Working Paper

Municipal Solid Waste Management Services in Africa

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Table of Contents

1. Introduction

Public Services International (PSI) commissioned this report to inform the approach to, and activities in, the municipal waste management services sector of their affiliates in Africa.

This report represents the second in a series of reports on municipal solid waste management in Latin America[1], Africa and Asia/Pacific. In addition, the European Federation of Public Service Unions recently published a report on waste management in Europe.[2]

The report aims to address the following questions:

- How do effective waste collection and related services contribute to urban health, decent work and living conditions, inclusive local economic development and climate change?
- What are the working conditions of public, private and cooperative workers in municipal waste collection and related services in Africa?
- How are waste services financed and with what policy strings attached?
- Who are the main private waste collection operators?
- What are the relationships between private waste collection operators, municipal operators, informal workers and their cooperatives?
- In what way can working conditions in municipal solid waste services in Africa be improved?

2. Methodology

This report is based on desk research. It uses reports, policy documents, academic articles and newspaper articles to provide an overview of municipal solid waste management in Africa and the Arab Countries. One of the key challenges in writing this report has been that there is no reliable, current and comprehensive data available. The recent United Nations Environment Programme (UNEP) report, '*Africa waste management outlook*', came to a similar conclusion.[1] What is an obstacle for researchers is in fact a major challenge for efficient waste management in Africa and in ensuring that waste workers enjoy decent

[1] For the report on Latin America see: Lethbridge, J. (2017) Municipal Solid Waste Services in Latin America. PSI. Available at: http://www.world-psi.org/sites/default/files/documents/research/web_en_lrgm_waste_report_ia_20174.pdf

[2] For the report on Europe see: Weghmann, V. (2017) Waste Management in Europe. Good Jobs in the Circular Economy. EPSU. Available at: https://www.epsu.org/sites/default/files/article/files/Waste%20Management%20in%20Europe.%20Good%20Jobs%20in%20the%20Circular%20Economy%20for%20web.pdf

working conditions. Without proper data and adequate collection systems the monitoring of, for example, the African Union's goal that African cities recycle at least half of their waste by 2023, cannot be achieved.

What is known, is that the levels of waste being generated in Africa are increasing. However, the workers who are responsible for dealing with it – both formally and informally – are not given sufficient recognition for the vital contribution that they make to recycling, re-using and disposing of the waste in a safe way. [3]

This is a particular challenge given the lack of reliable labour statistics about waste workers – whether they are in the formal or informal economy. Waste workers are some of the most vulnerable workers at a municipal level, facing serious health and safety concerns, in jobs that are often precarious, often fail to meet the standards of decent work, and with workers, in many cases, having few, if any, labour rights.[4] Comprehensive data on waste workers, whether in the formal or informal sector is urgently needed in order to help trade unions develop policies that will strengthen waste workers access to labour rights and decent working conditions.

3. Municipal Waste Services in Africa

3.1. Importance and benefits of effective local waste services

Effective waste management is essential for public health and for maintaining a healthy, safe and sustainable environment. If it is not properly managed, it can pose serious health and environmental problems and pollute our waters, soils and air. Due to the lack of waste management services in many African cities the burning of waste is a frequent occurrence. This is a major contributor to high levels of air pollution, although it is hard to quantify the exact impact as there are no emissions inventories for African cities. The Organisation for Economic Co-operation and Development (OECD) estimates that in 2013 around 712,000 people in Africa died as a consequence of dirty air, which was a 36% increase from 1990.[2] Air pollution particularly affects Africa's urban areas.

Mismanaged waste also causes clogging of rivers and drains, which causes floods. Stagnant water is also a breeding ground for mosquitos and other disease carrying insects. Consequently, it facilitates the spreading of diseases carried by mosquitos, such as Malaria, Zika virus and the dengue fever.[3]

[3] This attitude is also reflected in the terminology used by academics, researchers and practitioners. In a report commissioned by Women in Informal Employment Globalizing and Organizing (WIEGO) Melanie Samsons highlights that the most common term in the literature referring to informal waste workers is 'scavenger', a term which is essentially dehumanising – animals scavenge for food, not humans.[3] WIEGO uses the term 'waste pickers' in English and "recicladores" in Spanish.. This report uses use the term waste workers regardless of whether people work in the formal and informal economy and use the term recyclers for the specific task of taking recyclable material out of the general waste and re-processors for the specific task of processing recyclable material.

[4] See Cibrario, D (2018) SDG 11: To ensure sustainable waste services, we must value waste workers and make sure they are in decent jobs. Available at https://www.2030spotlight.org/sites/default/files/spot2018/Spotlight_2018_web.pdf

Waste is polluting oceans too. According to Greenpeace, 12 million tonnes of plastic are entering the world's oceans every year. [4] A lot of waste ends up in the sea via rivers, which carry trash over long distances and connect nearly all land surfaces with the oceans. Ten of the most polluting rivers in the world are responsible for 90% of plastic in the Oceans, and two of these rivers are in Africa, namely the Nile and the Niger. [5] The Oceans are now so polluted that over 90% of sea birds have plastic in their guts[6]. Fish also eat the plastic, as it smells like food to them.[7] In Northwest Atlantic, 73% of deep-sea fish are eating plastics.[8] The Indian Ocean is even more polluted than the Atlantic[9], and it is therefore safe to assume that fish on the African shores are also badly affected by plastic waste. While researchers have found that chemicals in the micro-plastic can be released during ingestion and cause toxicity, it is unclear if the plastic particles actually carry toxic chemicals. Therefore, the health risks associated with consumption are not yet accurately evaluated. [10]

For Africa, all these problems are going to increase rapidly, as the amount of municipal solid waste is expected to rise quickly, due to growing populations, increasing urbanisation, and changing consumption patterns. Africa's population is expected to grow from approximately 1.2 billion people in 2015 to almost 2 billion by 2040. Currently, around 40 % of the population in Africa live in urban areas (as of 2014). Rapid growth in urban areas (3.5 % per year – a faster rate than any other continent) is likely to result in the doubling of the urban population to over 1 billion people in 2040.[11] Eastern and Western Africa, are the two most rapidly urbanizing sub-regions in Africa.[12] As the population grows and urbanisation increases, so does the amount of waste. In 2015 the annual waste generation for urban Africa was 124 million tonnes. By 2040, it is expected to reach 368 million tonnes (see Table X).[13] In other words, the urban waste will increase by nearly 200% by 2040. Several studies have also identified a correlation between a rise in income, leading to a rise in consumption and a consequent rise in the amount of municipal solid waste generated.[14] In Africa, waste is therefore expected to rise as it has a growing middle class[5] and the majority of African countries aim to achieve 'middle income status' by 2025.

Table X: Urban waste generation in Africa (millions per year, in tonnes)

2015	2020	2025	2030	2035	2040
123.7	165.1	210.9	258.1	309.4	367.7

Source: UNEP (2018) Africa Waste Management Outlook. UN Environment Programme, Nairobi, Kenya. P 15.

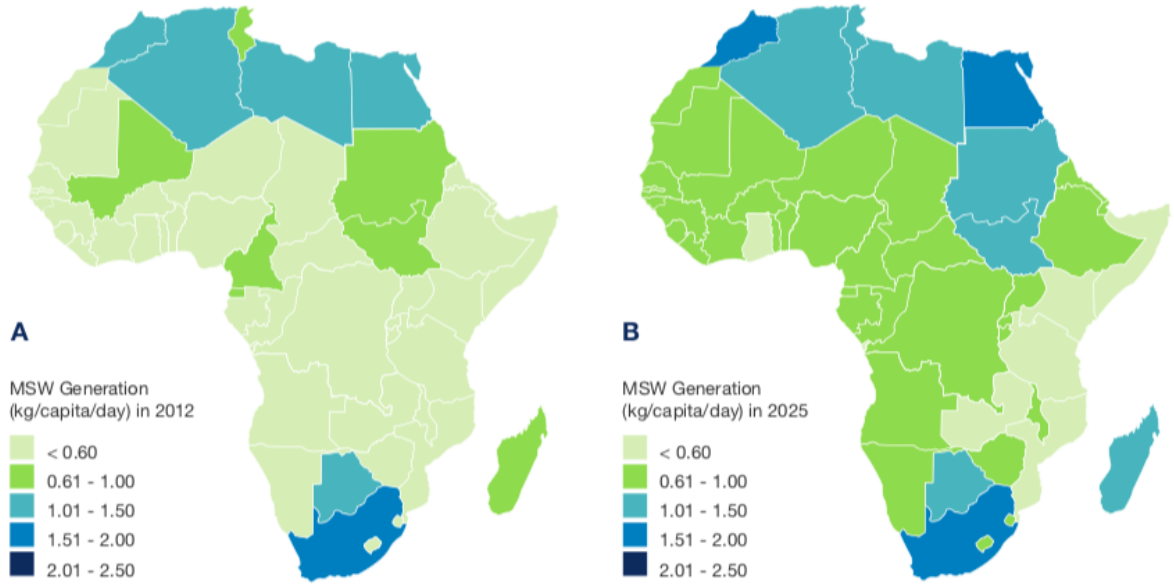
3.2. Waste generation

Estimates on how much waste is generated in Africa are based on urban areas, as there is hardly any data available for rural waste generation and management. It is assumed that waste generation in rural areas is much lower, due to lower consumption levels and lower purchasing power as well as higher re-use patterns. In total it is estimated that Africa generates around 125 million tonnes of waste a year (figures from 2012). [15] Currently, the amount of waste generated in Africa is less than in developed countries. The average per

[5] This report uses the World Bank definition of middle class defines as middle class as a group of people with a minimum of anything from US$2 to $10 monetary income/expenditure a day. Yet, the term middle class is problematic as $2 a day is just minimal above the international poverty line of $1.90 a day.

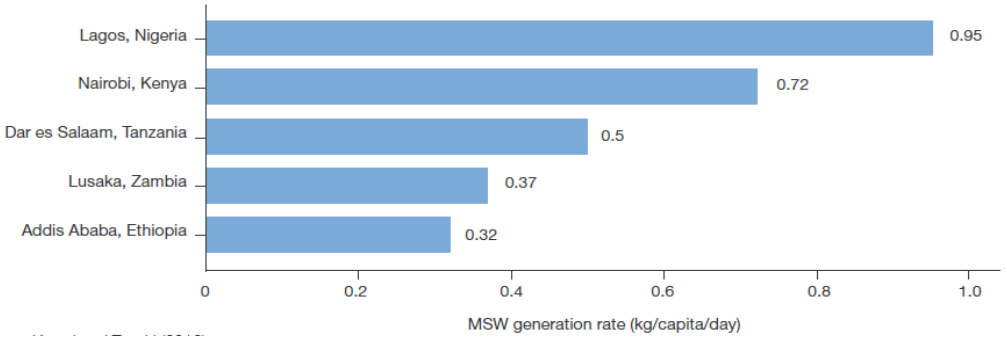
capita waste generation in 2012 was only between 0.78 kg and 0.8 kg of solid waste per capita/day compared to the global average of 1.39 kg/capita/day.[16]

Yet, the amount of waste generated differs significantly between countries and regions. The daily waste generation per capita is much higher in North African Countries, and South Africa than in the rest of the continent. [17] This is largely due to higher purchasing power and consumption in these countries. However, changes in consumption and production patterns in Africa are beginning to change what waste is produced and how much is generated. With an increased income, more people turn towards Western consumption patterns, thereby increasing the amount of waste generated. In addition, global waste trade and illegal waste trafficking from high income countries to Africa have increased waste generation in Africa. [18]



Due to variations in consumption patterns and difference in population the total quantity of waste produced differs enormously between African cities (see Figure X).

Figure X: Quantity of Municipal Solid Waste generated in selected African cities

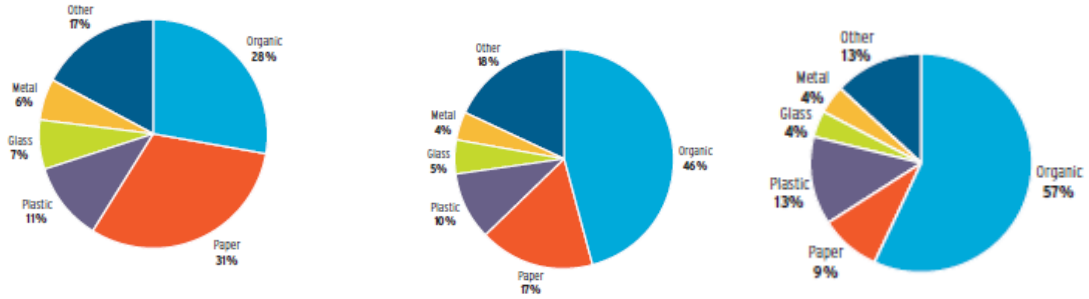


Source: Kawai and Taskaki (2016) in UNEP (2018) Africa Waste Management Outlook.

3.3. Waste Composition

In sub-Saharan Africa, waste composition is characterised by a high percentage of organic waste due to the preparation of fresh food, and the use of less packaging in goods that are sold (See Figure X).[19] It is estimated that 57 % of waste is organic, 13 % is plastic, 9 % paper or cardboard, 4% glass, 4% metal, and the remaining 13% is other materials.[20] This is very different from the waste composition in high income countries, where only 28% of the waste is organic waste and it is also above the global average of 46% organic waste (see Figure X).

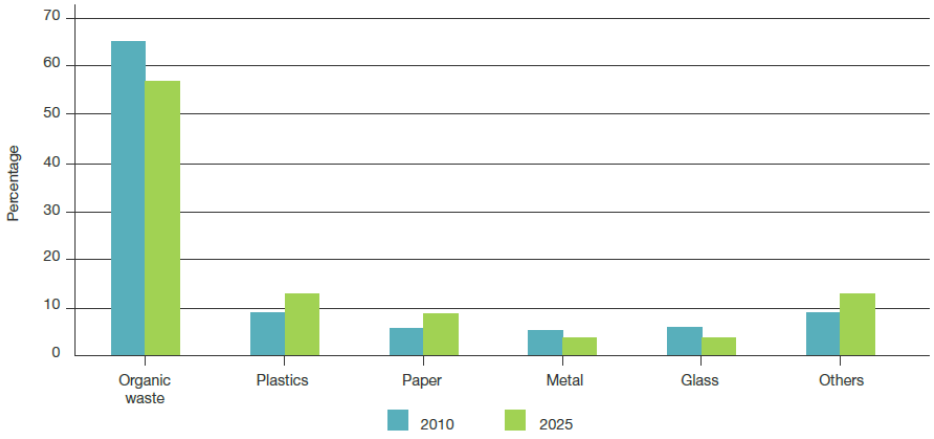
Figure X: Waste Compositions in High-Income Countries [6] Figure X: Waste Composition globally Figure X: Waste composition in SSA



Source: World Bank (2012) What a Waste. P. 19

However, the changing production and consumption patterns in Africa are reflected in slow changes to the composition of waste. The share of organic waste has gone down in recent years, while the share of plastic and paper has gone up. This trend is expected to continue, as income levels are predicted to rise (See figure X).

Figure X: Changing composition of wastes in Africa



[6] The Word Bank defines high income as those with an GNI per capita of $12,056 or more in the 2019 fiscal year.

Source: Hoornweg and Bhada-Tata (2012), in UNEP 2018.

The high amount of organic content means that the waste is very moist. High tropical rainfall, which is common in many African countries, increases the moisture content even further. Due to the different nature of the waste it is important to bear in mind that certain technologies for waste management developed over the last 40 years in the Global North are inappropriate for export to most African countries. For instance, compactor trucks designed for light waste with a high content of voluminous packaging materials are not appropriate technology in many African countries. High organic content also means that composting initiatives should be encouraged, which would help reduce landfill disposal (see section 3.4).[21]

Approximately 13% of municipal solid waste in Africa is plastic. The best way to address plastic waste is waste avoidance. Some African countries are already beginning to take steps to limit the amount of plastic (see section 4.10).

3.3.1. Hazardous waste

Countries in Africa have to deal with a range of different hazardous waste. This includes hazardous household waste, health care waste, e-waste, used lead acid batteries (ULAB), nanowaste, and marine litter. However, because of the limited data that is available, it is difficult to determine how much hazardous waste there is. Generally there are no systems in place to deal with hazardous household waste, with the result that it is often disposed of down the drain, which has negative consequences for the environment and human health.[22]

Despite the Bamako Convention (see section 4.1.4.), the importing of hazardous waste into Africa continues to be a problem. Since the disposal of hazardous waste is more strictly managed and costs more in developed countries, disposing of the hazardous waste by exporting it to African countries becomes a cheaper way to get rid of the waste. In August 2006, the cargo ship Probo Koala discharged 500 tons of toxic waste in Abidjan, Ivory Coast, killing 17 people and poisoning thousands more. The company involved, Trafigura, a Dutch international petroleum trader, tried and failed to get rid of the waste in five countries: Malta, Italy, Gibraltar, The Netherlands and Nigeria. To dispose of the waste relatively safely in Amsterdam would have cost the company US$620,000. In search for a cheaper disposal method, Trafigura hired a local Ivorian company to dispose of the waste illegally for just US$17,000 – a fraction of the price quoted in the Netherlands.[23] The waste was dumped at Akoudo, the open and unsanitary landfill site located in a poor residential area of the city. Trafigura paid the Ivorian government USD $195 million and was then granted immunity from prosecution.[24]

A recent report by the UN Special Rapporteur on hazardous substances and waste noted in particular that the transfer of hazardous and toxic waste from wealthier countries to those with lower levels of protection contributes greatly to workers and communities in these countries suffering from negative impacts on their health and safety.[25] The Probo Koala case is a stark reminder of this reality.

3.3.2. E-waste

Africa generated around 2.2 million tonnes of e-waste in 2012. The average per capita e-waste generation is 1.9 kg. This is significantly less than other continents. For example, Europe produced 16.6 kg e-waste per year. However, the quantity of e-waste is rising rapidly due to increased demand in electronic products and the short life-span of many products.[26]

It is estimated that locally produced e-waste in Africa only accounts for 50-85% of the e-waste, the rest comes from illicit e-waste trading. [27] A 2015 study from the UN University found that up to 90% of the world's e-waste was illegally traded or dumped. UNEP has warned that thousands of tonnes of e-waste are falsely declared as second-hand goods and, in this way, exported from the global North to the global South, in particular to Africa and Asia. Ghana and Nigeria are expected to import most of the e-waste, which is facilitated by the absence of laws and regulations that discourage or prohibit imports of used materials.[28] A recent study by the UN University and Basel Convention Coordinating Centre for Africa illustrates one aspect of how this illegal trade takes place. The study discovered, by inspection of containers and vehicle in Nigeria's ports in 2015 and 2016, that the empty space in second hand cars is not only used to export working, second-hand electronics from China, Europe and the US to Nigeria but also e-waste. The study found that 19% of the tested devices were non-functional, in other words disguised e-waste. Based on these findings the authors estimate that at least 15,600 tons of e-waste is illegally imported to Nigeria through used cars or containers every year.[29]

Very few countries have passed any legislation regulating the issue of e-waste. The exemptions to this are Madagascar, which passed legislation in 2015, and Kenya and Ghana, which passed it in 2016. South Africa, Zambia, Cameroon and Nigeria are still working on legislation. Ghana passed the Hazardous and Electronic Waste Control and Management Act of 2016, which was followed by regulations.[30] Under this new law a manufacturer or importer of electronic equipment is required to register with the Environmental Protection Agency (EPA) and pay electronic waste levy for the electronic equipment that is imported into Ghana or manufactured in the Ghana. Offenders risk a fine, imprisonment and are also liable for the cost of cleaning up any contamination caused by the waste.[31] Despite these attempts to control the e-waste sector, Ghana still receives around 192,000 tonnes of e-waste annually – most of it going to the Agbogbloshie dump in Accra. This pollutes the local soil, air and water but also poses serious health threats to the 10,000 informal waste workers that earn their living through sorting and recycling. [32]

3.4. Waste collection

Figures from 2012 reveal that the total waste collected in Africa was only 55 % of total waste generated. In sub-Saharan Africa the collection rate is even lower at 44 %. In poor areas the problem is particularly acute, with limited or non-existent waste collection services. This is striking as over half of the population in Sub Saharan Africa lives in poor

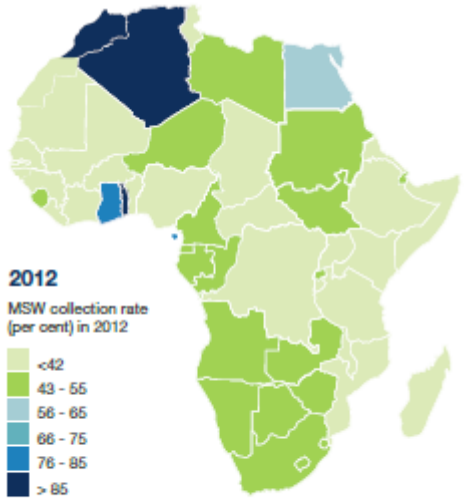
areas, often in informal housing.[7] [33] Consequently, residents are forced to deal with the waste themselves, which often leads to illegal dumping and open burning.

Yet, collection, rather than disposal, has in general been the focus for local government in dealing with waste. For example, in Tunisia the cost for waste collection and transport was 75-100% of the total solid waste management budget.[34] Integrated waste management services are not very common in Africa but it is practised in some areas, for example in Zanzibar (see Box X) and South Africa.

In countries where there is a breakdown of government services because of war or economic crisis, waste management services are often the first to suffer. For instance, in Zimbabwe in 2000, the economic crisis meant fuel supplies were low, which meant waste collection and service delivery were badly affected. Decades of war in Somalia resulted in waste being dealt with by residents dumping it openly in towns.[35]

The collection coverage varies considerably across countries, regions and cities and between urban and rural areas. (see Figure X). Around 60 percent of Africa's population live in rural areas[36] but there are hardly any waste management services available outside of the major cities.[37] For example, in Tunisia municipal waste collection is estimated to cover at 80% in urban areas and only 10% in rural areas.[38]

Figure X: Municipal Waste Collection Services in 2012 in percentage

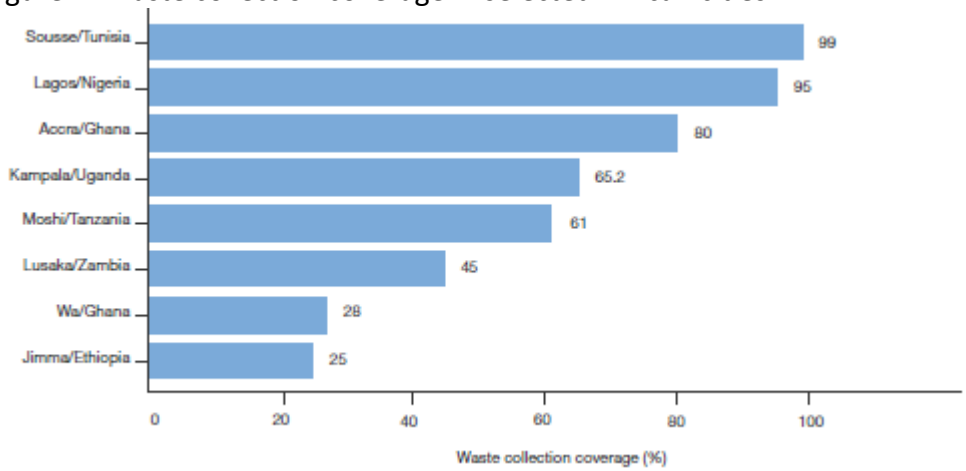


Source: UNEP (2018) Africa Waste Management Outlook. P. 30.

[7] These areas are often known as informal areas, or slums. UN Habitat defines a slum household as one "in which the inhabitants suffer one or more of the following 'household deprivations': lack of access to improved water source, lack of access to improved sanitation facilities, lack of sufficient living area, lack of housing durability and lack of security of tenure".

Some cities have achieved very high collection rate. For example, in Sousse, Tunisia and Lagos, Nigeria, waste collection coverage can be higher than 90 %;[39] whereas in Jimma, Ethiopia, the collection rate is as low as 25%. Waste collection performance can vary a great deal within the same country: for example, the city of Wa in Ghana has a collection rate of 28%, which is well below the continental average of 55%, while in the capital Accra coverage is over 80%. These differences generally result from different access that local structures have to infrastructure, capacity and financing.

Figure X: Waste collection coverage in selected African cities



Source: UNEP (2018) Africa Waste Management Outlook. P. 31.

Within cities there is also often a great discrepancy in terms of waste collection coverage, with the inner cities areas and wealthy neighbourhoods enjoying good coverage while the poor and neighbourhoods are often left out. In city centres the coverage can be over 90%, while in marginalised areas the coverage can be as low as 10%. For instance, many low and middle-income parts of Nairobi don't have any formal waste collection systems in place. Since the 1980s when a series of by-laws meant that residents no longer had to pay a collection fee for waste services, the City of Nairobi has had to fund these services from other sources. As the number of residents and areas needing servicing increased the City was increasingly unable to cope with the funds that they had. As a result, waste management services were increasingly contracted out in particular areas. More middle class areas, which can pay, now tend to receive better services than poorer areas where residents cannot afford to pay at all, or only pay a small amount.[40] With waste accumulating in open areas near to people's houses and in the streets, in rivers and channels or being burned in the neighbourhoods, there is an increase in dangerous emissions that harm people and the environment.

South Africa also faces a similar situation - of inequality in the waste management services that are delivered in different areas. The middle class areas generally have a formal system of collection with trucks, while many of the poorer areas have a more informal service, or a service that has been contracted out, or a very erratic and inadequate service from the municipality. There are many reasons for this – the legacy of apartheid has resulted in an inequitable service which municipalities have not managed to overcome; increasing numbers of people coming to the cities and living in informal housing; lack of prioritisation

of waste delivery services by municipalities; and a general lack of institutional capacity by municipalities to deal with waste services.[41]

Dar es Salaam is an example of a city where the privatisation of waste services has led to good coverage in the city area, while poorer neighbourhoods are left out as private providers naturally only service areas where they receive a return, in other words in areas where residents can afford to pay a fee for their waste collection.[42]

In other cities, the municipality remains responsible for waste management services to all areas. Interestingly, in Algeria, which is among the best performers in terms of waste collection (see Figure X), waste management is publicly owned and managed with very little private sector involvement. [43]

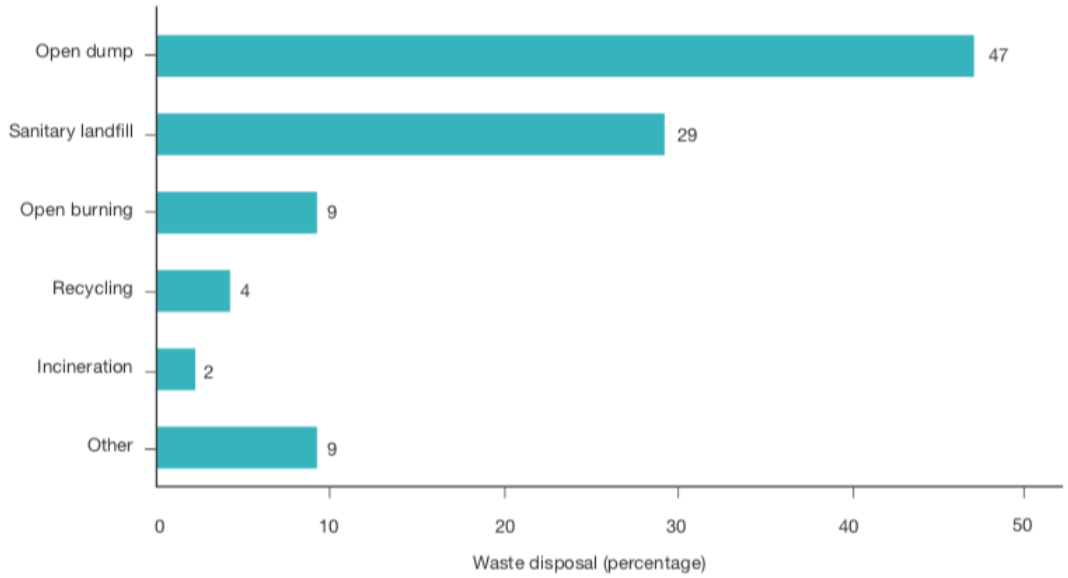
Informal waste collection happens in all cities to a greater or lesser extent. For example, in Kinshasa, Democratic Republic of Congo, almost all (98%) waste collection services are provided by the informal workers.[44]

The actors involved in municipal waste collection in African cities vary among, countries, areas and cities. Services are often delivered by a combination of actors and organisations, ranging from cooperatives of informal workers, NGOs and community groups, to private companies contracted by the municipality and individual waste pickers. These different actors are covered in more depth in section 6 of this report.

3.5. Waste Disposal

Waste can be disposed of through a variety of mechanisms. In Africa open dumping is by far the most common one. Open dumping refers to the unplanned dumping of waste without the involvement of environmental protection mechanisms. Almost half of Africa's waste is estimated to end up on (controlled and uncontrolled) open dumps. Another 30% of the waste is estimated to be disposed of in formal landfill sites, while open burning is another frequently used mechanism to get rid of waste.[45]

Figure X: Municipal Solid Waste Disposal Methods



Source: Worldbank (2012) What a Waste. In: UNEP (2018) Africa Waste Management Outlook. P. 27

3.5.1. Undisposed or unofficially disposed waste

While no official data is available it is clear that uncontrolled dumping is a common mechanism to get rid of waste. In Lagos, Nigeria, there are about 5000 illegal dump sites.[46] In Nairobi, Kenya there are over 70 illegal dumpsites scattered throughout the city where most private waste collectors dump collected waste.[47] In Dar es Salaam, Tanzania, 70% of the waste is either disposed of informally or illegally dumped into waterways, fields, or burned.[48] In Freetown, Sierra Leone, less than half of the total waste output is disposed of at one of the two major dump sites. Almost 127 tons remains uncollected, and is dumped informally, posing a major health and safety threat to communities and the environment.[49]

Open burning is frequently used as a way of dealing with undisposed waste, especially in areas where waste collection is non-existent. The consequences on the health of local communities are severe: for example, in Accra, Ghana, there is high incidence of respiratory disease among the families who burn their waste due to the lack of formal waste collection services. Children and women are often the most affected as they are mainly responsible for household waste open burning. Open burning also severely harms the environment and future generations by increasing greenhouse gasses, thus contributing to climate change, clearing land and contributing to high levels of pollution.[50]

3.5.2. Landfills

Many cities in Africa have only one official landfill site for the whole city, which in many cases is overflowing and a serious health and safety concern. For instance, in Abidjan, Ivory Coast, the only existing landfill site for many years was Akouedo (constructed in 1965). It badly polluted the surrounding area and is due for closure. Two new ones are being built to take its place. The first, which is located in Kossihouen, is a privately-operated landfill site and is up and running. The second one, at Attiekoi, is a publicly operated landfill and is not yet functional.[51]

Many countries have large numbers of illegal or informal landfills. For instance, in South Africa, out of 1 203 general waste landfills sites, only 524 are actually registered. Even those that are properly registered are generally not properly managed according to the required regulatory standard.[52]

The site of the landfill can also be a problem and can generate conflict between municipalities and local communities. In many cities it is located within the city, close to residential areas. Even when it is located outside the city it can encroach on land that could otherwise be used for more socially productive purposes, such as farming. The Repi landfill site (also known as "Koshe") in Addis Ababa, Ethiopia, is an example of the conflict that can result from the location of landfill sites. When this landfill site became operational in 1968 it was outside the city. Over the years, however, Addis Ababa has grown and Repi is now located within the city. The plan was to close it and send the waste to another landfill site in Sendafa, outside of Addis Ababa. Sendafa is home to the country's largest ethnic group, the Oromo, who already feel marginalised by the government.[53] In 2015 local communities protested vigorously against the location of the landfill site at Sendafa, blocking trucks from dumping waste. The protests stemmed from the fact that local farmers had been evicted in order to establish the landfill. The farmers claim they were not adequately compensated, and the promised jobs from the new development had not materialised.[54] Eventually Repi had to be brought back into use. The continuous use of Repi has had fatal consequences. In March 2017 part of the landfill collapsed, killing 113 people (see also section 7.1). Around 500 informal waste workers are believed to work at the landfill. The waste workers and the communities around the landfill are exposed to great health risks due to the contamination of water.[55]

The Oum Azza landfill in Morocco is considered as the largest modern landfill in the Maghreb region. [56] It receives the garbage collected from 13 communes, including Rabat, Salé and Témara, and is managed by a private company, Teodem, the local subsidiary of French company Pizzorno Environment. Oum Azza currently has an annual capacity of over 850,000 tonnes. [57] In 2010 the previously informal waste workers have organised themselves into a cooperative, called At-Tawafouk, and are now formally responsible for the recycling (see section (7.3).

Senegal does not have a fully functional landfill site. There are four landfill sites where waste is dumped - in Saint-Louis, Sindia (which is near Dakar), Mbeubeuss and Thies, but all of them face difficulties in functioning fully. The site in Saint Louis was not properly operated and has been turned into a large unregulated dumpsite. This landfill site was not completed due to a lack of resources. The Sindia site was meant to replace Mbeubeuss, an old landfill site, and one of the largest open dumps in the world. It is regarded as a major environmental, health and safety hazard, and the government has come under strong pressure from environmentalists to close it down. However, an estimated 3500 workers make a precarious living from salvaging, selling and recycling material from this landfill site. The city attempted to close down Mbeubeuss in 2008, but this was strongly opposed by the site's workers and the site was left open.[58] The Islamic Development Bank is currently supporting the development of three new landfill sites - in Tivaouane, Touba and Kaolack. The World Bank has also lent money to the Senegalese government to improve the provision of solid waste management services, particularly in Dakar. The focus of the grant is

to gradually close down the Mbeubeuss site, and establish another treatment and disposal site. The plan is to develop this new landfill site as a public-private partnership.[59]

In Lebanon, the landfill Naameth received three times as much waste as it was originally designed for. Due to a sit-in protest organised by nearby residents the landfill was finally closed on the 17th of July 2015, yet there is no alternative solution in place.[60] Two landfills are currently being constructed. However, in the meantime the waste gets collected by a private company, Sukleen, and then stored temporarily in parking lots until the construction of the new landfills is completed. A lot of the waste just piles up in the streets. The Naameth landfill, while closed, has not been probably dealt with. It is located in close proximity to the beach. As a consequence of storms, the marine retaining wall surrounding Naameth failed to contain the trash, which then flowed into the sea. In January 2018, massive amounts of waste piled up on the beaches of Lebanon. [61]

Box X: Waste Movement in Lebanon

When the Naameh landfill was finally closed on the 17th of July 2015 and there were no alternative disposal plans for the waste, the crisis erupted. The waste started to accumulate in residential areas and consequently people started to burn their rubbish. The toxic fumes polluted the air and dark clouds rose over Beirut. Outraged by the unbearable situation residents started to organise protests. On the 25th of July and August 2015 a demonstration with over 1000 protesters demanded an end to the waste crisis.[62]

The movement was led by a group called “You Stink” (tul‘it rihetkun), which consisted mainly of educated, young people but the movement attracted people from various backgrounds, including many families and individuals who did not have much experience with activism. The government responded to the protests with violence: the police used tear gas, fired bullets in the air towards the crowd, and beat up protesters. While the movement was initially about environmental demands it soon focused on police violence and much broader political and social grievances in Lebanon.[63]

Nairobi's only legal dumpsite, Dandora, was declared full in 1996. More than 30 years later it is still operating. [64]. Dandora is an open landfill, surrounded by residential areas. The dumpsite puts the health of the people living around it at risk. The Nairobi River, running right across the dumpsite, carries polluted water downstream where it is used for irrigation of food products and for drinking water. [65]

In Freetown, Sierra Leone, a 2014 assessment of the two major dumpsites showed that people living in and near the sites were exposed to diseases and contamination of their air, soil, streams and sea. The waste is burnt without first being sorted, leading to toxins being released into the atmosphere and serious air pollution.[66]

In some cities landfill sites are managed directly by the municipality, while in other cities private companies have been given a contract to manage the site. As the examples above illustrate, many landfill sites, whether managed by the municipality or a private company,

are poorly managed, struggle to cope with the amount of waste they receive, and are a constant source of health and safety hazards.

The unsafe conditions many landfills and dumps are in and the environmental and public health damage they cause illustrates the urgent need for a revised and integrated waste management system in Africa. The UN Special Rapporteurs report on hazardous substances and waste has highlighted the problem of waste workers being exposed to harmful substances, particularly on landfill sites.

Community attitudes to landfill sites has at different times and different places resulted either in opposition to closing a particular landfill site (because of the living it gives to informal waste workers) or opposition to a landfill site being established (because of the environmental impacts or because it will use farming land). This shows the importance of consulting workers and residents first before large construction projects are initiated.

3.6. Waste to Energy

Waste-to-energy, a process that generates energy in the form of electricity, heat or fuels from both organic and inorganic waste, is spreading fast worldwide. Burning waste with incinerators to generate energy is a profitable business opportunity. According to recent market research the global waste to energy market was valued at approximately $24 billion in 2014 and is expected to increase to $36 billion by 2020.[67] For the African Development Bank, as well as a range of international aid agencies, waste to energy fits in well with their commitment to extend access to electricity across the continent.[8] The Sustainable Energy Fund for Africa (SEFA), a fund administered by the AfDB, which aims to support small and medium scale renewable energy projects in the private sector has made a number of grants for waste-to-energy plants.

With the possibility of turning waste into energy, waste becomes an economic opportunity, a useful commodity which private companies can be paid to collect, and then paid again for the electricity that the waste generates. The waste-to-energy incinerators are expensive to build, so for companies to make a profit and to recover the investment they need a guaranteed stream of waste. Due to the high investment costs, municipalities usually sign long-term contracts with private incinerator providers, which binds them to deliver a minimum quantity of waste or to pay compensation fees in case this does not happen. This kind of arrangements tends to discourage recycling waste minimization policies, and create competition between informal waste workers and private recycling actors. [68] Thus, while waste-to-energy is often promoted as an environmentally friendly alternative to landfilling, it often ends up discouraging waste prevention as well as recycling. There are also numerous studies which call into question the health and environmental risks posed by burning waste.[69]

[8] The generation of electricity through waste to energy plants aligns with a number of AdB strategies, including the High 5 development priorities, the agenda to Light up and Power Africa, the 10-year Strategy, the Private Sector Development Strategy (2013 – 2017), the Energy Sector Policy 2012, and the New Deal on Energy for Africa.

In Africa, this sector is only just beginning to grow, but is expected to grow fast. At the beginning of 2018 the Ethiopian capital Addis Ababa opened Africa's first waste-to-energy plant at Addis Ababa's only landfill, Koshe (also known as Repi). The plant is run by a consortium of private companies, namely Cambridge Industries Limited (Singapore), China National Electric Engineering (China) and Ramboll, a Danish engineering firm. The consortium aims to set up a series of waste-to-energy facilities in major cities across the region.[70] The waste-to-energy plant is expected to incinerate 1 400 tons of waste per day, which is about 80 percent of the Addis Ababa's waste and is predicted to serve 30 percent of the city's households electricity needs. The incineration is set up to meet European standards on air emissions.[71] The waste-to-energy facility will be owned by the state power utility company Ethiopian Electric Power Corporation (EEPCo) and is expected to provide 100 skilled jobs in Addis Ababa.[72] A gas project (methane capture and flaring) has also been constructed at Repi. [73]

Nairobi also has plans to build a waste-to-energy plant. At the end of 2017 the African Development Bank approved a $995,000 grant to Asticom Kenya Ltd, to support the construction of a 10 MW municipal waste-to-energy plant in Kibera.[74] As the grant will only fund the cost of conducting a full environmental and social impact assessment, detailed engineering designs, and provide project-related legal advisory services, as well as financial/transaction advisory services, it can be assumed that the actual construction of the plant is likely to be contracted to the private sector.

In West Africa, Ghana has recently commissioned Armech Africa Limited, a joint venture between a Ghanaian company Doxa Worldwide and New Zealand's Armech Group, to build a $300 million waste-to-energy plant in Tema. Armech Africa Limited works in close association with Clarke Energy from the UK. [75] The Industrial and Commercial Bank of China, a Chinese Multinational Bank, financed the project. [76]

In South Africa, the Drakenstein Municipality in the Western Cape planned a waste-to-energy plant. It was meant to be a public-private partnership between the municipality and Interwaste, a South African waste company. Power Africa, a United States of America government initiative which focuses on increasing access to energy in Africa through facilitating private sector participation, was involved in facilitating the project.[77] However, the plant met strong opposition and in May 2018 the council announced that it was abandoning the project.[78] Local residents and businesses opposed the plant on a number of grounds – they argued that the tender was incorrectly awarded; the incinerator would be harmful to the environment and health and safety of residents; and on the basis that the municipality had not considered other options such as waste reduction, recycling and re-use.[79]

In Cape Town, South Africa, a waste-to-energy plant was opened in Athlone in 2017. It is a private sector initiative a Joint Venture between Waste Mart and Clean Energy Africa. New Horizons Energy, a subsidiary of CEA, will run the plant. It will convert municipal solid waste to energy, with an estimated 10% of municipal waste being sent to the plants instead of to landfill sites. Waste Mart already has a contract to collect municipal waste on a daily basis in the city. New Horizons Energy will run the plant.[80]

In general, waste-to-energy plants represent a new area of privatisation –both in relation to waste management and energy. Private companies are taking on contracts to collect and dispose of waste, and then they get a second contract to turn this waste into useable energy – essentially a form of double-dipping. Waste-to-energy plants which end up releasing toxic fumes into the atmosphere and contributing to pollution should be avoided altogether. But where it is possible to make use of biogas digesters to convert waste into energy, municipalities need to be exploring the possibility of setting up these plants themselves as a way to finance their overall waste management services bill.

3.7. Recycling systems

The empirical data on recycling in Africa is very limited as a lot of recycling is done informally. There are only a few formal recycling systems in place and it is estimated that the average recycling rate in Sub Saharan Africa is only 4 %.[81] However, due to the lack of data it is hard to tell if this estimate is correct. There are also huge variations from country to country and area to area. What is clear is that, given the high percentage of organic waste produced in Africa, the potential for zero-waste management is very high. Traditional methods, such as feeding organic waste to animals and composting achieved the best results. In Egypt, the Zabaleen community, a Christian community that specialised in urban waste management, (see Box x on page x) demonstrated that this can be an efficient and environmentally friendly method even in mega-cities, such as Cairo. The method of feeding organic waste to animals has also been used in other cities, for example in Sousse in Tunisia, Moshi in Tanzania and to a lesser extent in Nairobi, Kenya.[82] In the Ugandan capital Kampala, the Kasubi-Kawala neighbourhood set up a waste management system for 75% of their organic waste, which involves feeding animals, composting and making biofuel out of municipal organic waste.[83] Bamako, Mali has an estimated 85% municipal waste valorisation rate.[9] Most waste is either feed to pigs or reused through a traditional method called "terreautage", whereby unprocessed waste is sold to crop farmers, while partially composted waste is sold to vegetable farmers. [84]

Box X Aiming for Zero-Waste: Integrated Waste Management in Zanzibar, Tanzania
Zanzibar is currently piloting an integrated municipal waste management system with the aim of becoming a zero-waste island. More than 80% of the waste is wet organic waste, so compositing is key. The pilot started in September 2017 in a low-income area of Zanzibar called Shauri Moyo, where 200 households were selected, which represents 1/3 of all households in the neighbourhood. Each household received bins and plastic bags to sort the waste into wet, dry and hazardous waste. Eight workers – mostly women - from the local Shaurimoyo Waste Management Society (SWMS) are given the responsibility of educating the households on waste segregation, collection and processing. The workers receive a monthly salary and they can make extra income on top from selling the compost as well as dry waste such as metal, plastics, glass and carton paper. The project was launched by the Zanzibar Environmental Management Authority (ZEMA) and the public interest research and advocacy organisation Centre for Science and Environment (CSE) in India together with the local municipal councils of Zanzibar.[85] [86]

[9] Valorisation is the process that involves the transformation of organic waste into something else, by reusing, recycling or composting waste.

In Ouagadougou, Burkina Faso, the opening of a first recycling centre has not only made the city cleaner and safer, but it has also created jobs and income for the local community. Around 30 women manage the centre, with approximately 2000 informal collectors bring waste to be recycled.[87] Despite some encouraging experiences such as the one in Ouagadougou and Zanzibar (see Box X), the general lack of integrated waste management systems in Africa means that most recycling takes place directly on dumps by informal waste workers. In Nairobi the bulk of recycling takes place at the county's dumpsite called Dandora, where there are over 3,000 informal workers recovering different recyclable waste materials. Middle men are also present at the dump who buy the recycled material to process it further.[88] In Dar es Salaam most of the recycling takes place on its only dumpsite, Pugu. Informal waste workers recycle, among other materials, 80% of plastic bottles, which are then sold to national factories for processing and sale to national and international markets.[89] However, China's recent ban on recyclable waste could impact countries that have not established their own processing facilities and have not established their own local end use markets. [90]

Informal waste workers can save municipalities millions of US$ every year in free landfill space by diverting recyclables away from landfill sites. In South Africa it is estimated that around 80-90 % of the paper and packaging waste are recovered by the informal sector. In 2014, informal waste workers in South Africa saved the government between US$20–50 million a year in landfill costs, with no or little support from the municipality and despite a hostile environment (see section X). In Cairo, Egypt, the diversion of recyclable waste away from landfills reduced the municipal costs by US$16.9 million and in Lusaka, Zambia, by US$1.7 million per year. [91]

Formal recycling schemes are very rare in Africa. Recently, Johannesburg, South Africa introduced a mandatory recycling scheme for households. While informal recycling workers fear they might lose their access to the waste,[92] the company Pikitup claims that the informal waste workers will have better access to the already separated -waste outside of resident's homes.[93]

There is very little private sector involvement in recycling in Africa. However, an increased private sector interest in industrial sorting and recycling line for plastic bottles can be observed. Coca-Cola has announced its interest in investing in bottle recycling facilities world-wide and opened its first bottle recycling plant in South Africa in 2015.[94] Coca-Cola, as well as Unilever and Heineken are currently exploring the possibility of setting up a bottle recycling plant in Algeria. [95]

3.8. Street cleaning

Street cleaning is part of the waste management services that many municipalities are responsible for, but it often the first service to be contracted out or where labour brokers are used. It is also often an example of privatisation by the withdrawal of services – the municipality either never takes on the responsibility, or stops doing it, and hands the responsibility over to community 'volunteers' to carry out the function. The issue of volunteers carrying out waste management services is contentious one. It is often done in

the name of community empowerment or citizen duty (as in the case of Kigali, Rwanda), but it is often simply a way for the state to abdicate its responsibility and push it onto unemployed community members.

In Maputo, Mozambique, and Qena, Egypt, the municipality carries out the street sweeping responsibility. In Ouagadougou, Burina Faso, a private company is contracted by the municipality to do the street sweeping.[96] Various municipalities in Namibia, such as Walvis Bay have outsourced the street cleaning to private providers.

In South Africa, a private company, Selema Plant Hire, was contracted by the Greater Tzaneen municipality to sweep the streets. In 2016 the workers of this company went on strike over the failure of the company to agree to negotiate a recognition agreement with the union, the South African Transport and Allied Workers Union (SATAWU).[97]

In most cities the work of street sweepers is done by hand. Workers with brooms and bags walk the streets of various parts of the city sweeping and picking up waste. It is physically taxing work, can pose particular safety concerns for women workers, and has specific health and safety concerns. But mechanisation is often not the solution. It can result in job losses, it is often unsuitable for parts of the city where there are not neatly tarred roads, and it can be very expensive. In 2015 when the City of Harare bought two expensive road sweeper machines (at a total cost of US$600 000) to clean the streets between 10pm and 4am, residents argued that buying such expensive machines should not have been a priority given other serious service delivery issues facing the city.[98]

In South Africa many municipalities make use of the Extended Public Works Programme (EPW) for street cleaning. The EPW is an initiative of the national government which provides subsidies to provinces and local governments to employ workers on a temporary basis to do jobs such as street cleaning, clearing of alien vegetation, community safety, fire-fighting and so on. The EPW programme has been strongly criticized for paying very low wages, giving workers short-term contracts, and failing to equip workers with skills they can take to other jobs.

Box X: Kigali – Africa's cleanest city…thanks to compulsory work by "volunteers"

In the 2018 World Economic Forum the U.N. Environment Programme head Eric Solheim praised Kigali as the "cleanest city on the planet" in terms of lack of rubbish on the streets and green initiatives.[99] However, much of the work of keeping the city clean is done by 'volunteers' rather than by paid municipal workers.

Once a month is "Umuganda", a day of community work. The word Umuganda can be translated as 'coming together in common purpose to achieve an outcome'.[100] Residents pick up rubbish, clear land for community gardens or help to build new roads, classrooms or residential toilets for families that lack them.[101] It is a day of cleaning up but also an opportunity to catch up with the community. Umuganda is compulsory. At least one person over 18 per household must attend Umunganda. Residents are divided into neighbourhood work teams, with 20 to 150 families in each group. Non-attendance

at Umunganda, without an approved excuse from the local council, can lead to fines - 5,000-franc ($6) which is a significant amount of money for many people.[102]

Following Kigali's example also Dar es Salaam held a cleaning day campaign in 2016. The initiative requires all Tanzanian citizens to participate in regular cleaning activities of public spaces. [103]

4. Local, national and international policy frameworks

4.1. International and continent-wide policy frameworks

4.1.1. Climate change

Effective management of waste is an important contributor to the reduction of greenhouse gasses in the atmosphere, and therefore to mitigating climate change. Africa is a small contributor to greenhouse gas emission – only 3.8 % compared to the 23% of China or 19% of the United States of America. One of the sources of greenhouse gas emissions across the continent is the methane produced from the anaerobic decomposition of organic waste in landfill sites. While there is a lack of adequate data to be able to accurately quantify the contribution of methane to greenhouse gas emissions in Africa, it is estimated that Africa emits between one and seven percent of the world's total methane emissions.[104]
The United Nations Framework Convention on Climate Change (1992) calls on parties to the agreement to manage waste in a way that does not cause harm to human health or the environment. There is thus an imperative on these countries to manage waste effectively.[105]
One of the most direct ways that waste management impacts on climate change is through the release of methane from rotting waste. There are a number of different ways of approaching the reduction of methane. The most important way is to reduce the amount of waste generated and not recycled or reused so that less waste finds its way to landfill sites. It is particularly important that organic waste (including paper, cardboard, food waste and garden waste) is separated out and sent for composting rather than being added to landfill sites. Effective management of formal landfill sites, as well as getting rid of informal dump sites, are key ways of managing methane production. In addition, there has been an increasing focus on gas flaring from landfill sites as a way of capturing the methane.
The Clean Development Mechanism was a mechanism agreed to in the Kyoto Protocol (2007) which was meant to allow for the flow of climate finance to projects that aim to reduce greenhouse gas emissions. CDM financing has been used in a number of gas flaring projects at landfill sites across the continent. It is an important source of financing for private companies involved in these projects.

As section 3.5.2. shows, environmentally friendly, and effectively managed landfill sites are among the biggest challenges for waste management in countries across Africa. Controlled as well as uncontrolled dumping, and the burning of waste are major forms of disposing of waste in Africa which need to be urgently addressed as part of an effective integrated approach to waste management.

4.1.2. Sustainable Development Goals

Waste management is dealt with either explicitly or implicitly in more than half of the Sustainable Development Goals (SDGs). For instance, in target 11.6 of SDG 11, it is stated that "by 2030, reduce the adverse per capita environmental impact of cities, including by

paying special attention to air quality and municipal and other waste management." In target 12.3 of SDG 12, it was agreed that "by 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses". Target 12.4 aims to "by 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimise their adverse impacts on human health and the environment." Target 12.5 commits member states to "substantially reduce waste generation through prevention, reduction, recycling and reuse." A major problem with the tracking of SDGs in Africa, in order to evaluate to what extent they have been implemented, is the lack of data.[106]

The 2016 New Urban Agenda (NUA) also pledges to realize universal access to sustainable waste management systems, minimizing landfills and converting waste into energy, with special attention to coastal areas.[107]

South Africa, Togo and Benin are regarded as 'frontrunners' in terms of localizing the SDGs in their countries. They are among a number of countries which have taken active steps to align national and local development plans which highlight SDG commitments. Benin, for instance, has initiated a process of benchmarking between municipalities to measure progress and facilitate knowledge exchange on good practices. In South Africa, the South African Local Government Association (SALGA) is supporting national plans to align local plans with the National Development Plan 2030. In many regions in Senegal there are now mechanisms in place for integrating urban and regional development plans, as well as new urban plans in places such as Dakar (the Dakar horizon 2035). In other countries, however, such as Niger, the involvement of local government in ensuring the implementation of SDGs is weak[108].

The second AU-UN annual conference, held in July 2018, agreed on the need for the integration of the SDGs with the African Union's (AU) Agenda 2063.[109] Agenda 2063 is the African Union's strategic framework for socio-economic transformation on the African continent. In general, Agenda 2063 has more specific targets than the SDGs do[110]. The first ten-year plan for Agenda 2063 includes commitments for improving living standards across Africa. For the first 10 year plan of Agenda 2063 the main goal related to waste is for cities to recycle at least 50% of the waste they generate.

4.1.3. Waste avoidance and recycling

One of the key difficulties in determining whether the AU's goal of recycling at least 50% of waste by 2063 is being achieved is the lack of baseline data on current waste management and recycling.[111]

Some countries have set ambitious targets for reducing waste and recycling, but have generally struggled to meet these targets. For instance, in 2001 South Africa issued the Polokwane Declaration, which set a target of 50% reduction in waste to landfill by 2012 and a full zero waste plan to be in place by 2022. The Polokwane Declaration emerged in a context when South Africa, introducing a range of progressive legislation post the first democratic elections of 1994, was looking to make a shift towards recycling as a more

effective way of dealing with waste management. However, for a range of reasons, achieving these targets has been very limited - in the 17 years since the Polokwane Declaration, only 10% of waste has been diverted away from landfills to recycling.[112] These reasons include the fact that the targets established by the Declaration were not legislated ; no separation at source was introduced; and recycling as an activity was not integrated into municipal waste management services.[113]

4.1.4. Waste, health and environment

A number of commitments have been made over the years on the environment and its impact on human health. For instance, the Libreville Declaration signed in 2008 commits African countries to protect human health from environmental degradation and reaffirms implementation of the Bamako Convention.

The Bamako Convention on the ban on the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa came into force in 1998 and currently has 29 signatories. It complements the Basel Convention (established 1989), which is meant to reduce the export of hazardous waste from industrial countries to developing countries. The Bamako Convention takes this further and calls for the total ban of hazardous waste from developed countries into developing countries. The need for such a convention arose in a context where many developed countries were continuing to ship toxic waste to countries in Africa.[114] Despite this convention, 17 people were killed and thousands poisoned in 2006 when toxic waste was discharged into the landfill site at Abidjan, Cote d'Ivoire from the cargo ship Probo Koala (see section 3.3.1.).

The Bamako Convention commits African countries to minimize the production of hazardous waste within a country, ban the import of hazardous and radioactive waste into Africa from other countries, as well as control the movement of waste across borders within Africa. In order to take forward the implementation of this convention, a first Conference of the Parties (COP-1) of the Bamako Convention took place in June 2013 and a second Conference of the Parties (COP2) was held in February 2018 in Abidjan, Cote d'Ivoire. At this COP, the lack of progress in implementing the Convention was recognized, and African countries reaffirmed their commitment to implement the Bamako Convention, as part of a broader commitment to achieve the Sustainable Development Goals (SDGs). A permanent Secretariat is to be established in Mali, and an extra-ordinary COP is planned in Sudan in 2019 where the setting up of the permanent Secretariat will be discussed.[115]

To give effect to the commitments in the Bamako Convention, national governments need to pass relevant national legislation – which countries are generally failing to do.

4.1.5. Private sector involvement in waste management

Overwhelmed by the size of the waste problem (waste piling up and insufficient means of collecting it, as well as disposing of it safely and in an environmentally friendly way), many African countries have turned to the private sector to deal with the waste problem. For example, in Lagos, Nigeria the state was struggling to deliver an adequate waste management service. It was faced with a rapidly increasing population, lack of sufficient infrastructures, a lack of adequate funding for waste management, and a lack of enforcement of existing regulations. It brought in small private collectors in 2000, and then

in 2017 introduced the “Cleaner Lagos Initiative” which privatised many aspects of the waste management services to Visionscape.[116] Section 6.4.2. of this report highlights the severe shortcomings of this attempted privatisation.

In East Africa, waste management services in Dar es Salaam in 1994 was one of the first to be privatised. Other East African cities soon followed Dar es Salaam’s example and between 1997 and 2003, 15 municipalities in East Africa, in countries such as Somalia, Kenya, Uganda and Tanzania, also privatised their waste services. [117]

Municipalities generally have some measures in place to regulate private sector participation. For instance, in Ghana and South Africa private companies cannot operate legally in the waste management sector without the approval of or licence from the municipality.[118]

International institutions have promoted the use of the private sector in waste management by, for instance, often tying financial assistance to the involvement of private sector companies. For example, in the case of Egypt the German Development agency GIZ concluded that in Egypt 'the overall experience and results of private sector involvement were less than adequate'. [119] Yet, in the same report it continues to recommend Public Private Partnerships, which are a form of privatisation, for waste prevention programmes and also other waste management obligations. **[120]**

UNEP also advocates private sector involvement as a solution for Africa's waste management challenges. It argues: "One solution is to outsource landfill operation to the private sector, which can overcome municipal administrative challenges while still allowing the municipality to impose strict minimum operating requirements on the private operator."[121]

This stands in contrast to difficult experiences across the world where the outsourcing of landfills or waste to energy plants led to decreased recycling and the side-lining of informal waste workers. Cases in point are Sheffield in the UK[122], Bogota in Columbia[123], Amritsar, India[124]. Examples in Africa include Cairo in Egypt, Johannesburg in South Africa and Lagos in Nigeria (see section X).

4.2. National policies

4.2.1. Responsibility for waste management services

In most countries central government is responsible for the governance of waste management and sets out national policy and guidelines for waste management. The actual collection of waste is generally done at a local level, by municipalities. This is the case, for instance, in South Africa where municipalities are constitutionally mandated (in terms of the 1994 Constitution) to ensure waste management services are carried out, while the national Department of Environmental Affairs has oversight over the management of waste in the country and creates the policy framework. In Kenya, responsibility of the full range of waste management responsibilities including the collection and disposal of waste, regulating and monitoring the activities of waste companies and enforcing waste laws and by-laws, has been given to the local municipality.[125]

Increasingly, local government structures are getting involved in developing and implementing policy around waste management. In Dakar, Senegal, the issue of whether the city or national government had control over the waste management sector has been hotly contested. Macky Sall, elected President of Senegal in 2012, entrenched, to some extent, local government's control over the management of waste services. However, since then contestation between national and local government over who is responsible for waste management has continued. In 2015, waste management was transferred from the association of communes, CADAK-CAR (Community of Agglomerations of Dakar and Community of Agglomerations of Rufisque) to UCG (Unit of Coordination Management), which is the unit at the ministry of local government in charge of the national solid waste management programme.[126]

Municipalities face many challenges in carrying out their mandate to implement waste management services. Firstly, there is the issue of sufficient finances flowing from central government to local government to fund the services. For instance, in Sierra Leone, the 2004 Local Government Act of Sierra Leone devolved 80 functions to local councils, including waste management. As is the case in many countries, local government in Sierra Leone was not given sufficient resources and capacities to carry out all the devolved functions.

In many cases, communities are directly involved in waste management. There is also a large presence of informal waste workers involved, many of whom are self-organised into Associations.

4.2.2. Waste and national legislation

Policy frameworks for waste management are often incoherent, with legislation governing waste management often fragmented. For instance in Uganda, relevant legislation is spread over many different acts and ordinances, while in Egypt there is a lack of clarity between the roles of the governorates, municipalities, service providers and waste generators[127]. Sierra Leone presents a clear example of a fragmented system, with a lack of overall coordination. The Ministry of Health and Sanitation deals with solid waste policy, the Environment Protection Agency controls waste management facilities as well as dealing with e-waste and hazardous waste, the Ministry of Local Government and Rural Development is responsible for municipal solid waste services overall, and specific city councils are responsible for waste management in their jurisdiction.[128] In Tanzania, waste management services are covered by the Local Government Act of 1982, the Environment Management Act of 2004, as well as the Public Health Act of 2009.

Even where the legislation is strong, as in South Africa, the implementation is often weak, although there has been an increase over the last few years in the number of environmental enforcement actions as more enforcement officers have been appointed. Countries like Nigeria and Uganda also have by-laws in place to deal with waste in an environmentally sustainable way, but they are not enforced, leading to uncontrolled dumping and burning. In the case of Nigeria, this was seen as a problem of a lack of staff, weak penalties, and conflicting roles.[129]

For many countries, weaknesses in implementing waste management legislation and policy is symptomatic of a general weakness of governance at the local level.

4.2.3. The banning of plastics

Many countries have introduced bans on the use of plastic bags. In fact, Africa has the largest number of countries with a ban on the production and use of plastic bags, with 25 countries implementing restrictions on plastic bags. More than half of these countries implemented the ban between 2014 and 2017.[130]

South Africa was the first country that introduced a ban on plastic bags. Legislation was introduced in 2003 that established a minimum thickness (30 microns) for the bags, as well as a levy which customers have to pay. This was meant to encourage recycling.[131] To some extent it has worked, with 19.7% of plastic bags being recycled in 2015, and an annual increase in the growth rate of plastics recycling of 3%.[132] However, over time, customers simply factored the price of plastic bags into their shopping and the use of plastic bags crept up.[133] While Uganda introduced a minimum thickness (30 microns) for the bags as well as a levy in 2009, it did not completely ban plastic bags. In 2007 Botswana also introduced a ban on plastic bags and in 2010 Zimbabwe followed with a ban on bags under 30 microns and a levy for consumers for thicker ones. [134]

In East Africa Tanzania was the first country that approved a ban of plastic bags in 2006 but it was Rwanda which, in 2008, first enforced a ban on the manufacturing, use, sale and import of all plastic bags. A tax incentive was also provided to companies who invested in plastic recycling equipment or in manufacturing environmentally friendly bags. Initially, sufficient alternatives weren't provided and a black market in plastic bags smuggled from other countries emerged. However, enforcement has become stricter and the ban is now more effective.[135] In 2017 the East African Legislative Assembly passed the EAC Polythene Materials Control Bill aiming to prohibit the manufacturing, sale, importation and use of the materials. [136] Kenya enforced the ban of plastic bags in 2017. The punishment for contravening the ban are the most severe in the world - anyone producing, selling – or even just carrying – a plastic bag can face up to four years' imprisonment or fines of $40,000. [137] Tanzania has requested more time to implement the ban. [138] Burundi is expected to ban plastic bags in early 2020. [139] The illegal trade of plastic bags from Uganda poses a challenge for the ban in neighbouring countries, such as Kenya. [140]

A few East African countries have also introduced measures to ban plastic bottles. Rwanda introduced a ban on plastic bottles in 2018.[141] Kenya also announced a ban of plastic bottles but then decided to introduce a take back scheme instead. [142] In West Africa, several countries have instituted a total ban on the use and importation of plastic bags into the country (see table X).

In North Africa, Tunisia and Morocco banned the use of plastic bags on a national level, while in Egypt there is a regional ban in Hurghada.

The ban on plastics has had varying degrees of success in different countries. There are a number of reasons for this. Firstly, consultation over the proposed ban has not always

happened, or been sufficient. This, together with the lack of adequate alternative packaging and illegal trading has made it difficult to implement the ban. In addition, the ban has in many cases been difficult to enforce on powerful industries and many retailers.[143] While the ban has generally been celebrated as successful, some concerns over the impact of the ban on small businesses have been raised. [144] However, the effect a plastic ban, especially a ban of plastic bottles, could have on informal waste workers, is completely ignored in the debate. For example, in Dar es Salaam around 80% of the plastic bottles are recycled by informal recyclers, whose livelihood depends on the sale of plastics. Consequently, a take back scheme of plastic bottles, as was introduced in a few high-income countries, for example Norway, Germany, the US and Canada,[145] could be a better way of dealing with plastic bottles. It would not only protect the environment but also informal waste workers.

Table X: Countries that approved and implemented a ban on plastic bags

Country	Year	Level
Ban enforced		
Benin	2018	National
Botswana	2007	National
Burkina Faso	2015	National
Cameroon	2014	National
Cape Verde	2017	National
Chad	2010	National
Egypt	2009	Local, in Hurghada
Eritrea	2005	National
Ethiopia	2007	National
Gambia	2015	National
Guinea-Bissau	2016	National
Ivory Coast	2014	National
Kenya	2017	National
Malawi	2015	National
Mauritania	2013	National
Mauritius	2016	National
Morocco	2009/2016	National
Mozambique	2016	National
Niger	2015	National
Rwanda	2008	National
Senegal	2016	National
Somalia	2015	Local, in Somaliland
South Africa	2003	National
Tunisia	2017	National
Uganda	2009	National
Zanzibar	2006	Islands wide
Zimbabwe		
Ban approved		
Burundi[146]	2018	National
Mali	2012	National
Tanzania	2006	National

Source: UNEP (2018) Africa Waste Management Outlook. P. 58, 59.

4.2.4. Formalisation of the informal waste workers

While the work of informal waste workers is mostly ignored and often also actively prevented (see section 6.2), there are a few initiatives where they are integrated in the formal economy. Morocco was the first country in Africa that actively took the initiative to include 20,000 informal waste workers into the formal waste management system.[147] This new waste management system, supported by the World Bank, realised that higher recycling rates goes hand in hand with better working conditions and the formalisation of the informal workers.[148] One aspect of the formalisation was that workers organised themselves in cooperatives (see also section 8.2). In Egypt the failure of privatised waste management services led to the inclusion of the Zabaleen community (who set up a very effective and sophisticated informal waste management system) into the formal economy (see section 6.2 and Box X). Zanzibar in Tanzania is also aiming to become a zero-waste island through an integrated waste management system that builds on the integration of the informal economy (see Box X). According to the database created by WIEGO, the government in Senegal is also planning to establish a new recycling centre and to formalise 350 out of 7040 informal waste workers working at the landfill Mbeubeuss, Senegal.[149]

Formalisation becomes a problem when informal workers are incorporated into the formal system, but at lower wages and poorer working conditions. This happened, for instance, in Dakar, Senegal. By the late 1990s waste services had begun to collapse and rubbish began to accumulate in the streets and public spaces of Dakar. In reaction to this, a youth movement called Set/Setal (meaning “Be Clean/Make Clean”) emerged. This movement involved youth cleaning and beautifying their own neighbourhoods in Dakar. By 1990, the Set/Setal youth had been recruited into a city-wide participatory system by the mayor, Mamadou Diop. These youth were eventually incorporated into the city waste management system - but at a lower rate of pay and without benefits. The youth became responsible for collecting and loading garbage onto the dump trucks and delivering it to the city dump on the city outskirts. While paid a day-labour rate, they were not given other protections and benefits, despite becoming the backbone of the waste management system for the city at that time.

Another problem with formalisation of informal workers arises when only a fraction of the informal waste workers gain formal employment. This poses the question of what happens to the other informal waste workers, whose livelihood could be put at risk if they lose access to the waste. As such, formalisation bears the risk of deepening inequalities between a formally employed workforce and informal waste workers.

5. Financing waste services

Financing for waste services is a major factor shaping the quality of waste management services in any particular area and the conditions of the waste workers employed to deliver the service. Municipalities often face a problem of inadequate financing which hinders their ability to deliver an adequate service. And yet, where waste is not properly dealt with, the costs, particularly in relation to health and the environment, can be enormous.

5.1. Fees for waste management services

Waste management services are generally paid for either through a monthly solid waste fee paid by residents or a monthly charge which is incorporated into the municipal services account (a property tax). In some areas, no fee is charged for solid waste management services at all. This is the case, for instance, in Kano State, Nigeria and Nairobi, Kenya.[150]

Some countries have a waste fee that is collected at a local level. For instance, a local waste tax was introduced in Maputo, Mozambique, in 2002. But due to strong protests this was cancelled within a few months. A few years later it was re-introduced, more successfully this time, and attached to the electricity bill. Since 2007 the amount charged to different households has been linked to energy consumption – the higher your energy consumption, the more you pay for waste services. The motivation for this was that energy consumption can be taken as an indicator of socio-economic status, and the higher the socio-economic status, the more waste a household is likely to generate. A similar system was introduced in Cairo and Giza, Egypt to finance a private sector collection system. However, the residents, who preferred the collection system provided by the informal waste workers of the Zabaleen community filed a lawsuit against the government for adding the collection fees onto their electricity bills in 2003. They won the case and consequently the system was abolished (see Box X).

In Senegal, there is a solid waste management tax (TEOM) charged to each household. In 2016, this tax raised 5 billion CFA. This is a small proportion of the overall 21 billion CFA which is needed for the operational costs of waste management services in the country.

In Algeria, the waste infrastructure is financed by the central government, while the management of waste collection and disposal is financed by the junk removal tax, meaning that each household has to pay a fee to the municipally regardless how much waste is generated.[151]

In Ethiopia, the fees received from households and commercial enterprises for waste management services covered about half the costs of actually delivering the service.

5.2. Government and waste management budgets

In many countries local government is dependent on national government for finances for waste management services, and national government often does not prioritise these services. So while waste management services have been decentralised, fiscal decentralization has generally not followed. And when many city dwellers live in informal housing, and poverty and inequality is high, the ability of local government to raise sufficient revenue for waste management services is limited.[152]

There are many difficulties that municipalities face in balancing income and expenditure for waste management services. Generally, waste management tariffs are not ringfenced, meaning that it is not easy to measure expenditure against income[153]. There is often little relationship between the tariff charged and the amount of waste collected. Thus it is hard for municipalities to get a true picture of local finances in relation to wastes management services.

Some municipalities don't regard waste management as a priority in the light of so many pressing needs such as access to electricity, water and housing, and therefore don't prioritize budget allocation for it. [154] In some cases, municipalities simply don't have sufficient budget to allocate to waste management services. For example, in Senegal, the money allocated to waste management services is inadequate, and there is a large shortfall between the money available and the estimated amount (21 billion CFA) which is required for operational costs.

In Nigeria, the state and local government agencies tasked with responsibility for delivering waste management services receive little financing from the state or local government budgets.[155]

Revenue collection is often inefficient. [156] In South Africa, for instance, most of the municipalities collect less than half of their revenue targets and have operational deficits[157]. But the inability to collect waste management tariffs is not only because of capacity constraints, it also about political constraints. There is often a reluctance to pay for waste management services – not only because it is regarded in many areas as a poorly delivered service; but also because it is a service that many perceive the government should be providing for little or no cost to the residents because it is often about keeping public spaces clean.

Waste management services need to be subsidized either by central government or by other municipal funds. For instance, in Douala and Yaoundé in Cameroon, where the revenue generated by dedicated waste management taxes covers less than a tenth of waste processing costs, the state covers the vast majority of the rest of the cost.[158] In some low-income countries, municipalities can spend up to half of their budget on waste management services.

5.3. Private sector investment

Private sector investment in waste management in Africa is limited because it is regarded as a high-risk investment.[159] Recycling and waste-to-energy are the two areas of waste management services that are seen as most attractive to the private sector because they are able to generate the most income.

In some countries, where there is private solid waste collection, residents pay the fee directly to the private operator. This is the situation, for instance, in Lagos, where the fee is paid directly to the private operator, but the amount is set by the local government. If the state is not able to cover the rest of the costs, it can lead to breakdowns in waste management services. In Kigali, Rwanda solid waste collection services have been fully provided by the private sector since 2012, with the bill submitted directly to households. In addition, households are expected to participate in the compulsory community scheme, 'Umuganda'. [160]

5.4. Role of International Financial Institutions and Donor Organisations

Many players in the sector (for instance UN-Habitat and UNEP[161]), regard financial constraints as key to the challenges facing the sector and yet the financial solutions proposed are often not possible in the African context. International Financial Institutions

and donor agencies such as GIZ tend to promote full cost recovery through user charges as an important component of a sustainable waste management system. However, in a context where many communities are poor, this is not a feasible way of financing waste management services.

6. Waste service actors

In many countries primary collection of waste is done by informal waste workers, community organisations and non-governmental organisations. Secondary collection, where waste is taken from the primary collection points to the landfill site or other disposal site, has often been contracted out by the municipality to private companies through public-private partnerships (PPPs). There are some big multinational companies involved in these PPPs, but there are also a range of small and medium sized companies or enterprises that are locally based.

6.1. Municipal public workers

Municipal workers carry out waste management services in many countries, such as South Africa, Kenya, Uganda, Tanzania and Swaziland, with functions ranging from waste collection and disposal, landfill site management and street cleaning. In general, municipal workers are not involved in recycling initiatives because few municipalities are involved in recycling – they do not have the facilities or the systems in place for waste segregation.[162] There are exceptions, such as the City of Cape Town in South Africa, which does have material recovery facilities[163].

The majority of waste management workers are categorized as labourers, and so tend to be some of the lowest paid workers in the municipality. This was identified, for instance, as one of the problems facing the solid waste management sector by trade unions in Tanzania.

In South Africa waste management services are mainly the responsibility of municipal workers, who are employed on a permanent basis. Johannesburg was the first city to begin the process of privatizing these services through the process of setting up a separate, arms-length company, called Pikitup, to deal with waste management. Pikitup is wholly owned by the City of Johannesburg.

In Swaziland, municipal workers are also responsible for waste management services. In Mbabane, municipal workers collect waste twice a week from residential areas and daily from the Central Business District. Some municipal workers have also been involved in a pilot project in Mbabane to promote waste segregation at household level. This has involved door to door visits to residents in the selected pilot project area, explaining the importance of segregation of waste, and how the system will work. This educational role is an important function that municipal waste workers in other countries could also perform. A similar project is being run in Zanzibar, Tanzania, where municipal workers are involved in encouraging residents to segregate waste.

Where the municipality provides waste management services in a city, they sometimes use contract workers, rather than directly employing the workers. This happens frequently in South African cities for instance. Pikitup, the Johannesburg municipal entity responsible for waste was recently forced to insource a number of workers who it had been employing on a

contract basis.[164] In Tshwane, workers organised into the South African Municipal Workers' Union (SAMWU) have been protesting over many years around the issue of waste management services in some areas being outsourced.[165]

A problem common to many municipalities is that too few workers are employed to carry out the work that needs to be done. For instance, in Kampala, Uganda, too few municipal workers, as well as too little equipment (both trucks and the fuel to run them), meant that waste collection was often less frequent than the prescribed minimum of at least once a week. A study done in 2011 found that the waste management division needed at least 250 workers to operate effectively, but only had 64 workers. [166]

With an increasing amount of waste being generated in countries across Africa, it is clear that employing too few municipal solid waste management workers makes the challenge of delivering an effective waste management service even worse. This can clearly be seen in the case of Uganda. Municipal workers are important not only for delivering an effective service, but, as the cases of Swaziland and Zanzibar show, they can also play an important role in sensitizing local communities to the importance of segregating waste, recycling and composting.

6.2. Informal waste workers

Informal waste workers play a vital role in recycling waste in many countries across the continent. They can be found both recycling waste left on the streets, as well as on landfill sites. In some cities, informal workers are also involved in waste collection (for instance, the Zabaleen community in Egypt first collect the waste before sorting and recycling it). The work that informal waste workers do is unhygienic, frequently unsafe, and offers them a precarious livelihood, and yet, if they were not there, the waste problem in Africa would be far worse than it is now.

There is no reliable data available on the number of people that work in the informal waste sector. In South Africa, it is estimated that there are at least 90 000 informal waste workers across the country.[167] In Nigeria, around 10,000 informal waste workers work in Lagos alone.[168] In Morocco, the figure is much lower. Only 7000 people are estimated to work as informal waste workers in the whole country. [169]

The lack of data does not allow an analysis of waste workers incomes. However, from the preliminary research that has been conducted one can assume that the income of informal waste workers is low. In Dar es Salaam, the Global Alliance of waste pickers found that informal waste workers have a collection capacity of up to twenty kilograms per day and an income potential of $108USD per month based on identified market rates for the most commonly traded waste materials.[170] In Ouagadougou, Burkina Faso, informal waste workers have earned around 1 US$ per day since the opening of a new recycling centre.[171]

6.3. Shift from public to private

Because waste is a neglected service in many countries, with the resultant environmental, pollution and public health problems that this causes, governments have at times used the urgent need to solve the problems caused by a dysfunctional waste management system as a reason to bring in the private sector. The rationale provided for this often relates to the

cost relative to the size of the job. As waste generation increases, but without an increase in the budget allocated for waste management, municipalities feel less and less able to carry out this function.

This happened, for instance, in Lagos, Nigeria. In Lagos, the waste management system had traditionally been driven by a mix of informal waste workers, local entrepreneurs known as private sector participants (PSP operators) contracted to collect waste and deliver it to dumpsites, and the local state through the Lagos Waste Management Authority (LAWMA). PSP operators were introduced in the early 2000s as part of an early attempt to take some of the responsibility for waste management off the state. Many of the PSP operators started off as informal waste workers, and had regrouped themselves into more formal companies in order to take on the waste management work. LAWMA co-ordinated the PSP operators, cleaned public areas, managed transfer loading stations and oversaw the dumpsites.[172]

This was changed in August 2016 with the introduction of the "Cleaner Lagos Initiative" which effectively privatised the waste management service. In terms of this initiative, government departments, responsible for overseeing and monitoring waste management services, contracted in private companies to take responsibility the actual implementation of the service. Some of the PSP operators continued to operate in the new system, but their area of responsibility was smaller (focusing mainly on collection from some commercial premises), and many were completely excluded. Visionscape, a company which had not previously operated in Nigeria, and had no waste management experience, was brought in to run the waste management services from mid-2017 until late 2018 when the contract collapsed.

Management of many landfill sites has also been taken over by private companies. This has frequently negatively affected informal waste workers who recycled waste from these sites. Management and ownership of the Olusosun dumpsite in Lagos, Nigeria, was taken over by Revive in early 2017. The impact of the changes that Revive introduced has made it more difficult for informal waste workers on the dumpsite to make a living. They must now sell directly to Revive, for a relatively low amount, and then wait to be paid until Revive has sold in bulk to larger companies.

6.4. Private services providers

6.4.1. Main multinational players

Generally, waste management services in Africa are relatively fragmented with a number of different entities being involved. Often numerous small and medium size companies are operating in the same city. For example, in Nairobi, Kenya there are over 120 licensed private waste management companies, with an additional estimated 140 informal private companies also participating in the city's waste management.[173]

However, some big players are emerging on the continent. The biggest European waste management companies[10], namely Veolia, Suez, FCC and Remondis, are present on the

[10] See also Weghmann, V. (2017) Waste Management in Europe. Good Jobs in the Circular Economy? Available at: https://www.epsu.org/article/will-circular-economy-be-economy-no-workers-new-study-published

continent. And multinational companies from China, New Zealand and Libyan have also entered the scene.

In Morocco the multinational players have divided the country among themselves. In Rabat, Morocco's capital, the French firm Veolia Proprete collects waste in three of the districts, while the Chinese-Spanish companies Urbaser/TECMED collect waste in four districts of the city. Urbaser/ TECMED also provide the waste collection services for Marrakesh, Tangier, and Casablanca.[174] Urbaser was originally owned by the Spanish company Actividades de Construcción y Servicios (ACS) but in 2016 the Chinese firm Firion Investments S.L.U acquired Urbaser [175] In Casablanca, Sita Blanca, a subsidiary of SUEZ Environment won a seven-year contract in 2014, worth €187 million to clean five districts in Casablanca. The contract was then extended to four additional districts in Casablanca and the city of Mechouar. Also, in 2014, another subsidiary of Suez, Sita Atlas, won the invitation to tender from the Urban Community of Meknes for the rehabilitation of its waste disposal site and for the creation and operation of a disposal and recovery centre. The contract, worth €90 million, covers a period of 20 years. However, in 2017 the negative performance of Sita led to residents' complaints and eventually the cancellation of the contract in Casablanca (see section 6.4.2). [176]

In Egypt a series of contracts with multinational waste companies, namely Veolia, FCC, Urbaser and AMA Arab Environment Company, were signed in the early 2000s for waste management in Cairo, Alexandria and Giza, which collectively were worth around $75 million annually (see Table X). Other smaller municipalities also privatised their solid waste management system. However, the privatisation failed (see section 6.4.2), and the waste management services have since then been remunicipalised (See Table X). However, multinational private companies have not given up on Egypt. This time, the German waste multinational Remondis is trying to enter the Egyptian waste market. In early 2017, Egyptian authorities announced the establishment of the country's largest-ever waste management project, operated by Xervon Egypt S.A.E., a subsidiary of Remondis. The contract covers the waste collection from streets and highways, as well as two densely populated regions, Kafr El Sheik and Gharbia. The project is understood to be a pilot project for five years. The project is financed by the German development aid organizations (KfW and GIZ) and has a total budget of €50–100 million. The contract includes 10–20 collection systems, 5–15 loading stations, 5–10 waste sorting facilities, 3–6 composting plants, 4–6 new/modern landfill sites and closure and clean-up of 20–40 large existing "dump sites".[177]

Table X: Privatisation of waste management in Egypt, main municipal contracts

City	Year of privatisation	Value of contract	Length of contract	Company	Remunicipalisation
Alexandria	2000	$446 million[178]	15 years	CGEA Onyx, a division of Vivendi, which later became Veolia Environment	In 2011 Veolia terminated the contract (4 years early). The public sector company Nahdet Misr which is a subsidiary of

					the state owned enterprise Arab Contractors is now in charge of waste management.[179] [180]
Giza (Dokki, Agouza, and Imbaba districts)	2002	$7.6 million[181]	15 years	FCC and Urbaser	
Cairo (eastern and western zones)	2003	$25 million a year	15 years	FCC and Urbaser	Contract terminated and was not renewed
Cairo (North)	2002	$11.5 million a year	15 years	AMA Arab Environment Company (AAEC)	Contract terminated and was not renewed

Another big player that also entered the African waste market in Morocco is Averda, a Lebanese group that also operates in Libya, Saudi Arabia and the United Arab Emirates. Averda operates in Morocco since 2012 when it first won a contract in Nador, and a year later it also won contracts in Berkane and Rabat and then in 2014 also in Casablanca.[182] It provides a variety of waste management in cleaning services in these cities. Since then, Averda expanded rapidly in Africa: it now also operates in Gabon, the Republic of Congo and South Africa. In Congo it entered the market in 2015 during the African Championship. The contract was first only for street cleaning but it has since expanded. It now operates in 9 districts of Brazaville, Congo, and also includes waste collection.[183] In Gabon, Averda won a 5-year contract for waste management in the capital Libreville in 2014. The contract will be automatically renewed for another 2 years.[184] In South Africa, through its subsidiary Averda SA, Averda claims to operate in all major cities. Its services include not only waste collection but also landfill management.[185] Recently, Averda has been in the press for its aggressive eviction of informal waste workers from the Genisis landfill near Johannesburg, South Africa (see section 6.4.2.). Also, in Morocco Averda made headlines recently as Casablanca, which entered into a contract with Averda in 2014 announced in mid-2018 that it was ending its contract with Averda to initiate new competitive bid for the services in the city. This was surprising news given that Casablanca was supposed to be Averda's "showcase for Africa" and its starting point for its "Africa expansion" in waste management. [186]

In Ghana, the Ministry of Local Government and Rural Development signed a contract in 2015 with Armech Africa Limited. This is a joint venture company between a Ghanaian Company and the Armech Group from New Zealand. The agreement is to receive the waste collected in Accra in six modern transfer stations, extract recyclable material, and then convert the waste to electricity. In 2018 it was announced that a PPP had been signed

between Armech Africa and the Electricity Company of Ghana to build a power plant designed to generate 60 MW of electricity through Anaerobic Digestion, using a Tunnel Bio-Reactor. Armech Africa has exclusive rights to the patented Tunnel Bio-Reactor.[187] By holding onto the technology in this way, the company ensures their profit while limiting the ability of municipalities to undertake similar projects directly.

Also operating in Ghana is a public-private partnership called Zoomlion Ghana Limited, a subsidiary of Jospong Group of Companies. Jospong has been operating in the waste management sector in many countries across Africa since 2006. Zoomlion employs many young workers (estimated at 200 000) in jobs such as street sweeping, drain desilting and communal waste management. Zoomlion also operates in other African countries such as Togo, Angola, Zambia, Equatorial Guinea and Liberia.[188]

In Niger, an agreement has been signed between the government and Veolia, a French waste and water treatment company, to develop a waste management policy for Niamey, the capital of Niger.

Visionscape is an environmental company based in Dubai, United Arabs Emirate. Their subsidiary, Visionscape Sanitation Solutions focuses on waste management as well as waste-to-energy solutions. The company had a contract (2017 - 2018) with the Lagos State Government, Nigeria, to implement the waste management policy of the state, as part of the Cleaner Lagos Initiative. It does not seem to have any experience in waste management services in other countries.

6.4.2. Failures of Privatisation

As outlined in section 4.1.5 international institutions are quick to suggest more private sector involvement as the solution for Africa's waste management problems, as it is assumed that it will improve efficiency and effectiveness through better management, greater investments and new technologies.

However, right from the beginning experiences with privatised waste management services failed in Africa. Cameroon was the first country to privatise part of its waste management services in Africa. Already in 1969, Douala outsourced the management of its municipal waste and Yaoundé followed ten years later. The UNEP 2018 classified this privatisation as a "failed PPP". The performance of the waste companies where poor and eventually the World Bank intervened in 1994 with an emergency programme to clean up the two cities and especially the open dumps in the cities. However, despite the problems, the original company HYSACAM was re-contracted and the PPPs were expanded to 17 other cities across the country.[189] Again, this initiative failed. The company could not access 60% of the neighbourhoods, as the pathways were too narrow for their equipment and these areas continued to be served by the informal workers. [190] After nearly 50 years of privatised waste services an efficient and effective waste management system has not yet been introduced in Cameroon. The Cameroonian government is now wanting to introduce new operators into the system and issued a call for new companies in April 2018. [191]

It is not only in Cameroon where the contracted services where not fit for purpose. In fact, a common problem of privatised waste services is the direct absorption of European models

for African projects. [192] This was also the case in Cairo, Giza and Alexandria in Egypt. In Cairo, a very sophisticated, informal waste management system, run by the Christian Zabaleen community, had been in existence since the 1940s. They achieved very high recycling rates (see Box X). However, the city decided to establish a new private waste management system in the early 2000s. Unlike the Zabaleen, this system did not include a door to door collection system. The private companies did not collect the waste from the narrow streets or tall buildings, instead they set up central collection points by putting large bins in the streets, in which residents could deposit their waste. It did not take long for people to realise that the privatised waste system did not work. Waste piled up on the streets. Residents, who clearly preferred the Zabaleen system, and continued to make use of it, ended up paying double. The private companies were charging customers through the electricity bills, so there was no way around paying them. [193] [194] Additionally, they paid the Zabaleen for their services. Unsurprisingly, the residents complained. In Cairo, just six months after starting to operate, the companies Urbaser and FCC incurred municipal fines of $2 million due to citizen complaints of irregular collection and inadequate street sweeping.[195] In 2003, hundreds of citizens in Cairo and Giza filed lawsuits against the government for adding the collection fees onto their electricity bills. They won the case. Due to the failure of privatised municipal solid waste collection the cities then decided not to renew the private companies contracts when they came to an end (see Table X).

In Casablanca the privatised waste collection system also led to severe customer dissatisfaction. In 2017, after residents of Casablanca complained about the waste service being provided, the City of Casablanca cancelled the contract with Sita because of many failures in carrying out its contract. As well as losing the contract, it was penalised for the failures. Sita was temporarily replaced by a local semi-public company, Casa Prestations.[196] In 2014, Averda took over the waste management services, only to have their contract ended in 2018. (see section 6.4.1).

Another common problem of privatised waste management is the side-lining of the informal workers. This was also the case in Egypt. The contracts awarded to the private companies gave them ownership of the waste that they collect. Though most of the companies promised to give the Zabaleen communities around 50 percent of the garbage in return for their help in sorting that was only a fraction of what the Zabaleen had earned before.[197] In other words, through privatisation the Zabaleen lost access to waste, their livelihood. Some Zabaleen saw as much as a 75 percent decrease in earnings as a result.[198] The same situation happened in Johannesburg, where the private company, Averda, after taking over ownership and management of the Genesis landfill site, attempted to exclude informal waste workers, many of whom had been working there for 17 years. While the court case between Averda and the informal waste workers is still ongoing, Averda hired a private security company, called the Red Ants, which raided the homes of the informal workers outside of the landfill and violently attacked them, so that 19 people were hospitalised, 4 with serious injuries.[199] Also in Johannesburg, the livelihood of many informal waste collectors were threatened when the Council, and the council entity responsible for waste, Pikitup, brought in private recycling companies to do the work that the informal workers had traditionally done.[200] The City Council has committed to including them into future recycling operations. This move by the City Council has, however, been met by scepticism from WIEGO.[201] Also in Lagos, many small waste collectors, known as PSP operators, who

had originally been drawn from waste collectors working in the informal sector were pushed out of waste collection services when the city brought in a private company to run the waste management services.[202]

The marginalisation of the informal waste workers by the privatised companies not only causes social hardship because of the loss of income, but also poses an environmental challenge because the private companies do less recycling than the informal workers (see section 3.7). For example, the waste management system of the Zabaleen achieved recycling rates of 85%, while the private companies were only required to recycle 20% of the waste.[203]

Another major problem with privatised waste services is that the privatisation is only possible in areas that are deemed profitable. Poorer urban areas as well as rural areas are left with waste piling up. For example, Tunisia has a long history of privatised waste services, strongly promoted by the World Bank and other development institution. The 2010 UN-Habitat praised Sousse in Tunisia for having a 'successful experience with [waste management] privatization'. [204] Sousse in Tunisia outsourced waste collection in 1997 to Seltene. In the subsequent years Seltene managed to expand its services and in 2010 it collected 67% of the waste, while the municipality collected 33%.[205] However, there is very limited waste collection in rural areas.[206] It has been estimated that only 10% of the waste in rural areas is collected.[207] This is very significant given that, according to the World Bank, around 1/3 of the population lives in rural areas.[208] In comparison, neighbouring Algeria achieved a waste collection rate of 65-70% in rural areas, which is less than the collection rates in the urban areas of Algeria (of between 85 and 905), but still high for rural areas. [209]

In East Africa, Dar es Salaam has long been regarded as a leading example of privatised solid waste management, despite the fact that the privatised system failed to keep the city clean, with waste services still lacking in terms of scope and quality. This is highlighted by the fact that in 2010 and 2013, Dar es Salaam was rated the eighth and twelfth filthiest city in the world by NYC Consulting and Forbes respectively.[210] Privatisation started in 1994 with a pilot of one private company which provided the service in ten city centre wards. In 1996 privatised waste services were increased to 5 companies covering 24 wards and then to 70 franchisees covering 44 of the 73 wards. Dar es Salaam has been celebrated as a success story of privatisation by UN Habitat, which states, in the context of the lessons learnt from Dar es Salaam that "*the PPP strategy with proper support, especially in building capacity for business development, project management, supervision and procurement, appears to be among the best options for SWM.*"[211] Despite this positive endorsement, residents are not satisfied with the service of the privatised waste collection, as it is considered too expensive, unreliable and does not cover the entire area.[212] The privatised waste management service is mainly financed through household payments. [213] Consequently, there is not much incentive for the privatised companies to offer services to people that cannot afford to pay for them, effectively a large part of the population of Dar es Salaam.

Recent attempts by the government in Lagos, Nigeria, to bring in a private company have not been successful. In Lagos, the waste management system had traditionally been driven by a mix of informal waste workers, local entrepreneurs known as private sector participants (PSP operators)) contracted to collect waste and deliver it to dumpsites, and the

local state through the Lagos Waste Management Authority (LAWMA). PSP operators were introduced in the early 2000s as part of an early attempt to take some of the responsibility for waste management off the state, because the state was struggling to carry out the waste function. Many of the PSP operators were from the informal economy, and had regrouped into more formal companies in order to take on the waste management work. LAWMA co-ordinated the PSP operators, cleaned public areas, managed transfer loading stations and oversaw the dumpsites

This was changed in August 2016 with the introduction of the "Cleaner Lagos Initiative" which effectively privatized the waste management service. In terms of this initiative, government departments are responsible for overseeing and monitoring waste management services, but contracted in private companies are responsible for the actual implementation of the service. Some of the PSP operators will continue to operate in the new system, but their area of responsibility will not be as great (they will focus on collecting waste from some commercial premises), and many will not be involved at all. Visionscape, a company which has not previously operated in Nigeria, was brought in to run the waste management services from mid-2017, on the basis of a 10-year contract. Visionscape is an environmental company based in Dubai, United Arabs Emirate.

There have been major problems with the Visionscape contract. It has been unable to collect the waste it was contracted to, with the result that waste has been accumulating on street corners. While Visionscape was touted as having significant waste management experience, investigations found that they were a recently established company, with the Lagos contract their first. The failure of Visionscape was so great that the Lagos Assembly ordered the ending of the contract, and the LAWMA-PSP operators partnership was reinstated.

In Sierra Leone, Masada International was awarded a 20 year contract in 2012 to take over the waste management functions from the Freetown Waste Management Council, a municipal company. It was argued that such a long term agreement was needed as a way of being able to raise money from the financial market.[214] The intention was to collect, manage and convert the country's municipal solid and liquid waste into renewable energy. However, the process of local government handing over Freetown Waste Management was fraught with difficulties. The Ministry of Local Government signed the contract with Masada, but it was the Freetown Council that needed to hand over the Freetown Waste Management Company to Masada. The Council initially resisted the handover arguing that a contract needed to be signed directly with them.[215] By December 2013, Masada had incorporated the staff of Freetown Waste Management Company into their company. [216]

The relationship between Masada and the City Council has continued to be difficult. In August 2017 the mayor of Freetown complained that the company was not doing their job, forcing the City Council to step in and clear away garbage dumped illegally near the dumpsite.[217] Masada in turn claimed that the city owes it money for delivering the waste management service. Neither Masada nor the City Council collects waste from people's houses. Each household makes their own arrangement with a small contractor to take their waste to various transit points. Masada then collects the waste from these transit points and takes it to the dumpsites.[218] Often, however, residents are reluctant to pay anyone to

collect their waste, and often dispose of it in places other than the designated skips. This means Masada doesn't collect the waste, leading to a waste clogged and dirty city.

As can be seen from the above examples, the privatisation of waste management services in countries across Africa has generally failed to keep cities clean, provide an equitable service across poor and more wealthy residential areas, or provide decent jobs for solid waste management workers.

7. Gender and Waste

In several countries it is reported that more men than women work in the informal waste management sector. For example, in Kampala, Uganda [219], Dar es Salaam, Tanzania[220], Nakuru, Kenya[221] and in Lagos, Nigeria[222] informal solid waste collection is predominantly a male occupation. The number of women working in the informal waste management sector is, however, high in many countries, and probably higher than in the formal waste management sector. Research done by Wiego (Women in Informal Employment: Globalizing and Organizing) showed that about 80% of informal waste workers in India are women, and a small study done in Brazil showed that 56% of the informal waste workers are women.[223] While the figures in African countries might not be as high as in India, it is likely that there are a significant number of women. A study done in South Africa showed that the gender split among informal waste workers was 50% female/ 50% male.[224]

In the formal sector, collection and disposal of waste has also traditionally been a male job. However, in street cleaning there are often more women employed than men. Even in collections and disposal, there has been a shift over the last few decades to employing more women in these sectors, although they are still in the minority. A South African study noted that 32.1% of municipal employees in the waste sector are women. While it does not provide a breakdown of where these women are employed, and how many are in administrative positions and how many are working on the trucks, it does give an indication that there are a significant number of women in the sector.[225]

More research needs to be done on the number of women working in the sector, and the types of jobs they have. In addition, more research needs to be done on the gender dynamics in the waste management sector in Africa. Some preliminary research suggests that women tend to have a subordinated status when it comes to waste management systems – both in the informal and formal waste sectors. Some studies in Ghana and Nigeria have found that for informal wastes workers, men typically have access to higher value material which consequently leaves women with the dirtier and less valuable material. Women are also reported to be exposed to greater health and environmental risk. For example, at the 1/3 of the people killed in the landslides in Addis Ababa, Ethiopia and Maputo, Mozambique were women.[226]

8. Working conditions and worker organisations

8.1. Health and Safety

Waste workers in Africa are often working under extremely dangerous conditions that put their health and safety at risk. Their work is generally dirty, difficult and dangerous. The UN Special Rapporteur report on hazardous substances and waste noted that the exploitation

of workers is worsened by their exposure to toxic and hazardous substances in their daily work-lives. This is particularly acute for both informal and formal waste workers who must deal with dirty, contaminated and toxic material every day. This daily exposure to harmful substances that waste workers face – whether they are informally or formally employed; whether they collect household waste, or hazardous medical waste, or work on landfill sites – impacts on their rights to health, safe food and water, safe and healthy working conditions, and a healthy environment. [227] It is thus vitally important that proper attention is given to improving the health and safety standards for all waste workers.

While workers in both the formal and informal sector suffer from a lack of appropriate equipment such as gloves and sturdy shoes, this is a particularly severe problem for informal workers. As informal waste workers pick over waste on landfill sites, in bins and on open dumps, they are exposed to hazardous substances, sharp items and contaminated objects. It is therefore not suprising that the rate of diseases, infections and also deadly accidents are very high. The Global Alliance of Waste Pickers found that in Dar es Salaam, the informal waste workers rated their work as 'exhausting', 'dangerous' and 'unhealthy'. Of the 50 informal recyclers interviewed in the study 43 reported that they had been injured or admitted to a health facility in the last year due to their recycling activities. Airborne illness, animal bites, cuts, bruises or fungal infections were the most common health issues reported. None of the informal workers involved in the study was wearing any protective equipment (i.e. gloves, mask, boots, and overalls) and none had medical insurance coverage.[228] In Senegal, there was an outbreak of tuberculosis in 2007 among waste workers. This can be seen as a concrete example of the high level of diseases found among waste workers.[229]

Most dangerous, and sometimes deadly, are the working conditions of workers on unsafe landfills and dumps. Landslides on landfills add another risk to the already dangerous work. In March 2017 113 people died at the Koshe landfill in Addis Ababa, Ethiopia, including 12 children. [230] Another landslide was reported in Maputo, Mozambique, in 2018, where 16 people were killed. [231]

Formal waste workers, too, endure poor occupational health and safety conditions. The lack of proper equipment, protective clothing and masks is often a problem. Most of the PSI unions that organise waste workers raised this as a major problem facing waste workers. In Tshwane, South Africa, in 2018, municipal waste workers protested outside the offices of the City Council over demands for adequate personal protective equipment (PPE).[232]

Street sweepers – whether employed by the municipality or by a company contracted by the municipality, face particular health and safety issues. Walking all day sweeping the streets is physically taxing, and the dust kicked up from the sweeping can cause or exacerbate chest complaints like asthma. Street sweepers also face safety risks when they work on their own in streets, particularly at night.

Yet the health and safety risks of insufficient waste management services goes well beyond the workers. In Kenya, mishandled heavy metals at the Dandora landfill contaminated the neighbouring residential area (Wahithka). Moreover, the Nairobi River runs right across the dumpside and carries polluted water downstream where it is used for irrigation of food

products and for drinking water.[233] In Lagos over 27 % of the waste generated was dumped in canals and lagoons, which led to flooding within the city and the spread of water-borne diseases.[234] This was also the case in Dar es Salaam, where residents of Tandale district, Kinoni municipality, expressed their discontent about the poor management of waste, which when dumped in streams resulted in blockages and heightened the impact of flooding.[235] In January 2018 at least 45 people died from flooding in Kinshasa, Democratic Republic of Congo, and more than 5000 people were left homeless. [236] According to the World Health Organisation the flooding exacerbated a cholera outbreak, which was the worst the DRC had seen in 20 years.[237] Many residents blamed blocked drainage channels in the city for the flooding.[238]

8.2. Organisations of informal waste workers

A large proportion of work in Africa is in the informal economy. While data on the informal sector is generally insufficient and not available for all African countries, in 2012 the International Labour Organisation (ILO)[11] found that in some African countries over 80% of the workers work in the informal economy. This is true, for example, in Benin, Mali, Senegal, Tanzania, Uganda, Zambia and Cameroon. In other countries, such as Cape Verde, the employment situation is more or less equally balanced in terms of formality and informality. In South Africa informal work is relatively 'low' with 1/3 of the workers being occupied in the informal sector. Namibia with around 22 % informal employment and Mauritius with 17% have the lowest registered informal employment rates. [239]

Informal workers are usually highly vulnerable because they have no social protection and no secure income. [240] Hence formalisation, while not in itself sufficient, is an important step towards decent work.

Workers in the informal economy are often marginalised and lack representation. However, while organising levels are still low in the informal economy, some progress has been made over the last two decades on a local, national and international level. The establishment of Women in Informal Employment Globalising and Organising (WIEGO) was key in this regard. The WIEGO Organisation and Representation Database (WORD) database[241] provides the most comprehensive database of informal waste workers associations. It currently lists over 23 associations of informal waste workers in Africa (see Table X). However, the situation changes rapidly and the database needs constant updating. Most of the updates on the database were made in 2013, hence the table below is more an indicator that the organizing of informal waste workers is happening, rather than an exact data set.

Table X: Informal Waste Worker Organisation in Africa

Country	City/Location	Name	Number of members	Specifics
Benin	Cotonou	Association de Femmes Recuperatrices du Benin	1000	Collect waste in the city

[11] See the 2012 ILO report *Decent Work Indicators in Africa.*

Burkino Faso	Ouagadougou	Association Pengdwende	12167	/
Cameroon	Doula	Association de recuperateurs du Cameroun	300	/
Congo	/	Federation des Acteurs de lÉconomie Informelle au Congo		Waste workers, as well as transport workers, vendors, agricultural workers and home-based workers
Democratic Republic of Congo	Kinshasha	CLD MBL CINGABA	107	
Democratic Republic of Congo	Kinshasha	Compagnie d'Action pour le development familiale	87	/
Democratic Republic of Congo	Kinshasha	Coordination de femmes pour la paix et le development	200	/
Democratic Republic of Congo	Kinshasha	La Congolaise de travaux	45	/
Democratic Republic of Congo	Kinshasha	Ligue pour le Droit de la Femme Congolaise (LDFC)	2080	Waste workers, agricultural workers and vendors
Democratic Republic of Congo	Kinshasha	Reseau pour la collecte et valorisation de dechets	300	/
Ghana	Accra/Sarbah Landfill	Sarbah and Ablekuma	100	/
Egypt	Cairo	Workers' Union Cleaning and Beauty and Protecting the Environment	4500	/
Kenya	Kisumu	Kisumu Waste Management Association (KIWAMA)	20	/
Kenya	Nakuru	Nakuru Solid Waste Managers Association (NASWAMA)	24 groups	/
Kenya	Mombasa	Mombasa Integrated Solid Waste Management Organization	35 groups	/

Kenya		Waste Pickers Association of Kenya (WAPAK)	/	/
Madagascar	Antananarivo	Platform of committees of pre collection of waste (PLAFCCO)	300	/
Mali	Bamako	Collective des groupements intervenant dans l' Assaissement au Mali (COGIAM)	400	/
Niger	Niamey	Syndicat National des Travailleurs Autonomes de l'Economie Informelle du Niger (SYNATRA)	2313	Waste workers and Transport workers
Senegal	Dakar/Mbeubeuss	Association Book Diom des Récupérateurs et recycleurs de Mbeubeuss	1200	Recycle waste at the landfill Mbeubeuss
South Africa	Pietermartizburg	Hlanganani Ma Afrika	75	Work at landfill
Tanzania	Dar es Salaam	Waste Pickers Alliance	150-200	
Zimbabwe	Harare	Zimbabwe Chamber of Informal Economy Associations (ZCIEA)	10,500; in 150 associations	Waste workers, Construction workers, Vendors

Source: WIEGO, WORD database

Through informal workers organisations the waste workers collectively advocate for better working conditions, recognition, better tools, infrastructure and facilities and access to waste. For example, Hlanganani Ma Afrika in Pietermartizburg, South Africa has negotiated with the municipality to run a new recycling facility autonomously, without middle men. This has helped them to achieve better working conditions as well as better facilities (electricity and bathrooms).[242] Some of the informal organisations run education programmes and increase people's awareness of environmental and health issues. In Senegal, at the Mbeubeuss landfill, the Association, Book Diom des Récupérateurs et recycleurs de Mbeubeuss, also set up a health care centre. [243]

Other, more recent examples, that are not represented in the table, are for example found in Lagos, Nigeria, where informal waste workers have organised themselves into a number of different associations, namely the Waste Recycling Association of Nigeria (WRAN), the Scavengers Association of Nigeria (SAN) and the National Association of Scrap and Waste

Dealers Employers of Nigeria (NASWDEN). Since 2016, members of the associations have had to pay taxes and fees to the Lagos Waste Management Authority (LAWMA), for accreditation and operating rights. This was meant to provide some form of job security and social protection, but the privatisation of waste management in 2016 through the Cleaner Lagos Initiative resulted in many of them losing jobs and livelihoods.[244] Also, not included in the table are the over 3,000 informal waste workers at the Dandora landfill in Nairobi, Kenya. There the informal waste workers are organized in seven groups, which are all united in one umbrella group called *Nairobi Waste Pickers Association* that is registered by the County Department of Environment.[245] In Cairo the *Zabaleen* workers' syndicate, which represents the informal waste workers, the Zabaleen, negotiates with the Egyptian government over a new remunicipalised waste management system that includes the Zabaleen (see box X). [246] In 2012 the Zabaleen workers' syndicate was believed to have between 6,000-7,000 members. [247]

The largest modern landfill in the Magreb is Oum Azza in Morocco. There the recyclers organised themselves into a cooperative, called At-Tawafouk, in 2010. Through the cooperative the informal workers receive a fixed salary of around $265 a month, as well as health insurance, access to a bank account and a low mortgage.[248] Currently the cooperative has 160 members. The cooperative has had a major impact on their lives. Previously, they were competing against each other to find the most valuable waste, and they also worked without safety equipment, such as gloves, and without a secure income. Through the cooperative, their position has improved.[249]

A recent study in Malawi found that most of the informal waste workers saw an advantage to working in a cooperative. This is because through cooperatives recyclers are able to improve their bargaining power and can negotiate better prices for their material. They are also able to lobby the local government for storage facilities. Moreover, they can collectively sell larger quantities when prices are high. Additionally, cooperatives help to gain public trust and recognition for the work of the waste workers, and thus improve their sense of dignity. [250]

8.3. Trade union representation of waste workers

Unlike informal waste workers, who are generally organised into waste-specific organisations, formal waste management workers are generally organised into unions that organise all local government workers. These unions take up issues that affect all their members, such as wages and benefits, and less frequently take up issues specific to waste management workers. The unions also generally only organise the formally employed municipal workers, and frequently struggle to organise workers in areas that have been contracted out to private companies. So for instance, workers employed by a small private company that has been contracted by the municipality to provide services in a particular area are often not organised into the unions. This is a challenge for those workers because it means that they fall outside the collective bargaining arrangements. In some cases, waste management workers were members of a public sector trade union until the service was contracted. The union then lost those members.

Trade unions in Africa face many difficulties in organizing precarious workers – these can be informal workers, workers on temporary contracts, or have been subcontracted to the

municipality. Sometimes the problem lies with the union constitution, which presumes that workers to be organized will be permanent employees and doesn't make provision for organizing informal workers, or workers who are subcontracted to the municipality. The problem can also be with collecting union dues from workers who are precariously employed. Some of the waste workers are paid by the amount of waste they collect which can vary hugely from day to day. This makes it extremely difficult to know what dues to collect, as dues are a percentage of income earned. Sometimes the problem is that workers are too scared to join trade unions when they are precariously employed for fear that they will be victimised or loose their jobs.

Countries where waste management workers are organised into local government unions include South Africa (South African Municipal Workers Union - SAMWU); Kenya (Kenya County Government Workers Union - KLGWU); Ghana (The Civil & Local Government Staff Association of Ghana - CLOSAG) in Ghana; Botswana (Botswana Land Board & Local Authorities & Health Workers Union - BLLAHWU); Nigeria (the Nigerian Union of Local Government Employees - NULGE); Tanzania (the Tanzanian Local Government Workers Union - TALGWU); and Uganda (Uganda Local Government Workers' Union - ULGWU).

Waste workers organised into local government unions will sometimes go on strike together with other local government workers around common issues such as pay. This was the case in Kenya in 2017 when workers in KLGWU went on strike over non-payment of salaries.[251] In cases such as South Africa, where solid waste management workers form a large part of the union, municipal strikes need their support in order to be successful. Being part of the local government union can be of benefit to waste management workers. When the union negotiates for the whole bargaining unit and wins a wage increase for all, this can help to raise the wages of waste workers who are often the lowest paid workers. This is the case, for instance, in South Africa, where the union has been able to bring up the minimum wage paid in the local government sector through collective bargaining for the bargaining unit as a whole.

At times, waste management workers within the local government union, embark on actions around their specific demands. For instance, between 2013 and 2016 the waste collection workers in Johannesburg, who are members of SAMWU, launched several strike actions, including 5 wild cat strikes in late 2015 and early 2016. More than 4000 workers went on unprotected strikes for higher wages. [252] Eventually, after years of struggle, salary increases were achieved. [253] In June 2018 also waste workers in Port Elizabeth organised an indefinite strike through their union to achieve better working condition and back pay for around 3,000 workers. [254] Due to the strike, rubbish piled up in front of people's houses and bins remained unemptied. [255] After less than one week of strike action the workers won their demands. [256]

All waste workers, weather formally employed by the municipal sector or private sector or working in the informal sector, need decent wages, better working conditions, as well as better health and safety protection. Unionisation is key to achieve that. Closer collaboration between informal waste worker organisation and municipal trade union should therefore be encouraged, as well as ways for trade unions to organize and represent precarious and informal waste workers.

9. Alternatives to privatization of municipal waste services

9.1. Strengthening of municipal waste management services

With many municipalities struggling to provide an adequate waste management service given the scale of the challenges facing them, the first priority needs to be strengthening the capacity of municipalities to deliver an effective waste management service to all areas they are responsible for.

A community-based initiative in Zanzibar, Tanzania, highlights a viable alternative to keeping waste management services in the public sector, and delivering an effective service. In January 2017, the Centre for Science and Environment (CSE), a not-for-profit public interest research and advocacy organization based in India, and the Zanzibar Environmental Management Authority (ZEMA), signed a Memorandum of Understanding. The aim of this MOU was to facilitate better solid waste management practices and policy. The first pilot project undertaken in terms of this MOU involved a low-income community in Shaurimoyo. CSE funded the construction of three pits, propagation material, bins and bags and a grinding machine. Workers from the Zanzibar Urban Municipal Council constructed the composting pits. Workers from the community are paid by the Council to collect the segregated waste from households as well as to educate households on the importance of segregating their waste. Households segregate their waste into wet, dry and domestic hazardous waste and place it in the appropriate bins. Wet waste is sent to a composting site, while recyclable waste is sent to recyclers. Non-recyclable waste is sent to the Kibele landfill site.

The pilot project has been successful, and they are now looking to extend the project to other areas. They will also need to develop by bylaws which will strengthen decentralised waste management. The hope is also that this project will promote the effective segregation and recycling of waste.

As is highlighted by this example, many of the initiatives undertaken by municipalities in relation to waste promote segregation, composting, recycling and reuse of waste as a way of trying to reduce the amount of waste that needs to be disposed of in landfill sites. The Centre for Science and Environment is involved in a similar project to the Zanzibar one, in supporting the Mbabane, Swaziland (see section 6.1.).

In Tanzania, a large number of municipalities in the country are involved in the Tanzania Strategic Cities Project (TSCP) and Urban Local Government Strengthening Programme (ULGSP) project. These projects are meant to strengthen local government in the country to carry out their functions, including waste management, more effectively. The TSCP has been operational since 2010 and is designed to develop core urban infrastructure and services; strengthen institutions; and support the implementation of these programmes. Seven cities are currently the focus of the project, namely Arusha, Dodoma, Tanga, Kigoma, Mwanza, Mtwara and Mbeya. Through the project a large number of solid waste management depots have been built, local governments have received solid waste management equipment, trucks and so on. Municipalities, however, remain responsible for allocating sufficient

budget for operations and maintenance.[257] The trade unions have received this project positively as they see it bringing waste management services back into the municipality.

9.2. Remunicipalisation

Information on the remunicipalisation of waste management services and functions that have been outsourced in cities and countries across Africa is not easily accessible. Communities have at times expressed their unhappiness with the way services are delivered by the private sector, but there is little evidence that this has resulted in services being insourced again.

The situation of the Zabaleen in Cario, Egypt, however, is a very interesting case of an existing informal waste management system being formalised through a process of privatisation, followed by the remunicipalisation of the service once it became clear that the privatised service wasn't able to deliver an adequate service.

In Cairo the Zabaleen created a community led, highly efficient and sustainable resource recovery and waste-recycling system. In the 1940s the Zabaleen, who are a Christian community, migrated from the Upper Egypt to the outskirts of Cairo,[258] and over time established a waste management system that achieved recycling rates of 85%.[259] By means of comparison, the average recycling rate of municipal waste in the EU-27 and Norway in 2014 was 43% with Germany achieving the highest rate with 64%.[260] The Zabaleen community is estimated to be 70,000 and they are believed to sort 15,000 tons of waste daily, which is approximately 2/3 of Cairo's overall waste. The Zabaleen make most of their income by selling the recycled waste but a monthly collection fee from the households from which they collect their rubbish also adds to their income.[261]

The term Zabaleen is rooted in the Egyptian Arabic word *zebāla* which means garbage. The Zabaleen collect rubbish through a door to door system in Cairo - a mega-city with 18 million inhabitants. The recyclers, who are generally the men, work collectively in specific areas, collecting the waste. They take this back to the Zabaleen city at the outskirts of Cairo, also often referred to as "Garbage City". In Zabaleen city the women and children sort and organise the waste into 16 different categories every day.[262] Additionally, there are 750 small and medium-sized enterprises (SMEs) related to waste management.[263] Men usually recycle plastic and metal and the women are recycle food waste.[264] Pigs are an essential component of the recycling and sorting system, as they feed on the food waste. The Zabaleen community consumes some of the pigs themselves, but others are sold to hotels and other touristic locations in Egypt. This serves as a source of extra income and a form of savings.[265]

The Zabaleen also set up recycling systems in Alexandria, Egypt's second largest city, and in Giza. However, until fairly recently, the Zabaleen recycling system has not been officially recognised by the Egyptian government and, in fact, has generally been marginalised.[266]

In the early 2000s the government decided to privatise the waste management system in Cairo. The privatised service was done very differently. The private companies did not collect the waste from the narrow streets or tall buildings. Instead they set up central

collection points and expected residents to deposit their waste into large bins at these points. Residents were charged for the waste collection through their electricity bills. [267] [268] The contracts awarded to the private companies gave them ownership of the waste that they collected. Most of the companies promised to give the Zabaleen communities around 50 percent of the garbage in return for their help in sorting. This represented only a fraction of the income the Zabaleen had earned before.[269] In other words, through the privatisation the Zabaleen lost access to waste, their livelihood. Some Zabaleen saw as much as a 75 percent decrease in earnings as a result.[270] In addition, the private companies were only managing to recycle 25%, compared to the 75% that the Zabaleen had done.

The privatisation was contested by the Zabaleen community and consumers. In Giza hundreds of Zabaleen demonstrated in February of 2003 to campaign against the influx of foreign companies.[271] In Cairo, just six months after starting to operate, the companies Urbaser and FCC, incurred municipal fines of $2 million due to citizen complaints of irregular collection and inadequate street sweeping.[272]

As the private companies charged the citizens for the waste collection service through the electricity bills many customers feared that by not paying their bills their electricity might be cut. Consequently, hundreds of citizens in Cairo and Giza filed lawsuits against the government for adding the collection fees onto their electricity bills. The case was won by the consumers with the administrative court ruling that city residents do not have to pay any fees for garbage collection that are held in contracts endorsed by the Greater Cairo Company for Electricity Distribution (GCCED), the municipal sector responsible for the distribution of electricity for Cairo and Giza. This ruling also led to the cancellation of the billing system in Alexandria.[273] Due to the failure of the privatised waste service many residents have gone back to paying the Zabaleen for their services since December 2004.[274]

In 2009, at the height of the swine flu epidemic, the Mubarak government had roughly 300,000 pigs slaughtered, against the WHO'S advice. The slaughtering of the pigs destroyed a key element of the Zabaleen recycling system as they ate household organic waste. Consequently, the Zabaleen no longer collected it from the households, and food lay rotting in the streets, creating ahealth hazard.[275]

Increasingly, waste became a political issue in Egypt. Eventually, the Egyptian government was forced to accept that their privatisation experiment had failed. When the 15-year contracts with the private companies came to an end in 2017 the government chose not to renew them. Instead a 'new' system, that again draws on Zabaleen door to door collection, was gradually implemented. Even before the contracts of the private companies had expired, the government had agreed to give the Zabaleen uniforms and vehicles and, for the first time, granted them an official role in the city's waste processing system. As the new system was implemented, the streets of Cairo became much cleaner.[276] The cabinet allocated $17 million for the new waste collection system to purchase the necessary gear and to pay the wages.[277] By 2015 the government, in cooperation with the Zabaleen union, had registered 44 local disposal companies with a labour force of 1,000 families.[278]

The situation in Lagos, Nigeria, is another example where waste management services were taken back by the municipality after the 10-year contract with Visionscape seems to have been ended after only three years.[279] (see section 6.4.2.)

More research is needed to explore other possible cases of the remunicipalisation of waste management services in Africa that have been privatised.

10. Conclusions

Africa currently generates less waste than developed countries, with more waste being generated in urban areas than in rural areas. However, the amount of waste generated across the continent is beginning to increase due to factors such as growing populations, increasing urbanisation, and shifting consumption patterns shift. At the same time, waste collection rates are low, with only 44% of waste generated in sub-Saharan Africa being collected. Collection rates can vary widely within a country, between urban and rural areas, and even within a city, with waste collection in rural areas and poor urban areas often limited or non-existent.

There are many reasons for the low collection rates. These include a lack of institutional capacity in many cases for municipalities to deal with waste services; a rapidly increasing amount of waste being generated, particularly in cities, which overwhelms existing waste collection systems; and insufficient finances to run effective and equitable waste management services.

While the broad strokes of the problems relating to waste management services in Africa are known, it is difficult to implement effective strategies to deal with these problems because of a lack of detailed data and information. The Sustainable Development Goals commit countries to a range of targets in relation to waste management, but there is insufficient data on waste management services across different countries to assess whether these goals are attainable, or the extent to which they are being implemented.

Few countries have an effective Integrated Waste Management System in place. Legislative frameworks, allocation of responsibility and financing of waste is often fragmented and inadequate.

Partly because of the low collection rate, and the urgent need for government to deal with the mountains of waste that are being generated, which can cause severe health and environmental issues if not urgently dealt with, governments across the continent have turned to the private sector to fill the gap. This is a strategy that is encouraged by the International Financial Institutions and Aid organisations. However, evidence from cities such as Dar es Salaam show that where the private sector is brought in, the inequality of the waste management service being delivered increases as the private company is only interested in delivering a good quality service to areas where residents can afford to pay a fee for waste collection.

Street cleaning in many cities is privatised. This can happen either through the direct contracting out of the service to a private company, or by the municipality no longer

providing the service but instead encouraging local communities to 'volunteer' to keep the public spaces in their community clean. Often this is done in the name of community empowerment or citizen duty, but is often simply a way for municipalities to take a service, which generates no income, off their books.

Dumping of waste is a common mechanism for disposing of waste. Open burning of waste, which often accompanies dumping, creates environmental problems and is harmful to the health of communities. Many cities have insufficient landfill sites, with existing landfill sites often overflowing and an environmental hazard. However, many cities are focusing on improving landfill sites, and building new ones, with less focus on reducing, reusing and recycling waste as part of an integrated waste management strategy. Where municipalities have taken the lead on recycling efforts, the result has generally been the creation of jobs, and cleaner, safer cities.

Informal waste workers play a key role in recycling waste. In many countries they save municipalities large amounts of money as they divert recyclable waste away from the landfill sites. And yet governments are often reluctant to recognize the role that they play, and their vital importance to the system of waste management. In Egypt, the failure of the government to recognize their importance resulted in waste accumulating, and a massive drop-off in recycling when the informal waste workers were excluded and the private sector was brought in. In some countries, where private waste companies have become involved in recycling, tension has arisen between informal waste workers and the private companies. The private companies see the informal recycling activities as effectively cutting their profits. This has led to social unrest and conflict in some cases.

Waste-to-energy is becoming an increasingly popular solution to both waste management and small-scale energy generation. But it also has major downsides: it can undermine recycling and waste prevention initiatives, and if toxic material is burnt can also add to problems of pollution and environmental degradation. Additionally, waste-to-energy plants open the door to further privatisation of waste management services. Waste-to-energy is very capital intensive and therefore often depends on long contracts with multinational companies, which are keen to enter the lucrative waste market.

The financing of waste management services is a major problem – often municipalities are unable to raise sufficient revenue from delivering the service locally, and generally do not get sufficient finances from the national fiscus to make up the shortfall. The reasons for inadequate local revenue generation are many. They include inefficient revenue collection, a reluctance or inability of local residents to pay more than a small amount for waste collection services, the lack of ringfencing of waste revenue in municipal accounts, and the lack of prioritization of waste management services in the municipal budget.

Both informal and formal workers in the waste management sector suffer from low pay, poor working conditions and a lack of health and safety protections. It is imperative that informal and formal workers strategize and join forces to improve conditions for workers, as well as the service that municipalities deliver.

11. Recommendations

Accurate and comprehensive waste-related data collection for Africa. It is very difficult to develop coherent strategies and approaches to effective waste management services if there is not reliable comprehensive data available. It is strongly recommended that governments are lobbied to gather this data and make it widely accessible. The data collected must include labour statistics for municipal waste workers which can be used to inform policy developments and objective benchmarking.

Municipal capacity to deliver adequate and equitable waste management services are a priority for the continent. Limited municipal capacity to deliver waste management services is often a major hinderance to an effective and accessible service and needs to be strengthened. Trade unions need to be recognized as having a right to engage with government over urban policy and particularly over:

- The design and implementation of fair, integrated municipal waste systems and national frameworks that provide accessible, equitable, quality municipal services, while taking full advantage of the potential represented by the circular economy to generate decent employment opportunities;
- Sustainable financing systems as well as adequate staffing levels and training for municipal waste services
- Public solutions to the lack of investment in infrastructures, including viable alternatives to unsustainable open dumps and landfills that work for the communities and for the workers.

Trade unions need to advocate for the in-sourcing or remunicipalisation of municipal waste services. There are many good practices and success stories of publicly owned and managed waste management services worldwide, that are sustainable and work in the public interest rather than in the interest of private shareholders. In Africa these need to be better identified and documented.

Integrated waste management systems are an urgent priority for African cities and communities. Governments in all countries have a responsibility to implement an integrated waste management system which is sensitive to the need to deal with toxic and hazardous and harmful material in a way that is not harmful to the health and safety of workers and communities. The obligation of states to deal with hazardous waste as a human rights issues is emphasised in the UN Special Rapporteur's report[280]. Such a system needs to take account of the need to promote recycling, ensure effective collection, and ensure that there are safe waste disposal mechanisms (e. g. through the development of properly managed landfill sites). In line with the African Union's Agenda 2063 commitment that cities must recycle at least 50% of their waste by 2023, recycling initiatives need to become a major focus of waste management services in all countries.

The participation and the protection of the livelihoods of formal and informal waste workers and the involvement of local communities are a necessary condition for developing successful systems.

Consultation with workers and communities is a requirement prior to decision-making and investment. Many waste management decisions impact heavily on communities. These can include decisions around what level of service will be delivered, and where landfill sites will be established. Too often these decisions are taken without proper consultation with workers and communities. The location of waste infrastructure such as landfill sites and waste-to-energy plants has caused conflict and opposition in many places and in some cases stopped major construction plans. Trade unions, together with other relevant organisations, need to push government to ensure that proper consultation takes place.

Municipal waste collection services need to be equitable. Trade unions need to lobby for more equitable waste management services to be provided across a country and within a municipal area. Waste management services should not worsen inequality in a country by providing a differential service depending on income levels; on the rural/urban divide; or on whether it is an affluent area or a slum to be services. As essential public services, waste services should rather contribute to reducing poverty and inequality for all. Public waste management services are more likely to provide waste management services for the whole of the population than private companies, because they are not driven by the profit maximising imperative.

Hazardous waste and dealing with plastic waste need to be tackled on a priority basis. All countries need to pass national legislation to give effect to the Bamako Convention, and put in place effective measures to deal with hazardous waste. There needs to be a recognition that hazardous waste relates not only to waste produced through mining operations, or in chemical factories, but can also be waste that is allowed to fester in open dumpsites, or in poorly managed landfill sites. Municipalities in particular need to develop more effective strategies: to do so they need greater support by central governments and international institutions for this.

States must take responsibility for hazardous and harmful substances and act accordingly. The UN Special Rapporteurs report on hazardous substances and waste has called for the global community to adopt an instrument to prevent and minimize toxic exposures. Such an instrument would put an explicit obligation on every state to have an effective system in place to prevent and minimize toxic exposures; as well as to act on well-characterized threats to life and health of children and different genders.[281]

Waste management workers and must be valued and integrally involved in raising awareness, educating service users, communities and governments to the need to reduce, reuse and recycle waste. Municipal workers and informal waste workers – also through their labour unions and association - can play a critical role in educating communities on effective and safe waste management and can sensitize them to the vital role that municipal waste workers play ensuring a clean, healthy environment for all.

Obstacles to recycling waste must be removed. Clear strategies need to be developed to overcome many of the difficulties associated with recycling waste where no such strategies and facilities exist. These include a lack of legislation and regulatory frameworks for recycling; no strategies to promote separation of waste at source; the

fact that recycling is often not integrated into municipal waste management services; and lack of investment in recycling infrastructures.

Composting initiatives are adapted, sustainable waste management strategies and must be strongly encouraged. Due to the high percentage of organic waste produces in Africa composting initiatives should be actively encouraged. Examples that build on local and traditional knowledge, like Mali, which recycles 85% of its waste by fertilising the soil and Egypt's Zabaleen community which feeds Cairo's food waste to their pigs and goats, can serve as showcases for the rest of the continent.

The gender dimension of waste management services must be considered and embedded in any waste management system. Women represent the larger share of informal waste workers. Women are also typically found in the lower paid, most vulnerable jobs in formal waste management services, such as street cleaning. Measurement systems need to be put in place to assess gender breakdown and develop adequate policies to strengthen access, equality and safety for women workers in the waste sector.

Health and safety health and safety is a major concern for waste management workers requiring urgent action by governments and municipalities. Informal waste workers generally have no access to protective clothing or equipment and yet they face extremely hazardous conditions. Rather than trying to prevent informal waste workers from recycling waste on landfill sites and open dumps, which would undermine their livelihoods, the emphasis should be on developing more effective ways to protect them in this work. Formal waste workers also struggle to get adequate personal protective equipment and work in conditions which are often unhealthy and unsafe. Municipalities must be engaged to improve working conditions and provide adequate equipment for health and safety.

Privatisation in the name of cost-reduction and community empowerment perpetuates unequal access to waste service and locks workers in precarious, informal, unsafe employment. Volunteer schemes, where communities are encouraged to take on waste management services like street cleaning, need to be acknowledged as a form of perpetuating precarious and informal work without benefits into the formal waste management system. This institutionalizes poverty wages and cheap unprotected labour, and is at odds with the SDG commitments 8, 11 and 12, and with the New Urban agenda and the ILO decent work agenda. ‘Volunteers’ involved in this work need to rather be employed by municipalities directly to deliver the service.

The new drive for waste-to-energy in Africa should be regarded with caution. Municipalities should be encouraged to take on waste-to-energy initiatives themselves, focusing particularly on biogas digesters – turning organic waste into energy.

The potential of waste recycling in many African countries needs to receive the attention it deserves. There is the high potential for more effective recycling initiatives which includes using organic waste to feed animals, for compost and as a biofuel, as well recycling paper, glass and so on. Municipalities need to take on recycling as part of their waste management

services. This will create jobs, as well as make the cities cleaner and safer, as happened in Ouagadougou, Burkina Faso.

Informal waste workers need to be recognized for the important role they played in waste management services. Closer working relations between the informal workers and municipal workers needs to be encouraged to defend both informal and formal workers' conditions. Recent initiatives on the formalisation of previously informal recyclers in Morocco and Egypt show that the inclusion of informal waste workers can lead to higher recycling rates and better working conditions. However, at the same time, formalisation bears the danger of creating or intensifying a double-tiered workforce. Sustainable avenues of transition must be established so that all workers can benefit from it.

Adequate, sustainable financing is a fundamental to ensure access to quality waste services for all. Often waste management services are the responsibility of local government, but in many countries, the ability of local government to raise sufficient revenue at a local level to cover the cost of running the service is limited. It is strongly recommended that national government needs to contribute more of the national fiscus to municipalities to run effective waste management services. At the same time, municipalities need to prioritize the waste management budget at local level.

Trade unions need to identify effective ways of recruiting, prioritizing and representing municipal waste workers. This might mean reviewing and adapting their constitution; developing specific strategies to organising precarious and informal workers; and to develop adaptable, progressive union fee structures that flexible enough to deal with the variable income of these workers.

Trade unions need to take up issues relevant to all waste workers, regardless of their status. All waste workers, weather formally employed by the municipal sector or private sector or working in the informal economy, need improved pay, better working conditions and access to adequate personal protective equipment (PPE). Unionisation is key to achieve this goal. Closer collaboration between informal waste worker organisations and municipal trade unions is vital to win decent working conditions for all waste service workers and ensure quality waste services for all.

12.Notes

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