



# **Green Growth and Sustainable Development in Nigeria**

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## **Author's contribution**

*The sole author designed, analyzed, interpreted and prepared the manuscript.*

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## **ABSTRACT**

This study aimed to examine how the adoption of green growth can bring about sustainable development in Nigeria. A descriptive study design was adopted for this study. A literature search was performed from June 1st to July 20th, 2023. Articles, Journals and other publications on green growth and Sustainable development were selected using the PRISMA checklist. A total of 47 publications were selected including data from Trading Economics, Worldometer and Worldbank for Nigeria. From the results, CO<sub>2</sub> emissions increased from 78,350,318 in 2014 to 82,634,214 in 2016. Transport sector accounted for most of the emission and emission data included gases from burning of fossil fuel and cement manufacture. Also, deforestation increased between 2015 and 2017. Shifting to green growth is necessary for Nigeria to reduce the damage done to the ecosystem and bring about sustainable development.

*Keywords: Green growth; sustainable development; emission; economic.*

## **1. INTRODUCTION**

### **1.1 Background of the Study**

In the face of rising global population, the world has been faced with the challenges of increasing

economic opportunities and dealing with environmental deterioration which could prevent the utilization of these opportunities if not dealt with. The need to address with these two challenges simultaneously brought about the

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concept of green growth as it is seen as the combined solution to these two challenges. There is sufficient evidence to prove that human economic activity is degrading the natural environment that we rely on [1]. Green growth has been the most widely accepted panacea to environmental degradation and it is based on the use of technological and market innovations to better the efficiency of production and decouple natural resource use and deleterious environmental effects emanating from economic growth [2].

The environment sustains more than half of the African population who get their source of livelihood from agriculture, animal husbandry, fishing, hunting and foraging. The need to successfully acquire a source of livelihood while maintaining its source which is the environment is of utmost importance. The environmental cost of economic activities has raised various arguments among economists. Usage of unsustainable methods of production will continue to damage the soil, water supply and forests. Besides, the rate of replenishment is slower compared to the rate of usage. Therefore, there is need for government to formulate policies to sustain the environment and implement these policies [3], hence the concept of green growth and sustainable development.

Green growth refers to a theoretical path of economic growth which is friendly to the environment. It suggests the fact that economic growth should occur without being directly proportional to increased use of environmental resources and without being linked to unfavourable environmental effect such as environmental deterioration. It is known that an increase in environmental pressure usually accompanies increased production in many economies. Therefore, green growth hypothesizes decoupling whereby an economy can achieve growth without increasing environmental deterioration. Similar concepts such as green economy, sustainable development and low-carbon all gravitate towards environmental sustainability and are all driven by the transition towards sustainable energy systems [2].

Green growth is a policy that combines the environment and the economy with the aim of increasing economic growth through income and investment. This is necessary in order to reduce poverty by providing clean and green jobs and improved wellbeing of citizens. It also

checkmates and controls activities carried out in an environment. Green growth is the only way developing Countries can achieve sustainable development through reducing poverty and creating more awareness on environmental issues. Green growth is also referred to as economic growth that achieves significant environmental protection. If the hindrances to green growth can be removed and the needed innovation in place, green growth can be adopted in developing Countries [4].

Sustainable development involves meeting human development goals while maintaining the ability of the ecosystem to provide natural resources that the economy and society rely on. It is defined as development that meets the needs of the present generation without compromising the needs of future generations. It aims that humans safely co-exist on earth for a long period [5].

Green growth has its origin from the Asia Pacific Region. It was first discussed at the Fifth Ministerial Conference on Environment and Development (MCED) in Seoul, South Korea in 2005 and the Seoul Initiative Network on Green Growth was founded there. Since then, many international bodies have focused on green growth and partially used it as a panacea to the 2007/2008 financial crisis. The Organisation for Economic Co-operation and Development (OECD) alongside other organizations such as World Bank and United Nations have developed strategies on green growth. The OECD defines green growth as fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. They have emphasized that green growth doesn't replace sustainable development but rather provides a pathway for it. The OECD published a green growth strategy in 2011 [6]. Following that, the green growth knowledge platform (GGKP) was established by a coalition of the World bank, OECD, Global Green Growth Initiative (GGGI) and United Nations Environment Programme (UNEP).

Green growth, sustainable development and the need to find permanent solutions to environmental problems arising from the need to grow economies has been a major issue in economic development policy. Many Countries are experiencing serious economic problems, environmental hazards, unemployment and health problems despite the enormous resources

these Countries have. Many industrialized Countries like China, Korea and Japan are moving away from quantitative to qualitative growth path and are now leading in green growth export by creating industries that utilize wind, solar and biofuels [7]. Meanwhile developing Countries like Nigeria continue to tow the path of environmental and negative hardship resulting from exploration, extraction, manufacturing and production of economic activities which is a negative growth path.

The economies of developing Countries are built to exploit the natural resources present in the environment. Also, they cannot afford or access green technologies for sustainable development. These Countries lack the ability to shield themselves from the deleterious effects of climate change and environmental degradation and so they battle with the dangerous health consequences of water and air pollution. So, these Countries are in great need of green growth policy to protect their environment, better their wellbeing and livelihood and accelerate economic growth. The OECD has in 2012 developed a policy on green growth that developing Countries can use to achieve environmental and socio-economic goals.

According to a study done in Austria, Morsy [8] stated that there should be a balance between consumers' demand and the need to protect environmental resources. He also opined that green growth policy is a macroeconomic policy framework that migrates from outdated growth pattern to a more sustainable growth path. According to him, to successfully transition to green growth, innovation is necessary [8].

Green growth has however not been devoid of criticism with critics pointing out that it doesn't fully address economic systems change required to tackle climate and biodiversity crisis and other environmental degradation problems. Alternative theories of economic change have been suggested including degrowth, circular economy and doughnut economics. The concept of sustainable development has also been criticized and critics argue that there is nothing like sustainable use of non-renewable resource. Some argue that the concept is paradoxical and that the environment cannot be sustained [9]. Despite these arguments, green growth and sustainable development remain the widely accepted solution for environmental sustainability.

Nigeria is signatory to Paris agreement and other international climate change treaties; therefore, it is expected that the Country would prioritize greenhouse gas emissions reductions as a way to show its commitment. However, according to a 2021 data, the Country's greenhouse gas removal reduced by 23% while greenhouse gas emissions increased by 46% in 17 years. Carbon dioxide accounted for 56% of the greenhouse gas increase while methane and nitrous oxide accounted for 23% and 65% respectively. Agriculture contributed most of the carbon emission while energy, industrial process and product use followed [10].

Carbon brief reported that Nigeria emitted 104.27 MtCO<sub>2</sub>e in 2018, representing over 270% increase from 1990. Nigeria has also been ranked among the top 20 biggest emitters of greenhouse gases globally and among the top 3 in Africa due to the Country's heavy reliance on fossil fuel for economic development. It is also believed that rise in population, deforestation and economic development have contributed to rise in greenhouse gases emission over the years. With over 33% of the population in Nigeria lacking access to electricity and relying on wood burning for fuel, deforestation rate has increased with the Country losing 86,700 hectares of tropical forest between 2010 to 2019 and releasing 19.6 MtCO<sub>2</sub> in the process. The lack of practical reduction measures amidst these developments has led to increased greenhouse gas emissions and decreased emission removal [10].

According to Muhammad and Khan [11], investing in clean energy and advanced technologies can reduce pollution effectively and in turn improve the economic growth of the host Country. Exploring the concept of green growth and sustainable development in Nigeria will therefore highlight the need for developing countries like Nigeria to take urgent steps in adopting green growth measures in order to mitigate the contributory factors to climate change and achieve sustainable development. This study therefore aims to examine how the adoption of green growth can bring about sustainable development in Nigeria. This study will review literature and data suggesting unsustainability in Nigeria and will explore ways from relevant literature that the concept of green growth can be adopted in order to achieve sustainable development.

## 2. METHODOLOGY

### 2.1 Study Design

A descriptive study design was adopted for this study.

### 2.2 Method

A literature search was performed using electronic databases such as Web of Science and Google Scholar which are two electronic databases with the large bibliographic coverage. These electronic databases deliver keyword and citation data well and are ideal databases for social science topics like this. The search was performed from June 1<sup>st</sup> to July 20<sup>th</sup> 2022. The search terms were “Green growth”, “Sustainable development”, “review on green growth”, “green growth in Nigeria”. The search was done using these terms independently and in combination. The reference lists of all studies were identified and additional studies were sought from these references. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist was adhered to for this review as shown in the figure.

This research also used Country-level aggregated data by the Trading Economics, Worldometer and World Bank for Nigeria. Questionnaires were administered to anonymous respondents at the ministry of environment.

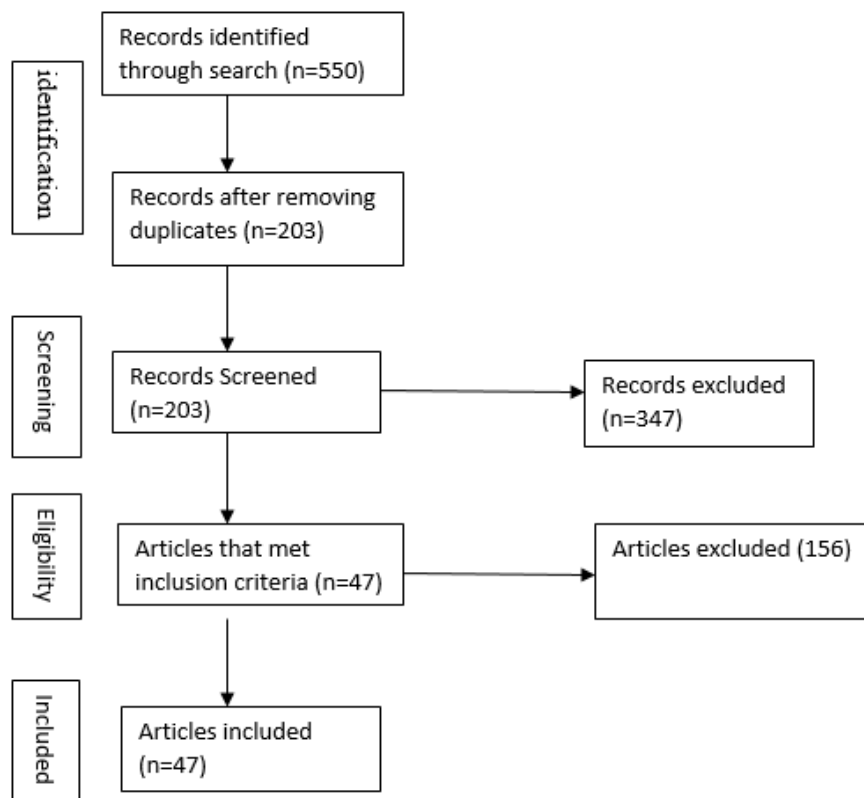
### 2.3 Inclusion Criteria

Eligible studies were articles, reviews and publications on green growth and sustainable development, decoupling, low carbon economy and renewable energy.

### 2.4 Exclusion Criteria

Studies outside the area of interest were excluded from this study. Studies that didn't report green growth nor contain the keywords were excluded.

Fig. 1 shows the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram used for literature search. A total of 47 publications including journals, newspapers and articles matched the inclusion criteria and were consulted. The remaining 503 articles were excluded. PRISMA checklist was used to screen relevant materials.



**Fig. 1. Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram of the Process of Literature Search, Screening and Inclusion of Studies**

### 3. RESULTS AND DISCUSSION

#### 3.1 Results

Results are shown in the figures below.

Fig. 2 shows the fossil CO<sub>2</sub> emission yearly in Nigeria. Fossil CO<sub>2</sub> emission increased from about 35 million tons in 1970 to over 75 million tons in 2010, which is an increase by about 40 million tons.

Fig. 3 shows the fossil CO<sub>2</sub> emission per sector in Nigeria. Transport sector had the highest level

of CO<sub>2</sub> emission of 31.9%. Power industry (14.8%) and buildings (8.7%) produced the least emissions.

Fig. 4 shows that CO<sub>2</sub> emission has increased from 95,000 in 2012 to over 125,000 in 2021. This data includes gases from burning of fossil fuels and cement manufacture but excludes emission from land use.

Fig. 5 is a graphical representation of the loss of tropical rain forest in Nigeria per year from 2008 to 2022. The figure shows that deforestation peaked in 2017 and was least in 2015.

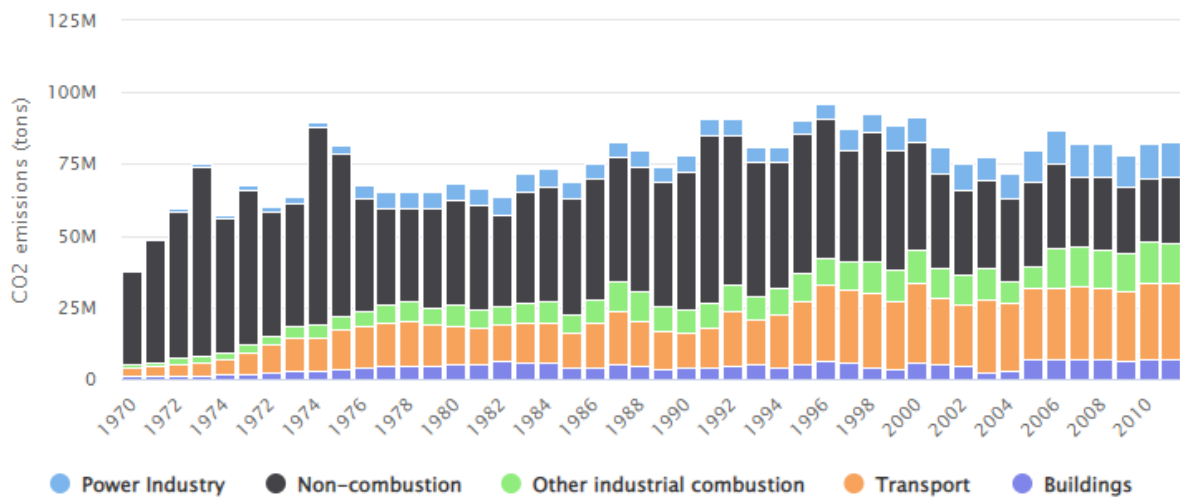


Fig. 2. Fossil CO<sub>2</sub> emission by year in Nigeria [12]

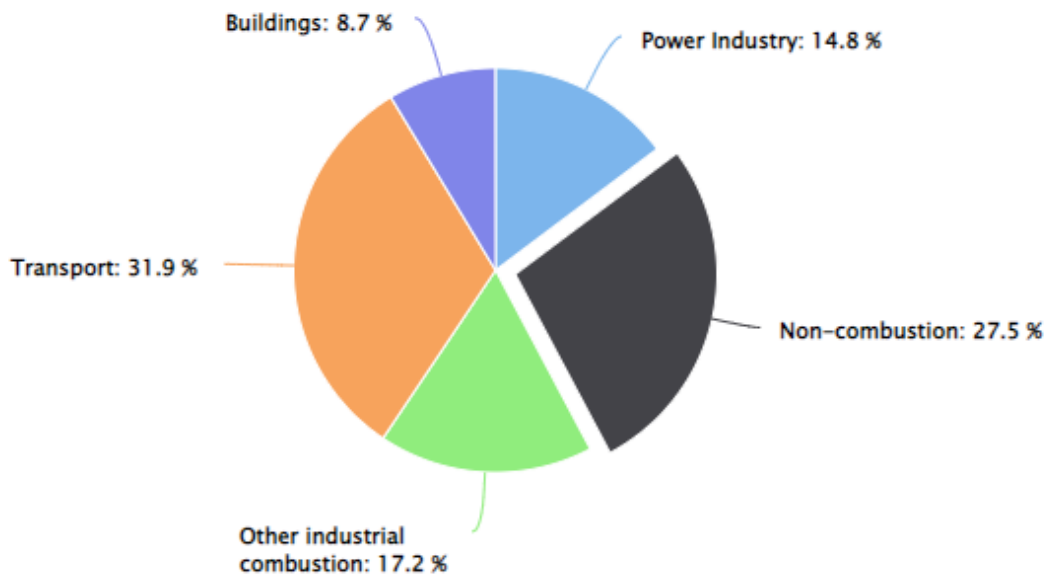


Fig. 3. Fossil CO<sub>2</sub> emission by sector in Nigeria [10]

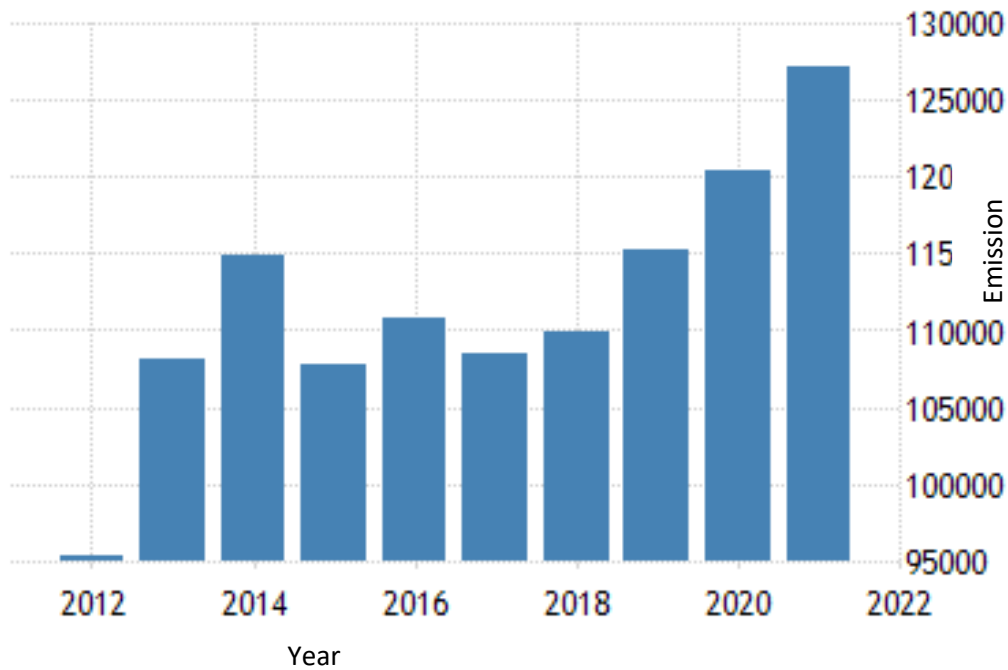


Fig. 4. Nigeria's CO<sub>2</sub> emissions [13]

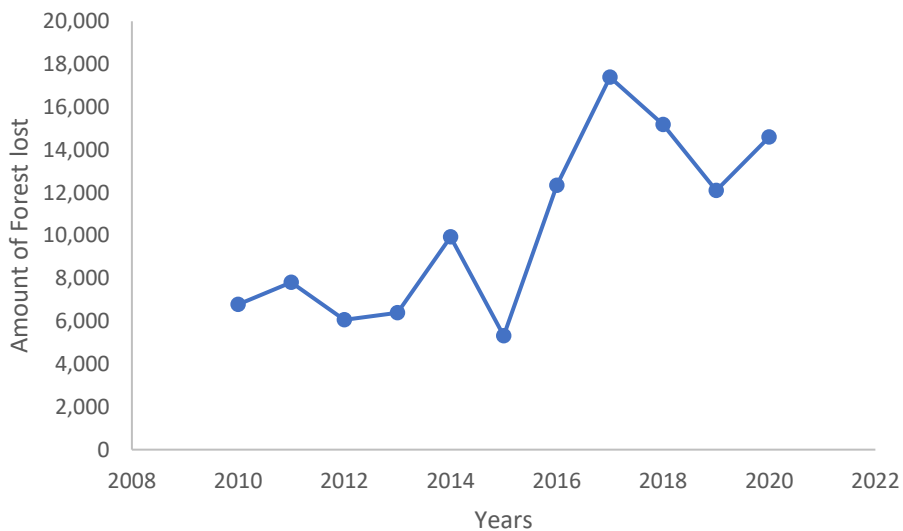


Fig. 5. Nigeria's tropical primary forest loss by year [14]

### 3.2 Discussion

Environmental Sustainability examines how resources will not be used up faster than they are being replenished and moving towards low carbon emission despite rising population. Since after the Civil war in Nigeria, the Nigerian ecosystem has been greatly disturbed due to rising crude oil exploration and exploitation, increased food and water demand and pressure

on other natural resources such as timber and fibers. Although these natural resources contribute to economic growth and social wellbeing, their excessive exploitation has created a disequilibrium in the ecosystem and this has severe human consequences. The survival of many Niger Delta communities is threatened due to crude oil exploration, overgrazing in the North has led to desertification and the South is battling with water pollution,

erosion and deforestation. This hasn't helped the deplorable living conditions of Nigerians especially the rural dwellers [15].

The data presented in the results show that CO<sub>2</sub> emission has been on the increase since 1970 till date with fumes from vehicles (transport sector) accounting for most of the emissions. Carbon dioxide emissions account for the highest share of greenhouse gases associated with climate change and global warming. There is therefore need to switch to alternative means of fuel for automobiles and other fossil fuel-powered engines to reduce these emissions.

On 18<sup>th</sup> November, 2021, President Muhammadu Buhari signed the Climate change Act into law, making Nigeria one of the Countries with national legislation that has set target for reducing carbon emissions alongside United Kingdom, New Zealand, France, Sweden, Ireland and Scotland. Although Nigeria doesn't have a carbon tax law, the President in 2020 committed Nigeria to a net-zero carbon target by 2060. The Climate change Act could help in achieving this target. However, it is not clear if Nigeria can achieve this target considering the Country's heavy reliance on fossil fuels as a source of energy and revenue.

The deforestation rate in Nigeria between 2000 and 2005 was 55.7%, the highest in the world that period according to Food and Agriculture Organization (FAO) [16]. Large areas of land reserved as protected areas in the 1950s no longer exist. Due to fast rising population, land has been lost to deforestation, degradation, encroachment and conversion to other uses. The nation therefore still has high unemployment rate, high consumption and over dependence on imports.

According to Global Forest watch, 567,371 out of 10,048,732 hectares of forest has been lost to deforestation as at 2006. Between, 2002 and 2020, Nigeria lost 14% of her primary forest. Nigeria's forest is lost through logging, timber export, subsistence agriculture (bush burning and logging to make provision for farmland) and collection of wood for fuel. Many households (about 120 million Nigerians) rely on wood for cooking in the rural areas and this has increased the rate of deforestation. Wood used for cooking accounts for about half of the wood removed from the forest [17]. The swamp and mangrove forest of the Niger Delta has also been severely affected by crude oil exploration and oil spillage in the region [18]. Also, migration of people to

urban areas has created the need to clear forests for residential areas, Schools, Airports and business places. Deforestation affects the environment negatively in several ways by causing desertification, ecosystem loss, biodiversity loss, erosion and land degradation. It is a huge threat to environmental sustainability and a big risk to the economy and citizens.

The solution to these lies in moving from "brown" growth to green growth. For the Government to fully key in into green growth policies, power stations and transmission lines need to be replaced with green technologies. To ensure continuous use of natural and sustained environment, the Country has to adopt policies that can assist in maintaining natural reserves while still trying to ensure development in the Country. This is the basis of the sustainable development theory.

Sustainable development suggests that environment and economic development are not exclusive of one another but complement and depend on each other and mutually reinforce one another in the long run. Despite the excessive demands on limited natural resources, practical policies haven't been formulated for its realization. Green economy can be achieved by shifting to Sustainable consumption and production will be of huge benefit to Nigeria as this will preserve the ecosystem, generate new opportunities for trade and investment, stimulate green growth and bring about sustainable development.

The green economy framework which includes low carbon technology, resource use efficiency and socially inclusive growth is of importance to Nigeria. The high dependence on natural resources exploitation is linked with the environmental degradation and extreme poverty in the Country because resource use cannot sustain human activities. Therefore, if the country shifts to a green economy, the country could benefit from her rich natural resource-endowments in pursuit of sustainable development [15]. To achieve this, there is need for the Government to set up a National Council for sustainable development. The Government must implement the UNEP report which contains the opportunities that will arise from the transition. Also, if Sustainable consumption and production is adopted in Nigeria, businesses will do better due to the opportunities for profit, expansion and employment generation.

To curb deforestation, public awareness and education must be done massively on the sustainable use of resources, forest management and use of alternative sources of energy such as stove instead of firewood. Government also has to take active steps to stop oil exploration in the Niger Delta so that more land won't be lost in the Niger Delta. Government must put new laws and enforce existing ones against logging. Tree planting campaign should also be encouraged [19].

### **3.2.1 Ways to achieve green growth in Nigeria include the following**

#### *3.2.1.1 Investment in renewable energy*

Renewable energy is energy collected from renewable sources like sunlight, wind, water movement and geothermal heat. These sources are naturally replenished on a human timescale [20]. Not all renewable energy sources are sustainable. Renewable energy systems are becoming more efficient and most worldwide newly installed electricity capacity is renewable. It is also creating jobs and many nations have turned to it for energy supply [21].

However, renewable energy is being hindered by huge amounts of dollars on fossil fuel subsidies [22]. To achieve net zero carbon emission, more effort is needed to increase renewable energy. Renewable energy project can be suited to a developing Country like Nigeria where energy is central to human development [23].

#### *3.2.1.2 Carbon tax policy*

Carbon dioxide is a greenhouse gas that is released due to human activities. It traps heat and has been fingered as a main cause of global warming. 27 billion tonnes of this gas is produced through human activities annually. To control this, carbon tax policy is necessary.

Carbon taxes can reduce greenhouse gas emissions effectively. It has been viewed by economists as an efficient way to curb Climate change [24].

Carbon tax is a levy on carbon emissions. Carbon tax is the penalty for deleterious effects of carbon emission and is aimed at reducing emission by increasing the price of fossil fuels that produce emission when burned. This way, the demand for high emission goods and services drops [25]. Carbon tax could also be

imposed on other greenhouse gases such as methane and nitrous oxide in order to achieve green growth. Carbon tax is necessary because greenhouse gas emissions can cause climate change which damages the environment and human health. Carbon tax reduces these negative consequences and thus a huge step towards green growth [26]. Carbon taxes have been shown to effectively reduce emissions and is viewed as the most effective way to tackle climate change [27]. Nigeria can tow the path of Countries who have committed to achieving net zero emissions. To achieve carbon tax policy, revenue generated from carbon tax should be redistributed to low-income earners by lowering their taxes.

### **3.2.2 There are however some barriers to sustainable development in Nigeria**

On a global level, the Paris agreement which is a multinational agreement between 193 parties to strengthen global response to climate change by reducing emissions and working together to adjust the consequences of climate change is an example of what Government can do to achieve Sustainable development. However, the lack of a political will on a national level is a barrier to achieving this. The failure of the Nigerian Government to implement the Paris agreement and do more outside that is a big obstacle to achieving Sustainable development in Nigeria.

Another Barrier is the negative consequence that could result from implementing Sustainable development. For example, replacing the use of fossil fuel with lithium-ion batteries can have a negative impact on the environment due to the method of lithium extraction. It could also result in serious economic consequences for a country whose major revenue is from crude oil.

## **4. CONCLUSION**

Green growth and environmental sustainability go hand in hand. Green growth talks about achieving economic growth without causing damage to the ecosystem while sustainable development talks about meeting human goals while sustaining the ecosystem. Green growth brings about Sustainable development. The study has shown the heavy burden of carbon emission and deforestation in Nigeria which calls for urgent attention. In Nigeria, sustainable development can be achieved by Shifting from Fossil Fuel use to renewable energy, introduction of carbon tax, introduction and enforcement of



stronger policies against deforestation and through massive awareness. These will lead to an improved ecosystem and bring about sustainability.

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## COMPETING INTERESTS

Author has declared that no competing interests exist.

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