

# Environmental Pollution in Nigeria: Issues and Solutions

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***Abstract:** This study was carried out to examine environmental pollution in Nigeria: issues and solutions using Amuwo Odofin, Lagos State as a case study. Specifically, the study sought to identify the issues of environmental pollution in Nigeria, analyze the impact of environmental pollution in Nigeria, and determine the solutions to the challenges of environmental pollution in Nigeria. The study employed the survey descriptive research design. A total of 86 responses were validated from the survey. From the responses obtained and analysed, the findings revealed that Burning of Refuse and Increase in Population and traffic are the most important factors causing pollution in the area, while Legislative laws that will protect the environment and Waste recycling are the two preferred solutions to reduce or stop the pollution in the area. Furthermore, Environmental pollution is a major challenge in Nigeria. The study therefore recommends the Local government should make laws that will protect the environment, and also these laws should have punishments and penalties to be made by violators. More so, the practice of Waste recycling should be encouraged in the area, and there should be provisions of Drainage systems to reduce erosion.*

***Keywords:** Environmental policy; Sustainable development and Waste management*

## INTRODUCTION

Environmental Pollution can be defined as the introduction of the contaminant into the natural environment that cause advanced change pollution can take the form of chemical substances or energies such as heat, noise or light. Therefore, environmental pollution can be defined as any undesirable change in the physical chemicals, or biological characteristics of any component of the environment (air, water soil etc.), which can cause harmful effects on various forms of life or property. Environmental pollution could be of various types including air, water, soil pollution etc. Environmental pollution in Nigeria occurs in both rural and urban areas. In rural areas, drinking water from natural sources such as rivers and streams is usually polluted by organic substances from upstream users who use water for agricultural activities. The most common form of stream pollution associated with forestry activities is increased concentrations of soil particles washed into the stream by land disturbance. The large particles sink to the bottom and increase the bed load while, depending on the stream velocity, smaller particles remain in suspension. In the river Niger, for example, studies have shown that the suspended matter can obstruct the penetration of light and limit the photosynthetic zone to less than 1m depth. Suspended sediments in watercourses have become a serious concern for the water supply authorities because they lead to increased water treatment costs.

Many factories in Nigeria are located on river banks and use the rivers as open sewers for their effluents. The major industries responsible for water pollution in Nigeria include petroleum,

mining (for gold, tin and coal) wood and pulp, pharmaceuticals, textiles, plastics, iron and steel, brewing, distillery fermentation, paint and food. Of all these, the petroleum industry presents the greatest threat to water quality. From time to time accidental oil spillages occur which endanger local sources of water supply and freshwater living resources, especially in the rural areas.

The problems associated with the lack of adequate water resources in the country threaten to place the health of about 40 million people at risk. Recent World Bank studies (World Bank, 1990) suggest that it would cost in excess of US\$ 109 a year to correct such problems if ground and surface water contamination goes unchecked. The

people most affected tend to be the urban and landless poor. In the long-term, the present level of environmental degradation could create health problems from waterborne diseases for most of this population. Many people are already affected by having to consume unsafe drinking water. Water contamination also places other resources at risk; fisheries and land resources, for example, have already been affected significantly. Most of the environmental pollution problems arise from anthropogenic sources, mainly from domestic and industrial activities.

### **STATEMENT OF THE PROBLEM**

- Spillage of oil into the environment
- Gas flaring activities
- Discharge of untreated water into water bodies
- Discharge of solid waste into water bodies
- Smog and carbon monoxide from industries and motor vehicles.

### **AIM**

The aim of this study is to examine the environmental pollution in Nigeria with a view to identify the issues and proffer solutions for improvement

### **OBJECTIVES**

- To identify the type of environmental pollution in the area.
- To determine impact of such pollution on the environment.
- To proffer physical planning solutions to the identified impacts.

### **SCOPE OF THE STUDY**

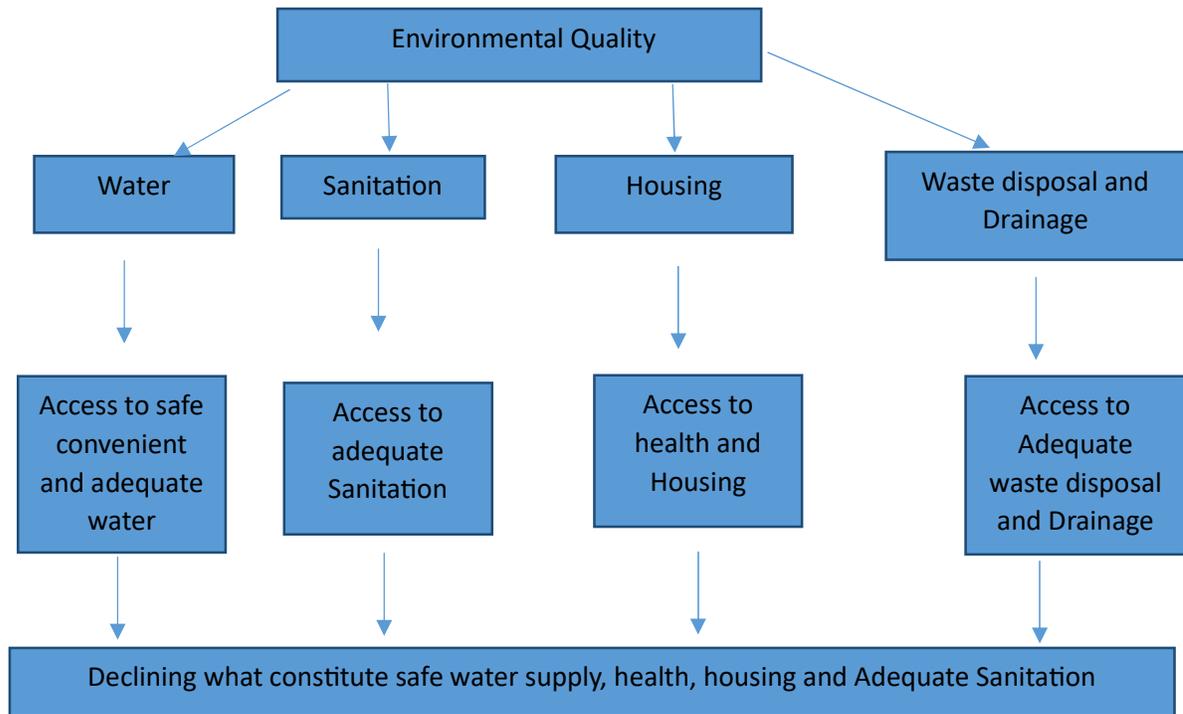
This study covers all types of environmental pollution ranging from air and water pollution due to oil exploration and refining, effluent waste from industries, dump sites, market and streets and noise pollution taking Amuwo Odofin L G A of Lagos State as case study.

### **CONCEPTUAL CLARIFICATION**

#### **Environment and Pollution**

The word “environment” may mean different thing to different people. Scientifically, the Physical, environment is different from social or economic. Environment means” that which surround or that which envelop the earth and it consist of the entire ecosystem. Scientifically, the four spheres or division of the earth VIZ: - Lithosphere, Hydrosphere Biosphere, and Atmosphere. This could be broken to include the water body and life therein, landmass, forests, grassland, deserts, animals, man himself and all the interactions taken place among those group. Environment is also defined as the circumstances surrounding or regions in which everything exist. Everything external to the

organism is included in it. It also includes open field, mountains, forest, Deserts, snow, Seas, River, Lakes, Wells Springs, atmosphere Etc.



**Figure 1.** Showing different components of Environmental quality

**Environmental quality and its effects**

Environment quality is a product of many factors that reduce the quality of an environment from what it should be in the physical outfit. General factor such as land degradation, pollutions of water and Air, noise, Sanitation, slums, etc., usually reduced the quality of an environment. Since environmental quality involves standard, provided a simple approach for ensuring the quality of an environment with illustrative sketch as shown above (figure 1) also added that the main concerned for the environment are the following

- How the Atmosphere, the rivers and the oceans are being polluted
- How people might be causing global warming.
- How people are destroying the world’s forests and other wilderness areas.
- How people are endangering the survival of other species
- How people are being careless with toxic (life threatening) wastes.

Research also added that the above measuring technique is applicable in many countries of the world. In addition, the account for environmental differences in many countries is based on the following;

- Climatic condition.
- Topographic and fertility of the soil.
- Availability of industries
- Commercial centers and parks.

### **Types of pollution**

Pollution exists in many forms and affects many different aspects of earth environment. Point source pollution comes from specific, localized, and identifiable sources, such as sewage; pipeline or industrial smoke stacks. While non-point source pollution comes from dispersed or uncontained sources, such as contaminated water, run off from urban areas or automobile emissions. The effects of these pollutants may be immediate or delayed. Here, primary effects of pollution occur immediately after contamination occurs, such as the death of marine plants and wild life after an oil spills at the sea while secondary effects may be delayed or may persist in the environment into the future perhaps going unnoticed for many years.

Also, Dichlorobiphenyl (trichloro ethene (D.D.T.) a non-degradable compound seldom poisons birds immediately, but gradually accumulates in their bodies. Birds with high concentrations of this toxic chemical lay thin shelled eggs and fail to hatch or produce deformed offspring. These secondary effects threatened the survival of species such as the bald eagle and peregrine falcon, and arouse public concern over the hidden effect of Non-degradable chemical compounds. While types of pollution that affects man in the society includes, Air pollution, water pollution, Land pollution and noise pollution to mention but a few.

### **Air pollution**

Air pollution means the presence of any abnormal material or property in the air that reduce the usefulness of the air resources. The term pollution may be referred in context with outdoor open atmospheric conditions, localized air condition, and enclosed space conditions.

#### **Sources of Air Pollution**

- Fuel burning operation for heat and power generation in large steam electric generating plant, in-residence, in hotels, clubs, hospitals and in different processing of laundries, Drycleaners, garage and service station.
- The refuse burning operation in different, municipalities industries and residential apartment
- Burning of fuels for modes of transportation which includes trucks, buses motor vehicles, and rail using petrol, diesel and gasoline.
- . Industrial and commercial process emission in different manufacture process namely metallurgical plants, chemical plants, refineries mineral production, etc.

#### **Cause of air pollution**

- Increase in population and traffic
- Development of industries
- Development of automobile engineering
- Thermal and nuclear generation
- Development of agriculture etc.

#### **Forms of air pollutions**

- Smoke
- Dust
- Gases
- Particulate matter from industrials, power generation plants, road-way dust. Etc.
- Hydrocarbon- from automobile exhaust
- Sulphur compound
- Nitrogen compound
- Carbon compound
- Fluorine compound
- Chlorine compound

Air pollution	Effect on human health
1. Sulphur dioxide	Causes suffocation, respiratory disease, Irritation of eyes and throat
2. Hydrogen Sulphide	danger of respiratory paralysis
3. Hydrogen Fluoride	Cause skin disease
4. Carbon Monoxide	Causes lungs diseases and slow poisoning leading to death
5. Oxidants	Causes lungs diseases.

Air pollution is particularly a health problem in rural areas. Millions of poor people in urban area also suffer from its effect, however, some estimates suggest that worldwide urban indoor air pollution kills about 600,000 people annually.

Air pollution is a major health problem because worldwide almost 3 billion people rely on biomass fuels which are mostly wood, charcoal, and animal dung for household cooking and heating.

### Water pollution

Pollution of water refers to an impairment of water quality that interferes with the use of water, sewage, industrial wastes and agricultural. Chemical such as fertilizers and pesticides are the main causes of water pollution in developing nation; more than 95% of urban sewage is discharged untreated into rivers and bays, creating array or human health hazard. Industrial pollutants that run into streams, rivers or lakes can have serious effect on wildlife, plants and humans. If the source of the water supply is a well or a borehole, it has been observed that during the raining season there is usually a massive increase in coliform counts. This occurs as a result of the flushing-in of feral materials of mixed human and animal origin . Also, the well stands the risk of pollution if the sides are not properly lined. During the rainy season, there is adequate seepage of water into the ground, the indicative organisms or other pathogenic microorganisms thereby find their way into the well. This case occurs when or where the well is so close to a septic tank and so on.

Also, erosion, the wearing a way of top soil by wind and rain can contribute to water pollution. Soil and silts washed from logged hill side, ploughed fields, or construction sites, can dig water ways and kill aquatic vegetation. Even a small amount of silt can eliminate desirable fish species, for example, when logging removes the protection plants cover from hill (sides, rain may wash soil and silt into streams, covering the gravel beds that trout or salmon use for spawning.

Moreover, urban water supplies often are contaminated from a variety of sources, including discharge of untreated industrial wastes, leaching from waste dumps, into surface and ground water, inadequate treatment of sewage and poor solid waste management. Few cities in developing countries have adequate sewage systems; and they often are limited to more advantage areas. Purification and recycling of water waste in sewage treatment plant is rare. Even fewer people have access to improved sanitation facilities than improved water supplies. According to two thirds of urban population in developing countries does not have adequate sanitation in that they lack flush toilet sanitary latrine, or a pit that can be covered over.

In addition, worldwide, about 2.3 billion people suffer from disease that are linked to water problems. Water related diseases kills millions of people each year preventing millions more from leading healthy lives and undermined developmental efforts

Water related diseases include diarrhoea, schistosomiasis, trachoma, ascariasis, trichiasis and hookworm disease. Diarrhoea diseases are the major water borne malady, responsible for 90% of the health problems related to water supply and sanitation. An estimated 4 billion cases of diarrhoea disease occur every year causing 3 million to 4 million deaths, mostly among children other diseases such as cholera can be endemic when there is poor food - hygiene, lack of sanitation or unsafe drinking water.

### **Noise pollution**

Noise pollution is at its worst in densely populated areas. Unwanted sound, or noise, such as that produced by air planes, traffic or industrial machinery, or radio repairing shops is considered a form of pollution. It can cause hearing loss, stress, high blood pressure, sleep loss, distraction and low productivity. Sounds are produced by objects that vibrate at a rate that the ear can detect. Most humans can hear sound between 20 and 20,000 hertz, while dogs can hear high pitched-sounds up to 50,000 hertz. Noise pollution is related to the intensity of the sound or the amount of energy it has measured in decibels, noise intensity can range from zero, the quietest sound the human ear can detect, to over 160 decibels. Solution to noise pollution include adding insulation and sound proofing to doors, wall and ceiling using ear protection; particularly in industrial working areas, planting vegetation to absorb and screen out noise pollution and zoning urban areas to maintain a separation between residential areas and zones of excessive noise.

Violent noise may cause temporary or permanent impairment of hearing. Noise is also of the major causes of stress and many of the other human affliction associated with tension, anxiety, accident proneness, high blood pressure and other diseases. The noise produces in urban area due to industrial activities, increases in traffic etc., cause tension and stressed related disorders.

### **Land Pollution**

Land pollution basically is about contaminating the land surface of the Earth through dumping of urban waste matter indiscriminately, dumping of industrial waste, mineral exploitation, and misusing the soil by harmful agricultural practices.

Land pollution includes visible litter and waste alone with the soil itself being polluted. The soil gets polluted by the chemicals in pesticides and herbicides used for agricultural purposes along with waste matter being littered in urban areas such as roads, parks, and streets.

Land pollution is the degradation of the Earth's land surface through misuse of the soil by poor agricultural practices, mineral exploitation, industrial waste dumping, and indiscriminate disposal of urban wastes. It includes visible waste and litter as well as pollution of the soil itself. Land pollution is pollution of our planet's land surface.

## Composition of Land Pollution

### Solid Waste

Solid wastes are unwanted solid materials such as garbage, paper, plastics and other synthetic materials, metals, and wood. Semisolid or solid matters that are created by human or animal activities, and which are disposed because they are hazardous or useless are known as solid waste. Most of the solid wastes, like paper, plastic containers, bottles, cans, and even used cars and electronic goods are not biodegradable, which means they do not get broken down through inorganic or organic processes. Thus, when they accumulate they pose a health threat to people, plus, decaying wastes also attract household pests and result in urban areas becoming unhealthy, dirty, and unsightly places to reside in. Moreover, it also causes damage to terrestrial organisms, while also reducing the use of the land for other, more useful purposes. Billions of tons of solid waste are thrown out annually. Waste from developed countries typically contains a high percentage of synthetic materials that take longer to decompose than the primarily biodegradable waste materials of developing countries.

Areas where wastes are buried, called landfills, are the cheapest and most common disposal method for solid wastes worldwide. But landfills quickly become overfilled and may contaminate air, soil, and water. Incineration, or burning, of waste reduces the volume of solid waste but produces dense ashen wastes (some of which become airborne) that often contain dangerous concentrations of hazardous materials such as heavy metals and toxic compounds. Composting, using natural biological processes to speed the decomposition of organic wastes, is an effective strategy for dealing with organic garbage and produces a material that can be used as a natural fertilizer. Recycling, extracting and reusing certain waste materials, has become an important part of municipal solid waste strategies in developed countries.

Expanding recycling programs worldwide can help reduce solid waste pollution, but the key to solving severe solid waste problems lies in reducing the amount of waste generated. Waste prevention, or source reduction, such as altering the way products are designed or manufactured to make them easier to reuse, reduces the high costs associated with environmental pollution.

Some of the sources of solid waste that cause land pollution are:

- (a) Wastes from Agriculture:** This comprises of waste matter produced by crop, animal manure, and farm residues.
- (b) Wastes from Mining:** Piles of coal refuse and heaps of slag.
- (c) Wastes from Industries:** Industrial waste matter that can cause land pollution includes paints, chemicals, and so on.
- (d) Solids from Sewage Treatment:** Wastes that are left over after sewage has been treated, biomass sludge, and settled solids.
- (e) Ashes:** The residual matter that remains after solid fuels are burned.
- (f) Garbage:** This comprises of waste matter from food that are decomposable and other waste matter that are not decomposable such as glass, metal, cloth, plastic, wood, paper, and so on.



The respondents are the residents of Amuwo Odofin and its environments since they are the ones suffering from the environmental pollution in the area, their opinions would be relevant and reliable.

### **Sampling Technique**

The sample size is determined using random sampling technique. The use of this method is in line with the studies of Ojo (2005) and Yacim, Lawal, Abdullahi, Ayodele and Umar (2012). A total of one hundred (100) questionnaires was administered to residents of the study area.

### **Sampling Procedure**

The procedure used for sampling this research was based on simple random sampling method. It allows for equal chances of being selected among the population members, each member of the population is given equal right of being involved in the sampling procedure since each is unique and can be selected randomly.

### **3.2.6 Technique for Data Analysis**

Simple descriptive statistics was employed in analyzing the collected data using frequency, percentage, mean item score and ranking.

## **RESULTS AND DISCUSSIONS**

The study employed the survey descriptive research design. A total of 86 responses were validated from the survey. From the responses obtained and analysed, the findings revealed that Burning of Refuse and Increase in Population and traffic are the most important factors causing pollution in the area, while Legislative laws that will protect the environment and Waste recycling are the two preferred solutions to reduce or stop the pollution in the area. Furthermore, Environmental pollution is a major challenge in Nigeria.

## **RECOMMENDATIONS**

The study therefore recommend the Local government should make laws that will protect the environment, also this laws should have punishments and penalties to be made by violators. More so, the practice of Waste recycling should be encouraged in the area, and there should be provisions of Drainage systems to reduce erosion.

### **5.1 Summary**

This study assessed Environmental pollution in Lagos State, Problems and Solutions, Case study of Amuwo Odofin. It specifically sought to know the Problems of environmental pollution in the area and as well provides Solutions to tackle the identified problems in the area. 100 respondents were selected and out of the 100 respondents selected to participate in the study, 86 respondents representing 86.0% responses were valid, 56.4% are female while 38.4% are males, and about 40.6% of the respondents have been living in the area for about 11- 15 years.

### **5.2 Conclusion**

The study has shown that according to the data obtained from the residents of Amuwo Odofin area of Lagos state, it was determined that Burning of Refuse and Increase in Population and traffic are the most important factors causing pollution in the area, while Legislative laws that will protect the environment and Waste recycling are the two preferred solutions to reduce or stop the pollution in the area.

### **5.3. Recommendations**

Based on the research carried out on this study, the following recommendations were suggested;

- The Local government should make laws that will protect the environment, also these laws should have punishments and penalties for violators.

- The practice of Waste recycling should be encouraged in the area.
- There should be provisions of Drainage systems to reduce erosion.

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