



Solid Waste Management in Nigeria

By Iriruaga Edith Tobore

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Editor' Note: This paper has been targeted for a broad audience. The level of scientific detail provided is therefore not as high as would be normally be required in technical paper subject to peer review by environment industry professionals.

Introduction

Nigeria is located at the Western part of Africa. It has 36 States and a Federal Capital Territory. The World Bank report of 2011 stated the population of Nigeria as 162, 470, 737 with a GDP of US\$ 235.9billion. With increase in population, urbanization and industrialization including globalization, the challenge of solid waste management (SWM) in the Country has increased and even now complex.

Contributory factors to the challenge include inadequate regulatory framework that has manifested in lack of interest of private sector investment in service delivery (infrastructure); uncoordinated institutional functions; low political will, low capacity to discharges duties, poor data information for planning, wrong attitude of waste generator amongst others. Yet on the increase is the demand for good waste management service for public health and environmental protection.

However the above generality in SWM in Nigeria, the commitment of the Lagos State Government towards sustainable waste management has made Lagos State a model for other States in the Country. This paper will be describing the waste management situation in Nigeria with notable examples from Lagos State.

Relevant Legislation

Environmental issue is administered by the Ministry of Environment at the Federal and States levels with Environmental Health department at Local Government level. Established legislations relating to waste management include;

- THE HARMFUL WASTE (SPECIAL CRIMINAL PROVISIONS, ETC) ACT , 1988
- THE NATIONAL ENVIRONMENTAL STANDARDS AND REGULATIONS ENFORCEMENT AGENCY ACT 2007 (NESREA ACT, repealed the Federal Environmental Protection Act of 1988)
- ENVIRONMENTAL IMPACT ASSESSMENT ACT OF 1992

Relevant regulations are

- NATIONAL ENVIRONMENTAL (SANITATION AND WASTES CONTROL) REGULATIONS, 2009)
- THE National Environmental Protection (POLLUTION ABATEMENT IN INDUSTRIES AND FACILITIES GENERATING WASTE) REGULATIONS

Legislations at the State level amongst other include;

- Lagos State Waste Management Authority
- Oyo State Solid Waste Management
- Kano State Refuse Management and Sanitation Board
- Kaduna State Environmental Protection Authority Law
- Rivers State Environmental Sanitation Authority

Waste Management Services

Waste Generation

There are varied data on waste generation and composition due to poor information management but notable of use is the study carried out by TC Ogwueleke in 2009 in some cities as shown below.

City	Population	Tonnage / month	Density (Kg/m ³)	Kg/Capita/Day
Lagos	8,029,200	255,556	294	0.63
Kano	3,248,700	156,676	290	0.56
Ibadan	307,840	135,391	330	0.51
Kaduna	1,458,900	114,433	320	0.58
Port Harcourt	1,053,900	117,825	300	0.60
Makurdi	249,000	24,242	340	0.48
Onitsha	509,500	84,137	310	0.53
Nsukka	100,700	12,000	370	0.44
Abuja	159,900	14,785	280	0.66

Presently, the rate of waste generation in Lagos (with estimated population over 10 million in 2012) is 9, 000 tonnes/day (Lagos State Waste Management Authority, LAWMA) while in Kano State, the rate is 3, 849 tonnes/day (Bayero University Kano Consultancy Unit). Generally, the average rate of generation is estimated as 0.5kg/capital/day.

Biodegradable waste account for over 50% of waste generated with other component estimated at different composition in different States. A recent study carried by the Bayero University Kano Consultancy Unit (March, 2012) estimated the following composition for Polythene/cellophane= 19% Paper = 12.7%, Metal= 10%, Glass=8.7%, Plastics=11.3%, Fines (ash, dust and sand)=12% Miscellaneous =9% while a study by the Basel Convention Coordinating Centre for Africa in 2009 reveals that 70% of all imports were used electronic electrical equipment of which about 30% could be described as E-Waste.

Generally, all waste streams are stored together in either bags or containers (such as used buckets) and plastics waste bins. LAWMA provides 240 litres bins for households after annual payment of the Land Use charge through the Land Records Company.

Waste Collection

Waste Collection service is offered mainly by the public sector though some State Governments operate some level of formal public-private participation (PPP). It is not, however, uncommon to

see informal waste collector using local vehicles (push carts) for collection services from door to door in some parts of Nigerian cities.

Collection service is mostly exclusive to the urban cities with not higher than 50% efficiency in most cities with Lagos and Calabar (in Cross Rivers State) as exception. The rural areas and urban slums are hardly rendered such services. The relatively success story of Lagos could be traced to the level of cost recovery from the public (waste generators) and strong political will towards good waste management in the State.

The Lagos State Government through LAWMA engages, coordinates and evaluates the activities of its private sector participant (they are over 300) into Municipal Solid Waste Collection. Collection frequency is either once or twice a week and usually on door –to-door basis. This is usually difficult in densely populated areas and it not uncommon that collection frequency is elongated.

Waste Transfer

Waste transfer station is not common in Nigeria the only State that has a waste transfer station is Lagos State. Below is the activity of the two transfer loading stations in the State for the 1st half of 2012.

MONTH	SIMPSON	OSHODI
JANUARY	6,389.35 m ³	4,064.45 m ³
FEBRUARY	4,988.86 m ³	4,970.48 m ³
MARCH	8,367.57 m ³	4,770.89 m ³
APRIL	7,404.70 m ³	3,915.59 m ³
MAY	8,562.08 m ³	6,121.62 m ³
JUNE	8,303.06 m ³	9,276.42 m ³

Source: Lagos State Waste Management Authority

Recycling

Recycling activities have been more of the informal sector on selected valuable materials. The formal sector is becoming interested in some States as they are pilot projects either running or planned for. In such projects source separation of waste is encouraged.

Examples of recycling activities in Lagos State include;

- Compost plant at Ikorodu for the treatment of market waste - it generated a minimum of 24,000 tonnes and maximum of 42,000.00 tonnes of compost in 2nd half of 2011
- Waste-To- Energy plant at Ikosi Market – generate biogas from the market waste that is used to operate 2KVA generator at the market.
- Plastic recycling plant at Olushosun for the conversion of water sachet into garbage bags – the Government introduced a buy back programme for water sachet, cartons, paper and glass.
- Formulation of recycling clubs in secondary schools to instil recycling habit in young people



Recycling Bank



Waste-To-Energy Plant at Ikosi market

Informal Recycling Sector

The Informal recycling sector is very active in waste management system in Nigeria. We have them either as itinerant waste buyers or scavengers and they target valuable materials such as plastics, paper, used electronic electrical equipment, glass, metal etc. Their activities have great impact in the reduction of the net volume of waste disposed of. However their importance, there is no formal integration of this stakeholder into the system except in Lagos State.

LAWMA introduced recycling banks (see picture above) in some organized areas where household are encouraged to deposit their recyclables like plastics, cans, bottles while the organic component are collected from door-to- door. Some of the scavengers in the State are employed by the Authority to be the Resource managers of the recycling banks. The Resource Managers, in addition to the income received from the Authority, are also given the recyclables to trade to supplement their income. The wages paid to them is a sort of incentive to dissuade them from working at the dumpsite. However, the numbers of the recycling banks are not sufficient to cater for the numbers of scavengers in the cities hence some of them are still allowed to scavenge materials at the site but are encouraged to use protective equipments.

Disposal

Wastes are disposed in dumpsites at designated land either owned by the government or private owner and in some cases in burrow pits and empty spaces illegally. The largest dumpsite possibly in Nigeria is the Olusohun dumpsite in Lagos. The Lagos State Government is working on extracting methane gas from the site as well as another dumpsite at Abule Egba. There are five approved dumpsites in total in the State. Below is the disposal activity for the 2nd half of 2011 and 1st half of 2012.

2011 half year report (Amount in Tonnes)	
July	263, 429.58
August	278, 770
September	274, 547
October	261, 694.40
November	267, 657
December	239, 282
2012 half (Amount Cubic metres)	
January	171, 092.65
February	355, 701.98
March	339, 020.58
April	350, 218.41
May	287, 193.77
June	314, 824

Source: Lagos State Waste Management Authority

The numerous dumpsites and heaps of dumps here and there in the Country pose serious environmental and health challenges and there is a need to check them.

Solid Waste Management Plan

There is no National Waste Management Plan in Nigeria and if any is available in any of the States it is likely it will not be substantial.

Recently, a draft Policy on Municipal and Agricultural Wastes was reviewed (August, 2012). It is hoped that the Policy in time will lead to development of a comprehensive legislation and possibly a plan that will address the issue of waste management in the Country. One major challenge in Nigeria is the enforcement and implementation of policy.

Challenges

Challenges in waste management service delivery include;

- Lack of comprehensive legal framework and enforcement of the existing regulations
- Low investment (private) in infrastructure
- Inadequate human capacity for administrative and technical issues
- Wrong attitude of the public towards solid waste disposal
- Financing –Cost recovery is low in most States and no funding
- Poor Planning – low data management and uncontrolled urbanization
- Uncoordinated institutional functions
- Low academic research and industry linkages
- Lack of the needed political will.

Intervention of the Waste Management Society of Nigeria

The Waste Management Society of Nigeria (WAMASON) with interest to develop waste management industry and practice in Nigeria has intervened in the following ways amongst others;

- Develop professional training courses to meet the manpower gap need of the waste industry
- Occasionally conduct campaigns to enlighten the public on proper waste handling.
- Develop a proposed Bill on National Waste Management and Control (the project is yet to be actualized)

Conclusions

There is a need to look beyond the challenges and collaborate on finding sustainable solutions that are viable in our local environment.

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Edith Tobore Iriruaga holds a degree in Industrial Chemistry from the University of Benin, Nigeria. She works with the Wastes Management Society of Nigeria (WAMASON) and involve since 2006 in coordination of human capacity development programme on different aspects of wastes management, organization of enlightenment campaigns and international programme (featured in Nigeria), and strategic partnership development.

She has been involved in projects on Environmental Impact Assessment, Environmental Audit, waste evacuation, planning and biological treatment of waste.

Edith Tobore Iriruaga is a member of the International Solid Wastes Association.