

Vol. 12. No.3. 2023

© Copyright by CRDEEP Journals. All Rights Reserved.

DOI: [10.13140/RG.2.2.21771.67366](https://doi.org/10.13140/RG.2.2.21771.67366)

Contents available at:

<http://www.crdeepjournal.org>

*International Journal of Environmental Sciences (ISSN: 2277-1948) (SJIF Value: 6.04)*  
 UGC Approved-A Peer Reviewed Quarterly Journal



## Review Paper

## Environmental Degradation Management through Education for Sustainable Energy Services in Nigeria: A Review

<sup>1</sup>Bakare, M.I. and <sup>2</sup>Ajala, O.O.<sup>1</sup>Department of Arts and Social Sciences Education, University of Ilesa, Ilesa, Nigeria<sup>2</sup>Department of Science, Technology & Mathematics Education, University of Ilesa, Ilesa, Nigeria

## ARTICLE INFORMATION

## ABSTRACT

**Corresponding Author:**  
Bakare, M. I.

**Article history:**

Received: 14-08-2023

Revised: 17-08-2023

Accepted: 10-09-2023

Published: 15-09-2023

**Key words:**

Environment,  
Degradation,  
Management, Education  
and Sustainable Energy.

*The greatest source of energy is the perennial solar radiation stored in form of fossil fuel, wood, solar and nuclear energy. Over dependence on these fuel by industries, transport, irrigation, and human comfort is a serious threat to energy. Demand on firewood for cooking is a major cause of deforestation which not only deepen energy crisis but also removing the vegetative cover that leads to soil erosion and desertification thus, linking energy crisis to environmental degradation. The paper emphasized imminent problem arising from over exploitation, injudicious utilization or wasteful use caused by pollution and other secondary effect of human beings. It identified lack of education and insufficient information about certain global, regional and local concerns and issues relating to the environment and environmental problems. It concluded that education should be such that makes citizens to be aware of the environment, knowledgeable about the physical laws that govern its behavior and motivation to solve problems as they emerge from the environment. It is recommended among others that for sustainable energy to be achieved in Nigeria education should be for the environment, from the environment, about the environment, proper use and management of the planet.*

**Introduction**

The magnitude of environmental deterioration signal real threat to human's security and survival. Over time, there have been global calls for nations and individual to pay attention to the impending ecological crises and environmental insecurity (Bakare,2014). The excessive exploitation of the natural environment undermines the capacity for use both now and in the future. It is assumed that knowledge about many contemporary environmental problems is still clouded with uncertainty. Environmental knowledge gained in the olden days was more empirical compared to today's experiences that are loaded with anticipated environmental challenges.

Accessibility to clean and modern energy in Nigeria has been a mirage (Iyang, 2019). Efforts should be focused on the imminent energy crisis resulting from reckless activities of human due to their quest to satisfy both domestic and developmental needs. Increase demand for energy to power industrial society needs the limited natural resources. Indiscriminate cutting of trees for domestic purposes, housing, fencing and furniture making contributes immensely to deforestation in Nigeria. Massive use of traditional energy services lead to rise in greenhouse gas emission which is injurious to environment and human lives. Air and water pollution, climate change, solid waste disposal are all indices of energy pollution that are directly related to environmental degradation.

Education and energy crisis according to Akinbode (2022) should be linked together and be included in the educational curriculum in order to bring awareness and generate interest among the students. Curriculum should be conventional by breeding generations of environmentally conscious individuals and improve the quality of lives without jeopardizing the quality of the environment. The study is expected to contribute to the knowledge on global sensitivity and awareness on environmental concern for accessible, clean and modern energy services in Nigeria. The study will equally assist individual to develop an understanding of the total environment and the skills needed to solve environmental degradation as it affects nature.

The study will make human to be aware that lack of effective environmental consciousness will continually endanger the lives and sustainability of the populace and the environment thus making education to be about, for and from the environment for its proper and rational use. It will also help to inculcate positive attitude needed to participate both individually and collectively in combating the manifestation of environmental problems in Nigeria

#### Objectives

1. To examine energy crisis as a consequence of environmental degradation.
2. To examine how education can be used to create awareness on the dangers of human activities on the environment
3. To highlight those skills needed to access a clean and modern sustainable energy.

#### Conceptual framework

**Environment:** It is a unique entity that incorporates all the living and creatures with all its dependents. Olong (2006) wrote that environment is the whole complex of physical, social, cultural, economic and aesthetic factors that affects individual and communities and determine their forms, character, relationship and survival. It constitutes the general surroundings of the people wherever they may be living on the earth surface. It is further explained to be composed of the bio-physical and socio cultural elements. These elements are the resources available at any given time and in a given location for the satisfaction of human needs and aspirations. Environment is regarded as the ultimate determinants of the nature and form of human survival (Isife, 2012). It influences how people live and how societies develop.

It focuses on the limitations and potentials of man and the complex relationship that exist between man and the environment placing man at the centre of environmental issues (Bakare, 2014). Studies show that man's activities on the environment have brought dramatic change in the outlook of the plant. As human population increases, forests decreases, desert spreads, animals decrease both in quality and quantity to the extent that some species are becoming extinct or facing extinction (Ehinder, 2006). Advancement in industrial technology tremendously benefitted man but all these process of development made their own demand on the earth's surface. A rise in the population means more demand on the environment leading to more food, health care services, land to grow food, higher energy needs and other basic obligations. The urge to acquire all these portend to whether the earth carrying capacity is capable to sustain the exponential growth in population and its associated challenges

#### Environmental Degradation

Environmental degradation is defined as the determination of the environment through depletion of the natural resources (Inyang, 2019). It occurs when there is an increased pressure on environmental resources. The United Nation International Strategy for Disaster Reduction sees the term as the reduction of the capacity of the environment to meet socio ecological objective and needs. Environmental degradation is any change or disturbance on the environment that is detrimental or undesirable. It comes in different forms, these include deforestation, pollution, depletion of the ozone layer, energy reduction, desertification, rising sea level reduced by global warming, erosion etc (Bakare, 2020). Environmental degradation destroy the natural habitats by reducing the fertility of the soil, preventing plant to absorb water and nutrient where there is increase in salinity, decrease in fresh portable water and loss of biodiversity (Bindraban, 2012). It is also seen as a form of misuse, abuse and over use of the natural resources thereby reducing both in quality and quantity. Uneson – Unep (1994) identified the following environmental resources facing problems they are: water, Soil, Air, Energy, Minerals, Plants and Animals.

**Water Resources:** This is one of the most essential resources for life. Quality and adequate fresh water is needed for domestic and household, commercial, agricultural and power generation plants. The world commission on Human Environment and Development (1994) emphasized the danger associated to water pollution and human health. Disgorging of sewage, bathing and washing by human beings and animals in the river make it unfit both for drinking and other purposes. Oil spillage makes the water harmful to aquatic life. Indiscriminate waste deposition into river, dumping of sewage or refuse causes water borne diseases of different forms and degrees. Water quality can equally be degraded through natural processes such as climate change, natural disaster geological factor or contamination by anthropogenic factors. The impact of environmental degradation on water if unchecked can stall economic growth and can worsen the poverty level of a nation.

**Soil Resources:** Soil degradation takes place at a very rapid rate due to indiscriminate activities of man. It is the loss of land's production capacity. This may be in form of reduction or less of biodiversity, soil fertility, arable land due to overgrazing, over population, urban expansion and explosion, climate change etc. (Maximillian.& Mathuans, 2019). Reports indicate that the World topsoil could become unproductive within 60 years if current rates of loss should continue.

**Erosion:** This is caused by wind, running water, ocean waves and glacier. Deforestation, over grazing, unsustainable agricultural practices, over cropping and inappropriate ploughing exposes soil to wind and water erosion. gully erosion, stream erosion are caused by water erosion. It can also lead to frequent flooding and sitting or river beds, dams and canals.

**Desertification:** Majority of the desertified areas in Nigeria are manmade. Removal of the vegetative cover by over grazing, deforestation and most especially poverty are the main cause of desertification.

**Salinity:** This occurs by the accumulation of soluble salt in the soil or water. It affects crops, pastures, reduces growth competing with the nitrogen uptake, reduce growth and stops plant production. Salinity can be both natural and stops plant production. Salinity can be both natural and manmade. Naturally, it occurs in arid and saline environment such as salt lakes, marshes, ponds and salt flats while manmade are majorly human activities. It is a growing problem that affects the soil and the water, this is a challenge for farmers, environmentalists and the communities at large. Excessive salt in the water or soil inhibits plant growth, reduces crop yields and disrupts the physiological process of the aquatic life. Development: This helps in the depletion of the soil such as construction of roads, dams, buildings, water-borne encroachment, extension of railways, growth and human settlement (UNESCO – UNEP, 1994).

**Air Resources:** Air is a basic requirement of life on earth and therefore indispensable. The gaseous ingredients in the air are maintained by a natural cycle for its composition and concentration. The return of carbon-dioxide to the air in expiration system is balanced by its withdrawal during photosynthesis. However, through man's various activities, this natural balance of gas concentrations in the air is being disrupted; for example, the excessive burning of fossil fuel in homes, factories and in vehicles increases the concentration which in turn leads to an increase in the average temperature of the atmosphere. Also, the release of sulphur and nitrogen oxide from industries increasingly results in pollution.

The gases undergo atmospheric chemical change to form acid rain which is a living organism. Increase in nitric oxides and chlorine produced from anthropogenic sources affects the natural ozone-oxygen cycle. Air pollution results in corrosion; cracks in buildings, monuments and other metallic and non-metallic structures.

**Animal Resources:** Wild life is an integral part of the bio system. They co-existed harmoniously with the balance of nature and preservation of species. Studies (Onfonmuan & Osa-Edoh, 2008) show that wildlife have been greatly affected and widely exterminated as a result of extensive exploitation of the forest, large scale hunting for commercial purposes, hunting for sport and pleasure and high dependence on meat as a source of protein (Kalu, 2007; Onike, 2010; Ifoni, 2012; Bakare, 2014;).

**Socio-Cultural Problem:** These factors include overpopulation, urbanization, modernization of agriculture and socio-economic disparities.

- a. Over population: This enhances greater demands for food, housing, water, energy and other resources. The effect leads to depletion of resources and degradation of the natural environment. Over population reduces quality of life, inadequate employment opportunities, health services and educational facilities.
- b. Urbanization: Uncontrolled influx of people to work in industries in the cities caused overcrowding in cities and marginal urban areas. This equally results in environmental deterioration, social tension and cultural degradation.
- c. Modernization of Agriculture: This is essential for the sustenance of a growing human population. It depends majorly on the use of capital intensive mechanization, high yielding varieties of crops and greater use of irrigation energy, fertilizers and pesticides. Demand and use resources, water logging, increased salinity and degradation of soil and water resources. It also depletes valuable genetic resources due to excessive dependence on hybrid crops rather than the natural varieties.
- d. Socio-economic disparities: Rapid advancement in transport and communication gave rise to realization about inequality in socio-economic and its effect on the environment locally and globally. Improved modernization in agriculture and industrialization led to higher standard of living making (human to change their life style and crave for more comfort and material (Ehinder, 2006). These wasteful and lavish ways of life have put more pressure on the resources and ultimately affect the environment. Malnutrition, inadequate housing, lack of clothing and proper sanitation, all results from poverty given rise to infection, diseases and poor quality of life.

### **Methodology**

Descriptive qualitative research design was adopted using Secondary data to collect data from reviewed literature, journals, textbooks and official publications. Equally, since the focus of the paper is on the human generated environmental degradation, context analytical approach was used to analyse the data.

### **Findings and Discussion**

The greatest sources of energy is the perennial solar radiation stored in form of fossil, wood, solar energy obtainable as hydro electric wind power, tidal energy, geothermal energy and nuclear energy. Demand for energy by man continues to grow on daily basis. Over dependence on fossil fuel from industries, transport and irrigation threatens energy resources in Nigeria. Incessant cutting of firewood for cooking not only leads to deforestation but also removes the vegetative cover leading to heavy soil erosion and desertification. Burning of fossil fuel yields carbon-dioxide, water and energy. Fossil fuel is a non-renewable energy source from coal, crude-oil, natural gas derived from petroleum products etc. Once these resources are used up, they cannot be replaced or replenished. Air pollution, water pollution and climate change are associated products released when fossil fuels are burned. Transporting fuel from the

mine of well causes air pollution, accidents or spillages. Thus, Bindraban (2012) wrote that if all these associated products of fossil fuel burning continues and are not checked on time, energy service in Nigeria might encounter an unprecedented crisis.

Findings revealed that development links education with environment and as such are intertwined. Robinson (2013), explained that development must be interpreted into educational activities in order to produce environmentally accountable citizens. It shows that education is expected to transmit awareness for a change, sustainable use and proper management of the environment and as such should assist in reducing boundary of ignorance of what should be known about the environment such that it adequately reflects in its degradation.

The energy crisis has been one of the greatest concerns globally. The study revealed that the demand on the limited natural resources needed to power industrial society is decreasing as the demand increases. Inyang (2019) argued that environmental mismanagement in Nigeria contributed to energy reduction which signals serious future crisis. The paper also posited that energy crisis is directly linked to environmental degradation thus access to quality education proven to be the foundation to improving people's lives and sustainable development.

The Sustainable Development Goals adopted in 2015 by all United Nation States addresses world challenges faced across globes including those relating to climate change, environmental degradation, gender inequalities, conflicts and peace resolution, insecurity and imminent energy crisis. It is a universal call to action to end poverty, protect the planet and ensure peace and prosperity by 2030. Sustainable development defines goals of economic and societal development. It recognizes the natural limits imposed by the ability of the biosphere to absorb the effect of human activities and its attendant problems. Careful management of these essential resources is a key feature of a sustainable future. Effective management of forest prevent desertification, land degradation and stop to biodiversity loss. Education for sustainability is expected to assist define social needs and problems in terms of economic development, prepare effective contributors to socio-economic development, develop and apply knowledge and skills to the solution for development and assist the society to priorities values and purposes relevant to environmental sustainable development (Ehinder, 2006; Onike, 2010; Bakare, 2014). Thus, the main pillars of sustainability are economic, environment and social. Sustainability is expected to enhance ecological system which must be protected and maintained for both present and future generation. The solution to environmental degradation is such that called for a global ethics that espouses attitude and behavior of individual and societies consonant with humanity's place within the biosphere. This ultimately will assist in recognizing and actively responding to the complex and changing relationship between humanity and nature.

## Conclusion

The paper explained the magnitude and consequences of environmental degradation and its relationship with energy crisis. It shows that attitudes of human towards the environment are still very unfriendly despite various attempts through series of seminar, conferences and workshops. The 1987 report of the World Commission on environment and development warned that unless there is a change in human behavior towards the environment, is a change in human behavior towards the environment, imminent danger awaits human and the world will continue to face serious environmental problems. Asaju and Arome (2015) concluded that education about the environment is the only viable tool to develop responsible attitude and behavior that help to sustain the natural resources for sustainable development. Orr (1995) asserted that if education fails to achieve this, then what is education for? Thus education should be about the environment, for environment and from the environment.

## References

- Akinbode, O. (2022). Accept Climate Change in educational Curriculum. The sunonline newspaper. Communique issued at the National Conference on Climate Change. Abuja. 4th October, 2022. <https://sunnewsonline.com> Retrieved September, 2023.
- Asaju, K. & Arome, S. (2015). Environmental Degradation and Sustainability in Nigeria: The Need for Environmental Education. *American Journal of Social Sciences*, 3 (3) 56- 61.
- Bakare, M.I. (2014). Environmental Education Themes in Social Studies for Sustainable Development at the Junior Secondary Schools in River State. Unpublished Ph.D Dissertation, University of Port Harcourt.
- Bakare, M.I. (2020). Environmental Crisis and Education for Sustainable Development in Nigeria. *OSCOED Technical Education Journal*, 2, 79- 84. ISSN: 2714-3112
- Bindraban, P. S. (2012). ISRIC Study: Assessing the Loact of Soil Degradation of Food Production. *Current Opinion in Environmental Sustainability*, 2, 311-323.
- Ehinder, O.J. (2006). *Environmental Education and Sustainable Development*. Abuja. Literamed Publishers (Nig) Limited.
- Ifoni, C.J. (2012). Strategy for Infusion of Environmental Education into Adult Education Programme in Ebonyi State. A Ph.D Dissertation, University of Port Harcourt.
- Isife, C.T.(2012). Environmental Problems in Nigeria- Sustainable Human Development Review. 4 (1&2), 21-35.
- Inyang, B. (2019). Environmental Degradation and Sustainable Development in Nigeria: A study of South- South Region of Nigeria. *International Journal of Humanities Social Sciences and Education*, 6(8), 33-42. <http://dxdoi.org/10.20431/2349.0381.0608004>
- Onike, R. (2010). Social Studies and Environmental Education. From <http://www.unilorin.edu.ng/journals/education> Retrieved July, 2022

- Orr, D.W. (1995). *Ecological Literacy: Education and the transition to a post modern world*. New York, University of New York, Washington D.C
- Robinson, J.O.(2013). Environmental Education and Sustainable Development in Nigeria: Breaking the Missing Link. *International Journal of Education and Research*,1 (5)
- UNESCO- UNEP, (1994). A Prototype Environmental Education Curriculum for the Middle School.*Environmental Education Series 29*.UNESCO.