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The Causes of Climate Change are Local but the Impacts are Global

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ABSTRACT

Climate change is caused by factors such as biotic processes, variations in solar radiation received by earth, plate tectonics, and volcanic eruptions. Certain human activities have also been identified as significant causes of recent climate change, often referred to as "global warming". The climate change phenomenon can easily be understood as a by-product of globalization. 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 less understood, it is however, clear that, it poses fears 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. This paper elaborately examines the view that the causes of climate change are localised but the impacts are global. The causes, Scenarios and impacts of climate change are also discussed.

Keywords: Climate Change, Causes, Global localised

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 (Oladipo, 2009).

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 (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.

CONCEPT OF CLIMATE CHANGE AND GLOBAL WARMING

Climate change is a change in the earth's weather, including change in temperature, wind patterns and rainfall as a result of the increase in the temperature of the earth's atmosphere that is caused by the increase of GHGs especially carbon dioxide (Yusuf, 2015). In other words climate change is a long-term shift in the climate of a specific location, region or planet. The shift is measured by changes in 3 features associated with average weather such as temperature, rainfall (amount and pattern) and show, wind pattern lasting for decades or longer (Yusuf, 2015).

The concept of climate change has to be linked with green house effects i.e natural effect and accelerated effects. The natural effect is a blessing (Gambo, 2015) while the accelerated is what causes global warming. Climate change refers to general shift in climate including temperature, precipitation, winds and other factors. Whereas Global warming (as well as global cooling) refers specifically to any change in the global average surface temperature (Yusuf 2015).

METHODOLOGY

This paper is aimed at reviewing the existing literature on causes, Scenarios and impacts of climate change. Structured literature review was the main methodology employed in this research; literatures such as Published books, Journals as well as internet services and other relevant publication were consulted with regard to the view that the causes of climate change are local but the impacts are global.

CAUSES OF CLIMATE CHANGE

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 2100. Even with the best mitigation efforts, some climate change cannot be avoided due to the inertia of the global climate system (IPCC Report, 2009).

The causes of climate change can be broadly seen as natural and anthropogenic causes.

The natural causes includes changes in Earth's climate naturally i.e by changes in the intensity of sunlight reaching the earth causing cycles of warming and cooling that have been a regular feature of the earth's climate history; variations in ocean currents and large eruption of volcanoes.

The anthropogenic causes include increase in GHGs caused mainly by burning of fossil fuels, emissions from machines (releases CO₂) and agricultural practices (releases methane and nitrous oxide).

CLIMATE CHANGE SEENARIOS

Scientists projected to produce five possible scenarios for future climates, should in case the GHGs are not reduced and symbolized (Yusuf, 2015). These are 4 assumption of what may like happens in various part of the world should the global average temperature rises to 1.0, 2.0, 3.0, 4.0 or even 5.0 (Yusuf, 2015).

THE 10°C TEMPERATURE RISE

These effects would be more in low-lying island states. The Arctic sea ice as already disappearing and after a 10° C global average temperature rise, it would disappear for good in the summer months. Heat waves and forest fire will become more common in the sub-tropics-worst-hit will be the Mediterranean region, southern Africa, Australia and South-west United States.

THE 2°C TEMPERATURE RISE

This is the temperature limit the scientists assume as the biggest tolerance. The heat waves seen in Europe during 2003, which killed tens of thousands of people, will come back every year with a 2°C global average temperature rise. Southern England will regularly see temperatures around 40°C in summer. The Amazon turns into desert and grasslands, while increasing CO₂ levels in the atmosphere make the world's oceans too acidic for remaining coral reefs and thousands of other marine life forms. More than 60 million people, mainly in Africa, would be exposed to higher rates of malaria.

Agricultural yields around the world will drop and half a billion people will be at greater risk of starvation. The West Antarctic ice sheet collapses, the Greenland ice sheet melts and the world's sea level begins to rise by seven meters, over the next few hundred years. Glaciers all over the world will recede, reducing the fresh water supply for major cities including Los Angeles. Coastal flooding affects more than 10 million extra people. A number of the world's species will become extinct as the 2°C rise changes their habitats too quickly for them to adapt.

THE 3°C TEMPERATURE RISE

After a 3°C global temperature rise, global warming may run out of control and efforts to mitigate it may be in vain. Millions of square kilometers of Amazon rainforest could burn down, releasing carbon from the wood, leaves and soil and thus making the warming even worse, perhaps by another 1.5°C. In southern Africa, Australia and the western US, desert takes over. Billions of people are forced to move from their traditional agricultural lands, in search of scarcer food and water. Around 20-40% less water will be available in Africa and around the Mediterranean. In the UK, summers of droughts are followed by winter floods. Sea levels rise to engulf small islands and low-lying areas such as Florida, New York and London. The Gulf Stream, which warms the UK all year round, will decline and changes in weather

patterns will lead to higher sea levels at the Atlantic coasts.

THE 4°C TEMPERATURE RISE

At this stage, the Arctic permafrost enters the danger zone. The methane and carbon dioxide currently locked in the soils will be released into the atmosphere. At the Arctic itself, the ice cover would disappear permanently meaning extinction for polar bears and other native species that rely on the presence of ice. Further melting of Antarctic ice sheets would mean a further melting of Antarctic ice sheets would mean a further 5m rise in the sea level submerging many island nations. Italy, Spain, Greece and Turkey become deserts and mid-Europe reaches desert temperatures of almost 50°C in summer. Southern England's summer climate could resemble that of modern southern Morocco.

THE 5°C TEMPERATURE RISE

It is regarded as highly unlikely and could be a "nightmare scenario" with a 5°C rise, global average temperatures would be hotter than for 50m years. The Arctic region sees temperatures rise much higher than average - up to 20°C - meaning the entire Arctic is now ice free all year round. Most of the tropics, sub-tropics and even lower mid-latitudes are too hot to be inhabitable. The sea level rise is now sufficiently rapid that coastal cities across the world are largely abandoned. Above 6°C there would be a danger of "runaway warming", perhaps spurred by release of oceanic methane hydrates. Could the surface of the Earth become like Venus, entirely uninhabitable? Human population would be drastically reduced.

AN OVERVIEW OF CLIMATE CHANGE IMPACTS AT GLOBAL SCALE

Scientists now know for certain that the earth has been warming for the past century (NASA, 2005). They know that human activities mainly the burning of coal, and oil have dramatically increased concentration of heat trapping gases in the atmosphere. And they understand the science of how these gases are causing the

observed warming. As a result they predict that the world will continue to warm in the centuries ahead with significant impacts on sea level and weather patterns, and consequences for human health, ecosystem and the economy.

Avoiding the most severe substantial reduction in emission of the green house gases that are contributing to climate change (NASA, 2005).

AN OVERVIEW OF CLIMATE CHANGE IMPACT IN AFRICA DRY LANDS

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. (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 She! 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).

AN OVERVIEW OF CLIMATE CHANGE IN NIGERIA SITUATION

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).

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.

The following are some of the global impacts of climate change.

GLOBAL TEMPERATURE (THE EARTH IS WARMING):

The world is getting warmer Average global temperature have risen by more than 1 degree Fahrenheit over the past century with average warming of as much as 4 degrees Fahrenheit in some regions (IPCC, 2007).

Accompanying the increased temperature at the earth's surface has been a significant rise in ocean temperature to a depth of 700 meter (NASA, 2005) scientist from the U.s National Oceanic and Atmospheric Administration have demonstrated that the ocean as a whole has been warming for the past five decades.

The increases in global temperature will continue in the decades ahead; scientists say. According to the International Panel on Climate Change (IPCC), which includes more than 2,000 scientist from the United States and other countries, over the next century, average global temperature will rise by two and a half to ten degrees Fahrenheit.

INCREASE IN GREEN HOUSE GASES

Global temperature have experienced natural shift throughout human history (IPCC, 2007). For example, the climate of the Northern Hemisphere varied from a relatively warm period between the eleventh and fifteenth centuries to a period of 8 cooler temperatures between the seventeenth century and the middle of the nineteenth century.

Many of the predictions that scientist have made in the past about the impacts of climate change are already upon us.

RISING SEA LEVEL

Among the most serious and potentially catastrophic impacts of climate change in sea level rise;; caused by a combination of melting glaciers all over the world and the “thermal expansion” of the seas as ocean warms. Rising sea level will have severe impacts in low-lying coastal communities throughout the world.

In Bangladesh, for example, even a one-meter rise would inundate 17 percent of the country. In the United States where 54 percent of the population lives close proximity to the ocean, the most vulnerable areas are the southeast and Mid-Atlantic coasts. Also at the risk are low lying areas and bays such as North Carolina’s Outer Banks; the Florida coast, and much of southern California.

MELTING POLAR ICE

The decline of the Greenland ice sheet was the focus of a February 2006 article in the Journal science. “Using new Satellite-based measurements, researchers showed that the second largest land-based ice sheet in the world is losing the twice as fast as scientist had estimated. A complete melting of this ice sheet could raise global sea level of almost 20 feet within a hundred years, a level that would permanently flood virtually all of America’s Coastal Cities.

CHANGING WEATHER PATTERNS

Scientist predict that climate change have a significant effect on global weather patterns, causing both more floods and more drought.

Extended heat waves, more powerful storms, and other extreme weather events have become more common in recent years and will continue on this trend. These changes in weather pattern will have serious and potentially severe impacts on human societies and the natural world.

DROUGHT AND FLOODING

Droughts and flooding are other weather impacts from climate change which include a high climate change which include a high incidence of drought and flooding and changes in precipitation patterns. According to the international panel on climate change, the future changes in weather patterns will affect different regions in different ways, for instance farms and forest may be more productive in some regions and less productive in some regions and less productive at others.

Among the reason, Precipitation will increase in high-latitude regions of the world in summer and winter while southern Africa, Australia, and Central America may experience consistent decline in winter rainfall. As a result of these changes agriculture in developing countries will be especially at risk.

CONCLUSION

Although for the large developed nations are responsible for climate change and have contributed most of global emissions, it is poorer people in the developing nations who will suffer the most and pay for the catastrophic impacts of climate change.

Moreover, the impact of climate change on broader human security and poverty could be very significant, as so many African livelihoods are dependent on rain-fed agriculture.

The risk of violent conflict in countries where populations live in fragile and unstable conditions that make them vulnerable to climate change impacts are real.

As pressure for fresh water supplies rises due to climate change, pollution, access to water, and its allocation and use are becoming increasingly critical concerns that may have

profound consequences for societal stability in the world.

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