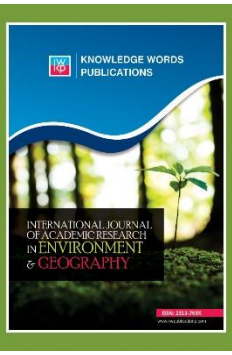

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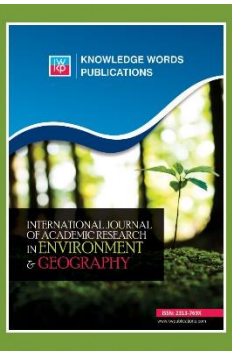

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Climate Change and the Need for Environmental Awareness: A Theoretical Insight

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Abstract

The work explores the intricate relationship that exists between human activities, environmental degradation and climate change. The basic danger associated with climate change is global warming. The work argues that gas flaring and other industrial activities negatively affects environmental quality through degrading influence on climate elements which inturn stresses and deepens global warming in a manner that triggers climate change which eventually results to natural disaster. The natural disaster occurs in form of intense temperature, melting ice bergs, increased rainfall, flooding, sea level rise, severe storms, heat waves, harsh weather, pollution, diseases and infections, degradation, drought and eco-system disruption, etc. The paper argued that this precarious situation arising from climate change will probably be more intense within Africa continent and other developing nations of the world; if the current rising temperature rate of 0.30^{o}C that will generally peak in about 2050 at 6.5^{o}C above the present global average temperature as postulated by IPCC in 2007.

Introduction

The United Nations Frame work on climate change defines climate change as a change of climate which is attributed directly to human activities that alter the composition of the global atmosphere and which is, in addition to natural climate variability-observed over comparable time period (Aliyol, Aketeyon and Ogundele, 2008; Amadike, 2009). It may be said to be a change in the statistical distribution of weather patterns when that change lasts for an extended period of time (ie. decades to millions of years). It could also be referred to a change in average weather of weather around long-term average conditions or in the time variation of weather around long-time average conditions (ie; more or fewer extreme weather events). The latest assessment report of the inter-governmental panel on climate change (IPCC) concluded that, most, of the observed temperature increases since the middle of the 20th century could be linked to increasing concentrations of Green House Gases (GHGs) resulting from human activities such as fossil fuel burning and deforestation (Solomon et al., 2007).

The greenhouse gases (GHGs) enhance the ability of the earth's atmosphere to warm because the gases allow solar radiation to travel through the atmosphere but trap some of the terrestrial radiation in the atmosphere, thereby preventing it from escaping back into space. The effect of these gases causes the earth's temperature to rise, and this rise tends to have increase since the advent of industrialization in 1900s due to increased burning of fossil fuels (Nyelong, 2004). Further significant increases in GHG levels are expected, particularly as developing countries became more industrialized (Ayoade, 2004). This situation seems to be true because as at the end of 2016, the gas flared during oil production in Nigeria alone spanned over 250 field locations and yielded wasted heat and energy equivalent to about $55x10^{s}$kwh, which is approximately equal to all of the total electrical power generated by Power Holding Distribution Company (PHCN) then Nigeria Electricity Power Authority (NEPA) in 1986 (Nyelong, 2004). This is certainly alarming and calls for urgent attention and individual awareness of the unknown climate change disaster and its associated hazards. Today, with the growing economies of most of the industrial nations of the world such as Japan, China, North-Korea, Brazil and India; their contribution to energy demand will account for an increasing proportion of the total global energy demand. Gas flaring and fossil fuels are expected to dominate this increase and the subsequent GHG emissions will in turn lead to rising temperatures. They predict that the effects of climate change will definitely touch on every aspect of life-support on the environment.

Thus, climate change is driven by a warming earth's atmosphere, the temperature of which is currently rising at a rate of $0.30°^{c}$ that will peak in about 2050 at 6.5^{0c} above the present global average temperatures (IPCC, 2007). Mamman (2007) also pointed out that the concern is not only on the natural changes in climate but also on the change induced by human activities levels. This makes climate change one of the greatest environmental problems facing every sector of the environment and the world at large.

Nigeria, like most developing countries is very vulnerable to the impacts of climate change because of its geographical location, size, population and natural topographical nature, particularly, the Niger Delta region of the country being deeply enmeshed in continual flaring of gases. In order to check this inadvertent ugly trend, there is the need to reduce the environmental risk, and adapt properly the environmental policy that will prevent the unlikely environmental disaster that may possibly affect the region.

What this portents is the urgent need for the development of better environmental reporting from both oil industries and non-governmental organizations to create and equip the general public with the needed environmental disaster information; particularly from the oil industries as part of their major corporate social responsibility.

Globally, the issue of environmental accounting, otherwise, known as green accounting or "sustainability reports" has become one of the obligations of corporations to states or host communities where they operate. Environmental guidelines or standards, such as the ones developed by the Netherlands based Global Reporting Initiatives (GRI), should be replicated and entrenched in Nigeria and other third world countries and be reported in their environmental awareness guidelines to ensure that companies report on their toxic waste, oil pollution, gas flaring, corporate energy use, and even carbon emission in the environment.

Therefore, the states, regions and or federal institutions of every nations is saddled with the capacity and the responsibility of environmental protection and management and as such should be strengthened through legislative and financial interventions that will not only act as a check but also as well as sustained capacity building project to enhance their effectiveness in regulating the activities of corporations in the extractive industries that impact negatively on the environment. This no doubt will also require the development of robust synergy between government institutions and civil society groups or other informed watch dogs to ensure independent monitoring and evaluation of cooperate practices of firms to ascertain the degree of their compliance to global best practice in environmental issues in order to reduce if not totally eliminating substance that triggers environmental degradation.

Climate Change and Vulnerability of the Environment to Natural Disaster

One major problem associated with climate change is the vulnerability of the environment to natural disasters hence, a core insight disaster studies can bring to a good exposure to climate-related issues and broaden understanding to areas of venerability which is very critical to the understanding of the nature of disasters (Helmer, 2006:2).

Vulnerability is defined as a set of conditions and processes resulting from physical, social, economical and environmental factors, which determine the susceptibility of a community to the impact of hazards (Schmidt-Thome and Jarva, 2003).

The various activities of man and other spatial industrial influence resulting the stressing and exposing the environment to inadvertent danger; these generate unequal exposure to risk by making either the environment as well as some people more prone to disaster than others, and these inequalities are largely a function of power relations in every nation, see (Hithorst and Bankoff, 2004). This is one major reason why scientists actively work to understand past and future climate by using observations and theoretical models. A climate record-extending deep into the earth's past-has been assembled, and continues to be belief up; based on geological evidence from bore temperature profiles, cores removed from deep accumulations of ice, floral and faunal records, glacial and periglacial processes, stable-isotope and other analyses of sediment layers, and records of past sea levels. In contrast, more recent data are provided by the instrumental record; in fact the general circulation models, based on the physical sciences, are now often used in theoretical approaches to match past climate data, and make future projections, and link causes and effects in climate change. In essence, the problem of vulnerability assessments focus on the identification of all the possible physical social, economic and environmental factors that could contribute to susceptibility of an individual, community, environmental location and or state to natural disaster. Observably, a good number of converging socio-economic, physical and environmental trends are occurring in different locations of the environment as a result of both natural and anthropogenic transformations that are prevalent in a given location which greatly influence the vulnerabilities of areas to environmental disaster, which includes the activities such as exploitation of natural mineral resources (especially petroleum activities), deforestation, pollution, urbanization and industrial development, among others. These negative trends are not only exposing the delicate ecosystem of the environment into harsh climate variability, but are also deepening

such area's vulnerability to natural disasters, (Freedom, 2008). Here disaster simply means exceptional events that suddenly result in large numbers of people killed or injured or large economic losses (Satterthwaite, 2003:80). Currently, with the increasing demand for crude oil for various operational activities different areas now are witnessing phenomenal growth in urbanization with attendant implications for the resilience of the environment, more so, as the rise of oil

cities and oil jobs in the source region have now generated mass migration, urban sprawl, slum housing, traffic congestion, and increased human and industrial pressure on the already precarious environment.

Today virtually every region and or environment of the world irrespective of the natural terrain and hydrology is gradually being exposed to constant threat from certain environmental problems, specially flooding, rise in sea level, melting of ice-bags, siltation, occlusion, erosion, land slide, Hurricanes, shortages of land for development and thunder strikes which has greatly implicated climate change occasioned by global warming. Although it is a fact that various people of the world have lived with these hazards for many years and have evolved ways of dealing with them, the point remains that environmental hazard of any degree remains a big threat to both man and the environment at large. In Nigeria for instance, one of the six risk-scenarios identified and developed by the IPCC directly implicates the vulnerability of the physical location of the Niger Delta to climate change-induced negative impacts. The identified six risk-scenarios are:

1. Water resources, especially in international shared basins where there is a potential for conflict and a need for regional coordination in water management.
2. Food security at risk from declines in agricultural production and uncertain climate.
3. Natural resources productivity at risk and biodiversity that might be irreversibly lost,
4. Vector-and water-borne diseases especially in areas with inadequate health infrastructure.
5. Coastalzones vulnerable to sea-level rise, particularly roads, bridges, buildings, and other infrastructure that are exposed to flooding and other extreme weather events; and
6. Exacerbation of desertification by changes in rainfall and intensified „ land use (IPCC 2001).

Worthy of note among the six predictions for the Niger Delta is the fifth risk scenario, that is, coastal zones vulnerability to sea level rise, particularly roads, bridges, buildings, and other infrastructure that are exposed to flooding and other extreme weather events. The coastal line in Nigeria lies between latitude 40 10′ to 60 20^{N} and longitude 20 45′ to 80 35′^{E}. Nigerian coastal area is lying with heights of not more than 3.0m above sea level and is generally covered by fresh water swamp, mangrove swamp, lagoonal mashes, tidal channels, beach ridges and sand bars (Nwilo and Badejo, 2001).

The Niger Delta region is located in the Atlantic coast of southern Nigeria where River Niger divides into numerous tributaries, the region has a coastline spanning about 450 kilometers, which eventually terminates at the Imo River entrance. The region experiences widespread of flooding because of its topographical nature as in low relief as well as the reduced hydraulic capacities of water channels and intense high rainfall. Again, in the mangrove

swamp forest areas, diurnal tidal movements may result in flooding that is exacerbated by rising sea levels, coastal erosion and land subsidence (UNDP, 2006; 74).

Over the years, research and experience on varying environmental degradation has shown that forest ecosystems play an important role in reducing the vulnerability of communities to disasters, both in terms of reducing their physical exposure to natural hazards and providing therewith the livelihood resources to withstand, cope and recover from hazards. However, with the current reduction of the forest ecosystems, it is estimated that about 20-25% of current annual carbon emissions into the atmosphere result from loss of tropical forest (IPCC, 2007). This fact no doubt indicates that the degradation of these forest ecosystems is exacerbating vulnerabilities around the world. In 1998 and 2005, forest clearing was blamed for a terrifying flooding that killed over 3,000 and caused $20 billion damaged of properties of varying degrees in China (World watch institute, 2002:9).

In the event of sudden climatic induced sea-level rise, the risk of those regions located around the coasta areas of the world being entirely submerged by devastating coasta flooding is most probable given its naturally subsidence prone territory. This is a major reason why long before now a UN report has estimated that about 30 percent of Africa's coasta infrastructure including coastal settlements in the gulf of Guinea, Senegal, the Gambia and Egypt could be inundated by 2085 due to climate change (UNEP, 2006). This precarious situation may likely increase climate-induced rise in the frequency of major influence on storms that may lead to more damage to offshore rigs, coastlines, and coastal industries that majors their activities' of operation within such coastal areas. When this happens, it will create a disastrous atmosphere which will definitely lead to panic and scampering for safety, which inevitably will deepen poverty; induce forced migration; disrupt socio-economic livelihoods, constrain national, regional, and or state revenue of such nation; and consequently may stretch to increase food scarcity in such region and its environment; Japan, North Korea, China had a similar experience in the past, Nigeria also experienced this within ugly situation within the Niger Delta region in 2012.

Ways of Mitigating the Impact of Possible Climate Induced Disasters

Mitigation can be defined as a reduction in how unpleasant serious situation on ground can be curtail and seriously be reduced with the aim of making and bringing such situation under control that seamless serious to the prevailing situation on grand so that it may be less severe. One of the ways of mitigating the impact of possible climate induced disasters is to identify the vulnerable area for possible classification and create the needed awareness. For instance:

1. Geographical location and or environmental location of the possible climate induced disaster area.
2. The likely groups-industrial groups, commercial groups and or vegetation groups that are likely to be affected by the disaster, and the communities -villages cities and or towns with the likely degree of the impact of the disaster.

This has to be done to empower them with the required prerequisite capacity to understand, adapt and cope with any information that may be required for the future disasters. Again, the importance of environmental education and monitoring is no doubt another key mitigating and managing climate change-related disasters. It is important to note that

environmental education is the process by which individuals gain awareness of their environment and acquire the needed knowledge skills, values, and experience, hence, these will be the driving force that will enable people to act individually and collectively to address contemporary and future environmental problems (Jonathan, 2008).

Therefore, it will be helpful and of great need to monitor and educate the people through constant exposure on dangers associated with environmentally influenced climate change impact on man and its environment. Also, for the purpose of environmental monitoring and education, with particular emphasis on climate change, there is the need for the emergence of a community of climate actors, cutting across philanthropic individuals, such as academic institutions, faith based organizations, religious groups, civil society groups, government agencies, community based organizations, and international organizations to lead the challenge of creating the necessary environmental awareness among the citizens. This should be done through the use of schools, mass media, meetings of all kinds, churches, global interactions- through inter-net, consistent publications in order to share information that will bring inhabitants of both rural and urban dwellers to the knowledge needed in understanding climate related environmental hazards.

As a matter of importance, there is need for biodiversity
conservation to aggressively pay the needed attention to reforestation and forestation of degraded land areas in order to mitigate the possible impact of climate induced disasters, with the view of effective legislative control and indiscriminate destruction of both mangrove and rainforest vegetation in the process of resources exploitation. Hence, legislation will help to protect endangered species and enhance proper management of government designated conservation areas which will help to reintegrate and regulate the much needed everpo-transpiration on the general circulatory system as well as reduce the moisture budget deficit on the environment.

Conclusion

This paper trace the complex linkages that exist among anthropogenic (e.g. Increased emissions of greenhouse gases), climate change and environmental degradation. It argues that the substance that influences global warming which is the burning of fossil fuel mainly coal, oil and gas-greenhouse gases has led to the warming, up of the global world and is projected to get much, much worse in 2050 and beyond. The paper notes that much of the natural environment on which (the people) particularly the local people depend is being depleted and degraded, what is more, most of the areas like the sea lines and coastal areas are said to be highly vulnerable with limited ability to adapt and cope to the climate induced environmental hazard.

The paper further contends that one major event of sudden climate induced impact is the sea-level rise, it maintained that the risk of those regions leaving along coastal areas are likely to be entirely submerged by devastating coastal flooding.

All literatures reviewed agreed on the global implications of continuous gas flaring on the environment which urgently needs mitigation in order to avert an impending

consequences, since it appears that control of gas flaring and its emissions remains elusive, yet it was seen as a major contributor that influence and trigger climate change which invariably induce environmental hazard.

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