

Visit to Democratic Republic of Congo

12th May – 19th May 2007

Report into the Key

Waste Management Issues

In Kinshasa, DRC

Completed by

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1 Introduction

Alasdair Meldrum – Albion Environmental Ltd, Claude Paul Chineegadoo – Net Consultancy / Heart and Paul Clacker – Stoke on Trent City Council, were invited to visit Kinshasa, Democratic Republic of Congo to learn about the waste management issues which were prevalent within the city.

We had been invited by His Excellency, Andre KIMUTA, Governor of Kinshasa. During the visit we were mainly working with the Vice Governor of Kinshasa, his Excellency S.E Bafiba Zomba Clement-Patrice, Ruffin Bangu MBUANDI PWATY and the rest of their team.

2 Background

Kinshasa (formerly Léopoldville or Leopoldstad) is the capital and largest city of the Democratic Republic of the Congo.

Once a site of fishing villages, Kinshasa is now a bustling city with a population of about 8.9 million in 2006, although some estimates put the population nearer 11 million. It ties with Johannesburg for the status of the second largest city in sub-Saharan Africa and the third largest in the whole continent after Lagos and Cairo, and it is the second largest French-speaking city in the world, after Paris.

It is located along the south bank of the Congo River, directly opposite the city of Brazzaville, capital of the Republic of the Congo. This is the only place in the world where two national capital cities are on opposite banks of a river, in sight of each other. There is no connecting bridge between the two capitals although there is a ferry which operates across the fast flowing river.

The Congo river is the second longest river in Africa after the Nile, and is the largest in terms of discharge. As a waterway it provides a means of transport for much of the Congo basin, being navigable for large river barges between Kinshasa and Kisangani, and many of its tributaries are navigable too. The river is an important source of hydroelectric power, and downstream of Kinshasa it has the potential to generate enough power for the whole continent.

3 Infrastructure

Prior to reviewing the waste management issues, it is important to review the infrastructure which is also relevant to waste management that is available in Kinshasa.

3.1 Roads

The main roads around Kinshasa are generally tarmac roads with lots of potholes. This can cause significant traffic congestion as vehicles go round or through potholes. Due to the poor state of the roads, there are no public buses on the roads although there are buses present within the country, available for use. The roads are very busy with private mini-buses providing much of the transportation needs.

Traffic control at junctions is either traffic lights (rarely) or police manning junctions. Some areas have very narrow streets and there is no system for operating one way streets.

Pavement areas are generally not surfaced and are frequently covered in mud and waste. This then pushes pedestrians out onto the road. A lot of transport is provided by hand carts which again use the side of the road. Bicycles are rare and so are motor bikes.

Due to the high incidence of rainfall in the area the roads have been provided with large drainage channels, some up to 1m wide by 2m deep along either side of the road. In most places these drainage channels are filled to ground level with waste and dirt which has washed off the roads. Where drainage channels have been cleared they are generally operational with minor repairs.

From a waste management point of view main issues are

- Poor state of roads and congestion preventing any proposed collection vehicles moving freely.
- Waste from drainage channels needs to be removed, as otherwise it will simply get washed back in.
- Narrow streets make access difficult however education campaigns have been successful in getting people to bring waste to a central point.

3.2 Drainage and Watercourses

Drainage and watercourses are frequently blocked with waste. This causes significant issues during the rainy season (8 months), when they estimate that between 100 – 150 people die in the city every time it rains. If the waste was managed and collected properly, it would not get into the drainage system and this high mortality rate could be avoided.

As most of the drains and watercourses are blocked with waste the water is contaminated. The stagnant water is also providing breeding conditions for

mosquitoes. The water in these drainage channels and water courses is used by the local people and it will contain –

- Contaminants for example metals from the breakdown of waste.
- Bacteria from the breakdown of waste.
- Conditions that are an ideal breeding ground for mosquitoes

The number of people killed each day from chemical or bacterial contamination of the water or from malaria is unknown but is likely to be significantly higher than the numbers killed by the flooding.

One of the priorities must be to clean out these drainage channels prior to the next rainy season (September 2007). The waste from these channels will be heavily contaminated and must be taken to an engineered landfill site.

3.3 Power Network and Supply

The power supply in the city is poor with frequent interruptions. This has little impact on waste management apart from disrupting of communications.

The power supply network is particularly poor both in terms of standard of installation and condition. Many people within the city also die from electrocution, and frequently this is caused by the flooding discussed above, connecting with the live uninsulated cables which are present.

3.4 Communications

Communications are particularly poor with most of the staff we met working from Pay-As-You-Go phones. Vodacom plus a number of other companies operate in the country and reception was generally good. DRC officials are restricted in terms of money to purchase phones and credit for phones.

Access to broadband connection was poor with limited signal strength. Again access to computers to gain access is very limited.

The fixed telephone lines are limited.

3.5 Drinking Water Supply

There is a supply network present however the quality and number of houses which receive this supply are unknown.

3.6 Sewage System

There is no sewage system and much of it ends up in the drains discussed in 3.2 above.

4 Waste Management Infrastructure

The existing waste management infrastructure is very limited, however there are improvements being put in place.

The current system relies on hand carts to collect waste and transport it to “temporary transit sites”. These “transit sites” do not appear to be temporary and it is clear there is waste at the road side, within the areas where people grow food crops, alongside rivers and drainage channels.

The council now has ten trucks to try and clear waste away. All are loaded by hand, and with waste not being bagged this is time consuming and difficult.

Efforts are being made to clean out drainage channels however the waste from these channels is very wet and difficult to handle.

The main “transit landfill” is occurring on fertile agricultural land. As the area is filled houses are being built on the waste. The site also has a population of resident scavengers who will be exposed to additional risks.

In summary the waste management system for Kinshasa has most of the pieces of the waste management “jigsaw” missing. The main part missing is a secure, engineered landfill site. There are other important parts missing for example, no collection infrastructure etc, however without a secure landfill disposal point the problem will only be moved around the city.

5 Recycling

Due to the hard working nature of the people in DRC, the country could have one of the best recycling systems in the world. In fact if it was not for the recycling already going on, the waste management situation in Kinshasa would be truly appalling.

The key proposal would be to provide central collection points where a price per kilogram is paid for separately collected material. This would effectively provide “free” cleaning of the streets and also provide revenue for the barrow boys currently uplifting waste who may feel threatened by any mechanization of the waste collection system.

The provision of a recycling service has a number of key advantages as follows:

- Provides earning opportunities to the population.
- Provides “free” collection from the streets.
- Eventually provides revenue from the recycle.
- Reduces the quantity of waste needing collection and sending to landfill.

The barriers to a recycling system being put in place at present are as follows –

- Finances to pay \$ / kg for material.
- Equipment and facilities to process recycle for either export or re-use.
- Access to export markets.

This type of recycling operation could be used to separately collect large quantities of material. At an operational level the difficult part will be agreeing the correct \$ / kg for each waste type. Waste types where this sort of operation would work very well include-

- Paper and cardboard.
- Plastic and plastic films / bags.
- Biodegradable material for composting.
- Metals
- Car batteries
- Stone and soil

If the correct system can be established, then the opportunities for the public to earn money and clean up their city are very high.

6 Public Health Issues

The public health issues in Kinshasa are immense and this brief report can in no way do these issues justice. Poor waste management is not the only health issue in Kinshasa. Lack of clean water, lack of sewerage system and lack of access to health care are also significant issues. The absence of a waste management system in this city however is a significant contributory to the high level of disease and death in Kinshasa.

The main issues which were identified (NB this is not the definitive list - there will be other issues we have not covered, but these are the most obvious) were as follows. We have split these into two groups, “visible killers and invisible killers”.

6.1 “Visible Killers”

The most obvious “visible killer” is the large number of people estimated to die every time it rains. Local estimates ranging from 100 to 150 people are killed every time it rains in the city. Remember during the rainy session it effectively rains for 8 months every year.

It could be argued that waste management is not the main factor here but if you consider the main cause of these deaths, the main causes are as follows –

- People getting washed away. This is directly attributable to lack of waste management as the drainage system is full of waste, and not operational.
- Houses getting washed away. Again this is attributable to lack of waste management. Another factor here is the poor quality of house design and construction.

- Electrocution – the condition and standard of the electrical supply (even in our 5 star hotel) was exceptionally poor. When it rains, due to the poorly maintained drainage system, the rain water comes in contact with bare cables resulting in “live puddles”. This is also probably a cause for the intermittent nature of the power supply especially when it rains.

6.2 “Invisible Killers”

There are a wide range of “invisible killers” in Kinshasa but again the main ones which directly relate to waste management are as follows –

- Landfill gas – the current practice of building houses on top of the waste is unacceptable. As the waste breaks down methane, carbon dioxide and trace components will all be produced. Since the house is built on the waste there is every chance these gases will enter the house. Main risks are explosion and asphyxiation from lack of oxygen. Houses built on waste should be checked for presence of methane gas as a matter of urgency and if found, houses should be destroyed.
- Malaria – the blocked drainage channels are allowing stagnant water to build up around the city providing perfect breeding conditions for mosquitoes. If the drainage system is maintained, at least the water in the drains will be flowing, thus reducing the opportunities for mosquitoes.
- Bacterial Infection – since people are in extremely close contact with waste as they live on waste, grow food on waste and even let their children play on waste, the chance for picking up bacterial infections is considerable.
- Water contamination – the breakdown of waste will release metals and other pollutants into the water. This water is used for washing and in some cases drinking.
- Clinical waste – with little difficulty, we found clinical waste on the transit site. In UK this waste would be rendered safe by incineration or thermal treatment. The provision of a secure method for treating clinical waste in DRC is essential.
- Hazardous waste – presumably hazardous waste is also disposed in these transit sites, again posing risk to population.

A clean Kinshasa would deliver significant public health benefits by reducing the incidence of disease and illness.

7 Environmental Issues

Due to the scale of the Public Health issues, it is difficult to place our environmental standards on this issue. The environmental issues are significant, but in no way are they close to the public health issues discussed previously. By resolving the public health issues, many of the environmental issues will also be addressed. The main environmental issues are as follows –

- Waste lying around across the city, open to scavenging by people and animals.

- Waste contaminating the land, surface water and ground water around Kinshasa.
- Waste getting washed into the drainage system and then the River Congo.
- No secure disposal point for waste for a city with a population between 9 and 11 million people.

8 Call for Action

What was made clear to us during our visit was that the government of Kinshasa are willing and able to work towards cleaning up their city. They have accepted our recommendation that one of the first steps in this process is to provide a secure long term landfill site for the waste generated within the city. Once this is provided the other logistical issues, for example street cleaning, drain maintenance and waste collection will then follow.

The people of Kinshasa are already voluntarily helping the government to clean up their city. There is therefore a willingness within the government and the people to address this vital issue.

The importance of this issue cannot be overstated. The three fundamentals of civilised society are clean water, removal of waste (both solid and liquid) and food. From our visit, certainly provision of water and food was not ideal but at least a significant part of the population had access to water and food. There is however no provision for removal of waste from the city.

For the International community this is a humanitarian disaster. We cannot let this loss of life continue. The scale of the problem is immense and the process of establishing a modern waste management infrastructure will take many years. However we cannot let the size of the task stop us making the first step which is to provide the people of Kinshasa with a secure landfill site for disposal of their waste. Although only a first step, this will have a significant beneficial impact on the people of Kinshasa.

The international community can provide advice, equipment and finances to take this significant first step. Albion Environmental International Ltd have contributed significant amount of time and costs to this project already on humanitarian grounds. We would urge the international community, NGO's and individual countries to do the same.

The government of DRC must also recognise that there is no "quick fix", but they must put in place policy and procedures for the long term, for example 10 to 20 years.

8.1 Immediate Actions

We believe that the following are immediate actions required before the rainy season September 2007.

1. Provision of an engineered, secure landfill site. The site does not need to be to UK standard but must make sure it does not pose risk to health and the environment in the future.
2. Landfill gas survey of all properties which are built on or suspected of being built on top of waste.
 - Location of all properties built on waste **DRC**
 - Landfill gas measurement equipment **AEI**
3. Cleaning out of drainage channels around the city to reduce flooding.

Once the above actions are completed then we can move on to developing the waste management infrastructure required for Kinshasa.

9 Kinshasa - City of Hope

The problems facing Kinshasa are immense. The waste management issues are just one part of a bigger picture; however they are a very significant part of the big picture. Albion Environmental International Ltd believes that the preservation of lives and prevention of diseases resulting from inadequate waste management facilities and policies must be addressed first before commercialisation can be considered.

We have invited the waste management team for a two week visit to the UK. We believe this is essential so that the team can see the level of infrastructure and investment required for the long term and it will also help the decision takers in planning ahead.

For Albion Environmental International Ltd to take this forward we must get the support of the UK Government, International community and the relevant NGO's. By working together, we can make sure the hope of the people of Kinshasa is not misplaced. We can deliver the first steps towards a sustainable waste management future for Kinshasa and together with the DRC team we will deliver a sustainable solution.



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