

Review

Climate Change: the Impacts and Potential Benefits for the Developing Nations

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The paper focuses on the impacts of climate change on Nigeria's economy. It identifies some particular sectors which global warming has actually had destructive effects, such as agriculture, mining, fishery, eco-tourism and transport. It also discusses the need for Nigeria to embrace new technology that will likely accompany climate change control. Therefore, government should team up with foreign investors and provide enabling environment for the future industry. Through the establishment of some industries, Nigeria's socio-economic may be turned around positively. Finally, the paper proffers some suggestions on Nigeria and developing nations which can minimize the scourge of global climate: The need to intensify national awareness campaign, translate the campaign to local languages. The Federal and the State should provide 15% of their budget in the next five years to combat desert encroachment and tackle flood. Government should intensify control on oil pollution, gas flaming and the developing nations need to work with private sector and transnational corporation in the area of technologies on climate change.

Keywords: Climate, impacts, potential benefits and developing Nations.

INTRODUCTION

The climate change phenomenon can easily be understood as a by-product of globalization. It is widely perceived as an amorphous and all-embracing concept, with increasing impacts on human activities with full forces that span across national boundaries. Climate change has had a profound effect on economic, socio, culture, political, technological and even biological nature of man and plants in the global village. (E. Oladipo, 2009) Therefore, it is important to study the impacts of climate on the economic development of state like Nigeria particularly the socio-economic because of danger and threats it posed to the national development. The paper highlight the effects of climate on some economic sectors in West Africa, particularly agricultural human health, tourism, and transport, and loss accrued within the last five years in the economic sector, as well as the potential benefits inherent in climate change through adaptation to new technologies. It is certain that the new technology that will emerge through control of climate change will be of immense important to developing nations.

It is right to observe that many are still ignorant of climate change and the issues surrounding the phenomenon. The phenomenon is still largely

understudied and therefore, understood, however, what is clear is that there are fears associated with it. Fear of natural catastrophe, of food insecurity and of technology change, as well as the human security and other socio-economic impacts that can lead to human annihilation. Perhaps, that is why the climate change and economic implication has become a major concern to global governance institutions, national government and civil society around the world. (O. Agbu, 2009)

At present human kinds dependence on carbon-based energy is causing global warming and climate change is accelerating more rapid and dangerous, than anticipated even predicated by scientists.

The 2007 United Nations Report based on the work of (2000) scientist predicted that Africa and Sub-Saharan Africa which included Nigeria would suffer most from drought, agricultural change rising in sea level threatening coastal areas and the spread of tropical pests and diseases. (UN Report 2007) Generally, the physical and scientific evidence that the climate of the world are changing include global rise in sea levels, drought and increasing desertification drying up of water resources (Rivers and Lakes), as well as increase in ambient temperature and in changing climate. In Nigeria

for example, the climate change phenomenon can be seen in persistent drought in the North, desert encroachment, and water stress and scarcity, rising sea level and inundation of coastal land by sea water in the south, whilst above average daily minimum and maximum temperature are common. (Federal Ministry of Environment Report 2008)

According to World Bank report in 2008 on the threat of climate change, it is estimated that by 2020 the world will need to feed 3 billion more people at a time when countries are dealing with a harsher climate, with sea storms, droughts and floods. Climate change could disrupt UN goals to halve global poverty and hunger by 2015 because of the impact on agriculture and food prices. The Report stated that countries in Africa and South Asia could permanently lose as much as 4 to 5 percent of their Gross Domestic Product (GDP) if the earth's temperature increases to 2 degrees Celsius as opposed to minimal losses in rich countries. Again, the Report project that mitigation measures in developing countries to curb carbon emissions could cost around \$400 billion a year by 2030. (The Guardian, 2009:24) At present, the average of mitigation finance is \$8 billion a year. The longer the delay in seriously addressing climate change issues the harder it alters infrastructures, economies and lifestyles.

Indeed, the climate change phenomenon is such a cross-cutting issue that it encompasses development economy, science, energy, ecology, technology, finance and effective international regimes and governance – and there is therefore the need to build cooperation among vastly different States, the private sector and civil societies to achieve the common goal of check-mating the threat. According to Hamzat Ahmadu, Chairman, National Executive Council of the Nigerian Conservation Foundation (NCF), the world is approaching a new era in which environmental and climate concerns shall be the main focus of economic development processes when investors shall view business and development sheets not only from its functional content, but also by the amount of carbon dioxide emitted by companies into the atmosphere. (A. Hamzat, 2009)

For Nigeria, which often not only speaks for itself, but also for Africa, climate change poses a specific challenge to its teeming population, about 140 million, most of whom depend on subsistent agriculture to survive. Quickly recognizing signs of global warming, designing appropriate policies and joining the global effort at address the issue are some of the immediate challenges facing Nigeria.

Climate change is one of the greatest global challenges of the 21st century whose threat is not only global but also multi-dimensional, invisible unpredictable and transcends borders. The IPCC Third Assessment Report (2007), noted that the Earth's average surface temperature increased from 0.6 + 0.2c in the 20th century. This trend is expected to persist with an increase of 1.4 to 5.0 centigrade by 2012. Even with the

best mitigation efforts, some climate change cannot be avoided due to the inertia of the global climate system. (IPCC, Report, 2009)

Climate change impacts between 2000 – 2010 revealed an increase agricultural production in industrialized countries while developing countries recorded decrease in agricultural land, especially cereal production portending danger for food security in Africa and particularly in West Africa which includes Nigeria. (Osita Eze, 2010) Consequently, there is growing recognition that Nigeria may not be able to meet up with the millennium development goal target in the area of social economic development projects already put in pipeline.

The results of West Africa vulnerability analysis with climate change show that more than 280 million people are presently at risk and may be relocated due to climate variations and sea level changes. With the projected climate change the sea level use about .05m and the number of people that may be relocated assuming there would be increase may be about 27 million. In Nigeria, Ghana, Guinea and Cameroun, climate change has also caused flood and wind erosion, thereby resulting to serious economic loss in terms of fishing and farming outputs. (IPCC Report 2007).

With the specific reference to the West Coast of Guinea, it is estimated that with an accelerated sea level rise (ASLR) of about 0.5 meters about 35% of the delta could be lost by the year 2015. This includes socio-economic livelihood of the people in that region. Global warming aridity has also compelled the pastoral farming in the Shel Region of West Africa to move to other areas in search of pastures for their animals. With nearly 70% of the Sahel region population depending on agriculture and other socio-economic means for sustainable livelihoods, climate change impact becomes a serious concern for government, stakeholders and civil societies in West Africa. (ECOWAS Conference Report, 2007).

Conceptual Discourse

Before going into critical issues there is need for conceptual clarification of the relevant terms associated with this essay.

Global Warning: With reference to International Panel on Climate Change Report, global warming is the gradual increase in the "Earth" surface temperature warming caused by human activity. It is the increase in the average temperature of the Earth surface air and ocean since the middle of 20th century. (IPCC, 2007)

Global Dimming: This is a gradual reduction in the amount of global direction irradiance of the Earth's surface. The main cause of this dimming is aerosols produced by volcanoes and pollutants.

Mitigation and Adaptation Measures: The two key words are frequently used. Mitigation is the slowing down that is the reduction of global warming through the

level of green house gases in the atmosphere, while adaptation is the dealing with the existing damage or the effects of climate change, particularly by the developing scientific and natural devices. Such as crop rotation and hard technologies. (WIPO, 2008)

Economic Development and National Development

Economic development is the utilization of human and natural resources endowed a State for purpose of nation-building. It entails increase in quality of life through provision of social amenities to the people. While national development is the totality of production of goods and services in all sector of national economy within a given period of time for the benefit of the country. (Mabogunje. A., 1996) From the above conceptual definitions one can see that there is a correlation between Economic Development and National Development one enrich the other. When factors of production, labour and capital are not in order, invariable it affects the economic and national production. Climate change as factor can make or mar national development. Therefore, the four concepts are germane to this research paper.

With reference to Chinasa Ugwuanyi (2009), she said that low production of agricultural products in Africa and particularly sub-Saharan African which include Nigeria could be traced to the incident of global warming and climate change on the continent. She posited that in part of Africa, especially Kenya, Uganda and Somalia, has experienced agricultural production declination due to drought and famine caused by pattern of climate change.¹⁴ Furthermore, that climate change has had a drastic impact on Nigeria economy, in the sense that Northern part of Nigeria has recorded low rainfall, poor crop yield and incessant desert encroachment from Sahara desert. The climate change threatened lives and properties of farmers and pastoral herdsmen living in that region.

The above finding was also reinforced by the earlier research work carried out by Martins (2008), who stated that agricultural output in developing countries change. This is because most low income countries are located in the tropical and subtropical regions which are mostly vulnerable to rising temperature and the semi-desert zone threatened by decreasing water availability.

Theoretical Discourse

The appropriate theory for this discourse is Human Security and Modernity paradigm. The two theories are interrelated and germane to discourse on climate change and African economic development. In the recent past, however, there has been a shift in the understanding and operationalization of security stimulated by the demise of the cold war and the

knowledge of the fact that the plurality of the world population lives under insecure and fragile political, economic and social environment. There has been a conceptual shift towards the protection of the human being, environment and livelihood.

Human Security

The following quotation from David Hebert (1996) gives a vivid understanding of the reference point of human security.

“In essence of human security means safety for people from both violent and nonviolent threat. It is a condition of being characterized by freedom from pervasive threat to people rights, their safety or even their lives. It is an alternatives way of seeing the world taking human being (people) as a point of reference. And also remove forces that constitute threat to their livelihood. Rather than focusing on exclusively on the security of land space (territory). Human security is about protection of economic food and environment where individual lives.¹⁶

According to Ogaba (2010), the concept of human security derives its compelling quality from four essential attributes. Firstly, it is based on universal concerns because there are numerous forms of threat that are common to all people regardless of their geographical location or their socio-economic status such as health threats, environmental threats, drugs, crime, human rights violations, etc. Secondly, threats to human security are no longer isolated issues. Threats to human security (famine, terrorism, communal violence, etc) tend to attract the attention and subsequent involvement of other members of the international community. (Ogaba, 2010: 41) Thirdly, threats to human security are easier to secure and cope with through the adoption of early preventive measures. If left unprevented, the eventual costs in human and non-human terms are usually devastating. Lastly, human security is centered on people and their existence. In broad terms, human security developed from two philosophical premises which are “freedom from fear, and freedom from want. (Ogaba, 2010: 42)

The concept of human security identifies seven main dimensions of security. These include economic security, food security, health security, personal security, community security, political security, and environmental security. Economic security emphasizes economic sustenance and requires that people should be assured of some basic means of sustenance and income either through work for which they are remunerated, or through some form of social provisioning or welfare system. Unfortunately, less than one-quarter of the world's population can be described as being economically secure. The situation is most serious in the developing world where unemployment is the order of the day. Indeed, the few who do manage to secure employment

are, to a very large extent, underemployed. The problem of high rates of unemployment among youths in African countries is a major factor that underlies high rates of crime and violence, which in turn undermines human insecurity.

Food security means that people should have both physical and economic access to food at all times. The implication here is that people should have access to food either by being able to grow it, buy it, or have it provided for the indigent segments of the population by the State. The availability of food is a necessity for human survival and security. However, man-made factors may result in the inequitable distribution of food in times of need. The inaccessibility and/or unavailability are particularly serious problems in sub-Saharan Africa. (FAO Report, 2006)

With reference to the World Health Organization study (2005:24), in developing countries where major causes of death tend to be infectious diseases the imperative for health security cannot be overstated. The HIV-AIDS, swine and avian flu pandemics attest to the transnational and easily transmissible character of health threats. The complicating dimension regarding health security, however, is that it is interlinked with other factors. For example, poor nutrition in combination with unsanitary environment worsens the health predicament of people.

The area of security threats are manifested in different forms. Physical torture, war, communal violence, crime, street violence, rape, and child abuse are forms of threat to personal security which should be secured against. There is no society in the world that is devoid of threats to personal security. This depiction is worse in the case of women principally because they experience greater threats to their personal security in virtually every sphere of life. (WHO, 2005).

According to, Ogbuagu, (1992:15), said that, Community security connotes the security that people derive from their membership in a group (family, community, etc.). The assumption is that such groups and communities in the less developed parts of the world offer support and protection to their indigent members. Unfortunately, the processes of modernization combined with the economic misfortunes of most developing countries have had the effect of eroding such traditional networks of support and protection. Furthermore, the increase in communal violence, as a part of Africa, has threatened community security. Political security assumes that people should be able to live in societies and polities in which their fundamental human rights are protected. In this regard, the global political trend towards democratization has helped to liberalize many hitherto authoritarian systems.

Environmental security is the fourth major threat issues whose impact has greater spread and permanence than the others. Environmental security pertains to environmental threats that are associated with, or arise from, the implications of intensive and

prolonged use of natural and non-natural resources. Years of intensive industrialization and resource use in various parts of the world have led to pollution and to the destruction of ecosystems. It is under this category of environmental security that the issue of climate change can be classified. (Ogbuagu, S., 1992: 16) From the conceptual discourse one can see that human security, especially environmental aspects framework is one of the appropriate model to analyze climate change issues. Let us now examine the second model, which is Modernity

Theory

Modernity Theory

There is general belief that third world countries would be intensely affected by climate change due to the poor state of their data base and their inability to mitigate the effect of such occurrences. The effects will vary and also that European nations will also be affected because climate change has no shield umbrella.

In Beeks' research exposition, (1992) on Risk Society: Towards a new modernity, he said modernity is a risk culture that spares no nation. Gideon (1993) also confirmed what Beeks had earlier stated that climate change due industrialization and modernization of human environment. This is a risk to global civilization. Beeks (1992), argues that we exist in a modern world albeit in a new form of modernity. The former stage of modernity was associated with the industrial society whereas the emerging modernity and its technologies are associated with the risk society. The risk society is actually a type of industrial society since many of the risks emanate from industry, e.g. gas flaring, pollution and toxic waste dumping to the sea. Beeks posits that:

Just as technology dissolved the structure of feudal society in the nineteenth century and produced the industrial society, modernization today is dissolving industrial society and another modernity is coming into being (Beeks, 1992:25).

The thesis is that we are witnessing not to the end but the beginning of a new type of modernity, one that goes beyond industrialization. The poser is what constitutes this new modernity and the attendant risk. The new modernity is labeled Reflexive modernity. Beeks argues that the present process of industrialization has taken place in West. The agents are increasingly becoming free of structural constraints covering both the West and the rest of the world. The global climate risk that emanates from the West spares no one including the European nations. Human society shares from the attendant risk. From Beeks' exposition one can deduce that climate change wind has brought calamity to humanity, the effect is being felt in form of drought, flood, food insecurity, to different part of the world including the

African continent. Further it has also led to destruction of lives and properties both in the developed and developing nations. For example the heavy flood in California, the hurricane blowing in Florida, and destruction of houses and properties in the China Southern cities of Shanghai in 2009 are cause for concern. (See CNN Report of 2008)

The above analysis revealed that modernization has through rapid socio-economic development has negative side effects and that is what the global village is witnessing today. This is in form of climate change and the severe impacts on human sustainable and economic development worldwide.

The Global Climate Change and Effects on the Developing Nations

Global climate change caused by the inexorable build-up of green house gases in earth atmosphere is – already disrupting ecosystem and causing about 150,000 additional death per year in Africa. (Koras, R.S. and Hames A., 2005) Unless climate change is reversed, public health situation (or) burden of climate are likely to almost double by year 2020 across the African continent including Nigeria. Average global warming of 2% threatens millions of people with an increase risk of hunger, malaria, flooding and water shortage. (G. P. Report, 2007) These problems are likely to be particularly severe in Africa. Climate change has already started to disrupt state capacity to generate wealth, to decrease the gross national product (GNP) and to affect human and ultimately national security of a country such as Nigeria. This may continue if sincere mitigation efforts are not put in place by policy-makers in West Africa, and the African Union in particular. The continent of Africa is noted for diverse range of climate: the west tropical, dry tropical, Sahara Sahel and arid areas. Nigeria is not spared from this climate range pattern; this also determines her agricultural production capacity and other inter-related economic activities. (ECOSEC Report 2008) Therefore, Africa and Nigeria in the sub-Saharan region is largely dependent on economic sector that are susceptible to climate change, such as agriculture, fisheries, forestry, and tourism. The four areas are germane to the Nigeria's economic development and represent risk for the State (Nigeria) as a developing country. This is in terms of ecosystem, water supply, agriculture, food industries as well as coastal business and public health. (WMD: 2005)

Disruptions of the natural patterns of any of these areas, particularly the first three has generated conflicts in the continent. For example, the shrinking in water at Lake Chad Basin has led to strain relations between Cameroun farmers and their Nigerian counterparts over sphere of jurisdiction, and access to water amongst the local people living in Maiduguri and sharing boundary with Cameroun. (Bary, 1983) Climate change presents

to humanity with its largest challenge in recorded history. It compels the Federal Republic of Nigeria to revamp the Lake Chad Basin Commission which has been inactive for some time. The Obasanjo administration had to invite the States concerned to multilateral discussion on how to manage Lake Chad Basin water resources in 2004. (IPCC 2004)

According to World Metrological Organization Report for 2005, it predicted extreme weather events, droughts, flooding, and rising of seal level that could affect countries such as Nigeria, Mozambique and Equatorial Guinea, especially those areas that share boundaries with Atlantic Ocean. (FAO Report, 2006) Today, Africa is home to the most rapid level of population growth and of urbanization in the world. The portend danger for the continent in terms of competition for economic resources presently are inadequate. The potential linkage between climate change, population pressure and conflict appears overwhelming in the case of water-war between Botswana and her immediate neighbors in South Africa. The African future war may be on resource competition survival of boundary conflicts.

Nigeria as a Case Study

Climate change is one of the greatest global challenges of the 21st century whose threat is not only global but also multi-dimensional, irresistible, unpredictable and transcends national border. The IPCC Third Assessment Report noted that the Earth average surface temperature increase 0.6 + 0.2 centigrade in the 20th century. (M. Haruna 2005) This trend is expected to continue with an increase of 1.4 to 5.8 by 2100. Even with the best mitigation efforts, some climate change cannot be avoided due to the inertia of the global climate system. Warming will vary region by region and also accompanied by significant changes in precipitation patterns, as well as changes in the frequency and intensity of some events. From documentary evidences, climate change has caused the collapse of Greenland ice sheet leading to increase in volume of water, break-up of ice on rivers and lakes, rising sea level. Also high latitude growing seasons, pole ward and altitude shift of plant and animal ranges and decline of some plants and animal population.

The Food and Agricultural Organizations Report of 2006 revealed some astounding impacts which include spread of disease vectors, including malaria, destruction of coral reefs from warmer seas and extreme weather events and threat to low-lying island. (Uwagbutan, 2009) The study also predicted that the ecosystem good and services will be disrupted. Projected climate change is expected to increase agricultural production in industrialized countries, while the developing countries especially African states will face a decrease in agricultural land, poor cereal production and food security in particular. More people will become water-

Table 1: Economic Impact Model Results

- Instead of a Computable General Equilibrium (CGE) model, this study used a Integrated Assessment MS Excel-based CC impact model developed by the Environmental Resources Management of UK and combining scientific and socio-cultural aspects to assess the overall impacts of CC on the Nigerian economy.
- The model is based on Nigeria's economic data and forecasts along With most recent peer-reviewed scientific studies (including IPCC's 2007 4th assessment report).
- The model split the country into three regions based on the six geographical/agro-ecological zones, namely: (i) the North comprising NW, NE, & NC; (ii) the South-West States; and (iii) the South-East and South-South States.
 - Three different impact timeframes were considered: 2005 – 2010, 2005 -2020, and 2005 – 2050.
- Four sectors were explored in the model, namely: (42%), (25%), (14%), and the other remaining nine main sectors (19%).

Source: Anthony Ikpi Model, University of Ibadan, Department of Geography, 2010

stressed as hydrologic variability affects water quality and supply. Furthermore it will affect human health and socio-economic well-being of developing nations generally. (Gorden, C., 2009)

Nigeria has a land mass of about 942,000 square kilometers of 73.7 million hectares or 75% is said to be sustainable for farming, fresh water bodies cover 12 million hectares. The country has 96 kilometers of coastline and an immense ecological diversity which endowed the country with natural capacity to produce a multiplicity of crops, livestock, wild animals, fisheries and forestry products. According to Nigerian Environmental Study Team (2006), Nigeria is vulnerable to the impact of climate change due to a long coastline, she is prove to; see level rise which caused flood in coast cities. And contaminate fresh water aquifers, due to increasing storm potential. There are also incidents of increased in drought and desertification in Nigeria as a result of global warming. The changes in rain pattern are threats to food production in some places like Benue, Niger, Ondo and Osun State of Nigeria. Food production capacity has fallen drastically, since the country agriculture is mostly rain-fed. For instance, in West African and Nigeria in particular, the highly productive ecosystem areas (mangroves, estuaries, delta coral reefs which form the basis for important economic activities such as "Tourism and Fishery" is vulnerable to destructive activities of flood. About 8 million people would be affected, and will impair mega cities like Lagos, Port Harcourt and Delta State.

The Impact of Climate Change on the Nigeria Socio-Economic Development Quantitative Analysis

With reference to the study conducted by Professor Anthony Ikpi and his team of Researchers of Department

of Economics, University of Ibadan, in conjunction with the United Nations Development Programme supervision in conducting a national survey (2009), it was revealed that Nigeria is one of the most negatively impacted countries in the world by climate change. Some regions have been affected, particularly the southern coastal region and the far north. Some sector of Nigeria's economy have been affected.³⁹ A preliminary Integrated Assessment mode of 2008, predicted that CC have resulted in a loss of GDP of between 6% and 10% and it could increase by 30% by the year 2050. This worth an estimate of N15 trillion and N69 trillion comes year 2050. Please, see the below quantitative analysis results (table 1 above):

From the above tables 4.1– 4.3 below, one can see that climate change without hesitation of doubt is a threat to the Nigeria's economic development, as such it demands utmost attention of policy-makers to reverse the trend.

Qualitative Analysis of the Climate Change Impacts on Nigeria Economy

Nigeria has not been immune from global warming. For example, many families have suffered from heat wave in the northern part of Nigeria. Niger State is said to have suffered severe heat wave for the past 20 years. In Zuba community of Niger State, women have complained of incidences of heat wave which lasted for three weeks in the year 2008. (Akingbade, B. 2009)

The South-Eastern and South-Western parts of the country have also experienced unusual flooding. In the Agulu-Nnaka, an area in the Eastern part of Nigeria; slides were also rampant in year 2006 – 2009. There are show cases of the evidence of global climates through severe erosion. A whole community was displaced and

Table 2 Summary of the Assessment of Impacts

S/N.	SECTOR	PERCENTAGE ASSESSMENT IMPACTS
(a)	Agriculture	42%
(b)	Mining Quarrying, oil and gas	25%
(c)	Wholesale and Retail	14%
(d)	Fishery	10%
(e)	Others	9%
Total		100%

Source: Anthony Ikpi, National Workshop 2010, p.14.

Table 3: Economic Impact Model Results: Findings

%age loss of GDP from CC (medium GDP growth) in different years:			
CC Scenario	2010	2020	2050
Low	0.7%	2.2%	6.4%
High	3.9%	11.1%	29.5%

%age loss of sectoral GDP from CC (medium GDP growth) in 2050		
Sector	Low CC Scenario	High CC Scenario
Agriculture	8%	36%
Mining & Quar	4%	21%
Whole & Retail trade	5%	27%
Other 9m sectors	5%	27%
Overall	6.4%	29.5%

Source: Anthony Ikpi, National Workshop 2010, p.15

Table 4: Economic Impact Model Result: Findings 2

Range of %age loss of GDP through CC by 2050 (assuming medium GDP Growth)

Region	%age Reduction in Sectoral GDP					
	Agric	Mining	Retail	Other	All	
North	8-331-6	7-27		5-23	8.-30	
SE&SS	8-385-22		2-10	5-26	5-25	
SW	8-42	5-25		7-34	5-29	7-34

Source: Anthony Ikpi, National Workshop 2010:16

many people lost their lives in the torrential rain fall that happened over night. (Aina, E. 2010)

In 2007, at Ekerewor local government area of Bayelsa, the State Ministry of Education had to declare a four-month break to wait for flood to recede for school children. Later the break was extended to six months due to prolongation torrential rain fall and over flowing water that submerged the local community. (Bayelsa State Government Report 2007) According to Halilu Ahmed Shaba, the Director for the National Space Research and Development Agency, he said that the flood waters came from the sea due to increase in on

sea level along the local coast line. The rise could be traced to the meeting of the POLAR ICE CAP. This is a direct consequence of global warming. (H. Shaba, 2009)

The Global Climate Change also created food scarcity for Federal Government of Nigeria, as a result severe drought and famine in Nigeria in 2006 – 2007, the Late President, Umaru Yar'Adua approved a sum of N134 billion in 2008 National Budget for Agriculture. The government also approved the importation of 11,0000 metric tons of grains to complement the local output and also a six-month waiver on import duties on Rice. It also approved the release and distribution of

65,000 metric tons of assorted food items from the strategic Food Reserve to cushion the effects of low yield in 2007 – 2008 season. (Uguwuanyi, 2008)

According to the Article jointly published in (2009) by John Dodesta and Peter Ogden, of the Center for African Progress, (CAP) both of them drew an equally bleak picture of Africa most populous State (Nigeria). This was from the combination of factors directed related to climate change. Nigeria will suffer from climate-induced drought, desertation and sea level rise till 2020, if urgent action is not taken. Already approximately 1.350 square miles of Nigeria land farms to desert each year, forcing both farmers and herdsman to abandon the abode or homes. (John Dodesta and Peter Ogden, 2009)

With reference to International Panel Report on climate change (IPCC, 2007), Lagos is one of the West African coastal mega cities, it is identified as a high risk area vulnerable to global warming, torrential rainfall and flood. The trend will continue till 2015. Already the Lagos State has high population growth in Nigeria and various socio-economic activities taking place in the city as a result of rural-urban migration movement to the city in search of job opportunities. Therefore, global climate is a threat to the livelihood of the Lagos State residents.

According to the Lagos State Ministry of Environment Report (2011), the overflow of water from Ogun river has wrecked commercial activities along Lagos-Shagamu river bank areas. The entire community in Owode Owun, Isherin Olofin, Ajegunle and Ikorodu have sacked due to deluge of water from Ogun river. Properties worth millions of Naira were lost in the two days rainfall within the area. This shows that climate change is a threat to socio-economic activities in Nigeria.

In Nigeria, farmers can no longer understand weather patterns and find it difficult to know when to plant as a result of climate change. Declining in rainfall in the desert-prone areas and heavy flood in the coastal communities has hindered the economic and productive capacity of farmers and fishermen in particular. It has also reduced the contribution to the national gross domestic product. These impacts negatively on the food security situation in the country, (Ihedioha, 2007).

Global Warming and Environmental Damage in Nigeria

Prior to the transnational oil corporation and their oil exploration and exploitation activities in the Niger Delta region of Nigeria, the indigenous people were living in peaceful condition. They were actively engaged in fishing and farming business. They also planted tree crops like timber, cocoa, oil palm and rubber for export. Their occupational activities even though was injurious but did not cause great harm to the environment. The coming of multi-national oil corporation with random oil drilling in the forest and wide spread clearing of forest

and oil pipeline laying and gas flaring contributed significantly to the process of global warming in Nigeria. This led to the problem of permanent day and no night in the some part of South-south region, particularly Bayelsa, Cross River and River States. According to Sharifel), he noted that: The oil rich region of the world possesses over 100 vertical and horizontal flares emitting over 45 billion kilowatts of heat. Many of these flares based at ground level are located close to the communities. He said the gas flaring has multi-dimensional effects on the local people. (Sharief, 2009: 22)

Furthermore he said that; ... the ecological impacts of the oil industry including flaring, oil spills waste are largely externalized a conservative estimate of ecosystem degradation caused by pollution in Nigeria was placed at \$5 billion dollars, per annum, excluding the economic cost of fisheries, agriculture clean water on which the which the entire population depend on. Deforestation and acidification were also ignored... (Ibid.: 23)

The Effects of Climate Change on Rural Dwellers in Nigeria

With reference to 2006 census, 64% of Nigeria's population are rural dwellers; about 45% of them are actively engaged in agricultural activities. They are food basket of Nigeria nation. The upsurge of global warming has had a great impact on fishing, farming and animal rearing for domestic consumption. Climate change has disrupted the eco-system most especially water weeds of the rural dwellers for agriculture and the animals feed. The river claims in northern part of Nigeria in more have enough water to irrigate the farmland. While in the South, the use in sea level has led to the destruction of fish ponds among the Ijaws and Igbo people. This has led to loss of economic power for Nigeria thus aggravating rural poverty. The above situation was also confirmed by UN Human Index Report of 2006 which placed Nigeria as a poor nation.

Ogbuagu (2002), Stated that there exist a linkage between climate change condition and human health in Nigeria, to the extent that certain respiratory diseases such as malaria thrive best when weather is very hot in Nigeria. In the Northern State of Nigeria, the cerebral spinal meningitis diseases are rampant as a result of hot climate attributed to the global warming. Likewise in the south west and south-east, flooding has produced water borne diseases in cities like Oyo, Ogun, Cross River, Osun, and Enugu State in Nigeria. The above situation made Federal government to appeal to World Health Organization for medical assistance in 2008 – 2009 to reduce the scourge of malaria and water borne diseases in the north and coastal communities of Nigeria.

Transportation System

Prior to the present situation (climate change), Nigeria had a good transport system especially the road network and railway system. The national economy thrives on the two transport systems for evacuation of farm produce from rural areas to the semi-urban and major cities in Nigeria. But with the global warming crisis leading to heavy rainfall and flood the railway lines and some of the road constructed are now in deplorable situation, thereby making it difficult to convey farm produce and bulk goods to and fro Nigeria cities. It has also led to high list of transportation lane in the haulage business across the country. The highway has also become a death trap for travelers due to bad weather conditions. (Federal Ministry of Transport Report, Nigeria, 2010).

Eco-Tourism

Global warming has also caused gradual extinction of animals from world forest in northern Nigeria. Some of these animals (bird species) can no longer be seen in their natural habitat because of weather situation. This limits tourism potential contributing to the national economy. (Nigeria Conservation Report 2007) From the above discourse one can see that climate change is a problem to Nigeria's socio-economic development, however, if the situation is properly manage, climate change can still be a blessing in disguise. This leads us to the potential benefits of global warming to the developing nation of which Nigeria is one of them.

The Potential Benefits of Climate Change To Nigeria and African Nations

The global efforts on climate change provide an opportunity for economic and hopefully for sustainable development arising from the mechanisms provided in the Kyoto Protocol. An example is the provision of the Clean Development Mechanism (CDM) when applied to Nigeria and other developing nations alike. The mechanism provides opportunity for industrialized countries to invest in project in developing nations of which African continent is included. The application of approved Clean Technologies if implemented and the methodologies followed will be of immense benefits for African States.

Scientists and Technologists

The Carbon credits that will be traded and exchanged with resultant sustainable low carbon economic development will also be beneficial to the Nigeria's economy, in terms of low carbon economic development

and poverty alleviation benefits, accruing to Nigeria as a domicile of the project.

At the African Ministers for Environment meeting held in Johannesburg on May 24 – 26, 2009 and the proposal for climate change compensation funds to assist the continent if finally approved by the United Nations may also be of immense value to African countries. The percentage of fund will assist in minimizing the damage already done.

The climate change issues has compelled the Federal Republic of Nigeria government and other West African States to be more proactive on all relevant matters relating to climate change and its attendant effects. Therefore, ECOWAS governments need to join international panel and other Action Committee Team at both AU and UN levels to discuss and negotiate on the matter in their national interests.

Emission Trading and Reduction: Article 3 of Kyoto Protocol allows developed countries to set up an Emission Reduction Project such as nuclear power generator to replace a fossil fuel generator in another territory. This is a good idea and way of reducing emission effects in the developing nations, provided the industrialized countries would faithfully abide by the Article. It is going to be a blessing to Africa in particular, since the Emission Trading has a target date assigned to it. It will also be easy to monitor the compliance under the international and municipal law regime as agreed to by the parties concerned.

Nigeria – Global Climate Technology Transfer

Nigeria and other developing nations are bound to benefit from the technology transfer that may be introduced to mitigate the effect of climate change. Technology solution are important in meeting the challenges of climate change, especially in enhancing the capacity to lower the cost of reducing the emission of green house gases as well as to improve the efficient of energy use. Technology provides Africa the options of reducing emission from existing sources of energy through more efficient consumption. (P. Ekwefor 2010) Technology has placed a great role in man's efforts to do more with less and is thus an indispensable factor to development process. It is not therefore surprising that it has constituted one of the most important issues in the climate change negotiations". (UN Report 2006) The import of the above statement is that, part of the solution to global warming crisis lies in developing appropriate technologies to reduce the scourge of climate change on nations. Nigeria stands to benefits from such search. Therefore, African governments need to show a kin interest in the climate change project muted by international agencies.

The Benefits to the Developing Nations: In the global community and on the issues of global warming Africa is

a stakeholder. An effective global action on climate change will assist Africa to transit from high carbon to low carbon economy. Africa's interest in the current technology transfer includes the following.

- Technology transfer that leads to reduction of poverty alleviation, which is the main priority to the continent;
- Reduction in the degree of environmental degradation, especially in the Niger Delta area. This is because the incidents of environment pollution in the Niger Delta region are inimical to the national development of Nigeria. The gas flaring and oil spillage in the region is a threat to the socio-economic development and the State security. However, with modern technology to control climate change, the oil pollution and gas flaring will be greatly reduced.
- Industrial capacity growth: since modern technology is a pillar of industrialization, it is important for developing nations to get ready and support technology that will reduce the menace of global warming and enhance her industrial capacity growth. Most especially in the area of renewable energy for national development.
- Job Employment: Climate change control through adaptation towards new technology will on the long run lead to acquisition of new technology, knowledge and modern skills. This will have positive effects on the level of employment which invariably will enhance nations' economic and human productive capacity-building of the developing nations.
- Foreign Direct Investment: The introduction of new devices to check the menace of climate change may include transnational corporation setting up new industries in Africa. This will increase capital and real positive increase in the gross national products of the continent. Therefore, change mitigation through application of modern technology is likely to be a blessing to the developing nations provided the national leaders put appropriate policies and mechanism in place to achieve such.

SUMMARY

In view of the theoretical analysis, one can see that climate change is a security risk for human socio-economic development. Furthermore, the industrialization leading to current modernization also came to compound human eco-system living. There are also evidences and established facts that global warming or climate change has had negative effects on the Nigeria's economic development. The control of climate change and adaptation to new technology devices will also improve Nigeria's economy on the long run. Climate change from this study has created more problems for Nigeria as a developing nation in the following ways:

- The flood and erosion have rendered thousands of people homeless in the some villages both in the northern and southern parts of Nigeria.
- Climate change has compelled Bayelsa State government to close down primary schools for six months.
- As a result of drought and famine caused by the global climate change, Federal government of Nigeria had to spend more on food importation in 2007 and 2008 seasons.
- The climate change scourge has led to rural-urban drift movement to major cities because Nigerian youths and adults could no longer practice farming in the rural areas. This worsened national employment and lower economic development potentials of Nigeria. It also limits the agricultural sector contribution to gross domestic product in particular.
- The global warming has made Nigeria to spend more on health sector in terms of provision of drugs and treatment for malaria and water borne diseases in the rural areas in Nigeria.

On the positive side, climate change, through appropriate mitigation control and application of technologies will enhance Nigeria's economy and national development provided that the government should establish an enabling environment, invest in the new technology devices, and team up with the international organizations on climate change measures.

Finally, climate change is caused by human activities and the emission of green house effects, the effect transcend national border and the consequences should be of great concern to the Nigerian government and policy-makers. This now leads us to recommendations on how to minimize the effects of climate change on the national economy and human capacity development in particular.

CONCLUSION

Climate change is a threat to Nigeria's economic development potentials, human capacity, environment and national development in particular. The south-south, south-west and the northern Nigeria States have experienced the negative impacts of climate change, because of the geographical location along the Equator. Therefore, multilateral efforts are required to reverse the sod situation and save Nigerian populace from gradual extinction.

RECOMMENDATIONS

Climate change is a major problem to the global existence and African continent in particular. The global warming and the effects is a threat to African states

economic development potentials and her huge population. To curtail the menace of climate change, the following recommendations are being proffered:

- African states need to intensify campaign on the effects of climate change on the environment and economic resources down to the grass root.
- The Green Tree Plantation project across the Sahara states especially the Sahelian region should be encouraged and adequate fund provided on yearly basis.
- African states government should enact parliamentary acts to control gas flaring and place sanctions on trans-national corporations violating their regulations.
- The state actors need to promote low carbon economy.
- Regional government in African continent need to meet on regular basis to discuss the problem and progress made on the impact of climate change in the continent.
- Finally, the continent needs to embark on Research and Development that could mitigate the effect of the climate change on the economic potentials of the continent. And also work with international organizations in the area of climate change issues.

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