

## Future Directions of Municipal Solid Waste Management in Africa

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The attractiveness of many cities in Africa is marred by the inefficient collection, management, disposal and reuse of municipal solid waste (MSW). Rectifying this requires a change in attitude towards how MSW is viewed. MSW needs to be viewed as a resource that should be incorporated into human development agenda and urban development. This has the potential for generating income for cities in Africa through the re-use of waste for purposes such as energy generation. This, however, requires the adoption of appropriate technologies, most of which are not readily available in Africa. The inability of African countries to make efficient use of their waste through re-use suggests that as a future direction, African countries need to adopt a set of appropriate technologies that will assist them to convert waste into re-usable assets.

### Introduction

Green issues have become cohesive factors that override divisive socio-economic and political government agendas.<sup>1</sup> One of these issues is MSW, and as such it requires investigation regarding its future use.<sup>2,3</sup> MSW can be viewed as a component of the environmental management process that has a direct bearing on a city's attractiveness and its social, economic and political development. In legal terms, it is a government service to which every citizen is entitled.<sup>4,5</sup> First-world countries have given MSW management priority by adopting strict regulations and innovative measures for its use (e.g. energy generation), as well as monitoring mechanisms that seek to ensure that MSW is infused into the development agenda of the cities.<sup>6</sup>

Rates and quantities of solid-waste generation, composition and disposition vary across Africa, these being linked to local economies, levels of industrial development, waste management systems and lifestyles of the country concerned.<sup>7,8</sup> The quality and availability of data on solid-waste generation and management in Africa is, however, scanty, and this impedes the development of programmes that will promote efficient use of solid waste in Africa. Developing a broader understanding of the types of solid waste that are generated by African cities, and researching how these can be used to advance development is now more than desirable, as solid waste is increasingly seen as an alternative source of renewable energy.

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**MSW has a direct bearing on a city's attractiveness and its social, economic and political development**

Devising better management options through re-use of waste in Africa will help the continent to achieve the Millennium Development Goal (MDG) number 7: to ensure environmental sustainability.

However, there are factors that directly or indirectly influence MSW management in Africa.<sup>9</sup> They include natural environmental concerns, social norms and associated concerns, economic factors, historical influences, political contexts, local, regional and national legislation, institutional factors, educational factors, technological developments, human resource deployment and financial constraints. These, combined, bring to the fore challenges associated with future directions of MSW management in Africa.

### **Status of solid-waste production and management in some African countries**

Africa has a varied historical and political background of waste management. There have been, for instance, allegations that some African countries serve as dumping grounds for toxic and hazardous waste, produced mostly in the developed world. To some extent this is directly linked to a culture of economic dependency on developed countries; the inherent belief that Africa can be used for any purpose; corrupt traditions and practices that are endemic to Africa and which ultimately affect all facets of lifestyles in Africa; and environmental management practices. Some of the largest African cities like Nairobi, Dar es Salaam, Lagos, Cairo and Johannesburg are experiencing population growth trends that are

primarily fuelled by high levels of migration.<sup>10</sup> This has led to the increased production of solid waste in these cities, with waste-collection systems as a result becoming inefficient, so that the cities lose their attractiveness. Proper sanitary landfills are still lacking in most African cities and waste is often thrown around in heaps. This is the direct cause of most cities in Africa being perceived as unhealthy.

By 2020 more than 50 per cent of the population in sub-Saharan Africa will be living in the cities.<sup>11</sup> This is likely to raise the daily rate of production of waste by as much as 1,0 kg per capita. For instance, the African Environment Outlook (AEO) of the United Nations Environmental Programme (UNEP) estimates that the per capita generation of solid waste is an average of 0,7 kg/day in Zimbabwe and 1,0 kg/day in Tanzania.<sup>12</sup> Most of this waste contains large proportions of organic matter. Mauritius generates around 1,1 kg/capita daily of mixed MSW, which has increased significantly from 0,8 kg per capita.<sup>13</sup>

South Africa has noted the impact of waste as a big challenge of the twenty-first century in its *Integrated Pollution and Waste Management Policy*, established by the Department of Environment Affairs and Tourism (DEAT).<sup>14</sup> The policy outlined goals to be achieved through the National Waste Management Strategy,<sup>15</sup> and highlighted the elements of integrated waste management planning, waste information systems, general waste collection, waste minimisation, recycling, waste treatment and disposal, capacity building, education and awareness as key intervention measures needed to promote efficient use and management of waste in Africa. According to

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Throughout Africa, less than half of the solid waste generated is collected

the 1999 State of Environmental Report,<sup>16</sup> South Africa generates over 42 million m<sup>3</sup> of solid waste every year. In 2001, the amount of waste produced was noted as increasing due to population growth, urbanisation and economic growth.

What these dynamics of waste production and management demonstrate is that there are disparities between higher-income and lower-income countries in the volume of waste generation and management strategies. Higher-income countries generate more waste per capita (approximately 2,7 m<sup>3</sup>/capita per annum) than the lower-income countries (approximately 0,2 m<sup>3</sup>/capita per annum).<sup>17</sup> This is reflected to a greater extent among African countries. For instance, Accra, Ibadan, Dakar, Abidjan and Lusaka generate waste in the range of 0,5 to 0,8 kg/capita per day, with a putrescible organic content of 35 to 80 per cent, and plastics, glass, and metals at less than 10 per cent. It is believed that because of improved standards of living and increased urbanisation the amount of waste generated by African cities will increase over the coming years. According to some studies,<sup>18</sup> waste generated in most urban areas in Africa will quadruple by 2025.

### Collection and disposal of solid waste in Africa

In urban centres throughout Africa, less than half of the solid waste generated is collected, and 95 per cent of that is neither contained nor recycled. It is indiscriminately thrown away at dumping sites on the periphery of urban centres, or at temporary sites. These inefficient forms of solid-waste disposal have serious health and environmental impacts, which extend beyond their boundaries,

polluting nearby water sources and serving as breeding grounds for disease.

Among the low-income countries this is worse. For instance, in Lesotho only 7 per cent of urban households have garbage collection facilities, while in Gaborone (Botswana) and Maputo (Mozambique), nearly all solid waste is disposed of in an open dump rather than a sanitary landfill.<sup>19</sup> Afon<sup>20</sup> reported in 2005 that in Lagos (Nigeria) heaps of garbage piled up at street corners and were often dumped indiscriminately.

In spite of these challenges, it can be mentioned that some African countries have set themselves ambitious goals and targets that seek to implement effective waste management techniques and strategies in order to promote proper management and disposal of waste. These include recycling, composting and anaerobic digestion. Progress made so far on these areas and technologies and the methods adopted are encouraging.

### Future directions of solid-waste management in Africa

Solid-waste management is therefore a significant environmental challenge in Africa, especially in large cities. Thus alternative uses, such as composting, separation and recycling, which are capable of converting waste into assets and also assist in generating employment and income, are desirable if the continent is to catch up with the international trends and standards of managing MSW. For Africa to attain this there are a number of hurdles that still need to be overcome. These

**In Africa there are very few alternative uses of solid waste**



include improving methods that are currently used to collect and dispose of waste, the most popular of which, in many African countries, is, as we have seen, use of unsanitary landfills or open dumping. This has promoted scavenging, which renders low social status to those who promote recycling by re-using waste for various purposes. The lack of advanced methods that are supported by appropriate technologies means that in Africa there are very few alternative uses of solid waste. To change this situation, investment in solid-waste management and technologies needs to be promoted. This should be supported by extensive research on MSW management that should put emphasis on:

- natural environmental analysis;
- social norms and concerns analysis;
- analysis of economic factors that promote waste production;
- historical influences on waste disposal and management in Africa;
- political contexts of waste management in Africa;
- local, regional and national legislation on waste management in various countries of Africa;
- institutional factors, including educational factors, that would promote innovative uses of waste in Africa; and
- technological developments for waste re-use and management that are suitable for African economies and the environment.

### Concluding remarks

Solid-waste management is the function that is primarily provided by local governments in most countries, especially the developing countries.<sup>21</sup>

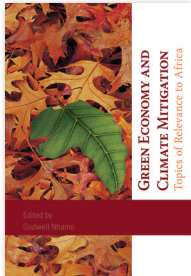
However, proper handling and disposal of waste is an indicator of how successfully and effectively the local government system is working. Among the developed nations, waste is no longer a burden of state but a resource that has been integrated into energy-generating strategies. However, as reflected in this brief, it seems that in Africa waste management and its re-use require drastic improvement through the adoption of the latest appropriate technologies.

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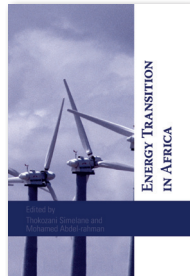
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**Proper handling and disposal of waste is an indicator of how effectively the local government system is working**



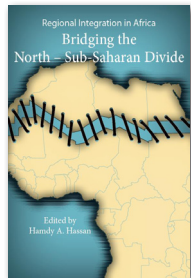
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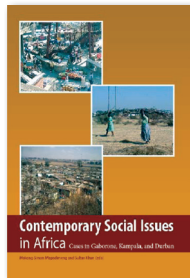
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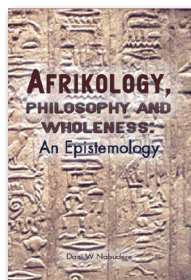
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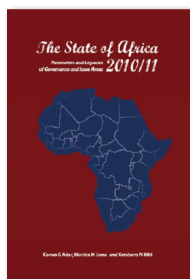
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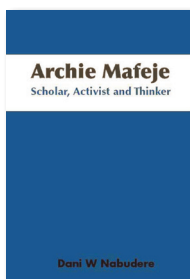
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