Climate Change and Socio-Economic Development of Ahoada West Local Government Area, Rivers State

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Abstract

This study was carried out to investigate how oil exploration and exploitation activities by humans call anthropogenic has induced climate change and affected socio-economic development of Ahoada West Local Government Area of Rivers State as a result of pollutions from oil spillages and gas flaring which contributed to the emission of Green House Gases (GHG) and global warming thereby making the study area vulnerable to natural disasters. This is in spite of the recent Climate Change Act, 2021 which encourages low Green House Gas emission, inclusive green growth and sustainable economic development. This article also examined how natural disasters such as flood and erosions has affected infrastructures as roads, schools, health centers, houses, electricity, underground waters and others. The work also analyses that flooding in the study area impacted negatively on the people's traditional system of farming and fishing practices. Again, the increase in health challenges, phobia and fears are critical. The Marxian Ecological Theory credited to Karl Marx (1918-1983) and Green Theory by Dyer (2018) were adopted in this study. The secondary data was used in this study. This article revealed that some of the major contributing elements or factors to climate change are oil inducement from exploration and exploitation especially from oil and gas leading to change in the ecosystem which is now difficult to predict weather system either in raining or dry seasons. This study therefore, recommends amongst others that man should encourage pollution free environment as to maintain sustainable development and make preservation for the future generation in Ahoada West Local Government Area of Rivers State and across the globe.

Keywords: Climate Change, Anthropogenic, Pollution, Sustainable Livelihood.

Introduction

Climate Change refers to the unpleasant human activities (anthropogenic) that negatively affect our environment which includes the lithosphere, hydrosphere, biosphere, atmosphere and in most cases the inducement changes the climate weather system either in raining or dry season in which it is now difficult to predict (Osita, 2010).

Ojo (2021) expressed that the recent Climate Change Act signed into law in 2021 is an Act to provide for the mainstreaming of climate change actions, establish the National Council on Climate Change; and for related matters, enacted by the National Assembly of the Federal Republish of Nigeria. And that the Act emphasises the provision of a framework for achieving low green house gas emission (GHG), inclusive green growth and sustainable development, by ensuring that Nigeria formulates programmes for achieving its long term goals on climate change mitigation and adaptation.

The Ahoada West Local Government Area of Rivers State is situated within the Orashi region of Rivers State which specifically identified and habours several multinational companies which carried out exploration and exploitation of oil and gas operations such companies as Shell Petroleum Development Company (SPDC), Nigeria Agip Oil Company (NAOC) now Oando Nig. Plc., ADDA Oil Production Company (AOPC), Nigeria Liquefied Natural Gas (NLNG) Limited and others situate there (MENV, 2020).

As we can see, this oil and gas activities influences and changes the natural environment of the study area because oil and gas activities generate oil spillages, gas flaring, burning of substances thereby contributing to the emission of greenhouses gasses, causing global warming, the depletion of the ozone layers resulting to heavy rainfall and increasing high temperatures.

Ogele (2005), has stated that before now the people of Ahoada West has not been experiencing natural disasters such as heavy flooding and erosion and this may not be unconnected with the oil and gas activities in the study area and its

environs. While Gobo (2005), asserted that potential threats to man due to the steady but depreciation on the physical earth as resulted to climate change which include desertification, biodiversity, ozone layer depletion, flooding, erosion. Fertility loses, increase temperature and drought/dryness and that this are great concern to environmentalist. Pachauri (2006), opined that economic growth and development across the world has caused major impacts on the Earth's Ecosystem and natural resources to an extent that can limit the well-being of future generations.

Adeoye, Ayanlade & Babatimehin (2009), also expressed that human and industrial activities in the last decade has contributed greatly to the increase in the concentration of greenhouse gases in the atmosphere leading to the enhanced greenhouse effect which is resulting to climate change. There is now serious questioning across the globe of the path that economic activities have expanded along since the advent of the industrial revolution. According to Tarfa (2020), Climate Change has become an existential threat to human kind and sub-Saharan Africa is the most vulnerable region to the impact of this threat and that Nigeria and indeed Rivers State with a vast population and one of the largest economic solely dependent on fossil-fuel is not prepared and will be most impacted.

Teme (2004), in a study on the Effect of Domestic and Industrial Activities on Climate Change in Africa has noted that the increases in emission of greenhouse gases is only part of the progressive decline in the quality and magnitude of natural resources such as clean air, water, healthy soil, forests and biodiversity. At the same time, the world has attained unprecedented growth income and wealth measured purely in financial terms.

Against this back drop, Santosh (2007), stated that the excessive growth of human population increasing from about 1 billion in the year 1800 to about 6.6 billion at the start of the year 2007, has resulted in economic urbanization and expansion of agricultural, industrial, and commercial activities on our fragile Planet – Earth. While Anselin (2005) in a study on the challenges of Agricultural Adaptation to climate change has opined that the worst of human induced climate change will require global co-operation.

According to the Rivers State Ministry of Environment Annual Report (2020) and her sister Ministry of Special Duties observed that Ahoada West Local Government Area has always been amongst the most flooded areas in Rivers State and that heavy rainfall specially during the rainy seasons put this area at risk. Most communities in the area are faced with hardship, their homes, farmland, drinking water, fish ponds becomes vulnerable. The report also stated that from 2016 to 2022 Ahoada West heavy flooding has impacted negatively on the socio-economic of the people and that life especially at the rural communities has not been easy, increasing poverty and frustration.

Consequently, Ogbanga (2022) narrated that several communities in Ahoada West had for the past ten (10) years besides 2012 from 2016 to 2022 been victims of flooding and that the damages to socio-economic has been on the rise. In the recent flooding in 2022 alone Ogbanga (2022) further stated that the Rivers State Flood Disaster Committee recorded that there were more than 5,894 Internally Displaced Persons (IDPs), several houses were destroyed/damaged, several agricultural land (Hectares) destroyed, injured persons and others.

In view of the above, this article further analyse that the negative impacts of flooding and erosion is as a result of oil induced climate change in the study area – Ahoada West LGA of Rivers State and how these phenomenon has affected socio-economic development, agriculture (fishing and farming), the economic livelihood of the people and health challenges.

Is climate change real, does it exist in Ahoada West Local Government Area of Rivers State and global. Can it be prevented, reduce or mitigate the Green House Gases. What are the regulators doing about it – the relevant government agencies or the National Council on Climate Change and the multinational oil companies and other related industrial companies doing about it in Rivers State.

Oil Induced Climate Change and Its Impact on Ahoada West Communities

Sobel (2008), observed that Climate Change is the overall trend of the entire Earth's climate toward a different average state. It is most easily understood and predicted when framed in terms of average over the entire earth and over decades or centuries. For him, these averages are changing gradually by the standards of a

human life time but very steadily on a geological timescale, and as individuals, community and nations our experience of climate is much more local and immediate and our lives can be strongly affected by big storms, floods, draught, erosion and others.

Santosh (2007), Awosiki (1995) & Etiosa (2007) in their different studies agreed that, the earth's atmosphere has always acted like a greenhouse to capture the sun's heat, ensuring that the earth has enjoyed temperatures that permitted the emergence of life forms as we know them, including humans. Without our atmospheric greenhouse the earth would be very cold. Global warming, however, is the equivalent of green house with high efficiency reflective glasses installed the wrong way around. Ironically, the best evidence of this may come from a terrible coolings event that took place some 1,500 years ago.

While Gobo (2010), further expressed that it is sad to note that most communities in Rivers State, such as Ahoada, Omoku, Abua and others suffers significantly from various types of disasters. Disasters such as flood, landslide, tidal waves, coastal erosion, sand-storms, dust-storms, locust/insect infestation, oil spillages and other man-made disasters have claimed many lives in Nigeria and rendered many homeless.

Consequently, Ekine and Talbot (2020) asserted that flooding in particular as a result of climate change has threaten many economy of the world because it affects the main stream of the traditional economy looking at the economy of the study area; the people of Ahoada West are real farmers, fishers and hunters, they supply farm produce sufficiently to the local market. Some of the farm produce include stable food like; garri, fufu (starch), plantain, banana and others. Thus, the occurrence of flooding has continued to threaten the output of farm produce. To Ukpong (1994), low productivity in farm produced is as a result of flooding activities because farm land are destroyed, stored crop seed were wetted with water which in turn get decayed whereby agricultural activities becomes disrupted.

As Adeoye et al. (2009) attested that Nigeria is one of these developing countries. As the planet warms, rainfall patterns shift, and extreme events such as droughts,

flood and forest fires become more frequent which results in poor and unpredictable yields, thereby making farmers more vulnerable, particularly in Africa. Osita (2010) in a study on Climate Change and Internal Relations in Rivers State asserted that the activities of oil multinational industries in the state that uses out dated operational equipments, as resulted to pollution and degradation of the environment.

The Historical Perspective of Climate Change

Climate change "is perhaps one of the most serious environmental issues that the present world's population is facing although the issue is not new". The United Nations Agency known as the United Nations Frame work Convention on Climate Change (UNFCCC) refers to Climate Change is a change of climate emanating from anthropogenic activities (Ogele, 2020). Historically, a French Physicist known as Jean-Baptist Joseph Fourier in 1820 was the first to discover a change in the climate. Fourier examined various possible sources of the additional observed heat. In 1824, Fourier presented an essay to the Academic Royale des Sciences in Paris on the regulation of the planetary temperatures. In his essay, Fourier understood that the "atmosphere is asymmetrical to the transmission of incoming solar energy and outgoing terrestrial energy – the constituent gases of the atmosphere are more critical to outgoing thermal energy than they are to incoming short-wave solar energy" (Hulme, 2009).

Tyndall (1861), while experimenting in the laboratory in 1859 discovered that the atmosphere absorb the differing amount of short-waves and long wave radiation. Tyndall discovery was further advanced after several years, which established for the first time the molecules of water vapour, carbon dioxide, methane, nitrogen oxide, and ozone each display's some unique absorptive properties when radiant (infra-red) heat is passed through them; thus, for example, water vapour is 16,000 times more active in absorbing in fra-red radiation, molecules than is oxygen. The change in the amount of any of the radioactively could have produced all the mutations of climate which the researches of geologists' revealed (Tyndall, 1861). By the 1890s, Sauate August Arrhenius was the first to perform the calculations of a parameter which was presented before the Stockholm Physical Society in 1895. Arrhenius was already familiar with the concept of the green house, thinking of Fourier and Tyndall's experiment of water vapour. Arrhenius draws these ideas

and data together to show that splitting or amplifying the concentration of carbon dioxide in the global atmosphere would lead to changes in the average surface air temperature of the Earth between about 40c and 50c, even though it was known that nearly a billion tons of coal worldwide was being combusted annually at the time of the century, the brief was that little of the released carbon dioxide would remain in the atmosphere when contended with his discovery, Arrhenius conceded that such combustion might induce a notable increase in atmospheric carbon dioxide over the cause of a few centuries – such as warming, the deduced might be beneficial for humanity by starving off the next glacial cycle (Arrhenius, 1896).

Factors that Contribute to Climate Change and Flooding in Ahoada West

Gas flaring is a common phenomenon among the oil producing countries and has become a detrimental challenges globally. Ubani and Onyejekwe (2013), described gas flaring as the "burning of natural gas and petroleum hydrocarbons in flame stocks by upstream oil companies in the oil fields during operations". It burns through a gas flares on oil wells, in refineries or chemical plants". The burning processes produce carbon dioxide, carbon monoxide, and sometimes soot, depending on the efficiency of burning and the hydrocarbon composition of the natural gas".

Gas flaring increases greenhouse emission in Rivers State, Okotie et al. (2018), explained that in developed countries that have hydrocarbon in commercial quantities, gas flaring has been banned and offenders pay severe penalties, which has made flaring of associated and non-associated natural gas a less attractive alternative for gas management. Below are pictures of Flood incidents in Ahoada West Local Government Area of Rivers State.



Picture of 2022 Flood Incidents at Akala in Ahoada West
Source: Rivers State Ministry of Environment Annual Report 2022



Picture Of 2022 Flood Incidents at Jakrama 1 in Ahoada West
Source: Rivers State Ministry of Environment Annual Report 2022

Climate Change and Ensuring Food Security

Climate change brings a cascade of risks from physical impacts to ecosystem, agro-ecosystems, agricultural production, food chains, incomes and trade, with economic and social impacts on livelihood and food security and nutrition. For Celine (2007), the people who are projected to suffer the earlier and the worst impacts from climate change are the most vulnerable populations, with livelihood depending on agricultural sectors in areas vulnerable to climate change. Understanding the cascading risks, as well as the vulnerabilities to these risks, it's essential to frame ways to adapt. Reducing vulnerabilities is a key to reducing the net impacts on food security and nutrition and also to prevent long-term effects. Increasing resilience of food security in the face of climate change calls for multiple interventions, from social protection to agricultural practices and risk management.

According to Bauer et al. (2015), the world's poor, adapting to climate change and ensuring food security go hand in hand. A paradigm shift towards agriculture and food systems that are more resilient, more productive, and more sustainable is required for me:

> *The world needs to act now.*
> *To eliminate hunger and malnutrition.*
> *To enable the agriculture sectors to adapt to climate change.*
> *To mitigate climate change in order to keep it at level where, it is still possible*
> *To ensure and safeguard everyone's food security and nutrition, in that effort,*
> *Agriculture has a role to play by keeping in mind that food security is the priority of human existence.*

Incidence of Flood Induced Poverty Level in the Orashi Region of Rivers State and Climate Change Institutionalization

NEPAD (2004), stated that the majority of Africa's people live in the rural areas. However, the agrarian systems are generally weak and unproductive coupled with external setbacks such as climatic condition that induced flooding, erosion and others. Ogbanga (2023) in his report expressed that as a result of the frequent flooding at the Orashi Region of Rivers State which includes;

Ogba/Egbema/Ndoni, Abua/Odual. Ahoada East and West Local Government Areas respectively reported that the rate of rural unemployment and poverty has increased tremendously and dramatically. Ogbanga (2023), further stated that whenever flooding occurred the unbearable manner in which people lost their jobs and sources of economic livelihood is sympathetic.

Glacken (1997) has also stressed that the issues of Climate Change has come to form a major issue in discussing environmental realities in the world. In fact, at global discussion; Climate Change occupies a greater part in plan and action of most international conferences. The evidence of global warming is a related discussion in climate change issues. The visible horrors such as ozone hole and global warming contribute to the various climate changes which worried the international communities.

For Okaba (2005), climate change is the average weather or a change in the distribution of weather events around an average (for example greater or fewer extreme weather events). Gobo (2006), also noted that climate change is one of the most serious environmental threats facing mankind worldwide and that in the Niger Delta, it has affected socio-economic activities in several ways, including the direct impact on food production as stated above. Perhaps, this is why the subject has become of most important to global government, institutions and national governments, including the civil society observed it serious complications for human kind dependence on carbon based energy is causing global warming.

Aluko (2008), the people of the Niger Delta highly dependent on the environment for their sources of livelihood, the region has been described as the riches wetland in the world and the home of numerous species, aquatic, terrestrial plants and animals; before the discovering of oil, but now due to climate change normal activities cannot longer be guaranteed.

Theoretical Framework

This article adopted the Marxian Ecological Theory and the Green Theory. The Marxian Ecological theoretical framework is credited to Karl Marx (1818-1883) which stated that nature and capitalism are in an enduring conflict as we witness the exploitation of labour and natural resources simultaneously – clearing of

forests, gas flaring leading to climate change because of large scale corporatization and destructiveness disguised as development.

Ecological Marxism is a subfield of sociology which seeks to study the dialectics of nature from a Marxian perspective and challenges the concepts of conservation and sustainable development and that capitalism is a bid to maximize and accumulate profit will undermine environmental friendliness. O'Connor (1973) argued that capitalism undermines the factors that sustain it, such as human labour and the environment. Marx's ecology serves as the foreground for studying environmental degradation, though his analysis of capitalism and how it favours the accumulation of private property and priorities profit over the protection of the environment. Capitalist growth also stimulates the continuous burning of fossil fuels and deforestation.

Consequently, in the material economy Marx greatly talks about the means of production because man must eat first before he begins to think and do other things. Ake (1981), confirmed that in the primacy of material conditions, particularly economic factors in social life and that the economic needs is man's most fundamental need. Unless man is able to meet this need he cannot exist in the first place and confirm that man must eat before he can do anything else – before he can worship, pursue culture, tradition, career and others.

While the Green Theory helps us to reduce issues such as climate change in terms of long term ecological values rather than short term political interest. According to Dyer (2018), climate change is the dominant environmental issue of our age, caused by our dangerous reliance on fossil fuels. Green Theory helps us to understand this in terms of long-term human interest. These interests are generally pursued by status through investments in technology, but there are no easy technical solutions to human – induced climate change. From the perspective of green theory, this technical impasse requires a change in human values and behavior and therefore presents an opportunity for political innovation or even a transformative shift in global politics.

This theory explains why climate change as a result of oil and gas exploration and exploitation is a problem for states to solve because of economic competition and disincentives to cooperation.

Dyer (2018) further stated that the green theory perspective on climate change understand it as a direct consequence of human collective choices. Specifically, these choices have led to historically anthropocentric economic practices of historically arbitrary political groups (state), who have exploited nature in their own short-term interests. Climate change presents a clear case of injustice to both present and future humans who are not responsible for causing it and to the ecosystem as a whole. Therefore, a solution requires an econometric theory of value and more ethical than instrumental attitude to human relations in our common future. Green theory helps us to redefine issues such as climate change in terms of long-term ecological value rather than short-term political interests.

In view of this, Green Theory helps us to re-examine the relationship between the state, the economy and the environment, whereas the Marxian Ecological theory talks about how man's primacy for economy needs has created unfriendly environment. Hence, these two theories are suitable for this article.

Conclusion

No set of policies, no system of incentives and no amount of information can substitute for individual responsibility when it comes to ensuring that our grand-children will enjoy a quality of life that comes from quality environment. Information can provide a basis for action. Vision and ideas can influence perceptions and in spire change: New ways to make decisions can empower those who scale a role in shaping the future. However, all of this will depend on individuals acting as citizens, consumers, investors, managers, workers and professionals can decide that it is important to them to make choices on the basis of a broader, longer view of their self-interest; to get involved in turning those choices into action; and most importantly to be accountable for their action.

The combination of political will, technological innovations, and a very large investment of resources and human ingenuity in pursuit of environmental goals has produced enormous benefits over the past two decades. This is an

achievement to celebrate, but in a world that steadily uses more materials to make more goods for more people, we must recognize that we will have to achieve more in the future for the sake of the future generations. We must move towards a world in which zero defects as become for manufacturing and we must recognize that the pursuit of one set of goals affects others and that we must pursue policies that integrate economic, environmental, and social goals.

Against this backdrop, the arrival of oil and gas exploration and exploitation has induced climate change and also affected socio-economic development of the Ahoada West Local Government Area of Rivers State. Anthropogenic activities involving several oil multinational companies in the study area and its surrounding neighbours; Ahoada East, Abua/Odual and Ogba/Egbema/Ndoni Local Government Areas in the Orashi region of Rivers State as host communities to several oil and gas companies, no doubt will lead to change in the climatic weather system which may be difficult to predict. As the region continued to contribute to the emission of greenhouse gases which lead to global warming, depleting the ozone layers resulting to frequent flooding and erosion and the increase in temperatures leading to drought/dryness, deforestations, desertification and others. Ahoada West is prone to flooding and between 2012, 2016 to 2022 respectively the area has suffered untold hardship.

This article also gathered that before the discovery of crude oil exploitation, the people of Ahoada West were highly dependent on their environment for their sources of livelihood. Hence, the dominant economic activity of the people is trading. Only very few were employed in the industries and in the Civil Service. Though some still engaged in farming and fishing, they work more with little in return. Their fishing and farming have been impaired by the deplorable environment. This is a major cause of poverty in the area.

It is critical to note that infrastructure such as roads, schools, health centres, electricity underground water, the destruction of houses/homes, phobia, fear, death and migration or relocation of most of the people in Ahoada West are major impact of flooding and erosion as a result of induced climate change.

Recommendations

In view of the above, this study recommends as follows:

1) Oil and gas exploration and exploitation activities by the multinational oil companies should abide by the international, Nigeria Climate Change Act of 2021 and all acceptable best practices as to sustain environmental development in their operational fields. Environmental Impact Assessment (EIA) and Environmental Audit Report (EAR) or Environmental Evaluation Assessment (EEA) should be regularly and sincerely carried out in Ahoada West Local Government Area.

2) Government and policy regulators should prevent or mitigates and give relief materials as at appropriate. Water lines or rivers should be train to accommodate more flooding waters. They should build shore protections, canalization, embankments and tree planting as appropriate as to encourage better living conditions for the people of Ahoada West; and

3) This article also recommend that early warning signs of climate change phenomenon and its implications should be effectively communicated to the people, this will encourage preparations and awareness, especially in flood prone areas should be advised to increase their Damp Proof Course (DPC); that is the foundation of buildings in this region should be increase by height of at least 2 meters (6ft) above sea level in Ahoada West Local Government Area of Rivers State, Nigeria.

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