

WASTES MANAGEMENT AND THE ISSUE OF SUSTAINABLE LEGAL AND INSTITUTIONAL FRAMEWORK STRATEGIES IN NIGERIA*

Abstract

The précis of this paper is that Nigeria was using old methods in collecting, transporting, storing and final disposal of our domestic and industrial wastes Healthcare wastes which is new in Nigeria had no good provision for their proper management. These methods were not only obsolete but were not sustainable. Sustainable strategies for waste management are those plans, tactics and methods we adopt in collecting, transporting, storing, treating and final disposal of our wastes under the Nigerian Laws for sustainable strategies. The thrust of this paper is to expose Nigerians to the use of advance technologies and equipment of the three Rs of reduction, reuse and recycling in managing wastes. To expose Nigerians to the need to adopt modern methods of pulverization, incineration and modern sanitary landfills and to encourage quick prosecution of waste related offences to serve as deterrence to wastes management offenders. We found that dumping and poor disposal of wastes have varied effects on the lives of people and the environment. We recommended that our environmental laws in the area of waste management should be amended to reflect these strategies and to make waste management offences strict liability offences as obtainable in advanced countries like United Kingdom and United States of America. India has also gone ahead of Nigeria in proper management and disposal of such liquid waste/waste water like faeces due to their serious campaign against open defecation (OD) as they are now open defecation free (ODF).

Keywords: Waste management, Nigeria, sustainable strategies, legal and institutional framework, Environment and open defecation free (ODF).

1. Introduction

Waste constitutes one of the most serious problems to the environment; lack of effective management regulations can seriously affect the Nigerian environment in future.¹ The indiscriminate dumping and poor disposal of refuse have varied effects on the life of the people and the environment. The environment in which one lives and works influences his health and well-being. Lack of good sanitation constantly exposes four-fifth of the world's population to a range of diseases encouraged by dirty water, filth and environmental pollution.² Apart from human suffering that such diseases bring to them; the high illness and health hazard they cause act as an effective brake on hopes for development.³ But when waste management authorities and government fail to do what is expected of them, our environment will not be healthy and sustainable for development. The inadequate and inefficient management of wastes have been regarded as one of the most serious environmental problems faced by cities of the developed world.⁴ The seriousness of this problem as well as the concern it draws from citizens of the affected nations could be justified by the magnitude of publications available today. It is however, ironic that healthcare wastes have not been given much attention in the developing world, including Nigeria.⁵ Healthcare waste, as a problem, came into the limelight in the developed countries in the 1980s because of epidemiological and political reasons. While the developed nations moved simply in evolving policies and strategies to address healthcare wastes, developing nations, particularly those in Africa, did not pay serious attention to this pressing calls. The irony is that in all these developing countries including Nigeria, the number of public and private hospitals, maternities and dispensaries and biomedical diagnostic laboratories and veterinary hospitals and clinics are daily increasing. The rate of waste generation in these institutions has also been on the rise and no efforts were put in to segregate them from general waste.⁶

The researcher is of the view that sustainable strategies for waste management are those plans and tactics Nigeria should adopt as a country in managing waste problems. Nigeria can do this by using modern technologies and equipment. We can also achieve sustainability in waste management by changing the perception of man to waste management. We should also use modern waste management method, finally, if our legislature and judiciary are active, Nigeria can achieve waste sustainability. The government should also pursue policy that will reduce

* **By Livinus I. NWOKIKE, OND, HND, PGD, MBA, FNIM. LLB (Hons), BL, LLM, PhD candidate**, Justice of Peace, Notary Public, Lecturer, Department of International Law and Jurisprudence, Faculty of Law, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria, Email: li.nwokike@unizik.edu.ng, tolerancefocus@gmail.com, website: <http://www.geci.org.ng> . Phone Number: 08033521034, 09073018015

¹ I Ehiguelua, *Environmental Protection Law* (Warri: New Page Law Publishing, 2007), 3

² I O Nwimo & L N Omaka, 'Refuse management in Nigeria cities situation' (2007) Vol. 1 Nigerian Environmental Law Review: A publication of Nigeria Environmental Law Teachers Society, 50

³ *Ibid*, 50

⁴ S B Agbola *et al*, 'Introduction' *Healthcare wastes management*, (Ibadan, Ibadan University Press, 2009).

⁵ *Ibid*, 1

⁶ *Ibid*, 2

poverty level of her citizens in line with goal one of the United Nations' sustainable development goals. Nigeria, being a signatory to many international regional Conventions, Agreements and Protocols ratified by Nigeria, it would be wise for our government develop political will and interest in tapping from these conventions and protocols to improve our wastes management strategies for sustainability. The time to do this is now.

2. Clarification of Terms

Biodegradable Wastes consist of (a substance or chemical) is the one that can be changed to a harmless natural state by the action of bacteria, and will therefore not damage the environment. **Non Biodegradable Wastes** represent the opposite of biodegradable wastes.¹⁰ **Sustainable Development** is seen as constituting development that meets the needs of the present without compromising the ability of future generations. It is also defined as 'a requirement that the use of resources today should not reduce real income in the future.'¹¹ Sustainable development can only be successfully achieved if new processes are now utilized. **Convention** is defined as an agreement or contract, especially one among countries, in multilateral treaty.¹² **Treaty** is defined as an agreement formally signed, ratified, or adhered to between two countries or sovereigns, an international agreement concluded between two more states in written form and governed by international law – also termed accord convention, covenant, and declaration.¹³ **Strategies** are defined as plans that are intended to achieve a particular purpose. These also mean the processes of planning something or putting plans into operation.¹⁴ Strategy is the process of planning something or putting a plan into operation in a skillful way.¹⁵ Strategy is the creation of a unique and valuable position, involving a different set of activities. It requires you to make trade-offs in competing – to choose what not to do. Strategy also involves creating 'fit' among a company's activities.¹⁶

Black's Law Dictionary on its part, defines the **environment** as 'the totality of physical, economic, cultural, aesthetic and social circumstance and factors which surround and affect the desirability and value of property and which also affect the quality of people's lives.'¹⁷ The Principal legislation on Environmental Protection in the United Kingdom The Environmental Protection Act, 1990, under Section 1(2) of its Provisions contains the following definition of the environment; 'The environment consists of all or any of the following media namely, the air, water and land, the medium of air includes the air within buildings and the air within other natural or man-made structure above or below ground.'¹⁸ Coming back home, Section 20 of the Nigeria Constitution¹⁹ defines Environment as (a) 'Land water and air, including all other layers of the atmosphere; (b) all human, animals, plants and all living organisms living therein; (c) the inter-relationship that exists in paragraph (a) and (b) above.' **Enforcement** has been defined as the application of a set of legal tools both formal and informal, designed to impose legal sanctions or penalties to ensure that a defined set of requirement is complied with. Compliance is therefore the ultimate goal of any enforcement programme.²⁰

Enforcement is the use of legal tools to assist in the compliance with environmental requirements. Hornby and Cowrie define enforcement as to force people or something to obey the law or make something effective or make something by force.²¹

Waste is defined as unproductive, empty, rejected and superfluous.²² Materials become wastes when their owner will give them away or pay to have them hauled away.²³ Healthcare wastes may also be viewed as an asset which may generate revenue through appropriate treatment and handling.²⁴ Gilpin in his *Dictionary of Environmental Terms* defines waste as 'materials of solid or semi solid character that possess or no longer considers of sufficient

¹⁰ A S Hornby, *Oxford Advanced Learner's Dictionary* (Oxford: new 9th ed., 2015), 140

¹¹ L Atsegbua et al, *Environmental Law in Nigeria: Theory and Practice* (Lagos: New edition, AMBIK Press 2010), 69

¹² B A Garner, *Black's Law Dictionary* edited by, Thomson Reuters (America: 10th edition, 2014)

¹³ *Ibid*, 1732

¹⁴ A S Hornby, *Oxford Advanced Learner's Dictionary*, Solly Wehmeier (ed) (Oxford: new 7th edition, Oxford University Press, 1993)

¹⁵ *Oxford Advanced Learner's Dictionary* (New York: 7th edn Oxford University Press, 2005)

¹⁶ M E Porter On Strategy: *Harvard Business Review*; 10 Must Read (Boston: Harvard Business Review Press, 2011)

¹⁷ HC Black's Law Dictionary *op.cit*, 479

¹⁸ United Kingdom Environmental Protection Act (EPA) 1990

¹⁹ Constitution of Federal Republic of Nigeria, 1999

²⁰ O Fubara: Proceedings of a Conference held in Kaduna where the need for enforcement of the legal tools and the consequent imposition of legal sanctions the purpose or sanction in case of non-compliance were emphasized

²¹ Oxford Advanced Learner's Dictionary, *op cit*, 508

²² S Oliver, 'Waste management and disposal, in purchasing and supply management', (1991), 22-24

²³ S B Ogbola, *op.cit*, 33

²⁴ C G Gumerson & D C Jones, 'Costing and cost recovery for waste disposal and recycling, Discussion Paper Report No UDB-37, Waste supply and urban Development Department, Operation Policy Staff, The World Bank (1984), 33

value to retain.’ Therefore, a thing is a waste even if it may be a high value to another person, as long as the person generating it does not have sufficient interest to retain the thing. This definition is subjective and must be looked at from the point of view of the person possessing the objects.²⁵ Generally, various legislations in several jurisdictions have attempted to describe, define and delimit the meaning of waste. Waste has been defined as something that is not or no longer useful and is to be thrown away or disposed of.²⁶ The World Health Organization (WHO) defines ‘waste’ as ‘something which the owner no longer wants at a given time and place and which has no current or perceived market value.’²⁷ National Environmental Standards and Regulation Enforcement Agency (Establishment) Act (NESREA) of 2007, which uses the expression, ‘Hazardous substances’, defines it as:

Any chemical, physical or biological radioactive material that poses a threat to human health and the environment or any such substance regulated under international Conventions to which Nigeria is a party or signatory e.g. Montreal Protocol, Rotterdam Convention, Stockholm Convention, Kyoto Protocol etc. Any includes any substance designated as such by the President of the Federal Republic of Nigeria by Order published in the Federal Gazette.

This definition to my mind is too technical, as materials need not be radioactive for them to constitute hazardous substance. **Domestic Waste** means garbage and other discarded solids resulting from private dwelling, or residential home or premises or educational establishment or a nursing home and includes liquid waste.²⁸ **Industrial and Commercial Waste** waste means garbage and other discarded solid matters resulting from industrial and commercial operations and include liquid waste and waste from mines and quarry.²⁹ **Hazardous Waste** means wastes (solids, sludges, liquids and containerized gases) other than radioactive (and infectious) wastes which, by reason of their chemical activity or toxic, explosive, corrosive or other characteristics, cause danger or likely will cause danger to health or the environment, whether alone or when coming in contact with other wastes.³⁰ **Management according** to Harold Knoontz, is getting things done through and with people.

3. The Legal Framework for Waste Management in Nigeria

Primarily as a result of industrialization, great and sometimes irreparable damage is done to the environment. Mankind is now faced with the fact that the current of destruction might lead to a very bleak or even non-existent future for the earth and its inhabitants. The control and regulation of the use of the environment by all nations is therefore essential. Laws, which achieve this purpose, provide the framework for such regulation and control.³¹ We shall therefore discuss legal framework for waste management under:

Common Law

The common law, in contrast to the law on legislation, comprises various legal principles which have been developed by the judiciary in decided cases over many years. This is the judge made law rather than statute law. Actions under common law consist of ‘one on one’ disputes involving an action commenced by an injured plaintiff (claimant) in high courts against the person (defendant) who allegedly caused the injury. Thus, common law according to Wolf & Others is a mechanism to regulate the legal relations between private persons, whether individuals or companies.³² The most important set of common laws which have application to environmental protection in general and pollution in particular is the law of torts (wrongs). The principal function of the law of torts is to provide a range of remedies for any person who suffers a wrong consisting of damage to property or person (personal injury) caused by the activities of another person. Although common law actions have been criticized for ‘being too expensive, too long winded and too uncertain’, nevertheless, it has, in recent year’s proved to be a fertile grounds for environmental litigation, although the judiciary have demonstrated a rather lukewarm response to attempts to use the common law of torts as a mechanism to control the adverse impacts of environmental pollution on people, property and the wider environment.³³ It will be necessary to briefly discuss these rules seriatim:

²⁵ M Purdue, ‘Defining Waste’, *Journal of Environmental Law* 1990, Vol. 2

²⁶ M Attah, Problems of Domestic Waste Management in Nigeria: Any Repressions? <http://www.nigerianlawguru.com/articles/> accessed on 27th July, 2017

²⁷ Cited in Michael Purdue ‘Defining Waste’ *Journal of Environmental Law* (JEL) Vol 2

²⁸ Anambra State Waste Management Authorities Law (ASWAMA), 2015, S. 2

²⁹ *Ibid*

³⁰ R Bastone, et al. ‘The Safe Disposal of Hazardous Waste’, World Bank Technical Paper No. 983, Washington DC, 1989

³¹ L Atsegbua et al *op.cit*, p. 50

³² S Wolf et al, *op.cit*, 339

³³ *Ibid*, 34

Nuisance

Nuisance takes place when physical injury is inflicted on the plaintiff's property or when the ordinary use of same is materially interfered with or impaired. It is that activity which arises from unreasonable, unwarranted or unlawful use by a person of his own property, working obstruction or injury to the right of another, such that the law will presume resulting damage. Whether or not anything is nuisance is to be determined not merely by an abstract consideration of the thing itself, but with reference to the locality, the duration and all the circumstances.³⁴

Negligence

Negligence arises under the Harmful Waste (Special Criminal Provisions, etc.) Act and the NESREA Act 2007, from failure of a person with or without lawful authority to exercise the care demanded by the circumstances in dealing with prohibited activities relating to harmful waste, with the result that the plaintiff suffers an injury. The basis of the action is a 'duty of care' which the defendant has breached, 'with consequent injury to the plaintiff.' Criminal prosecution lies for any act of willful negligence under the Act,³⁵ which endangers human life or health, for example: shipping with or without lawful authority harmful wastes or hazardous substances without informing the shipmaster,³⁶ exposing for sale harmful wastes or hazardous substances prohibited and declared unlawful;³⁷ it also lies for all nuisances of a public and private nature occasioned by an act or acts itself carried out with lawful authority, if the creation of the nuisance is the probable consequence of the act.³⁸

Trespass

Trespass to a person is a tort which is frequently committed in everyday life. It is basically unreasonable interference with body of person which can be committed either by causing actual harm or by just causing an apprehension of force.³⁹ We recommended that Nigeria should emulate these countries. This is the only way the victims can be saved from pollution and other environmental hazards of the 21st century.

Constitution of the Federal Republic of Nigeria 1999⁴⁰

First, the Constitution is the formulation of the country's law and basic principles that governs a country. It spells out the responsibilities of the various organs of government as well as the relationship between the citizens.⁴¹ For Nwabueze, 'a Constitution is a body of fundamental principles according to which a state is governed. It is therefore a declaration of how certain goals are to be achieved in any society.'⁴² The CFRN, 1999⁴³ as amended has no express provision for environmental protection. The constitution also excludes international treaties from being applied as law in Nigeria until they are enacted as law by the National Assembly.⁴⁴ By implication, international treaties on environmental protection to which Nigeria is signatory shall have no force of law in Nigeria unless they are enacted as laws by the National Assembly. Chapter II of the 1999 Constitution is not an enforceable part of the constitution. A section in the said Chapter II provides for environmental protection by the State.⁴⁵ This provision is however merely persuasive and does not possess the binding force of law. It would appear that economic expediency is at the root of not making environmental protection an enforceable part of the constitution. In view of the wanton destruction of the environment by oil industry operators, it is suggested that environmental protection should be made justiciable under the constitution. We recommended that S. 6(6)(c) of 1999 Constitution be reformed so as to make Chapter II possible by individuals in Nigeria court. In contrast, a developing country like India treats environmental issues under its constitution as involving constitutional rights and duties.⁴⁶ The Malian Constitution provides that a healthy environment is the right of every citizen and environmental protections the duty of every Malian.⁴⁷ The Indonesian Constitution forbids economic activities

³⁴ *Ifejika v. Oputa* (2001) 11 NWLR, (Pt 725), 583 at pp. 589-590, paras. H-A, *UTB v. Ozoemena* (2001) NWLR (Pt. 713), 718

³⁵ *Ibid*

³⁶ *Williams v. East India Co.* (1802) 3 East 192

³⁷ *Shillito v. Thompson* (1875) 1 Q.B.D. 12

³⁸ *R v. Moore* (1832) 3 B. & Ad. 184

³⁹ <www.legalservicesindia.com> accessed on 22nd September, 2019

⁴⁰ Cap C 23, Laws of the Federation of Nigeria, 2004

⁴¹ Alfred Okukpon in L. Atsegbua (ed) 'the 1999 Constitution of Nigeria and the Protection of the Right of Citizens to a clean environment' in selected essays on petroleum and environmental law, Atsegbua (ed.), (Benin: Department of Public Law, 2000) p. 25

⁴² BO Nwabueze, *The Presidential Constitution of Nigeria*, (London: C Hurst & Company, 1982)P. 7

⁴³ Cap C 23, LFN, 2004

⁴⁴ Section 12, *ibid*

⁴⁵ Section 20, *ibid*

⁴⁶ Art. 48. Indian Constitution 52nd Amendment Act, 1985

⁴⁷ Art. 50 Ch. IV. Constitution of the Federal Republic of Indonesia. 1989

that are destructive to the environment.⁴⁸ Nigeria will therefore be following global trends by making environmental rights justice able under its constitution. It is also suggested that the right to a healthy environment should be construed to be part of the right to life guaranteed under the CFRN, 1999 as amended. There has however been a lukewarm judicial attitude in construing the provisions that guarantee the right to life to include the right to a clean and healthy environment.

Petroleum Act⁴⁹

This is an Act which came into effect on the 27th of November, 1969 to provide for the exploration of Petroleum from the territorial waters and the Continental Shelf of Nigeria and to vest the ownership of and all on-shore revenue from Petroleum resources derivable therefore in the Federal Government and for all other matters incidental thereto. By the provision of section 2, the Minister of Petroleum and Solid Minerals is empowered under 2(a-c) to grant a license, to be known as an oil exploration license, to explore for petroleum; a license to prospect for petroleum, and a lease to be known as an oil mining lease, to search for, win, work, carry away and dispose of petroleum. Section 8(a) states that the Minister shall exercise general supervision overall operations carried on under licenses and leases granted under this Act, and to report annually to the Federal Government on the progress of the oil industry in Nigeria. The minister reports directly to the federal government and as such, it is obvious that the above provision leaves the Minister with enormous powers and duties as that does not place such duties or powers of the Minister under any obvious check. The Minister having such powers may decide to abuse his wide powers and may even refuse or neglect to perform the prescribed duties. Although section 12 provides that the Minister may in writing under his hand delegate to another person any power conferred on him by or under the Act, unfortunately, the minister by virtue of the same Act cannot delegate the powers to make orders and regulations

Oil in Navigable Waters Act, (ONWA) 1968

The Act provides for penalty for violation of its provisions but failed to stipulate the minimum or maximum amount for such penalties. It only stated without adducing any reason that where trial is by a court of summary jurisdiction other than a High Court, such penalty, shall not exceed N2,000.00.⁵⁰

Associated Gas Re - Injection Act (AGRA) 1979

The Act made an initial provision for ending oil flaring by April, 1980 and the imposition of fines against defaulters. A new deadline was set in 1984 by the Associated Gas (Continual Flaring of Gas) Regulations which permitted flaring under certain circumstances. The Act was further amended in 1985 to fix the penalty of 2 kobo for every 1000 cubic feet of gas flared.⁵¹ The above fine was easily paid by the oil companies and did not discourage them from flaring gas. The fines were raised to 11 kobo for every 1000 cubit feet of gas flared in 1998. Two sister legislations, i.e, the Associated Gas Re - injection Act of 2004 and the Associated Gas Re - injection (Amendment) Act of 2005 which succeeded the 1979 Act bore the same lime as the 1979 enactment. They mandated the oil companies to submit a detailed proposal for gas utilization. The 2005 amendment prohibited gas flaring without the permission of the Minister. Despite the above provisions, the oil companies preferred to pay the paltry fines than engage in gas utilization project.

National Environmental Standards Regulation and Enforcement Agency Act (NESREA) 2007

The NESREA Act was enacted in 2007 to replace the FEPA Act. The Act created the National Environmental Standards Regulation and Enforcement Agency and conferred on it the responsibility for the protection and development of the environment in Nigeria and other related matters. The Act came seven years after FEPA was scrapped and its functions transferred to the Federal Ministry of Environment but the latter was unable to cope with the challenges of managing the Nigerian environment. The Act tried to integrates the key environmental stakeholders into its governing body.⁵² A major strength of the new agency created by this Act is that unlike FEPA which is stated to be an arm of the presidency, the new Agency is an independent body with perpetual succession.⁵³ But some easily noticeable faults in the composition of the governing council of the Agency include the provision that the permanent secretary in the ministry of Environment can nominate a representative into the Governing Council of the Agency. It is suggested that for the composition of the Governing Council to be taken seriously, a member to the council from the civil service should not be below the rank of permanent secretary. Furthermore, section 3 (2) of the Act was inelegantly drafted to read 'A member in the council other than the Chairman shall

⁴⁸ Art. 50 Ch. IV. Constitution of the Federal Republic of Indonesia. 1991

⁴⁹ Petroleum Act, Cap P.10, Laws of the Federation of Nigeria, 2004

⁵⁰ Section 5 *ibid*

⁵¹ Associated Gas re-injection (Amendment) Act, 1985

⁵² Section 3 NESREA Act, 2007

⁵³ Section 2 *ibid*

be appointed by the minister on the recommendation of the body, if any he represents' instead of 'All members of the council other than the chairman, shall be appointed by the minister upon the recommendation of the body, if any he represents.' This is because apart from the chairman, all other members of the council are to be appointed in that manner. There is also the problem of the non representation of the oil producing communities to correspond with the appointment of a representative of oil exploration and production companies⁵⁴ in the council of the Agency. This appears to be inequitable. The NESREA Act also adopted a wrong approach in resolving the reoccurring conflict between FEPA and the Department of Petroleum Resources (DPR) in environmental regulation of the oil and gas industry by excluding the oil and gas industry from the ambits of its application.⁵⁵ The wide powers⁵⁶ conferred on the Agency by the Act may have however rendered the exclusion otiose. Furthermore, the provisions of section 7 (A - F) also appear to have conferred on the Agency the power to enforce general anti - pollution laws in the oil and gas industry.

Environmental Impact Assessment (EIA) Act 1992

The Act was enacted for the purpose of allowing a prior consideration of environmental impact assessment on certain public or private projects. The idea behind the Act is to assess the likely impact of new industrial or scientific projects upon the natural environment as respects pollution, biodiversity, ecosystem balance, and/or sustainable development.⁵⁷

Harmful Waste (Special Criminal Provisions etc) Act 1988 (HWSCPA)

This Act was enacted as a response to the dumping of harmful toxic wastes at Koko, Delta state, Nigeria by an Italian company. The Act prohibits the dumping or depositing of harmful waste in the air, land or waters of Nigeria.⁵⁸ One interesting feature of this Act is that notwithstanding its depiction as an Act with 'Special Criminal Provisions', it provides for civil liability of offenders to persons who have suffered injury as a result of the offending act. The Act provides for a punishment of life imprisonment for any person convicted under it⁵⁹ for the act of dumping toxic waste or for the facilitation of the offence as well as the negligent officer of any company that commits the offence.⁶⁰ The act also provides for the civil liability of the offenders.⁶¹

One of the major drawbacks to the application of this Act to the oil and gas industry is in the definition of 'harmful waste'.

National Oil Spill Detection and Response Agency (NOSDRA) Act 2006

The Act established the National Oil Spill Detection and Response Agency. It empowered the Agency to manage the National Oil Spill Contingency Plan (NOSCP) and take responsibility for detecting and clearing up oil spills in Nigeria.⁶² The Agency was established in compliance with the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPPRC, 1990) to which Nigeria is a signatory. The Agency is to work with other governmental agencies to enforce policies on environmental law in the oil and gas industry and monitor response activities to oil spill incidents.⁶³ The Governing Board of the Agency is appointed by the President upon the nomination of the Minister of Environment.⁶⁴ The Agency is invested with wide powers for the performance of its functions. The Agency has succeeded in clearing up more than 1,150 oil spill sites abandoned by the oil companies and have issued certificates of clean up of 15 oil sites to Adax Petroleum and 254 to Shall Petroleum Development Company,⁶⁵ who are expected to pick up the bills for the clean up.⁶⁶ One of the major lapses in the Act is the saddling of the Minister with the responsibility of nominating members to the Governing Board of the Agency instead of such members being recommended by the relevant bodies they represent. Second, relevant stakeholders of the oil producing states and non governmental agencies are not represented on the Board of the Agency. At the State level, we have the following laws for the following states Anambra State Waste Management

⁵⁴ Section 3(1)(a) (viii) *ibid*

⁵⁵ Section 7 and 8(g) (n-r)

⁵⁶ Section 8 *ibid*

⁵⁷ Preamble to the Environmental Impact Assessment Act Cap E 12 LFN 2004

⁵⁸ Section 1. HW (SCP) Act, Cap H1, LFN. 2004

⁵⁹ Section 6 & 11, *ibid*

⁶⁰ Section 7, *ibid*

⁶¹ Section 12, *ibid*

⁶² Preamble to the NOSDRA Act 2007

⁶³ section 7(g)(i). 19(1) (2) and 2nd Schedule *ibid*

⁶⁴ section 2(4) *ibid*

⁶⁵ BBC 'Monitoring Africa-Nigeria Oil Spill Detection Agency Discovers 1,150 abandoned sites' this day website Lagos, 25 Jan, 2008 <http://www.redorbit.com/news/science/1231158/nigeriaspill_detection_Agency.discov> accessed 02/02/2012

⁶⁶ *ibid*

Law for Anambra State,⁶⁷ The Lagos Waste Management Authority Law for Lagos State⁶⁸ and Enugu State Waste Management Authority (ESWAMA) for Enugu State respectively⁶⁹

4. Sustainable Strategies for Waste Management in Nigeria

Here, this paper shall discuss Technologies/Equipment Procurement, Attitude towards waste management and disposal methods, prosecution and adoption of modern waste management strategies.

Technologies and Equipment Procurement

Technology is the knowledge of the core productive activities of an organization. It is the knowledge of how to manipulate materials (raw materials) by applying complex of techniques to achieve a patterned stipulated or expected end. So, it is the knowledge of how to manipulate materials achieve some contemplated and (product).⁶⁹ They are two major components of technology. These are: (1) knowledge of the productive activities of an organization (i.e. complex of techniques which are applicable in the transformation processes of that organization) and (2) the equipment which can be used to carry out these technological processes and realize the expected objectives of the productive activities of an organization. In India, their government has launched what they called Swachh Bharat Mission.⁷⁰ The objective of the mission is to improve solid waste management practices leveraging modern technology, eliminate open defecation and manual scavenging by providing toilet facility, capacity augmentation of ULBS involving private sector, being behaviour change and social change. While the government of India is committed to building millions of toilets to eliminate open defecation, technology plays an important role in improving solid waste management, sanitation and citizen communication /awareness.

Attitudinal Change Strategy

In this climate of Uncertainty, I am convinced more than ever that people need to know how to control and manage the quality of their lives through a positive mental attitude. Attitude is everything.⁷¹ Attitude has to do with people's disposition or reaction to situation, event or person, attitude could be described as negative or positive, lukewarm or warming, good or bad, welcoming or rebuffing. The way the resident's urban centers view the waste they generate during their commercial institutional or domestic activities leaves more to be desired.⁷² UN-Habitat defined attitude as a mental state of readiness organized through experience which exerts a directive or dynamic influence upon the individual's with which it is related. Rihon defines attitude as the predisposition or a tendency to react specifically toward an object, situation or value, usually accompanied by intimate feeling and emotion. Man therefore needs to be checkmated with regulations, training, education, seminar, conferences and with sensitization to let him know the impacts and consequences of his actions and inactions. We, therefore advocate the use of NGOs and paralegals to inculcate positive attitudes in man for sustainability, development and waste free society.

Adoption of Modern Methods of Waste Management/Disposal as Strategy

The big question is what do we do with our waste or where do our wastes go? Here we would attempt to present some of the methods of waste management or disposal starting with the least desirable but most commonly used measures, to the modern methods and preferable options. However, it is important to note that modern waste management is centered on the 'three R's' of Reduction, Reuse and Recycling before destruction or finally secure storage of wastes.

Sanitary Landfills

This is a common method for disposal of solid waste in most parts of the World including Nigeria. But in Nigeria, the method or notion of a Sanitary landfill is not different from the open dumps that are present all over the urban centers. The developed countries like America and Europe have long recognized the health and environmental hazards of open dumps, as .is the case in Nigeria and have turned to Sanitary Landfills strictly speaking. Here solid waste disposals are regulated and controlled, this system decreases odour and litter in order to discourage insect and rodent populations, the landfill operators are required to compact the refuse and cover it every day with

⁶⁷ 2015

⁶⁸ 2007

⁶⁹ 2004

⁶⁹ C I Onwuchekwa, Business Policy and Strategic Management (Onitsha: University Publishing Coy, 2000) P. 163

⁷⁰ V Prabhakar and R Mewotra, 'How to transform waste management using ICT <<https://economictimes.indiatimes.com/news/science/how-to-transform-waste-management-using-ict-to-enable-swachn>>

⁷¹ K Harrel, Attitude is Everything (New York; Jossey Bass Inc. 1999) P. xii

⁷² O C V Eneji *et al*, 'Attitude towards waste management and Disposal methods and the Health status of Cross River State, <<http://www.scirea.org/journal/agriculture>> accessed 22/3/2019

a layer of dirt. According to Bruce,⁷³ the principle is to tip the mixed refuse compactly in layers not more than 2m deep and to seal all exposed faces of each day's tipping with at least 0.25m of incombustible and non-putrescible (non-decomposing) materials such as earth or dust. A modern Secure Sanitary Landfill according to experts, possesses a thick bottom cushion of compacted clay that surrounds the pit like a bathtub. Moist clay is flexible and resists cracking if the ground shifts. It is impermeable to ground water and will safely contain wastes. A layer of gravel is spread over the clay liner and perforated drainpipes are laid in a grid to collect any seepage that escapes from the stored material. A thick polyethylene liner, protected from punctures by soft padding materials, covers the gravel bed.

Incineration

Unable to manage the growing piles of waste in our urban centers, the readily available options is to set fire on the unsightly waste whether on the streets or in the dump sites. But in developed countries, incinerators are specially designed burning plants capable of burning thousands of tons of waste per day. It is composed of a furnace into which the refuse is charged and ignited, a secondary combustion chamber in which burning at a high temperature is continued to complete the combustion process, and flues wherein the gases of combustion are cleansed as they are conveyed to a chimney and thence to the atmosphere.⁷⁴ In some incinerators, waste is sorted as it comes in to remove unburnable or recyclable materials before combustion. This method is known as refuse-derived fuel because the enriched burnable fraction has higher energy content than the raw trash. Another method of incineration called Mass burn, involves the dumping of everything smaller than sofas and refrigerators into a giant furnace and burn them as much as possible. This method avoids the expensive and unpleasant job of sorting through the garbage for non-burnable materials but often causes greater problems with air pollution and corrosion of burner grates and chimneys. Regrettably, Nigeria cannot talk with too much pride about a standard incinerator. The available make shift incinerators are usually unable to perform the required functions with result that highly inflammable objects are dumped and abandoned in the incinerators making subsequent burning impossible⁷⁵.

Recycling

In common usage, this term is usually ascribed two meanings. Sometimes recycling is mistaken for reusing, such as when refillable beverage containers are reused for packaging of beverages. But under solid waste management, the term could only mean;

the reprocessing of discarded material into new, useful products. Some recycling processes reuse materials for the same purpose: for instance, old aluminum cans and glass bottles are usually melted and recast into new cans and bottles. Other recycling processes turn old materials into entirely new products. Old tires, for instance, are shredded and turned into rubberized road surfacing. Newspapers become cellulose insulation, kitchen wastes becomes a valuable soil amendment, and steel cans becomes new automobiles and construction materials⁷⁶.

Recycling is a key component of modern waste management, hence, its importance as the third component of 'reduce, reuse and recycle' waste in the hierarchy of waste management. In Nigeria, waste recycling is a growing though not prominent method of waste management; it is well rooted in Lagos State than anywhere else in the country. Investigation reveals that scavengers who are mainly children, after combing the nooks and crannies of the city, convene their collected 'wastes' to sell to the middlemen who in turn resell to the contractors who finally take the 'waste' to the industries for recycling⁷⁷. This system serves as a cheap and reliable source of packaging materials that is valuable to manufacturers of insecticides, cosmetics, paints to mention a few. According to Adeola Okesiji,⁷⁸ the recycling process includes various method such as washing, dry cleaning, adjusting, repairing, repainting and the likes. Recycling is usually a better alternative to either dumping or burning of wastes.

Pulverization

According to Suckling,⁷⁹ this method of waste management involves the use of specialized waste vans which crush the solid wastes by their grinding mechanism. The grinding mechanism reduces the wastes into tiny

⁷³ F E Bruce, *Water supply, Sanitation, and Disposal of Waste Matter*. In W Hobson (Ed), *The Theory and Practice of Public Health*, (London: Oxford University Press, 1999) , 35-48

⁷⁴ R K Turner, *Municipal Solid Waste Management: An Economic Perspective*. In AD Bradshaw *et al* (eds) *The Treatment and handling of wastes*. (London: Chapman and Hall, 1992), 83-102

⁷⁵ F E Bruce, *op.cit*,40

⁷⁶ *Ibid*, 318

⁷⁷ J Ibeh, a Trader in the Iron scrap business along Enugu-Onitsha Express Road, Nkpor

⁷⁸ Waste Recycling in Nigeria' Environmental Law Research Institute Newsletter. Issue 1, November 2008. 8

⁷⁹ C N Suckling, 'Transformation and re-use'. In A D Bradshaw *et al* (eds),*op.cit*, 51-54

particles, as they are loaded into the van. The beauty of this method lies only in the fact that wastes are reduced into tiny particles and thus are no longer attractive to flies and other disease vectors. This method however is unattractive and should not be encouraged as a standard mode of waste management. This is because the reduced wastes are finally disposed of by dumping them on the land or in the sea, the disadvantages of these open or sea dumps had earlier been discussed. Any waste management method that does not accommodate or advocate an environmentally friendly final disposal should not be encouraged or recommended for use.

Re-use

For some experts, in waste management, better than recycling or composting is cleaning and reusing materials in their present form. This in effect saves the cost and energy that would have been used in 'remaking them into something else'⁸⁰ This method is a common practice in Nigeria, though it is more of a way of meeting the demands and challenges of survival and development than with the intention of reducing or management of waste.

The above modern waste management methods and institutions adopted by developed countries like United Kingdom and United States of America are sustainable. Nigeria should adopt same for proper management wastes. We advocate that more efforts should be made by Nigerian courts in these regard. Nigerian courts should adopt strict liability approach on waste management for sustainable development.

5. Conclusion and Recommendations

Waste generation really has been a recurring decimal in the lives of every human being in Nigeria. Proper waste management, therefore, is the panacea to this burden on our environment. It is correct to say that Nigeria has legal and institutional framework strategies for waste management. The laws and institutional no doubt abound in Nigeria which are the bedrock in managing our wastes. The only problem lies in proper enforcement mechanism. Again, both legal and scientific scholars have literatures on waste management in Nigeria. The only problem remain that some of these laws and literatures are weak when compared with how domestic, industrial and commercial wastes are managed in advanced countries like United Kingdom, United States of America, India is even has gone ahead of Nigeria in the area of their managing liquid wastes/human excreta as a result of their serious efforts against open defecation (OD) which made them now to be open defecation free (ODF). Healthcare wastes which are new in Nigeria have been provided for in these advanced societies. Nigeria is admonished to cue up in these regards for sustainability.

This study makes the following recommendations. Nigeria should adopt modern approaches of the three Rs of wastes reduction, reuse and recycling where such methods like pulverization and incineration should be used to reduce wastes into a smaller size and be treated with modern wastes management facilities before their final disposal for sustainability. It is also recommended that Nigeria should make use of modern equipment and technologies in storing, collecting, transporting, treating, disposing and managing wastes for sustainable development. We encourage the use of such innovative measure like solar powered dustbins which send alert to sanitation crew once they are full. We recommend the use of such modern methods of analytics, sensor based sorting methods, sensor based wastes collection methods, modern sanitary landfills (instead of ordinary open dump) and the use of modern treatment facilities should be used to treat liquid/waste water wastes before their final disposal into the river. There is need to have these modern sanitary facilities in all the states of the country including Federal Capital Territory, Abuja as against having it only in Lagos State. There is need to amend our laws. Thus, our legislations and laws should have specific and coordinated provisions on the use of modern technologies and equipment in collecting, sorting, transporting, treating and disposing of wastes. Legislation against environmental degradation should be all embracing and able to address the wastes problems. The special defences open to the defendants in the Oil in Navigable Waters Act should be removed and made strict liability crimes. There is need to incorporate corporate social environmental responsibility in our Laws. It is also a notorious fact that over the years, oil exploitation has resulted in the devastation of local environment, causing enormous environmental damage to the indigenous people who are dependent on the resources of lands and waters for sustenance. There is need to employ professionals and competent human resources to dispose and manage wastes in our environment using modern equipment and technologies. Our government should have sincerity and political will to assist wastes managers in disposing and managing our wastes. There is need to make sustainable development should be incorporated in our laws. It is also necessary to encourage environmental education and awareness by sensitizing Nigerian citizens and companies operating in our environment to be conscious of their acts in the environment. Poverty rate should be reduced in Nigeria in line with goal one of United Nations sustainable development goals.

⁸⁰ W P & MA Cunningham *op. cit.*, 321