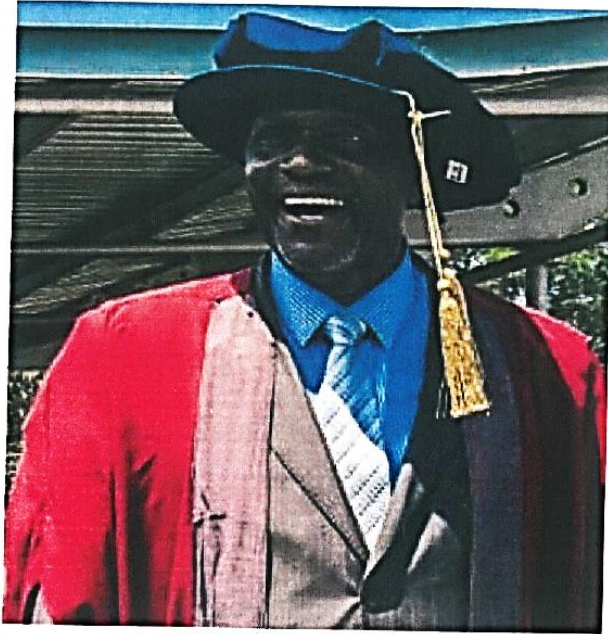


NIGERIA PERSPECTIVE TO POPULATION DYNAMICS AND SUSTAINABLE DEVELOPMENT

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CHAPTER EIGHT

Population Growth Challenges for Environmental Sustainability in Nigeria

Lawal F.O, Ifabiyi I. P. and Salau W.

Introduction

A healthy and safe environment is of great benefit to man as well as other living things. However, the simultaneous relationship between global population growth and environmental degradation has been worrisome over the years. Population growth became an issue of global concern in the mid-twentieth century, while issues of environmental concern only came to the forefront around 1970. According to the Intergovernmental Panel on Climate Change (IPCC) (2018), environmental degradation has become a global challenge in recent years. Although, increase in population size is part of global concerns, there is the interplay of other factors that are bigger and more complex than just the number of humans. The concern is more about what is happening within those populations in terms of their distribution (density, migration patterns), composition (age, sex, and income levels) and, most importantly, their consumption patterns. Man's activities in the environment brought about by an increasing population have resulted in significant changes to landscapes and the ecosystem. Thus, an increase in population signifies a decrease in the health of our environment. Moreover, population growth rate plays a prominent role as a descriptor of the relationship between population, ecosystems, and poverty. Hence, to understand the dangers continuous increase in population poses, this paper discusses the complex relationships between human population and

environmental degradation, with emphasis on the impact of human population growth on environmental sustainability in Nigeria.

Nexus between Population and Environment

Population is referred to as the inhabitants of a place. According to Isangedighi (2010), the population is the aggregate of inhabitants of a specified area. Tarsi and Tuf, (2012) defined population as the totality of individuals of the same species living and interbreeding in a given area. The environment is occupied by the population of human beings, flora and fauna etc. Thus, environment can be defined as the physical surroundings of man, on which he depends for his activities during his lifetime which facilitates or hinders his growth and survival (Enger and Smith, 2004; Prabuddh, 2021). Environment is the space and surrounding where living and non-living things find existence. The environment includes air, water, land, living organisms, and various materials surrounding us. In other words, the environment combines physical and biological factors which contain both living and non-living components.

There is an age-long relationship between man and the environment as man's activities influence the environment and the environment also influences man's activities. To buttress this, Hannigan (2006) opined that the environment plays three prominent roles in human lives, which are: living space (home, shelter); offering resources (renewable and non-

renewable) to support man's life; and waste repository (dumping ground for waste and garbage). It is to this end that the United Nations International Strategy for Disaster Reduction (UNISDR) (2015), posited that the relationship between population and environment is such that; an increase in population affects the environment through the consumption of natural resources such as land, food, water, air, fossil fuels and minerals; and the release of waste such as air and water pollutants, toxic materials and greenhouse gases.

Furthermore, Ulayi *et al.*, (2021) observed that human population growth has much impact on environmental resource conservation and remains the root cause of environmental degradation. In other words, rapid population growth means more consumption of resources and ultimately indicates more environmental degradation.

Thus, (Bourque *et al.* 2005; Malcolm and Pitelka, 2000; In Pradip *et al.*, 2020), defined environmental degradation as the deterioration of the environment through the depletion of resources especially the biotic and abiotic elements of our surroundings including air, water, soil, plant, animals, and all other living and non-living element of the planet of earth. Similarly, Tyagi *et al.* (2014), defined environmental degradation as any alteration made which is perceived to be detrimental or has adverse effects on the environment.

Population is a major factor that negatively impacts the environment when it exceeds the threshold limits of the support systems. Thus, population growth influences the magnitude and complexity of changes that occur in the natural ecosystem. Environmental degradation is

influenced by the infringement of human beings due to human activities such as indiscriminate burning of the bush, farming, and cutting down of valuable trees among others. To make matters worse, the environmental implications of high levels of resource consumption caused by increasing population are not confined to the local environment or country. For instance, the emission of CO₂ through the use of fossil fuels for energy has an impact on the global environment. Obot (2008) believes that where and when the human population is higher than the resources available to the inhabitants of that environment, man tends to compromise the principle of conservation and preservation.

Environmental Implications of Some Specific Population Factors

Population size

It is expected that as the world population continues to rise, there will be a simultaneous increase in the use of world resources such as potable water, arable land, forests and fisheries. For example, it is estimated that the global population is expected to increase from about 7 billion people inhabiting the earth (in 2012) to about 9.6 billion by the year 2050, the implication of this rise is the surge in use of environmental resources (UNFPA, 2012; FAO, 2012). Consequently, there will be an increase in waste generation and a gradual reduction in the available resources.

Population distribution

The number of people on the surface of the earth is not evenly distributed across space, and this affects the environment. The high fertility rate in many developing

regions, together with low fertility in the developed nations indicate an uneven distribution. Furthermore, human migration is continuously high, many of which follow a rural-urban pattern. Not up until 1960, only less than one-third of the world's population lived in cities, however, the United Nations Population Fund stressed that more than half of the world population, now live in urbanized areas, a figure expected to rise to 70 percent by 2050 (UN-Habitat, 2008). Thus, the rapid growth of urban areas has a considerable effect on the environment as these growths have resulted in unplanned urban development, pollution, increased consumption of resources such as water, food and energy and higher demands for urban mobility.

Population Composition

The population composition of an area also affects the environment. At present, global population has both the highest proportion of young people (under 24) and the largest percentage of elderly people in history (NPC, 2006; 2009; NBS, 2018; UN 2023). Since the young population is more likely to migrate, there is the tendency to increase the pressures on the urban environment. Furthermore, income is also an essential component of the population. The uneven distribution of income results in pressure on the environment from both the poor and the rich. Past studies (Ouedraogo, 2006; Abd'razack, *et al.*, 2012 and Baiyegunhi and Hassan, 2014) have also explained that income is the major factor determining household energy demand. These studies argued that low-income earners survive by depleting scarce natural resources, such as forests or animal populations, to feed their families.

On the other hand, high-income earners consume more energy and cause pollution through the vehicles they use and large amounts of waste by the lifestyles they adopt.

Nigeria Population Structure

Nigeria with an estimated population of about 223 million persons, is the most populous black nation in Africa and the world (UN, 2023). Several studies (Oramah, 2006; Obot, 2008; UN, 2023) have examined the factors that influence population growth in Nigeria. Some of the factors examined include early marriage, lack of access to family planning, high birth rates, religious/cultural beliefs, preference for a male child, lack of education, old age security, and status symbol among others. Nigeria's population in 2022 was 218,541,212, a 2.41% increase from 2021. The current population is in excess of 222million at a growth rate of 2.44% and if this trend continues, it is projected to be over 390 million by the year 2050 (UN, 2023). The spatial distribution of its population is such that about 54% of the population lives in rural areas while about 46% live in urban areas. From the population pyramid, the demographic structure of the country reflects a growing youthful population with the median age being 18.04 years of age (UN, 2023). Thus, since the land mass of a country does not change in size, and there continues to be a rise in the size of the population, it is evident that Nigeria is currently overpopulated.

Environmental Problems Exacerbated by Human Overpopulation in Nigeria

The continuous rise in population is drastically exerting environmental

pressure on Nigeria. The country is under increasing threats from ecological destruction with occurrences such as drought, floods, pollution and erosion arising from both natural and human activities (FGN, 2012). According to a United Nations Report (2011), some environmental problems are associated with the increasing trend of population growth which results in consumption in the country. These environmental problems include:

Generation of Waste and Increased Susceptibility to Global Warming

The UNISDR (2015) reported that increased population growth results in the consumption of natural resources such as land, food, water, air, fossil fuels and minerals; and ultimately the release of waste such as air and water pollutants, toxic materials and greenhouse gases. For example, the values for the concentration of CO² emissions in the country signify a simultaneous increase in CO² emissions as human activities increase due to the increasing human population. The CO² emissions increased from 39,196.563kt in 1990 to 76,057.245kt in 2000, it further rose to 96,280.752kt in 2014 (WDI, 2017). This figure shows that CO² emissions in Nigeria increased simultaneously alongside the population growth. This degrades the environment, making the country more easily susceptible to global warming and climate change.

Threat to Biodiversity

In Nigeria, loss of biodiversity constitutes a major environmental menace arising from humans' destructive activities. Biological diversity comprises varieties of living organisms which help stabilize the climate and protect ecological resources

in an environment. Nigeria is naturally endowed with a diversity of natural ecosystems spanning every geographical zone. For instance, the National Biodiversity Strategy and Action Plan in 2006 identified more than 5,000 species of plants and 22,090 species of animals in Nigeria (FGN, 2012). The country is endowed with the savannah (Guinea, Sudan and Sahel) in the north, rainforest in the west, freshwater swamp and mangrove forest in the south, and montane forest along the eastern border with Cameroon. However, due to human activities brought about by increasing population and quest to satisfy their needs, there has been a threat to biodiversity as mineral resources have been extracted, animals have been hunted and plants have disappeared. For example, there is an estimated 0.4% threatened and 8.5% endangered plant species, and 0.14% threatened and 0.22% endangered animals and insect species in the country (FGN, 2012; Jack, Jackson and Uzobo, 2017). Hence, Nigeria's ecosystem has experienced huge loss of its flora and fauna due to human activities such as agriculture, industrialization, and transport development among others. This has resulted in ecological imbalance in the country.

The Strain on Forests (Deforestation)

Deforestation is one of the 'three dreaded Ds' that degrade the environment, the other two being drought and desertification. Ellen (2021) observed that deforestation has been the major cause of extinctions worldwide. In Nigeria, the rate at which deforestation is being carried out is alarming, such that the country has been acknowledged as having the highest rate of deforestation in Africa and the loss of

primary forests in the world (Jack, Jackson and Uzobo, 2017). According to FAO (2018), rapid population growth and economic activities have been major threats to Nigeria's forest ecosystems, with the deforestation rate ranging between 0.72 and 2.38 percent annually. Deforestation as a result of dependence of mostly rural dwellers on forest resources to meet their needs for food, fuel, and medicines among others. In urban areas, forests are wiped out for purposes of urbanization and industrialization, and transport development among others. This consequently results in soil erosion and loss of sustainable logging potential. If this trend continues, it will be deleterious not only to the environment but also to the economy of the country as forestry accounts for 3% of the country's GDP (Jack, Jackson and Uzobo, 2017)

Desertification and Drought

Desertification and drought are two other 'dreaded Ds', which are bedeviling many communities in the northern part of the country. About approximately 351,000 hectares of Nigeria's landmass of 351,650 sq. miles is lost to desertification at a rate of 0.6km per annum (FGN, 2012; Ibrahim, *et al.*, 2022). This is evident in states such as Borno, Yobe, Bauchi, Gombe, Adamawa, Jigawa, Kano, Katsina, Kebbi, Sokoto, and Zamfara States where about 50-75% of the landmass is being affected by desertification. In addition, the Lake Chad basin is not left out of desert encroachment and has been grappling with the impacts of drought and desertification for decades. According to the Glossary of Meteorology (1959), drought is defined as "a period of abnormally dry weather, sufficiently

prolonged for the lack of water to cause serious hydrologic imbalance in the affected area". Since the 1960s, the Lake Chad has shrunk by 90% due to climate change and overuse of resources. The size of the basin was 21.7 km³ between 1990 and 1999. However, due to desert encroachment and other factors, the size reduced to about 21.2 km³ in the period between 2000 and 2009 (Coe and Foley, 2001 and Ifabiyi, 2018). The effects of desert encroachment in the country are evident in crop failure, death of livestock and famine, forced migration and conflicts arising from the search for scarce resources such as land and freshwater (Okoli and Atelhe, 2014; Adelalu *et al.* 2015).

Environmental Pollution

Environmental pollution is a major menace constituting a threat to the achievement of sustainable development in Nigeria. Pollution of various types are largely linked to human activities arising from rapid population growth. These activities are commonly associated with the extensive use of fertilizers and pesticides for agriculture and improper disposal/dumping of industrial, hospital and municipal wastes. Environmental pollution of different types is highly visible around the Niger Delta region of the country where an estimated 9 –13 million (1.5 million tons) of oil spilt into the Niger Delta ecosystem over the past 50 years (Kadafa, 2012; Omoogun *et al.*, 2021). Furthermore, the flaring of gas is also a major environmental concern in the region as about 19 billion cubic meters of gas is flared and this adds about 35 million metric tons of carbon dioxide and methane to the environment annually (Malumfashi 2007; Omoogun *et al.*,

2021). This affects crop growth, causes respiratory disorders in humans, and destroys the aquatic ecosystem (Omoogun *et al.*, 2021).

Flooding and Soil Erosion

According to Ali *et al.* (2016), floods are among the pressing environmental menace all over the world, affecting man and his immediate environment. A flood could be a natural phenomenon or it could be caused by human activities in the environment. In Nigeria, flooding is largely associated with heavy rainfall which consequently leads to increased run-off. It can also be linked with human activities such as dam breaks, blockage of river channels, poor land use practices and urbanization which increase the rate of run-off and decrease the rate of infiltration. The flood incident of 2012 was a most devastating disaster, which affected 31 states across the country, and where many people were displaced, and lives and properties were lost (Oyekale, 2013). During the 2012 flood, a peak water level of 12.84m and maximum discharge of 31.692 m³/s were recorded at Lokoja in Kogi State by the Hydrological Services Agency (Joshua *et al.* 2015). Additionally, erosion of different types are now common in many states such as Anambra, Abia, Enugu, Gombe, Kogi and Imo States (FGN, 2012). Similarly, the Niger Delta region experiences high erosion annually at the rates of 18 to 24 meters, thus, the region lost about 27.657 km² of its total area of 46.535 km² to erosion around the coast between 1986 and 2003 (Ibaba, 2012).

Policy Implications and Measures

The increasing population growth and the simultaneous environmental degradation

will continue to hamper the achievement of sustainable development in Nigeria, if the past trend holds. The current growth rate of 2.44% and the population estimates indicate that there will be increased pressure on environmental resources to meet the demands of the ever-increasing population in Nigeria. Thus, to achieve sustainable development by 2030, conscious efforts must be geared towards tackling issues of population, its related challenges and the corresponding environmental degradation by putting in place the following measures:

1. Holistically tackling the issues by adopting a multidimensional, inter-sectorial and clear-cut approach to achieve sustainable development in Nigeria.
2. The approaches must factor in policies to curtail population growth and environmental degradation by mainstreaming the following:
 - i. Expansion and rehabilitation of health services and family planning measures;
 - ii. Removal of subsidies for resources (electricity, diesel, petrol, gas, fertilizers and pesticides) used by both private and public sectors to reduce their wasteful use and thereby curb environmental problems;
 - iii. Specifying property rights and assigning ownership titles to common resources (land, forest, minerals, fisheries among others) for private use to avoid overexploitation of environmental resources;
 - iv. Conduct public awareness and participatory programmes in the form of formal and informal

education programmes, relating to environmental management and population control to mitigate environmental degradation and population explosion;

v. Adoption of market-based and regulatory approaches for population control and protection of the environment. This entails enforcement of market-based instruments (MBIs) such as environmental taxes that include pollution charges (emission tax/pollution taxes) and taxes for those who exceed the number of children (4 in no.) approved by the Federal government.

Conclusion

Issues relating to population cannot be overlooked in Nigeria, especially with the burden they exert on the environment. Several studies have pointed out the

implications of rapid population growth and environmental degradation. This paper discusses the impact of human population on the environment, viz-a-viz the achievement of sustainable development in Nigeria. As such, the paper argues the implications of rapid population growth and the resultant environmental menace such as increasing ecological imbalance, pollution, deforestation, amongst other issues. Thus, concise measures are necessary to control the country's increasing population and the corresponding stress exerted on the environment, if it will live sustainably and achieve sustainable development. Nigerians must act promptly and be intentional, making the decision to slow down the growing population so that the environment will not, out of distress, revolt against the populace.

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