



## Environmental Pollution and Sustainable Development in Nigeria

Abah Emmanuel Ogbonna<sup>1\*</sup> and Unah Uchenna<sup>2</sup>

<sup>1</sup>Department of Public Administration, Ebonyi State University, Abakaliki, Ebonyi State, Nigeria

<sup>2</sup>Department of Industrial Chemistry, Ebonyi State University, Abakaliki, Ebonyi State, Nigeria  
abanuel62@yahoo.com

Available online at: [www.isca.in](http://www.isca.in), [www.isca.me](http://www.isca.me)

Received 11<sup>th</sup> January 2016, revised 20<sup>th</sup> March 2016, accepted 29<sup>th</sup> April 2016

### Abstract

*Environmental pollution and its consequences on the Nigerian society are of great concern and cannot be overlooked. This work is aimed at looking critically on environmental pollution, causes, effects and sustainable development in Nigeria. While pursuing a better life, man has continued to pollute the environment through agricultural and industrial activities, generate noise, population increase, urbanization, deforestation, bush burning and so on. Through these activities; man has directly and indirectly created problems which have caused environmental degradation and several other hazardous effects such as widespread of diseases, reduction and destruction of natural habitats, and has led to low socio-economic development of Nigeria as a nation. The paper recommends that the issue of environment and sustainable development should be everybody's concern, individuals, cooperate bodies must develop interest and do more to safeguard our environment so as to leave behind a better future for posterity to inherit.*

**Key-words:** Pollution, Environment, Waste management, Sustainable development.

### Introduction

The environment play a major role in the developmental processes of man and any little distortion on the environment can lead to dangerous consequences that the world will find difficult to come out from. The environment is the mainstay of human activities for agricultural, industrial, commercial, technological and tourism development of any society. Considering the position of the environment in both human existence and other activities, environmental problems now become public discuss at both national and international levels<sup>1</sup>. Environmental destruction and degradation, that had been seen as the problem of the developed countries is now a source of concern for all the nations of the world not minding her economic status. For example, in Nigeria, the issue of our environment wasn't taken serious until after the dumping of toxic waste at Koko, Delta State in 1988. The toxic waste which was allegedly dumped by an Italian company in connivance with a Nigerian accomplice businessman brought to light how much we know and care about our environment<sup>1</sup>.

Environmental pollution is caused by the activities of man and continuous human interaction with the environment. Several studies have shown that as the population of a country increases, the exploitation of the environment and its adverse effect - pollution have also increased with its consequential effects on lives of the people and other living organisms. In the quest to meet up the basic needs of lives of these increasing population which includes shelter, feeding and clothing, man have over stretched the environment. Trees are cut down as timbers for building, to meet the feeding need of the ever growing population; farmers have adopted some new/modern farming

techniques such as the use of herbicides, pesticides, inorganic fertilizers, mechanised farming, etc. all these had contributed a lot in the pollution of our environment. In Nigeria, wastes emanating from new technologies such as scrap computers, radios, televisions, refrigerators, hand phones and their batteries just to mention a few are posing great dangers to our environment<sup>2-4</sup>.

The abuse of the natural environment because of lack of knowledge/information, poverty, overpopulation and quest to satisfy human wants has caused a lot of environmental damage. These happens as people make efforts to feed, clothe, shelter and provide other developmental needs using any natural resources they can lay hands on<sup>5</sup>. These activities help in the development of the nation and also have some negative effects on our surroundings.

This paper examines environmental pollution, causes, effects and sustainable development in Nigeria.

### Concept Analysis

**Pollution:** The environment provides man with the air; water and food for his survival on earth, many activities of man have changed the natural constituents of the environment which portend danger to man and his environment<sup>6</sup>.

“Pollution is the introduction of any substance at the rate faster than the environment can take care of either by breakdown, dispersion, recycling or storage in any harmless form into the environment”<sup>7</sup>.

Pollution can be grouped into air, water and land or soil. Air pollution are caused by the emission into the atmosphere particulate matter such as smoke, dust, soot, greenhouse gases, noise, etc. Whereas water pollution is caused by the dumping, introduction, etc. of the following into the water bodies; municipal wastes, leaching of agricultural chemicals such as pesticides, herbicides, insecticides, fertilizers, etc. into the water, wastes from industries, medical wastes, agricultural wastes, acid rain, sediments from erosion, oil spillage, etc. While land or soil pollution are caused by dumping or introduction of plastics, tyres, cans, papers, soaps, old vehicles, solid waste from homes and industries, industrial and agricultural wastes/effluents, etc. to the soil<sup>7,8</sup>.

Due to the increase in the establishment of industries, sources of pollution are increasing rapidly. The reason behind the increasing pollution of our environment is because of the rapidly growing population. The increasing demand for energy, food, clothe, house, etc. has led to increase in waste generation. Not only that population is increasing, the standard of living is also increasing, all these are placing additional stress on the environment<sup>6</sup>.

**Environment:** Many definitions of the term “environment” have been given by different academics and corporate bodies / agencies. Not minding the way one sees the term; “environment”, it simply means our surroundings.

The term “environment”, “is the sum total of outer conditions that impact the life of an individual or a population, specifically the life of man and other living organisms on the earth’s surface”<sup>9</sup>. The Federal “Environment includes water, air, land and all plants and human beings and/or animals living there in and the interrelationships which exist among these or any of them”<sup>10</sup>.

It includes continual interaction between physical and non-physical elements, living and non-living things which determine the distinguishing features, growth and sustainability of both the constituent elements of the environment and the environment itself<sup>11,12</sup>.

Arising from the above, environment is seen and understands as everything that is surrounding living organisms including man which sees for the continued existence and development of other things therein.

**Environmental Pollution:** Some years ago, researchers brought to the attention of mankind the crucial problems that are posing a threat to the existence of humans – global warming, destruction of the ozone layer, desert encroachment and many others but they were not taken seriously. For lack of knowledge and interest, we have done a great damage which cannot be changed to the environment where all life and wellbeing of all solely depends. But through better knowledge, wiser behaviour and attitudinal change, we can have a better environment which

will lead to a better life for us and generations to come<sup>13</sup>.

Environmental pollution occurs when any material, organism or substance is introduced into the environment especially by the direct and indirect action of man, in more than its natural concentration which has detrimental effect on it and every other thing therein. Environmental pollution is grouped into three; they are air water and land pollution<sup>7</sup>. Most environmental problems are due to the production or consumption of goods whose waste products translate easily into pollutant<sup>14</sup>.

Environmental pollution takes place when our environment is unable to take care of the by-products of human activities. These by-products, if not taken care of have negative impacts on important environmental duties to man such as providing clean air and water for the healthy survival of man<sup>7</sup>.

**Sustainable Development:** The idea of sustainable development is mindful of the counsels of environmental specialists on the harmful effects development is causing and the support giving to development by those in the field of economics without regards to the environment. Sustainable development is a method of differences in the interrelationships that occur between social, economic and natural systems and procedures that are involved. Briefly, sustainability requires a vibrant equilibrium between all the requirements of human race and the vital need for the protection of our natural environment<sup>13</sup>.

In April 1987, the Brundtland Commission of the United Nations published its ground breaking report, “Our Common Future”- this brought the idea of sustainable development to the general public. From the report, sustainable development was explained as follows; “Sustainable development is the development that meets the needs of the present without comprising the ability of future generations to meet theirs.” In essence, sustainable development is the procedures of change that involve the utilization of resources, methods of investments, the invention and use of technology; and political and social change are all in agreement and enhance both present and future potential to meet human needs and wants”<sup>13</sup>.

Sustainability is closely related to the question of equity which include; fairness, social justice and greater access to a better quality of life. For us to arrive at all these, there is a big need to start behaving in a way that will stop climate change, further environmental pollution and reduce inequalities, as all these threatens to change every progress already made in human and economic development for the poor people in the world<sup>15</sup>.

Development is the increase in the manufacturing, distribution and consumption of goods and services by man. Developments are more interested in the means of production, such as mineral mining or exploration, but fail to provide answers on what will happen or how to replace those if these resources got exhausted. Additional, the consequences of developmental processes on the

environment are not always considered. The lasting effects of the actions of man on the environment are either not known or not understood very well, it is now very clear that something that needs to be handled carefully (the environment) is now being disturbed, interrupted and changed by man either knowingly or unknowingly. Some of these changes for example, the disappearance of some animal, tree species, etc, are what we cannot reverse no matter how hard we try. Other processes may soon exceed a point where there will be no remedy, if urgent action is not taken to save the situation. Nevertheless, all attempts to safeguard our environment have met resistance by people who insisted that development which include among other things improving the living standards for growing number of people must come first over environmental concerns. Therefore, the challenge of sustainable development includes reconciling conflicting claims and adopting a development which is environmental friendly<sup>13</sup>.

Sustainable development means a better quality of life now and for posterity. It means not using up resources faster than the earth can replace. Sustainable development has two major ideas:

The idea of necessities, particularly the important necessities of the poorest of the poor in the world, which must be given special priority; the hindrances been caused by technological innovations and social organization on the environment's capability to meet the needs of mankind now and generations to come<sup>15</sup>.

From the foregoing, people should look at the world as a system connected with time. When we think of the world this way, we will understand that air pollution from Kano state affects air quality in Enugu state, insecticides sprayed in Adamawa state could harm fish in river Niger of Anambra state and that water released at the dam at Ndubia Igbeagu, Izzi local government area of Ebonyi state will cause flooding in Cross River state. The pollutants from any industrialised nations from Asia or Europe can as well affect the air we breathe in Nigeria. Also, when we know that actions of man on earth have a chain effects over time, we will realize that the actions our fore fathers took about how to farm or fish years ago continued to affect agricultural practice today; and the policies we endorse and implement today will have an impact on our children when they become adults. The environment should be seen as an asset stocked with various forms of wealth but if those of us living now should use up this wealth without investing for posterity, then they will have nothing to inherit<sup>15</sup>.

### Theories of Sustainability: Ecological Models

Theories of sustainability tend to highlight and bring together societal reactions to environmental and cultural problems. In a simple term, sustainability is the ability to conserve something, its result, or method over a period of time. We can say that something like agriculture, forest, or any investment is sustainable if the processes do not exhaust the means on which

it rest on. In the everyday use of sustainability, the perception borders on the ways in which environmental pollution is threatening the economy, health and the social systems. From the point of view that economic and social systems depends on the environment, sustainability throws more light on the link concerning the harm being done to the environment which are caused by the activities of man and the threat to humanity caused by the world environmental problems. The theory of sustainability raises a blatantly major question of whether man can successfully continue with her activities and achieve her aims without finishing the natural resources on which it depends?

The above question draws our attention to the impacts human activities are causing to the earth, such as loss of biodiversity, climate change, global warming, pollution, etc. To cushion the impacts of these human activities, it requires reforming the entire human systems and activities ranging from financial, political, industrial, energy, transportation, communication and education. However, those reforms can be a problem to other aims and aspirations of the global community, like eradicating extreme poverty and protecting human rights. The question is how do we resolve these conflicting issues?

In a nutshell, the close relationship which sustainability brings points towards the dependency of all the goals on ecological conditions; eradicating poverty cannot stand in for protecting the biodiversity because it from the ecosystem that the means of fighting poverty will come from. The concept of sustainability confronts man and the society at large with a moral question of what must be sustained?

Ecological models of theories of sustainability intend to sustain the biodiversity and maintain the environment without much harm. Instead of making business prospects or investment the major unit of sustainability, they rather consider the wellbeing of the people in the world as priority<sup>16</sup>. In this model, the question of what environmental goods to sustain are looked at from anthropocentric and ecocentric points of view. From an anthropocentric angle, important natural resources and the environmental systems must be sustained and the renewing procedures on which human lives depend. While from an ecocentric point, species and environmental systems must be sustained as the originators of beings with inherent value.

### Causes and Effects of Environmental Pollution

The task of environmental pollution is a problem of the entire world especially in the developed societies; present societies of Africa and Nigeria in particular also are facing challenges of how to handle these problems.

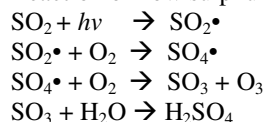
**Agricultural and Hunting Activities:** Evidence has shown that almost all the farmers in the rural areas of Nigeria still adopt bush burning method to clear their farmland, cut down trees indiscriminately, clear the forest for farming activities, etc.

These activities no doubt change the natural vegetation of the environment. The use of bush burning to clear farmland reduces the micro-organisms in the soil that would have helped to aerate the soil and increase the soil fertility, also the leaves of these shrubs and trees burnt would have added organic materials to the soil. Burning of bushes also threatens wildlife, human's life, property, increase erosion and flooding<sup>17</sup>.

In the quest for food, man have destroyed greater parts of natural vegetation, excavated large areas of land, greatly changed the landscape, and even created new lands through land reclamation. The economic importance of the forest and the vegetation to mankind cannot just be waved aside. In addition to the fact that it serves as a primary source of food to man, the forest also provides logs and other materials for building, manufacturing and pharmaceutical industries and firewood for fuel use in cooking especially in the rural areas<sup>18</sup>.

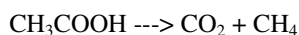
Bush burning either for farming or hunting activities leads to environmental problems such as erosions. Continuous bush burning often decreases the ability of that particular area to grow vegetation, releases to the atmosphere greenhouse gases such as sulphur oxides (SO<sub>x</sub>) and nitrogen oxides (NO<sub>x</sub>) which causes acid rain and depletes the ozone layer and cause more heat intensity to reach the earth, thus threatening human, animal and plant life and property as well as causing dangers to the survival of the environment<sup>17</sup>.

Reaction of how sulphur oxides cause acid rain, Equation-1



Livestock farming, popularly referred to as domestication of animals also has a major polluting effect on the environment. Heavy grazing of animals and the activities of Fulani herdsmen have led to trampling and compaction of the soil, thus reducing its capacity to retain water, it makes the soil very hard for cultivation for farmers, changes the soil structure and can lead to soil erosion. Even though, there may be some gains in animal grazing on a farmland because these animals provides faeces, a natural organic fertilizer rich in nitrates and several other nutrients. But these faeces are sometimes washed into the streams, ponds and rivers during rainy seasons which serve as sources of water for domestic use for most farmers in the rural areas and thus, constitute health hazards to the rural populace causing diseases such as diarrhoea, dysentery, typhoid fever, cholera, etc. Animals are one of the major sources of the emission of methane (CH<sub>4</sub>) to the atmosphere, which come from the activities of microbes which act on the cellulose and other carbohydrates in their digestive systems. The growing of rice in freshwater wetlands in Ebonyi (Abakaliki), Benue and Tarabastates to feed the ever increasing population of man produces a large amount of methane and carbon (IV) oxides (CO<sub>2</sub>). During the bacterial metabolic process of

methanogenesis, acetate is acted upon and split into CO<sub>2</sub> and CH<sub>4</sub>. These gases contribute to global warming<sup>19</sup>. Equation-2.



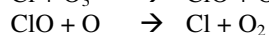
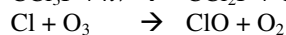
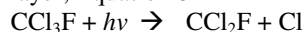
The use of inorganic fertilizer, pesticides, herbicides, insecticides has caused air, water and soil pollution. Many pesticides move through the air, water and soil and bio accumulate or bioconcentrate in food chains leading to serious ecological and human health problems such as cancer, organ damage (liver, kidney, etc), reproductive damage, gastrointestinal illness, nausea, vomiting, etc. Because of regular cultivation of the soil, farmers now start using fertilizers to increase their crop yield. Hunting of fish by the use of different chemicals has made the water-streams, rivers and sea environments to be heavily polluted, due to the use of these dangerous chemicals<sup>20</sup>.

**Industrial Activities:** The industrial revolution made people realise the critical nature of pollution problem and its destructive effects. Industrializations was the first cause of serious environmental pollution because that was when man started using in large quantity fossil fuels such as gas, oil and coal. The use of fossil fuel in the production, manufacturing, power generation, agricultural industries and road, rail and air transportation emits gaseous, liquid and solid pollutants into the air, water and soil which cause many harmful effects to organisms, man and the environment<sup>1</sup>.

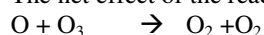
The causes of most environmental challenges take their origins in the developmental process of man or in its failures and inadequacies. Mankind had knowingly and unknowingly generated unexpected industrial pollution that he doesn't know how to handle where he is trying to adjust from old ways of life to the modern ways. With the growing human need and development in technology, people are adjusting to new life styles which are created by industrial revolution and civilization. Different industrial processes ranging from excavation, mining, processing, use and disposal of industrial waste products have highly polluted the environment. Many cities in Nigeria that have clusters of industries such as Lagos, Aba, Enugu, Ibadan, Nnewi, Kano, Port Harcourt, Onitsha, Benin, Warri, Kaduna, etc. have witnessed the release into the atmosphere pollutants that deplete the ozone layer, cause diseases and destroy our environment. Our industries are generating so much waste than the environment can take care of, as individuals; we consume so much products and generate very high volume of wastes which we throw away and nature's own way of absorbing these wastes is very slow thereby putting a lot of pressure on the environment. Some of these industrial wastes such as heavy metals bio accumulate in the food chain which leads to different diseases including organ damages if taken by man. Industrial activities have continued to release chlorofluorocarbons (CFCs), CO<sub>2</sub> and other greenhouse gases to the atmosphere which depletes the ozone layer, though some of them have been banned, the effects of the ones already in the

atmosphere are still on. These gases destroy the ozone layer<sup>3</sup>.

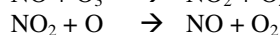
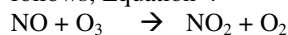
Reactions of how chlorofluorocarbons (CFCs) destroy the ozone layer; Equation-3



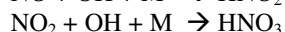
The net effect of the reactions above is:



Reactions of how nitrogen oxides deplete the ozone layer are as follows; Equation-4



In the Niger Delta areas of Nigeria, oil spills from pipelines that were vandalized by hoodlums, vessels, pipelines, oil terminals and bulk storage facilities, the blow out of offshore oil and gas wells, the dumping of drilling muds and oil soaked wastes, etc. have caused high level of water and land pollution which kills aquatic animals, makes the water bad for any domestic or agricultural use and renders the soil useless for any farming activities<sup>1</sup>. A visit to some Niger Delta areas shows that almost all the water they use for cooking, washing and other domestic activities are bought which leads to a decline in the finances of the people. Also, corrugated iron roofs rust so easily due to acid rain caused by air pollution. Gas flaring and fumes from different companies such as carbon dioxide, sulphur oxide, hydrocarbon, nitrogen oxide, etc. are emitted as a result of incomplete combustion of especially fossil fuel and other carbon containing substances in exhausts pipes and plants. This have caused acid rain which destroys our forest, water bodies, damages artistic and architectural works and also destroys the soil meant for agriculture and other purposes<sup>7</sup>. Equations-1 above and 5 below shows how some of these pollutants cause acid rain Equation-5.



Where: 'M' is any third body which absorbs energy, e.g. nitrogen or oxygen. Also, at night, ozone (O<sub>3</sub>) oxidizes NO<sub>2</sub> to N<sub>2</sub>O<sub>5</sub> and whence to nitric acid. The overall reaction is as follows; Equation-6.



H<sub>2</sub>SO<sub>4</sub>, HNO<sub>2</sub> and HNO<sub>3</sub> are formed which subsequently fall together with rain causing the damages explained above.

The exploitation of the forest for timber have led to the felling of trees for use in building construction, furniture, canoe, ship construction as well as in other industrial activities. This has led to deforestation which can cause erosion of the soil and storm

that may also lead to the destruction of properties, crops and animals, desertification, flooding, soil infertility<sup>21</sup>.

**Noise Pollution:** Noise pollution can best be described as unwanted sound caused by human activities in our societies. It becomes pollution when it is too high and might be a source of worry to humans and the general public. At present times, the activities of people in construction industries, recording studios, air, land and sea ports transportation companies have not just caused noise pollution but have worsened the bad state of the environment that is already polluted<sup>1</sup>.

More so the increase in churches and mosques with their loud amplified speakers mounted on the roof tops produces unpleasant noise to the discomfort of every resident around. Some of them start as early as 4am when most residents are still sleeping to disturb the public in the name of prayers. Also the blaring of illegal siren by some politicians, traditional rulers and security agencies for no just cause added to the approved sirens by ambulances and security agencies, loud speakers fitted in some marketing company buses, some individuals in our different neighborhood tune their music playing instruments to a very high peak, all these constitute noise pollution and disturb the people around. Recently, Lagos state government closed some churches, mosque and some industries because the noise that is coming out of their loud speakers and generating sets. These can lead to headache, emotional disorder, high blood pressure, malfunction of the central nervous system and may lead to deafness<sup>22</sup>.

**Overpopulation:** Population growth has been known as one of the contributors to the environmental pollution, the stress and strain over population exerts on the environment cannot just be wished away. Nigerians large population size has always been seen as a symbol of greatness, the most populous black nation in the world and any attempt to reduce it has always been resisted. Our large population has made our farmers to forego the traditional farming methods that allowed them to produce enough food with little impact on the environment. There are evidences everywhere of rapid decline in environmental quality and human living conditions occasioned by rapid increase in human population. The increase activities in the production sector to meet the needs of the growing population will exert much pressure on the environment and people will only be concerned on what they will gain from the environment without worrying on the consequences of such action especially for the coming generations. Food and other basic needs must be provided for the ever increasing population – all these are suffered by the environment where resources will be pulled from<sup>5</sup>. Globalise Interactive World Map, 2005 states that Nigeria population growth rate is 2.56% and that by the year, 2050 Nigeria's population will be more than 250 million (Figure-1). This shows that corresponding farming and industrial activities will be embarked on to provide for the ever increasing population thereby putting more pressure on the environment.

### Environmental Management

For so many years, there has been increasing concern over the impacts of public health attributed to environmental pollution. It is estimated that about a quarter of the diseases facing mankind today occur because of long exposure to environmental pollution<sup>23</sup>.

Over population have made so many people who have no business being in the urban areas, those that cannot afford good houses in the urban areas live their different rural areas in search of good livelihood in the cities, many of these people end up in the slums. These slums have no good sewage disposal, no drainages and these pose serious environmental consequences. This mass movement of people to the urban areas without proper town planning to accommodate such people has led to improper disposal of both sewage and refuse which leads to environmental pollution and destroys the aesthetic nature of the urban cities. The problem of the disposal of sewage and refuse is quite serious because of the rapid rate of generation of non-

biodegradable materials such as plastics. Also inadequate construction of drainage system, dumping of refuse in drainage/water ways, farming and building of houses on the natural water channels are one of the major causes of increasing cases of flood in some urban and rural areas<sup>24</sup>.

Improper management of solid waste is one of the main causes of environmental pollution and degradation in many urban centers in Nigeria. Majority of these cities do not have regulations on solid waste management, facilities for disposing solid waste properly including harmful wastes which may be infectious, toxic or radioactive<sup>25</sup>. Table-1, is showing the solid waste generated in some Nigeria urban cities between 1982 to the year 2000 while Table-2, shows estimated and projected volumes of solid waste in some Nigerian cities till year 2020. The two tables show that the wastes generated are increasing as the number of years increases, this might be because the population is increasing or that people in these cities increased their waste generation by producing and consuming more products.

**Table-1**  
**Solid waste (kg/year x 1000) generation in some Nigerian urban centres<sup>25</sup>**

Cities	1982	1985	1990	2000
Lagos	625,399	681,394	786,079	998,081
Ibadan	350,823	382,224	440,956	559,882
Kano	319,935	348,580	402,133	535,186
Kaduna	257,879	280,925	324,084	431,314
Onitsha	242,240	263,929	300,477	386,593
Port-Harcourt	210,934	229,821	265,129	236,853
Aba	131,190	143,712	169,719	236,703
Gusau	44,488	48,471	57,243	79,835

Napoleon et al.(2011)

**Table-2**  
**Estimated and projected volumes of solid waste in some Nigerian cities (tonnes/year)<sup>36</sup>**

Urban Area	2000	2010	2020 Projected
Lagos	999,641	1.2x10 <sup>5</sup>	1.61x10 <sup>5</sup>
Ibadan	579,723	996,102	1.14x10 <sup>5</sup>
Port-Harcourt	357,436	762,143	1.03x10 <sup>5</sup>
Warri	129,921	174,372	547,242
Kaduna	428,563	761,479	1.04x10 <sup>5</sup>
Kano	526,671	921,511	1.30x10 <sup>5</sup>

Poor waste management poses a great challenge to the wellbeing of the residents of the city, particularly those living near the dump sites because the dump sites can easily pollute their land, water, air and vegetation and food sources. Poor management of solid waste leads to environmental degradation, destruction of the ecosystem and poses great danger to public health, hence the need to manage it very well<sup>7</sup>. The question is “how do we manage our environment” to make the best out of it and leave a better environment for generations unborn.

Different organizations are mainly becoming more concerned with demonstrating and achieving good environmental performance by controlling impacts of their activities, products and services on the environment<sup>5</sup>.

Environmental management is the different actions taken by individuals, government and cooperate bodies to regulate and protect the health of the environment. They are different steps, actions and day to day positive behaviours/activities that are aimed at impacting positively on how the environmental resources are used and protected. It is the management of the environment in such a way that the interaction of the modern human societies with their impact on the environment will not influence the ecosystem more than nature can take care of<sup>26</sup>.

In Nigeria, though there are laws, ministries and agencies saddled with the mandate of protecting and safeguarding our environment, they have not really done much. The Federal Ministry of Environment, National Environmental Standards and Regulation Enforcement Agency (NESREA), etc. at the federal level and different state environmental protection agencies are all mandated to see for the safety of our environment. Companies were established here and there but

nobody regulates the quality and amount of gaseous effluent they emits into the air, the waste water they discharge to our water bodies, how and where they discharge and dump their solid wastes. All these may be contained in a paper but there should be action, individuals, co-operate bodies or organisations that exceed the standards set should be prosecuted for the masses to feel the existence of these bodies. Many of the States’ Environmental Protection Agencies and Ministries only serve as revenue collection department use in the revenue drive of the states while refuse are allowed to litre at different places within the states. More actions should be taken by all to safeguard our environment for our own good and the betterment of posterity<sup>5</sup>.

### Environmental Pollution Laws in Nigeria

People’s attention has always been on how to take advantage of the environment and milk her natural resources for economic and developmental reasons with little or no regard for preservation and sustainability of the resources<sup>27-29</sup>.

Not minding that Nigeria attended the 1972 Stockholm Conference on Human Environment, the United Nations Environment Program (UNEP) and also ratified many other International Environmental Conventions, not much were done legally to preserve and protect our environment, even where there is, implementation of the laws has always been a problem. Nigeria has made other efforts to protect and preserve our environment such that in 1981, a bill for the establishment of a Federal Environmental Protection Agency was sent to the National Assembly<sup>30</sup>.

So many other laws and policies were made as contained in the 1999 constitution of the Federal Republic of Nigeria.

Nigeria's growing population

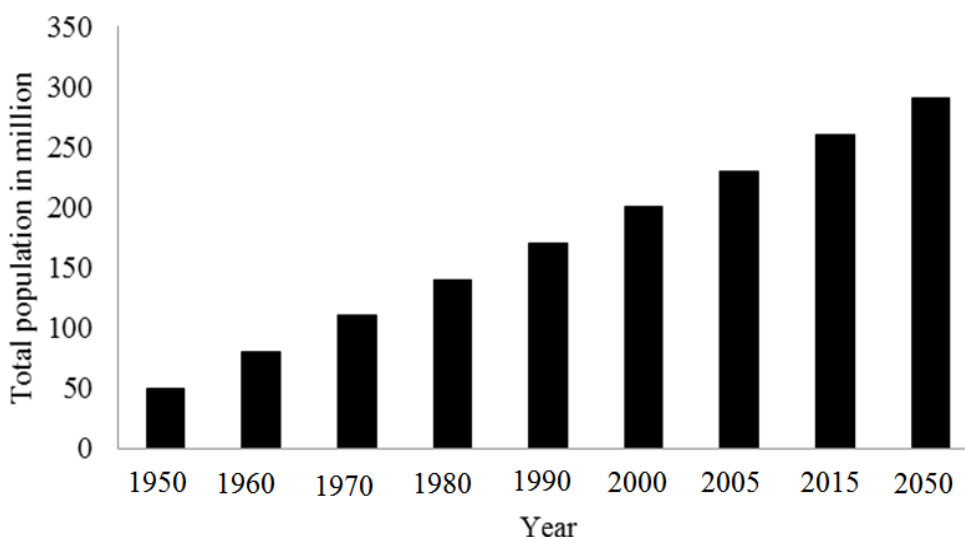


Figure-1  
The estimated total population of Nigeria in the near future<sup>35</sup>

### **The 1999 Constitution of the Federal Republic of Nigeria:**

The 1999 Constitution of the Federal Republic of Nigeria made so many provisions for the protection of our environment. Section 20 said “The State shall protect and improve the environment and safeguard the water, air and land, forest and wildlife of Nigeria”. Section 16, subsection 2 have it that “The State shall direct its policy towards ensuring the promotion of a planned and balanced economic development”. While section 17 (2) (d): “In furtherance of the social order, exploitation of human or natural resources in any form whatsoever for reasons, other than the goal of the community shall be prevented”<sup>31</sup>.

**National Policy on Environment:** This was launched in Nigeria by FEPA on 27<sup>th</sup> November, 1989 with the following goals:

To secure the quality of air, water and land for the good health and wellbeing of Nigeria’s citizens. To preserve the environment and the natural resources therein for the benefit of the present and generations to come. To preserve, improve and restore the environment and ecological processes important for preserving natural species and the principle of optimum sustainable yield in the use of natural resources. To mobilise and sensitize the people on the relationship between developmental processes and the environment. To cooperate with international bodies and other countries in the protection of our environment<sup>27</sup>.

**Harmful Wastes Act, Cap 165:** This was part of the quick response to an incident where a toxic waste was dumped in Koko, Delta State, Nigeria in 1988, by a foreign company in connivance with some unpatriotic Nigerians<sup>31</sup>.

**The Federal Environmental Protection Agency (FEPA):** FEPA was established to protect Nigeria’s environment by Decree 58 of 1988, this was amended by Decree 59 of 1992. They were invested with powers to manage the environment, develop environmental policies and have control over Nigeria’s environment<sup>30</sup>. They were powered to:

Minimize the damage done to the environment through agriculture and industrial activities by monitoring and making corrections where necessary in their processes. Establish environmental principles, guidelines, specifications or standards for the protection of the Nigeria’s air, water, land and inter-state waters to protect the health and welfare of Nigeria’s population from environmental pollution. Set standards for water quality, noise control, effluent limitation, ozone layer protection, control of hazardous substances, etc.

**The Environmental Impact Assessment Act of 1992:** This Act oversees Environmental Impact Assessment (EIA) for any intended projects to be cited in Nigeria. This is set to carry out Impact Assessment of any form of project(s) in Nigeria to know how the project can affect human, animals, other organisms or the environment at large either negatively or positively<sup>32</sup>.

### **Pollution as Obstacle to Sustainable Development**

Prevention of pollution ought to be seen and recognised as a very important part of sustainable development, combining these two will make it easier and more fruitful in tackling environmental problems as a whole. The act of sustainability should apply to all aspects of business from mining, fabrication, building, etc. The ideas of sustainability for so long ago have been associated with preserving of natural resources and safeguarding the environment. Pollution prevention is the gateway to sustainable development<sup>33</sup>.

It is better to prevent pollution rather than trying to solve the problems of pollution is important for the process of development and addressing many environmental challenges. Craig went further thus; “it is important economically and environmentally to reduce the input of materials and energy, minimize the amount of waste for treatment and disposal and make sure the wastes that are produce can be reused or disposed off easily without harm to the environment”<sup>33</sup>.

A population without health challenges is very important for economic development of any society; the poorest people in the world are the ones that suffer most from the health effects of environmental pollution. Diseases and many other harmful effects related to polluted environment reduces economic development, apart from human suffering, illness causes a huge financial burden on the family through payment for drugs and hospital bills and lost in productivity. For instance, a child that is sick cannot perform well academically in school and an unhealthy adult cannot work or care for his/her family. Non-communicable diseases which are on the increase such as heart disease, stroke, diabetes, cancer, can reduce economic development by pushing people into poverty due to loss of productivity and cost of long term medical treatment<sup>34</sup>.

To prevent pollution and ensure sustainable development, the following steps should be adopted among others. The quality of the environment for the poor populations should be improved because they are the ones hard hit by the burden of environmental diseases, by reducing their exposures to air pollution in homes especially by providing them with good cooking materials/clean stoves to prevent them from burning of biomass/firewood in cooking and provide clean water, good toilet facilities and other sanitation facilities. Identify different efforts to tackle environmental problems which can as well be beneficial to health, such as encouraging the use of bicycle and trekking as a means of transportation reduces the emission of greenhouse gases and air pollution.

Recognize that certain policies, programmes, practices and technologies fashioned to encourage sustainability and economic development may be unknowingly pose some adverse effects on the environment and health of the people and efforts should be made to correct them before implementation<sup>33</sup>.



## Conclusion

The environment is where we all live and interact whereas development is what we all do in an attempt to improve, adopt and live a better life. Development cannot take place without leaving behind an indelible mark on the environment, either positive or negative mark, so the two are inseparable.

In our efforts to keep progressing developmentally as human, to meet our ever increasing needs as a people and to meet our ambitions in life, we have taken so much from the environmental resources with little or no effort or plan for a replacement. We forget so easily that posterity will still need the same resources for their survival. The challenge of facing the future and of safeguarding the interests of coming generations is very important and we must adjust our lifestyle so as to accommodate the needs of the future generation. We needed a mandate for change, the process will not be easy or straightforward but we must make excruciating choice for the sake of posterity.

**Recommendations:** There should be awareness creation and reorientation for people to change their life style and adopt ecofriendly life style. The awareness creation should be taken to the rural areas because those in the rural areas have developed I don't care attitude to the issue of environmental protection.

Environmental protection should be included in our educational curriculum especially at the primary and secondary school level to catch them young. When the students are coming out of school, they will be more informed and have the knowledge and be alert to their environment and make adequate efforts towards positive behavior to protect their environment.

The government should prevail on producers and industrialists to develop and produce eco-efficiency products because this will go a long way in safeguarding the environment. Being eco-efficiency entails that the processes of mining, manufacturing, production and provision of other services reduces wastes, use less energy and facilitate reuse and recycling. The government also should map out grazing areas for cattle rearers and Fulani herdsmen, provide and manage dump sites especially in the urban areas, engage in proper waste management and establish waste recycling plants at least one in every state of the federation.

People should be educated to adopt sustainable use of goods and services and general sustainable lifestyles. Sustainable use of goods and services does not mean consuming fewer goods but consuming goods that are of high quality, can easily be repaired or updated. We should as well adopt reuse and recycle of our waste product instead of outright throw away.

Host communities/stakeholders for mining and construction industries should always insist on Environmental Impact Assessment (EIA) before signing any agreement with such firm or industry.

The issue of environment and sustainable development should be everybody's concern/business – individuals, co-operate bodies and the government must develop interest and do more to safeguard our environment so as to leave behind a better future for posterity to inherit.

## References

1. Evelyn M.I. and Tyav T.T. (2013). Environmental Pollution in Nigeria: The Need for Awareness creation for sustainable Development. *Journal of Research in forestry, Wildlife and Environment*, 4, 5-14.
2. Ocheri M.I. (2003). Environmental Health Hazards and National Survival and Stability: A Need for Education. *Benue State University Journal of Education (BSUJE)*, 4, 167-175.
3. Gbehe N.T. (2004). Conference Paper at the Department of Geography, Benue State University (BSU) Makurdi. January '04. Land Development in Nigeria: An Examination of Environmental Degradation Associated with land use Types.
4. Aja J.O. (2005). Environmental Education as a Panacea for a sustainable development in Nigeria: Schools environment in focus. *African Journal of Environmental Laws and Development Studies*, 1, 114-127.
5. Omofonmwam S.I. and Osa Edoh G.I. (2008). The Challenges of Environmental Problems in Nigeria. *Journal of Human Ecology*, 23, 53-56.
6. Smart N. Uchegbu. (1998). Environmental Management and Protection. Precision Printers and Publishers, Achara Layout, Enugu, Nigeria.
7. Okonkwo E.M. and Eboatu A.N. (1999). Environmental Pollution and Degradation. Onis Excel Creations Publication Ltd, Palladan Zaria, Kaduna State, Nigeria.
8. Miroslav R. and Vladimir N. Bashkin. (1998). Practical Environmental Analysis. The Royal Society of Chemistry, Thomas Graham House, science Park, Milton Road, Cambridge CB4 0WF, UK.
9. Miller G.J. (1976). Living in the Environment: concept, problems and Alternatives. California Wad South Publishing Company Inc.
10. FEPA. (1990). Federal Environmental Protection Agency, Act of 1990 under section 38.
11. Johnson V. (1992). What is Environmental Education. Michael Atchia (ed.). Environmental Education in the African school curriculum, Ibadan; African Curriculum Organisation.
12. Muoghalu L.N. (2004). Environmental Problems and their Effects on Human life: from Awareness to Action. H. C. Mba et al. (eds), 13-28.
13. United Nations (2016). The Universal Declaration of

- Human Rights. [http://www.un.org/en/globalissues/environment/Accessed May 21, \(2015\).](http://www.un.org/en/globalissues/environment/Accessed May 21, (2015).)
14. Onwioduokit E. A. (1998). An Alternative Approach to Efficient Pollution control in Nigeria. Proceedings of the Annual Conference of Environmental Protection Society of Nigeria. University of Ilorin, Kwara State Nigeria.
  15. Akintoye V.A. and Opeyemi O.A. (2014). Prospects for Achieving Sustainable Development through the Millennium Development Goals in Nigeria. *European Journal of sustainable Development*, 3, 33-46.
  16. Rolston Holmes III. (1994). Conserving natural value. New York: Columbia University Press.
  17. Ayia O.N. (2009). An Assessment of the Bush Burning Prohibition Law of Benue State Cap. 25, Laws of Benue, 2004, In M. O. Odey, N. T. Gbehe and Ter-RumunAvav(ed) Agricultural and Environmental issues in Nigeria: Essays in Honour of Rt. Hon. Austion Igoji Awodi, Makurdi, Oracle Business Ltd.
  18. Kelvin T.P. and Levis A.O. (1994). An introduction to Global Environmental Issues. London Butter Tanner Ltd.
  19. Chen Robert S. (1990). The Hunger Report: 1990. Providence, RI: Alan Shawn Feinstein World Hunger Programme, Brown University. *Environmental Impact Assessment Review*, 10, 335-358.
  20. Kates R.W., Clark W.C., Norberg-Bohm V. and Turner III B.L. (1990). Human Sources of Global Change: A Report on Priority Research Initiatives for 1990-1995. Occasional Paper 3. Providence, RI: Institute for International Studies, Brown University.
  21. Omiegbe O. (1999). Bush burning and its effect in Africa. A case study of Nigeria. *Benin Journal of Environment Education*, 1, 10-20.
  22. Nyakuma A. (2012). Noise, when is it a pollutant? *New Era-weekly Newspaper*, 5.
  23. World Health Organisation (WHO), (2011). Public Health and the Environment. Retrieved from [www.who.int/gho/phe/en/index.html](http://www.who.int/gho/phe/en/index.html)
  24. Njoku John. (2006). Where Human Waste is Dumped with Impunity. *Vanguard Newspaper*, Monday, p. 42.
  25. Napoleon S.M., Kingsley O.D. and Joan E.D. (2011). Mitigating the Impact of Solid Wastes in Urban Centres in Nigeria. *Journal of Human Ecology*, 34, 125.129.
  26. Rodgers K.P. (1987). Director, Department of Regional Development Organisation of American States, Washington, D.C. Guidelines for Planning the use of American Humid Tropic Environments.
  27. Ifeanyi A. (2002). Environmental Impact Assessment as a Tool for Sustainable Development: The Nigerian Experience. Proceedings of the FIG XXII International Congress, April 19-26, Washington, D. C. USA.
  28. Eneh O.C. and Okezie Y.C. (2009). Developing and Growing Sustainable Micro, Small and Medium Enterprises-Global Template on Sustainable, Human Development. *Sustainable Human Dev. Rev.*, 1, 67-92.
  29. Eneh O.C. and Owo N.J. (2008). Sustainable Development: A Review. *International Journal on Development Studies*, 3, 100-103.
  30. Nwosu U.D. (2012). Environmental Pollution Control in Nigeria: Problems, Solutions and Advocacy. Retrieved from <http://www.scribd.com/doc/94948450>
  31. Nigeria law. (1999). Constitution of the Federal Republic of Nigeria. <http://www.nigeria-law.org/ConstitutionOfTheFederalRepublicOfNigeria.htm>
  32. Onyenekenwa C.E. (2011). Managing Nigeria's Environment: The Unresolved Issues. Retrieved from <http://scialert.net/abstract/?doi=jest.2011.250.263>
  33. John R. Kasich and Craig W. Butler. (2014). Sustainable Development and Our Environment; a paper presented by the Director, Ohio Environmental Protection Agency. Retrieved from [www.epa.ohio.gov/.../sustainable.aspx](http://www.epa.ohio.gov/.../sustainable.aspx)
  34. World Health Organisation (WHO), (2011b). Mortality and Burden of Disease from Water and Sanitation. Retrieved from [www.who.int/gho/phe/water-sanitation/burden/en/index.html](http://www.who.int/gho/phe/water-sanitation/burden/en/index.html)
  35. Globalise Interactive World Map (2005). Nigerian population data. UNEP.
  36. Amuda O.S., Adebisi S.A., Jimoda L.A. and Alade A.O. (2014). Challenges and Possible Panacea to the Municipal Solid Wastes Management in Nigeria. *Journal of Sustainable Development Studies*, 6, 64-70.