

LEGAL FRAMEWORK FOR ASCENSION OF WASTE GENERATION TO WEALTH CREATION: AN INNOVATION TOWARDS ENVIRONMENTAL SUSTAINABILITY AND DEVELOPMENT IN NIGERIA

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Abstract

Waste can be refuse or superfluous material especially that remains after a manufacturing or chemical process. Waste has become a recurring decimal in the lives of every human being. We tried in this work to x-ray how this by-product called waste could be a raw material for a new product; thereby creating wealth rather than generating waste to the company or nation. Ascension of waste generation to wealth creation in Nigeria has the consequences of leading to a sustainable development in Nigeria which is the development that meets the needs of the present society in Nigeria without compromising the ability of the future generation to meet their own needs. The aim of this work is to appraise the legal framework for ascension of waste generation to wealth creation and the likely innovation towards environmental sustainability and development in Nigeria. We adopted doctrinal methodology of research with analytical approach of data collection through primary and secondary sources. This research found that improper management and use of wrong technology gave rise to waste generation which is inimical to the natural environment. The work therefore focuses on how legal framework and regulations can be established and applied to properly manage waste and generate wealth for sustainable development in Nigeria. We recommended institution of legal framework and application of regulations, recycling, use of advanced technologies and proper waste management mechanism for managing waste and generate wealth there from, for enhanced productivity and sustainable development in Nigeria. The work concluded on the note that institutionalizing legal framework and application of regulations thereto will provide platform for generation of wealth towards sustainable development in Nigeria.

Keywords: Law Waste Generation, Wealth Creation Environmental Sustainability, Development, Nigeria

1.0 Introduction

Waste generation is a recurring situation in the lives of every human being. Waste can be generated during the extraction of raw materials, the processing of raw materials into immediate and finished products. The consumption of final products or other human activities including municipal, residential, institutional, commercial, agricultural and special healthcare, household, hazardous waste, and sewage sludge.¹ Ordinarily, waste is something which the owner no longer wants at a given time and place and which has no current or perceived market value. Waste generation varies depending on the source of its generation.

Waste contains a lot of valuable resources in the form of nitrogen, phosphorous, potassium and other chemicals which are useful.² The ever increasing volume of solid wastes generated in Nigeria cities has shown Nigerian complacency regarding the management of urban environment. The ever-increasing solid waste generated in cities might mean that by the year 2010, the volume might rise to over 15 million tons.³ Microorganisms play an important role in the biogeochemical cycles and convert these valuables resources into harmless and useful products.⁴ However, there are

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¹Sankoh F, Environmental and Health Impact of Solid Waste disposal in Developing Cities. A case study of Greenville Broik Dumpsite, Sierra leone, *Journal of Environmental Protection*, (2013), 4 (7), pp. 665-670

²Hammed T B, An abattoir waste transfer management through complex, *International Journal of Interdisciplinary Social Sciences*, 6(2), (2014) pp. 67 – 68

³WP Cumingham and MA Cumingham; *Principles of Environmental Science*, (4th edition, New York: McGraw Hill Co., 2008) p. 312

⁴KC Sridhar and TB Hammed; 'Turning Waste to Wealth in Nigeria: An Overview. *Journal of Human Ecology*, 46(2), (New Delhi, 2014)

certain wastes arising from industries or healthcare facilities which may be hazardous, infectious and need to be treated as special wastes, this is the reason why wastes should be properly recycled. In fact, recycling creates job opportunities and should be adopted as a proper waste management strategy for sustainability. The precise of this paper is how can these materials which ordinarily should have been thrown away as wastes can sustainably create wealth to the growth of economy. The work will further examine the present waste management practices in Nigeria and suggest a better regulatory and integrated plan by the government, oil companies and individuals using modern equipment and technologies of artificial intelligence in managing our wastes.

2.0 Clarification of Terms

Waste *simpliciter* is defined as unproductive, empty, rejected and superfluous.⁵ Waste is defined as refuse or superfluous materials especially that remain after a manufacturing or chemical process.⁶ Waste is also any unavoidable material resulting from domestic activity or industrial operation for which there is no economic demand and which must be disposed of.⁷ Ascension is the act of moving up or of reaching a high position.⁸ Wealth is defined as large amount of money, property that a person or country owns. Generation is defined as the generation of something especially electricity, heat et cetera.

Creation is defined as the act or process of making something that is new or of causing something to exist that did not exist before. Innovation is the introduction of new things, ideas or ways of doing something, an age of technological innovation. To innovate is to introduce new methods, ideas etc. to make changes.⁹

Sustainable Development is seen as constituting development that meets the needs of the present without compromising the ability of future generation. It is also defined as a requirement that the use of resources today should not reduce real income in future.¹⁰ Strategy is the creation of a unique and valuable position involving a different set of activities.¹¹

Strategy is also defined as plans that are intended to achieve a particular purpose.¹² It is also defined as an integrated plan through which an organization accomplishes its basic long term-goals such as integrated plan [that] consists of the corporate long term goals of purpose, mission and objectives and the growth strategies through which corporate strategies are realized.¹³ However, this paper examines how sustainable development is achieved in Nigeria by the application of innovative strategy of modern technologies and equipment in turning wastes generated to wealth creation by recycling processes.

3.0 The Legal Frameworks 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

⁵IS Oliver; 'Waste management and disposal, in Purchasing and Supply Management' (1991) pp. 22-24

⁶ BA Garner; *Black's Law Dictionary*. (11th edition, United States of America: Thomson Reuters, 2019) p.1906

⁷Op.cit

⁸ AS Hornby; *Oxford Advanced Learner's Dictionary of Current English*. (New 9th edition, Oxford: Oxford University Press, 2004) p. 74

⁹ GEDDES & GROSSET, *Webster's Universal Dictionary & Thesaurus* (Geddes & Grosset, UK) p. 258

¹⁰Atsegbua L, *Environmental Law in Nigeria: Theory and Practice*. (New edition, Lagos: AMBIK Press, 2010) p. 69

¹¹ Porter, M E, *What is Strategy in On Strategy*, Harvard Business School Publishing Corporation (United States of America: Library of Congress Cataloging-in-Publication Data, 2011)

¹²Op.cit

¹³CI Onwuchekwa; *Business Policy and Strategic Management*. (Onitsha: University Publishing Coy, 2000) p.27

use of the environment by all nations is therefore essential. Laws, which achieve this purpose, provide the framework for such regulation and control.¹⁴

We shall therefore discuss legal framework for waste management under the following sub headings: Common Law, The Constitution of the Federal Republic of Nigeria 1999 as amended, The Petroleum Act, Oil in Navigable Waters Act, (ONWA) LFN, 2004, Oil in Navigable Waters Regulation (ONWR), LFN 2004, Associated Gas Re - Injection Act (AGRA), LFN 2004, National Environmental Protection (Effluent Limitation) Regulations (NEPELR), 1991, National Environmental (Pollution Abatement in Industries and Facilities Generating Waste) Regulations, 1991. (NEPAIFGWR), National Environmental Standards Regulation and Enforcement Agency Act (NESREA), 2007, Environmental Impact Assessment (EIA) ACT, 1992, Harmful Waste (Special Criminal Provisions e.t.c) Act, 1988 (HWSCPA), Basel Convention on Transboundary Movement of Hazardous Matter and Disposal, Oil and Gas Pipeline Regulations, 1995 (OGPR, Environmental Guideline and Standards for the Petroleum Industry, 1991 (as Revised in 2002) EGASPIN, National Oil Spill Detection and Response Agency (NOSDRA) Act, 2006, Oil Spill and Oil Waste Management Regulations, (OSOWMR) 2011, Oil Spill Recovery, Clean Up, Remediation and Damage Assessment Regulation, 2011 (OSRCRDAR), Hydrocarbon Oils Refineries Act (HORA), 1965, Niger Delta Development Commission Act, (NDDC), Anambra State Waste Management Law, The Lagos Waste Management Authority Law, Enugu State Waste Management Authority (ESWAMA). but for the purpose of this paper, we shall briefly discuss only the following; Common Law, The Constitution of the Federal Republic of Nigeria 1999, Oil in Navigable Waters Act, (ONWA) LFN, 2004, National Environmental Standards Regulation and Enforcement Agency Act (NESREA), 2007, Basel Convention on Transboundary Movement of Hazardous Matter and their disposal 1991.

3.1 Common Law

The common law, in contrast to legislation, comprises various legal principles which have been developed by the judiciary through decided cases over many years. This is the case 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 the appropriate courts against the person (defendant) who allegedly caused the injury. Thus, common law is a mechanism to regulate the legal relations between private persons, whether individuals or companies.¹⁵

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 years 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.¹⁶

3.2 The Constitution of the Federal Republic of Nigeria 1999

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

¹⁴ L Atsegbua et al *op.cit*, p. 50

¹⁵ S Wolf et al, *op.cit*, 339

¹⁶ *Ibid*, 34

the relationship between the citizens.¹⁷ 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.¹⁸

The CFRN, 1999¹⁹ 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.²⁰ 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.²¹ 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.

The Petroleum Act

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. To say the least, the powers of the minister are too wide and ought to be curtailed. The power to make regulations prescribing anything requiring to be prescribed for operations carried out under this Act, includes among others, ensuring safe work conditions, conservation of Petroleum resources, prevention of pollution of water courses and the atmosphere, making of reports and returns (including reports of accident) and inquiries into accident.²² This Act has been amended

¹⁷ 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

¹⁸ BO Nwabueze, *The Presidential Constitution of Nigeria*, (London: C Hurst & Company, 1982)P. 7

¹⁹ Cap C 23, LFN, 2004

²⁰ Section 12, *ibid*

²¹ Section 20, *ibid*

²² Section 9(b)(i-v) of the Petroleum Act

Oil in Navigable Waters Act, (ONWA) LFN, 2004

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 Two Thousand Naira.²³ It also failed to provide for the level of offences under the Act triable by inferior courts and those that should go to the High Court. It is suggested that in future amendments, the Act should graduate the level of spills triable at the minor courts and those that should proceed to the High Court as well as the appropriate fines or penalties for each level of spill into navigable waters. This will make for uniformity in its enforcement.

3.3 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 integrate the key environmental stakeholders into its governing body.²⁴ 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.²⁵

3.4 Basel Convention on the Control Transboundary Movement of Hazardous Wastes and their Disposal, 1991

The Convention came into force in Nigeria on 5th May 1992 but was ratified by Nigeria on 13th March in 1991. The Convention has among other things at its preamble “aware of the need to continue the development and implementation of environmentally sound low-waste technologies, recycling options, good housekeeping and management systems with a view to reducing to a minimum the generation of hazardous wastes and other wastes.”

The objectives of the Convention are:

- (a) Reducing transboundary movement of wastes to a minimum, consistent with the environment’s sound and efficient management of such wastes.
- (b) Minimizing the amount and toxin of hazardous waste and ensuring that environmentally sound management, including disposal and recovery operations as close as possible to the source of generation.
- (c) Assisting developing countries in environmentally sound management of hazardous and other wastes they generate.²⁶

4.0 Modern Methods of Waste Management

Sanitary Landfill

Sanitary land filling method is the simplest and widely used waste disposal management method of solid, non-hazardous and non-radioactive wastes. The operation is basically a biological method of waste management. The solid wastes are spread in layers, compacted to the smallest practical volume, and covered by material applied at the end of each operating day.²⁷ Radioactive wastes emit ionizing radiations that can harm living organisms. However, the handling and disposal of such

²³ Section 5 *ibid*

²⁴ Section 3 NESREA Act, 2007

²⁵ Section 2 *ibid*

²⁶ L Atsegbua et al, *op.ci*

²⁷L I Nwokike. ‘Sustainable Strategies for Waste Management in Nigeria: A Legal Appraisal’ being Dissertation for the award of Doctor of Philosophy in Laws, Faculty of Law, Nnamdi Azikiwe University, Awka, (2021) p. 230

materials under specialized category and is not a responsibility of municipal authorities but is usually entrusted to specialist organizations in practically all countries.²⁸

The danger of improper waste storage lies, mainly, in its potential to contaminate surface and ground water supplies, Modern storage methods tend to eliminate or minimize such dangers, Sometimes, temporary storage of solid waste is done by forming new waste piles that are carefully constructed over an impervious base. To prevent dispersal, such piles have to be protected from wind and erosion. Long-term storage of waste is done in sanitary landfills. One of the important aspects of these modern landfills is that buried waste never comes in contact with ground water. An adequate distance is maintained between the bottom of the landfill and seasonally high ground water table. The landfill is built up in units called "cells". It is a disposal site that is carefully selected, designed, constructed, and operated to protect the environment and public health. The advantages are low cost, flexible operation and final disposal. Disadvantages are that the process is slow, requires large land area and there exists the possibility of leaching of pollutants and toxic metals from the site into the groundwater.

Daily solid waste is transported to a landfill site, spread in a layer and covered with 10-20 cm thick soil and a plastic liner. When refuse "cells" in a site are filled a layer of -0.5-meter impervious soil, called final cover, is spread on top of the landfill. Area and trench methods are also in use. The geographic and topographic selection for a landfill is important. Monitoring and control systems are provided for detecting and, if necessary, eliminating contamination of the soil around the pits and under-ground water sources with offensive leachates from the piles.

Composting

Composting is the biochemical degradation of organic materials (biodegradable trash) under carefully controlled conditions to yield humus-like sanitary soil supplement. Composting offers a method of processing and recycling both garbage and sewage sludge in one operation. The volume of the waste can be reduced by as much as 50 per cent. Digested compost is processed and used as mulch. Processing includes drying and screening. The decomposable materials in refuse are isolated from inorganic materials- through sorting and separating operations based on size, density and magnetic and other physical properties. Shredding reduces the size of the waste articles to uniform size. Both aerobic and anaerobic decomposition can extract useful products. Aerobic system of decomposition is known as composting. It is the only process that provides for recycling of organic residue. In a common procedure of composting, the polluted material is mixed with a solid organic substance that is readily degraded (e.g. wood chips, sawdust straw, etc.), The pile is supplemented with nitrogen, phosphorous and other inorganic nutrients and is placed hi a single heap. Moisture and aeration are maintained by periodic mixing and turning and exposing the materials to air.²⁹Composting method can be developed into a major process for handling sewage sludge to maintain an eco-friendly environment. As more stringent environmental rules and siting constraints limit the use of solid waste incineration and land filling options, the application of composting is likely to increase.

Incineration

Incineration is a controlled combustion process used for volume reduction and destruction of residual organic matter and pathogens. Advantages of incineration are:

1. Applicable to all combustible (organic) materials
2. Suitable to handle biohazard waste
3. Large land areas are not required.

²⁸P Narayanan (2014). *Environmental Pollution: Principles, Analysis and Control*. (New Delhi: CBS Publishers & Distributions Ltd.) p 619.

²⁹Op.cit, p 238

The disadvantages are:

- Environmental nuisance
- Products may be hazardous to health
- It is not the ultimate disposal method. Combusted residues still have to be disposed.

By the early part of the twentieth century very few urban communities in the world were incinerating solid waste. Most cities were following the primitive method of dumping it on land or water. General recognition of the pollution and public health problems, resulting from the open dumping of waste as well as of improper incineration, resulted in change in attitudes in adoption of sanitary landfills, which were designed and operated in a manner that minimized risks to environment and public health. At the same time, the incinerators have been redesigned to recover heat energy from the waste and to provide extensive air pollution control devices to satisfy stringent standards of air quality.³⁰ Modern municipal incinerators are designed to operate on the basis of continuous feeding and burning of the solid waste. From storage pit the waste is lifted and deposited into a hopper and chute above the furnace and released on to a charging grate or stoker. The grate shakes and moves the waste through the furnace allowing air to circulate around the burning material. Rectangular as well as rotary kiln and vertical circular furnaces are in use. The furnaces are lined with refractory bricks to withstand high temperatures.

Complete burning in any incineration process depends on: (i) combustibility of the pollutants, (ii) residence time, (iii) flame temperature and (iv) turbulence. For burning carbonaceous waste without smoke, temperature $>750^{\circ}\text{C}$ has to be maintained. The degree of turbulence of the air in the incinerator affects oxidation and overall performance. If the material to be disposed is in the form of waste gas containing organic materials that are combustible, incineration can be considered as the final method of waste disposal.

Pyrolysis is a thermochemical process, under anaerobic conditions, for conversion of organic solids to combustible gases, water vapor and a solid residue. The liberated gases can be used as fuel. 'Synpyrol' is a new technology, a combination of synthesis and pyrolysis, during which cellulose and water molecules react together to produce hydrolyzed cellulose, which is broken into hydrocarbons and other organic compounds. Conversion involves neutralization of acidic or alkaline wastes and proper disposal. Special storage and handling facilities are required for radioactive waste.³¹

Recycling

Recycling of part of the solid waste generated in the domestic and industrial sectors is an attractive way of conserving resources as well as reducing the burden on sorting and final disposal. For example, converting wastepaper from offices into corrugated boxes or newsprint (post-consumer recycling).

Evidently, recycling involves separation; recovery and reuse of components of solid waste that may still have economic value. Two of the safe disposal methods mentioned above namely, composting and incineration with heat recovery, can be considered as recycling technologies. From the municipal waste paper, metals, glass, plastics and rubber are potentially reusable if not as they are, at least after some processing. Of the various steps involved in recycling separation poses greatest problems. After experimenting with various alternatives the general consensus arrived at is that separation of recyclable material from the garbage can be done at centralized mechanical processing plants.

In developed countries major cities have established Material Recycling Facilities (MRF). At a typical MRF the collected garbage is loaded on to a conveyor. Electromagnetic separators are employed to remove steel cans. The remaining material passes over a vibrating screen where broken

³⁰*Ibid*, p. 234

³¹ *Ibid*

glass is removed, the conveyor then passes through an air classifier, which separates plastic and aluminum containers from the heavier glass containers.³²

Methods of recycling solid-wastes are given in Table 2 and solid-waste management methods in Table 3.

Table 1: Methods of Recycling Solid-Wastes

Recycling Process	Components
Steam generation	Combustible components
Composting	Garbage, rags wood chips and paper
Waste recovery	All refuse
Metal recovery	All refuse
Gasification and pyrolysis	Organic fraction of wastes

Table 2: Solid-Waste Management Methods

<i>Process</i>	<i>Waste Disposed</i>	<i>Cost</i>	<i>Remarks</i>
Compaction	Non-hazardous materials	-	Volume reduction for transport & refill
Landfill	Non- hazardous materials	Low	Simple operation
Composting	Biodegradable organic materials	Medium	Better suited for clean environment economical
Recycling	Selected materials	-	Depends on economics, usage, impact and social acceptance
Incineration	Combustible organics (except for explosives and special compounds)	High	Reduction in volume. End disposal for combustibles
Pyrolysis	Combustible organics (except for explosives and special compounds)	High	Reusable products
Special storage & handling	Radioactive waste	High	Very necessary

Radioactive Waste Disposal

Nuclear industry, nuclear power plants, medical establishments, research facilities and some Government organizations are the sources of generating commercial low-level radioactive waste. The International Atomic Energy Agency (IAEA) defines low- and intermediate-level waste as "radioactive wastes in which the concentration or quantity of radionuclides is above clearance levels established by the regulatory body, but with a radionuclide content and thermal power, below those of high level waste (i.e. about 2 kW/m³)." This type of waste is, usually, separated into short-lived and long-lived wastes, for purposes of storing and disposal. In the context of radioactive waste, 'disposal' is defined as "an emplacement of waste in an approved, specified facility without the intention of retrieval." Land disposal is the prevailing current common practice. In that case, the objective is to provide sufficient isolation of waste to protect humans and the environment and not to impose any undue burden on future generations.³³

³² Ibid

³³ Ibid

Sewage or Wastewater Management

Sewage or Wastewater originates mainly from domestic, industrial, ground water and meteorological sources. The management of "body elimination" which is part of the liquid waste before now was managed by "Night soil carriers" (an acronym for the kind of waste they carry and the time of the day in which it is done) Although the practice is now extinct, there is still little or no respite in the management of body elimination as the raw waste find itself in the open land or river untreated by those who contract to evacuate the waste *albeit* in a more modern way than what it was. Development of municipal water supply systems and household plumbing brought about flush toilets and the beginning of modern sewer systems. At about the same time, the septic tank was introduced as a means of treating domestic sewage from individual households both in sub-urban and rural areas.

However, there was still the problem of what to do with the sewage collected from individual households as it was recognized that the discharge of sewage directly into open land or into streams caused health problem. To solve this problem, it was fit that sewage treatment facilities be constructed to limit the health problems associated with its improper management.³⁴

5.0 Conclusion

Waste is something which the owner no longer wants at given time and place and which has no current or perceived market value. However, legal framework and proper method should be applied and adopted to recycle them and they can be reused. Nigeria should engage the application of modern technologies and equipment and apply modern methods of waste collection, transportation, treatment and disposal to optimize our wastes for sustainable development. Our laws should be reformed to provide for the modern methods such as pulverization, modern sanitary landfill, composing and recycling to manage our generated wastes for sustainability.

6.0 Recommendations

The researcher recommended the application of legal means, regulation, recycling, use of advanced technologies and proper waste management mechanism for managing our waste for enhanced productivity and sustainable development. Again enacting active laws and legislations at national, regional and international can be helpful to sustainable development.

³⁴Ibid