

# Financing climate change for economic development (a case study of nigeria)

[Environment](#), [Climate Change](#)



FINANCING CLIMATE CHANGE FOR ECONOMIC DEVELOPMENT (A CASE STUDY OF NIGERIA) Written By: ABORISADE OLUWASOGO OLANREWAJU  
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ABSTRACT Climate change adaptation is increasingly becoming an area of growing interest and involvement for many developing countries that unfortunately bear the brunt of an overheating planet caused by developed or so called advanced countries.

The uncertain effects of a changing climate on Nigeria's economy pose significant setbacks for meeting development targets like Nigeria's aspiration to be among the twenty best performing economies of the world by the year 2020 [Vision 20: 20: 20] and achievement of the Millennium Development Goals. The fact that Africa's most populous country runs dangerously on a mono-product economy oiled by cheap hydrocarbon deposits, underscores this heavy dependence on natural resources.

Climate change-induced losses and the unsustainable use of these invaluable resources appear to be a harmful problem that has elevated itself to a real development challenge in Nigeria. It is not difficult to see that Nigeria's climate security vulnerability lies predominantly along the coastal, littoral states of the south and the northern frontline states as a result of a combination of high physical exposure as well as low household and community resilience.

Poor adaptive responses to growing shifts in temperature, rainfall, storms, and sea levels could help fuel violent conflict in some areas of the country

due to shortages of resources such as land and water which breeds negative secondary impacts such as more sickness, hunger, and joblessness, which in turn flings the doors to conflict and social chaos wide open. These problems are further compounded by a lack of institutional, legislative and fiscal capacity for effective management of natural resources and stability of the ecosystem; leading to reduced farm productivity, increased work load particularly on women, and a dislocated rural economy. Mitigation and adaptation are both necessary to alleviate the impacts of a changing global climate on our local communities and national economy. This research work therefore discusses climate change in Nigeria and ways it could be financed to increase economic development in Nigeria. INTRODUCTION Climate Change is a term used for changes in weather condition in the past few years said to be caused by Global Warming.

Global Warming is increase in the average temperature of planet earth which is said to be caused by continuous emission of gases that trap heat to the earth's atmosphere. Climate Change and Global warming are often used interchangeably. In an upper part of the atmosphere called the troposphere 10-19km above sea level, certain gases trap heat to the earth to make it warm. Without these gases, the average temperature of the earth will be 33°C colder not able to support life for humans and several living things.

These heat trapping gases for their action that resembles heat trapping effect to a glass house in Physics are called Green House Gases (GHG). There are a number of GHG known with some more potent and available than others, these GHG have a natural cycle that keep them balanced and

available at certain range in the earth's atmosphere for their function to keep the earth warm. Certain anthropogenic activities like burning of fossil fuels release gaseous products made up of one or more GH gas. Nigeria's economy though heavily dependent on oil is sustained by agriculture and has thus become increasingly constrained.

Both source of revenue for the economy is vulnerable to climate change crisis. Sustainable development of these sectors of the economy can only be achieved if processes in use are in favour and harmony with the environment. Although, Nigeria is not a major player in the green house gas emission compared to the western countries, the country has contributed to the depletion of the ozone layer through continuous gas flaring emission by multinational oil corporation in Niger Delta region. Climate change has become a global concern with harmful effects as seasonal cycles are hindered.

For example, food production and water supply are adversely affected by the effects of climate change and if care is not taken, it will affect the economy in a drastic way. Nigeria and Climate Change Nigeria is exposed to the dangers of climate change, which is now a global issue. The dangers pose serious threats to existing environmental problems like desertification, erosion, flooding, and ecological devastation. Considering the strong connection between climate change and development, Nigeria is highly at risk in the area of food security, poverty reduction, energy and most importantly, infrastructure and general economic development.

In view of this anyway, Nigeria's efforts and actions must be informed by these realities. For example, it is estimated that in the Sudan-Sahel area of Nigeria, between 89, 297 and 133, 944 square kilometers of arable land would be at risk. It is estimated that the capital value at risk stands at about US\$6. 4 billion for the current level of development, (NCCC, 2003). In December 2009, Nigeria like many other countries had the opportunity to tackle its climate change issues at Copenhagen, the capital and largest city in Denmark.

However, climate change cannot be successfully addressed by any individual country it requires therefore substantial action and continuous efforts. These actions include nations' investing in programmes and projects aimed at reducing the emissions of greenhouse gases (GHG's), and contribute to adapting to climatic changes. Nigeria is committing itself to facing the challenges that climate change presents within its borders and is acting rapidly to ensure that the Copenhagen deal is the best for Nigeria and Africa.

This is being achieved by continuing to form partnerships globally and regionally, and by promoting the development of alternative energy sources internally. Nigeria believes that climate change poses important threats to Africa, while equally offering some unique opportunities to generate new revenues and build more diverse and resilient economies. For example, a policy like the Clean Development Mechanism (CDM) if designed to have an African focus could generate investments worth billions of US dollars every year. Causes of climate change

The climatologists have found evidence to suggest that some factors are primarily responsible for most of the past episode of climate change on the earth and which needs to be addressed urgently. These factors include: (a. ) Radioactive forcing A process which alters the energy balances of the earth-atmosphere system is known as radioactive forcing mechanism (Shine et al, 2010). These may include degree of difference in the earth's orbit around the sun, solar radiation, volcanic activity and atmospheric composition. (b. ) Non-radioactive forcing

Any change in the climate must involve some form of energy redistribution within the global climate system. Yet there are forcing agents who do not affect directly the energy budget of the atmosphere (the balance between incoming solar radiation and outgoing terrestrial radiation). These are considered to be non- radioactive mechanism of global climate change. Such agents usually operate over vast time scales [10<sup>7</sup> to 10<sup>9</sup>] and mainly include those which affect the climate through their influence over the geometry of the earth's surface, such as location and size of mountain ranges and position of the ocean basins. (c. ) External forcing

This section discusses some of the various external forcing mechanisms operating over time a scale of 10 years to 10<sup>9</sup> years. (i. ) Galactic variations The orbit of the solar system about the centre of the galaxy has been considered as a possible external climate forcing mechanism (Hugget, 1991). During the course of a galactic years [now estimates at 303million years] variation in the inter stellar medium (William, Isaac and Shoo, 1975) may also suggest that variation in gravitation torque induced by galaxy's near

neighbors, the small and large megallanic clouds, could have far reaching consequences for the earth's climate. ii. ) Orogeny It is the name given to a tectonic process of mountain building and continental uplift. Such mechanisms operate over tens or even hundreds of millions of years. The earth's outer surface, a layer known as the lithosphere {made up of the crust and the upper section of the mantle}, is broken up into 12 different plates which are constantly adjusting their positions relatively to each other and such movements are driven by the internal convective dynamics within the earth mantle.

When plates collide, one may either be subduced beneath another or both are pushed continually together, forcing upwards any continental land masses, to form long mountain range. (iii. ) Epeirogeny It is a term that describes changes in the global disposition of land masses and like organic process, this changes are driven by internal plate tectonic movements. Continents move around the globe at a rate of several centimeters per year owing to the slowness of the internal dynamics of the earth. However, over tens or hundreds of millions of years, both the size and position of land area can change appreciably. iv. ) Volcanic activity Explosive eruption can inject large quantities of dust and gaseous materials [such as sulphur dioxide] into the upper atmosphere [the stratosphere], where sulphur is rapidly converted into sulphuric acid aerosols. Whereas volcanic pollution of the lower atmosphere is removed within days by the effects of rainfall and gravity, stratospheric pollution may remain there for several years, gradually spreading to cover much of the globe. A volcanic activity has the ability to affect global climate on a longer time scale.

Over periods of millions or even tens of millions of years, increased volcanic activity can emit enormous volumes of green house gases, with the potential of substantial global warming (Pickering ; Owen, 2004; Rampino ; Volk, 2006]. However, the global cooling effect of sulphur dioxide emissions will act to counter the green house warming and the resultant climate change remains uncertain. (v. ) Ocean circulation It was identified that the oceans store an immense amount of heat energy, and consequently play a crucial role in the regulation of the global climatic system.

In order to explain the observed hemispheric synchrony of glaciations, despite periods of directly opposed orbital forcing in the two hemispheres, many researchers have looked to the oceans. Although, in this sense, changes in oceans circulation has traditionally been viewed as internal forcing mechanisms in its own right. Economic implications of Climate change The estimates of economic impact on climate change are typically based on ' damage function'. The estimates cover a variety of climate impacts that are usually grouped as ' market impact' and ' non-market impact'.

Market impacts include effects on climate sensitive sectors such as agriculture, forestry, fisheries and tourism; damage to coastal areas from sea level rises; changes in energy expenditure (for heating and cooling) and changes in water resources. The non-market impacts cover the effects of climate change on health; leisure activities, ecosystem and human settlements. The economic implications of climate change in Nigeria are discussed below: (a. ) Agriculture, Forestry and Fisheries McCarl (2007)



reported that 70% of the workforce in Nigeria relies on rain-fed agriculture for their livelihood.

He noted that agriculture is affected by climate change as a result of reduction in quantity and quality of yields; changes in crop practices through changes in water use (irrigation) and cost of agricultural inputs such as herbicides, insecticides and fertilizers; Environmental effects particularly due to frequency and intensity of soil damage leading to nitrogen leaching, soil erosion and reduction of crop diversity. Other effects are adaptation of organisms and plants to flood, salinity and temperature, collapse of flourishing profitable investment and a sharp downturn of national economy.

According to Okali (2004), droughts usually increase in occurrence, having a huge impact, especially in the dry North as a result of desertification. (b. ) Tourism and Leisure activitiesThe forest is the abode for wildlife. If the forests disappear, the wildlife goes with it. Sites of tourist attractions in Nigeria are vulnerable to climate change. The waterfalls, the lakes, the river basins, the ocean views, the beaches, the ranches etc. may be nowhere to be found. Due to this, the huge investment of both the government and the private sector in tourism and leisure activities may be eroded.

Loss of revenue and the lay-off of those employed in this sector of the economy will impose financial strain on the economy. (c. ) Coastal areas and Sea level rises Not less than seven out of the thirty-six states in Nigeria is in the coastal area. Nigeria's coastal zone is richly blessed with various natural resources such as crude oil and fish, which are presently being exploited for

economic gains. The global climate change and the concomitant sea level rises will have adverse effects on the coastal zone.

Nigeria could lose over 18, 000 square kilometers of the coastal land and the natural resources contained therein as well as experience disruption in socio-economic activities. This will also increase the salinity of the fresh water, thereby affecting aquatic life. Loss of revenue and GDP and the attendant impact of rendering the inhabitants of the coastal areas, who are predominantly fishermen, unemployed. (d. ) Human settlement Desert encroachment is becoming a threat from the northern part of Nigeria due to desertification.

The inadequate trees in some parts of the North have resulted in unfavourable living condition and displacement of many human settlements. The rising sea level and gully erosion are equally claiming several kilometers in the coastal areas especially the southern part of the country. Valuable resources and infrastructures of the country are found in this area and if the sea claims these places, the economy of the nation will be affected. The Tsunami incidence in Japan on 12th March 2011, which claimed thousands of lives and properties worth billions of dollars, is a warning signal.

It is also very important that Nigeria lend a clue from the bitter experience of Japan. (e. ) Health Increased temperature in the various regions could result in high incidence of malaria and other diseases that affect humans due to high temperature. The possibility of water-borne diseases as a result of the sea level rises cannot be ruled out. The implication of this is that there would be an increase in the cost of maintaining a healthy nation. It is note-worthy

that this might frustrate the recent effort by government and relevant international health agencies to halt the scourge of malaria and other diseases. f) Industry and manufacturing The effect of global warming on the climate-vulnerable sectors of the economy (agriculture and the coastal resources) that provide input for the industry and manufacturing is another area of concern. The infant industries and the small and medium scale enterprises could be threatened. This is because only the big ones will be able to pay the high prices of manufacturing inputs. The GDP will be adversely affected by the inability of the small businesses to operate since they act as catalysts for economic growth and development. g) Financial services sector This sector serves as the intermediary between the deficit sector and the surplus sector of the economy. Owing to the ability of the big companies who are mostly quoted on the stock exchange to weather the storm of the likely downturn, they will force the market into an initial boom, which may not last, only to be followed, subsequent to its effect on the climate sensitive sectors, by a devastating and catastrophic burst because no entity or segment of the economy would be left out.

Hence, there is the tendency of experiencing what could be best described as ' climate induced inflation'. Ojugbo (2010) noted that climate has a significant effect on the country's economy. Climate Change Financing Providing financial support to developing countries like Nigeria to help mitigate the effects of climate change and adapt to its impacts will be crucial to achieving agreement at the United Nations Framework Convention on Climate Change (UNFCCC) in Copenhagen in December 2009. This makes

financing one of the most critical issues in international climate change negotiations.

The major issues that need funding in order to address climate change properly are observed to include mitigation, adaptation, technology transfer and capacity building of institutions and personnel. Funding must benefit from domestic and international sources. The major sources of domestic resources to finance development in Nigeria have been domestic savings which are channeled into development through various formal and informal avenues, taxation, domestic borrowing (including borrowing from the banking system and private sector), bond financing, external reserves, surpluses of public enterprises, and very importantly, the oil sector.

Domestic resources should ideally constitute the major source of financing development and should be the first port of call. It is a better long term option in the achievement of any longer term development goals. On the other hand, external resources should be seen as providing supplementary finance to domestic resources. External finance has proved difficult to predict and sustain. Indeed, some forms of external finance, for example, ODA, portfolio investment and bank lending that may appear to be important have tended to be highly volatile and hence potentially risky and problematic for development.

Also, there has been skepticism about aid effectiveness such that ' despite the declared huge disbursement by donors, there is not much on the ground to show for it' (NPC, 2008). If domestic resources must provide a robust basis for sustainable progress in meeting the climate change challenges, then

policies need to be implemented which would increase domestic saving and raise the revenue (tax and nontax) GDP ratio significantly beyond current levels. As at June 30 2009 there remain few well known sources of domestic financing for climate change adaptation/mitigation, renewable/green energy projects in Nigeria.

Whilst we suspect that there are some in-house sources of finance being discussed within various institutions, these are not yet publicly known and are at their primary stage of development where they do exist. With respect to mitigation, a lot of resources are needed particularly in acquiring technology. Nigeria supports the initiative for the establishment of a Multilateral Technology Acquisition Fund to buy Intellectual property Rights (IPR) which is a major constraint to technology transfer.

Most of the resources for mitigation have moved to the developed countries over the years. Nigeria supports therefore the review of this anomaly for equitable distribution. Mitigation resources should also come to developing countries so that their developmental efforts do not finally result in injecting more GHG into the atmosphere. Nigeria should team up with other African countries and the G77 to seek for greater access to Adaptation Funds. Many of the potential adaptation projects which are urgent require considerable capital investment that the Fund can best provide.

The significance of this is that this source of funding is reliable and predictable. Demand notices requiring for settling of counterpart Funds should be sent early enough to facilitate the processing of payment. Nigeria should team up with other countries to ask for the change in the present

arrangement in which developed countries alone produce the CEOs of the GEF. In the future, the position should be alternately occupied by candidates from the developed and developing countries to reflect the global character of this institution.

Constraints to financing climate change in Nigeria Some of the expected major sources of financing climate change in Nigeria encounter a lot of challenges/constraints. Some of these are as follows: - \* The precarious dependence of government revenue on the oil sector. Thus, any shortfalls in oil revenue will adversely affect climate change mitigation/adaptation. Projected government financing of climate change may partly depend on economic growth performance and may not be realized if the growth performance is weak. The need to lay a solid foundation for sustainable growth, rely more on domestic sources of financing especially noninflationary sources, and diversify the revenue base away from oil to non oil tax sources. In addition to the above, the following issues have been identified as current constraints that are hampering progress in efforts to tackle climate change activities in the country: \* Lack of a regulatory framework that should guide any institutional governance and the activities of climate change have discouraged local lending to renewable energy projects, foreign direct investment (FDI), and significant take-off of the CDM market. The lack of an established and working climate change institution has encumbered the drawing up of a broad-based and robust regulatory framework that can, with the assistance of consultants and advisers in this area, ensure world-class practices being put in place in Nigeria as part of the structure. \* Absence of definite budgets within the various government

ministries, departments, and agencies to incorporate climate change activities in national development within the broader Nigerian society. Lack of moral persuasion by the federal government on private enterprise to focus on driving climate change mitigation strategies and business development. \* Lack of general educational campaign to advise financial institutions, corporate bodies and civil society on the merits of investing in Green Energy and the CDM market has greatly hampered the take off of all related projects. Lack of knowledge by financial institutions on investment within the new ' green' economy in all its ramifications due to lack of capacity build-up in this area. \* Lack of knowledge among most local financial institutions on how to advise clients to access CDM funds for their projects which leads to less revenue being generated from carbon sequestration projects.

## CONCLUSION

Nigeria cannot afford to be left outing the fringes of achieving environmental sustainability, alleviating poverty and reducing extreme hunger in line with the millennium development goals. The Government of Nigeria must as a matter of expediency treat the problems associated with climate change on the economy with urgency by adhering to international environmental treaties and embarking on massive and aggressive sensitization of the citizens on the problems associated with global warming and the steps that can be taken to address the concern.

The government needs to sensitize Nigerians on the need to be more environmental friendly, evolve a change in consumer behaviour and ensure effective utilization of financial resources to mitigate the effects of climate

change. REFERENCE Odjugo, P. A. O. (2010). Regional evidence of climate change in Nigeria. *Journal of Geography and Regional Planning*, 3(6), pp. 142-150 United Nations Organization. (2010). Climate Change Conference in Cancun leads to agreements Sass.

R. L. , (2009), *Frequently Asked Questions: Climate Change*, James A. Baker III Institute for Public Policy, Rice University United States Central Intelligence Agency World Fact Book (2011), <https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html> United States ClimateScienceProgram (2008), *Trends in Emissions of Ozone Depleting Substances, Ozone Layer Recovery and Implications for Ultra Violet Radiation Exposure Synthesis and Assessment Product 2. 4*