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# WHY IS CLIMATE CHANGING ? IS THERE ANY REMEDY IN LAW ?

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## 1.0 INTRODUCTION

Climate change is a change in the statistical distribution of weather over periods of time that range from decades to millions of years. It can be a change in the average weather or a change in the distribution of weather events around an average (for example, greater or fewer extreme weather events). Climate change may be limited to a specific region, or may occur across the whole Earth.

Anthropogenic climate change has a number of wide-ranging impacts on the natural environment and on society, with various human activities and sectors of society contributing to increased concentrations of greenhouse gases in the atmosphere. Different aspects of the problem are covered by a range of international legal instruments, covering topics such as biological diversity, desertification, ozone depletion, oceans and seas, energy, and trade and investment. Notwithstanding these diverse instruments, the main body of international law on climate change is to be found in the United Nations Framework Convention on Climate Change (UNFCCC 1992) and its Kyoto Protocol (Kyoto Protocol, 1997), as well as the decisions taken by the Conference of the Parties (COP) to the UNFCCC and the Conference of the Parties serving as Meeting of the Parties (COP/MOP) to the Protocol.

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## 1.1 BACKGROUND STUDY OF CLIMATE CHANGE

Climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. The climate change problem is related to changes in the concentration of the greenhouse gases (water vapor, CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, and CFCs), which trap infrared radiation from the Earth's surface and thus cause the greenhouse effect. This effect is a natural phenomenon, which helps maintain a stable temperature and climate on Earth. Human activities, such as fossil fuel combustion, deforestation, and some industrial processes have led to an increase in greenhouse gases concentration. Consequently, more infrared radiation has been captured in the atmosphere, which causes changes in the air temperature, precipitation patterns, sea-level rise, and melting of glaciers.

## 2.0 CAUSES OF CLIMATE CHANGE

Climate change is caused by both natural and human induced activities which are as follows;

### PLATE TECTONICS

Over the course of millions of years, the motion of tectonic plates reconfigures global land and ocean areas and generates topography. This can affect both global and local patterns of climate and atmosphere-ocean circulation.

The position of the continents determines the geometry of the oceans and therefore influences patterns of ocean circulation. The locations of the seas are important in controlling the transfer of heat and moisture across the globe, and therefore, in determining global climate. A recent example of tectonic control on ocean circulation is the formation of the Isthmus of Panama about 5 million years ago, which shut off direct mixing between the Atlantic and Pacific Oceans. This strongly affected the ocean dynamics of what is now the Gulf Stream and may have led to Northern Hemisphere ice cover. During the Carboniferous period, about 300 to 360 million years ago, plate tectonics may have triggered large-scale storage of carbon and increased glaciation. Geologic evidence points to a "mega monsoonal" circulation pattern during the time of the supercontinent Pangaea, and climate modeling suggests that the existence of the supercontinent was conducive to the

The size of continents is also important. Because of the stabilizing effect of the oceans on temperature, yearly temperature variations are generally lower in coastal areas than they are inland. A larger supercontinent will therefore have more area in which climate is strongly seasonal than will several smaller continents or islands.

## **SOLAR OUTPUT**

The sun is the predominant source for energy input to the Earth. Both long- and short-term variations in solar intensity are known to affect global climate. Three to four billion years ago the sun emitted only 70% as much power as it does today. If the atmospheric composition had been the same as today, liquid water should not have existed on Earth. However, there is evidence for the presence of water on the early Earth, in the Hadean and Archean eons, leading to what is known as the faint young sun paradox. Hypothesized solutions to this paradox include a vastly different atmosphere, with much higher concentrations of greenhouse gases than currently exist. Over the following approximately 4 billion years, the energy output of the sun increased and atmospheric composition changed, with the oxygenation of the atmosphere around 2.4 billion years ago being the most notable alteration. These changes in luminosity, and the sun's ultimate death as it becomes a red giant and then a white dwarf, will have large effects on climate, with the red giant phase possibly ending life on Earth.

Solar output also varies on shorter time scales, including the 11-year solar cycle and longer-term modulations. Solar intensity variations are considered to have been influential in triggering the Little Ice Age, and some of the warming observed from 1900 to 1950. The cyclical nature of the sun's energy output is not yet fully understood; it differs from the very slow change that is happening within the sun as it ages and evolves. While most research indicates solar variability has induced a small cooling effect from 1750 to the present, a few studies point toward solar radiation increases from cyclical sunspot activity affecting global warming.

## **ORBITAL VARIATIONS**

Slight variations in Earth's orbit lead to changes in the seasonal distribution of sunlight reaching the Earth's surface and how it is distributed across the globe. There is very little change to the area-averaged annually averaged sunshine; but there can

be strong changes in the geographical and seasonal distribution. The three types of orbital variations are variations in Earth's eccentricity, changes in the tilt angle of Earth's axis of rotation, and precession of Earth's axis. Combined together, these produce Milankovitch cycles which have a large impact on climate and are notable for their correlation to glacial and interglacial periods, their correlation with the advance and retreat of the Sahara, and for their appearance in the stratigraphic record.

## **VOLCANISM**

Volcanism is a process of conveying material from the crust and mantle of the Earth to its surface. Volcanic eruptions, geysers, and hot springs, are examples of volcanic processes which release gases and/or particulates into the atmosphere. Eruptions large enough to affect climate occur on average several times per century, and cause cooling (by partially blocking the transmission of solar radiation to the Earth's surface) for a period of a few years. The eruption of Mount Pinatubo in 1991, the second largest terrestrial eruption of the 20th century (after the 1912 eruption of Novarupta) affected the climate substantially. Global temperatures decreased by about 0.5 °C (0.9 °F). The eruption of Mount Tambora in 1815 caused the Year Without a Summer.[23] Much larger eruptions, known as large igneous provinces, occur only a few times every hundred million years, but may cause global warming and mass extinctions.

Volcanoes are also part of the extended carbon cycle. Over very long (geological) time periods, they release carbon dioxide from the Earth's crust and mantle, counteracting the uptake by sedimentary rocks and other geological carbon dioxide sinks. According to the US Geological Survey, however, estimates are that human activities generate more than 130 times the amount of carbon dioxide emitted by volcanoes.

## **OCEAN VARIABILITY**

The ocean is a fundamental part of the climate system. Short-term fluctuations (years to a few decades) such as the El Niño Southern Oscillation, the Pacific decadal oscillation, the North Atlantic oscillation, and the Arctic oscillation, represent climate variability rather than climate change. On longer time scales, alterations to ocean processes such as thermohaline circulation play a key role in redistributing heat by carrying out a very slow and extremely deep movement of water, and the

long-term redistribution of heat in the world's oceans.

## HUMAN INFLUENCES

Anthropogenic factors are human activities that change the environment. In some cases the chain of causality of human influence on the climate is direct and unambiguous (for example, the effects of irrigation on local humidity), while in other instances it is less clear. Various hypotheses for human-induced climate change have been argued for many years. Presently the scientific consensus on climate change is that human activity is very likely the cause for the rapid increase in global average temperatures over the past several decades. Consequently, the debate has largely shifted onto ways to reduce further human impact and to find ways to adapt to change that has already occurred.

Of most concern in these anthropogenic factors is the increase in CO<sub>2</sub> levels due to emissions from fossil fuel combustion, followed by aerosols (particulate matter in the atmosphere) and cement manufacture. Other factors, including land use, ozone depletion, animal agriculture and deforestation, are also of concern in the roles they play - both separately and in conjunction with other factors - in affecting climate, microclimate, and measures of climate variables.

### 3.0 CLIMATE CHANGE AND THE NIGERIAN LAW

The Nigerian government had made several efforts in the past on environmental protection which was focused on the safety, protection and conservation of the economically important natural resources of the nation.<sup>1</sup> In fact, in 1988, the Federal Government in a bid to protect against the misuse of the environment established the

<sup>1</sup> *Oil Pipeline Act 1958, Forestry Act 1958, Destruction of Mosquitoes Act 1958, Public Health Act 1958, Mineral Act 1958, Mineral Oil Safety Regulations Act 1963, Oil in Navigable Water Act 1963, Endanger Species Act 1990 Quarries Act 1990 Sea Fishery Act 1990 etc.*

Federal Environmental Protection Agency (FEPA).<sup>2</sup> And with the establishment of the Agency, State Environmental Protection Agencies and Local Government Environmental Protection Agencies was set up in all the states of the Federation.<sup>3</sup> The major function of the agencies are to control the use of the environment and to check the misuse of same.

The Nigerian Constitution<sup>4</sup> outlines provision for state to protect and improve the environment. Also in 2007, the National Assembly enacted a law creating the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act (NESREA). However, the major problems that impede access to environmental justice in Nigeria are the operation of the rules of burden and standard of proof.<sup>5</sup>

The law as if affect climate change is being constructed at the intersection of several areas of law, including environmental law, energy law, business law, and international law. Any effort to address climate change also raises issues about the proper role of state, local, and federal. International environmental laws have a key source: the international treaties among states. These include:

- Conventions: These set binding obligations on the Party states.
- Framework treaties: These regulate very general principals.
- Protocols: these deal with technical details.

If an unwritten international legal rule is followed and accepted by a number of party states over a period of time as their moral and legal obligation, this legal rule becomes customary law. For example, in the case where a particular commitment to act is repeatedly expressed in international conferences, and if participating countries decide to act on it, the commitment then becomes an obligation under customary law.

Over recent decades we have witnessed the emergence of an international legal framework recognising the environmental and human impacts of climate change,

2 *The 1972 Stockholm conference on Human Environment that was attended by Nigeria ignited the Lagos plan action of 1980 and also reinforce the emergence of the Federal Environmental Protection Agency (FEPA) now Federal Ministry of Environment with effect from September, 1999*

3. *Decree 58 of 1988.*

4 *Section 20(1) of the Nigerian Constitution 1999.*

5 *N Joseph, Access to Environmental Justice in Nigeria(Lead City University Journal, Vol. 1, Pt. 1, 2008) p. 18.*

identifying differentiated responsibilities between states, and (mostly) agreeing to initial emission reduction targets. The principle of equity has subtly influenced the development of the international climate change regime, but there now exists a more conscious and overt shift towards promoting ideas of justice and fairness within climate change law. Due to the complex and integrated nature of the problem, heavy reliance is placed on the principle of cooperation within climate change law. However, it is argued that solidarity potentially offers a more composite and mature principle that better reflects the diversity and complexity of our international society.

New laws and policies to respond to the challenges of climate change are emerging at a frenetic pace. Domestic and international measures are already imposing obligations on and providing opportunities for businesses and other large organisations, while even more significant developments lie in wait. As the new Federal Government begins to implement its climate change agenda, and as the international community begins to negotiate the next phase in the global climate change response, businesses and public bodies need to come to grips with how these new laws and proposed policies will affect their organisations. The developing patchwork of climate change laws is of particular relevance to citizens because they are large users of energy and also suffers the impact. They may therefore be required to comply with regulatory requirements, such as emissions reporting, and will need to weigh the effects of new regimes, such as emissions trading, on their budgeting and investment decisions, and approach to contracting and risk.

The concept of solidarity has a long history within political and sociological scholarship. Traditionally associated with the law of obligations, solidarity has emerged to represent a principle of mutual responsibility (or mutuality) focused on the relationship between the individual and society. However, owing to the lack of any 'explicit and coherent theoretical tradition of its use as a systematic term', solidarity is widely used but notoriously difficult to define. In its broadest sense, solidarity describes the relationship or dynamics within a community, and the commitment towards cooperation, support and (re)distribution so as to ensure that less fortunate members of the community are provided for. In this way, solidarity might be viewed as 'the principle that the strength of a society is measured by the extent that its rich members support their vulnerable fellow citizens'.



This clearly resonates with the problem presented by climate change where there exists vast inequity in terms of capacity to adapt to and mitigate climate change, along with disparate contributions in terms of greenhouse gas emissions. Thus, on the face of it, the concept of solidarity presents a potential mechanism for the redistribution of resources and responsibilities within the global community so as to achieve a more equitable and justice-orientated response to climate change.

The effect that climate change will have on human rights has received little attention in international climate change debates. This is now changing. A growing number of recent studies, in particular the March 2009, Office of the United Nations High Commissioner for Human Rights (OHCHR) study on climate change and human rights have documented that climate change is set to impact human rights on a massive scale.<sup>6</sup> The human costs of climate change born as a result of increasing droughts, water shortages, the spread of tropical and vector born diseases, which in turn lead to growing migration and conflict, directly threaten fundamental human rights; such as the rights to life, to food, to shelter and work. Moreover, it is the poorest countries and the rights of vulnerable social groups, including elderly people, disabled people and marginalised communities, which are particularly at risk.

#### 4.0 CONCLUSION

The impact of climate change on law and that of law on climate change cannot be over emphasized and can also not be ignored. The mitigation aspects of averting or reducing the effects of climate change on the populace will be aided and guided by the rule of law. Therefore remedies to climate change can also be found in law. Unfortunately however, the main harms caused by climate change although by no

6 Houghton, John Theodore, ed (2001). "Appendix I Glossary". *Climate change 2001: the scientific basis: contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, UK: Cambridge University Press. ISBN 0-521-80767-0. <http://www.ipcc.ch/ipccreports/tar/wgl/518.htm>. And [http://en.wikipedia.org/wiki/Climate\\_change](http://en.wikipedia.org/wiki/Climate_change). also see <http://www.minterellison.com/public/connect/Internet/Home/Legal+Insights/Newsletters/Previous+Newsletters/A-D-Climate+change+law?>

means the only ones are to economic, social and cultural rights,<sup>7</sup> but these rights do not enjoy robust protective mechanisms under international law. At present, they are routinely violated throughout the world; climate change will make the fulfillment of these rights significantly more difficult, and so put immense extra strain on an area of law that is already weak. Unless the international framework for the protection of these rights were substantially strengthened through the creation of something like a global welfare system (a utopian idea in the present climate) it is hard to see how it can cope with the extra stress of climate change.

## 5.0 RECOMMENDATIONS

Though climate change is more of science based problem, but from the foregoing discussion in this paper, the solution to the resultant climate catastrophe seems to go beyond scientific solution alone. For this, the following recommendations are made for effective control of human manipulation of the climate and its resultant negative effect on human as well as nature:

- Enactment of a bill by both the National and State Assemblies against the human manipulation of nature that can result in health hazard on man or nature. Therefore, any human effort that may result in the continuing changing of climate and its resultant adverse effect should attract stiff penalties.
- Not only that, the regulation on controlling the hazardous effect of the climatic/atmospheric changes should clearly be spelt out on various headings such as mean and extreme causes focusing on man, atmosphere, biological, ecological, geographical and general scientific causes and the level of the resulting damage and both the effect and sanctions including the guiding laws should be based on this headings.

<sup>7</sup> IPCC, *Fourth Assessment Report, Climate Change 2007: Synthesis Report*: <http://www.ipcc.ch/>. See OHCHR Webpage on *Climate Change and Human Rights*: <http://www2.ohchr.org/english/issues/climatechange/study.htm>. Also see UNDP, *Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in a Divided World*, UNDP 2007: <http://hdr.undp.org/en/reports/global/hdr2007-2008/>

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- Furthermore, Lawyers should be more vocal in leading the crusade against the damaging of the environment. This is necessary, considering the fact that, lawyer are the acclaimed rights advocates all over the world, lending their voice to this crusade may attract global sympathy and the destruction of climate may reduce if not totally eliminated.
- Further still, it is highly recommended that both local and international legislations that will provide for adequate compensation for any victim of humanly induced climatic change should be put in place.
- Finally, lectures symposia, seminars conferences and workshops like this on tropical issues relating to climate change and its effect on both human and nature should be encouraged.