23rd WEDC Conference Durban, South Africa, 1997

WATER AND SANITATION FOR ALL: PARTNERSHIPS AND INNOVATIONS

Refuse management problems in Lusaka, Zambia

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LUSAKA CITY, WITH an estimated population in 1996 of 1.9 million and area of about 360 km^2, is one of the largest and fastest growing urban centres in Zambia (LCC, 1996). Up to 75 per cent of the city's population live in peri-urban areas, mostly in unplanned (squatter) settlements, which are characterised by overcrowding, inadequate sanitation and limited access to refuse collection acid disposal services.

Management of urban refuse in Lusaka is a responsibility of the Lusaka City Council (LCC) through its Department of Public Cleansing (DPC), which is under the Public Health Services Directorate. Over recent years the DPC has encountered a number of problems including shortage of equipment, inadequate funds and a low capacity in skilled labour force making it unable to continue servicing the city adequately and effectively. These problems have been to a larger extent aggravated by the lack of both political will and public awareness of the dangers of uncollected refuse. The introduction of liberalised trade which promoted large scale street vending and roadside trading, has increased waste accumulation and worsened the already deteriorating situation of the DPC.

The problems of refuse management in Lusaka are further discussed in this paper. Various contemplated and attempted solutions by the Lusaka City Council and other interested parties are also reviewed.

Nature of refuse

A 1996 study by the LCC and the Environmental Council of Zambia (ECZ) concluded that domestic refuse constituted about 80 per cent of the total generated in Lusaka with over 60 per cent of it coming from high density residential areas; and the remainder coming from industries, markets, hotels and hospitals.

Domestic refuse has a density of about 380 kg/m^3 with a daily average generation rate of about 0.5 kg/capita which is typical of many cities in developing countries. As seen from Table 1 the average composition of domestic refuse in Lusaka is about 50 per cent putrescibles and 36 per cent containing mainly soils, ashes and dust. The large quantity of putresibles however, provides an opportunity for comporting. However, this option is not likely to be achieved in the near future because the refuse is mixed with soils, ashes and dust.

In low density areas the amount of putresibles in the refuse accounts for over 68 per cent with less than 25 per cent in high density dwellings. With regard to ashes, soils and dust, high density areas generate up to 66 per cent compared to less than 12 per cent in the low density dwellings (table 1). The disparity between these two communities in terms of refuse composition is so great that it defies proper and accurate quantification of the refuse generated in Lusaka City. An attempt to separate the waste components at the generation sources is being tried especially in high density areas where the bulk of the refuse contains a large amount of inorganic matter. This is being achieved progressively through public awareness campaigns by the LCC, ECZ, nongovernment organisation (NGOs) and community based organisations (CBOs) such as the resident development committees (RDCs) in order to change peoples' attitudes. Since the majority of people in pert-urban areas use charcoal or firewood as fuel, consideration for manufacturing briquettes from the refuse as an alternative would have been the best solution that is acceptable to the residents, the city council and the politicians. Unfortunately, this option has not yet been thought of or suggested by any interested parties in the management of refuse for the city of Lusaka.

Table 1. Characteristics of domestic refuse in Lusaka

Characteristics	High Density	Medium Density	Low Density	City average
Paper and cardboard %	2.7	4.2	7.3	4.7
Metals %	1.6	1.8	2.3	1.9
Plastics %	3.0	4.8	6.7	4.8
Glass %	0.8	2.6	2.5	2.0
Textiles %	1.7	1.4	1.1	1.4
Putrescibles %	24.8	55.0	68.7	49.5
Soils, ashes & dust %	65.6	30.2	11.7	36.0
Weight (kg/capita.day)	0.56	0.54	0.41	0.50
Density (kg/m^3)	395	309	495	384

Source: LCC & ECZ, 1997.

Storage facilities

Refuse storage facilities in Lusaka include the common 200-litre oil drums, skips, enclosures or waste cages and standardised refuse bins. About 400 storage receptacles are used in the city which is not enough to contain the refuse generated.

Skips and disused oil drums are generally preferred for storing commercial, industrial, institutional and street waste. In low density residential areas, standardised refuse bins are being used almost exclusively in about 10 per cent of the households (Tambatamba, 1997). In medium and high density residential areas, communal dumps and dug out pits are commonly used.

Concerning skips, the amount of refuse in areas where they are placed exceed the number of skips in Lusaka at present. An increase in the number of skips is unlikely due to their high cost. However, even if this was raised, the situation would not improve as only one skip lift exists in the city for their removal when full of refuse (Table 2).

The 200-litre oil drums have proved to be valuable items among the city's residents as when placed on the major streets in the central business district in Lusaka a year ago, all were stolen. Therefore were ineffective as refuse collection receptacles. It was found that the drums were used for making many domestic items including charcoal stoves, roofing, gates and as water containers.

The standardised refuse bins are undoubtedly ideal for households in residential areas, but with the current economic hardships prevailing in the country, these facilities are likely to be misused like the 200-litre oil drums. Areas where this misuse is most likely to occur are the high density poor communities of the periurban areas. Standardised receptacles should however be encouraged in both low and medium density households, provided an efficient system of either door to door or kerbside collection is devised by the city council and possibly privatised.

Collection service

In the city of Lusaka, refuse collection presents many problems due to scarcity of resources. In residential dwellings where standardised bins are provided, collection is on a weekly basis depending on the availability of vehicles; but it is sporadic. Although collection of market, Street and commercial refuse is on a daily basis, the frequent breakdowns of vehicles greatly hampers the DPC's operations. Industrial refuse is not currently collected by the DPC. Industries and some hotels usually hire private contractors for the collection and disposal of their waste.

Table 2. Type of refuse collection equipment 1970- 1996

Currently there are nine serviceable vehicles and only 270 casual workers out of the expected 800 in the whole establishment. The nine vehicles consist of six tractors with trailers, two refuse compactors and one skip lift. The justification for buying the compactors which numbered eleven in 1985 has never been verified because the refuse density in Lusaka is high and therefore does not need compaction prior to disposal. The lack of vehicle standardisation in the entire fleet of refuse collection vehicles as shown in table 2 has significantly contributed to the existing low level of refuse collection in the city. With the present scenario, the DPC is capable of collecting only 10 per cent of the 1400 tonnes of refuse generated daily and the remaining 90 per cent left to rot et markets, road sides and alleys (Agyemang *et al*, 1997) . It is also evident from table 2 that the drastic decrease in the number of refuse collection vehicles began after 1985, presumably due to lack of spares, poor operation and maintenance. During this period the population of Lusaka had increased to more than twice that of 1970(table 2).

If effective operations are to be achieved, the DPC should consider increasing the number of tractortrailers in its collection fleet. However, in pert -urban areas where the DPC rarely reaches and where privatisation of refuse collection may not be feasible, NGOs and CBOs should continue their efforts in educating residents towards waste minimisation by advising them to separate soils and ashes from the refuse at the point of storage. A number of these organisations are already doing a commendable job in this area, such as PUSH-Zambia (pert-urban self help), Care-PUSH, Irish Aid and JICA (Japanese International Co-operation Agency). The only envisaged problem however, is that there is no co-ordination between these groups and that they are not obliged by law to submit their development projects to the city council for approval.

Disposal site

There is only one tipping site for the city of Lusaka which is situated at Libala, south of the city centre. The site has an area of 2.5 ha and covers numerous disused laterite quarries. The average haul distance from refuse generation sources in the city is about 15 km. This tends to preclude the use of slow moving refuse collection vehicles such as tractors, especially at peak hours when there is heavy traffic in the city.

The main access road to the disposal site is not tarred and is badly maintained. The tipping site has two old, non-operational wheel dozer compactors and conse-

quently the refuse is not properly disposed of. The lack of refuse weight recording system like a weigh bridge allows private and other refuse collectors to dispose of their waste free of charge. This denies revenue to the city council which is already cash strapped as it does not receive subsidy from the government.

Disposal of refuse at the Libala tipping site is by crude dumping. As the site is not fenced, scavengers have easy access to it. At present scavenging has reached an alarming level with about 100 scavengers operating at the site daily (LCC & ECZ, 1997). City council of finials are however unable to remove them from the site. Of serious concern however, is that some hazardous wastes have at times been brought to this site mainly from hospitals without incinerators and from other industries. (LCC & ECZ, 1997).

Apart from the legalised refuse disposal site at Libala, it is currently estimated that there are about 20 other illegal dumping sites in the city (LCC & ECZ, 1997). These have been developed in peri -urban areas purely on the basis of the haul distance to the legal dumping site. Since the geology of the city of Lusaka is mainly of dolomite and limestone, contamination of ground water sources by leachate is a big possibility. City authorities should therefore enforce existing bylaws in order to stop this from happening.

Conclusion

The problems affecting an efficient refuse management in the city of Lusaka which have been highlighted in this paper hinge on three main issues: inadequate funds, shortage of refuse collection equipment and low capacity in skilled labour force. Lack of political will has also contributed significantly to the current worsening situation in the management of urban refuse in the city of Lusaka. Other factors include the absence of public awareness and peoples' attitudes towards the dangers associated with improper refuse collection and disposal methods. This situation is not only posing a serious public health hazard to the city dwellers, but is also responsible for the present ugly urban environment of Lusaka.

The shortage of equipment has been to a larger extent due to lack of vehicle standardisation. Inappropriate refuse collection vehicles and the poor revenue collection system by the city council have also contributed to the deterioration of services in the entire management of the city's refuse.

Part of the solution to an efficient refuse management in the city is that of privatising the refuse collection system in areas where revenue can be collected with residents agreeing to pay for the service. In addition, the disposal site could be fenced to discourage excessive scaveging. A weigh bridge could also be installed to cable the city council charge fees from private refuse collectors for the use of the dump site.

With the concerted efforts of the LCC and other interested private entrepreneurs, NGOs and CBOs through public awareness campaigns, it is envisaged that the problem of refuse management in Lusaka will soon be sorted out.

References

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