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Improvement of refuse collection in Kitwe

A participatory approach

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**IMPROVEMENT OF REFUSE COLLECTION IN KITWE
(A PARTICIPATORY APPROACH)**

Support to the Implementation of National Plans of Action
(SINPA) – Zambia.



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Table of Contents

Acknowledgements	i
Executive Summary	ii
1. INTRODUCTION.....	1
1.1 National context of the Project	1
1.2 This report	2
1.3 The City of Kitwe	2
1.5 Study Objective.....	3
1.7 Limitations and Scope of Work.....	4
2. ANALYSIS OF CURRENT REFUSE COLLECTION SYSTEM.....	6
2.1 Institutional Issues	6
2.2 Legal Framework.....	9
2.3 Waste Management.....	10
2.3.1 Sources, Characteristics and Composition of Waste.....	10
2.3.2 Amounts Generated.....	11
2.3.3 Storage and Collection	11
2.3.4 Collection and storage at household level.....	13
2.4 Street Sweeping.....	14
2.5 Recycling	14
2.6 Disposal	14
2.6.1 Unsanitary Landfilling	14
2.6.2 Illegal Disposal	15
2.6.3 Disposal at household level.....	15
2.7 Financial Aspects.....	16
2.7.1 Costs	16
2.7.2 Revenues	17
2.8 Problem Summary.....	18
3. DIRECTIONS FOR IMPROVED WASTE MANAGEMENT.....	21
3.1 Towards A Participatory Approach	22
3.2 Technical Arrangements	22
3.3 Financial Arrangements	24
3.4 Institutional Arrangements.....	27
3.4.1 Contract management.....	28
3.4.2 Support Functions.....	30
3.4.3 Regulatory and Educational Functions.....	30
3.4.4 Provision of Solid Waste Infrastructure	31

4. REQUIREMENTS FOR SUCCESSFUL PARTICIPATION	32
4.1 Technical capacity	32
4.2 Financial Capacity	32
4.3 Manpower Capacity	32
4.4 Required Organisational Reforms and Measures	32
5. CONCLUSION AND RECOMMENDATIONS	34
5.1 Recommendations	34
REFERENCES	35
APPENDIX 1: CONSULTED PERSONS	36
APPENDIX 2: HOUSEHOLD SURVEY RESULTS - ALL.....	37
APPENDIX 2: HOUSEHOLD SURVEY RESULTS - WUSIKILE	39
APPENDIX 2: HOUSEHOLD SURVEY RESULTS - BUCHI.....	42
APPENDIX 2: HOUSEHOLD SURVEY RESULTS - NKANA EAST	44
APPENDIX 2: HOUSEHOLD SURVEY RESULTS - RIVERSIDE.....	46
APPENDIX 2: HOUSEHOLD SURVEY RESULTS - IPUSUKILO.....	48
APPENDIX 2: HOUSEHOLD SURVEY RESULTS - BULANGILO.....	50
APPENDIX 2: HOUSEHOLD SURVEY RESULTS - NDEKE VILLAGE.....	52
APPENDIX 3: PRIVATE SECTOR AND COMMUNITY INVOLVEMENT IN REFUSE COLLECTION: OPTIONS AND EXAMPLES.....	54
APPENDIX 4: PROPOSED SINPA ACTIVITIES 1999-2000	56
RESUMEN EN ESPAÑOL.....	58

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Executive Summary

This project set out to define the refuse collection problem in Kitwe and to propose ways of improving the same.

Through a household survey, interviews with relevant institutions and a physical survey of the town, it was established that the Kitwe City Council is not able to provide an adequate refuse collection service to its residents. Less than 10% of generated waste is collected. The rest is either burnt or scattered around the town in illegal pits, piles, road kerbs and even drainage systems. The situation contributes to environmental degradation, poor public health conditions, high risks of epidemics and a generally aesthetically unpleasant environment. The reasons for this situation include among others, inadequate financing mechanisms, inadequate technical capacity, failure to enforce existing legislation, poor participation of stakeholders and a general weakness in existing institutional structures.

Some major strong points were identified through the surveys and they included users' willingness to pay for and private sector willingness to be involved in refuse collection. Building on these the study proposes to improve refuse collection through a participatory approach in which the council ceases to be a service provider and becomes a facilitator and regulator. The Council is expected to facilitate and control the activities of the private sector through contracts and licensing procedures.

Collection and management of waste is handled by the private sector through both contract arrangement based on open tendering as well as open competition; and by community based organisations who oversee the collection of waste from source to primary collection points. Secondary collection is to be undertaken as a collaborative effort between the council and the private sector. The council retains a minimal collection role in selected areas only as a way of utilising existing capital outlet.

Individual users are expected to pay for collection in order to sustain the proposed system. User fees are billed with other services such as water as a means of achieving compliance. The study goes further and suggests that certain technical, financial and manpower capacities together with organisational capacities will have to be developed if the new system is to succeed.

Among the major recommendations are improvement in solid waste data collection and management, improved road networks, development of a sanitary landfill, development of a regulatory and institutional framework for operation of all stakeholders, improved revenue collection systems, development of proper contract management procedures, environmental awareness campaigns, and establishment of appropriate operational standards.

Recognising the difficulties of introducing new systems, the study ends by recommending that the council should proceed on an incremental (experimental) basis starting with implementing of those ideas which are more readily acceptable to society.

1. INTRODUCTION

1.1 National context of the Project

Zambia with its 10.7 million inhabitants underwent several social and economic changes in the last ten years that make the country today one of the least developed countries in the world. The underdeveloped primary sector and the unbalanced secondary sector have made Zambia vulnerable to the market forces that were unleashed with globalisation. The secondary sector is dominated by the mining industry in the Copperbelt region and the decline in copper prices in the late 1980s weakened the country's economy considerably. Under the pressures of IMF, the World Bank and the European Union, Zambia adopted a Structural Adjustment Programme in the early 1990s. Ten year later it was concluded that the programme is 'biting hard without bringing the benefits hoped for' (EU Courier, July-August 1999, p.19). Poverty, unemployment, malnutrition and bad health are on the increase. The emergence of HIV/AIDS has also hit hard in Zambia, so much so that the average life expectancy at birth reduced with ten years to 42.7 years (Economic Intelligence Unit, UNDP/World Bank). WHO also reported in a recent bulletin that because of the virus Zambia has about 1 million orphans.

Public services, among them health care, are becoming too expensive and are, effectively, on the decline as the result of reduced public revenues. The Government Zambia has embarked on different strategies that could help out to overcome the current deficiencies. A Public Sector Reform Programme was initiated in 1996, public services are reorganised to allow the private sector to provide public services, and privatisation of the copper mines was set in. The government has initiated a decentralisation process. A Decentralisation Policy Bill was prepared in 1996. The Bill will delegate several public services to lower tiers of government, among them the municipal councils. The Bill has not been passed by the Parliament yet.

Kitwe with 700,000 inhabitants and in the heart of Copperbelt region faces all the social and economic ails of the country. The decline in demand for copper and the fall of copper prices has resulted in severe unemployment and a dwindling business that was erstwhile supporting the mines. The income of the Council fell too, as the yield of property taxes fell and the fiscal support of the central government disappeared. The current financial capacity allows the Kitwe Council allows just paying salaries. Maintenance, let alone, new capital works were barely undertaken for the past 10 years. The quality of services in Kitwe deteriorated which effected the payment discipline of its citizens negatively.

In this context, the SINPA project would meet a tremendous challenge to find opportunities to turn around the downward spiral of misery. In March 1997, a project formulation workshop laid out the objectives and components of the SINPA project. The outcome is reflected in the SINPA Project Document submitted to NEDA. The participants to the workshop included all major stakeholders and possible partner

capacity building institutions, including the Copperbelt University. The four objectives of the SINPA-Zambia project were agreed and these are¹:

1. Kitwe City Council staff has improved capacity in strategic areas;
2. Capacity building institutions run activities relevant to local government and its partners;
3. Linkages are improved between the demand and supply of capacity building services;
4. Relevant experiences are documented and accessible.

In addition to these objectives, the overall aim of the SINPA-Zambia project is to evolve and institutionalise an approach to encourage and support local implementation of policy and activities within the framework of the National Plan of Action². The experiences developed within the context of Kitwe will form the basis for the development of this approach.

A number of meetings and workshops were held in 1997 and 1998 with the parties involved in the Project and these identified the following activities to be initiated in 1999 (Annual Plan SINPA-Zambia 1999):

- O. Orientation workshop for councillors of Kitwe
- A. Manpower development for agreed core activities
- B. Widen the resource base of the KCC
- C. Improve responsiveness of the council to needs of the stakeholders
- D. Stimulating economic development in Kitwe
- E. Refuse collection

1.2 This report

This study is conducted as part of the Support to the Implementation of National Plans of Action (SINPA) project. SINPA is a capacity building project on sustainable human settlements development. It is executed by the Institute for Housing and Urban Development Studies in collaboration with Kitwe City Council and School of Built Environment (Copperbelt University). The aim of this study is to make recommendations on how to improve refuse collection in Kitwe.

1.3 The City of Kitwe

The City of Kitwe lies on a gentle sloping peneplain in the heart of the Copperbelt Province of the Republic of Zambia, at a mean altitude of over 1295m, between latitudes 12° and 13° South and longitudes 27° and 29° East.

The City of Kitwe is distinctly divided into two; a mine controlled area and a Council controlled area. This study concentrated on the council controlled area. The area under consideration has an estimated population of approximately 500,000 people

¹ See Project Proposal for SINPA, September 1997, p. 5-3 and Plan of Operations, September 1998, p. 12

² See Project Proposal for SINPA, September 1997, p. 5-8, and Plan of Operations, September 1998, p. 34

living in low, medium and high-density residential areas. For the purposes of this study, the city has been divided into 3 distinct land use zones namely, a commercial zone (includes the CBD, industrial area and all social services e.g. schools, and hospitals); a formal housing zone (inclusive of low, medium and high density residential areas) and a peri-urban zone which covers all squatter settlements both upgraded and otherwise.

The city of Kitwe has evolved from the 1930's as a mining town with Nkana Copper Mine forming the backbone of the city's economic activity supported by a host of both light and heavy industries. The city also has a highly developed and fast expanding informal economic sector and is also fast becoming an educational centre through the continuing expansion of the Copperbelt University and the development of a host of private schools and colleges.

1.4 The Refuse Collection Problem

In a participatory project formulation workshop of SINPA, the key actors involved identified the situation of solid waste collection in Kitwe as one of the core problems. Indeed, only a small percentage of waste generated is actually collected and disposed in a non-sanitary landfill. On the other hand, Kitwe is a green and relatively low density city with vast areas of open land, and the waste problem is not that visible and does not (yet) have direct negative impacts on the majority of inhabitants. But, inadequate solid waste management in Kitwe results in the accumulation of waste on open lands, in drains and in the living area of many people, causing a nuisance and stinking pools, environmental pollution through leachates from piles (water and soil pollution) and burning of waste (air pollution), clogging of drains, and the possible spread of diseases. Unattended piles of waste are a breeding place for insects and rats.³

There is thus a need for improved waste management. Under the Local Government Act, the local authorities are obliged to offer refuse collection and disposal services to its residents. However, this has not been the case with KCC and other councils in the country. This situation has been attributed to the financial difficulties the local authorities are going through due to reduced Central Government grants over the past 5 years. However, the problems related to this are not only the result of the limited financial resources but also of the solid waste management system itself.

1.5 Study Objective

The main objective of the study is to assist the KCC in improving the current performance of refuse collection. The outcome of the study is a policy recommendation to KCC for improved refuse collection, with special emphasis on institutional arrangements for a partnership approach.

1.6 Methodology

Study findings in a Lusaka compound (Mayeya, J. & C. Mukosa, 1996), show that there may be a relationship between pests found in the homes and rubbish sites with common illnesses recorded at health centres. Domestic waste is mainly sweepings and vegetable matter, taken to nearby piles. These rubbish sites are not well attended to and only occasionally cleaned/emptied. Flies and other insects are a nuisance both at the rubbish sites and the homes.

Apart from consultation of various literature, information for this work was collected from the key stakeholder institutions namely, Kitwe City Council, Ministry for Local Government and Housing and Environmental Council of Zambia. A list of consulted persons is presented in Appendix 1.

In order to learn from experiences of others, interviews were conducted with different organisations, in particular the Zambia Consolidated Copper Mines Limited (Nkana Division), four private firms involved in refuse collection i.e. two in Lusaka and two in Kitwe, and from one community based organisation, operating in Ipusukilo, Kitwe.

The role of individual households in solid waste management cannot be over-emphasised. Information pertaining to them was collected through a household survey of attitudes to and practices in solid waste management. A convenience sample of 140 households (20 in each sector) was selected randomly from 7 residential areas namely, Riverside, Nkana East, Buchi, Bulangililo, Ipusukilo, Wusikile and Ndeke village. These settlements were chosen on the basis of the following:

- (i) Riverside and Nkana East –Low Density
- (ii) Buchi and Wusikile – High Density
- (iii) Bulangililo and Ndeke Village – Medium Density with Bulangililo being a Basic Site and Service Area
- (iv) Ipusukilo -Informal settlement

These seven townships represent the seven residential sectors typical of Kitwe and indeed of all major urban areas in Zambia.

Although the council does not administer community services in mine townships, Nkana East and Wusikile have been incorporated for the main reason that current solid waste management practices by ZCCM can offer some lessons to the council.

The legal and policy framework was established through a review of relevant Parliamentary Acts and other government documents.

1.7 Limitations and Scope of Work

For the purposes of this study, Kitwe is defined as that areas which falls within the council administrative area and does not therefore relate to the mine townships in any way. Due to the uncertainty surrounding service provision after the sale of ZCCM, the mining company will provide these services it is assumed in this work that for the next two years, as has been the case in other towns where the mines have already been sold. On the basis of this, the proposals in this work will be focused on the operations of the council though it is recommended that after the mines are sold they should be reviewed to take account of the situation in the mining townships.

Whilst this work has attempted to present a picture of the current solid waste management situation in Kitwe, certain issues have however not been conclusively tackled due to the limited time for the project and the failure of the council to provide adequate information about their operations. This relates in particular to the issue of conducting of economic analysis of the solid waste situation and characterisation

of the solid waste generated in the city. Certain decisions such as determination of performance standards, types of vehicles to be used, recycling possibilities and even the best type of private sector involvement will only be made after a period of experimentation with the proposals made in this report.

The sample chosen for the household survey is obviously too small to represent the entire population of Kitwe. The ratios from these surveys used to argue out cases should therefore be taken simply as ratios representing general trends in the population and not as conclusive statistical evidence of the considered phenomena.

2. ANALYSIS OF CURRENT REFUSE COLLECTION SYSTEM

2.1 Institutional Issues

This section examines the administrative structures and responsibilities for all major stakeholders and the legal and policy framework enshrining solid waste management

Administrative Structure and Responsibilities

There are five main organisations involved with solid waste management in Kitwe namely, Kitwe City Council, Ministry for Local Government and Housing, Environmental Council of Zambia, Community Based Organisations and Private Companies.

Kitwe City Council

The KCC is the main body charged with the task of delivering services to the city of Kitwe. The council has 6 departments one of which is the Department of Public Health Services (DPHS) charged with the responsibilities of refuse collection.

The DPHS is headed by a Director who is assisted by a Deputy Director (Figure 2-1). The department currently employs 237 persons of whom 75 members of staff are in the Refuse Removal Section (approximately 54 sweepers, 16 refuse collectors, 1 office clerk/orderly, and 4 Capitaos (Supervisors), for the town centre and markets. Table 2-1 below illustrates the authorised as opposed to the actual establishment in DPHS of KCC and the shortfall in recommended manpower levels. It is worth noting that the Department of Housing and Social Services also employs market sweepers thus duplicating this function.

The department is supposed to service all areas of the city but currently services (on an occasional basis) only institutions of learning, Kitwe Central Hospital, the 23 city markets, and the central business district. Thus only a small percentage of the population is served by KCC.

Ministry for Local Government and Housing

Through the Department of Infrastructure Support Services (DISS), the Ministry is mandated to solicit for funds on behalf of the local authorities for the provision of physical infrastructure and to develop policy on all infrastructure services. At the moment the ministry neither provides funds for KCC nor does it have a specific policy on solid waste management.

Environmental Council of Zambia (ECZ)

The ECZ is a regulatory body formed by an Act of Parliament called the Environmental Protection and Pollution Control Act (EPPCA) No.12 of 1990. Under this Act, the ECZ is mandated to control pollution and protect the environment. Solid waste management is one of the pollution problems handled by ECZ for the whole country. At present Statutory Instrument No. 71 of 1993 is in force and addresses specifically solid waste management issues vis-à-vis licensing of transporters of

solid waste and operators of disposal sites. The regulations also provide for the control of activities at the landfills and disposal sites.

Currently ECZ have offices only in Lusaka and it is therefore very difficult for them to monitor activities in other towns.

Figure 2-1: Structure of the Department of Public Health Services

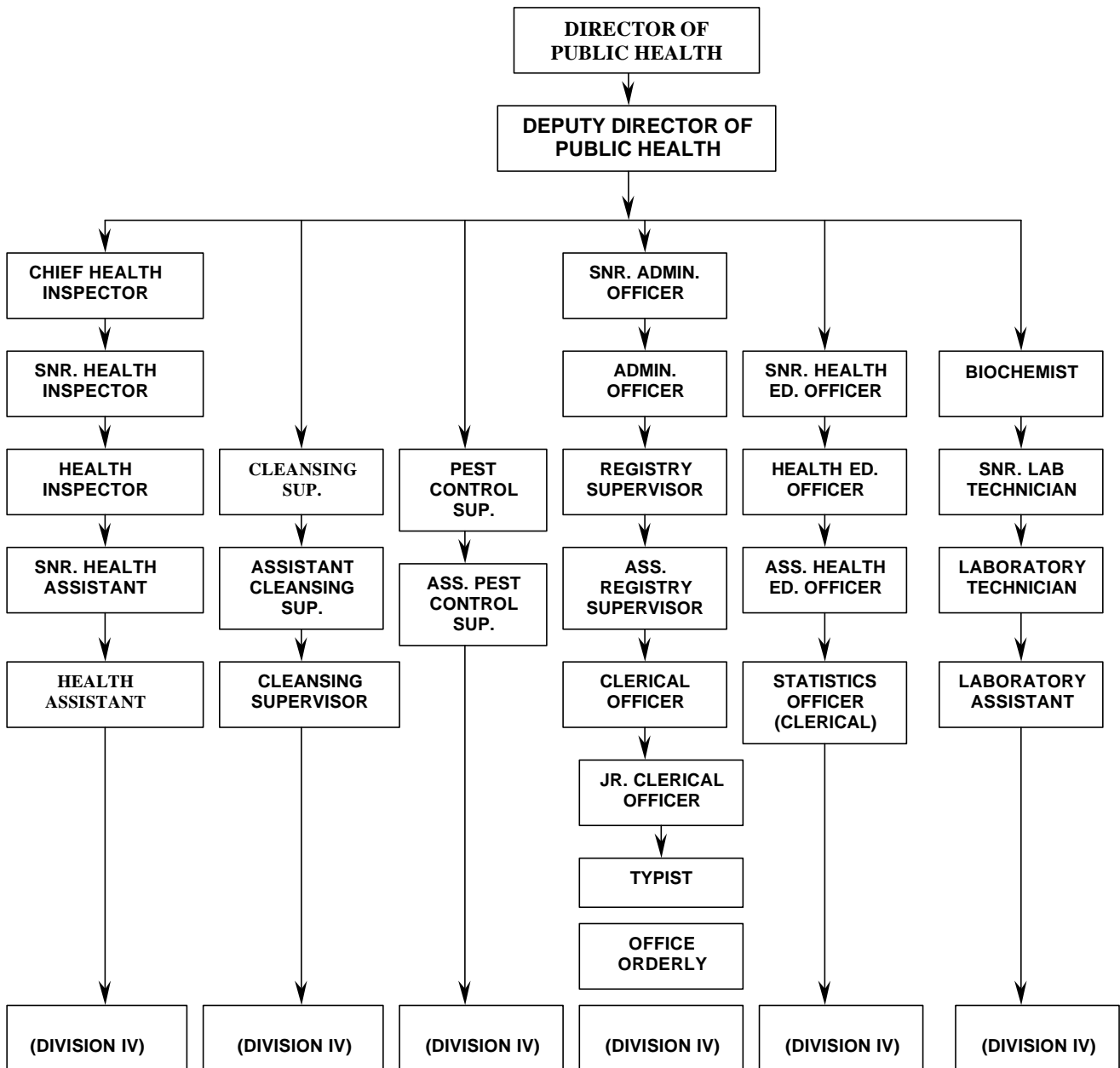


Table 2-1: Establishment of the Department of Public Health Services

Section	Authorised	Actual
(a) Administrative Staff		
Administration	17	11
Health Inspectorate	20	03
Abattoir	01	01
Health Education	05	02
Refuse Removal	03	01
Pest Control	03	02
Laboratory	03	01
Promotive Health	46	13
Total	98	34
(b) Division IV (Uniformed Staff)		
Administration	09	08
Abattoir	-	02
Public Toilets	23	22
Pest Control	38	28
Health Education/Lab	04	03
Refuse Removal	90	74
Promotive Health	48	66
Total	212	203

Source: Kitwe City Council Public Health Department, Staff monthly report as at 31st March 1999

Private Sector Involvement

Even though there is no established framework for involvement of the private sector, Mpelembe Properties Nkana Limited is however currently involved in collecting garbage from a number of commercial properties in the city centre. In addition three other private companies and an NGO are currently negotiating for refuse collection agreements with the KCC⁴. There are also indications that some other private individuals are already engaged in refuse collection without the knowledge of the council.

Community Based Organisations

Although most squatter settlements in Kitwe have Residents Development Committees (RDCs), the council is not however aware of any that are involved in solid waste management nor of the exact number and types of NGO's operating in these areas. A meeting held by the study team with the Ipusukilo Resident Development Group however, revealed that this group is involved in solid waste management. The RDC conducts door to door education campaigns on the need for proper refuse disposal. Due to lack of a collection system, residents are advised to dig pits and discouraged from piling refuse in public areas. Through the involvement of PUSH in the Food for Work program the community is well organised to undertake

⁴ Mpelembe Properties Limited started collecting garbage in 1984. The company was a sole garbage collector for all ZCCM Divisions. In 1996 the Nkana Subsidiary was bought out through a Management Buyout Scheme which saw the formation of a new company, Mpelembe Properties Nkana Limited. Mpelembe collects refuse from Edinburgh hotel, National Provident Fund, Workman's Compensation Fund and Tummy Fillers, either twice or four, times a week.

development projects and they expressed willingness to be involved further in solid waste management.

Given that PUSH has been to a few other settlements in the town, it is highly likely that most of them will already have some institutional structures in place through which improvement of refuse collection can be undertaken.

CARE International, Oxfam and another NGO are also currently in the process of discussing with the Council on the possibilities of them coming to work with communities in Kitwe. The stage for community involvement is therefore quite well established although the council has to take a more pro-active approach in the matter.

The team also came across a report, which indicated that an NGO (The Ford Foundation Trust) was making plans to come and start a community based solid waste management system in Chimwemwe Township. The Council authorities however seemed ignorant of this fact.

2.2 Legal Framework

Table 2-2 below shows the major provisions of the Local Government Act, the Public Health Act and the Environmental Protection and Pollution Control Act, in relation to solid waste management.

Table 2-2: Legal Provisions For the Management of Solid Waste

Parliamentary Act	Provisions Relating to Solid Waste
The Local Government Act, No. 22 of 1991(together with Township and Market Regulations	-Powers to provide and maintain solid waste facilities, Prohibition of burning refuse in public places, Setting of fees for removal of refuse in non domestic premises, Obliging property owners to provide dustbins, prohibition of refuse deposition in drains and public streets and prohibition of unauthorised disposal.
The Public Health Act (Cap 535)	Powers of the Minister to confer powers and impose duties on local authorities in connection with sanitation, housing, waste disposal, drainage and latrines, water and food supplies, and control of infectious diseases.
The Environmental Protection and Pollution Control Act, No 12 of 1990.	Powers to ECZ to regulate the handling, storage, transportation, segregation and destruction of hazardous waste, monitoring of waste disposal sites, licensing of waste transporters and disposal sites, formulating standards on disposal methods and means, control of disposal of pesticides, prohibition of open air burning

As shown in the table, existing legal Acts deal fairly adequately with the issue of solid waste management. The persistence of the problem therefore suggests a lack of

awareness and failure to enforce by the relevant institutions.

2.3 Waste Management

This section presents the technical aspects of solid waste handling, ranging from waste generation to disposal. It examines the waste characteristics and amounts being dealt with.

2.3.1 Sources, Characteristics and Composition of Waste

To identify the sources and characteristics of solid waste, the three land use zones identified in section (1.2.3) above were consolidated into two i.e. commercial area, and residential area. The residential areas were treated as high, medium, or low-density. The reason for consolidating was simply that in terms of activities all residential areas are basically the same. The possible sources of solid wastes have been identified in each area. These sources represent the activities that have a potential of producing quantifiable amounts of waste. Table 2-3 presents the findings.

In all areas, one can obviously find domestic waste. The commercial area generates waste from a wide variety of sources such as industry, commercial (shops, guest houses), institutional (offices), market, sweeping and street vending. Likewise in low-density areas, commercial and institutional waste can be found, but also waste from the hospital (Kitwe Central Hospital, the biggest in the city, located in Parklands). The sources of solid waste in the high and medium density residential areas are mainly domestic, but also commercial, garage and market.

Based on these sources of waste, one can determine the waste characteristics. Domestic waste contains mainly green (organic) waste, but will also have some paper and glass, batteries and a substantial amount of sand, dust and ashes. Green waste originates not only from domestic sources but also from the 23 markets of the city.⁵ In the commercial area, industry generates wastes like sawdust and hazardous materials (used oil), and institutes and offices contribute to paper waste. In high and medium density residential areas, garages will generally generate hazardous (like oil, etc) waste in addition to derelict vehicles whilst commercial waste generally accounts for paper and plastics from the various packaging materials.

The composition by percentage of each waste generated in all the four sectors can only be ascertained once a complete characterisation study is undertaken. This requires at least 90 days which were however not available to the consultants. Nonetheless, it was observed during this preliminary investigation that the waste contained more green waste than any of the waste itemised in Table 2-2. Further, the trend of the green waste is expected to increase from the low to the high-density residential areas. The density of the waste in the low-income areas is expected to be higher than that in the medium and high-income areas, respectively. This is attributed to the high moisture content and high quantities of vegetables, soil, sand and ashes (sweepings). In the town centre there is much more mixed waste than any other area. Next to a lot of green waste from the market followed by paper, relatively high

⁵ Two of these markets, Town Centre Market and Chimwemwe Market (low-income area), have a population of approximately 3000 traders whilst the rest have traders in range of 200 and 500.

quantities of commercial and industrial wastes were also observed. Generally, the density of the commercial waste is likely to be lower than that of the low-income residential areas. Market waste on the other hand has high density due to the large quantities of greens.

A survey among residents from different townships revealed information on what kind of waste is disposed, (see Table 2-2. below). With some caution, one could generalise some waste characteristic patterns related to income level. For example, high-income areas generate more plastic and glass waste than lower-income areas.

Table 2-2: Solid Waste Disposed in Different Townships

Township	Yard Waste	Food	Plastic	Paper	Glass
Riverside high-income	15	20	19	8	6
Ndeke Village medium-income	17	15	14	13	0
Bulangililo low/medium-income (site & service)	17	17	12	12	0
Buchi low-income (council)	8	10	15	14	0
Ipusukilo low-income (squatter settlement)	16	8	11	7	0

*The numbers in the columns represent the total number of responses out of 20 respondents in each settlement

2.3.2 Amounts Generated

In the absence of a characterisation study it was difficult to estimate the amount of waste generated in the City of Kitwe. According to the Acting Director of Public Health, the City of Kitwe generates between 0.9 and 1.0 kg of solid waste per capita per day. This figure nevertheless seems to be rather high. Schweizer Limited (one of the three firms trying to start collecting for the council) on the other hand, has used 0.5 kg/cap-day in its plan to initiate a solid waste management system in the City. The 0.5 kg/cap-day is more likely to be within the range since the City of Lusaka with a higher economic base has a per capita generation rate of 0.6 kg/cap-day of total solid waste⁶.

The Council further estimates a population of 500,000 people for the City of Kitwe generating approximately 500 tons of waste per day. These figures however need to be verified with a more detailed study of population and economic trends and characteristics. The new figure should then be used in projecting the solid waste generation trend and growth for coming years.

2.3.3 Storage and Collection

⁶ Lusaka City Council & Environmental Council of Zambia, (1997) and Schweizer Report (1999). .

The Kitwe City Council Refuse Removal Section only store and collect waste in the town centre and markets (mainly the two big markets in the town centre), the hospital and some educational institutes.⁷

Table 2-3: Sources, characteristics and composition of solid waste in Kitwe Council Area

Area	Source	Characteristic	Composition %
Commercial Area	Industry Commercial Domestic Market Institutional Street vending Sweeping	Green waste (food, yard: organic) Paper Plastic Textile Sawdust (wood) Can/tin (metal) Sludge Sand and Dust Hazardous (used oil) Glass (bottles) Building rubble	Information not ascertainable within given time but necessary that it be acquired
Low Density Residential Areas	Domestic Commercial Market Institutional Hospital	Green waste (food, yard, market: organic) Paper Plastic Textile Ceramics Can/tin (metal) Sand and Dust Battery Glass (bottles) Hospital (infectious, hazardous)	
Medium Density Residential Areas	Domestic Commercial Garage Market Institutional Clinic/Hospital	Green waste (food, yard, market: organic) Paper Plastic Textile Ceramics Wood Can/tin (metal) Sand, dust and ashes Hazardous (used oil) Battery	
High Density Residential Areas (including peri-urban)	Domestic Commercial Garage Market	Green waste (food, yard, market: organic) Paper Plastic Textile	

⁷ ZCCM Nkana Division has provided 'communal refuse storage bins' for its residents in all its townships. These communal bins cater for at least an average of four households. In addition to these communal bins, ZCCM also provides waste receptors and/ or bins to some of its residents especially those living in the high-income residential areas and flats. Kitwe City Council on the contrary has failed to even provide such a storage facility at markets and later on to its residents. Unlike KCC, private companies do the door-to-door refuse collection service in the mine area. These contracted companies collect wastes from 'refuse storage bays', receptors and bins from mine residential areas.

	Institutional Clinics/hospital	Ceramics Wood Can/tin (metal) Sand, dust and ashes Hazardous (used oil) Battery	
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The pressures of collecting waste from market areas in order to avoid the breaking-out of epidemics and consequently preserve their aesthetic values compel the Council to use their meagre financial resources on the refuse collection at these market areas. The lack of adequate refuse collecting vehicles has also contributed to the failure of the City Council to offer door-to-door refuse collection service to its residents. Kitwe City Council has at the moment only five vehicles (1 compactor and 4 tipper trucks, with capacity of 7 tons) to service all the areas. In each truck there are 6 refuse collectors of which one is a driver. The Council has employed a total of 16 refuse collectors. Out of these 5 vehicles, an average of 2 vehicles is on the road (7 days a week) doing an average of 3 trips per day. The rest of the vehicles are in the garage for maintenance and awaiting different attention. The very bad road conditions contribute to the breakdown of trucks and hamper effective service delivery in residential areas. The Council estimates to need 15 trucks to adequately service the city.

The Department of Public Health of the Kitwe City Council claims that about 20% (100 tons) of the waste generated per day is collected. However, this still needs to be verified considering that at any one given time there are 2 x 7 ton vehicles doing 3 trips per day and, hence, collecting about 42 tons of waste per day (i.e. less than 10%).

The last problem is related to the fact that KCC has only one compactor. The bulk of the waste is transported to the tipping site using ordinary tipper trucks and/ or flat trucks. These invariably increase the cost of the service as more fuel is used in the collection due to the increased number of trips.

The KCC refuse removal section only store and collect waste in the town centre and markets (mainly the two big markets in the town centre and in Chimwemwe), the hospital and some educational institutes⁸.

2.3.4 Collection and storage at household level

Proper refuse storage and collection are non-existent in the residential areas. For instance the household survey indicated that only a very small percentage i.e. 10% of those interviewed use dustbins. This overall figure must however be contrasted with the different figures for the different neighbourhoods (Appendix 3).

The Bulk of those interviewed i.e.101, take their refuse straight to a pit while 26 pile their refuse. The remaining 3 use both pile and a pit. Given the relative scarcity of land in medium and high-density residential areas, residents seldom bury such pits and instead they resort to burning the waste to create space for disposal of more wastes. Others resort to dumping the waste indiscriminately in storm water drains,

⁸ Kitwe City Council does not provide storage facilities at the markets.

roadside, kerbs, etc. These methods might be seen as a convenient and cheap alternative and may therefore influence people's willingness to pay for refuse collection, particularly if the environmental consequences of poor refuse collection are not given high priority.

2.4 Street Sweeping

Street sweeping is only done in the Town Centre and markets. The Council employs about 63 street sweeper on full time basis. They work from 07.30 to 15.30 hours daily. This is not necessary as the job can be done cheaper if people are hired on casual basis. The Department of Housing and Social Services also employs market sweepers thus duplicating this function.

2.5 Recycling

Apart from the Zambezi Paper Mills Limited, a company that uses waste paper as its raw material for the manufacturing of paper products, there is little recycling of wastes going on in the City. Zambezi Paper Mills Limited has its processing plant in Ndola and collects used paper from major cities and towns of Zambia. At a small-scale, old newspapers are resold to traders at markets who use it as foodstuff wrappers.

Other forms of recycling are in the field of metallic products by foundry industries like Scaw Limited, Kitwe Foundries, etc. People in the informal sector also collect plastic containers although it is not clear how they are re-used. A deposit refund system has developed over the years catering mainly for bottles of factory-manufactured beverages and beer.

There is no record of any composting activity.

Very few scavengers can be seen in the city, except occasionally at rubbish piles in the town centre, and some children picking food waste at institutions. Approximately a dozen scavengers operate individually at the dumpsite, mainly picking metal and plastic containers.

2.6 Disposal

2.6.1 Unsanitary Landfilling

Kitwe has one official dumping site where the collected waste is disposed, called Uchi Refuse Tipping Site. The landfill is located about 2 km Southeast of the town centre. Nkana Mine initially used the tipping site as a copper tailing dam. However, in the early 1970's the land was turned into a domestic refuse-tipping site primarily for the purposes of reclaiming it. Since then, Uchi Refuse Tipping Site has received all kinds of waste ranging from industrial (sludge from BP (Z) Limited Plant, Chloride Zambia, etc.) domestic and garden waste to mine tailings. The ZCCM Nkana Division Public Health Department manages the site. A gatekeeper registers the trucks delivering waste.

Uchi Refuse Tipping Site, like many other Zambian dump sites, does not have any

form of underlying layer (clay layer or the High Density Polythene) specifically constructed at the base of the landfill to prevent leachate from percolating into the underground aquifer. In addition, the site does not have any leachate collection system in place. Neither does it have any gas vents installed. The leachate is thus potentially polluting the nearby Uchi stream and eventually Kafue River, about 4 km East of the tipping site. The tipping of domestic waste is done randomly in the marsh lands of the tipping site area.

2.6.2 *Illegal Disposal*

During the 1996/97 year (1-4-96 to 31-3-97), Uchi Refuse Tipping Site received a total recorded volume of approximately 8,275 m³ (as opposed to the projected volume of 11,725 m³ of refuse). This amount accounts for all the areas in the City including the mining area. In the following year 1997/98, it was projected that the tipping site would receive a total volume of approximately 12,175 m³ of solid wastes. However, only 7,725 m³ of solid waste was dumped at the site⁹. The 1997/8 figures show a 6.6% decrease in the waste dumped at the site in comparison to the 1996/97 figures. The projected 3.7% increase in the solid wastes dumped at the Uchi Refuse Tipping Site in the year 1997/98 could not be achieved for any one of the following possible reasons: the frequency and the rate of refuse collection drastically declined due to reduction in the number of collection vehicles; the number of illegal disposal sites increased; and increase in indiscriminate dumping of solid wastes. According to the gatekeeper, tipping by KCC collector trucks is irregular, sometimes none in a week, sometimes four a day. The scavengers at the dumpsite estimate that on average KCC trucks deliver waste only once a week.

It is evident that a number of indiscriminate disposal sites exist in the city. There is a large amount of open 'waste' land where solid waste can be dumped. The poor road network in the city contributes to this. The constant breakdown of refuse vehicles and the rapid wear and tear associated with poor roads, has led waste transporters dumping their garbage in open spaces, roadsides and kerbs.

2.6.3 *Disposal at household level*

As in refuse storage, a significant number of households use available land as an alternative to conventional refuse disposal practices. For instance, 51% of the 140 households bury their refuse, 30% burn it, while 19% take their refuse to communal piles. The remaining households use a combination of all these methods

The study also revealed that there is a high level of indiscriminate use of public open spaces for dumping of waste. For instance even though only 19% of households took their refuse to communal piles, 32% of households however said there was a communal pile near their home. These dumping grounds are obviously illegal given that the council does not at the moment provide any communal refuse disposal points.

It should be noted that most residents have resorted to the above practices due to a lack of alternatives. As the survey indicated almost all the residents recognise the environmental and health implications of poor solid waste systems. Out of the 140

⁹ (ZCCM – Public Health Department Annual Reports).

households interviewed 98% thought that waste was harmful. This point was also highlighted by the Ipusukilo RDC group who constantly pointed to cholera and bad smells as examples of why the problem should be addressed.

2.7 Financial Aspects

Ideally this section should have shown how the council performs in terms of revenue and expenditure on solid waste management. However due to poor record keeping and the irregularity in refuse collection, it was very difficult to establish this financial situation with any certainty.

2.7.1 Costs

All the stakeholders interviewed had very different cost estimates for their operations. Table 2-3 below shows the 1999 Budget Estimates of the KCC Refuse Removal Section. In 1998, the Council spent 88% of revenue on salaries, 2% on supply and services, and 9% on plant and transport. Given that the council does not collect refuse for the whole town, it is obvious that a lot of money was spent on paying people who do not really do anything. The amount spent on salaries was also far too high compared to the amount spent on actual collection.

In the 1999 budget estimate it is proposed that 34% will be spent on salaries, 6% on supply and services, 5% on plant and transport and another 55% on Revenue contribution to Capital Outlay (RCCO). A casual look at the two budgets suggests that even though the council may budget for refuse removal they are however not able to raise the required revenues. This forces them to spend whatever little resources they raise on salaries and other personal emoluments regardless of whether or not the service is provided. Thus the costs they incur cannot be taken to represent the true costs of collecting refuse.

Ignoring this point however, it can be estimated that in 1998 the council spent approximately K15.7 million per month on refuse collection. Given that they have 5 trucks this works out to about K3.1million per truck per month.

Table 2-3: Solid waste cost figures of KCC

Description	Realised 1998	Budgeted 1999
Employees		
Salaries	2,570,000	3,341,000
Wages	84,958,000	110,445,000
Repatriation and Terminal Benefits	40,998,000	10,500,000
Burial Benefits / Funeral Grants	1,810,000	1,500,000
Personal Allowances	26,103,000	33,933,000
LASF/NPF/Workmen's Comp.	10,527,000	13,685,000
Medical Expenses	0	0
Leave / Travel benefits	0	0
Service Charge	0	0
Subtotal	166,966,000	173,404,000

Premises		
Cleaning Materials	210,000	5,413,000
Subtotal	210,000	5,413,000
Supply and Services		
Purchase of equipment	1,586,000	16,706,000
Purchase of Uniform/ Protective Clothing	1,824,000	12,463,000
Subtotal	3,410,000	29,168,000
Plant and Transport		
Repair and Maintenance of Motor Vehicles	8,410,000	11,250,000
Fuel	9,624,000	7,500,000
Hire Expenses	0	7,500,000
Licence Fee	0	0
Depreciation	0	0
Subtotal	18,034,000	26,250,000
Revenue Contribution to Capital Outlay (RCCO)		
RCCO ¹⁰	0	282,000,000
Subtotal	0	282,000,000
TOTAL EXPENDITURE	188,620,000 (83,460 US\$)	516,238,750 (228,424 US\$)

(1US\$ = K2260: 1999)

The 1999 budgets proposes that the council requires about K43 million per month (i.e. K12.6 million per truck) per month. Mpelembe Properties suggested that they could run the city centre service effectively with K1.5million per truck per month. Schweizer suggested K21 million per truck per month to serve a population of 3000 households. ML Electrical estimated that they were able to provide an efficient service in a high-density residential area with K1.2 million per truck per month. The huge variations in these figures suggest that a true estimate of how much it would actually cost to provide a refuse service in Kitwe is not known. This is not surprising given that all the people involved do not know exactly what types, quantities and composition of waste they collect nor the size of population they serve.

Cointreau (1994:43-44) suggests that low income countries like Zambia need to spend US\$ 4.5/c/yr on collection, US\$0.9/c/yr on public cleansing, US\$0.4/c/yr on disposal and US\$ 0.81/c/yr on transfer of waste. These figures if extrapolated to Zambia give a huge cost, which is far much higher than KCC, or any of the other firms are proposing.

What is required therefore is to conduct the already mentioned solid waste characterisation study and also detailed financial analysis in order to establish the cost of providing an adequate solid waste service in Kitwe.

2.7.2 Revenues

Prior to the sale of council houses, refuse collection fees were incorporated into the property rents together with charges for other services such as street lighting. Given

¹⁰ The RCCO includes a special fund called Vehicle Replacement Fund (VRF). In case of refuse collecting vehicle the VRF is replenished by allocating an annual contribution of one fourth of the cost of a new vehicle. To address and take care of inflation, the mechanism used is to depreciate for one additional year. This allows for the replacement of the vehicle at the end of its economic life.

the uneconomic rents charged then, it is obvious that these service charges were far from adequate. Currently there is no revenue collection scheme for refuse collection and removal services although the council does charge shops at the town centre a minimal fee. Revenue for refuse collection is therefore obtained from the general fund which is dependent on other unreliable sources such as water charges, personal levy, government grants etc. It is obvious that the current revenue base cannot sustain the council service.

The failure of the council to collect revenue for refuse from users should not be taken to mean that this is impossible. To the contrary this is very possible. For instance Mpelembe Properties which also collects from the city centre charges per collection for its service¹¹.

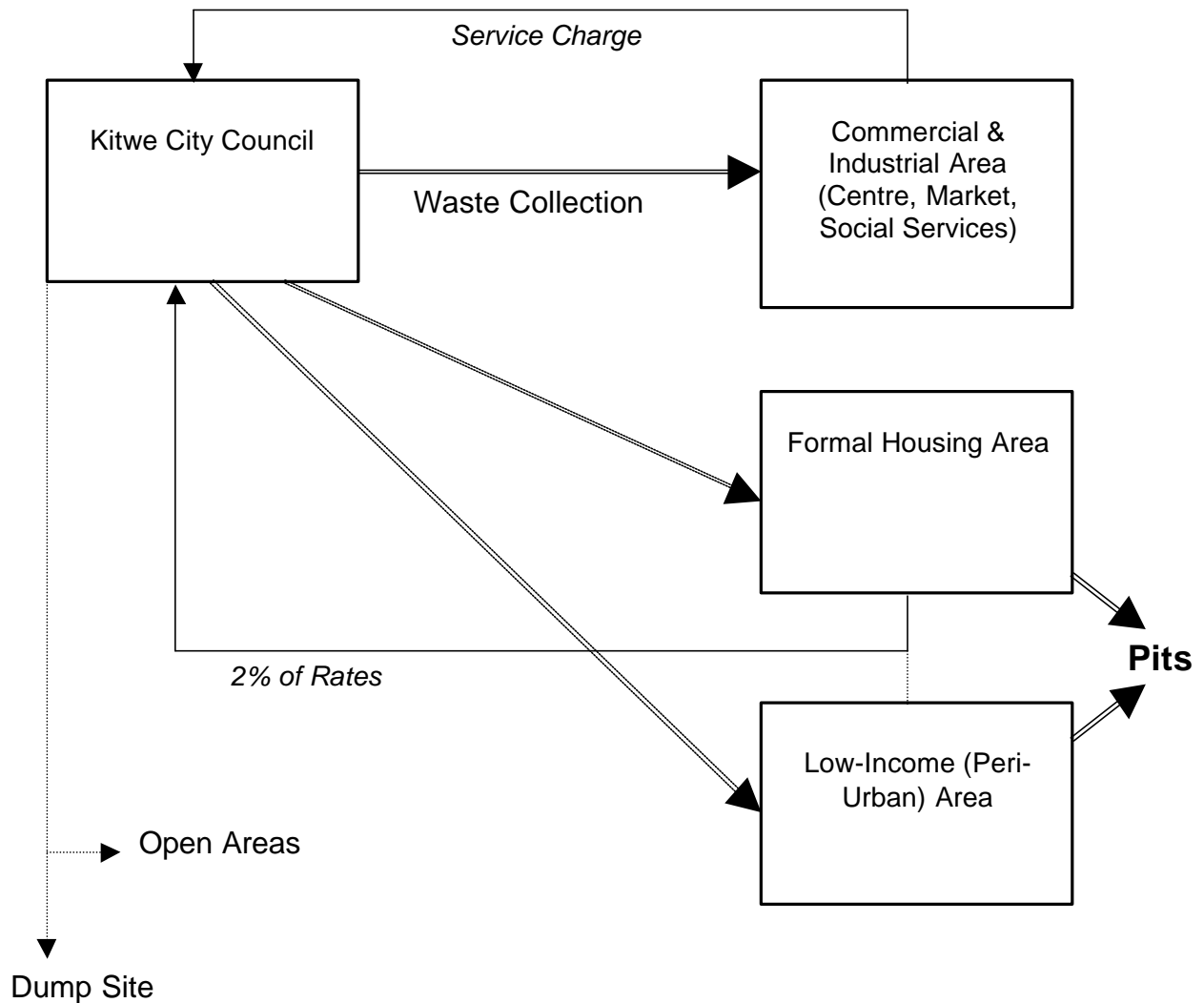
The potential for revenue collection was also highlighted by the household survey which showed that although most people use unconventional refuse disposal methods, most generally appreciate the need for the conventional and are generally willing to pay for these. For instance when asked the question whether people should pay for refuse collection, 86 respondents said yes, 48 said no and 5 were not sure. The amounts people were willing to pay however varied from as little as K200.00 in peri-urban areas to a maximum of K15,000.00 per month in high cost areas (Appendix 2).

2.8 Problem Summary

It is obvious from the foregoing that although Kitwe City Council is responsible for solid waste management, they provide inadequate services to the inhabitants of Kitwe and have no capacity to sustain provision of this service. At least 90% of generated solid waste remain uncollected. The little that is collected is disposed in an unsanitary landfill at Uchi. The residents resolve their refuse problem in economically cheap but environmentally unfriendly ways particularly pits, unattended illegal piles and burning. This has resulted in poor environmental conditions and an ever-present risk of epidemics. Figure 2-1 Below illustrates the current poor situation of refuse collection in Kitwe.

¹¹ E.g. K25,000 for Edinburgh Hotel, K150,000 for National provident Fund, K35,000 for Workman's Compensation Fund and K25,000 per month for Tummy Fillers. Currently this is a token fee rather than a user fee as Tummy Fillers pile their rubbish together with National Provident Fund. However Mpelembe is moving towards separating the waste and charging Tummy Fillers a realistic fee.

Figure 2-1: Refuse Collection Problem in Kitwe



Kitwe City council is not able to provide adequate services resulting in negative environmental and health effects from indiscriminate dumping and pits.

Positive indicators from Survey:

- people's willingness to pay and to solve problem at community level
- private sector keen to come in

The general reasons for this failure can be summed up as follows:

- low technical sustainability of the waste handling systems: resulting from lack of information on solid waste state in the city; lack of equipment, poor road networks, availability of unused unmonitored land, operation of unsanitary landfill.
- inadequate resource mobilisation: due to inadequate central government grants,

inadequate general local revenue and failure to charge and collect user fees for refuse collection.

- lack of adequate institutional arrangements: due to lack of a clear policy by government on solid waste management, lack of co-ordination between actors which has resulted in duplication of functions, failure of council to take stock of all goings on in their city, vesting of licensing and monitoring powers in a centralised Lusaka based ECZ.
- Failure to enforce existing legal provisions: due to lack of manpower and resources for enforcement, bureaucratic procedures and failure of the council to lead by example.
- lack of co-ordinated participation of other possible actors, such as the private and informal sector and community organisations despite their willingness to be involved: due to apparent attempts by the council to do everything themselves (albeit not successfully). Till recently, it seemed that KCC considered involvement of others as a reduced responsibility of their own tasks (and thus a threat), instead of changing toward a different role and responsibility when participation of other actors is introduced. The other reason could also be the non-existence of a legal and institutional framework within which the roles and responsibilities of all stakeholders are clearly spelt out.

3. DIRECTIONS FOR IMPROVED WASTE MANAGEMENT

Despite all the identified problems, it is worth noting that there are a number of positive indications upon which possible solutions can be based. They include:

- *Existence of public knowledge on need for refuse collection service:* Public campaigns on the need for improved environmental friendly collection systems can be built on this knowledge and these campaigns must be designed to help people understand why particular existing systems such as pits and piles may not necessarily be the best solutions.
- *People's acknowledgement of the need to pay for refuse collection service:* this offers an opportunity for the introduction of a user charge for refuse collection. Such a charge must however take into account people's ability to pay. As the survey indicated, whilst 61% of those interviewed were willing to pay, 71% still thought the council should be responsible for collection. This might mean that people are willing to make a contribution to refuse collection but not necessarily to pay an economic tariff for it. This fact is perhaps justified by the amounts people are willing to pay with the highest amount i.e. KI 5,000 being just about a third of what the private firm Schweizer for instance is proposing to charge on a monthly basis.
- *Existence of CBO's in low income neighbourhoods:* these can be used as a basis for involvement of those communities that may not be able to pay for refuse collection as well as act as a voice for the users.
- *Private sector willingness to be involved:* As earlier stated, a number of private companies have already indicated their willingness to be involved in refuse collection. One company in particular Schweizer Limited has already submitted a draft proposal on how they could work with the council in collecting refuse initially in the low-density areas. They propose a pilot scheme of at least 3000 households who will enter into an agreement with Schweizer for refuse collection. This will require 10 vehicles. The firm will charge a minimum of K12,000 per collection that will be done once a week. This would add up to K48,000 per month, a figure much too high even for high-income households. For low-income areas, Schweizer proposes secondary collection only, and proposes that community based organisations arrange for the primary collection and payment of their service.

The operations of Mpelembe Properties Limited in the Central Business District also highlight the willingness and ability of the private sector to be involved. Fabricar Limited is also proposing to take over solid waste management at the market areas of Kitwe. Farbricar, already active in Ndola, proposes to establish communal bins and collect waste with a tractor-trailer, and revenue collection is to be done through the market organisations.

There is also unverified information to the extent that there is a woman who goes round collecting garbage from door to door at a fee of about K10,000 per month and that A company called Milna has also expressed interest.

The Five private firms currently collecting for ZCCM namely ML Electrical, Monta, Hobamith, JK Enterprises, and F.C. Kasusu could also be incorporated within

the KCC area. There is however need to study their operations in order to assess their performance.

This willingness by the private sector to be involved is indeed a major positive aspect as it offers an opportunity for the council to dispose of those activities which the private sector can take care of. However it is important to note that any strategies devised must of necessity entail the council playing a fairly significant role, as the vast majority of people perceive solid waste to be typically a council function. When asked the question on who should be responsible for refuse, 71% identified the council, 13% said private firms and 11% said the community. However the 24% who mentioned the private sector and the community also signify that there is some acknowledgement amongst the residents that the council can no longer adequately provide this service. The result also indicates some level of acceptance of the involvement of the private sector, a point supported by people's willingness to pay.

- *Existence of a supportive legal framework:* making it easier to enforce standards as well as regulate the sector.

3.1 Towards A Participatory Approach

Considering the above stated problems and the existing strong points within the community, increased participation of the private sector and community based organisations seems to be the direction for improved waste management in Kitwe. Kitwe City Council should be involved because they have ultimate responsibility for refuse collection; the private sector should be involved because they have a greater capacity to mobilise resources and run their operations on commercial and business principles (private sector involvement is not a new concept and it has been tried with varying success levels in a number of places- see Appendix 3); and the communities should be involved because as consumers of the service they have an obligation to pay for it or to make some other contribution that will ensure that the service is provided.

The ultimate goal of a participatory approach however should be and is to promote public health, environmental protection, economic efficiency and good governance. In order for KCC to achieve this goal, new technical, financial and institutional arrangements for refuse collection will have to be made including improvement in the fields of proper technology and proper planning and management, e.g., financial aspects of waste handling.

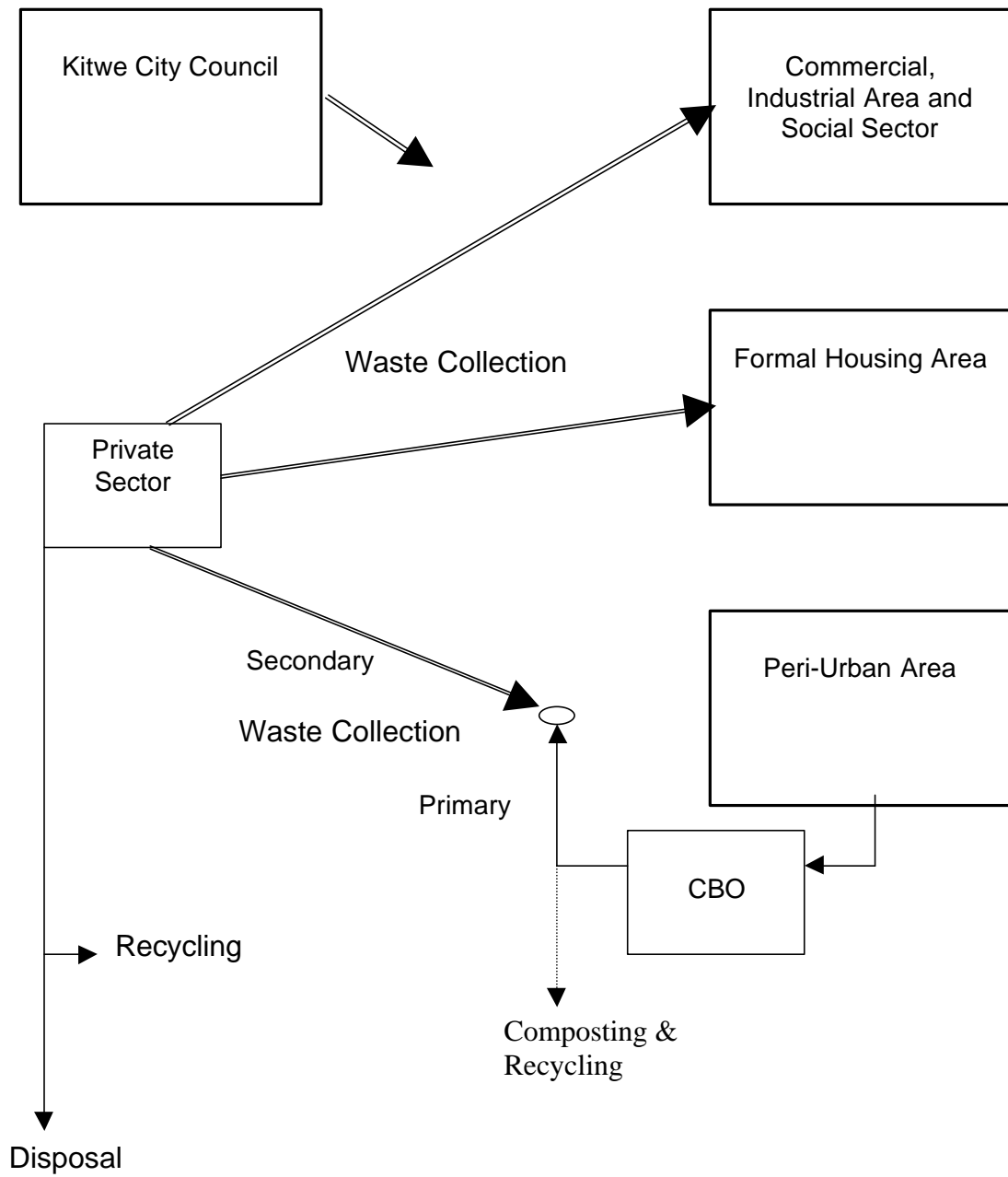
3.2 Technical Arrangements

Figure 3-1 Below illustrates the proposed technical arrangements. At the technical level, the city should be divided into three broad collection zones namely Commercial (covering the CBD, industrial area and all social sector institutions such as schools, hospitals etc); Formal residential areas (high, medium and low density); and the Peri-urban areas covering all informal and upgraded squatter settlements.

Given the councils' inadequate technical and financial capacity, and given also that the private sector is willing to be involved, it is proposed that council should not be involved in direct collection of waste except in perhaps in peri-urban areas (see below). In addition, KCC should continue providing waste services for the social

services run by the government particularly schools, hospitals and other such

Figure 3-1: Technical Arrangement



Private companies are contracted to collect waste. At low-income areas, this is done in co-ordination with primary waste collection organised by CBOs institutions. Such an arrangement will ensure that the existing waste equipment of the council remains being used. Moreover, the council can in this way better judge the private sector claims of performance and costs.

Due to the public nature of street sweeping, the council should retain this function. The number of sweepers must however be reduced and those retained are employed on casual and not pensionable conditions.

The council will also have to play an active role in the conversion to and management of the Uchi tailings dam as a sanitary landfill.

In the commercial and formal housing areas, collection should be undertaken by private firms on an incremental basis starting with low-density residential areas, the CBD, Industrial area and the Markets. Collection from markets must be organised through market associations. The private firms must also be responsible for co-ordinating any recycling activities and ensuring correct disposal in a sanitary landfill.

In the peri-urban areas, it is proposed that either the private sector or the council only take care of secondary waste collection in co-ordination with primary waste collection organised by CBOs. The CBOs can play an effective role in setting up a primary waste collection scheme, where the waste is gathered at communal points for further (secondary) collection (e.g., examples from Burkina Faso and Cameroon; Pfammatter & Schertenleib, 1996).

The CBOs (or resident development committees) not only arrange for collection of waste from residents to communal points, but can also engage in activities in waste recycling and composting of the organic waste. As most of the waste is of organic nature, composting would substantially reduce the amount of waste for secondary collection by a private company.

All non-governmental social services located in formal housing areas must be catered for by the private firms operating in those areas although the firms will have to collect their own revenue from them.

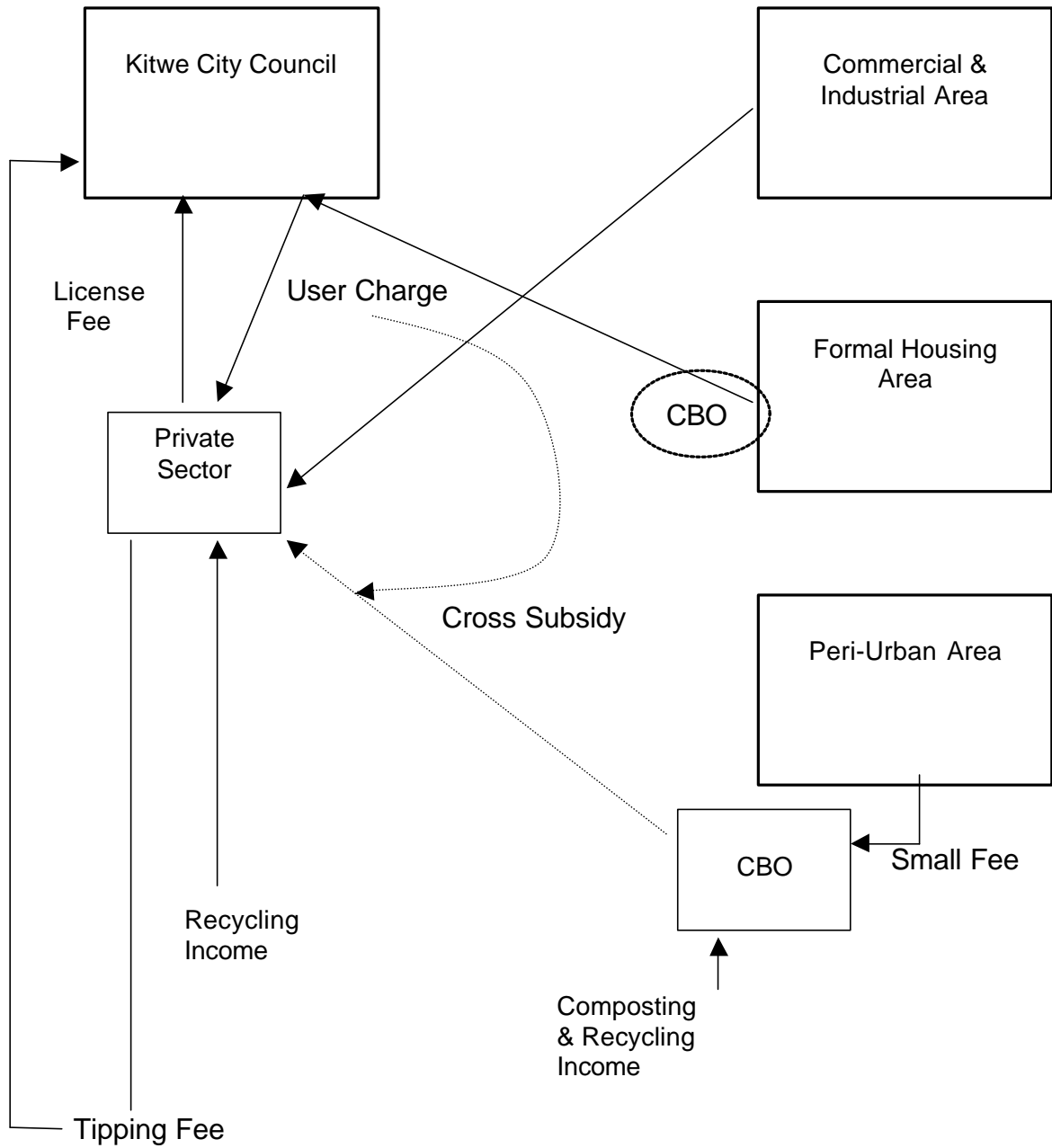
3.3 Financial Arrangements

For the proposed technical arrangements to be viable the financial arrangements shown in figure 3-2 below will have to be instituted. The financial arrangements have been developed based on the perceived ease with which user fees can be collected.

For the commercial areas, it is proposed that the private sector determine and collect their own user fees. The amount will have to be worked out between the private firms and the individual customer depending on the type and volume of waste being collected. This is the current practice both by Mpelembe Properties and the private firms operating in Lusaka. The council will however have to put in place by laws to compel users to pay for the service. They will also have to ensure that the fee is economically justifiable. In principle, revenues collected by private firms should

suffice for the companies to recover operational costs, to re-invest in their capital outlet, and have a profitable business.

Figure 3-2: Financial Arrangement



Council collects a user charge from high & medium income residents to pay private firms and both cross subsidise secondary waste collection from low-income areas. Private firms collect revenue directly from commercial & industrial clients.

Because of the difficulties in establishing household income levels, it is proposed that all users in formal housing areas should be obliged to pay for solid waste collection. Since these users already pay for other services such as water, it is proposed that the refuse collection fee should be billed together with one of these services. The fee should be determined and collected by the council, who will then pay an agreed contract fee to private contractors. This approach is preferred because of the potential difficulties with collection and non-compliance that would result if the private firms had to collect their own revenue¹². Secondly, the council has at its' disposal legal entitlements (i.e. passing of by-laws) not available to private firms which they can use to impose and enforce a user fee for refuse collection. Lastly, the council already has billing systems, which can be used to collect refuse charges without incurring too much administrative costs. In this regard it is proposed that refuse charges be combined with water and sewerage charges. In the current process of commercialising the water sector, this combined billing should be discussed.

For peri-urban areas it is proposed that user contribution will be in the form of labour and time to ferry waste from individual households to primary collection points. However wherever possible attempts should be made to establish micro-enterprises within the communities who can then charge a small fee for transferring waste to the primary points.

It will also be worthwhile for both the council and the private firms to consider the possibility of contributing to cross subsidising secondary waste collection from low-income areas (thus, using part of the user charges paid by the medium and high income residents). This issue must however be approached cautiously as people are already unhappy about having to pay cross subsidies for water and electricity services.

This cross subsidy need not necessarily be high, as not that much waste needs to be collected from communal points of low-cost areas, particularly assuming reduced amounts from recycling and composting. The collection of waste in low-income communities can be made economically feasible if composting methods can be used, either in backyards or neighbourhood composting. The latter may create paid employment and income opportunities for community members, provided there is sufficient space and market possibilities. Considering the extensive urban agriculture activities in the low-income areas this might be a feasible option. Nevertheless, to assist CBOs in managing the primary collection and composting activities, a small fee will have to be collected from the inhabitants.

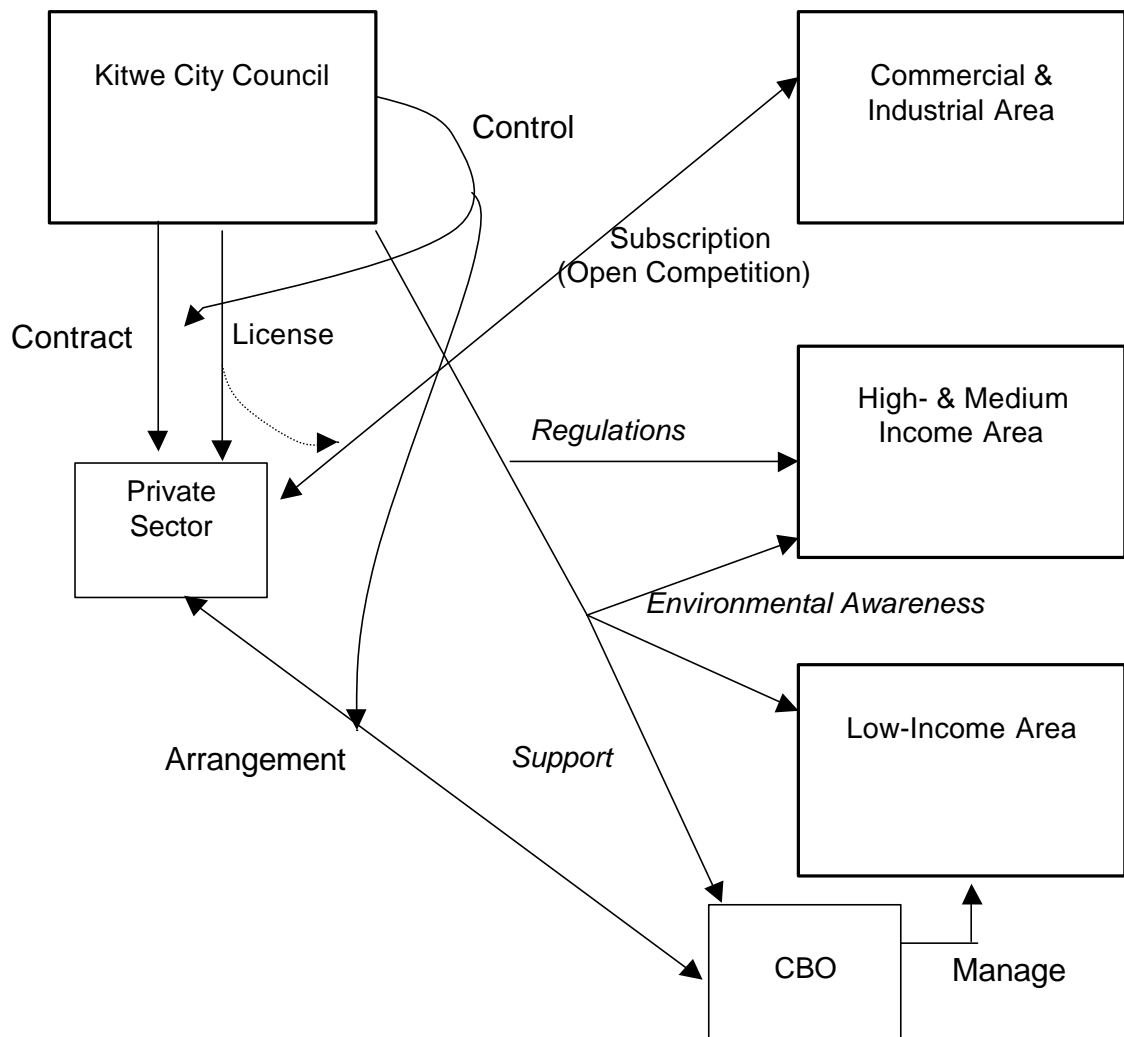
The private sector should also seek ways of income generation through recycling. They should also use low-cost means of transporting waste and not invest in inappropriate and costly compactor trucks.

¹² Solid waste may not be considered a priority service like water and electricity.. Therefore non-payment would lead to withdrawal of service by the private sector and people would not be bothered since they have other alternatives such as pits. This would defeat the whole purpose of the exercise.

3.4 Institutional Arrangements

The foregoing proposals mean an ultimate change in the role of the KCC in solid waste management. Figure 3-3 shows the institutional arrangements that must be made in order to foster participation.

Figure 3-3: Institutional Arrangement



Council arranges and controls contracts and licenses, provides regulations for inhabitants to pay user charge, creates environmental awareness, and supports CBOs’ waste management activities.

Thus, the role of the council in solid waste management changes from a service provider to a facilitator: contract manager, regulator and provider of infrastructural facilities.

As the figure indicates, the council’s main role will be to create an enabling environment for other players. They will be facilitators i.e. contract managers, regulators and educators as well as providers of infrastructural facilities with limited direct provision for identified sectors.

It may be of interest to KCC, to analyse experiences with participatory waste management in the ZCCM townships, Lusaka and other areas, provided in Annex 4.

3.4.1 Contract management

As contract managers the council will be involved with giving out contracts to private firms for the servicing of the formal residential areas. These contracts should stipulate clearly the population or zone/s to be served, agreed performance standards and agreed penalties for non-performance. Wherever possible, collection of waste from primary points in peri-urban areas should also be built into the contracts and paid for through the proposed cross subsidy.

In principle, in a competitive market private enterprises could provide waste collection services at higher efficiency and lower costs. Private sector participation provides for a means of introducing efficiency and mobilising private investment. But unfortunately, the waste service performance of the private sector is not always satisfactory. This is, among others, due to a low level of competence and equipment, preference for high value waste areas, and the absence of support by an appropriate overall waste management of local authorities. The often overwhelming expectations placed upon privatising waste services do not always materialise, as can be learned from experiences in Asian cities (Lee, 1997). What then are the requirements for successful privatisation? According to Cointreau-Levine (1994), this involves three key issues: competition, accountability, and transparency.

Bidding

Successful privatisation starts with a competitive bidding procedure (in a contestable market) with a clear procurement process of tendering and sound qualification.

Currently, it seems that the Kitwe City Council is discussing opportunities for private sector involvement with several interested parties, without having a clear procurement process. However, to benefit from expected advantages of privatisation, a proper procurement process is required. Most important, the contracts should be awarded by competitive bidding and be transparent. The bidding procedures should include the establishment of sound qualification criteria and procedures. First, a Request for

Pre-Tender Qualifications needs to be released. Firms need to submit detailed financial information as well as information on previous waste collection, or related experience. Those ultimately judged qualified, receive a Request for Tenders. These firms need to be interviewed and numerically ranked based on criteria such as: technical expertise, base tender price (and proposed conditions), knowledge of local conditions, and financial strength. The service should be divided over distinct areas among several competing private firms.

Contracts awarded should adhere to the following characteristics:

- provide exclusive right of specified services in well-defined areas: large enough for economy-of-scale
- finite term contract: long enough to recover investments, e.g., 5 years
- payment tied to specific performance indicators

For the commercial area it is proposed that the open competition which has already been started by Mpelembe Properties should be encouraged to continue. This method has the advantage of giving users a choice of service provider, ensuring better service and less involvement of the council in it's management.

The council can suffice with providing operation and tipping licenses to qualified

private firms in co-ordination with ECZ.

Monitoring

Monitoring of the performance of the contracted private firm is essential, possibly in consultation with ECZ. Performance indicators have to be used by the council, e.g., the amount of waste delivered at Uchi dumpsite and absolute control of illegal dumping. A first step could be to ask the Uchi gatekeeper not only to register the delivering truck but also estimate the volume, and regularly report this to the council. Later on, a weighing bridge could be installed. For performance monitoring of either public or private waste collectors, records of all load volumes and weights delivered at the dumpsite is essential.

It is also possible that community organisations could monitor the performance of private sector provided that they are informed about the features of a good quality service.

3.4.2 Support Functions

Most low-income communities in Kitwe particularly in peri-urban areas are already organised for community programs through RDCs. Where RDC's do not exist, the mechanisms are in place to assist with their formation. Communities can therefore be effectively incorporated into solid waste management through these committees.

Support may also be needed in terms of technical facilities such as equipment, training in waste handling methods, and other such areas, which may not be readily accessible in the communities. In these areas therefore the role of the council will be to support the establishment and strengthening (as the case may be) of community based organisations and ensuring that they are empowered to take an active role in refuse collection.

3.4.3 Regulatory and Educational Functions

Most important for proper and effective participation of the private sector and community is an institutional framework that supports the participation, and that the role and responsibilities of each actor are clearly defined. The main objectives of a regulatory framework are to ensure compliance with standards of service, price control, and to create a commercially viable and attractive business environment. Thus, operational and environmental regulations and standards to guide private contractors (and inhabitants) need to be set up.

In this regard the task of regulation and education falls on KCC. The KCC will have to establish a regulatory framework within which all other actors can perform. Activities to be regulated will include:

- (i) Level of user fees so as to ensure that these are affordable and economical.
- (ii) Use and management of the Uchi landfill in collaboration with ZCCM.
- (iii) User compliance in terms of paying for service and use of proposed refuse disposal methods
- (iv) Use of public open space for refuse dumping

- (v) Sector performance standards: i.e. Frequency of service, types of vehicles, management of solid waste infrastructure etc

Apart from regulation and enforcement of established rules perhaps it will be more critical to explain to people the need for waste services and thus the need for them to pay for it. The polluter pays principle has to be applied. Creating environmental awareness is needed, for example by organising a 'cleansing day'. This can be done in co-operation with NGOs operating at city level, or CBOs at neighbourhood level (at high- and medium-income areas).

3.4.4 Provision of Solid Waste Infrastructure

One area that the council will have to improve will be the road network. This is fundamental to the successful operation of the new system. Secondly the council in collaboration with ZCCM and ECZ have to improve the state of the Uchi landfill by converting it into a sanitary landfill. Similarly in peri-urban areas the council will have to work with other actors to ensure that the chosen primary disposal points are managed in an environmentally sensitive manner.

4. REQUIREMENTS FOR SUCCESSFUL PARTICIPATION

Participation requires that user communities and responsible institutions have both the capacity and the opportunity for participation (Schubeler 1996:34). For the purposes of this work capacity refer to the technical, human and financial resources and the organisational structures available to the council and the other players for solid waste management.

4.1 Technical capacity

Private contractors will have to use the right type of vehicles. It is proposed that tipper trucks should be the standard vehicles while flat trucks should definitely not be allowed.

In order to sustain and improve on the proposed system the council will have to develop a database (computer based) on solid waste practices and management for the whole city. A starting point could be the existing gatekeeper whose activities should be strengthened and his records availed to KCC. New technologies (both equipment and systems) will have to be developed for the management of Uchi as a sanitary landfill.

4.2 Financial Capacity

In the residential areas the operations of the private firms will depend on their ability to collect revenue from the council. It is therefore imperative that the council improves its revenue collection in line with the proposals by Ndeke et al (1999) and pays the contractors on time. In the commercial zone the council will have to put in place by-laws compelling all users to register themselves with one of the private firms. The council will also have to work out a mechanism for generating revenue for street sweeping and collection of refuse in peri-urban areas.

It is also worth noting that initially, most companies will require access to credit for capital financing (e.g., a financial loan from banks to buy equipment).

4.3 Manpower Capacity

A fair number of staff with certain specialities will be required. Figure 4-1 below illustrates the proposed manpower capacity building strategy.

4.4 Required Organisational Reforms and Measures

Apart from building capacity there will also be need for certain organisational reforms and measures.

1. Establishment or strengthening of existing tender board which must incorporate public health, environmental and solid waste experts to ensure conformity to set operational standards.
2. Improved mobility of land use, environmental and public health inspectors to ensure effective monitoring of activities.

3. Establishment of a solid waste information centre and laboratory to assist in development of solid waste database.
4. Establishment of a solid waste community liaison committee which should include public health workers, social workers, land use planners, environmental engineers, NGO's, private firms and community representatives to ensure effective communication between different stakeholders.
5. Amendment of building by-laws that permit the use of pits as alternatives to refuse collection.
6. Once the proposals in this work are fully operational, there will be need to reduce the number of employees in the refuse collection section so that only those who will be actively involved e.g. street sweepers, public health workers, laboratory technicians etc. are retained.

Figure 4-1: Manpower capacity building Strategy

Manpower Required	Functions	To be trained by
Environmental and public health Inspectors	Environmental awareness campaigns, monitoring refuse collection activities.	CBU and ECZ. Some candidates can be drawn from amongst existing cleansing department workers.
Solid waste Analysts - Analysts -lab technicians -Information technologists	Develop and maintain an up-to-date data base on refuse and it's management. Advise other actors on refuse management and recycling activities.	Either employ qualified ones or train them at either a local institution or at IHS.
Contracts and licensing officers	Handling all refuse contracts and licensing procedures and operations.	Either use existing officers or train new ones. CBU.
Community development and liaison officers	Assisting and supporting CBO's and promoting liaison between CBO's and other stakeholders	Either use existing officers or train new ones. CBU, KCC.
Land use/development control officers	Controlling the use of public open spaces and use of individual premises.	CBU.
Community Based Solid waste Groups	Developing strategies for refuse management	KCC, CBU and ECZ

Note: CBU training programs refers only to short term workshops and seminars for which CBU through SINPA would be in a better position to draw together different professionals.

5. CONCLUSION AND RECOMMENDATIONS

This work has shown that Kitwe City Council is currently unable to provide an adequate solid waste service to its residents. It has also shown that there exist possibilities for resolving this problem through a participatory approach involving both the community and the private sector. The study has gone further and suggested ways in which these improvements can be achieved. The bulk of the proposals are directed at policy change. Modalities on how to implement these ideas will have to be worked out as and when a decision is made to adopt any of these proposals. It is acknowledged that the proposals in this work cannot be implemented at the same time. The study therefore ends by highlighting in form of recommendations those ideas that can be implemented within the short and medium terms.

5.1 Recommendations

1. The community liaison committee should be constituted and they should be instrumental in conducting public health campaigns on the necessity, advantages and disadvantages of the proposed waste management system so as to start getting a feedback from the population.
2. An inventory of all squatter settlements and NGO's should be undertaken to establish the existence of CBO's and where need be constitute them.
3. A tender board should be set up or the existing one strengthened so that the, the council can immediately advertise for companies to provide refuse collection services in commercial areas. The council should also enact by-laws to compel users to register with these companies.
4. Once the council implements Banda et al (1999) proposals in terms of disposing of certain activities, they should consider immediately laying off the street sweepers and re-employing only the right number on casual basis.
5. For the residential areas it is recommended that a pilot waste collection project should be conducted in a high and low-density area as well as in Ipusukilo peri-urban area. At the end of the scheme performance standards should then be established and these applied to all other areas.
6. It is recommended that a complete characterisation study and a more detailed financial analysis be undertaken to answer the unanswered questions in this work.
7. It is recommended that SINPA continues to assist with capacity development through the activities outlined in Appendix 4.

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APPENDIX 1: CONSULTED PERSONS

Mr Mumba	Department of Community and Social Services (ZCCM)
Mr Chishimba	Department of Public Health (ZCCM)
Mr Mwiinga	Department of Infrastructure and Support Services (Ministry for Local Government and Housing)
Dr Wamulume	Department of Public Health Services (Lusaka City Council)
Ms. Mate	Sustainable Lusaka Programme (Lusaka City Council)
Mr Chipili	- ML Electrical and General Contractors – Kitwe
Ms. Muleya	Cleanfast Limited – Lusaka
Ms. Gallis	Gallis’ Refuse Removal Limited – Lusaka
Mr Zimba	Department of Housing and Social Services (KCC)
Mrs Mwanza	Department of Housing and Social Services (KCC)
Mr Kaminsa	Department of Public Health Services (KCC)
Mr Lusambo	Department of Public Health Services (KCC)
Sr. Bowa	Ipusukilo Clinic (Kitwe) Mpelembe Properties Nkana Limited (Kitwe)

APPENDIX 2: HOUSEHOLD SURVEY RESULTS - ALL

SEX		AGE	
F	26	<20	2
M	114	20 – 30	17
		31 – 40	44
		41 – 50	56
Total	140	Total	140

EMPLOYMENT STATUS		EDUCATION	
Private Institution	36	Primary School	17
Public institution	38	Secondary School	84
Self Employed	42	Tertiary	39
Unemployed	23		
No Answer	1		
Total	140	Total	140

HOUSE-HOLD SIZE		IS WASTE HARMFUL	
1 – 3	7	Yes	138
4 – 7	19	No	1
8 – 10	66	No Answer	1
10+	47		
No Answer	1		
Total	140	Total	140

REFUSE STORAGE		DISPOSAL OF REFUSE	
Dust Bin	10	Burn	42
Pile	26	Burn/ Bury	2
Pile/ Pit	3	Bury	72
Pit	101	Left for collection	4
		Communal Pile	18
		Others	3
		No Answer	1
Total	140	Total	140

WHY SO MUCH REFUSE		WHO SHOULD COLLECT	
Contractor and Council failure	1	Council and Private firms	1
Contractor failure	5	Community	16
Council failure	80	Council	100
Council and People	3	Council and community	2
No Collection	5	Council and private firms	2
Peoples attitude	33	Private firms	18
Too many People	10	N/A	1
Rainy Season	1		
N/A	1		
No Answer	2		
Total	140	Total	140

SHOULD PEOPLE PAY		HOW MUCH	
Yes	86	Less than K 1000.00	21
No	48	K 1000 – K 1500	20
Do not know	5	K 2000 – K 2500	10
N/A	N/A	K 3000 – K 5000	13
		K 6000 – K 10000	7
		K 11000 – K 15000	1
		No Answer	68
Total	140	Total	140

DISTANCE TO COMMUNAL PILE		ANY REFUSE COLLECTION SYSTEM	
Not Far	46	Yes	59
Quite Far	4	No	55
Very Far	6	Do not know	20
N/A	84	N/A	5
		No Answer	1
Total	140	Total	140

APPENDIX 2: HOUSEHOLD SURVEY RESULTS - WUSIKILE

SEX		AGE	
Female	1	<20	0
Male	19	20 – 30	2
		31 – 40	6
		41 – 50	8
Total	20	Total	20

EMPLOYMENT STATUS		EDUCATION	
Private Institution	18	Primary School	1
Public institution	0	Secondary School	19
Self Employed	2	Tertiary	-
Unemployed	0		
Total	20	Total	20

HOUSE-HOLD SIZE		IS WASTE HARMFUL	
1 – 3	-	Yes	20
4 – 7	8	No	-
8 – 10	7	No Answer	-
10+	5		
Total	20	Total	20

REFUSE STORAGE		DISPOSAL OF REFUSE	
Dust Bin	-	Burn	2
Pile	11	Burn/ Bury	-
Pile/ Pit	3	Bury	5
Pit	6	Left for collection	3
		Communal Pile	9
		No Answer	1
Total	20	Total	20

WHY SO MUCH REFUSE		WHO SHOULD COLLECT	
Contractor failure	5	Community	2
Council failure	-	Council	11
Peoples attitude	2	Private firms	7
Too many People	9	N/A	-
No system	4-		
Total	20	Total	20

SHOULD PEOPLE PAY		HOW MUCH	
Yes	10	K 500	4
No	9	K 1500	1
Do not know	1	K 2000	21
N/A	-	K 4000	2
		No Answer	2
		N/A	10
Total	20	Total	20

DISTANCE TO COMMUNAL PILE		ANY REFUSE COLLECTION SYSTEM	
Not Far		Yes	12
Quite Far		No	-
Very Far		Do not know	5
		No Answer	3
Total		Total	

APPENDIX 2: HOUSEHOLD SURVEY RESULTS - BUCHI

SEX		AGE	
Female	4	<20	0
Male	16	20 – 30	7
		31 – 40	3
		41 – 50+	10
Total	20	Total	20

EMPLOYMENT STATUS		EDUCATION	
Private Institution	4	Primary School	2
Public institution	9	Secondary School	16
Self Employed	2	Tertiary	2
Unemployed	5		
Total	20	Total	20

HOUSE-HOLD SIZE		IS WASTE HARMFUL	
1 – 3	2	Yes	20
4 – 7	12	No	-
8 – 10	4	No Answer	-
10+	2		
Total	20	Total	20

REFUSE STORAGE		DISPOSAL OF REFUSE	
Dust Bin	-	Burn	4
Pile	3	Burn/ Bury	-
Pile/ Pit	-	Bury	15
Pit	17	Left for collection	-
		Communal Pile	1
Total	20	Total	20

WHY SO MUCH REFUSE		WHO SHOULD COLLECT	
Contractor and Council failure	-	Council and Private firms	-
Contractor failure	-	Community	3
Council failure	15	Council	17
Peoples attitude	4	Private firms	-
No Answer	1		
Total	20	Total	20

SHOULD PEOPLE PAY		HOW MUCH	
Yes	10	K 500	3
No	9	K 1000	3
Do not know	1	K 2000	2
N/A	-	K 5000	2
		K 10000	1
		N/A	9
Total	20	Total	20

DISTANCE TO COMMUNAL PILE		ANY REFUSE COLLECTION SYSTEM	
Not Far		Yes	5
Quite Far		No	12
Very Far		Do not know	3
Total		Total	20

APPENDIX 2: HOUSEHOLD SURVEY RESULTS - NKANA EAST

SEX		AGE	
Female	2	<20	0
Male	18	20 – 30	0
		31 – 40	4
		41 – 50+	16
Total	20	Total	20

EMPLOYMENT STATUS		EDUCATION	
Private Institution	12	Primary School	0
Public institution	-	Secondary School	7
Self Employed	2	Tertiary	13
Unemployed	6		
Total	20	Total	20

HOUSE-HOLD SIZE		IS WASTE HARMFUL	
1 – 3	0	Yes	18
4 – 7	8	No	1
8 – 10	10	No Answer	1
10+	2		
Total	20	Total	20

REFUSE STORAGE		DISPOSAL OF REFUSE	
Dust Bin	3	Burn	9
Pile	5	Burn/ Bury	-
Pile/ Pit	-	Bury	4
Pit	12	Left for collection	4
		Communal Pile	3
Total	20	Total	20

WHY SO MUCH REFUSE		WHO SHOULD COLLECT	
Contractor and Council failure	-	Council and Private firms	-
Contractor failure	-	Community	3
Council failure	12	Council	9
Council and People	-	Council and community	-
No Collection	-	Council and private firms	-
Peoples attitude	7	Private firms	7
Rainy Season	-	No Answer	1
No Answer	1		
Total	20	Total	20

SHOULD PEOPLE PAY		HOW MUCH	
Yes	16	K 1000	4
No	3	K 1500	3
Do not know	-	K 2000	3
No Answer	1	K 2500	1
		K 3000	2
		No Answer	7
Total	20	Total	20

DISTANCE TO COMMUNAL PILE		ANY REFUSE COLLECTION SYSTEM	
Not Far		Yes	16
Quite Far		No	3
		No Answer	1
Total		Total	20

APPENDIX 2: HOUSEHOLD SURVEY RESULTS - RIVERSIDE

SEX		AGE	
Female	3	<20	0
Male	17	20 – 30	0
		31 – 40	6
		41 – 50+	3
Total	20	Total	20

EMPLOYMENT STATUS		EDUCATION	
Private Institution	8	Primary School	-
Public institution	5	Secondary School	-
Self Employed	7	Tertiary	20
Total	20	Total	20

HOUSE-HOLD SIZE		IS WASTE HARMFUL	
1 – 3	1	Yes	20
4 – 7	6	No	-
8 – 10	13	No Answer	-
Total	20	Total	20

REFUSE STORAGE		DISPOSAL OF REFUSE	
Dust Bin	4	Burn	13
Pile	2	Burn/ Bury	-
Pile/ Pit	-	Bury	7
Pit	14	Left for collection	-
Total	20	Total	20

WHY SO MUCH REFUSE		WHO SHOULD COLLECT	
Contractor and Council failure	-	Council and Private firms	-
Contractor failure	-	Community	1
Council failure	16	Council	14
Peoples attitude	4	Private firms	4
Too many People	-	No Answer	-1
Total	20	Total	20

SHOULD PEOPLE PAY		HOW MUCH	
Yes	16	K 1000	2
No	4	K 2000	2
Do not know		K 3000	1
N/A		K 5000	5
		K 6000	1
		K 10000	4
		K 15000	1
Total	20	Total	20

DISTANCE TO COMMUNAL PILE		ANY REFUSE COLLECTION SYSTEM	
Not Far		Yes	11
Quite Far		No	5
Very Far		Do not know	4
Total		Total	20

APPENDIX 2: HOUSEHOLD SURVEY RESULTS - IPUSUKILO

SEX		AGE	
Female	6	<20	0
Male	14	20 – 30	3
		31 – 40	9
		41 – 50+	8
Total	20	Total	20

EMPLOYMENT STATUS		EDUCATION	
Private Institution	4	Primary School	10
Public institution	1	Secondary School	9
Self Employed	9	Tertiary	1
Unemployed	5		
No Answer	1		
Total	20	Total	20

HOUSE-HOLD SIZE		IS WASTE HARMFUL	
1 – 3	3	Yes	20
4 – 7	15	No	-
8 – 10	1	No Answer	-
10+	1		
Total	20	Total	20

REFUSE STORAGE		DISPOSAL OF REFUSE	
Dust Bin	-	Burn	4
Pile	18	Burn/ Bury	-
Pile/ Pit	-	Bury	16
Pit	2	Left for collection	-
Total	20	Total	20

WHY SO MUCH REFUSE		WHO SHOULD COLLECT	
Contractor and Council failure	-	Council and Private firms	-
Contractor failure	-	Community	-
Council failure	12	Council	20
Council and People	-	Council and community	-
No Collection	-	Council and private firms	-
Peoples attitude	6	Private firms	-
Total	20	Total	20

SHOULD PEOPLE PAY		HOW MUCH	
Yes	11	K 200	4
No	7	K 300	2
Do not know	2	K 400	1
N/A	-	K 500	1
		K 600	1
		K 1000	2
		Do not know	9
Total	20	Total	20

DISTANCE TO COMMUNAL PILE		ANY REFUSE COLLECTION SYSTEM	
Not Far		Yes	1
Quite Far		No	17
Very Far		Do not know	1
N/A		No Answer	1
Total		Total	20

APPENDIX 2: HOUSEHOLD SURVEY RESULTS - BULANGILO

SEX		AGE	
Female	4	<20	2
Male	16	20 – 30	1
		31 – 40	5
		41 – 50+	12
Total	20	Total	20

EMPLOYMENT STATUS		EDUCATION	
Private Institution	1	Primary School	3
Public institution	1	Secondary School	16
Self Employed	14	Tertiary	1
Unemployed	4		
Total	20	Total	20

HOUSE-HOLD SIZE		IS WASTE HARMFUL	
1 – 3	0	Yes	20
4 – 7	5	No	-
8 – 10	8	No Answer	-
10+	7		
Total	20	Total	20

REFUSE STORAGE		DISPOSAL OF REFUSE	
Dust Bin	2	Burn	8
Pile	2	Burn/ Bury	-
Pile/ Pit	-	Bury	8
Pit	16	Left for collection	-
		Communal Pile	4
Total	20	Total	20

WHY SO MUCH REFUSE		WHO SHOULD COLLECT	
Contractor and Council failure	-	Council and Private firms	-
Contractor failure	-	Community	5
Council failure	15	Council	15
Peoples attitude	4	Private firms	-
Too many People	-	N/A	-
Total	20	Total	20

SHOULD PEOPLE PAY		HOW MUCH	
Yes	12	K 500	2
No	8	K 1000	4
N/A	-	K 5000	1
		No Answer	5
		N/A	8
Total	20	Total	20

DISTANCE TO COMMUNAL PILE		ANY REFUSE COLLECTION SYSTEM	
Not Far		Yes	3
Quite Far		No	13
Very Far		Do not know	4
Total		Total	20

APPENDIX 2: HOUSEHOLD SURVEY RESULTS - NDEKE VILLAGE

SEX		AGE	
Female	6	<20	0
Male	14	20 – 30	5
		31 – 40	7
		41 – 50+	8
Total	20	Total	20

EMPLOYMENT STATUS		EDUCATION	
Private Institution	4	Primary School	1
Public institution	5	Secondary School	17
Self Employed	6	Tertiary	2
Unemployed	5		
Total	20	Total	20

HOUSE-HOLD SIZE		IS WASTE HARMFUL	
1 – 3	0	Yes	20
4 – 7	12	No	-
8 – 10	3	No Answer	-
10+	4		
No Answer	1		
Total	20	Total	20

REFUSE STORAGE		DISPOSAL OF REFUSE	
Dust Bin	1	Burn	1
Pile	1	Burn/ Bury	2
Pile/ Pit	-	Bury	16
Pit	18	Left for collection	-
		Communal Pile	1
Total	20	Total	20

WHY SO MUCH REFUSE		WHO SHOULD COLLECT	
Contractor and Council failure	-	Council and Private firms	1
Contractor failure	-	Community	5
Council failure	9	Council	12
Council and People	-	Council and community	2
Other	5	Council and private firms	
Peoples attitude	6	Private firms	
Total	20	Total	20

SHOULD PEOPLE PAY		HOW MUCH	
Yes	11	K 500	3
No	8	K 1000	2
Do not know	1	K 1500	2
No Answer		K 10000	1
		No Answer	12
Total	20	Total	20

DISTANCE TO COMMUNAL PILE		ANY REFUSE COLLECTION SYSTEM	
Not Far		Yes	11
Quite Far		No	5
Very Far		Do not know	3
N/A		No Answer	1
Total		Total	20

APPENDIX 3: PRIVATE SECTOR AND COMMUNITY INVOLVEMENT IN REFUSE COLLECTION: OPTIONS AND EXAMPLES

Method for Involvement	Examples
<p>Contracting Private sector provides collection service under contract with the local government. Revenue for solid waste is collected either from general council revenues or billed by the council with other services such as water, sewerage, property rates etc.</p>	<p>Venezuela, Chile, Brazil , Argentina, Korea, Nigeria In the Mine townships of Kitwe where 5 private firms have been given contracts for different neighbourhoods. The firms are paid an agreed amount by the mine who collect a service charge from the users.</p>
<p>Franchising Local authorities can give exclusive franchise to a private firm for the right and responsibility to provide service to customers within a zone. In return the private firm pays a license fee to the government. The firm charges their customers an appropriate fee, which can be regulated by the local authority. The Local authority monitors performance. In franchising the private firms bear the cost of billing and revenue collection.</p>	<p>Nigeria, United States, Egypt, Indonesia, Colombia,</p>
<p>Concession Under concession arrangements the private sector finances and owns solid waste management facilities for the purposes of recycling and resource recovery</p>	<p>Nigeria, India, Hong Kong, Argentina, United States, Mexico</p>
<p>Open Competition In this method each household and establishment hires a private collection firm and pays the solid waste charge set by the firm. This method leads to higher costs than even the public service. Competing firms operating in the same areas lose economies of contiguity and in many instances collusion on prices can occur.</p>	<p>Nigeria, United States, England and Canada. This method is currently being used in Lusaka and Kitwe's city centre where 5 and 1 firm respectively have taken up the task of collecting garbage</p>

<p>Community Based Activities Communities organise refuse collection, management and recycling activities either by themselves or with the help of NGO's through CBO's</p>	<p>Indonesia, Brazil. In Ipusukilo township the residents Development committee conducts public campaigns and door to door monitoring to ensure that the residents dig pits in which to throw their garbage. In Lusaka's Chipata compound, British Aid is working with a youth group to establish compartmentalised midden bins in order to promote refuse segregation and consequent recycling of refuse. Some terrazzo is already being made from the waste.</p>
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APPENDIX 4: PROPOSED SINPA ACTIVITIES 1999-2000

3rd Quarter 1999	
Presentation of report and recommendations to KCC	SINPA
Consideration of report and recommendations	KCC
Report and recommendation clarification (if requested)	SINPA
Decision Making and Council Resolutions	KCC
4th Quarter 1999	
Facilitated workshop on implementation	KCC, SINPA
Development of implementation plan	KCC
Schedule of training in line with implementation plan	KCC, SINPA
Characterisation study and pilot project	KCC, SINPA
Setting implementation priorities for the year 2000	KCC
1st Half 2000	
Implementation support	SINPA
Facilitated Training workshops in Environmental awareness, Contracts, licensing and tendering, Solid waste management by CBOs.	KCC, SINPA
Development of Solid Waste Data Base	KCC, SINPA
Mission Visit, implementation review	KCC, SINPA
2nd Half 2000	
Implementation support	SINPA
Specialist staff training	KCC, SINPA
Mission visit and implementation review	KCC, SINPA

RESUMEN EN ESPAÑOL

El Mejoramiento de la Recogida de Desechos en Kitwe (un Enfoque Participativo)

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Seminario SINPA

IHS, Rotterdam

19-21 de Septiembre de 2000

Este proyecto se realizó con el propósito de analizar el problema de la recogida de desechos en Kitwe y proponer mejoras.

A través de una encuesta de hogares, entrevistas con las instituciones relevantes y un estudio físico de la ciudad se concluyó que la Municipalidad de Kitwe no tiene la capacidad de prestar un servicio de recogida de basura adecuado a sus habitantes. Se recoge menos del 10 % de los desechos generados. El resto se quema, o se tira por la ciudad en fosas ilegales, montones, los bordillos de las aceras, hasta el sistema de alcantarillado. Esto contribuye a un deterioro ambiental, malas condiciones de salud pública, un alto riesgo de epidemias y un ambiente generalmente desagradable en términos estéticos. Entre las causas de esta situación se encuentran: mecanismos de financiamiento inadecuados, una capacidad técnica deficiente, el incumplimiento de las leyes existentes, la escasa participación de los actores interesados y una debilidad generalizada en las estructuras institucionales existentes.

A través de las encuestas se identificaron varias fortalezas importantes, entre ellas la buena disposición de los usuarios a pagar el servicio y del sector privado a involucrarse en la prestación del servicio. Con base a estas el estudio propone mejorar la recogida de basura a través de un enfoque participativo; la Municipalidad dejaría de suministrar el servicio y asumiría un papel de facilitador y regulador. Se prevé que la Municipalidad facilite y monitoré las actividades del sector privado a través de contrataciones y la concesión de licencias.

La recogida y gestión de desechos sólidos se realizan tanto por el sector privado como por las organizaciones de base. El primero por medio de licitaciones y concursos abiertos y estas últimas con la supervisión del traslado de basura de su fuente hasta los puntos primarios de recogida. La recogida secundaria se realiza de forma conjunta entre la Municipalidad y el sector privado. Solo en algunas áreas mantiene la Municipalidad un papel mínimo en la recogida y esto solo para utilizar la capital ya existente.

Los usuarios individuales pagarán el servicio de recogida para que se pueda sostener el sistema propuesto. Las tarifas de usuario son cobradas conjuntamente con las de los demás servicios (como agua) para asegurar que se paguen. El estudio propone además que será necesario desarrollar ciertas capacidades técnicas, financieras, humanas y organizativas para garantizar el éxito del nuevo sistema.

Entre las recomendaciones principales son las siguientes: el mejoramiento del sistema de recopilación de datos sobre desechos, así como su gestión, el mejoramiento de las redes viales, la construcción de un botadero, el montaje de un marco regulador y institucional para las actividades de todos los actores interesados, un sistema de recaudación

mejorado, la elaboración de procedimientos de contratación adecuados, el montaje de campañas de sensibilización ambiental y la definición de estándares de funcionamiento apropiados.

Reconociendo las dificultades de introducir nuevos sistemas, el estudio termina con la recomendación que la Municipalidad ejecute el nuevo sistema de forma experimental y comience con la puesta en práctica de esas ideas que son las más aceptables a la sociedad.