division to the south of Ngumba, and provides a viable contrast to Ngumba Estate, being a more uniformly designed estate, with relative uniformity in housing, road network. It also lies within the sector of the city that is scheduled to receive the services of the city council in the area of solid waste but is also serviced by private companies. The two estates, being both middle income but diverse in location, service orientation, as well as physical characteristics, are expected to reflect both similarities as well as contrasts in neighbourhood adaptation to the solid waste crisis and consequently, the strategies of its management.

3.3 Sampling

Multi-stage sampling was adopted using a combination of purposive, cluster, quota and convenience sampling strategies as follows:

Purposive sampling was applied for the selection of site for study as justified in Section 3.2. While Ngumba Estate is a small, one- phase estate, BuruBuru Estate comprises six phases: Buruburu phase I, II, III, IV and V and V-Extension. Cluster sampling was therefore, employed to select the phases of BuruBuru to be surveyed. For a more representative study of BuruBuru, two phases of the estate were studied, Phase I representing the older phase of the estate and Phase V representing the newer phase. Phases I and V-Extension were selected for two reasons: First, they are clustered together, which provided convenience in application of time and scarce resources and secondly, Phase I, being the oldest phase, provides a viable contrast to Phase V-extension, which is the newest phase. Purposive sampling was also applied in the selection of key informants for the study of the private companies and the Nairobi City. The study therefore, targeted the owners/administrators of the private companies viz: Evabo and Danbeat enterprises operating in Ngumba Estate and PIK- A- KAN garbage collectors in BuruBuru. Preliminary enquiry from residents of the respective estates helped identify the private companies to be studied. At the city hall, interview was held with the Officer- In-Charge, Contract management at the cleansing division, a division in the department of environment. This key informant consequently guided the derivation of secondary data from the Nairobi City Council.

A preliminary survey visit of the Ngumba and BuruBuru initially intended to obtain a sampling frame for the household survey, after which systematic random sampling was to be applied to derive the specific households to be interviewed. However, due to the discordant pattern of housing structures in Ngumba and BuruBuru Phase I, it was impossible to get a complete and reliable sampling frame in order to successfully apply systematic random sampling.

Consequently, a combination of quota and convenience sampling was used instead, with a proportionately equal numbers of respondents being sampled from each of the two estates. During the survey, a deliberate attempt was made to sample respondents from each of the lanes in each estate, targeting the maisonettes, flats as well as the semi-permanent buildings within the estates

The household survey drew a total sample of 100 households- 50 from Ngumba Estate and 50 from BuruBuru Estate. Although attempt was made to draw an equal number of respondents from each of the phases of BuruBuru, the actual study sample derived 27 from Phase V and 23 from Phase I to make up the total sample of 50 respondents. The departure from the intended sample is attributed to actual sampling difficulties on the ground. Poor organization of houses and lack of uniformity of houses in Buru Buru Phase I made it more difficult to get easy access to the respondents. It is noted that this phase of Buru Buru has a large number of housing extensions, with a mix of maisonettes, flats, residential and business premises adjacent each another. Many of these housing extensions lack clearly defined access entrances or plot boundaries. We were therefore, compelled to sample those houses that were accessible and whose occupants were available and willing to be interviewed. A larger sample was consequently drawn from PhaseV, which is better ordered and therefore easier to access. Table 4 shows the sample distribution within the estates of study.

Table 4: Distribution of Respondents by Estate of Residence

Estate	Frequency	%
Ngumba	50	50.0
BuruBuru -PhaseV	27	27.0
-Phase I	23	23.0
Total	100	100.0

3.4 Data Sources and Techniques of Data Collection

The study derived data from three main sources: individual households, private waste management companies and the Nairobi City Council. Both qualitative and quantitative (variable- oriented) data were utilised as follows:

To study the households both qualitative and quantitative methods were applied utilising a combined structured and unstructured questionnaire and supplemented by the observational method. The structured questionnaire was utilised to derive variable-based data, which was essential for testing the conceptual arguments postulated in both the theoretical framework and the hypotheses. Semi-structured questions and open ended questions were also utilised to obtain explanatory quantitative data on the variables under observation. Direct observation was further adopted to capture information on the status of the household facilities and the general state of solid waste mismanagement and environmental hygiene in the neighbourhoods.

Key informant interviews using unstructured interview guides were used for the Private Waste companies and the Nairobi City Council. These elicited descriptive data that acted as a bridge to the quantitative data and the theoretical conceptions articulated in the literature review. Secondary data were also derived from official and published documents of both the Nairobi City Council and the private waste companies. These may comprised both quantitative and qualitative data. Table 5 summarises the sources of data and the methods of data collection used.

Table 5: Summary of Sources and Techniques of data Collection

SOURCE OF DATA	TECHNIQUES OF DATA COLLECTION	TYPE OF DATA TO BE OBTAINED
<ul style="list-style-type: none"> • 1. Heads of households 	<ul style="list-style-type: none"> • Interviews using a standardised structured and semi-structured questionnaire • Direct observation 	<ul style="list-style-type: none"> • qualitative data • quantitative data
<ul style="list-style-type: none"> • 2. Key informant - Nairobi City Council 	<ul style="list-style-type: none"> • Interviewing using an unstructured key informant guide • Review of official records of the Council 	<ul style="list-style-type: none"> • Qualitative data • Quantitative data
<ul style="list-style-type: none"> • Key informants of Private waste management companies 	<ul style="list-style-type: none"> • Interviewing using an unstructured key informant guide 	<ul style="list-style-type: none"> • Qualitative data

3.5 Data Analysis

The data collected were analysed both qualitatively and quantitatively. The qualitative data was categorised and organised into themes and concepts. From these, major generalisations were formulated and relevant arguments analysed and interpreted in perspective of other key arguments in the study. The quantitative data were coded and statistically analysed using the Statistical Package for Social Sciences (SPSS). Basic descriptive and inferential statistics were utilised. The descriptive statistics principally provided summarising measures for the measurable and enumerable characteristics of the data. These include calculation of simple statistics such as the mean, frequency distributions, and percentages. Inferential statistics were essential for drawing conclusions on the variables of interest; conclusions that are essential for the testing of the hypotheses. Cross-tabulation as well as the Pearson's Chi-square and Gamma tests of correlation were utilised.

The Pearson's Chi-square (χ^2) is a technique of statistical analysis that attempts to establish relationship between two variables both of which are categorical in nature. The technique compares the proportion observed in each category with what would be expected under the assumption of independence between the two variables (Mugenda and Mugenda, 1999). If the observed frequency greatly departs from what is expected, then we reject the null hypotheses that the two variables are independent of each other and conclude that one variable is related to the other.

Gamma is a symmetrical measure of association between two ordinal variables indicating the direction and strength of the association. It is based on the number of same-order pairs or

concordant pairs (P), and the number of different-order pairs or discordant pairs (Q) Its value ranges between negative -1 and 1 with values close to an absolute value of 1 indicate a strong relationship between the 2 variables and values close to 0 indicate little or no relationship.

3.6 Problems Encountered in the Field

In the course of field data collection, various problems were encountered as enumerated below:

1. **Lack of organized housing structures-** In both Buru Bururu phase I and Ngumba estates, there are many housing extensions with multiple entrances, often in varied stages of completion. In many cases, the extensions acted as both business and residential premises. This further complicated sampling, making it impossible to draw a reliable sapling frame. Consequently, it was not possible to apply probability sampling methods as initially intended and non-probability sampling techniques had to be used instead. In some lanes, accessibility of the households determined who was interviewed. In the informal housing sector in Ngumba Estate, close proximity of the houses was a disadvantage because residents did not appreciate the regular intrusion. Some declined to be interviewed for the reason that they had no further response beyond what their neighbour had already stated as their circumstances were similar. In these cases we were only able to interview those who consented.
2. **Absence of household heads-** In some cases, the heads of households selected for interview were absent, particularly as the study area comprises people in either formal employment or business. This problem was tackled by making return visits

and rescheduling the interviews for late afternoon and weekends when most people are either not at work or have returned home from work.

3. **Refusal or reluctance to be interviewed-** Some respondents refused to be interviewed indicating that they were occupied with other things. In this case, another household within the same lane was selected. In a few cases respondents wanted to be left with questionnaires to complete them at their convenience. This was discouraged as we considered that this would decrease accuracy and denies the interviewer the chance to ask probing questions, build opinion on respondent attitudes, as well as make general observations. In a few instances it was necessary to reschedule the interview to a time when the respondent had more time to take the interview, but in most cases the respondents were more compliant once we explained the need for a face to face interview.

4. **Lack of access to information at the Nairobi City Council.** Information from some of the departments at the Nairobi City Council, especially financial records, was not accessible due to delays and bureaucracy. Officers kept making reference from one office to another, indicating that they needed further authorization to release information. Much of the data in the study was, consequently, derived through three sessions of extensive interview with one key informant and through available published documents from the council.

5. **Difficulties in contacting the waste companies-** The small companies usually do not have established office premises and telephone contacts. Some use telephone bureaus, and are registered under obsolete telephone contacts. Tracing them for interview was consequently complicated. This problem was countered by persistent follow-up through known intermediary contacts.

CHAPTER FOUR

ANALYSIS OF QUANTITATIVE AND QUALITATIVE DATA

This study aimed to answer four main questions. First, was to find out the level of inadequacy of the Nairobi City Council's waste disposal services and the strategies that the residents have adopted to cope with the resultant solid waste management crisis. Secondly, the study aimed to find out the factors that influence waste disposal practices and thirdly to explore the form and nature of the Nairobi City Council-private sector collaboration with the aim of engendering better understanding of the prospects that this collaboration holds for the sustainable management of solid waste. Finally, the study aimed to explore the likely implications of the current solid waste management approaches on the relationship between the residents of Nairobi and the local authorities.

The survey collected and analysed both qualitative and quantitative data from Ngumba and BuruBuru residential estates as well as the Nairobi City Council and private waste management companies operating within the estates studied, namely Evabo, PIK-A- KAN and Danbeat Enterprises. Survey of the Nairobi City Council and the private companies primarily derived qualitative data on the operations of the individual sectors as well as their collaborative waste management efforts. The household survey on the other hand, obtained quantitative as well as qualitative data regarding the management of solid waste at the household level as well as information centring on service delivery by both the Nairobi City Council and the private companies. In this chapter an analysis of both the quantitative and qualitative data obtained during the field study is presented. The data is organised into two parts. The first part covers

the institution-level management of solid waste by the Nairobi City Council and the private companies and the second covers management at the household level.

PART I: INSTITUTION -LEVEL MANAGEMENT OF SOLID WASTE

The following discussions on the management of solid waste by the Nairobi City Council and the private companies, beyond attempting to build better understanding of the crisis of solid waste in Nairobi generally, also endeavours to answer two questions raised in Chapter 1 of this study. First, it addresses the question of the adequacy of the city council's waste disposal services and secondly, it explores the form and nature that the Nairobi City Council-private sector collaboration takes and the prospects that this collaboration holds for the sustainable management of solid waste in Nairobi.

Primarily utilising qualitative data derived from key informant interviews, Section 4.1 and 4.2 respectively report on the status of the Nairobi city council waste management services and the internal dynamics that contribute to the solid waste crisis in Nairobi, followed by discussions on the nature of emerging collaboration between the City Council and the private companies in Section 4.3. Section 4.4 provides a profile of the private companies, with a bias on their form, nature and operations. In Section 4.5 discussions centre on the factors that impede performance of these companies. Some quantitative data derived from household surveys will also be utilised in corroborative arguments that contextualise the activities of these institutions at the household level.

4.1 Status of Nairobi City Council Solid Waste Management Services

Appreciation of the central role of the Nairobi City Council in the management of solid waste in Nairobi is fundamental to understanding of the crisis of solid waste in the city as a whole. Casual observation of the problem in Nairobi as well as extensive literature in Chapter 2 indicated that the crisis is pervasive in Nairobi, primarily due to the failure by the city council to meet its obligations to the residents of Nairobi. Through the household survey, casual observation of the neighbourhoods surveyed and extensive interview with a key informant at the Nairobi City Council, this study confirmed that service to the residential sectors of Nairobi was both inadequate and of inferior quality. It also established that the city council is overwhelmingly beleaguered by the waste management crisis.

Estimates by the Nairobi City Council indicate that the city of Nairobi currently generates about 1,600 metric tonnes of solid waste per day. Collection by the council, however, falls far below the estimated volume. Currently the City Council operates with a maximum of 20- 7 to 8 tonne garbage collection trucks, each with a carrying capacity of approximately 5 tonnes and capable of making about 10 trips per day. At the time of carrying out this study, only 16 out of a total of 50 trucks owned by the council were in operation. This means that at that point in time, it was only possible to collect a maximum 800 tonnes of the estimated total generated per day, leaving the other half to accumulate. In reality, however, this estimate is largely exaggerated, even with augmentation from the 120 individuals and companies in operation. On average, there are approximately 70 privately owned vehicles of varied capacities in operation, which is only half the number that is required. These contribute about half of the daily collection. For effective operation, however, the Council estimates that at least 230 vehicles, both City Council and the

private sector are required. With the current shortfall, therefore, only about 50% of the garbage (800 tonnes) is collected per day, leaving the rest to accumulate.⁹ Although this volume indicates that the amount of waste collected has doubled from the 400 tonnes estimated by UNCHS in 1999 (UNCHS, 1999), it on the other hand, also indicates a 25% increase in the amount left to accumulate relative to the 600 tonnes estimated for the same year. This massive increase largely accounts for the mounds of garbage in the city and the escalating waste management crisis.

Collection of waste and the associated cleansing services are limited to a few parts of the city. According to the Nairobi City Council, the current scope of operations feature the high-income neighbourhoods such as Muthaiga, Kileleshwa and Karen (with the exclusion of inner core Karen), and excluding the low-populated, more spacious neighbourhoods that are considered able to burn or bury their waste. They are also scheduled to cover some middle-income estates such as Buru Buru. A few low-income estates such as Jericho and Kayole are often catered for as well as the slum areas that are exclusively left by most of all other agencies to the Council. The outer fringes of the City, which include Ngumba Estate, are not covered by the Council at all. Despite this official schedule, however, it is apparent that Buru Buru residents are not aware of the scheduled weekly collection and that if it does take place is so unreliable that the people have ceased to depend on it, leading to them seeking alternative means of waste disposal. The consequence has largely been the adoption of unhygienic means of waste disposal and accumulation of uncollected waste in most compounds and at illegal dumpsites in lanes and

⁹It is indicated that both the private sector and the City Council contributes approximately 50-60 percentage of the total garbage collected per day. The Council admits, however, that rarely is the 50% average covered.

roadsides. The lacuna left by the city council has also created an environment conducive to the growth of the private waste management sector.

Attempts by the City council to alleviate the crisis has mainly targeted the central business district (CBD) and barely touched the residential estates. Depending on availability of funds, the city council contracts a private company, the Kenya Refuse Handlers company (KRH), to cater for the CBD on a tendering basis. The CBD alone generates approximately two thirds of the total waste and requires a minimum of 5 collection trucks to service it. Occasionally, the council also hires as many as 15 vehicles from the private sector to carry out collection, mainly in the low income estates in the North and Eastlands. These are paid on the basis of the tonnage of waste carted away. Despite these attempts to improve collection is still skewed in favour of the high- income areas on the one hand, and the very low-income areas by virtue of their undesirability for private sector investment. Under the circumstances, the middle-income neighbourhoods like Ngumba and BuruBuru receive no service at all.

Availability of finances is an important consideration in the outsourcing of services by the city council. This means that during periods when contracts lapse, the waste continues to accumulate and illegal dumping is common. For example at the time of carrying out this study, the city council had not contracted any company to cater for the CBD due to lack of funds. Beyond income considerations, coverage of council services is determined by five other factors. First, is the ease of access to the individual estates. Estates that are inadequately served by a tarmac road network, particularly those in the outer fringes of the city and the low income neighbourhoods are not prioritised. Ngumba estate is therefore afflicted in both respects.

Second, is the availability of council resources, mainly equipment and finances, which determine the scope and quality of services to the city residents. Issues of finance are further explored in Section 4.2. The third reason is that of pressure from residents in particular neighbourhoods. Community pressure compels the council to respond irrespective of their intended scope of operation. For example, community-based organisations such as the Karengata association representing the Karen and Langata residents, the Nairobi Central Business District Association mainly representing the business community in the Central business district, the Westlands Association, representing the residents of Westlands and the Accra Road Association representing the adjoining industrial and residential estates, have to varying degrees all effectively advocated for improved service in their respective neighbourhoods. In the two estates surveyed, the study observed that community organisations, particularly for purposes of promoting estate hygiene were not well developed, which means that the residents are not able to use them as leverage to ensure that the city council delivers services. Political pressure, particularly from the civic representatives is a fourth determining factor. In most cases, areas represented by vocal councillors receive more attention. This advantage does not seem to apply in the estates studied. Finally, pressure due to specific neighbourhood environmental awareness is an important factor. Often, the more environmentally aware neighbourhoods are more vocal about their needs and form neighbourhood associations to advocate for services. Often, these are found in the higher income neighbourhoods such as those of Karengata and Westlands. Evidence from the medium-income estates surveyed has indicated that although environmental awareness is apparent, there are hardly any community movements advocating for proper waste management either to the city council or to its members. Thus, the internal weaknesses of the council as

discussed in the following section, impact more on these particular neighbourhoods than they do in either the high income or the low income estates.¹⁰

4.2 Factors Impacting the Nairobi City Council Waste Management Services

Evidence from the city council supports contentions by other studies (Liyai, 1998; UNDP, 1996; Nairobi City Council, 1993; UNCHS, 1998) that financial problems significantly contribute to the city council's difficulty in the financing and administration of its programs particularly that of solid waste management. In earlier sections of this study, it is noted that this factor in particular is imperative in determining of the scope and quality of service to the city residents, especially the middle income estates. It is however, significant that beyond the financial shortfalls, the crisis is further exacerbated and perpetuated by factors external to the council at the societal, legal and legislative levels. Beyond the financial problems, this section discusses some essential dimensions to the problems at the Nairobi City council that determine the level of efficacy in its delivery of service.

The Nairobi City Council predominantly depends on internal sources of revenue for its operations. With the exception of the Local Authority Transfer Fund (LATF) which was recently introduced by the government and funded from the central government Fuel levy, local authorities do not benefit from funding from the central government exchequer.¹¹ The most

¹⁰ It is necessary to note that despite the prevalence of a greater waste crisis in the low-income neighbourhoods, particularly the slums, these areas are predominantly served by the city council. Due to their overtly disadvantaged status, they are also the focus of many NGO activities, both periodic and ad hoc. The high income neighbourhoods have the advantage of council services as well as those of the private companies.

¹¹ The local authorities received funding from the central government in the 1970's before the abolition of the graduated personal tax (GPT). Presently there is a proposal to review Nairobi city council rates in order to improve the council's finances and presumably, improve service.

important sources of funds for the Nairobi City Council include council rates, licences, rents, fees and charges on service. The cleansing department thereafter benefits from this revenue through funding from the city treasury. In addition, the department generates revenue for the council through levies on its services such as the provision of garbage collection bins, which is billed through the water bills, charges at the garbage tipping sites, destruction of special waste loads such as drugs, charges on high waste generating sectors such as hotels among others and licences to the private companies. These, however, generate low amounts of income that cannot sustain the department's operations. The council for example only charges Ksh10 per bin rental per each billing cycle. Charges at the tipping site are also minimal, ranging from Ksh 100 for small vehicles to – Ksh 280 for a 7 ton lorry. On a rough estimate, the department is able to generate a maximum of between Ksh 2-3 million through the water bills and less than 1 million in direct collection.

As contended by UNHCS (1998) and UNDP (1996), collection of revenue is a perennial problem for the council. Cyclical billing for example is irregular and is characterised by non-payment. The dustbin levy is also minimal, as only about 1500 bins are distributed per year, which means that a substantial number of city residents are recipients of services that they do not pay for. Revenue that is generated by the council is further mismanaged to the detriment of services. Lack of transparency in accounting for revenue collected and expended is evidenced by the fact that it was not possible to get exact figures on any account from the council. Accounts are based on estimate budgets and not actual income or expenditure and this encourages mismanagement

of the funds.¹² Financial impropriety at the council is further propagated by the fact that the council solely depends on its internal audit for financial accounting due to lack of a government audit policy.

The chronic mismanagement and consequent lack of funds consequently, has repercussions in various areas. The misuse of funds as dispensed through gross over-employment discussed in Section 2.3 for example, is one such repercussion. The council for example is said to have a disputed total of 16,000 employees. This staff complement is characterized by over-staffing in some departments such as city planning and under-recruitment as well as under-utilisation of professional staff. Critical areas such as the cleansing department for example has less than 50 professional staff and has experienced a decline in its staff compliment from 3,214 in 1983 to 2,000 as at March 2002. This has negative implications for cleansing and garbage collection at a time when the city's population is increasing rapidly. There is consequent need for re-allocation and redistribution of workers within the various departments.

Another important sector affected by low funding in the council is the maintenance of the waste collection vehicles. Repair and replacement of the garbage collection trucks is not adequate. Even when funds are available for this purpose, cumbersome procurement procedures and lack of proper coordination between departments usually obstruct purchase of new vehicles and spare parts, and on occasion the funds are not utilized as per allocation by the end of the

¹² Due to bureaucracy and delays (probably intentional) it was not possible to access the official accounts in respect of any of the relevant accounts from the revenue office.

accounting period. In the meantime, the collection vehicles at the workshops are prone to vandalism, resulting in the many that are grounded

Beyond the financial aspects of the crisis, the city council recognises that other external factors such as low participation at the community level fuel the crisis. Other factors identified by the city council as contributing to the crisis include lack of awareness by the general public on the need for proper waste management, a general negative attitude towards environmental management, which directly affects disposal patterns, non payment for services and non-adherence to by-laws on proper disposal by the private companies. The impression by the council that the general public is generally unconcerned about issues of waste management, however, needs to be viewed cautiously. A general survey of attitude levels of the respondents does not support this notion. Of the total number of respondents interviewed, only 12% could be said to have had a negative attitude to environmental issues as a whole. Further, the respondents agree on a ratio of 19:1 that in order to solve the problem, residents must become more involved in keeping their estates clean. This stereotype by the council points to the need for a deliberate effort by the council to understand neighbourhood disparities in the communities as a prerequisite to any effective policies in respect of collaboration with them.

At another level, the enforcement of the city council general environmental by-laws particularly on indiscriminate night dumping by private companies and property owners are un-enforced due to the internal weaknesses of the council itself. It is noted that dumping apart from being at the more obvious roadsides, is mostly done at open spaces next to the informal settlements to avoid transport costs and insecurity at the dumpsite. Regardless of the reason, it compounds the waste

problems in these low income neighbourhoods. This factor alone further supports arguments such as those by UNCHS (1999) that the poor strata of the community suffers most from exclusion and the breakdown of law enforcement. Livai(1998) and UNDP(1996) have argued that one of the critical hurdles to effective administrative performance at the city council is lack of clear delineation of administrative functions. This study found out that due to this factor, enforcement by the council is inevitably, complicated by disorganisation and duplication of functions, especially between the cleansing department, which is the core department in cleansing and waste management and the inspectorate department, which is responsible for enforcement. Consequently, little enforcement of waste disposal and other environmental by-laws is done.

The combination of all the above problems at the council, among others, has influenced the council to admit their lack of capacity to cope with the city's waste management needs and consequently, the need for collaboration with external partners in order to address the crisis. A significant, though not exclusive form of this collaboration, is that with the private waste management companies. The following section outlines the emergence and nature of this collaboration.

4.3 Emergence and Nature of Nairobi City Council- Private Sector Collaboration

In previous discussions on privatisation of public infrastructure in Kenya in Section 2.6, it is noted that the Government, through Sessional Paper No. 1 of 1986, deliberately encouraged the mobilisation of additional resources for urban infrastructure (Republic of Kenya, 1986). Government policy stipulations such as the public enterprise reform program, among others,

specifically aimed to expand the private sector in the economy by shifting more of the responsibility for production and delivery of products and services from the public to the private sector. In so doing, privatisation is expected to alleviate perennial financial shortfalls, and overall promote efficiency (Michel and Warrick, 1996, World Bank, 1997), lack of which, as in the case of the Nairobi City council, has crippling consequences for operations and service delivery. Although the Nairobi City Council has no imminent plans to wholly privatise solid waste management, by allowing the involvement of private players into a sector that has been its exclusive domain, the city council of Nairobi expects to improve the management of the sector by tapping into the additional resources of private investors.

According to the Nairobi City Council, private players in solid waste management began to emerge as early as 1985-86, with the bulk coming in during the second half of the 1990s. During this period, there was also heightened public awareness of the need for proper disposal and initially, industries were the first to contract private companies to render services. Initially, the city council was opposed to this intrusion, particularly in the outer fringes of the city and would intentionally target these areas for collection in order to discourage competition. Workers, particularly the casual personnel at the city council, were also opposed due to threats of redundancy especially during the period 1998-1999 when the casual workers were dismissed to pave way for private companies.¹³ With increased in-migration into the city, the concurrent extension of city boundaries and rapidly dwindling council resources, however, the city council was inclined to concede its inability to cope. Gradually, there was incessant complain and conflict with property owners, community organisation and even individuals over the non-

provision of service. There was also additional pressure from within the council itself during the mid 1990's mainly due to presence of "outsiders" within the council particularly through the technical co-operation from personnel from such organisations as JICA- Japan. Contrary to assertions by Aseko and Okelo(1997), there is no evidence that external pressure from the international community was brought to bear on the council to privatise, which factor could reduce its commitment on the privatisation process. The city Council policy on privatisation was nevertheless, not published until December 2001. We note however, that limited partnership has existed since the 1960's in areas such as septic tank exhaustion in the rural areas, education, health and water supply among others.

Collaboration with the civil society is of two major types: First, collaboration with the private waste management companies, on a contract basis and as independent operators and secondly, collaboration with civic groups. The former is of particular interest to this study. Collaboration with civic groups involves that with community-based groups (CBOs) and private individuals or companies that are not directly involved in solid waste management. Private companies are licensed to operate within the city precincts, and are regulated by the City Council policy of December 2001. Other than paying statutory rates to the council, these companies operate independently of the council. Contracting for services in the CBD is on the basis of competitive bidding, and so far, only the Kenya Refuse Handlers company has collaborated on contractual terms with the council. The company otherwise operates on a competitive basis with other private companies. In this form of co-operation, the city is able to attract capital from the private

¹³ Currently, the council retains the casual workers to service other areas apart from the CBD. They are also necessary because of gaps between contracts given out to service the CBD.

sector into solid waste management, an important component of privatisation of services as propounded by Michel and Warrick (1996) and World Bank (1997). It is however, not evident that by harnessing these funds, there has been any significant reduction of public sector expenditure on waste management, which has in any way minimised budgetary pressure on the City Council and increased provision for other city council services. Co-operation with CBOs is limited to provision of labour, equipment and materials on request and mostly during the community clean-up exercises. The city council however, recognises the need to engender this kind of collaboration particularly in the informal settlements and future proposals include setting up a section on community development to enhance this co-operation. Partnership with more institutionalised organisations such as the Nairobi Central Business District Association includes such areas as street cleansing, provision of litterbins to NCBD sponsoring organisations in the city centre, street lighting, and the rehabilitation of public toilets. Private companies and individuals are also involved in other non-solid waste oriented areas such as putting up road signs, which includes advertising, maintenance of road reserves and maintenance of roundabouts. These initiatives, though contributing to the city's environmental hygiene, are not directly engendered towards alleviation of the solid waste problem and do not encompass the residential neighbourhoods. This means that residential districts are increasingly dependant on private companies for their waste disposal needs. The companies, as I have argued in subsequent sections of this chapter, by their form and nature are not capable of entirely replacing the city council in- as- much- as they are gradually taking over many of its functions. Section 4.4 looks at the form and nature of these companies.

4.4 Form and Nature of the Private Waste Management Companies

To understand the basic characteristics and performance of the private companies, key informant interviews were conducted with key administrators of three companies, namely Danbeat Enterprises, Pik-A-Kan Garbage Collectors and Evabo Enterprises. The three companies are representative of the companies that emerged in the first half of the 1990s in response to increased failure by the Nairobi City Council to meet its obligations to residents in the residential estates of Nairobi. All three are registered as commercial enterprises, not as waste management companies. This means that the scope of their operation includes, but is not limited to the area of waste management. Consequently, both PIK-A-KAN and Evabo are involved in other business ventures, while Danbeat deals exclusively with garbage collection, but maintains an open policy for future ventures. This arrangement gives room for flexibility in case of business failure in an unstable sector with a newly emerging market. In all cases, this is clear indication that, at least presently, none of the small operators considers waste management a stable business venture, without buffer from other business ventures. This may partially be accounted for by the fact that the companies are relatively young, having been founded in the early 1990s and partially by doubts of the viability, competitiveness and sustainability of the waste management market on a commercial basis. In all these cases, the market remains small and defensive, and the expansion of individual companies slow.

Concomitant with Hall's (1974) definition, these companies can be defined as small based on the limited size of their membership and resources. Characteristic of their small size they are therefore less complex with a limited degree of horizontal and vertical differentiation as well as spatial dispersion. They are particularly limited in terms of professionalism and specialisation

(Hall, 1974:109-139). The complexity of an organisation, particularly combined with the astute management of its controls, communication and coordination processes, is largely associated with greater organisational effectiveness (Hall, 1974:164-170). The factors delimiting the effectiveness of the small companies can therefore, be understood from the perspective of their size and structure.

The size and growth capacity of the companies can best be explained by the type of business ownership, which is mainly limited to the family concern and small-holder partnerships. This limits the capital resources available to start and develop the business, leading to small companies that are limited in scope of operation, both geographically and functionally (See profiles at Annexes. In the case of Danbeat Enterprises, the entrepreneur started off with no real operating capital except that derived from the fees levied on the customers. On a similar line, Evabo Enterprises (Waste management Department) commenced operation on an experimental basis, through the initiative of an unemployed resident school-leaver, purely depending on the charity of the proprietor of the mother company. Evidence of the potential for the growth of the companies is however evident, albeit at a slow pace. Danbeat for example, has 3 permanent and 11 temporary employees. Evabo has 5 permanent and 4 temporary employees, while Pik-A-Kan, which is the largest of the three companies, has 20 permanent employees and takes on temporary workers on demand, especially when there is demand for cleansing services.

Pik-A-Kan Garbage Collectors can be taken as a model company for the growth potential of micro enterprises in waste management. The company was the first to be established as a family concern in Buru Buru Phase V-Extension in 1992, with inspiration from BINS which is a

large and established waste management company. The proprietors, being resident in the estate and initially motivated by the need for a cleaner residential estate, noticed that people would dump their waste in a heap waiting for the City Council to collect, and this made the estate unhygienic and untidy. Attempts to sell the idea of the business to the resident was at first met with resistance as the people claimed that they were taxpayers, and the company started operation with only one client. As the Council services became increasingly irregular and eventually ceased in most estates towards the second half of the 1990s, the company's patronage increased and its operations expanded from solely collecting waste to sweeping, cutting grass, clearing storm drains as well as pest control. To promote self reliance in transportation of the waste, the company, by utilising funds ploughing back from profits and from bank loans, has purchased a total of three collection trucks with two 3 tonne and one 6 tonne capacity. In a span of 10 years, with aggressive marketing and increasing demand for service, the company serves a total of 1,200 clients, 800 of them in Buru Buru estate alone targeting both the domestic sector and market centres. Further, it has expanded in scope into other estates such as Lavington, Ngong Road, State House, Parklands and Kilimani, thus competing with the large companies such as BINS and KRH for clients. Its operating capital has also increased from Ksh 40,000 to 1.2 million.

Pik- A -Kan is illustration that the industry has potential for growth both in diversity of operation and geographical scope on a self-sustaining basis. In addition, it has potential to create employment, which is critical to the reducing unemployment and related poverty. Unemployment and the associated poverty, as I have argued in Chapter 2, is an important contributor to the urban crisis that further feeds back into the crisis of solid waste. In the

activities of the private companies, therefore, we see evidence of their significant contribution to the alleviation of this crisis. However, various aspects in their nature and operating environment hamper their ability to solve the crisis. These factors form the subject of discussion in the following section.

4.5 Factors Impeding Performance of Private Waste Management Companies

Small waste management companies experience numerous difficulties in the establishment and operation of their businesses, emanating from within and outside the companies. The following six factors featured prominently among the companies studied:

a. Lack of investment capital

It has already been noted that the waste management sector is pre-dominated by small and micro enterprises. Most of these commence operations with minimal financial backing derived principally from personal savings and in many cases dependant on the returns from the investment itself. In some cases, there is no actual capital specifically set aside for the business as it is either not precisely audited for the purpose or is intertwined with other business ventures run by the enterprise. In all cases observed, there has been no financial support or incentive from donor organisations that support the micro-enterprise sector, or the government. In fact, none of the key informants interviewed was aware of any agency that specifically provides funding to the sector. These financial problems are further exacerbated by non-payment of service fees by clients. It is indicated that only three quarters of the clients pay their fee on a regular basis, while the remaining quarter has to be virtually pursued for payment, with a substantial amount of this

quarter not recoverable.¹⁴ The repercussion of this financial shortfall is that most of the companies do not have the requisite capital equipment and materials essential for the job. None of the companies, for example is self sufficient in transportation of waste and all occasionally rely on rented vehicles. In all cases, none of the vehicles used conforms to the specifications provided by the Nairobi City Council as outlined in the Department of Environment Policy on Private Sector Involvement in Solid Waste Management (Nairobi City Council Department of Environment, 2001)¹⁵ In addition, none of them are able to supply their personnel with essential clothing such as hand-gloves, over-coats, aprons, overall head-helmets, face-masks and gumboots as per the policy requirement. Of further interest is that it is not only impossible for these micro-enterprises to meet the financial requirements laid out by the policy of a minimum Ksh 500,000, but further that, as a result, they can not and will not in the foreseeable future be able to perform to the standards attendant with the required level of investment. One of the perceived advantages of privatisation as we have noted in Chapter 2 is to improve the regulatory environment by selecting more economically rational means. Its success therefore depends on whether the regulatory environment is suitable and how reforms respond to the concerns of those affected (World Bank, 1997). This level of disparity between the policy and the actual situation on the ground consequently, has overt connotations for the individual company's performance presently and in the future and signals difficulties in the control and regulation of the industry in the future.

¹⁴ Due to the small amounts of fees charged on an individual household basis, and the high cost involved in taking legal action, the companies' only recourse in cases of non-payment is to cease service, often after accumulation of debt. This is a major inducement for defaulters and results in regular loss for the companies, with consequent repercussions for growth and operations.

¹⁵ It is also pertinent that the Policy on Private Sector Involvement in solid Waste Management was only published in December 2001. At the time of researching this paper, only one of the companies had acquired the document. This is indication that much of the sector is not aware of the policy requirements and therefore, will take time before it can comply with its provisions. Necessary enforcement mechanisms are yet to be effected and the Nairobi City Council concedes that so far, the requirements are not strictly enforced. Ironically, not even the city council is able to conform to the policy specifications.

b. Operational difficulties

Devolution of public sector services to the private sector is associated with numerous advantages, including those of commitment to cost-covering tariffs necessary for infrastructural maintenance, improved incentives for operational efficiency, adaptive technology, competitive discipline and improved technology among others (Nellies, 1999). For these to be realised in a private waste management industry that is dominated by the small companies, the industry needs to overcome the numerous operational problems that encumber it. Specifically, it has to overcome the inhibitions presented by the industries' task and general environment of operation. By definition, "the task environment includes all external organisations and conditions that are directly related to an organisation's main operations and technologies", while the general environment includes "institutions and conditions that may have infrequent or long-term impacts on the organisation and its task environment" (Harrison, M. 1987:24). As indicated in the arguments in Chapter 2 and denoted by the accompanying theoretical model, the interrelatedness of the private sector company operations to their external and task environment is significant. As the emergence of the private sector is the result of shortfalls at the level of the central government, the municipal authority as well as the local communities, its operations inevitably, are negatively influenced and affected by underperformance in these sectors.

This study found two specific categories of operational difficulties experienced by the private companies. First, those directly associated with the lack of capital and second, those associated with operational encumbrances on the ground. As outlined in (a) above, lack of adequate waste

carrying vehicles and equipment is widespread, affecting the scheduling of collection and curtailing the expanse of the area covered. Usually one small vehicle services several estates, which means that collection is timed differently for different estates, and cost to and from the dumpsite is usually duplicated. In cases of lateness or failure to collect, which often occurs particularly due to delays in dumping or vehicle breakdown, then garbage is left to litter the sidewalks and is exposed to both human and animal scavengers. This, as I have argued in Chapter 1 is an eyesore that is a common feature of the city of Nairobi and is a constant source of complaint among clients. Lack of equipment such as fork-lifts and tipping trucks means that garbage is collected and tipped out manually. Coupled with lack of the basic equipment, and the fact that household garbage is indiscriminately dumped in one bag, there is also constant complaint among workers of injury from sharp objects and chemical spillage.¹⁶ Numerous problems are associated with actual waste collection on the ground. These include lack of proper disposal bins which makes collection especially during the rainy season very difficult, indiscriminate dumping by the clients around the collection area, which includes waste that sometimes cannot be conveniently carried by the small vehicles such as broken furniture. In some estates methods of collection are also cumbersome as in cases where collection is from the doorsteps. In such cases lateness inconveniences the company and some tenants are rude and uncooperative when collectors knock on their doors or when required to bring out the garbage and occasionally accuse the workers of theft.

¹⁶ In cases where some basic protective gear is provided, it is claimed that workers resist wearing them. Usually this is because it is not in their 'culture' to wear them, but principally due to ignorance of their value. It is important to note here that most of those involved in the actual collection of the garbage are poor, often illiterate unemployed people, in many cases drawn from a lot that would normally scavenge in the dumpsites. These are the ones who are likely to accept the appalling conditions of work, at minimal pay. A day's casual work pays a minimum of ksh 200 for a loader and ksh350-500 for a driver with exception of small incentives such as snacks during work. Significantly, the companies do not seem to place much premium on the need for protective clothing and one company indicated that they do not think it should be enforced.

Problems at the city council dumpsite in Dandora and Ruai deserve special mention. According to the Nairobi City Council, the Dandora dumpsite can be classified as a semi-sanitary landfill that, besides accommodating garbage, is also involved in limited recycling of waste before dumping. It is the city council's responsibility to maintain the dumpsite, thereby making it accessible for its own disposal needs and that of the private companies at a cost based on the tonnage of the vehicle. The city council, however, has only 2 bulldozers deployed to cart away the waste and is not able to cope with the amount of waste generated. Moreover, these two are regularly said to be out of fuel. The private companies describe disposal at the dumpsite, particularly during the rainy season as "a nightmare". The roads are not maintained, and vehicles constantly get punctures or get stuck in the mud and garbage mounds and the companies consequently incur added expenses towing them out. These problems discourage other vehicles owners from hiring out their vehicles for purposes of carting away waste. Insecurity is an additional negative feature of the dumpsite. Many *Chokora* live around the dumpsites where they scavenge for a living. Besides having to pay them to an added ksh100 to off-load the garbage and to push the vehicles out when they get stuck in the waste, they are a constant security threat as they scabble to scavenge even before the designated dumping area and vandalise the vehicles in the process.¹⁷ The expense and level of mismanagement of the dumpsite, besides being an obvious disincentive to proper disposal, is

¹⁷ At some point, companies were compelled to pay for armed police escort from the Kinyago police post, further increasing their expenses. Currently, companies indicate that the *chokora*, also known as *mungiki* after a religious cum political activist group operating in the area, have begun to organise themselves to enhance security. This is indication that with defined intervention, such informal groupings can be mobilised for greater involvement in the waste management process. Studies of non-governmental refuse collection systems in Indonesia, for example, have shown that incorporation of scavengers into waste management is a practical possibility (SANDEC News, No 2, October 1996).

also a source of conflict with adjacent communities. In 2000 for example, this conflict caused the temporary closure of the Dandora dumpsite, following which companies, as well as the City Council itself, had to incur extra expense to dump at the Ruai dumpsite, which is situated further from the city centre. Companies admit to having been so frustrated by this problem that many dumped at night on roadsides or on rented open fields. Resolution of such problems call for the harmonious co-existence with the communities adjacent to the dumpsites, but this cannot be achieved without the maintenance of a sanitary landfill. This requires heavy capital investment both to set up and operate both professionally and economically; funds that the city council admits to lacking. Experience of successful landfill management in developed countries such as the Texas Disposal Systems in the United States of America shows that effective and sustainable management of a landfill must necessarily include, not just landfill management but also recycling and composting, amid optimum control of emissions and environmental aesthetics (Goldstein, 2002). This kind of venture ultimately involves long-term heavy investment in capital and professional skills; factors which only aggressive and resolute private companies have been able to profitably invest in.

c. Unfair market competition

The waste management industry has showed little change in characteristics from that reported by UNCHS in 1998, although the number of operators has risen dramatically from the 30 companies reported in 1998 to 120 individuals and companies estimated by the city council in the year 2002. The market is still largely uncoordinated and unregulated and the small companies fundamentally operate in open competition with one another. The individual company's scope of operation and clientele is dependant upon it's aggressiveness in recruiting

clients and the ability to undercut the competition by offering extra services such as sweeping, cutting grass and clearing of storm drains. It is estimated that the highest concentration of companies is within the Eastlands areas where it is estimated that 7 companies are in operation in Komarock estate and 20 in Buru Buru alone. Consequently, there is inherent and at times open conflict between the small companies in the middle and low income areas. Pricing of services is an important component of this competition and is dependant on particular neighbourhood characteristics and sometimes the personal appearance of the potential clients. They consequently range from as low as Ksh 75 in a two single-room houses sharing basis in some low-income estates like Komarock to Ksh 500 in high income estates such as Kileleshwa and Lavington. Besides competition among the small companies, there is also increasing competition between the small and large companies in the high income areas as the small companies, charging lower collection rates begin to infiltrate the traditional enclaves of the big companies. Conflict is imminent with some small companies alleging that the large companies, which are better equipped and more financially stable, collude with the City Council *askaris* and the regular police force to harass them over non-conformity with the city council's waste management statutes. Contrary to my earlier assumptions in support of conceptions by scholars such as Ng'ethe and Kanyinga (1992) that competition and conflict between the state and non-state is inevitable as the private sector begins to assert itself in areas that are traditionally state domain, this competition does not presently involve the City Council, which seems resigned to the fact that it can no longer cope.¹⁸ The companies however, indicate that in the early 1990s the

¹⁸ It is indicated that the council services can be as irregular as once in five months in estates listed as being serviced such as Komarock. With such irregular service, reliance on the private companies is steadily growing. Companies, however claim that estates that have open spaces where they can dump rely less on their services, but revert to them as soon as these are fully constructed.

city council was openly hostile to their operations and deliberately targeted collection in the areas of their operations to counter patronage. While on the one hand competition between the small and large companies can be said to be unfair, conversely it is gradually paving way for the diversification and improvement of service by individual companies as demonstrated by companies such as PIK-A-KAN enterprises.

d. An Under-developed private waste management sector

The private waste management sector has barely crossed the decade mark in Kenya. Many entrepreneurs ventured into the industry in the early 1990s amid a rapidly disintegrating public sector. Consequently, the sector was both unrecognised and unregulated until the introduction of the policy on private sector involvement in December 2001. The result is that there is little inter-sector co-operation among stakeholders for purposes of information exchange, education, co-ordination and self regulation. Collective efficiency is a critical component of small scale industrial growth in developing countries. Schmitz (1995) for example, from his studies of the foot-wear industry in Brazil concludes that co-operative networks, both vertical and horizontal, among the different players in the industry has been a defining factor in maximising on the competitive advantage derived from local external economies and joint action, leading to a vibrant industry. The absence of intra-sector network in the waste management industry, unlike many other co-operative networks among micro-enterprises in Kenya, effectively deprives the sector of the chance to share expertise and to articulate their needs to relevant authorities such as the city council, the legal authorities and the relevant government ministries. We note for example, the obvious lack of collaborative effort between the private companies and the City Council in

the formulation of the policy paper on private sector involvement in Waste management.¹⁹ The result is a policy that is either ignorant or inconsiderate of the reality of the practitioners and that is, as a result, largely unenforceable. Individual companies as a result continue to be limited by their own resources and the sector in general lacks uniformity and forward planning for future growth.

e. Lack of professionalism

An important but questionable presumption of the privatisation debate is that privatisation will unequivocally hand over the specific sectors to competitive enterprises, thus making it more efficient (Nellies, 1999). In contradiction, Nellies has perceptively raised concern that transitionally weak economies may not deliver on privatisation because they often turn over mediocre assets to people lacking the incentive to manage them well (Nellie, 1999). Additionally, a salient question raised in Chapter 2, is that of the quality of the enterprises that are venturing into solid waste management. The obvious lack of professionalism, coupled with the other weakness noted in the companies involved in waste management at points (a) to (d) above supports these concerns. The Nairobi city Council environment policy for example requires the following qualifications for operators in solid waste management:

Solid waste managers shall possess the following qualifications or discipline: environment/public health sciences, environment sciences/minimum diploma certificate (and) solid waste management-minimum certificate course. In addition, they should have business administrative background. Companies must also engage a health workforce/staff (Nairobi City Council. 2001:10).

¹⁹ According to the companies, only one forum has been called by the city authorities, under the chair of the Nairobi Provincial Commissioner in 1996. The forum at this time was openly hostile to the companies, which were accused of operating illegally. All other environmental forums organised by NGOs and international organisations have largely excluded the small operators.

The reality is that most of the small companies are owned and run by people who have none of these qualifications and neither do any of their employees. Of the three companies sampled, only one of the managers had attended a seminar on sanitation. Gradually, some of the companies have realised the value of trained staff and are organising particularly in marketing. It is clear however, that professional training in the technical area of waste management is beyond their reach and more organised intervention is required, which the small companies may not be in a position to meet without support from other stakeholders, especially the city council and the ministry of local government. Without this, further environmental pollution by operators on account of ignorance is a definite concern.

f. Low Level of community participation

Results of studies on solid waste management in developing countries of China, West Africa, Asia and South America have shown that the direct involvement of community members in waste management through community-based approaches can achieve some measure of success in alleviating the domestic waste management crisis (Pfammater and Schertenleib, 1996). At the same time the individual, household as well as collective role in waste management has direct as well as indirect community-level consequence for waste management. Community participation in waste management, at personal, individual and household levels in the cases studied has played a definite role in undermining the general waste management level in the estates and directly watered down the efforts of the private companies. In both estates surveyed, as in the city of Nairobi generally, there is a general lack of a well developed waste disposal ethic. Indiscriminate littering is evident everywhere and the presence of open spaces encourages cumulative dumping of domestic waste. Further, the lack of community self-regulation and

legal audit on dumping provides leeway for illegal dumping irrespective of the efforts of individual households. This culture is indicative of a general low level of community participation in environmental management, particularly beyond the immediate household and there is indication that neither the communities nor the city council and other external agencies are responding to this need, with the exception of occasional campaigns by churches and youth groups. During the household survey for example, it was established that only 35% of the respondents carried out cleaning of compounds and open spaces near their houses on a daily basis. In 40% of the cases, it was done two to three times a week, but in the rest of the cases, it was done irregularly or not at all. This distribution is significant particularly because responsibility for maintaining environmental hygiene in 60% of the cases studied is vested on individual households, which themselves are already burdened by the waste crisis, against 1% for private companies, 1% city council, 12% for community members, 13% for landlord and 7 percent for other agencies. Unlike other community-based campaigns such as those on security, few clean-up campaigns exist and many do not think they are necessary. Minimum community action in the two estates studied is only limited to cleaning by estate youths and church-initiated clean-up, occasional hiring of workers by estate committees (not deliberately set up to tackle cleaning), and the occasional clean-up by the residents or external organizations. This, however, is minimal as over three quarters of the respondents indicated that they were not aware of any community clean-up exercises in their particular neighbourhoods and only fewer than 40% had taken part in any community clean-up exercise. Nevertheless, on a ratio of 17:1, there is general acknowledgement by residents that such activities are necessary. Some residents, on the other hand, are opposed to participating in community clean-up indicating such reasons as that they were too busy, that they already pay taxes towards that

purpose and that therefore it is the council's responsibility, while others were discouraged because people would still litter, in which case the exercise would be a waste of time and encourage laziness. Gender considerations also featured as deterrent to men's willingness to take part in clean-up. Most respondents however, agree in principle that they have a role to play in the cleanliness of the area beyond their residences, ranging from actual cleaning or payment for cleaning, littering less, to organizing for clean-up and encouraging neighbours to participate. Others see their role in lobbying to the city council as well as other environmental campaigns. These responses and the general broad-based recognition among the residents of the multiple benefits of community action provide a valuable basis for social action, and may have potential benefits for the management of solid waste in Nairobi. The foregoing findings corroborate Farrington & Babbington (1993) arguments that neglect of social welfare concerns can be attributed to the civil society's political and organisational weakness (Farrington & Babbington, 1993 in Zamberia 1999:60).

Beyond the direct will and organisation of the community for purposes of participation in environmental management, it is important to note that the capacity of the individual household as well as the community as a whole to participate can be influenced by personal as well as household income considerations. Even in relatively middle-income neighbourhoods such as Ngumba and Buru Buru, there are pockets of low-income earners who cannot afford to pay for private sector services or who regularly find it difficult to meet their obligations. Concerns regarding the ability of communities to adopt privatised services consequently, have been raised in Chapter 2 of this study. As other studies have concluded, addressing these concerns is fundamental to the determination of successful privatisation of public sector services

(UNCHS.1998, Zurbrugg.1999; Aseko and Okelo.1997). The extent of the influence of income, among other factors on the household waste management practices are addressed in the remainder of this chapter, which primarily focuses on the household management of solid waste.

PART II: MANAGEMENT OF SOLID WASTE AT HOUSEHOLD-LEVEL

Discussions in this section primarily focus on the household-level management of solid waste. They attempt to answer three main questions that are raised in Chapter 1 of this paper. First, and in follow-up to arguments raised in the preceding part of this chapter regarding the inadequacy of the city council's waste management service, it addresses the question of the strategies that the residents have adopted to cope with the prevailing situation. Secondly, it looks at factors that influence waste management practices and thirdly, it attempts to answer the question of the likely implications of the current solid waste management approaches on the relationship between the residents of Nairobi and the local authority. The discussions in this section are based on analysis of both quantitative and qualitative data derived from household surveys utilising both structured and semi-structured questionnaires as well as casual observation of the area of study. They also include a comparative look at data drawn from both Ngumba and BuruBuru Estates of Nairobi. Section 4.6 presents a brief description of the demographic characteristics of the study sample. In Section 4.7, discussion centres on the household waste management practices, while Section 4.8 examines critical factors that influence household-level waste management practices. This section also outlines the emerging relationships between the residents and the local authority.

4.6 Demographic Characteristics of Study Sample

The sample of 100 respondents drawn from Ngumba and BuruBuru estates comprised 44% male and 56% female heads of households. The prevalence of a larger number of women surveyed can be attributed to the predominance of women who were willing to discuss this topic, which in itself may be the result of the fact that waste management is principally a domestic undertaking, and its management or mismanagement is therefore of immediate concern for women as the predominant domestic caretakers. It can also be explained by the presence of more women engaged within the household during the daytime when most of the studies were conducted. This is however, not indicative of more women principally employed within the household as only 5% of the respondents indicated their occupations as housewives.

The sample population is relatively youthful, with 71% of the respondents aged below 40 years, and only 4% were older than 49 years. Notably, only 9% were younger than 24 years. This population distribution is significant because it comprises the bulk of the working population of the economy, which by implication, is the tax-paying sector of the population. Consideration of the opinions and actions of this particular sector of the population is therefore important in formulating and enacting of policy on domestic waste management for the following reasons: First, as tax payers, their individual decisions regarding domestic expenditure directly influences expenditure on cleaning, conservancy and by extension the priority placed on waste disposal-related expenses. Second, as the predominant income earning and taxpaying sector of the population, their ability and willingness to pay City Council rates as well as other public sector taxes has both direct and indirect implications for budgetary provision for social services. Third, this age group is significant in building both community and domestic consensuses on

proper waste management as well as nurturing acceptable environmental behaviour at the domestic level. In this respect, it is significant that the central characteristic of households surveyed is the family unit with 64% of the respondents married compared to 32% who are single and 3% who are divorced, separated or widowed.

The general level of literacy among the respondents is considerably high for both estates. All respondents in the two estates have received some formal education, with over 82% having attained Secondary or college-level education. 90% of the respondents from BuruBuru for instance were educated to college or university level against 74% of the respondents from Ngumba. While all respondent from BuruBuru have been educated to upper primary school level, a minimum of 4% of Ngumba respondents have only been educated to a level of lower primary school and are associated with the respondent in the informal residential units in the estate. BuruBuru, therefore displays more homogeneity in terms of educational attainment than Ngumba. The significance of this population dynamic is that the majority of the population has potential to understand the implications of the existing environmental pollution and the implications for health that arises from improper waste disposal. Concurrently, this knowledge can be expected to influence the significance that the households attach to proper solid waste disposal habit and additionally the methods they adopt in the disposal of the waste. The extent to which these presumptions apply are explored in subsequent sections of this study.

Ngumba and BuruBuru are predominantly working class estates and a proportionately large majority of the respondents are engaged in the formal sector as professionals (31%), white

collar jobs (12%) or are self-employed as businessmen and small traders (44%). Others are engaged as casual workers, or are housewives. Ngumba and Buru Buru Estates can be classified as middle-income estates. The levels of income of the residents in the two estates are widely but relatively evenly dispersed between the income brackets of Ksh 4,999 and Ksh 50,000. There is, however, relative disparity in income between Ngumba and Buru Buru and between the two phases of Buru Buru as well. Ngumba Estate for example is the only estate that recorded residents in the lower income bracket below Ksh 4,999/- at 7.8% of the respondents. It also has the highest number of respondents with income of less than Ksh 14,999/- at 35.2 % of the estates residents against 16.3% in Buru Buru. The low income in Ngumba Estate was mostly recorded in the informal housing structures and permanent, but squalid single room residences in the same estate. As has been argued in Chapter 2 and espoused in later sections of this study, the income levels of individual estates has a close bearing on the ability and willingness of residents to pay for private sector services. As noted in Chapter 2, one of the problems that the city council experiences is in generating revenue in the form of rates and other levies. Yet, as we note from the above distribution, the majority of the residents are direct payers of council rates in the form of business licences and are also taxes payers to the central government as employees in the formal sector. At the same time, they are potential contributors to other city council as well as government taxes and rates as they are recognised income earners. The response of this sector of the population to lack of council service is therefore important and merits discussion in later parts of this chapter.

The nature of household tenancy in both BuruBuru and Ngumba is predominantly tenant leased rather than owner-occupied housing. Of the total number of respondents only 28% of the houses

were owner occupied as opposed to 72% that were tenant leased. In Ngumba, 30% of the respondents' houses were owner occupied, while in BuruBuru, only 26% were owner occupied. Most of the landlords are absentee landlords, having built houses for rental but preferring to live elsewhere. This form of property ownership and tenancy may explain the widespread short period of tenancy in the estate, whereby over 60% of the estates' residents had only lived in the estate less than 5 years, with half of these having been resident less than 2 years. Less than 20% had lived in the two estates longer than 10 years. A combination of these two factors could have negative implications for community bonding, which results in lack of community-based initiatives in the two estates as noted in Section 4.5(f). They on the other hand would encourage more individualistic-centred solutions to waste management that would better be served by the private companies. The size of household in the two estates ranges from very small one person household to as large as 9 persons in Ngumba and 8 in BuruBuru although, on average, households are considerably small at an average of 4 persons per household (3.8 in Ngumba and 4.1 in BuruBuru) with an average of 3.3 dependents per household. One factor that can be used to explain this situation is the varying type and size of houses. While BuruBuru Phase V for example, has largely even structures comprising bungalows, BuruBuru Phase I and Ngumba have a mix of bungalows, maisonettes, flats of varying sizes and single-roomed bedsitters. Ngumba has, in addition, several semi-permanent structures as well as permanent structures that can best be described as squalid. The large number of small houses in Ngumba may help to explain the fact that Ngumba has a much smaller average household size than BuruBuru.

Putting into perspective, among others, the perceived implications of the demographic characteristics of these neighbourhoods, the following sections attempt to look at the way

households are managing the waste crisis. Section 4.7 that follows begins by taking a look at storage and disposal of solid waste by household.

4.7 Storage and Disposal of Household Solid Waste

Discussions in Sections 4.1 to 4.5 have underlined the limitations of City council waste management services and emphasized that although the entry of the private companies into waste management has alleviated the crisis, numerous problems within the two institutions as well as at the community level continue to frustrate efforts towards optimum management of solid waste. In these discussions, it is noted that Ngumba estate is excluded from the zone of City Council service by virtue of its location in the outer fringes of the city, and that, although BuruBuru is within the zone that is mapped to receive council services, these services are virtually non-existent. To cope with the absence of council services, households in Ngumba and BuruBuru have adopted various strategies for the storage and disposal of household solid waste. This section centres on the methods that households have adopted to manage the crisis, with particular emphasis on factors that influence these choices and their consequent challenges.

Methods of Waste Disposal

Residents of BuruBuru and Ngumba do not have a universal method of waste disposal in their particular neighbourhoods. Principally, four methods of disposal were identified by the residents; including hiring of private companies to collect the waste, dumping in garbage pits,

dumping in garbage heaps, and burning. Table 6 is a summary of the distribution of respondents according to the method of waste disposal used.

Table 6: Distribution of Respondents by Method of Waste Disposal

ESTATE	MEANS OF DISPOSAL						
	Private company	Dump in garbage pit	Dump in garbage heap	Burn	Other	Total	%
Ngumba	41	2	3	2	2	50	50
BuruBuru	37	3	5	3	2	50	50
Total	78	5	8	5	4	100	100

From the data in Table 6, we note that there is overwhelming reliance on the private waste disposal companies to cater for waste disposal in the two estates. 82% of the respondents in Ngumba and 74% in BuruBuru rely on the private companies. Overall, 78% of the total residents in both estates use the private companies, and without exception, none of the respondents utilises the services of the Nairobi City Council for disposal of waste. While this may indicate relatively well moderated and hygienic methods of waste disposal, we note that there is a considerably large proportion (22%) of the residents in both estates that utilises alternative means of disposal like dumping either in a specially defined garbage pit or garbage heap, through private recyclers and by burning. Exposed garbage pits and heaps, sometimes smouldering as the garbage is burnt, are a regular sight in both estates. In Ngumba, 18% of the respondents use these methods, while in BuruBuru, a proportionately higher percentage of 26% utilise them. In isolated cases, recycling is done either through reuse of some of the material for

agricultural purposes in upcountry farms, or through private recyclers. Private recycling is not a popular means of waste disposal despite the fact that numerous *mali kwa mali* (barter) traders²⁰ regularly operate around both estates.

One visible method of disposal that none of the respondents identified and that is particularly, though not exclusively, found in Ngumba, particularly around the semi-permanent housing structures and in Buru Buru Phase I, is the indiscriminate disposal in the open spaces and on the roadsides, often not in distinct dumping heaps or pits. In the informal housing sector of Ngumba for instance, some residents had dumped both solid and semi-solid waste in front of the houses, and more garbage was scattered around the compounds. In both the estates, litter was regularly strewn in and around the compounds, lanes and open spaces. With this in mind, there is need to rethink the definition of waste disposal as defined in Section 1.6 of this study to include, apart from the co-ordinated and pre-ordered removal of waste, particularly from the kitchen refuse and from periodic cleaning, also the habitual, indiscriminate and usually spontaneous littering with accumulated as well as isolated pieces of refuse that are flung out both by the household occupants and by passers-by. This definition would indicate that the crisis of waste disposal needs to be addressed, not just from the household level, but from the point of reference of the community as a whole and the individual practice as well.

²⁰ *Mali kwa mali* is a Kiswahili word that can be directly translated as "property for property" or barter. The *mali kwa mali* traders are peddlers who barter new wares for household disposables, exchange household wares such as buckets, glasses and toys or sometimes pay in cash for items such as old clothes, shoes, newspapers and bottles. They consequently either re-sell them for re-use or recycling. The respondents did not however, recognise them as means through which they dispose of their waste, either because their services do not fall within the regular contractual arrangement as those of the private companies and the City Council or because the items disposed of in this way do not fall within their regular categorisation of waste. It is also evident that the sector is not well developed or recognised in the two estates.

The above disposal patterns, inevitably, are influenced and affected by the frequency of waste disposal. Importantly, the study noted the lack of synchrony between demand for disposal and the frequency with which houses disposed through the conventional methods indicated, with pressure for disposal often outweighing the regularity of disposal. This imbalance complicates waste management by households and has negative repercussions for storage and disposal practices. The following discussions focus on these concerns.

Frequency of Waste Disposal

Beyond the ability of each household to have access to a conduit for waste disposal, an important consideration in the debate on sustainable management of household solid waste is the regularity of disposal and consequences of infrequent disposal, prime of which is the problem of storage. In the 1988 study of the problems of solid waste disposal in Nairobi, Liyai argued that the infrequent and irregular service by the city council contributed to the twin problems of limited waste storage and more garbage in the households, thereby raising the possibility of irregular dumping (Liyai, 1998). These are very significant problems in the management of household waste in Ngumba and BuruBuru. While by Liyai's estimates over 41% of the residents were receiving service from the city council at least once a week in 1988, with the withdrawal of the council services and despite the entry of the private companies, the frequency of waste disposal has not increased. On average, as indicated by the data in Table 7, over three quarters of the residents, dispose of their waste either once or twice a week.

Table 7 **Distribution of Respondents by Means and Frequency of Waste Disposal**

ESTATE	FREQUENCY OF DISPOSAL	MEANS OF DISPOSAL						
		Private company	Dump in garbage pit	Dump in garbage heap	Burn	Other	Total	%
Ngumba	Daily	6*	1	1			8	8
	Twice a week	5				1	6	6
	Once a week	28	1	2	2		33	33
	Twice a month	1				1	2	2
	Other	1					1	1
BuruBuru	Daily	10*	1	1		1	13	13
	Twice a week	2	1				3	3
	Once a week	25	1	4	3	1	34	34
	Total	78	5	8	5	4	100	100

* Figures given for 'Daily' disposal through private companies must be viewed with caution. While these respondents indicated daily disposal of garbage, it is possible that this disposal is merely for purposes of storage rather than actual removal from the premises. This caution is based on the fact that the maximum frequency of collection by private companies is indicated as twice a week.

Data in Table 7 indicates that the majority 67% of the residents in the two estates dispose of their waste once per week. This percentage is proportionately similar for both estates with 66% in Ngumba and 68% in BuruBuru. Private companies play a key role in this disposal. Only 21% of the respondents are able to dispose of their waste daily²¹, while 9% dispose twice a week. Dumping in garbage pits or heaps is done either on a daily or weekly basis. From the large amount of dumping around some of the estate lanes in the two estates, it is possible that some of the respondents stated methods of disposal may not be entirely credible. A curious statistic provided by 2 Ngumba residents for example, is that they dispose 'twice a month, an

²¹ Given the comment * at Table 7 it is possible that figures for weekly disposal could be much higher with a concomitant reduction in those who dispose daily through private companies.

assertion that would constitute a domestic improbability. Another is raised by the fact that about 16% of the residents dispose daily through private companies, yet the companies do not provide daily disposal services. This raises possibility that many people dump their waste, yet do not take responsibility for it. Overall, with the exception of 30% of the total number of respondents who dispose either daily or twice a week (28% in Ngumba and 32% for Ngumba) regardless of the prudence of the method used, the majority of the respondents have to store their refuse awaiting scheduled disposal. In line with Liyai's (1988) arguments, this directly exposes them to the problem of storage and the temptation of indiscriminate dumping. Conceivably, it also increases the possibility of residents who use the private companies utilising other methods to dispose of excess waste. Pursuant to this line of argument, it is important to keep in mind that household waste predominantly comprises organic waste, which can not be stored effectively and conveniently for long periods. The challenges of Waste storage therefore deserve specific mention and comprise the subject of the following discussion.

Challenges to Household Storage of Solid Waste

Adequacy and suitability of waste storage methods and facilities as we have noted in the preceding discussions are important aspects in the effective management of household solid waste, particularly in neighbourhoods where disposal is irregular as in the case of Ngumba and BuruBuru. In Chapter 1, we noted that studies on the management of solid waste, particularly from the perspective of architecture and design of housing facilities have indicated that the physical facilities within the housing structure, including the spatial allotment and design are important considerations in the effective management of household solid waste. Most housing estates in Nairobi have nevertheless, been sighted as having put little consideration for waste

disposal and storage in their architectural design (Mbugua, 1980 and Sibanda, 1980). This study found out that the physical facilities available to the households, especially the compounds and verandas are important elements in the storage of household waste. The ease with which each household secures storage of its waste, consequently, has bearing on the waste management problems experienced by the household and the probability of unhygienic disposal. From the data in Table 8, we note four essential locations for the storage of waste by households: the front yard, the back yard, the front veranda and the back veranda of the house, none of which is specifically designed for the purpose.

Table 8: Distribution of Respondents by Site of Waste Storage

Estate	Location of Storage Area					Total
	Front yard of house	Backyard of house	Front veranda	Back veranda	Other	
Ngumba	4	22	1	21	2	50
Buru Buru	6	36	1	7		50
Total	10	58	2	28	2	100
%	10	58	2	28	2	100

Storage of household waste follows relatively similar patterns in the two estates. As indicated in Table 8, 86% of the respondents either store the waste in the back yard or back veranda of their houses, while only 12% store it in the front yard or front verandas of the houses. A minority 2% in the semi-permanent housing structures in Ngumba do not store the garbage at all, preferring instead to dispose of it as it is produced, normally in the garbage heaps or right outside their houses.

Those housing units that include backyards have significant advantages in the storage of waste, and over half of the respondents utilize them for the purpose, regardless of whether it is private or communal. BuruBuru Estate therefore has significant advantage in this respect over Ngumba in that most of the houses have independent compounds with backyards, unlike Ngumba where most of the houses are flats. This placement of storage area is advantageous in that it removes the proximity to the main residence, keeping it from public view and enhancing the visible sign of hygiene. Use of the front yards as a storage point is particularly cumbersome as it obstructs entrances and is often an eyesore. The situation is worse in cases where the front veranda was used, signifying the reason why only 2% of the respondents utilised it for this purpose. Several waste receptors were evident in front of the houses that utilise the latter two areas for storage, with varied volumes of waste awaiting disposal and considerable spillage of excess litter around the receptacles. Lack of suitable and adequate storage space therefore, constitutes an important consideration in the household's management of solid waste. Despite the significance of compounds (particularly the backyard) and the verandas (mainly the back veranda) as essential areas of storage, nevertheless, a proportionately large number of households neither have a compound nor a veranda. As evident by the statistics in Tables 9 and 10 many households, especially those in flats in Ngumba and Buru Buru Phase I also share communal compounds and verandas, which compounds the problem of effective storage.

Table 9 **Distribution of Respondents by Presence of Compound**

Estate	Availability/Type of Compound				
	Yes (Private)	Yes (Communal)	No	Total	%
Ngumba	14	24	12	50	5
Buru Buru	37	13	-	50	50
Total	51	37	12	100	100

Table 10 **Distribution of Respondents by Presence of Veranda**

Estate	Availability/Type of Veranda				
	Yes (Private)	Yes (Communal)	No	Total	%
Ngumba	18	22	10	50	50
Buru Buru	40	10	-	50	50
Total	58	32	10	100	100

Due to the large number of flats and other shared housing structures in Ngumba Estate, only 28% (14 out of 50 households) of the total number of residents in the estate had private compounds and only 36% (18 out of 50 households) have private verandas. 48% share compounds while 44% share verandas. The remaining 24% did not have any compound and 20% had no veranda at all. In contrast, all respondents of Buru Buru Estate had a compound and veranda, with only 26% (13 out of 50 households) sharing a compound and 20% (10 out of 50 households) sharing verandas. Appreciably, more than half of those sharing communal facilities were in Buru Buru Phase I, which as, noted earlier, has numerous housing annexes and flats in contrast with Buru Buru Phase V which is predominated by bungalows. Additionally, and compounding the problem of lack of adequate storage space, most verandas in the flats and

shared compounds are extremely narrow and this further aggravates the problem of storage over long periods. This aspect may further explain the motivation for unorthodox disposal. Lack of compounds and verandas as well as the shared facilities in Ngumba and to a limited extent BuruBuru phase I may further explain the fact that effective solid waste management in these neighbourhoods is appreciably less apparent than in BuruBuru Phase V, which has more private compounds and verandas.

Adding to the complications associated with structural shortfalls in the housing facilities, storage is further complicated by lack of adequate and appropriate waste receptacles. Respondents indicated use of three key waste receptacles: nylon paper bags, which are used by over 86% of the respondents; tin trash cans (7%); sometimes used in combination with nylon paper bags and plastic trash cans (7%). Private waste collection companies usually provide the plastic paper bags, while trash cans are left to the individual households.²² From the above statistics however, we note that most households do not have access to the trash cans.

Taking into consideration the general level of satisfaction with these methods of storage, we note that although nearly $\frac{3}{4}$ of the respondents indicated that they found the method of storage used adequate, and over $\frac{1}{4}$ found them inadequate as indicated in Table 11.

²² According to PIK-A-KAN Garbage Collectors, tin garbage cans are only provided only in exclusively higher income estates such as Kilimani and only on request and payment of an extra charge. Initially, trash cans were provided by the Nairobi City Council and charged on the monthly water bill. According to the Nairobi City Council about 1500 bins are still distributed annually, mostly to business premises and higher income residential areas. These are too few to meet the demands of the city residents in view of the existing budgetary limitations. City residents were previously billed at Ksh10 for dustbin hire per each billing cycle, but the charge has since been withdrawn due to lack of supply.

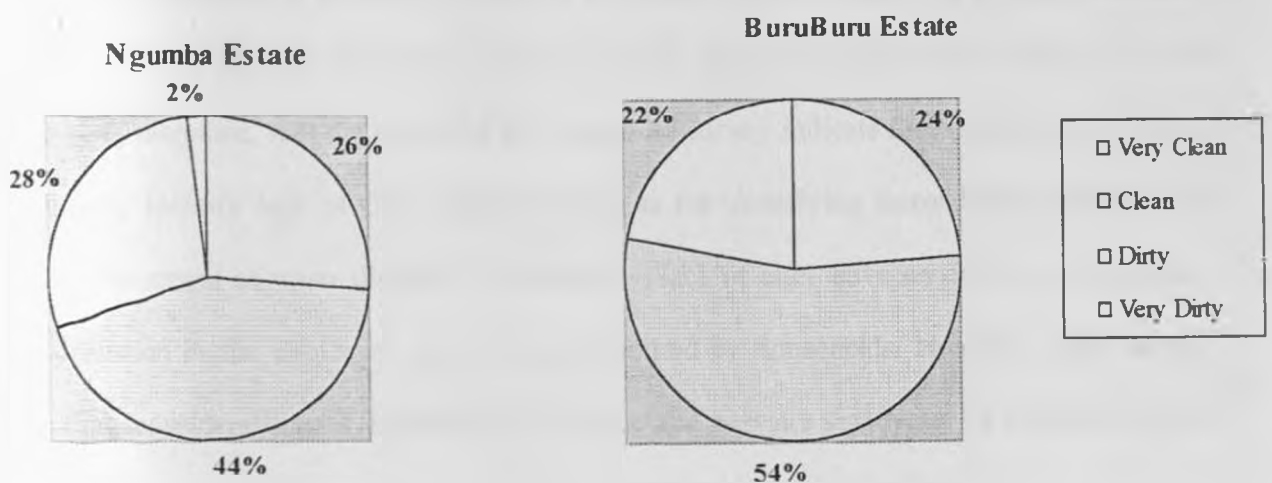
Table 11 **Distribution of Respondents by Adequacy of Waste Storage Method**

Adequacy	Waste Receptacle Used			
	Nylon paper bag	Tin trash can	Plastic trash can	Total %
Adequate	61	6	7	74
Not Adequate	25	1	-	26
Total	86	7	7	100

Summary at Table 11 points to the fact that not only do most people use the plastic paper bags, but also that these comprise nearly the entire sample that is dissatisfied with the method of waste storage. Various reasons were given for this disaffection, among them storage for long periods which attracts pests, having to mix different types of waste, stench from the garbage, spillage with the subsequent deficiency of hygiene, spillage by scavengers such as neighbourhood cats and dogs. These problems are exacerbated by plastic bags that are of low quality and that often split, spilling the waste. In most cases they are not large enough to hold all the waste produced awaiting collection on a weekly or bi-weekly basis. This, coupled with occasional missed collection by private companies creates further need for individuals to find alternative avenues of disposal. Although 42% of the respondents indicated that private companies have never failed to collect the waste on designated days, a significant number indicated that the alternative for their failure is to burn or dump in the pits. 16% of the respondents are more pro-active, and indicated that under the circumstances, they would call the company to come and collect; which they usually do. Alternatively, the individual would have to take the garbage to a city council bin or dumpsite. 9% however, indicated that they take no action at all, but await the next collection day. We note therefore, that not only does the storage

of waste affect disposal, but so does the particular method of storage present the user with specific difficulties or advantages in the management of waste. The result is that most compounds have bins and plastic bags overflowing with waste, many leaking and as a result emitting unpleasant odours. There is also a lot of waste discarded around the compounds, open spaces and pathways. The numerous garbage mounds on the roadsides along the two estates attest to this inappropriate disposal. As we have noted in earlier sections of this chapter, community participation in general, is not particularly high in the two estates and it is noteworthy that residents' concerns about waste management at the household level do not proportionately spill-over to the environment beyond the immediate household. Consequently, as evidenced by a casual rating of garbage disposal within the compounds and the adjoining lanes and open spaces (See Figure 4), only about ¼ of the households can be rated as very clean, while approximately one other ¼ could be described as dirty.

Figure 4 Comparative Rating of Households by State of Garbage Disposal in Compound and Immediate Environment



From the comparative data in Figure 4, we realise that, in spite of the fact that a comparatively equal and large percentage of people in both estates use the services of the private companies for disposal of their waste and the fact that about $\frac{3}{4}$ of the households can be rated as either clean or very clean, there is still a considerable proportion of houses that have relatively low levels of hygiene. A total of 28% houses in Ngumba were rated as dirty and a further 2% as very dirty, in comparison to 22% that were rated as dirty in BuruBuru. Notably, none of the households in BuruBuru was rated as very dirty, and of the 22%, that were rated as dirty 19% were in Buruburu phase I. These data, considered in the light of the problems observed in preceding discussions, indicate a less than satisfactory state of waste disposal in the estates and would point to the fact that the current methods of waste management may not be effectively addressing the crisis. In view of this, it becomes necessary to further question why, despite the shortcomings observed, residents dispose of household waste in the manner that they do. This question is addressed in Section 4.8.

4.8 Household Determination of Waste Disposal Method

From the conclusions in previous sections of this study, we have noted that without exception, the Nairobi City Council has failed to offer service to Ngumba and BuruBuru estates. It is not surprising therefore, that the results of the household survey indicate that respondents, without exception, identify lack of City council service as the underlying factor behind their use of alternative means of waste disposal. Consequently, lack of alternative services, is an important consideration in the choice of waste disposal method by households. However, other factors including considerations of expediency of service and cost are significant as indicated by the

distribution of the respondents by means of waste disposal and the reason for the choice of method in Table 12.

Table 12 **Distribution of Respondents by Method of Waste Disposal and Reason for Choice of Method**

Means of Disposal	Reason for choice of Disposal Method							Total
	Expediency of service	Cost	For Hygiene	No alternative service	Garbage pit nearby	No opinion	Other	
Private company	39	6	3	12		6	12	78
Dump in garbage pit		4			1			5
Dump in garbage heap		6		1			1	8
Burn		3		1			1	5
Other	2	1					1	4
Total	41	20	3	14	1	6	15	100

From the data in Table 12, three major factors stand out as broadly influencing respondents' choice of waste disposal method: the expediency of service, cost and the lack of alternatives.

a) Expediency of service

The need for a dependable disposal service by far determines the choice of waste disposal method. Of the total number of respondents, 41% indicated that their choice was determined by reasons of expediency of disposal services. This encompasses reasons of adequacy of the service, convenience, reliability and effectiveness of the service. Significantly, of this total, 95% disposed through the private companies. The total also comprises 50% of all respondents who use the private companies to dispose of their waste. This implies that, comparative to the

alternative: private companies do offer reasonably expedient service. While reasons of expediency are a popular determinant for use of private sector services, it is important not to lose focus of some of the factors that demean this expediency. Users for example, list myriads of complaints about the services of the private companies, which water down their satisfaction with the service. These include increasing of fees arbitrarily, poor quality and insufficient disposal bags, late collection of garbage, failure to supply disposal bags on time, poor handling during collection including littering by scavengers, lack of trash cans, and unreliable collection trucks. Respondents further raise concern that the private companies do not provide cleansing services for the roads and lanes and they were not confident that the garbage collected is disposed of hygienically. Such complaints are perhaps inevitable in perspective of the numerous problems impeding the performance of private companies as discussed in Section 4.4. Given the vastness of these complaints, reasons of expediency should be viewed more from the perspective of user expectation than from that of actual quality of service, and should be construed to mean that private companies, more than any other available agency, largely meet this expectation. In this respect, we note that an additional 12% of the respondents reluctantly use the private companies instead of the more unconventional means such as disposing through the garbage pits and heaps for the reason that there is no other alternative service.

b) Cost

In Chapters 1 and 2 of this study I have raised two major arguments concerning management of solid waste. First, that low-income communities suffer most exclusion from mainstream services provided by cities (UNCHS, 1989 and 1990) because they are more dependent on

basic needs and public services than other members of the society (UNICEF/Kenya Economic Association, 1989). We have accordingly noted in Section 4.1 that most middle and low income estates, particularly those that are situated in the outer fringes of the city and that are neither represented by strong community lobby groups nor influential civic representatives suffer the blunt of city council neglect. This factor alone, as we have noted in point (c), predisposes residents to use alternative methods of refuse disposal. Additionally, issues of affordability of services amid declining Third World economies are central concerns in studies on the delivery of municipal services, including those of waste disposal (Pfammater and Shertenleib, 1996; UNCHS, 1989; UNICEF, 1989; Nellies, 1999). In line with these concerns, discussions in Chapter 2 hold that diminishing household incomes, brought about by declining global and domestic economies, have made it difficult for individual households to meet household demands and this makes it more difficult for households to budget for ancillary services such as private waste disposal services in the absence of city council services. Minimal service by the city council to the lower income estates means that residents suffer more from the effect of these economic shortfalls. The effect of this, however, will differ depending on individual household income.

From the data in Table 12, we note that, cost of services impacts differently on different households, consequently dictating the manner that they dispose of their waste. Of the total number of respondents, 20% indicate cost as an important factor for their choice of disposal practices. Its influence is two-fold; as a disincentive and as a stimulus for use. Of the total number of respondents whose disposal habits are determined by cost, 70% use the more unconventional methods of disposal such as through the garbage pit, garbage heap and

burning while the remainder use the services of private companies. Paradoxically, while those using the services of the private companies indicate that they choose to use the service on account of the low cost, those using the alternative indicate that the private companies are expensive. Others either prefer not to spend any money on the alternative or state that due to poverty they cannot afford to pay for waste disposal services at all. These responses clearly pit cost and issues of affordability of alternative services, particularly the privatised services at the centre of the solid waste management debate

From the above data it is possible to infer that households with higher incomes use the services of the private companies, while those with low incomes use the alternative methods. This study indicates that this conclusion is only correct to a limited degree. From the data in Table 13, we note that in as much as the cost factor predominates the income bracket below Ksh 15,000, there is no indication that cost is only significant among residents with low incomes. At the same time it does not mean that only those in the lower income bracket use the alternative methods of disposal.

Table 13: Distribution of Respondents by Income, Means of Waste Disposal and Reasons for Choice of Method

Monthly Income	Means of Disposal	Reason For Choice of Method								
		Expediency of Service	cost	For Hygiene	No Alternative Service	Garbage pit nearby	No Opinion	Other	Total	%
0-14,999	Private co.	3		1	2		4	2	12	12.5
	Dump in garbage pit		1			1			2	2.08
	Dump in garbage heap		5		1			1	7	7.2
	Burn		2					1	3	3.1
	Other		1					1	2	2.08
	Total		3	9	1	3	1	4	5	26
15,000-24,999	Private co.	10	1	1	4			5	21	21.9
	Dump in garbage pit		2						2	2.08
	Dump in garbage heap		1						1	1.04
	Burn		1						1	1.04
	Other	1							1	1.04
	Total		11	5	1	4			5	26
25,000 & above	Private co.	23	4	1	6		2	5	41	42.7
	Dump in garbage pit		1						1	1.04
	Burn				1				1	1.04
	Other	1							1	1.04
	Total		24	5	1	7		2	5	44

N=96

From the data in Table 13, we observe that the use of the private companies is not exclusive to those in the upper income brackets (Above Ksh 25,000) nor is the use of alternative means of disposal exclusive to those in the lower income bracket (Below Ksh 15,000). For example, 12.5% of the total number of respondents use the services of the private companies, yet are in the lower income bracket. This total comprises about 16% of all respondents who use the

services of the private companies. This percentage can be contrasted with 55% in the upper income bracket (Over Ksh 25, 000) and 28% in the middle income bracket (above Ksh 15, 000). We also note that about 3% of the respondents also use alternative methods, yet are in the upper income bracket. This percentage comprises only about 13% of respondents using the alternative means and can be compared to about 64% in the lower income bracket and about 23% in the middle income group. We note further, that over 47% of the respondents who are influenced by price in their choice of waste disposal method are in the lower income bracket compared to about 26.3% who are in the middle and upper income groups. From these data we can make inference that due to low incomes, respondents in the lower income bracket are more likely to be unable to pay for privatised waste disposal services than their counterparts in the higher income brackets, thereby resorting to using alternative methods for disposal of their waste. Those in the upper income brackets, for the same reason, are more likely to use the services of private companies.

Based on the above inferences, we can further test hypothesis 1 that household income influences waste disposal practices by households. To test this hypothesis, the average monthly income (Q9) is crosstabulated against method of waste disposal (Q22) and willingness to pay for private sector services (Q62). The results are shown in Table 14 and Table 15.

Table 14 **Distribution of Respondents Average Monthly Income and Means of Waste Disposal**

Average Monthly Income	Means of Waste Disposal						%
	Private company	Dump in garbage pit	Dump in garbage heap	Burn	Other	Total	
0-14,999	12	2	7	3	2	26	27.08
15,000-24,999	21	2	1	1	1	26	27.08
25,000 & Above	41	1	-	1	1	44	45.83
Total	74	5	8	5	4	96	100

N=96

Chi-square----- Value 25.2 df 8 Significance .001

Crosstabulating the average monthly income against method of waste disposal resulted in a chi-square value of 25.2 at a level of significance of .001 with 8 degrees of freedom. The result indicates that the two variables are related. We can therefore conclude that average monthly income is significant in determining use of private waste disposal services. To test whether there is a relationship between income and willingness to pay for private sector services, the average monthly income (Q9) is crosstabulated against willingness to pay for private sector services (Q62) and the result is given in Table 15.

Table 15: **Crosstabulation of Respondents Average Monthly Income/ Willingness to Pay for Private Sector Services**

Average Monthly Income	Willingness to Pay for Private Sector Services			
	Very Willing	Unwilling	Total	%
0-14,999	12	14	26	27.08
15000-24,999	17	9	26	27.08
25,000 & Above	36	8	44	45.83
Total	65	31	96	100

N=96

Chi-square----- Value 9.6 df 2 Significance .008

On crosstabulating the variable average monthly income against willingness to pay for private sector services, a chi-square value of 9.6 was realized at a level of significance of .008 with 2 degrees of freedom. From the results of the crosstabulations above we can conclude that an association exists between monthly household income and the willingness to pay for private sector services. From the statistics in Tables 16, 17 and 18 we can therefore conclude that income is important in determining the methods of waste disposal used by residents of Ngumba and BuruBuru Estates, and that it particularly influences adoption of private sector services. As we have noted in Table 13 and the associated data analysis however, the methods used are not exclusively dictated by household income and can be explained by other factors as discussed in (a), (c) and (d). Given the significance of income on the management of household solid waste however, it is necessary to question to what extent residents are willing to pay for waste disposal services, and what impact the current shortfall in service provision has on their willingness to pay for these services. These issues are further discussed in Section 4.9.

c) Lack of Alternative Service

As noted in preceding discussions, the common denominator in the use of alternative means of waste disposal is the lack of service by the city council. As a result 14% of the respondents based their choice on the lack of alternative method. The majority (86%) consequently opted to use the services of the private companies, while the rest preferred to dump in the garbage heap or to burn the waste. A common complaint that the city council has neglected these neighbourhoods is an indication that preferably, the residents would choose to use the services

of the city council to the alternative. It is also an indication that with the availability of city council services, there would be less dumping and burning of waste.

d) Other Factors

For some residents, hygiene is the fundamental consideration when choosing the mode of waste disposal. Irrespective of considerations of efficiency, cost or alternative means of disposal, 3% of respondents chose to use the services of the private companies. Despite the necessity to place premium on hygiene in the individual household management of solid waste, this percentage is considerably small comparative to the latter three reasons and indicates that reasons of hygiene do not readily predetermine the method of waste disposal in most households. Programmes intended to improve the management of urban solid waste must therefore, of necessity, include sensitising residents on the importance of hygiene, thereby promoting it at the top of household waste management agenda.

For a small percentage of the respondents, the presence of a garbage pit nearby additionally acts as an incentive to dump. This is an opportunistic response that can be curbed through greater adherence to city council anti-dumping laws and greater collective responsibility by communities. These, unfortunately, have either been neglected or loosely enforced by the city council and the local communities.

4.9 Issues of Costing and Payment for Services

From the factors discussed above, we have noted that no single factor exclusively determines the methods that residents in Ngumba and BuruBuru use to dispose of their waste. In Section

4.8(b) however, we have noted that there is a specific relationship between pricing of services, the method of waste disposal and willingness to pay for private sector services. In this section, therefore, I will look at costing of domestic waste management services, primarily focusing on the services of the private companies, which, as we have earlier noted, serves 78% of the respondents and other rates paid out to the city council. I will also look at the attitude of the residents towards pricing of these services and how the respondents view issues of pricing relative to the services provided. Consequently, I will look at the way issues of pricing affect the residents' relationship with the city council, particularly, as we have noted, because the city council continues to charge rates and levies to the residents, yet it does not provide services.

On a monthly basis, most respondents spend between Ksh 150 and Ksh 200 on cleaning and conservancy.²³ The bulk of this is paid out to the waste disposal companies in form of monthly fee for garbage collection and, to a limited extent, private recyclers. As noted in Section 4.4, private companies charge between Ksh 75 in the low-income estates with single rooms and Ksh 500 in the high income neighbourhoods, which would account for the pricing in medium income estates like Ngumba and Buruburu. Normal rates to the City Council are also paid as part of the cyclical water bill as noted in Section 4.2. Two issues as discussed below are significant when looking at expenditure: fairness of the cost and affordability of services.

Parallel to income disparities in the estates studied, opinion regarding pricing of services is not uniform among the respondents as we can observe from the data in Table 16.

²³ From the responses given by the residents, the general understanding of the terms 'cleaning and conservancy'

**Table 16: Distribution of Respondents by Average Monthly Income/
Opinion on Service Charges**

Opinion on Service Charges	Average Monthly Income				
	0-14,999	15000-24,999	25,000 & Above	Total	%
Too high	2	1	2	5	6.5
High	2	4	8	14	18.2
Fair	10	16	30	56	72.7
No Opinion	-	-	2	2	2.6

N= 77

From the above data, we note that on the average respondents consider the cost of services fair. Over 72% of the respondents considered the current charges fair, but about 24% considered it either high or too high. As earlier noted with the influence of cost (See Section 4.8), these responses also cut across the income lines, with some respondents in the higher bracket (Over Ksh 25,000) saying the fee is high while others in the lower bracket (under Ksh 15,000) say it is fair. This implies that opinions are not based on the income of households per se, but also on other factors such as the nature of the service as we will subsequently note. There is also a wide a range in the general opinions on monthly fee that should be charged for garbage disposal services ranging from ksh 40 to ksh 1,500, and this can be taken to demonstrate the disparity in the respondent's capacity and willingness to pay for services. The average amount however was indicated at about ksh 200. From the perspective of both the waste companies and the City Council, the fee charged is too low to cater for the services already provided. In order to fund further improvement, an upward revision of the charges is necessary. This is a logical argument

was payment to an external agency exclusively for the purpose of waste removal. This did not include any other expenses paid to domestic or contracted workers for the general maintenance and cleaning of household and the immediate environs.

given that lack of adequate financing is a key problem for both the city council and the private companies as we have noted in Chapter 2 and earlier sections of this chapter.

While it may be inevitable to target private citizens as a principle source of finance for the waste management industry, this notion is heavily disadvantaged by two factors: first, that of willingness to pay for services, and secondly, lack of willingness to pay more for these services.

Whereas a small percentage of respondents are willing to pay for private sector services because they think that they are relatively efficient or in order to stop environmental pollution, reasons for respondents reluctance to pay the existing fees besides the feeling that private sector services are expensive, include the feeling that it is the duty of the City Council and they shouldn't have to pay extra fees to private companies. Others feel that they don't have to pay since they can dump waste elsewhere, while some feel that they have no money to waste and it is not their work. Poor service continues to be a problem as some respondents are reluctant to pay until services improve. Many respondents further resist the idea of higher fees for various reasons as summarised in Table 17.

Table 17: Summary of Respondent Views on Higher Service Fees

Unwilling to Pay	Willing to pay (Conditionally)	Willing to Pay (Unconditionally)
<ul style="list-style-type: none"> • Can't afford • City council should do it as I pay levies • The fee already paid is enough • Services should be free by City Council • Amount of service doesn't warrant more • Some other companies charge less • They are not always effective • Prices should be lowered • I have little garbage to dispose of • Don't see why I should 	<ul style="list-style-type: none"> • Would pay more if services were improved • Would pay if service providers account for levies 	<ul style="list-style-type: none"> • Waste management is a tough job • To increases the effectiveness of service

Reasons for lack of willingness to pay higher fees are based on issues of institutional weaknesses and poor regulation of both the private sector and the city council as already noted in earlier sections of this chapter. 64% were unwilling to pay more for various reasons top on the list being that the fee already paid was too high and that the amount of service received does not warrant higher fee. Many do not see why the city council should not provide services against the levies already charged. Only a minimal 15% were willing to pay more and nearly half of them on condition that services were improved and the city council accounted for the levies already charged. Obviously until these weaknesses are addressed there will be reason for the public's reluctance to adopt new increased rates by both the city council and the private companies. Taking into consideration the fact that household income is an important determinant in the choice of waste disposal methods, then planning for waste management requires specific consideration of user sensitivity to pricing of services. This, as well as conclusions in Section 4.8, specifically supports arguments by other studies (Pfammater and Shertenleib, 1996; Nellies, 1999; Oyugi and Okello, 1997) that costing of services deserves specific consideration for privatisation of municipal services to be successful. Both service providers consequently, agree that there is definite need to subsidise the low income neighbourhoods, a factor that the private companies are already putting into consideration during pricing.

It is necessary to note that much of this negative response to payment, particularly of city council rates is based on the pre-existing relationship with the rate payers. 3/4 of the respondents in this study indicated that their relationship with the council was either

unsatisfactory or very unsatisfactory based on considerations of poor performance by the council. Generally, respondents are unwilling to pay for City Council services due to the fact that no services are rendered. 84% of the respondents indicated that they were unwilling but paying reluctantly²⁴, while about 16% were very willing to pay because it was the council's due while others indicated willingness if the council provided services, accounted for the rates and if only to avoid using the private companies. This is comparable to 69% of respondents who were willing to pay for private sector services against 31% who were unwilling to pay. Based on the reasons discussed above, we note that respondents generally have more confidence in the capacity of the private companies to deliver services. Additionally, of those not already using the services of the private companies, 74% indicated that they would be willing to use the services against 26% who responded negatively. This is indication that with proper regulation, the private sector could provide acceptable service to the majority of the residents. This conclusion is further supported by 94% of the respondents who are of the opinion that the entrance of the private companies into waste management will help solve the problem of waste disposal in Nairobi. By contrast the level of confidence in the city council as a whole and its services is very low. For example, in response to the question "How would you describe your relationship with the city council?" 77% described it as unsatisfactory and 7% as very unsatisfactory, while only 2% described it as very satisfactory and 12% as satisfactory. Over ½

²⁴ About 95% of the respondents pay rates such as water and sewerage, land rates, trade licenses and parking fees to the council, and are not convinced that the council has equally reciprocated in provision of services. This figure however, is not indicative of the number that actually pays these fees and for water and sanitation in particular. The City council on the other hand indicates that rates are characterized by default and occasional collusion with collectors to defraud the council, which indicates that fees collected, cannot adequately cater for services already rendered. Additionally, it argues that many rate defaulters are also recipients of some form of council service such as road maintenance, water, and sewerage.

of the respondents feel that the city council should leave the management of solid waste to the private companies because the council can never provide good services. To test whether there a correlation between willingness to pay city council rates and levies and the relationship between the council and the residents as stated in hypothesis 2 exists, the independent variables relationship with city council (Q63) was crosstabulated against the dependent valuable Willingness to pay city council rates (Q61). The results are summarised in Table 18.

Table 18 Crosstabulation of Respondent' Relationship with City Council/Willingness to Pay City Council Rates and Levies

Willingness to Pay City Council Rates & Levies	Relationship With City Council					Total	%
	Very satisfactory	Satisfactory	Unsatisfactory	Very unsatisfactory			
Very willing	-	7	1	7	15	16.3	
Reluctant	2	4	3	68	77	83.7	
Total	2	11	4	75	92	100	

N=92

Gamma: **Value** **Approx. Sig.**
 .599 .041

The approximate significance of Gamma indicates that the two variables are related and the high value of the gamma coefficient indicates a strong relationship between the two. We can therefore conclude that the poor relationship between the public and the city council influences their willingness to pay city council rates and levies. This confirms deductions in the theoretical framework in Chapter 3, that poor services by the council, partly driven by lack of finances dissuades residents of Nairobi from paying rates and levies to the council and that this further feeds back into the problem of non-performance by the council. It also supports arguments that discontent and disillusionment with state or Para-state inefficiency could lead to exit in the form

of non-participation by the civil society (Nyang'oro, 1993). In fact, most residents paid city council dues only because they had no recourse. Even with more efficient revenue collection, the city council would need to improve on their performance and accounting before the rate-payers can reciprocate through payment of rates. Despite these shortcomings however, respondents are of the opinion that even with the participation of the private companies, the services of the city council are necessary. We have already noted for example that there are critical gaps in the service provided by the private companies and that further and that the services offered by the two sectors are not necessarily mutually exclusive. Importantly, the role of regulation of the entire industry must of necessity be allocated to the city council. In addition, 95% of the respondents agree that effective management cannot be achieved without involvement of the local communities in keeping their estates clean.

With the above considerations in perspective, we can deduce that issues of harmonisation of fees and their rationalisation relative to services provided and specific neighbourhood income classes are important. On the other hand, even with increased levies and better payment, the input of the rate payers and the service providers alone is insufficient to solve the problem without proper disposal practices and enhanced attitudes towards proper waste management as well as overall better co-operation with all stakeholders at the community level.

In summary, this chapter has demonstrated that the crisis of household solid waste is endemic in the middle income estates of Nairobi mainly due to administrative and financial problems that encumber the Nairobi City Council and that effectively prevented it from providing services. As a result more than $\frac{3}{4}$ of the residents have opted to use the services of private companies.

Despite heavy reliance on private companies, their services are limited in scope and their efficiency is undermined by numerous intra-sectoral problems. Consequently, households continue to face problems of storage and disposal of waste. On account of these shortcomings, as well as on the basis of household budgetary constraints, among other reasons, some residents are unable or reluctant to pay for private sector services and many continue to dispose of their waste through less conventional methods. These methods further exacerbate the general state of waste mismanagement in the neighbourhoods. The study also determined that as a result of the lack of service by the city council, residents have a very low level of confidence in the council's ability to manage the solid waste sector. This generally leads to residents' resistance to payment of rates to the council and further exacerbated the crisis of solid waste. On the other hand, residents have generally more confidence in the ability of the private companies to solve the problem of waste disposal in the long run and are generally willing to adopt their services. This confidence can perhaps be supported by the fact that the Nairobi City Council has proved unable to deliver service and the private companies, despite their shortcomings, so far present the only tangible alternative to the crisis. The study however, concludes that private companies alone are incapable of resolving the crisis of waste mismanagement. In line with conclusions by other studies in state-civil society partnership (Mbatia, 1996; Zamberia, 1999), this study suggests that effective solid waste management requires enhanced collaboration between the state and civil society, primarily the private sector companies, the local communities and the city council. For the sustainable management of solid waste in Nairobi, however, the city council needs to play a more pro-active role as facilitator and regulator of the sector.

CHAPTER FIVE

SUMMARY AND CONCLUDING DISCUSSIONS

5.1 Summary of Study Findings and Conclusions

This chapter refocuses on the major findings of this study, highlighting the main focus of the study and the key findings. Arising from these findings, the chapter then attempts to draw relevant conclusions that help to bring about better understanding of the problem under study.

This study principally focuses on the crisis of solid waste management in the city of Nairobi. It specifically focuses on the city council's inability to offer services to Nairobi citizens, and the emerging collaboration between the city council and the private sector in the management of solid waste. In main, it is argued that in the absence of city council services, adjustment from the Para-state (city council) controlled management to privatisation takes different forms in different households and individual households have therefore adopted different methods of disposal to cope with the crisis. Similarly, their ability to adopt privatised services differs depending on their economic circumstances. The play-off from this adjustment process, inevitably, influences the way the sector players interrelate, with repercussions for the sustainable management of solid waste.

Chapter 1 has outlined the magnitude and scope of the crisis in the city of Nairobi. In this chapter, it is argued that the crisis of solid waste management, which is endemic in most Third World cities, is a product of increasing over-urbanisation. The problem has however reached

crisis point due to rapid population growth in the urban areas and is exacerbated by lack of effectual fiscal and financial planning by the municipal authorities. The waste management crisis further continues to grow in the face of dwindling national resources that curtails funding to municipal authorities and limits household expenditure on sanitation. The inability of municipal authorities to cope has therefore led to the emerging collaboration with the private sector. Necessity to understand the nature of this collaboration, its application at the community level and the way society is readjusting to the phenomenon in a depressed economy therefore provided basis for this study. The report therefore aims to promote understand of the social, economic and inter-sector relationships relevant to this phenomenon as a means of assessing the viability of existing methods for purposes of promoting the sustainable management of solid waste in the city of Nairobi.

The objective of this study was four-fold: First, it set out to find out the extent of the adequacy of Nairobi City Council's waste disposal services and how city residents are coping with the situation. Secondly, it set out to determine the factors that influence waste disposal practices by the residents. Thirdly, it set out to explore the form and nature that the Nairobi City Council-private sector collaboration is taking and the prospects that this collaboration holds for the sustainable management of solid waste in Nairobi and fourthly, the study sought to determine the likely implications of the current solid waste management approaches on the relationship between the residents of Nairobi and the local authority. Consequently, the study was guided by the following four questions: One, How adequate are the city council waste disposal services and what strategies have the residents adopted to cope with the situation?; Two, What factors influence waste management practices?; Three, What form and nature does the Nairobi City

Council-private sector collaboration take and what prospects does this collaboration hold for the sustainable management of solid waste?; and Four. What are the likely implications of the current solid waste management approaches on the relationship between the residents of Nairobi and the local authority?

To answer these questions, the study utilised both primary and secondary quantitative and qualitative data. The primary data was collected through a field survey of households in two middle-income estates of Nairobi, and from three private companies operating in the estates as well as from the Nairobi City Council. Secondary data for the study was derived through extensive review of literature and from official documents from the Nairobi City Council. The data collected thereof was analysed both qualitatively and quantitatively and provided the basis on which conclusions relevant to the study were drawn.

Through detailed review of literature in Chapter 2, the study traces the cause of the waste management crisis in Third world cities, with specific focus on the crisis of over-urbanisation, and how it has continued to constrain financing for services and consequently the delivery of municipal service in Kenya. Extensive literature review traces the problem at the macro-level to the global economic recession and the debt burden that is crippling Third World economies. It is argued that this factor has weakened the capacity of the state and the public sector in general to render services, giving rise to the need for collaboration with the civil-society. At the level of local municipalities financial problems and mismanagement have directly contributed to the disorganisation of the service sector. The private sector therefore, is an off-shoot of this service gap. The paradox, however, is that the sector has emerged at a time when the global as well as

local economic crisis has impacted negatively on household incomes, making it difficult for most people to pay for privatised services. The principle question that emerges in this chapter and that feeds back into the topic of study is whether privatisation is a viable solution to the problem and whether indeed, the current city council-private sector collaboration will contribute to attainment of the goal of sustainable management of solid waste in Nairobi.

The study findings presented in chapter 4 reveal that the problem of waste mismanagement is endemic in the middle income residential neighbourhoods of Nairobi. Collection of household waste by the Nairobi City Council is ineffective and limited in scope, and is biased to the higher income areas and the very low income areas, usually the slums. Middle income estates, particularly those in the outskirts of the city are basically ignored by the city council. Ngumba and BuruBuru Estates in particular receive no city council services at all. Consequently, the city residents have ceased to rely on the city council services and almost exclusively rely on the services of private companies. Over 12% of the respondents however, still rely on alternative modes of waste disposal such as burning, dumping in pits and garbage heaps and to a limited extent on private recyclers. Several factors we found to determine the choice of waste disposal method used by the respondents, principle among them the need for expedient service. This factor almost exclusively determines use of the private company services. Cost considerations are the second most important factor. On the one hand respondents felt that the low cost of private services motivated them to make use of the services, others conversely felt that the services fee was too high and they could not afford to pay due to reasons of low income. The third important factor for choice of method, whether of private sector services or alternative methods is the lack of alternative, primarily based on the fact that the city council does not offer

services. Additionally, while on the one hand some residents will use private company services due to considerations of hygiene, others are encouraged by the poor enforcement of city council by-laws and will dump their waste in garbage pits and heaps.

Three principle factors were found to explain the failure of the Nairobi City Council to deliver services, leading to the above crisis. These are shortage of finances, financial mismanagement and administrative incompetence. The study particularly found out that the perennial problem of revenue collection by the council is amplified not just by the council's poor record of collection, but also by the poor relationship existing between the city council and the city residents mainly due to diminished confidence in the council's capacity to deliver service. Increasingly, the residents of Nairobi feel that the private companies are a more viable solution to management of solid waste and are therefore more willing to pay for their services. Consequently, many respondents see no reason why they should pay rates when they do not receive services, despite argument by the city council that they do offer other services such as street cleaning, and water supply. In fact, the lower the respondents rated their relationship with the city council, the more reluctant they are to pay council rates and levies. This enhanced public reluctance to payment of city council rates and levies perpetuates the cyclical problem of lack of finance and feeds back into the cycle of poor services to the residents.

Contrary to earlier assumptions, the competition and conflict that existed between the city council and the private sector over space and revenue in the sector has gradually abated as the city council admitted that it can no longer cope. This admission has consequently paved way for the collaboration between the city council and the private sector. Currently, collaboration

with the private sector is limited to contracting for service of the CBDA and hiring of vehicles to do the collection. Limited collaboration with the local communities also takes place in the form of provision of labour, equipment and materials on request, but neither of the two estates under study had benefited from it. Private companies however, operate independently of the city council but the council is mandated to regulate the entire sector.

To a great extent, private companies are the only reasonably reliable and efficient method of waste management in the residential estates. Many obstacles however, stand in the way of their optimal performance and their services are in effect limited in many respects. Generally, due to the fact that the services of private company services are limited almost exclusively to waste disposal and additionally that co-ordinated community action to deal with waste management generally and cleansing of the area outside of the houses in particular is limited, irresponsible dumping is rife and continues to aggravate the crisis. Additionally, the frequency of garbage collection is on average insufficient and disorganized. Management of household waste is as a result constrained by inadequate storage and disposal and logistical difficulties during collection make collection disorganized. At the same time several sectors of the community cannot afford or do not want to pay for the services, which complicated the financial planning and operations of the private companies and is an added hurdle in the private sector management of waste. The form and nature of the private companies themselves is a limiting factor to their performance. It is argued that several reasons prevent private companies as presently constituted from being able to resolve the problem of waste management in Nairobi. These inter alia, include lack of investment capital, operational difficulties such as poor equipment and lack of city council infrastructure, unfair market competition, an uncoordinated and underdeveloped private sector,

lack of professionalism and the low level of community participation. Unless these issues are meaningfully addressed, then the sector will continue to operate at limited capacity and will not provide a meaningful solution to the crisis of waste management.

Despite the incompetence of the City Council and increasing private sector entry into waste management, it is clear that the private sector cannot in the short term effectively replace the city council in the provision of waste management services. There is especially need for collaboration in the management of infrastructure such as the maintenance of the landfill, and the regulation of the entire sector. Currently, the city council has not been very effective in performing the two roles.

Arising from discussions in the reports, we can conclude that the effective management of solid waste in the city of Nairobi fundamentally hinges on two major factors:

First, is the effectiveness of the individual service providers; namely the city council and the private companies. The mismanagement of the Nairobi City Council currently continues to hinder meaningful collaboration with any other sector, whether non-governmental or otherwise. As the regulator of the waste management sector, articulation of policies and their enforcement hinges on the effectiveness of the city council or any other body that is charged with the role. The very ineptness of municipal authorities constitutes a stumbling block in the way of privatisation. On the other hand, the financial and structural weakness of the private companies as well as the under-development of the entire private waste management sector provides a weak link in this collaboration. A stronger financial and managerial base, better inter-sector co-

ordination and co-operation for purposes of increased information sharing, education and articulation of needs are necessary to increase their efficiency. These are prerequisite to the companies' ability to comply with the requirements of the policy on private sector involvement in solid waste management

Second, is the need for greater involvement of all stakeholders in solid waste management. It is clear from the study that there is little community organisation for purposes of waste management. Community involvement is mostly limited to payment of rates and fees for waste disposal. However, it is clear from discussions in Chapter 4 that the public is not indifferent to the waste crisis and that there is considerable interest in participation towards proper environmental hygiene. This requires deliberate programmes for their involvement, particularly driven from the community level or from the city council itself. These initiatives should also aim to seek greater individual household involvement in proper waste management, including looking for alternative methods and partnerships that will enhance such participation. Low real incomes of households and general public prioritisation of environmental hygiene continue to be critical concerns. Thus concerns of privatisation must include raising national and household incomes in order to encourage broad-based community adoption of appropriate waste disposal methods. In this respect, we note that the results of the study indicate that income is particularly significant in determining use of private sector services. It is therefore inconsistent to think of privatising basic services such as waste collection, particularly for low-income neighbourhoods where a large sector of society cannot afford to pay. Pricing of waste services and enhanced public education with intention of boosting general priority for proper waste disposal are essential prerequisites to successful collaboration between the city council and the private

sector. Thus, while it is clear that the involvement of both the private sector and the Nairobi City council constitutes an inevitable approach in the management of solid waste in the city of Nairobi, the structure of this collaboration requires further consideration. Inevitably, any such planning should take into account the socio-economic characteristics of the city residents as critical stakeholders in the process and as the ultimate source of finance for the process. For the sustainable management of solid waste in Nairobi to be achieved, a tri-sectoral approach including the private sector, the city council and community-based organisations is an absolute imperative.

5.2 Contributions of the Study

This study has attempted to provide a micro-level understanding of the crisis of waste disposal at the household level in the face of diminishing capacities by municipal authorities in developing countries. In this sense, it contributes to an overall better understanding of the problem of solid waste in Third world countries. In exploring the emerging collaboration between the private sector and the Nairobi City Council, the study attempts to provide essential insights into the phenomenon of privatisation of public services in developing economies, bringing out some of the factors that predetermine successful privatisation. In the more complex case of partial privatisation as denoted by the Nairobi City Council-private sector collaboration, the study attempts to bring about understanding of some of the socio-economic factors that impact the success of such collaboration. This kind of information will, hopefully, feedback into the process of policy towards better planning for solid waste management in Nairobi and be useful for planning for other municipalities as well. Significantly, the study provides insights into the difficulties that the private sector faces as it attempts to become

integrated into the waste management sector, and provides insight into some of the areas that policy planners need to focus on if the private sector is to be an effective partner in the management of solid waste. Importantly, the study has also attempted to bring about understanding of the type of relationships emerging between the private citizens and local authorities in response to the crisis, and in a limited way has indicated how these relationships impact and feedback into the process of solid waste management.

Given that privatisation of municipal services is an emerging phenomenon in the developing world, the results of this study can provide data from which further research can be based. Section 5.3 provides suggestions on area where further research can be pursued.

5.3 Suggestions for Further Research

This study was limited to the study of middle-income neighbourhoods. While these results can be generalised for other middle-income neighbourhoods in Nairobi, they cannot be accurately used to explain the problem of study in all neighbourhoods in Nairobi. In effect, a comparative study of the problem in different neighbourhoods would bring about a better understanding of the problem across the social and economic strata in the city.

Obviously very little study has been done on the operational capacities of the private waste companies and this study was limited in the number of companies covered. A more intensive coverage of the companies, particularly the emerging competition between the micro and medium size companies would indicate the dynamics of the private sector in general. Further,

comparative studies between Nairobi and other municipalities would yield insight into the collaborative approach.

This study has shown that beyond financial shortages and mismanagement, the Nairobi City Council's organisational structure contributes to the inadequate management of solid waste management. However, no study has been done to indicate the areas that impact upon the effective management of solid waste services, particularly as it affects the performance of the private companies and the process of collaboration with the private sector generally. Such research would be useful in determining the institutional framework necessary to enhance the city-council-private sector collaboration.

Among other findings this study has demonstrated that a significant aspect of the waste management problem derives from low participation by local communities, particularly as coordinated community-based organisations. The study has nevertheless, established that the local communities generally are neither unconcerned about the problem nor are they unwilling to participate in the effective management of the problem. This indicates that local communities could provide a dynamic facet in the resolution of the solid waste crisis. Little study however, has been carried out in the area of community-level participation in waste management, particularly with the aim of documenting local experiences on a comparative basis with other Third World Cities. Such a study would give insight into the community dynamics that, although strongly directed towards resolution of other social problems, have largely been overlooked in the management of solid waste. These could be integrated within a viable institutional framework towards resolution of the current crisis.

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Appendix 1

UNIVERSITY OF NAIROBI
DEPARTMENT OF SOCIOLOGY

TOWARDS SUSTAINABLE MANAGEMENT OF URBAN SOLID WASTE
A STUDY OF NAIROBI CITY COUNCIL-PRIVATE SECTOR
COLLABORATION IN THE MANAGEMENT OF SOLID WASTE

HOUSEHOLD SURVEY QUESTIONNAIRE

RESEARCH SITE : _____
INTERVIEWER : _____
PLOT/HOUSE NUMBER : _____
DATE OF INTERVIEW : _____
QUESTIONNAIRE No : _____

INTRODUCTION

Good morning/Afternoon. My Name is _____ I am a research assistant for Ms Chrisine Ikiara a student at the University of Nairobi. Ms Ikiara is conducting research on solid waste management by the Nairobi City Council and the private sector. The information gathered in the research will be used to make practical recommendations on the effective management of solid waste, in an effort to improve the situation in Nairobi. Your help in providing information that will facilitate this study will be greatly appreciated. All information you give will be treated with utmost confidence.

A PERSONAL INFORMATION

- 001 Estate of Residence 1. Ngumba
2. BuruBuru
- 002 Are you the head of the Family? 1. Yes
2. No (Stop Interview)
- 003 Respondents sex 1. Male
2. Female
- 004 What is your age? Exact age
1. Under 20 6. 40-44
2. 20-24 7. 45-49
3. 25-29 8. 50-54
4. 30-34 9. 55-59
5. 35-39 10. 60 and over

- 005 Marital status
- | | | | |
|----|-----------|----|---------|
| 1. | Single | 2. | Married |
| 3. | Divorced | 4. | Widowed |
| 5. | Separated | 6. | Other |

006 What is the highest level of education attained?

1. Non
2. Lower Primary (Std I-IV)
3. Upper Primary (Std V-VIII)
3. Secondary School
4. College (Tertiary and University)
5. Other (Please specify)

007 What is your main occupation?

1. Small trader
2. Casual labourer
3. Business
4. Profession (e.g. Teacher, Doctor)
5. White collar (Clerk, Typist)
6. Housewife
7. Other (Please specify)
- 8.

(For those who are married only)

008 If married, What is your spouse's occupation?

1. Small trader
2. Casual labourer
3. Business
4. Profession (eg. Teacher, Doctor)
5. White collar (eg Clerk, Typist)
6. Housewife
7. Other (Specify)

009 On average, what is your monthly household income? (Check response against range)

1. 0-4,999
2. 5,000-9,999
3. 10,000-14,999
4. 15000-19,999
5. 20,000-24,999
6. 25,000-29,999
7. 30,000-34,999
8. 35,000-39,999
9. 40.000-44,999
10. 50,000 and above

B **HOUSEHOLD CHARACTERISTICS**

- 010 Does your house have a compound
1. Yes (private)
 2. Yes (Communal)
 3. No
- 011 Does the house have its own veranda (State whether private or communal)
1. Yes (private)
 2. Yes (Communal)
 3. No
- 012 How many people live in this house (Inclusive of househelp)? _____
- 013 How many members of the household are dependent on you? _____

C **OWNERSHIP AND TENANCY**

- 014 How long have you lived in this estate? State number of years _____
- 015 Did you live in any other place in Nairobi before moving to this estate?
1. Yes (State where) _____
 2. No
- 016 Do you own this house or are you a tenant?
1. Owner (**Go to 019**)
 2. Tenant
- 017 If a tenant, how much do you pay per month for the house? State exact amount. _____
- 018 If you are a tenant, does the landlord live within the same plot?
1. Yes
 2. No. Where does the landlord live? _____
- (**Go to 021**)
- 019 If owner, is the house on mortgage?
1. Yes
 2. No (**Go to 021**)
- 020 How much do you contribute towards mortgage each month? Please state exact amount _____
- 021 How much do you spend per month on cleaning and conservancy? State exact amount _____

D MANAGEMENT OF SOLID WASTE

022 How do you dispose of domestic waste and how often is it disposed(Check response against table 1)

Table 1

MEANS OF DISPOSAL	FREQUENCY OF DISPOSAL							
	Daily	Once a week	Twice a week	Thrice a week	Twice a month	Once a month	Irregularly	Never
City council								
Private company								
Private Recyclers								
Dump in garbage pit								
Dump in garbage heap								
Burn								
Other								

023. What is your reason for choosing to use the method of disposal?

1. City council _____
2. Private company _____
(Go to 026)
3. Private recyclers _____
4. Dump in a garbage heap (specify location) _____
5. Dump in garbage pit _____
6. Burn

024. For those not using the services of private companies, would you be willing to use the services of private waste disposal companies?

1. Yes
2. No (Please explain your answer) _____

025. What is your reason for not making use of the services of the waste companies?

1. Lack of knowledge
2. Their cost
3. Don't know how to access them
4. Never been approached by the companies
5. Other(Please specify) _____

026 (For those who have ticked more than one option in Table 1)
Please state your reason for using more than one means of waste disposal

027 How would you rate the level of adequacy of the method of waste collection that you use? (Please check answer in Table 2)

Table 2

MEANS OF DISPOSAL	LEVEL OF ADEQUACY				Please Give reason for your answer
	Very adequate	Adequate	Inadequate	Very inadequate	
City council					
Private company					
Private Recyclers					
Dump in garbage pit					
Dump in garbage heap					
Burn					
Other					

028 What in your opinion could be done to increase your level of Satisfaction? _____

029 Where do you store the household waste before disposal?

1. Front yard of house
2. Backyard of house
3. Front veranda
4. Back veranda
5. Other (Please specify)

030 How do you store garbage before disposal? Please describe the receptacles used?

1. Nylon paper bag
2. Tin trash can
3. Plastic trash can
4. Basin
5. On the ground (skip to 033)
6. Other(Please specify)

- 031 Who provides the receptacle? 1. City Council
 2. Refuse collection company
 2. Self
 3. Other(please specify)
- 032 Do you consider the receptacle adequate for your needs?
 1. Yes
 2. No(Give reason)_____
- 033 Do you find the method of storage adequate? 1. Yes (**Go to question 35**)
 2. No
- 034 If no, what would you say are the inadequacies of the method of storage?

- 035 What happens if garbage is not collected? Please explain what action you take_____

- 036 Please identify the key agencies that should be responsible for waste disposal

- 037 Do you pay for waste disposal services? Yes
 No (**Go to 041**)

038 To who do you pay the waste disposal fees and how much do you pay?
 (**Check answer in Table 3**)

Table 3

WHERE PAID	AMOUNT
Nairobi City Council	
Private company	
Private Recyclers	
Other(specify)	

- 039 How would you describe the fees charged
1. Too high
 2. High
 3. Fair
 4. Don't know

040 Would you be willing to pay more for the service? Yes
No

Why? Please explain your answer _____

041 What in your opinion would be a fair monthly price for garbage disposal services?

042 How would you describe the quality of waste disposal service that you receive?(Check answer against table 4)

Table 4

SERVICE PROVIDER	QUALITY OF SERVICE			
	Very satisfactory	Satisfactory	Unsatisfactory	Very unsatisfactory
City council				
Private company				
Private Recyclers				
Other				

043 Please state any problems that you have experienced with the service you use
(Note response in Table 5)

Table 5

SERVICE PROVIDER	PROBLEM
City council	
Private company	
Private Recyclers	
Other	

E CLEANING OF IMMEDIATE ENVIRONMENT

044 Who is responsible for sanitation in the compound, lanes and open spaces outside your house?

- | | |
|--------------------------|-------------------------------|
| 1. Individual households | 5. Landlord |
| 2. Private company | 6. Other(please specify_____) |
| 3. Nairobi City Council | 7. No one |
| 4. Community members | |

045 How often is the cleaning carried out? _____

046 How would you rate the level of cleanliness of your estate?

1. Very clean
2. Clean
3. Dirty
4. Very dirty

047 Are you satisfied with the level of cleanliness of the estate?

1. Very satisfied (Go to 049)
2. Satisfied (Go to 049)
3. Dissatisfied
4. Very dissatisfied

048 What in your opinion can be done to improve the cleanliness in the estate?. Please Explain.

049 Who in your opinion should be responsible for cleaning the compound, lanes and vacant spaces? _____

050 Are there any community clean-up exercises in your estate? 1. Yes
2. No (Go to 054)

051 If yes, please describe how they are organised and carried out.

052 Have you personally participated in the community clean-up exercise?

1. Yes
2. No(Go to 054)

053 If yes, what was your experience?

054 Do you think such activities are necessary? 1. Very necessary
2. Necessary
3. Not necessary
4. Don't know

Please give reason for your answer.

055 Would you be willing to take part in a community clean-up exercise in your estate?

1. Yes
2. No. Please give the reason why _____

056 Have you attended any environmental awareness campaign or forum?

1. Yes (Please state which) _____
2. No

057 Are you satisfied that your neighbours have done their best to keep the estate clean?

1. Very satisfied
2. Satisfied
3. Dissatisfied
4. Very dissatisfied

058 Are you satisfied that you have done your best to keep your estate clean?

1. Very satisfied
2. Satisfied
3. Not satisfied

059 What do you think should be your role in improving the cleanliness of the area surrounding your household?

F RELATIONSHIP WITH NAIROBI CITY COUNCIL/GOVERNMENT

060 Are you required to pay any city council levies

1. Yes Please state type of levy and how often it is paid
(Tick answer in Table 6)
2. No (Go to 061)

Table 6

TYPE OF LEVY	FREQUENCY OF PAYMENT					
	Daily	Weekly	Monthly	Annually	Other	Never
Water and Sewerage						
Land Rates						
Trade Finances						
Parking fees						
Other (specify)						

061 In general, how willing are you to pay the City Council rates?

1. Very willing
2. Willing
3. Reluctant(paying)
4. Unwilling(not paying)

Please give reason for your answer _____

062 How willing are you to pay private for sector services?

1. Very willing
2. Willing
5. Reluctant(Paying)
6. Unwilling(Not paying)

Please give reason for your answer _____

063 How would you describe your relationship with the Nairobi City council?

1. Very Satisfactory
2. Satisfactory
- Unsatisfactory
3. Very Unsatisfactory. Please explain the reason for your answer?

064 How satisfied are you with the services offered by the various solid waste service Providers? (Please check your answer against Table 7)

Table 7

SERVICE PROVIDER	VERY SATISFIED	SATISFIED	DISSATISFIED	VERY DISSATISFIED
City council				
Private company				
Private Recyclers				
Other				

Please explain the reason for your answer _____

Now I'd like to read some statements about solid waste management in the City of Nairobi. Please tell me if you strongly agree, agree, disagree or strongly disagree with them.

065 The entry of private waste companies into solid waste management will help solve the problem of waste disposal in Nairobi.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

066 Even with the participation of the private companies, we still need the services of the Nairobi City Council.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

- 067 The Nairobi City Council should completely leave the management of solid waste to private companies because they can never provide good services
1. Strongly Agree
 2. Agree
 3. Disagree
 4. Strongly disagree
- 068 Private companies cannot solve the problem of solid waste in Nairobi because many people cannot afford to pay their fees
1. Strongly agree
 2. Agree
 3. Disagree
 4. Strongly disagree
- 069 In order to solve the problem of solid waste, the residents of Nairobi must become more involved in keeping their estates clean.
1. Strongly agree
 2. Agree
 3. Disagree
 4. Strongly disagree

That is the last question in the interview. Thank you very much for the assistance you have given me. Good day.

G **GENERAL OBSERVATION**
(Please observe the following and note after the interview)

- 070 How would you rate the level of cleanliness of the household?
1. Very clean
 2. Clean
 4. Dirty
 5. Very dirty
- 071 How clean is the immediate environment of the household? Consider the compound, lanes, open spaces.
1. Very clean
 2. Clean
 3. Dirty
 4. Very dirty

072 What is the general infrastructure of the area around the household? Describe the general state and organisation of the housing structures, roads, lanes and compound

073 Comment on the state of garbage disposal in the compound and immediate vicinity of the household.

074 What is the general attitude of the respondent to issues of solid waste mismanagement?

- 1. Very concerned
- 2. Concerned
- 3. Indifferent

UNIVERSITY OF NAIROBI
DEPARTMENT OF SOCIOLOGY

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COLLABORATION IN THE MANAGEMENT OF SOLID WASTE

KEY INFORMANT GUIDE
PRIVATE WASTE MANAGEMENT ENTERPRISES

NAME OF COMPANY _____
ESTATE OF OPERATION _____

INTRODUCTION

A. BACKGROUND TO COMPANY

- Location of the company
- Registration.
- Ownership
- Services engaged in
- Size of the company
 - ◆ Personnel
 - ◆ Capital investment
 - ◆ Scope of operation
 - ◆ Number of clients served
- Reasons for starting waste management services

B SOLID WASTE MANAGEMENT

- Method and operation of waste collection
- Volume of garbage collected and disposed of
- Disposal of garbage and related problems
 - ◆ Collection
 - ◆ Clients
 - ◆ External factors
 - Community related

- Competitors
 - City Council
 - Legal
- ◆ Administrative and other internal problems
- Access to customers
 - ◆ Practical problems
 - ◆ Competition
 - ◆ Public awareness
 - ◆ Infrastructure

C FINANCING

- Sources of finance
- Business incentives
 - ◆ From government
 - ◆ Other sectors
- Pricing of services
 - ◆ Charges
 - ◆ Determination of prices
 - ◆ Adequacy of the charges.
- Problems of collection of fees
 - ◆ Manifestation
 - ◆ Magnitude
 - ◆ Repercussions

D RELATIONSHIP WITH STAKEHOLDERS

- Relationship between company and the City Council, the government administration and other solid waste companies
 - ◆ Partnership
 - Contracting
 - Licensing and levies
 - ◆ Problems of registration
 - ◆ Problems of operations
- Challenges and handicaps to operations
- How the problems can be addressed.
- Experience with the local communities.
- Future prospects for waste management.

UNIVERSITY OF NAIROBI
DEPARTMENT OF SOCIOLOGY

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COLLABORATION IN THE MANAGEMENT OF SOLID WASTE

KEY INFORMANT GUIDE - NAIROBI CITY COUNCIL

INTRODUCTION

A STATUS OF SOLID WASTE MANAGEMENT

- 01 Perception of the of solid waste management in Nairobi
- ◆ Magnitude
 - ◆ Level of success/failure in management
- 02 Scope of coverage of waste collection - Geographical coverage
- Frequency
- 03 Scope of coverage of cleansing services - Geographic
- Frequency
- 04 Determination of areas to be serviced
- 05 Level of waste generation
- 06 Magnitude of waste disposed
- ◆ Disposal by the City Council
 - ◆ Disposal by private companies
- 07 Extent and trends in waste accumulation
- 08 Causes of the solid waste crisis

B FINANCING AND ADMINISTRATION WASTE MANAGEMENT

- 09 Organisation of the solid waste management function
- ◆ Parties involved
 - ◆ Constraints

- 010 Sources of revenue for waste management
- 011 Amount of revenue generated in the last five years
- 012 Trends in budgetary allocation from the central government over the last five years
- 013 Trends in revenue collection over the last five years
- 014 Expenditure on solid waste management in the last five years.
- 015 Financial constraints and trends.
- 016 Constraints in revenue collection
- 017 Effects of financial constraints on solid waste management
- 018 Approaches to the alleviation of the financial constraints

D PRIVATISATION

- 019 Policy position regarding privatisation of solid waste
- 020 Opposition to privatisation
- 021 Status of privatisation of municipal services in Nairobi
 - ◆ Sectors that are privatised
 - ◆ Prospective areas to be privatised
 - ◆ Criteria for privatisation
- 022 Privatisation of solid waste being carried out
 - ◆ Areas that are privatised
 - ◆ Prospective areas privatised
 - ◆ Parties involved
 - ◆ Manner of privatisation
 - ◆ Identification of participants
 - ◆ Licensing
 - ◆ Regulation
- 023 Problems of licensing and regulation
- 024 Impact of the involvement of the private waste companies
 - ◆ Negative effects of the involvement of private companies

- ◆ Problems of payments
- ◆ Prospects for future collaboration
- ◆ Competition for space and revenue

025 Relationship between the city council and the private waste disposal companies

026 Future projections on the privatisation process

E COMMUNITY INVOLVEMENT

027 Impact of the City council inability to deliver solid waste services on its relationship with the residents of Nairobi

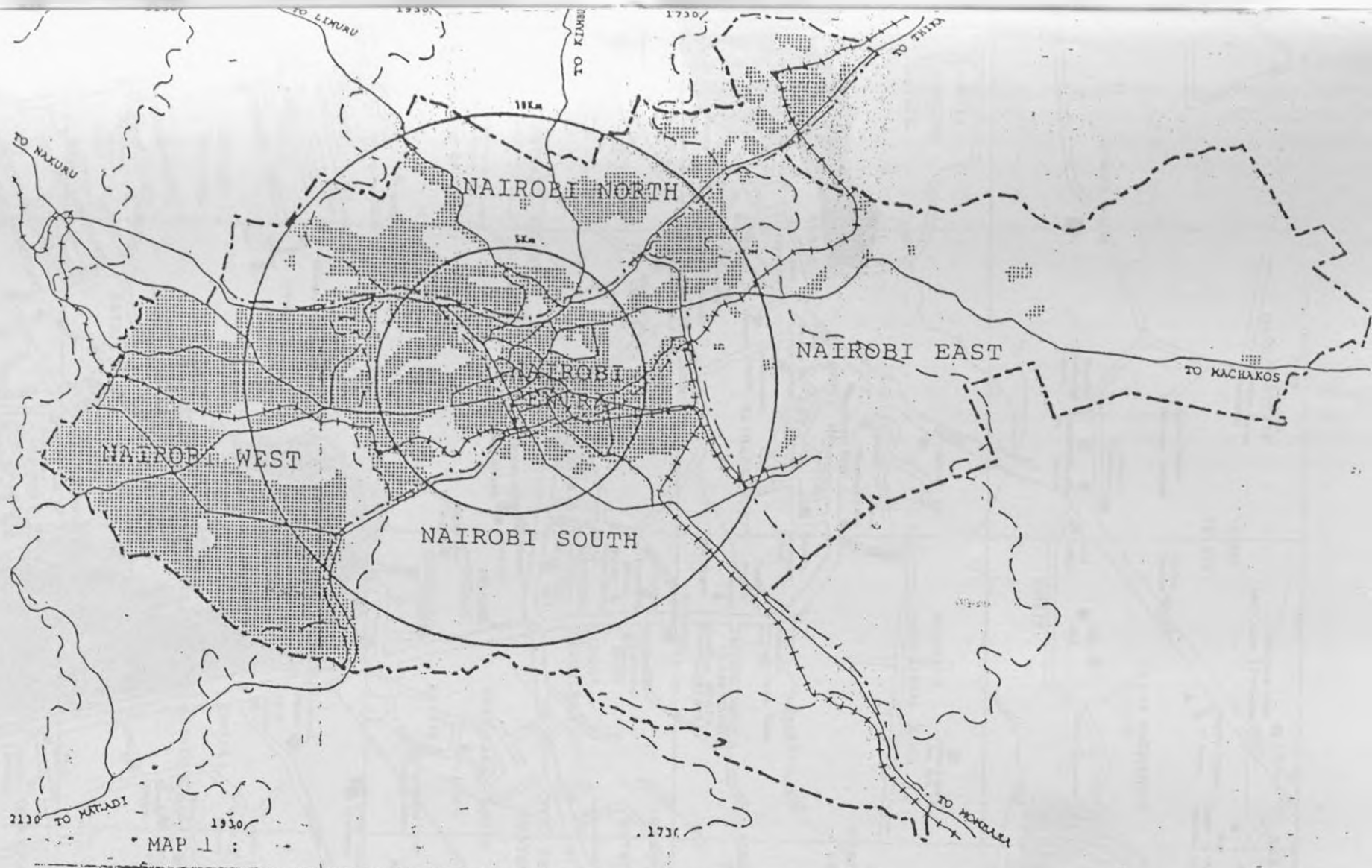
- ◆ Problem of fee payment
- ◆ Confrontations
- ◆ Withdrawal from use of services

028 Initiatives to incorporate residents into solid waste management?

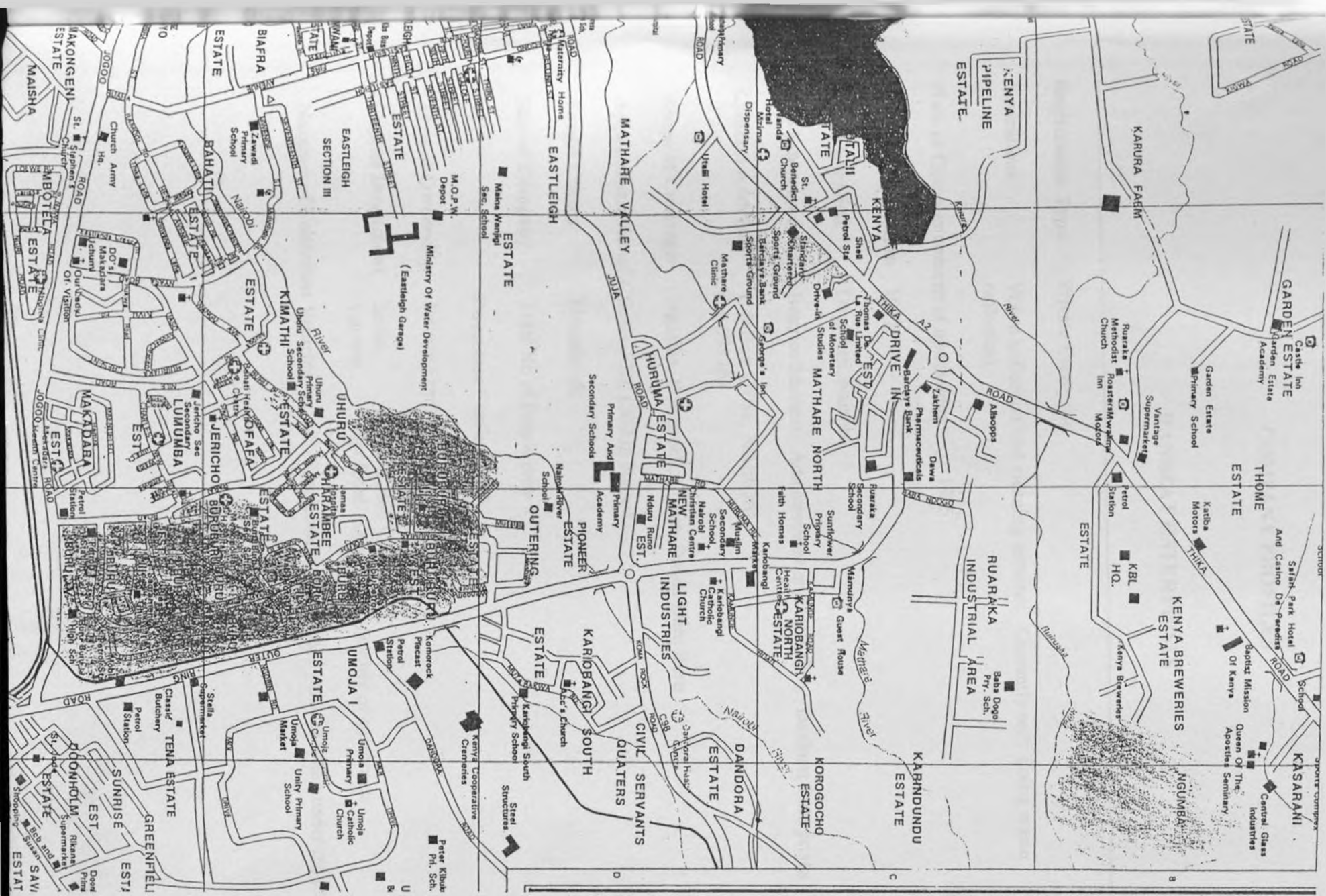
- ◆ Nature of involvement
- ◆ Expected beneficiaries
- ◆ Obstacles to collaboration
- ◆ Involvement of the marginalised groups (slums, scavengers)

029 Approaches to the problem in medium and low income neighbourhoods

030 Immediate and long-term plans for improving services in Nairobi



The Directional Map of Nairobi
 Adapted from the Conceptual Model for the City of Nairobi Decentralisation, UNDP, 1996. PP 56



Location of BuruBuru and Ngumba Estates
 Adapted from the Map of Greater Nairobi

COMPANY PROFILES

DANBEAT ENTERPRISES

- Registration Type** : Private Enterprise
- Operations** : Waste collection and cleaning services. Currently only doing waste collection
- Date of Commencement of operations** : 1995
- Date of Registration** : 1997
- Office Location** : Dagoretti, Nairobi
- Key Informant** : Beatrice Muthoni, Administrator and Co-Owner, Danbeat Enterprises
- Contact Address** : P.O Box 13086, NAIROBI
Tel 575768
- Scope of Coverage** : Ngumba, Komarock, Umoja, Sunna Buru Buru
- Approximate No. of Clients** : 700 (300 in Ngumba)
- Target Clients** : Households
- Size of Company** : Total No of Employees- 11
Permanent Employees- 3
- Type of Ownership** : Private Family business
- Capital Investment** : Initial - Ksh 1,000
: Current -Not fixed. Depends on number of customers
- Number of Collection Vehicles** : 1. Supplements with rented vehicles when under repair.

PIK-A-KAN GARBAGE COLLECTORS

- Registration Type** : Enterprise
- Operations** : Garbage collection, Sweeping, Clearing drains, cutting grass and extermination of pests.
- Date of Commencement of operations** : 1992
- Date of Registration** : 1993
- Office Location** : Buru Buru Estate, Nairobi
- Key Informant** : Jones Mutiso, Director and Co-Founder, Pik-A Kan Garbage Collectors
- Contact Address** : P.O Box 11614, NAIROBI(GPO)
Tel 786667 NAIROBI
- Scope of Coverage** : Buru Buru, Lavingtonne, Ngong Road, StateHouse, Parklands, Kilimani
- Approximate No. of Clients** : 1,200
- Target Clients** : Households and market centres
- Size of Company** : Total No of Permanent Employees- 20
Temporary casuals hired on demand for clenasing assignments.
- Type of Ownership** : Limited company(Family-based)
- Capital Investment** : Initial - Ksh 40, 000
: Current - Ksh 1.2 Million
- Number of Collection Vehicles** : 2x 3 tonne trucks, 1x 6 tonne truck. Occasionally hire vehicles during rainy season

EVABO ENTERPRISES

Registration Type : Enterprise

Operations : Garbage collection. (NB. The refuse collection department is only one section of the company. The main company deals with other business ventures)

Date of Commencement of operations : 1995

Date of Registration : 1992

Office Location : Ngumba Estate, Nairobi

Key Informant : Jacktonne Owiso, Administrator and Partner, Evabo Enterprises

Contact Address : P.O Box 60505, NAIROBI(GPO)
Tel 862911, NAIROBI

Scope of Coverage : Kasarani, Roysambu, Garden Estate, Eastleigh, Lavingtonne, Kileleshwa, Woodley, Statehouse

Approximate No. of Clients : 1,000 (500 in Ngumba)

Target Clients : Households and business premises

Size of Company : Total No. of Permanent Employees- 5.
4 Temporary casuals

Type of Ownership : Partnership

Capital Investment : Initial - Not accounted for

: Current - 100,000(operating capital only)

Number of Collection Vehicles : 1x 3 tonne pick-up, 1x 4.5 tonne truck. Occasionally hire vehicles when under repair