

# DEFORESTATION AND CLIMATE CHANGE IN NIGERIA

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## **Abstract**

*Empirical studies reveal that Nigeria has a vast amount of forest resource base whose diversity reflects the country's large land area of 923,765 km<sup>2</sup>. Its diverse tropical ecological environment comprise coastal mangrove and rain forest in the South, and Guinea Sudan and Sahel Savanna to the North. But, various estimates confirm the very high rate of deforestation in the country as a result of primarily persistent high and ever-increasing rate of demand from wood and wood products from both domestic and external sources. Thus, the natural function of the forest in purifying the environment is impaired. Integration of development planning and environmental management of all levels of political and economic decision making needs to be adopted to ensure sustainable development.*

## **Introduction**

Climate change is one of the endemic environmental problems plaguing the global environment. Indeed, it is now being recognized as the greatest and most serious environmental challenge facing the world in the 21st century, to the extent that global warming and climate change issues now top the global agenda (Nwafor, 2006).

On the other hand, deforestation in Nigeria is another major area of environmental concern. It is one of the most important issues of the last ten decades because of its effects on

### **Deforestation trend in Nigeria**

Deforestation is the removal of forest and other forms of vegetative cover from a site without its replacement. There is considerable uncertainty about the rate of deforestation in the tropics because detecting and interpreting change is difficult (Cunningham and Cunningham, 2005). Nigeria has a vast amount of forest resource base whose diversity reflects

global climate, via its impacts on the biogeochemical cycle of carbon. In view of its link with global warming and climate change through the decrease in the global carbon sink, deforestation is a local environmental problem with a global dimension. Although it has occurred since the dawn of civilization, reports from various parts of the world indicate that it is now on the increase due to increased socio-economic activities. This paper therefore traces the impacts of deforestation on climate change in Nigeria. the country's large land area of 923,765 km<sup>2</sup>. Its diverse tropical ecological environment comprise coastal mangrove and rainforest in the south, and Guinea, Sudan and Sahel savanna to the north. About 96,000 km<sup>2</sup> of the total area of forest types in Nigeria constitute the forest estate. This represents about 10% of the total land area of Nigeria compared to 20%, which is the target in the forest policy (Isimekhai, 2002).

Various estimates confirm the very high rate of deforestation in Nigeria. The high forest cover in the country decreased from 20 million hectares in the beginning of the 20<sup>th</sup> century to only 2 million hectares in the 1990s (Oguntala, 1996). In the Sudan-Sahel States of Sokoto, Katsina, Kano, Bauchi and Borno, shortages of fuel wood are already critical.

The major causes of deforestation in Nigeria are population growth and the expansion of economic activities, including logging or timber exploitation, urbanization, farming, bush burning, firewood collection, grazing, and infrastructural development (Emodi, 2012). During the oil boom years of the 1970s, there was a massive increase in construction activity which heightened the demand for both construction and furniture timber from forests in Ondo, Edo, Delta and Cross River States (Atoyobi, 2000). Hence, the country's standing crop of valuable species

Iroko, Mahogany) of merchantable size has been severally depleted. In Ajoda New Town Ibadan, in Agbara, Ogun State and in Abuja Federal Capital Territory, forests and woodlands have been and are being destroyed to make way for new cities, industrial and

housing estates. The phenomenal growth of Lagos along Badagry or Ikorodu roads amply illustrates the consequences of urban population growth. Nearly all farmlands between Lagos and Ikorodu have been engulfed.

According to Okezie (1999), in the past 30 years, the country had been losing on the average about 23,000 hectares of the gazetted forest estate per annum through government dereservation. For instance, 410 hectares of Ogba forest in Edo State was used for government projects and airport. The Army School of Artillery, the Nigerian Defence Academy and the Police Mobile Training School have together claimed about 7,420 hectares of forest reserves in Kaduna State. In Kwara State, the Ilorin airport claimed 1,140 hectares of the Ajaokuta Forest Reserve (NEST, 1991).

Also, a lot of forested land have been lost through indiscriminate bush burning and over exploitation. For example, between 1980 and 1982, over 900 hectares of gmelina pulpwood plantation in Oluwa Forest Reserve, Ondo State, and 490 hectares of pine pulpwood plantation in Anambra state were lost to fire.

### **Climate change and the implications**

Climate change refers to a statistical significant variation in either the mean State of the climate or its variability, persisting for an extended period typically for decades or longer (Nwafor, 2008). In Intergovernmental panel on climate change (IPCC) usage, climate change refers to any change in climate over time, whether due to natural variability or as a result of human activities altering the atmospheric composition (IPCC, 2001). However, Anyadike (2009) observed that climate change is any change in the climate directly or indirectly attributable to astronomical cause, earth based causes and/or human activities.

Climate change could be noticed through global warming caused by: Green house gases through a phenomenon known as "green house effect". The green house effect is analogous to the glass panel of a garden green house that lets heat but prevents some of it from escaping, thus warming the plants enclosed inside. It is the cumulative effects of this heat that scientists concluded as causing global warming. However, according to Anyadike, climate change could be brought about through solar spot cycle, meteorites, milantovitch variations, volcanic eruptions and other human activities such as transportation emissions and gas flaring.

Greenhouse gases absorb and emit radiation within the thermal infrared range. The earth receives energy from the sun in form of radiation, and reflects about 30% of the incoming solar radiation. The remaining 70% is absorbed, thus increasing the temperature of earth. According to Miller (1991), the major greenhouse gases are; carbon dioxide, chlorofluorocarbon (CFC), methane, nitrous oxide.

The implication of climate change cannot be over emphasized. According to Inter governmental Panel on Climate Change (IPCC), unless urgent action is taken, it is likely that, global temperature will rise by a further 1.8 - 4.°c. In a few decades, it is expected that heat waves will become more intense and frequent in urban areas. Warming will seriously affect rainfall. Precipitation will increase and some regions will get drier. Not

### **Effects of deforestation on climate change in Nigeria**

Forest perform a number of valuable natural services as they process energy and circulate matter in the normal course of their functioning. They are involved in the regulation of global temperature, precipitation and other biological mediated climate processes at global or local levels.

Because plants absorb considerable amount of solar radiation and release water vapour through transpiration, forests moderate temperature and help to maintain an even climate. Forests are also involved in maintenance of hydrological cycle. Plants absorb water from soils and release it through transpiration, returning the water to atmosphere. Hence, forests maintain a favourable distribution and even flow of water, absorbing it when it is abundant and releasing it gradually to bring about ideal climatic condition (Emodi, 2005). Besides it is

knowing what to expect will be one of the greatest difficulties for the agricultural sector in coping with climate change. Meanwhile, farmers have already started counting their losses because of unfavourable weather. As the climate changes, the vagaries of weather will be more pronounced and losses in crop production are likely to increase. The effect of global warming will be felt in the rise in sea level because of the thermal expansion as ocean waters warm. Besides, there will be melting of glaciers and ice field at the polar region. The warming at the poles could have great consequences when the ice melts because so much water is stored in form of ice in this region. This will give rise to flooding in many costal areas, forcing many people to abandon their property and migrate into the hinterland. Furthermore, water quality will be a thing of concern in many regions.

generally understood that plants absorb carbon dioxide and give out oxygen in return in the process of respiration. Thus, the excessive carbon dioxide within the environment are naturally removed by plants and the needed oxygen by man provided by these plants, maintaining a good balance in the system for both man and other living organisms to exist.

In their normal functioning, all natural and altered forest areas perform some or all of the proceeding natural services free of charge. They also do it repeatedly year after year, and we tend to take these services for granted until the forests and their services are lost. For example, deforestation in India is largely responsible for the massive siltation that caused repeated human tragedy and suffering in Bangladesh. Centuries of forest removal and overgrazing in the Mediterranean basin have produced a climate that is much hotter and drier than it once was (Wright and Nobel, 2002).

In Nigeria, the federal government in recent past, in a bid to cut cost had on many occasions adjusted upwards prices of petroleum products like kerosene. In many instances, the product is not available for purchase. Where it is available, it is highly priced by independent marketers, considering their cost of procuring it.

Consequently, the product kerosene is tilting towards being beyond the reach of the common man. Hence, a lot of people have resorted to the old usage of firewood as the source of fuel for cooking. Firewood has become a good source of revenue particularly to those living in the hinterland. No wonder the rate at which our forest land especially those near the cities are being deforested for want of firewood. For instance, in Enugu metropolis, on every Oye day, the rate at which firewood is being moved from the neighbourhood of Amorji-Nike, Nchatancha, etc. to Oye Emene market is very alarming. The firewood comes from the forested neighbourhood around Enugu metropolis, leaving the forested neighbourhood dilapidated. This invariably boils down to deforestation of the area which has serious effects on the micro and macro climate of the environment.

In an attempt to proffer solution, the federal government initiated among others the following programs:

- i. The Arid Zone Afforestation Programme (AZAP) to combat the devastating effects of the drought in the northern part of the country by establishing several hundred of hectares of woodlots.
- ii. Federal Government of Nigeria Assisted Pulpwood plantation Project (in the forest reserves).
- iii. The World Bank Assisted Forestry Project; aimed at promoting the establishment of shelter belts and community wood lots in the arid zones of the north.
- iv. African Development Bank (ADB) assisted Forestry Plantation Project.
- v. F.G.N/Katsina Afforestation Project to improve the living conditions of the people by planting trees on farmland, establishment of wind brakes and community woodlots.
- vi. Initiation of national tree planting campaign by the federal government.
- vii. Establishment of national parks.

Despite the initiation of these programs, there have not been effective and efficient implementation measures taken to obtain good results.

## Recommendations

Having identified deforestation as a major factor among others in climate change as it affects Nigeria, the following measures are suggested:

- ① There is need for integration of development planning and environmental management of all levels of political and economic decision making to ensure sustainable environment.
- ② Education through lectures, seminars and workshops sponsored by the three

- ① As vegetation plays the role of carbon sink, reforestation needs to be done to compensate for over harvesting.
- ② The wanton destruction of our forest must be checked, and forestry authority empowered, to act accordingly.
- ③ Creation of public awareness by sponsored jingles, through the electronic and print media, including the information highway, internet.

tiers of government and well spirited individuals, non-governmental

- organization and stakeholders in the environment.
- ① Reforestation is one of the best ways of countering deforestation. Hence, federal and state governments should substantially step up their financial commitment to reforestation.
  - ① The federal and state governments should enlist the co-operation of large scale farmers and open-cast miners by including in their agreements the need to rehabilitate and reforest, with woody species, their areas of operation before quitting them.
  - ① Private individuals or communities should also be encouraged to establish and own woodlots by creating necessary incentives such as free or subsidized supply of seedlings, operational machinery or rebates.
  - ① There is need for the redesigning of the species composition and structure of our plantation in order to incorporate all forest components, including plant and animal species being threatened with extinction.
  - ① Reclamation and stabilization of degraded areas could be realized in savanna through reforestation, using drought-hardy and relatively fast establishing trees (local and naturalized) like *Balanites aegyptiaca*, *Salvadora persica*. Also fire tolerant species like monotes *Kertingii*, *Maranthes* and *Combretum nigricans* could be used as firebreaks.
  - ① There is need for the development of multi purpose forest ecosystems that will support grazing, in addition to providing other benefits, especially in the Sudan Sahel belt now experiencing acute shortages of browse materials.
  - ① Selective cutting of trees could be adopted to allow natural regeneration from the surrounding trees, thereby avoiding the financial and environmental costs of starting afresh.

## Conclusion

One of the greatest of man's contributions to climate change is the enhancement of greenhouse gases by the enhancement of carbon dioxide in the atmosphere through deforestation. It has been proved that if carbon dioxide emissions and concentration continuous unchecked, according to scientific mid-range projections the global average surface temperature is expected to rise by 0.2 to 0.4 degrees celcius per decade throughout the 21st century and beyond. This entails a global average temperature of approximately 3 to 5 degree Celsius is to be expected by the year 2100. From scientific analysis, an increase beyond 2-2.5 degrees celcius will mean a sharp rising risk of crossing a tipping point that can

cause adverse effect on our planet's living and non-living organisms.

Sound forest management provides enormous benefits on sustainable basis. If we wish to reduce the rate at which primary tropical forest, particularly Nigerian forests are being depleted, better forest management will suffice. Far more radical economic, social and political reforms will be needed. Therefore, there is need for collective efforts of individuals, non governmental organizations, corporate groups, stakeholders and governments in a united effort at saving our environment through tackling the problem of deforestation.

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