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## RESEARCH ARTICLE

### A REVIEW ON ENVIRONMENTAL CHALLENGES AND RESPONSIVENESS

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#### ABSTRACT

This paper review explores environmental challenges and responsiveness. Natural calamities and human activities have contaminated the ecosystem, making it unhealthy for plants and animals. Human activities are required to address environmental issues. The quality of the environment will be determined by how humans respond to environmental challenges. The literature reviewed reveal that although environmental challenges could be attributed to natural disaster, some could be due to anthropogenic activities. Human actions have an impact on the environment, prompting the need for people to engage in environmentally friendly activities that will aid in the preservation and sustainability of the environment for future generations.

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## INTRODUCTION

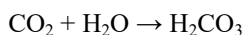
Inappropriate behavior towards the environment is detrimental to human and plants existence. Environment is everything in nature, both living and non-living. The environment is affected by human activity. The quality of life of humans and other living things is influenced by the environment. Every living entity requires clean air, water, shelter, improved living conditions, and a more favorable habitat. Since environment influences one's quality of life, it is necessary to have a safe and healthy environment. The environment has been contaminated through natural disasters and human activities, therefore, making it unsafe for plants and animals. Human activities are needed to mitigate environmental problems. The way humans respond to environmental issues will determine the quality of the environment. The environment is defined as the physical and biotic setting in which people, animals, and plants live and work (Benny, 2009; Anderson, 2019; Orisakwe

2019 as cited in Pona *et al.*, 2021). While environmental issues are described by Giving Compass (2022) as the negative impacts of human activity on the Earth and its natural systems. Degradation of the environment is hazardous to animals, plants, and microbes, compromising their long-term health and security (Anderson, 2019). Globally, the state of the environment has deteriorated considerably. Climate change and the greenhouse effect are on the rise, causing a plethora of natural disasters such as glacier melt, floods, tsunamis, pollution, and the emergence of infectious and non-communicable diseases, all of which endanger human health (Faroog and Meraj, 2017 as cited in Pona *et al.*, 2021). Human actions have an impact on the environment, necessitating the need for people to conduct environmentally friendly acts that will help to maintain and sustain the environment for future generations. Lawrens (2021) opined those human actions impact the health of the ecosystems in which we live, as well as the environment. Similarly, Pona *et al.*, (2021) stated that environmental quality has an impact on human health, and human activities have an impact on environmental quality. There is need to have a good and quality environmental health as it will aid in environmental sustainability.

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**Problem of Research:** Anthropogenic activities such as deforestation, improper waste disposal and use over dependency on fossil fuel have impacted negatively on the environment causing pollution and climate change, among others. Human actions have an impact on the environment, prompting the need for people to engage in environmentally friendly activities that will aid in the preservation and sustainability of the environment for future generations.

**Environmental Challenges:** As news regarding environmental deterioration is often publicized in the media, the quality of our environment has degraded to an alarming level. The gravity of the situation is demonstrated by the occurrence of several environmental problems around the world, including greenhouse gas emissions, global warming, poor waste management, unregulated land use, flooding, deforestation, climate change, ozone layer depletion, pollution, unregulated farming, overfishing and chemical toxicity (Akpanfun, Ndinwa, and Chukwumah, 2020). Pachamama Alliance (2021) described three cause and effect problems that are detrimental to the environment, they are Oil drilling and spills, deforestation, and production of plastic. Oil drilling is a problem that has a significant impact on the environment. The addiction to fossil fuels is a global problem that impacts every part of life. Ocean Acidification an environmental issue is the long-term uptake of carbon dioxide and other acidic gases by oceans caused by a decrease in pH and it is caused by anthropogenic activities such as the use of fossil fuels. The extinction of marine organisms and ecosystems has been caused by ocean acidification (BioExplorer, 2021). Petroleum exploration and production is an activity if not executed with uttermost environmental guide is very impactful to the environment. Among the probable negative impactive activities are deforestation and ecosystem distortion during seismic operation, onshore or offshore oil spill due to equipment failure and sabotage. Ochekwu and Eneh (2012) also stated that pollution incident has a negative impact on agriculture and health. The release of hydrocarbons from spills nutates and kills life as well distorts the ecosystem. Also, fossil fuel burning contributes to rising atmospheric Carbon dioxide (CO<sub>2</sub>), which leads to global warming and ocean acidification.



The equation above illustrates that Hydrogen Carbonate and other similar substances are acidic and alter the pH of the environment especially the soil, ground water, ocean, and other water bodies, impacting negatively on their inhabitants. Deforestation is another environmental issue. Thousands of acres of forest are cut down for road and building construction, industrial purposes like large-scale farming, and paper manufacturing. Since, the loss of habitat threatens the existence of many species, deforestation causes wildlife and biodiversity extinction. Trees which absorb carbon dioxide (CO<sub>2</sub>) are cut down for industrial purposes, building and road construction. Reduction of trees, hence means reduction of reduction of trees' ability to reduce emissions in the atmosphere. Trees help to cool the atmosphere as it absorbs CO<sub>2</sub>. Also, the production of plastic is an environmental challenge. Currently, civilization produces a lot of waste, and a lot of that waste is made up of plastic. The Great Pacific Garbage Patch, for example, is an example of how this waste gets up all over the world in both land and ocean. Clark (2019) stated that plastic waste is a problem, but so is plastic production, which is reliant on fossil fuel combustion.

This is startling, especially considering how much money that can be saved by using reusable bottles. Buying a somewhat more expensive bottle and refilling it as needed is far less expensive than buying plastic bottles and throwing them away. In Cameroon, reports have been made of the effects of oil spill, gas emissions and improper waste disposal such as food poisoning, climate change and pollution on the environment and human life. Cameroon has made enormous efforts to address a wide range of multi-factorial environmental health challenges. One of such efforts is the commissioning of the Cameroon Inter-Ministerial Commission for Municipal Waste Management. This agency has the responsibility of defining and developing adequate policy for the management of municipal garbage in Cameroon (Abia, Mbako and Njoya, 2018). Similarly, global warming and climate variability, biodiversity loss, deforestation, desertification-land degradation, waste littering, population increase, urbanization, pollution, poverty, and health hazards are some of the major environmental concerns in South Africa. These challenges pose a challenge to governments and other stakeholders both inside and outside of Southern Africa to find long-term solutions by addressing the underlying causes. Even though the region's environmental concerns are being addressed at the national, regional, and international levels, more could be done. Many government departments and players, both inside and outside the government, must strengthen national coordination and implementation of vital programs in rural and urban areas (Bernard and Darkoh, 2009).

Animals and plants operate and live on land, in water and in the air, hence there is land, water and air pollution. Pollution which is the process of making land, water, air, or other components of the environment filthy, unsafe, or unfit for use can be achieved by introducing a pollutant into a natural environment (LiveScience, 2018). Water, air, and land pollution can be due to natural cause such as drought, floods, melting snows, volcanic eruptions, storms, and it can be in relation to anthropogenic activities such as urbanization, improper waste disposal, untreated sewage ways, oil spills, industrial activities, agricultural practices (Blaettler, 2019; Denchak, 2018; Texas Disposal Systems, 2020). According to BioExplorer (2021), land pollution is an environmental problem which can have a negative impact on not just the health of those who live nearby, but also the future growth of plants due to a decrease in soil fertility. Land pollution is one of the current environmental problems in the United States (US). Land pollution can be because of large-scale industrialization and human intervention, such as the spraying of various chemicals to kill pests and herbs, which can cause hazardous agents and chemicals to leach into the soil, resulting in higher amounts of toxic agents and chemicals in the soil. Toxins are also introduced into the environment due to municipal and industrial waste (Denchak, 2018). Another environmental problem is global warming primarily from ozone (O<sub>3</sub>) layer depletion. Human activity is to blame for global warming, which is the constant heating of the Earth's surface, oceans, and atmosphere caused by the combustion of fossil fuels, which emits carbon dioxide (CO<sub>2</sub>), methane, and other greenhouse gases into the atmosphere. The consequences and repercussions of global warming are increasingly seen and apparent over the planet (Bradford and Pappas, 2022). Bradford and Pappas continue by stating that both the polar ice caps and alpine glaciers are melting. Lakes all throughout the world, including Lake Superior, are rapidly warming,

sometimes faster than the surrounding environment. Animal migration patterns are shifting, as are plant activity dates, such as trees budding their leaves earlier in the spring and dropping them later in the fall. One of the most evident and direct consequences of global warming is the rise in global temperatures as well as ocean and sea levels. The average worldwide temperature has risen by around 1.4 degrees Fahrenheit (0.8°C) over the previous century, according to the National Oceanic and Atmospheric Administration (NOAA), (Bradford and Pappas, 2022). According to a global BBC investigation, the number of exceptionally hot days with temperatures over 50°C has climbed during the 1980s. They are now found in more parts of the world than ever before, posing serious threats to human health and way of life (Dale and Stylianou, 2021). Chavara Karachi, Pakistan's largest city with a population of more than 16 million people, is one of the world's largest and hottest cities, with residents experiencing a 45-degree Celsius heat wave in 2015, during which 200 people died from dehydration and heatstroke, and the temperature in 2021 is higher than it was in 2015 (Okwoche, 2021). These environmental challenges are detrimental to plants and animals' survival; hence actions need to be taken to mitigate environmental problems.

**Responding to Environmental Challenges:** World leaders are taking steps to combat climate change and reduce the use of fossil fuels, thus, there was a United Nations (UN) Conference on Climate Change (COP26) held in 2021 at Glasgow, United Kingdom (UK). According to the UN Intergovernmental Panel on Climate Change, carbon dioxide emissions must be reduced to zero by 2050 to avert global warming of 1.5 degrees Celsius (Yahya, 2019). The Individual and community efforts area also needed to combat environmental problem. With environmental concerns on the rise, organizations such as the UN and Earth.Org are asking all communities to raise their environmental literacy and engagement in conservation efforts (Lauwrens, 2021). Individual efforts must be considered. Even though numerous natural and man-made factors are contributing to this terrible trend, little individual efforts and lifestyle modifications can have a huge positive impact (Bio Explorer, 2021). For instance, since a visit to the UK parliament by a Swedish climate activist and the Extinction Rebellion marches in April 2019, public concern about the environment has reached new highs in the UK. According to data collected by the polling firm YouGov since 2010, people now regard the environment as the third most significant issue confronting the country. The environment was ranked third after Brexit and health, ahead of the economy, crime, and immigration. Environmental issues such as climate change and wildlife extinction are valued even higher by young people, ranking second only to Brexit (The Guardian, 2019). Similarly, due to the high temperature in Pakistan, a Pakistani businessman began planting trees in urban areas (urban forestry) to assist cool the metropolis, as forestry is essential in cooling city buildings (Okwoche, 2021). Communities must be informed on environmental issues and how they may contribute to reduce environmental risks. According to the Economic Commission for Latin America and the Caribbean (ECLAC), greater economic activity in developing countries leads to increased energy and consumption demand, resulting in environmental deterioration. The absence of a legal and economic framework for environmental protection, as well as a lack of public participation in pro-environmental behaviors, pose significant

obstacles for developing countries. Universities are responsible for both teaching and environmental conservation. As a result, long-term growth is important to its advancement, and this strategy needs the establishment of an adequate environmental policy and management. Following a prior environmental study conducted in Portugal, the University of Azores developed an environmental policy in 2006 as the first step in implementing an Environmental Management System (EMS). In the case of waste management, the findings of projects like the Environmental Survey at the University of Azores and GeRLab resulted in the development of environmental priorities and strategies to improve environmental and economic sustainability, as well as suggested recommendations for future EMS and several environmental educational programs that connect communities to environmentally friendly practices (Meloet *al.*, 2007). Environmental issues are exacerbated by a lack of knowledge and a scarcity of evidence-based data, which is aggravated by limited research capacity and insufficient funding, which prevents the formulation of important strategic initiatives. As a result, it was determined that more knowledge about climate change is required, as well as climate change education in schools (UNDP, 2016).

To reduce pollution and reliance on oil and fossil fuels, efforts have been made to create clean, renewable energy sources. Clean energy sources include biofuel, hydropower, solar energy, and wind power. In addition, one of the most important steps toward achieving a healthy environment is policy. (Giving Compass, 2022). According to Clark (2019), implementing a green policy approach, developing a recycling plan, purchasing recyclable things, shutting off electrical appliances, and going paperless can all help to encourage environmental consciousness in businesses and eco-friendly behavior. Environmental awareness should begin at the top of any organization. Employees will follow their superiors' and supervisors' lead if they set a good example.

**Environmental Challenges and Responsiveness in Nigeria:** Environmental issues did not gain official prominence in Nigeria, for example, until the 1988 Koko toxic waste dumping saga, which also highlighted the urgent need to establish the Nigeria Federal Environmental Protection Agency (FEPA), the Federal Ministry of Environment, and other relevant agencies in the country, ostensibly to address environmental issues. Previously, the government had been worried about the need for a robust legislative framework to protect a sustainable environment. FEPA issued decree No. 58 in 1988, which was amended in 1992 as decree No. 59, and the Harmful Waste Decree No 42 of 1988 was enacted to deal with hazardous waste disposal. The essence of these decrees eventually led to the establishment of many entities and legislative frameworks in the country that deal with environmental issues, albeit some of these measures have not produced the desired effects (Evelyn and Tayay, 2012; Akambe and Kpae 2017 as cited in Ibrahim *et al.*, 2020). Climate change is recognized in the Nigerian government's current national development plan as a danger to economic growth and future development (Vision 2020). In 2015, the federal government issued a national climate change policy to guide climate change action. The policy defined broad national goals, objectives, and mechanisms for mitigating the effects of climate change (Sodipoet *al.*, 2020).

On July 30, 2021, the Nigerian government submitted its first Nationally Determined Contributions (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC), encapsulating countries' post-2020 climate measures to decrease greenhouse gas emissions and adapt to climate change consequences. As one of the ways to minimize the effects of the climate problem, the current administration has pledged to reducing greenhouse gas emissions by 45 percent by 2030. (Usigbe, 2021). Furthermore, land pollution is on the rise in Nigeria, owing primarily to an increase in industrial activity, resulting in massive environmental deterioration and the consequent health concerns for humans. As a result, land pollution will harm economic and social development. However, there is no legislation in Nigeria that regulates land pollution. Bolaji and Alatise (2021) proposed boosting awareness and changing attitudes among Nigerians as a path forward to successfully implement environmental and resource management policies. Plastic rubbish is a neglected environmental concern in Nigeria, and if not handled, it will continue to harm the ecosystem and future generations. Poor plastic waste disposal contributes considerably to Nigeria's rubbish problem. Salami (2018) explained that plastic bags are not the only source of pollution in Nigeria, but they are the most obvious, clogging drainage systems, littering streets, and poisoning sewage systems. Plastic garbage is not adequately disposed of or recycled in the country. The lack of an effective waste management system in the country, as well as a lack of environmental consciousness among the general populace, explains why all garbage ends up in the river and the ocean. This prompted the Nigerian government in May 2019, to pass the Plastic Bags Prohibition Bill (Bill), which proposed making all plastic bags used for commercial and household packaging illegal to use, produce, or import. Unfortunately, this legislation is not enforced. Plastic garbage remains an environmental menace in Nigeria.

Another environmental concern in Nigeria is flooding, particularly in the country's largest cities. Flooding harms both the natural environment and property. Flooding happens because of rainfall and can be caused by natural reasons such as excessive rain caused excessive evaporation due to global warming or by human activities such as project building and waterway blockage. Flooding is aggravated by residents' negative attitudes about rubbish disposal and the failure of municipal governments to offer waste disposal services. The impacted people have always shown a cavalier attitude toward environmental preservation through inappropriate waste management, excessive deforestation, and other behaviors that have a long-term harmful influence on the environment, culminating in the loss of many lives and property (Muhammed *et al*, 2018; Echendu, 2021). Every year, the Nigerian Hydrological Service Agency is tasked with educating Nigerians on flood prevention measures. Nigeria is subjected to natural and man-made flood disasters on an annual basis; this issue should be handled from the start. In 2021, the Director General of the Natural Emergency Management Agency (NEMA) claimed that flooding in Nigeria is caused by anthropogenic activity. It was mentioned that dams utilized for energy are occasionally exploited for agricultural reasons, and a demand was made for efficient dam utilization (Channels TV, 2021). Erosion has been identified as a serious threat to the long-term viability of the Nigeria's environment. It has an impact on life on Earth by degrading land resources, reducing agricultural productivity, decreasing

soil fertility due to topsoil loss, and contributing to climate change by compromising soil C-sink potentials. Despite a paucity of data, land degradation remains a severe issue. Another concern is that erosion management programs in Nigeria do not contain sustainable home-bred alternatives. Such knowledge could benefit both research and practice in building strong environmental conservation strategies that are responsive to the cultural and socioeconomic realities of the place (Okenmuo, 2021). According to Chudeet *al*, (2020), overgrazing, excessive farm activities, tillage, bush clearing, extractive industries, road construction, bush burning, overpopulation, tree felling, residential buildings, development of urban centers, industrialization, pesticide fumigation, stone and sand quarrying, and mining are just a few of the human factors that have caused erosion. Since human activities contribute to erosion, human actions can as well limit erosion by reducing the above-mentioned activities that diminish the soil and cause erosion. To act positively to reduce erosion in Nigeria, the Vanguard Editorial, (2021) reported that large tree planting, the addition of mulch and boulders to the soil to restrict erosion on slopes, and the building of fiber logs to keep soil from washing away can all assist to reduce erosion. In addition, every home should have an adequate drainage system in place to allow water to flow into appropriate waterways.

Also, in response to environmental challenges in Nigeria, the Institute of Natural Resources, Environment, and sustainable Development (INRES) was established at the University of Port Harcourt, Nigeria in 2011. INRES' mission is to produce competent indigenous manpower capable of developing and implementing integrated, multidisciplinary, and sustainable solutions to developmental, environmental, and natural resource management challenges through the production of quality Master of Science, Doctorate, and postgraduate Diploma/Certificate graduates, among others (University of Port Harcourt, 2017). Based on the preceding, it is possible to assume that the government and relevant environmental agencies will be unable to handle Nigeria's serious environmental challenges on their own, hence other actions should be taken in response to the environmental issues. Muhammed *et al* (2018) suggested that environmental education will play a crucial role in resolving environmental problems and achieving long-term sustainable development for present and future generations in Nigeria. The United Nations Conference on the Human Environment in Stockholm in 1972 advised all countries to explore including Environmental Education (EE) into their formal education curricula. This momentum was fueled by a conference convened in Tbilisi in 1977 to set objectives, pedagogical principles, and implementation techniques for advancing environmental education on a national and worldwide scale. The goal of these conferences was to provide environmental information to countries while also encouraging them to protect the environment (Toili, 2007 as cited in Ndzimbomvu, Rampedi and Kemp, 2021). Environmental Education (EE), a branch of education that focuses on ways to mitigate the effects of human activities on the environment, has become more popular in recent years, in response to a growing awareness that the environment is being badly harmed, to lessen human environmental impact and build a more sustainable future (Akpafunet *al*, 2020). Furthermore, Bosah (2013), opined teaching environmental education as a stand-alone subject is a method of imparting environmental concern and understanding in students from a young age.

Onuoha *et al* (2017) explained that teaching subject as a stand-alone is more effective in teaching since it covers vast content areas of the curriculum. Children are encouraged to think critically and imaginatively, as well as to become more involved in their communities, through environmental education. It instills in children the value of the environment and provides them with the tools they need to live environmentally conscious and sustainable lives. Teaching youngsters about the environment can assist them in developing long-term habits that will benefit them as they grow older. Even minor actions can have a significant impact over time. Recycling, carrying reusable shopping bags to the store, turning off the water when brushing teeth, shutting off lights when not in use, and using reusable water bottles are all simple, long-term activities that may be performed at any age (Kinnear, 2021). According to EMA (2020), an environmental curriculum could include the following topics: Climate Change, Deforestation, Ecosystem and Biodiversity, Environmental Issues and Management, Land Use and Development, Marine/Coastal Zone Management, Natural Resources and Energy Conservation, Air/Land/Noise/Water Pollution, Waste Disposal, Management, and Recycling (Aquifer Preservation and Groundwater Management). Better environmental education programs in schools, stronger monitoring and enforcement of environmental legislation, and increased fines for violations of environmental regulations, according to EMA (2020), are the greatest remedies to environmental concerns. They also underline the significance of increasing environmental understanding and cultivating stronger pro-environmental attitudes among students.

## Conclusion

The world is faced by environmental challenges which are limiting the attainment of sustainability development. The existence of plants and animals are threatened due to environmental problems such as pollution, flooding, erosion, improper waste management, global warming, and deforestation. These environmental crises cause extinction of the biodiversity and wildlife, health problems and food scarcity. It was noted that environmental problems may be due to natural causes such as hurricane, tsunamis and earthquake, and anthropogenic activities such as overgrazing, unregulated hunting and fishing, deforestations, burning of fossil fuel, mining, and indiscriminate waste dumping. The threat of many types of disasters is heightened by a lack of disaster awareness, which makes it more difficult for people to respond to catastrophes when they occur, resulting in an increase in casualties and property damage. Communities must be informed on environmental issues and how they may contribute to reduce environmental risks, as these will help them in taking appropriate actions for the environment. Teaching Environmental Education in schools is way to respond to environmental crisis. Since, through Environmental Education students are also made aware of environmental issues and are better equipped with skills to cater, protect, and preserve the environment. The increasing demand for EE is ultimately a call for global, regional, and local action to address environmental hazards to both the biosphere and the political, economic, and political components of society. More importantly, it is a desire for global systems to promote the formation of individuals who are concerned with solving energy and human requirements in an environmentally conscious manner for the benefit of present and future

generations. Environmental education is vital in establishing information, a positive attitude, and environmental behavior among society's members. Individuals are enlightened because of Environmental Education, and they have a better awareness of their own nature and the implications of their actions. Environmental Education can aid in the creation of innovative techniques to instilling a favorable attitude toward environmentally destructive activity. In addition to lack of awareness, is lack of attitudes towards environmental problems. Environmental issues are heightened when communities show little or no concern to the environmental problems around. Collective effort is needed to maintain a healthy and quality environment. Conducting an Environmental Impact Assessment (EIA) is a good response to environmental problems. Environmental Impact Assessment (EIA) is the process of evaluating the possible environmental implications of a proposed project or development, considering both positive and negative inter-related socioeconomic, cultural, and human-health impacts (Convention on Biological Diversity, 2010). EIA should be carried out before, during and after the construction of a project. Tree planting should be encouraged as one of the ways to cool the atmosphere. An impact assessment (IA) is needed before trees are cut down for construction purposes. Everyone has a part to play in mitigating environmental problems. Any little action today can save the environment tomorrow. Actions such as planting trees around buildings and homes, non-dependence on fossil fuel, proper disposal of industrial and home waste, switching to cleaner and renewable energy, production of biodegradable bags, reducing, reusing, and recycling of products, conducting impact assessment before construction of roads and buildings are all positive response to the environmental problems in the world today.

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