

Waste Management Strategies in Urban Areas of Cross River State, Nigeria

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Abstract

Waste management has become one of the concerns of government in developed and developing countries in order to improve her environmental hygiene. However, the brunt of waste on the living condition of the people has necessitated governments at all pedestals to enunciate waste management strategies, policies as well as techniques in that perspective. This paper however, assesses waste management strategies in two urban cities of which Ikom and Ogoja Urban Development Authorities were preferred. The study also adumbrated on the concept of waste management as well as various methods of waste disposal adopted in these two cities. The challenges of waste disposal were also accentuated in the study. Nevertheless, waste disposal techniques were discussed. Indeed, findings from respective agencies (Ikom and Ogoja Development Authority) portend that, there are paucity of operational trucks to aid in the conveyance of wastes to the dumps sites, lack of containers to deposit waste hence, waste are kept on the ground (flash point) in strategic locations. It was also revealed that staffs of the agencies are poorly funded and remunerated. That staff are owed for over six months, lack of adequate working aids such as, nose mask, hand gloves, lack of access road to enhance movement of operation truck to the dump sites. Indeed, it was recommended amongst other things that, government should release grants to enhance for effective delivery to the people, more operational trucks should be procured in a view to pave the way for timely evacuation of wastes with ease and workers (casual) should be provided with working aids such as nose, mask, hand gloves and rain boots.

Keywords: Waste management, strategies, urban areas, Cross River State, Nigeria.

1.0 INTRODUCTION

Waste management is the activities and actions required to control waste from its inception to its disposal. Nonetheless, this encompasses the collection, transport, treatment as well as discarding of waste together with monitoring and regulation of the waste management process. Shammar (2010) posits that waste can be solid, liquid or gas and each type have diverse methods of disposal and management. Waste management deals with all types of waste, including industrial, biological and households. Waste can pose a threat to human health. Lalit and Subhojit (2017) opined that waste management practices are not uniform among countries (developed and developing nations), regions (urban and rural areas), residential and industrial sectors can all take different method. An outsize portion of waste management practices deals with municipal solid waste (MSW) which is the bulk of

the waste that is created by households, industries as well as commercial activities. Through history, the amount of waste created by humans was inconsequential due to low population density and low societal levels of the exploitation of natural resources. It is imperative to note that widespread wastes produced during pre-modern times were mainly ashes and human biodegradable waste, and these were released back into the ground locally, with minimum environmental impact. Tools made out of wood or metal were generally passed down through one generation to another (Kurr, 2016).

Nevertheless, waste administration has posed serious threat due to its human physical condition and environmental sustainability implications. It is really a pressing issue the world over since a high percentage of waste currently generated is disposed of by open dumping. In justifying this claim, Shammar (2010) asserts that management of waste is a worldwide challenging issue especially in developing countries and has adverse environmental impacts on human existence. Naturally, mankind relies on the environment and its resources to sustain their lives. Solid waste mismanagement has posed restless conditions and environmental problems in Nigeria and many other developing nations. Indeed, household waste management, collection and disposal have always been a universal problem. This is due to the premise that well-organized and appropriate collection and disposal of solid waste has not been acknowledged as essential to the cleanliness and health of urban societies since the nineteenth century.

Over the course of the first half of the twentieth century, sanitary engineers and the broader public also came to understand that the inappropriate treatment of waste could cause major environmental degradation, while recycling could contribute significantly to environmental sustainability. Management of waste is very important to human existence in the sense that, improperly stored refuse can cause health, safety and economic problems. All living organisms create waste, but humans create far more waste than other species. Hence, in order to encourage and promote economic growth giving our huge public revenue, there is the need for the government to revise its macroeconomic policy peculiar to environmental resources so as to enhance economic development of the country (Oti and Odey, 2016). Hence, the objective of this study is to ascertain the waste management strategies adopted in two major urban areas of Cross River State, Nigeria.

2.0 LITERATURE REVIEW

2.1 The concept of waste management

According to Ralph (1964), waste management simply connotes the collection, keeping, treatment and disposal of misuse items in such a way as to render it harmless to human and animal life, the ecology and the environment generally. This is imperative because the importance of waste management is to protect human lives in particular and the environment at large. The United Nations (UN, 2008) described sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own need. The principle of sustainable development seeks to achieve societal and environmental equity while in pursuit of economic gain. From the point of view of sustainable development, waste can be interpreted broadly or narrowly in the following perspectives: Broadly it might be seen as including various forms of pollutant which ranges from discharges of toxins into the commons or of emissions into the atmosphere. A narrow interpretation on the other hand, can be characterized as those by-products of production and consumption that are the subject of specific waste control programmes. A cursory look at the definitions of waste in media and print documents portends that wastes are considered as unwanted goods that are no longer useful or desirable. In the German Waste Act of August (1993), waste is defined as "a portable object that has been abandoned by the owner" and also as an "orderly disposal garbage". The Framework Directive on waste in the United Kingdom

posits' that waste is a substance or an object that is discarded by its owners. Waste is defined as those materials which are generated as a result of normal operations over which we have control in terms of their production, disposal or discharge (Lalit & Subhojit, 2017). Nonetheless, waste could be seen as any substance or object which the producer or holder discards or intends or is required to discard. Vandana and Singh (2017) defined waste as the sum total of all the materials thrown away from homes and commercial establishments and collected by local governments. It includes food wastes, household waste, containers and product packaging, dirt, demolition and construction wastes and other kinds of inorganic wastes from residential, commercial and institutional sources, the collection and disposal of which are performed by local authorities and which may be in either solid or semi-solid form. Examples of this kind of waste are electronic appliances, newspapers, clothing, food scrapes, boxes, disposable table wares, office and classroom papers, furniture, wood, pallets, rubber tyres and restaurant wastes. According to Euan (2016), waste management has to do with the collection, transport, storage, treatment, recovery and disposal of waste. Nonetheless, Mexican scholars view waste management as the body of actions related to waste characterization and classification, waste selection, storage and transportation, as well as its transfer, treatment and final disposal. Waste management is the collection, transportation, processing, managing, and monitoring of waste materials. These materials can be solid, liquid, or gaseous substances as the case may be.

2.2 Challenges of waste disposal

Generation of too much waste: One of the major waste disposal problems is accredited to the generation of too much waste. America alone is responsible for the producing of about 220 million tons of waste annually. In 2007 for instance, it was recorded that Americans generated nearly 260 million tons of municipal solid waste. This is about 2.1 kg per person each day. The point made here lies on the premise that, if these are only figures in America, let's try to imagine the amount of waste produced by the rest of the population across the globe. According to the World Bank report, the average global municipal solid waste (MSW) generation per person on daily basis is about 1.2 kg and the figure is expected to rise up to 1.5 kg by 2025. This therefore showcased that every state and local authority suffers the problem of effective discarding of waste due to the generation of too much waste.

Most of the wastes are toxic in nature: A good number of states as well as local authority legislations are generally slipshod on regulating the ever-expanding manufacturing companies. On a daily basis, these companies produce toxic products that end up getting thrown away after use. Most of the products contain hazardous and health-threatening chemicals. Indeed, reportage by the U.S. indicates that more than 60,000 untested chemicals are present in the consumer products in homes. There are even products known to contain toxic chemicals, such as Biphenyl-A (BPA) often presented in plastic toys, but they are still poorly regulated. Packaging is also one of the biggest and rapidly enlarging categories of solid waste which accounts for over 30 percent of municipal solid waste and approximately 40 percent of the wastes are plastic which are never ecological in nature.

Regulations are based on vested interests: Since waste disposal and management has become a profit making endeavour, those who opined for safe, quality as well as suitable management of waste disposal are outmatched by industries in the business. Large enterprises in waste disposal business dominate all aspects of the market from operating landfills, sewer systems and incinerators to recycling facilities. The corporations simply aim at making profits regardless of the waste reduction requirements or the resultant destructive ecological collision. As such, they work in partnership with vested interest regulators thereby creating a big problem in the effective regulation of waste disposal, which has worsened the devotions to waste reduction and recycling programs. To make matters worse, even some state officials

work together with such industry officials to expand landfills, increase waste tonnage, and develop new waste disposal or recycling or treatment facilities to augment profits.

Dependence on dying technologies to reduce and recycle waste: Waste disposal and management facilities as well as state resources have continued to rely on myopic and quickie solutions instead of developing effective recycling and waste reduction programs. Consequently, it has created continued reliance on the use of out-dated technologies to deal with waste discarding. The problem here lies on the premise that most states are unenthusiastic and less ingenious towards advancing new technologies for reducing the toxicity as well as degree of waste or enhancing recycling, especially solid waste (Ministry of Health, 1995).

Some of the technologies marked as “green” are not true in actual sense: Recycling knowledge such as plasma arc, gasification, and pyrolysis are often marked as “green” but the truth of the matter is that they are not 100 per cent green. These recycling technologies burn up waste with little or no oxygen and for this reason therefore, it does not differentiate them from the traditional incinerators which produce energy from burning waste. As much as setting waste on fire to produce energy is considered green because it does not involve the use of fossil fuel, it still releases toxic materials into the environment. Also like the traditional waste incineration systems, these technologies emit toxic ash into the atmosphere that can potentially harm people’s health and the environment.

2.3 Solutions to waste disposal challenge

Eco-responsibility “Reduce, Re-use, Recycle”: Eco-responsibility is concerned with three Rs mantra which means Re-use, Reduce, and Recycle. Local communities, authorities and states need to put more efforts towards the education of waste management. Essentially, the slogan can help reduce the levels of unsustainable waste that prove awkward in various environments across the world. With the implementation and consistent practice of the three Rs, communities and local authorities as well as states will not only have the temerity to deal with waste but also move in the path of achieving zero wastes. More emphasis should be placed on responsible resource utilization with the intent of avoidance, maximizing recycling and waste reduction methods. Avoidance and waste reduction involves mechanisms such as repair of broken things instead of buying new, purchasing and re-using second-hand items as well as designing reusable and recyclable products (Giusti, 2009).

Effective waste disposal and management: An efficient tactic for municipal waste disposal and management can offer improved solutions for the various challenges connected with waste materials. It ensures there is gradual upgrading of new and cost-effective facilities which aimed at supporting higher ecological protection standards. As a matter of fact, effective management strategy will also see to it that landfills are decisively situated in a perspective to ease waste collection, transfer and monitoring or recycling. This can be achieved through the realization of waste disposal plan which must include proper monitoring and regulation of municipal solid and food waste, livestock waste, sewage sludge, clinical waste, and construction waste.

Control and monitoring of land filling and fly-tipping activities: Thousands of tonnes of construction and demolition materials are generated by various local construction companies. In most cases, a large portion of these waste materials can be re-used, reclaimed or recycled. With the control and monitoring of land filling and fly-tipping activities in the area of public works, construction and demolition materials can be resourcefully reclaimed, reused or recycled in other projects such as landscaping, village houses, recreation facilities or car parks, or roads. By applying these techniques and monitoring fly-tipping activities, the

construction and demolition materials that sometime go into landfills which further worsen the management of solid waste can easily be administered (Hester, 2015).

Plans on waste diversion: Many-sided approach on waste transfer and diversion in terms of more hygienic and efficient waste disposal management can offer tremendous solution to waste problems. To address most of the waste problems, especially landfills and sewer material, the local authorities and state waste management facilities need to formulate waste diversion plans, with an objective of making certain that there is convenient and proper waste disposal at landfills and waste transfer facilities. Measures such as mandating equipment standards and rerouting of refuse collection/transfer can enhance the environmental performance of waste disposal operations.

Improvements of thermal waste treatment: Thermal waste treatments have been proved not to be 100 percent green as they are normally pronounced. Therefore, to lessen the problems that occasioned with thermal waste treatments (issues such as emission of toxic gases with organic compounds such as furans, PAHs, and dioxins); states and researchers as well as green groups and academicians can explore the possible developments with regards to advanced thermal waste treatment techniques. Appropriate and improved thermal waste treatment technology is important as a strategy for tackling environmental concerns (Shukla, 2017).

2.4 Methods of waste disposal

The following are the waste disposals methods adopted by most counties in the world including developing countries in general and Nigeria in particular:

Landfill: A landfill is a site for the disposal of waste materials by burial. Landfill is the oldest form of waste treatment, although the burial of the waste is modern; historically, refuse was simply left in piles or thrown into pits. Historically, landfills have been the most common method of organized waste disposal and remain so in many places around the world.

Incineration: Incineration is a disposal method in which solid organic wastes are subjected to combustion so as to convert them into residue and gaseous products. This method is useful for disposal of both municipal solid waste and solid dregs from waste water treatment. This process reduces the volumes of solid waste by 80 to 95 percent. Incineration and other high temperature waste treatment systems are occasionally described as "thermal treatment". Incinerators convert waste materials into heat, gas, steam, and ash. As a matter of fact, incineration is carried out both on a small scale by individuals and on a large scale by industries. It is used to dispose solid, liquid and gaseous wastes. It is recognized as a practical method of disposing of certain hazardous waste materials (such as biological medical waste). However, incineration is a controversial method of waste disposal, due to issues such as emission of gaseous pollutants. This method is common in countries such as Japan where land is scarcer, as the facilities generally do not necessitate as much area as landfills.

Recycling: This is a resource recovery practice that refers to the collection and reuse of waste materials such as empty beverage containers. The materials from which the items are made can be reprocessed into new products. Material for recycling may be collected separately from general waste using dedicated bins and collection vehicles.

According to Vrijheid (2000), the type of waste materials accepted for recycling varies by city and country. Each city and country has different recycling programs in place that can handle the various types of recyclable materials. However, certain variation in acceptance is reflected in the resale value of the material once it is reprocessed. In July 2017, the Chinese government announced an import ban of 24 categories of recyclables and solid waste, including plastic, textiles and mixed paper, placing tremendous impact on developed countries globally, which exported directly or to China.

Energy recovery: Energy recovery from waste is the conversion of non-recyclable waste materials into usable heat, electricity, or fuel through a variety of processes, including combustion, gasification, pyrolyzation, anaerobic digestion, and landfill gas recovery. This process is often called waste-to-energy. Energy recovery from waste is part of the non-hazardous waste management hierarchy. Using energy recovery to convert non-recyclable waste materials into electricity and heat, generates a renewable energy source and can reduce carbon emissions by offsetting the need for energy from fossil sources as well as reduce methane generation from landfills.

Resource recovery: This simply means the systematic diversion of waste, which was intended for disposal, for a specific next use. It is the processing of recyclables to extract or recover materials and resources, or convert to energy. These activities are performed at a resource recovery facility. Nevertheless, resource recovery is not only environmentally important, but it is also cost-effective. It decreases the amount of waste for disposal, saves space in landfills, and conserves natural resources. As a matter of fact, resource recovery (as opposed to waste management) uses life cycle analysis (LCA) attempts to offer alternatives to waste management. For mixed Municipal Solid Waste, plethora of studies have indicated that administration, source separation and collection followed by reuse and recycling of the non-organic fraction and energy and compost/fertilizer production of the organic material via anaerobic digestion to be the favored path.

2.4 Benefits of efficient waste management practices

- 1. Economic benefit:** Improving economic efficiency through the means of resource use, treatment and disposal and creating markets for recycles can lead to efficient practices in the production and consumption of products and materials resulting in valuable materials being recovered for reuse and the potential for new jobs and new business opportunities. Efficient management of resources can lead to reduction in the burden of national debt trajectory (Oti, and Odey, 2016).
- 2. Social benefit:** By reducing adverse impacts on health by appropriate management of waste products, the resulting consequences are more appealing civic communities. Better social advantages can lead to new sources of employment and potentially lifting communities out of poverty especially in some of the developing poorer countries and cities.
- 3. Environmental benefit:** Eliminating adverse impacts on the environment through reducing, reusing, recycling and minimizing resource extraction can result in improved air and water quality and help in the reduction of greenhouse gas emissions.
- 4. Inter-generational equity benefit:** Following effective waste management practises can provide subsequent generations a more robust economy, a fairer and more inclusive society as well as serene environment.

3.0 Discussion of Findings

3.1 Ogoja Urban Development Authority (OUDA)

Ogoja is located in the Northern Senatorial District of Cross River State, Nigeria. However, Ogoja Urban Development Authority (OUDA) was established in the year 2001 during the administration of Governor Donald Duke. The operational office is located in Igoli, Ogoja LGA. The name of the Executive Secretary of Ogoja Urban is Mr. Ejar Egbantu and the agency has ten permanent staff drawn from the administration unit, account unit and stores. Indeed, casual staffs are 300 making a total staff strength of 310 respectively. The agency was created in a view to take care as well as harness and manage the waste produced by the people and to also maintain a green and serene environment that would attract tourist to the

area. Nevertheless, the agency is delineated into three main sub units and there includes the following:

- ❖ Waste management unit
- ❖ Open space/beautification and
- ❖ Environmental health and sanitation

The waste management unit is responsible for the creation of flash points where refuse can be dump pending when evacuation would be made to the actual dump-site. The waste management unit also supervises staff in the unit responsible for the evacuation of refuse. On the other hand, the open space/beautification is responsible for sustaining a clean and green environment, land scalping, planting of flowers, dressing of trees from time to time, cleaning of pathways amongst others. It is also concern with the maintenance and management of trees planted by the government in the area. This is to halt indiscriminate cutting down of the ornamental trees. Indeed, the environmental health and sanitation unit is responsible for the inspection of toilets, houses, allotting out spaces for business activity and also in charge of removing containers that are mounted illegally.

3.1.1 Operational trucks for refuge evacuation

In the course of the study, it was found that Ogoja Urban has just one operational truck available for the evacuation of refuge. The truck is a hiyap truck that cannot tip refuge inside hence the causal staff end up using shovels, head pans as well as diggers to get the refuge into the truck and thereafter, still do same when depositing them on the dump-site.

Flash points: These are designated areas where refuges are kept pending evacuation since there are no containers, flash points are used as alternatives to containers. However, there are 24 respective flash points in Ogoja which were designated by Ogoja Urban Development Authority (OUDA).

3.1.2 Method and challenges of waste management in Ogoja

Waste are being incinerated and emptied into the dump site. Thereafter some scavengers goes and get the metallic wastes such as irons, metals, coppers and any other thing they can sell in order to make money or end a leaving. The remaining substances which are not metallic are burnt most especially during the dry season. Some of the challenges encountered in Ogoja Urban Development Authority are as follows:

- ❖ Inadequate operational trucks
- ❖ No access road for the truck to go and dump the refuge after evacuation
- ❖ No containers to aid users drop their refuge inside hence, they throw same on the ground thereby making it difficult to be evacuated
- ❖ The government has not acquired a dump site. The one currently in used is a borrowed location and the owners are making request for the release of their land from the government
- ❖ Casual staff as well as other staff has not been paid salaries from June, 2019 to January, 2021.
- ❖ No impress to run the agency

3.1.3 Demands made by the management of Ogoja Urban Development Authority (OUDA)

In view of the inadequacies and challenges encountered by the Ogoja Urban, some demands were made to the state governor. Amongst the demands are:

- ❖ Government should release grants to Ogoja Urban in order to enhance effective service delivery in the areas

- ❖ The government should mandate the local government towards the contribution of grants to the agency
- ❖ More trucks should be procured and supplied to the agency
- ❖ More containers should be provided in respective designations
- ❖ Casual workers should be provided with working aids such as: hand gloves, nose mask amongst others.

3.2 Ikom Urban Development Authority (IUDA)

Ikom local government was created from the old Obubra, and is situated in the Central Senatorial district of Cross River State. Nonetheless, Ikom Urban Development Authority was established in the year 2001. Currently, the name of the Executive Secretary of Ikom Urban is Hon. Edey Agara. The tenure in office is three years which is subject to renewal by the state government. The agency has 9 civil servants and 216 casual workers making it a total number of two hundred and twenty-five persons respectively. Ikom Urban has only one operational truck to convey waste from flash point(s) to the dump site. There are a total of twenty flash points where people dump their waste and there is only one dump site in Ikom where refuges are being emptied into. However, the flash points are allocated days where in the refuge are being conveyed to the appropriate dump site as the case may be.

3.2.1 Challenges Encountered by Staff of Ikom Urban Development Authority

It is no longer news that since both Ogoja and Ikom Urban Development Authorities is administered by a unilateral body (State government), the challenges are similar if not the same. Amongst the quandaries faced by Ikom Urban Development Authority are:

- ❖ Inadequate trucks to evacuate wastes to the dump site
- ❖ No containers to enhance collection of waste
- ❖ Poor financing system
- ❖ Lack of salary payment

3.2.2 Strategies for the maintenance of Dump Site

Following are the strategies adopted by Ikom Urban to maintain the dump site:

- ❖ The dump site is maintained by applying chemicals
- ❖ Burning
- ❖ Scavengers goes there to scavenge
- ❖ Burning degradable amongst others.

In terms of economic implications therefore, the establishment of Ikom Urban have provided job opportunities to over two hundred and sixteen persons who are directly or indirectly benefiting from the agency.

4.0 Conclusion and Recommendations

This work discussed waste management strategy in two urban cities of which, Ogoja and Ikom Urban Development Authorities were adopted. Indeed, it is imperative to note that “waste management” as a concept was developed in order to collect, treat as well as keep waste without having any negative upshot on the lives of the people. Generally, wastes are considered as those products that are not valuable or needed by the consumer. This work has widened the scope of esteem readers towards understanding the various methods adopted by both Ogoja and Ikom Urban Development Authorities in managing their wastes. It was recommended amongst other things that, government should release grants to enhance for effective delivery to the people, more operational trucks should be procured in a view to pave the way for timely evacuation of wastes with ease and workers (casual) should be provided with working aids such as nose, mask, hand gloves and rain boots.

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