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Challenges and Possible Panacea to the Municipal Solid Wastes Management in Nigeria

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Abstract. This paper provides overview of the state of municipal solid waste management (MSWM) by local authorities in Nigeria. Different areas through which the challenges can be tackled in order to improve municipal solid waste (MSW) services are discussed. With increasing global change pressures (population explosion, haphazard rapid urbanization, climate change etc.), coupled with existing un-sustainability factors, cities in developing countries are most likely to experience difficulties in efficiently managing MSW. The unplanned urbanization growth will definitely lead to huge problems on governments especially for meeting the increasing demand for proper and healthy municipal services. The growth results in increasing quantity and complexity of the generated wastes and overburdens. The rural economy needs to be improved if rural–urban migration is to be managed. Communal efforts of local, state and federal government, the stakeholders, Non-Governmental Organizations and the private sector are paramount to attaining high level of development and sustainable MSWM.

Keywords: MSWM challenges, Nigeria, Poor economic growth, MSWM.

Introduction

Solid wastes constitute a growing problem and have gained increased political awareness over recent years. The amount of solid waste generated in the world is steadily increasing and every government in the world is currently focusing on methods to approach the challenges posed by MSWM [1]. The increase in population as a result of industrial revolution in major towns and cities of the world have necessitated rapid growth or high rate of urbanization and development, for instance, Nigeria cities in recent time have witnessed rapid population growth resulting from influx of migrants from rural area to the cities [2]. This brings about the concentration of industrial, commercial, infrastructural, administration and government activities in urban cities. Thus, leading to rapid growth of cities population; the rate of waste generation also increases, leading to increased burning of refuse and high rate of air pollution, which in turn increased concentration of green house gases that cause global warming and subsequent climate change. The volume of waste generated in any city is often a reflection of the intensity of human activities such as population growth, urbanization and social development, resources exploitation and unchecked technological advancement[2].

Environment health conditions are hampered through the pollution of ground and surface water by leachates from dump sites. Air pollution is often caused by open burning at dumps leading to foul odours and wind-blown litters. In dump sites, Methane is an important greenhouse gas, which is a by-product of the anaerobic decomposition of organic wastes.

The best approach to solid waste management (SWM) in developing countries has been an important concern for researchers and policy-makers. SWM should not be viewed from a narrow perspective of collection and disposal, but should instead be seen as a part of issues arising out of rapid urbanization. Furedy (1992) [3] also observed that solid waste planning in developing countries does not focus on the concept of “resource recognition”, i.e. treating waste as an unused resource. Effective management of municipal waste is required, but local authorities in many

countries are constrained by limited finances and inadequate services [4-6]. Wastes usually end up as illegal dumps on streets, open spaces and waste land.

The importance of waste collection, transfer and disposal cannot be over-emphasized. Apart from the issue of aesthetics, uncollected wastes constitute a health risk, which can be a serious consideration in low income residential areas. Leachate from uncollected and decomposed garbage waste can contaminate groundwater and this could have enormous health implications in low-income communities where the use of well-water for drinking is common [7].

Challenges of MSWM in Nigeria

Nigerian cities are largely characterized by the public provision of urban infrastructure services. These services, such as water supply, drainage, sewerage, access roads and solid waste collection and disposal are usually of poor quality [8]. The administrative structure and financing arrangements of Nigeria government are pointers to the problem of solid waste management. The three tiers of government in Nigeria are often involved in one way or another in the provision of services in the country's major urban centres. Constitutionally, some of the services fall within the statutory function of one tier of government or another. For instance, the 1989 federal constitution assigned to city councils the responsibility for the construction and maintenance of some categories of road, for street drains, for the installation of street lighting and for the provision of refuse services [9]. In practice, however, state government sometimes steps in to complement the efforts of municipal councils, particularly in those cities that are state/regional capitals. As a result, the responsibility for waste services varies between Nigerian cities [9].

Poor state of MSWM in Nigeria is also characterized by poor financing of public waste services provision. The annual average financial resources allocated to sewerage, drainage and refuse services by all the states in Nigeria fell from US\$ 163 million between 1981 and 1985 to only US\$ 1.8 million between 2005 and 2010 (Table 1). It was not possible to determine the amount allocated exclusively to solid waste services. This was because the national development plan documents

that were consulted did not disaggregate the allocation to each category. However, public funds for waste services are not usually adequate, considering the many expanding cities in the country [9].

Table 1 Initial capital allocation to sewerage, drainage and refuse disposal by all states during three plans period (millions of Naira and its US dollar equivalents)

Plan period	State Government allocation	Annual Average
1975 – 1980	302 (US \$ 487)	50 (US\$ 82)
1981-1985	493 (US\$ 814)	164 (US\$163)
1990 – 1992	435 (US\$ 52)	145 (US\$ 17)
1993 – 1997	398 (US\$ 8.4)	75 (US\$ 2.7)
2000-2005	486 (US\$ 4.7)	185 (US\$ 2.1)
2005-2010	645 (US\$4.1)	280 (US\$ 1.8)

Note: Currency conversions are based on the Central Bank of Nigeria exchange rate at the first year of each plan period.

SOURCE: Adapted from various Nigerian National Plan documents, Ogu, 2000

A national profile of the Nigerian environment that presented solid waste disposal in the country has one of the most intractable environmental problems. The national profile observed that in many Nigerian cities, the volume of solid wastes has overwhelmed urban administrators' capacity to plan for their collection and disposal. Thus, it is not uncommon to find urban streets and roads practically blocked by solid wastes [10]. The national profile suggests that the annual per capita solid waste generated in Nigeria is 30 kilos, which amounts to about 3 million tonnes a year if we use an approximate national population Figure of 150 million. Table 2 presents the volume of wastes generated in some Nigerian cities.

Table 2 Estimated and projected volumes of solid waste in some Nigerian cities (tonnes/year)

Urban area	2000	2010	2020 (Projected)
Lagos	999,641	1.23 x 10 ⁵	1.61 x 10 ⁵
Ibadan	579,723	996,102	1.14 x 10 ⁵
Port-Harcourt	357,436	762,143	1.03x 10 ⁵
Warri	129,921	174, 372	547,242
Kaduna	428,563	761,479	1.04x 10 ⁵
Kano	526,671	921,511	1.30x 10 ⁵

Public provision of waste services in Nigeria is also characterized by little recovery from service beneficiaries and there is the added problem of the inadequate institutional capacity of the public agencies responsible for environmental waste management [11]. The constraints on public agencies have sometimes led city authorities to resort to one form of private sector participation or another. In Lagos, the Nigerian commercial capital and largest city, the open competition method of private sector participation was implemented for about five years before it was replaced by the contract method in 1985 [10]. The Lagos State Waste Disposal Board divided the city into zones and awarded contracts to a number of selected private operators who were required to collect and dispose of industrial and commercial wastes in the various zones [12].

Possible panacea to MSWM in Nigeria

Involvement of the three tiers of the Government in embarking on eco-friendly and green waste management technological approach and their support for the private sector for similar initiatives with appropriate policies put in place to drive these initiatives to move the country towards zero waste pollution.

The baseline information, including the spatial-temporal aspect of waste management composition, about the composition of waste should be known, this

should also include general mapping and identification of waste composition in the urban cities.

The 4Rs - Reduce, Reuse, Recycle and Restoration of damaged resources of Environment, should be adopted and applied all the times, so that waste can be turned to wealth.

The steps in waste management, starting from household waste storage, to waste segregation recycling should be brought to the awareness of the public as attitudes to waste can affect the whole waste management system.

Government should institutionalize legislations and make such enforceable.

Also, indigenous knowledge should be developed to tackle adverse climate change impacts.

Conclusion

Better management of our wastes can significantly reduce emissions of gases to the atmosphere, thus preventing depletion of ozone layer. Through engagement of all the principals in the waste hierarchy, waste materials can be turned into wealth, in effect, reducing the need for increasing extraction of raw materials and fossil fuels. Recovery technologies can offer opportunities to recover materials and energy from wastes, which would otherwise be disposed of to the environment or landfill, with the attendant release of green-house gases to the atmosphere. This will reduce the impact of climate change. Awareness to the general public and the entire stakeholders in the field of environmental management, the local, state and federal government as well as the public must have their activities streamlined and properly coordinated to ensure that the cities in developing countries transits to a low-carbon or green economy within the shortest time.

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