

Law and Climate Change in Nigeria



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CLIMATE CHANGE AND HUMAN HEALTH: MIGRATION AS ADAPTATION

BY

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ABSTRACT

Increased anthropogenic activities have contributed to the high increase in the rate of gaseous emissions into the atmosphere. The rapid increase in world population has been a major factor. The current world population which has skyrocketed and almost doubles what it used to be some years ago is a contributor of note. This increased environmental pollution which, in turn, has caused climate change. The need for the understanding of Migration, as an adaptation strategy to climatic change is clearly pointed out. The inconsistency in government policy and lack of understanding of the major factors of climate change in developing countries would appear to have encouraged the continued dependence on fuel wood to meet their domestic energy requirements. Tree planting efforts to decrease the effects of ozone layer depletion can only yield desired results if all countries strictly adhere to the Kyoto Protocols.

I. INTRODUCTION

The long-term good health of populations depends on the continued stability and functioning of the biosphere's eco-physical systems often referred to as life-support systems. This is so particularly at a time when man is becoming increasingly urbanized and distanced from these natural systems.¹⁰⁸¹ An integral part of these complex life supporting processes is the global climate system, which is now

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1081 McMichael A.J. (2003) in McMichael A.J. et al 'Climate Change and Human Health: Risks and Responses', WHO, Geneva.

becoming increasingly pressurized under the weight of human numbers and economic activities. Increased anthropogenic activities worldwide have contributed to the high increase in the rate of gaseous emissions into the atmosphere in recent times. As a matter of fact, this constitutes the major source of atmospheric pollution and it is also a fact that pollution has been the major cause of climate change.¹⁰⁸² The Intergovernmental Panel on Climate Change (IPCC) emissions inventory methods also consider unsustainable use of fuel wood to be a source of net carbon dioxide (CO₂) emissions.¹⁰⁸³

There is the need to continuously enlighten the populace about the environment, its quality and the impact of mans' habits and attitudes on its sustained quality. Practices like tree planting exercises should be augmented with policy decisions like affordable pricing for kerosene as fuel in domestic cooking to safeguard our forests.¹⁰⁸⁴ Also the Stern Review¹⁰⁸⁵ and IPCC Fourth Assessment Reports¹⁰⁸⁶ both state the adverse impacts of climate change on people's health, safety and livelihoods. The predicted climate change will create barriers to future poverty reduction and reverse many of the important socio-economic gains made by developing countries. Climate Change knows no borders and those without forests may even be greater victims and perhaps find it more difficult to adapt.¹⁰⁸⁷ The impacts of climate change on population distribution and mobility is attracting growing interests as well as debates. The Intergovernmental Panel on Climate Change (IPCC) posited as early as 1990 that "the gravest effects of climate change may be those on human migration". Migration is often seen as the result of a failure to adapt to a given situation. Frequently cited figures estimate that by 2050, the number of people forced to move

1082 Hart J., 'Global Warming' in Microsoft Encarta 2006 (CD) (Microsoft Corporation, Redmond, W.A 2005).

1083 UNEP et al, in Von Maltitz G.P. and Scholes R.J. (1995) 'The Burning of Fuelwood in South Africa' (Kluwer Academic Publishers, 1995).

1084 Abdullahi J. et al 'Rural-Urban Migration of the Nigerian work populace & Climate Change effects on food Supply: A case study of Kaduna city in Northern Nigeria', Fifth Urban Symposium, 2009.

1085 Stern Review Team 'What is the Economics of Climate Change?' (HM Treasury, London 2006).

1086 IPCC, 'Climate Change 2007: Mitigation: 4th Assessment Report', BM. Ogunlade et al (eds) (Cambridge University Press, UK, 2007).

1087 Maathai W., 'Africa: Continent Must Protect Forest to Mitigate Global Warming', The Citizen (Dar es Salaam 2009). Distributed by All Africa Global Media (allafrica.com).

'environmental refugees', primarily because of climate change could be as many as 200 million.¹⁰⁸⁸

Migration, however was and always has been an integral part of the interaction of humans with their environment. It should also be recognized as a possible adaptation strategy, especially at the early stages of environmental degradation. Migration reduces reliance on the environment for livelihoods by allowing for income diversification through remittances. The contributions of migrants through the transfer of knowledge and skills upon return can also significantly strengthen the livelihoods of families and communities facing environmental challenges. In Ghana, migration from the north to the south is a typical strategy to deal with structural scarcities of rainfalls, food and land; though, these movements actually decline during times of severe drought and food crises. Also in Drought-prone villages in Burkina Faso before the political instability in Cote d'Ivoire in 1999, Burkina Faso regularly and in large numbers sent members of the community to Cote d'Ivoire to work on plantations. The remittances they sent home were often invested in water and irrigation systems, schools and hospitals.¹⁰⁸⁹ Migration is a possible response to climate risks, and not everyone exposed to risk will respond by migrating.¹⁰⁹⁰ Others may not adapt and may not be able to or may choose not to migrate, and so experience livelihood decline, increased health problems and declining life expectancy.¹⁰⁹¹

To make matters worse, the most rigorous mitigation will not prevent near-term impacts because significant temperature rises and climate change are already locked in from past emissions. This makes the case for vigorous adaptation measures to be in place over the next few decades to improve the resilience of vulnerable communities.

II. WHAT IS CLIMATE?

¹⁰⁸⁸ Myers N., 'Environmental Refugees: An Emerging Security Issue', Presented at: 13th Economic Forum, Prague, 23-27, May 2005. See also Stern Review Team, *op. cit.*

¹⁰⁸⁹ IOM, 'Migration, Climate Change and the Environment', IOM Policy Brief, May 2009.

¹⁰⁹⁰ Adamo S., 'Addressing Environmentally Induced Population Displacements: A Delicate Task', Background Paper for Cyber Seminar on Environmentally Induced Population Displacements, Population-Environment Research Network, August 2008. See also Black R., 'Environmental Refugees: myth or reality? New issues in Refugee Research', Working Paper No.34, University of Sussex, UNHCR Evaluation & Policy Analysis Unit, Geneva 2002.

¹⁰⁹¹ Kothari U., 'Staying Put and Staying Poor?' *Journal of International Development* (2003) 15: 645-657.

From the foregoing, human activity has become a major force in affecting the process of climate change. Climate refers to the average weather conditions of a given geographical area studied over a period of time (usually some 35/40 years). Usually, parameters such as temperature, rainfall, humidity, wind (Speed and direction), evaporation, evapo-transpiration etc are used in expressing weather conditions. It is when noticeable changes are observed that experts bring this to the notice of mankind.

III. GLOBAL WARMING: REAL OR UNREAL?

The Earth's Climate has always changed naturally, and equilibrium has always been found. The major concern today is the effect of anthropogenic activities on the process of warming of the climate. That there is global warming is unequivocal. A report by 600 scientists from 40 countries concluded in summer of 2007 that even the most skeptical opponents of climatic change cannot easily deny it any more.¹⁰⁹² With the broad variety of its impacts to human health, climate change "has been described as one of the most significant environmental challenges the world has ever faced".¹⁰⁹³

At the local level, you will notice that when many people sleep in a room the temperature is usually warmer. It is also warmer in urban centres than in the villages. The reasons are not farfetched. It is the same concept of increased heat generation that has resulted in climate change. However the process is different.

IV. CONCEPT OF GREEN HOUSE EFFECT

A typical and easily understandable description of the green house effect is given by what happens when a car is parked outside in the sun. The interior part of the car becomes heated up.¹⁰⁹⁴ What happens in such a situation is that the sun's ray that enters the car gets trapped inside the car and note, studies have shown that items like butter, candles etc can melt depending on the length of exposure to sun's rays and time of the day. Thus, the sun's ray which comes in the form of short waves becomes

¹⁰⁹³ Begley S., 'The Truth about Denial', *Newsweek*, August 13, 2007, pp. 36-43.

¹⁰⁹³ Chan L.H.M., 'Food Safety and Food Security in the Canadian Arctic', *Meridian Fall/Winter 2006*, pp. 1-3.

¹⁰⁹⁴ Oyegun R.O., 'Insulation Hazard in Unshaded Car Park in the Tropics: A Case Study of Ilorin, Nigeria', (1982) *Weather Vol. 37, No. 9*, pp. 260-262.

heat in form of long waves, which cannot escape through the glass of the car. The trapped radiation is what generates the heat that melts the candle and damages some other items kept in the car. Can we for a moment imagine the car as the Planet Earth? Indeed, the scenario just created is similar to what happens on earth. Also, Botkin and Keller¹⁰⁹⁵ see green house effect as analogues of global warming because of its process of heat trapping or warming.

V. THE PLANET EARTH.

The Earth which is the third of the nine planets known to mankind has an average temperature of 15 degree centigrade. It is also about 150,000,000 km away from the sun, the same distance as the moon from the sun. While the moon is cold, the earth is hot. What then can be responsible for this? The only plausible explanation is the fact that the Earth has the atmosphere whereas the moon does not.

Surrounding the earth are layers of heat-absorbing gases (greenhouse gases). Such gases include Nitrogen, Oxygen, Carbon-dioxide, Ozone and the like. These gases together form a type of layer or blanket surrounding the earth and they help to moderate the atmospheric temperature on the surface of the earth. The ozone layer in particular acts as an absorbent layer for ultraviolet rays from the sun.

VI. CLIMATE CHANGE: ITS CAUSES.

However, with increase in human population; increasing industrialization and transportation and increased consumption of hydro-carbon, the emergence of petrochemical industries; CFC gases used in refrigerators; nuclear power and generation of carbon monoxide have resulted in the increased production of ozone depleting gases. These ozone depleting gases and some photochemical reactions tend to reduce the ozone layer. In other words, there is a reduction not only in its thickness, but in addition, it also punctured holes in the ozone layer. The consequence is that ultra violet rays which hitherto was absorbed by the ozone layer now has the opportunity of direct access to earth. This has led to increase in the occurrence of skin cancer and increased temperature.

Huge volumes of fossil fuels in the form of gasoline, oil, coal and natural gas that are

¹⁰⁹⁵ Botkin B.D. and Keller A.E., "The Atmosphere; Climate and Global Warming", *Environmental Science, Earth as a Living Plant* (1998) 2 pp. 440-463.

consumed everyday end up releasing carbon-dioxide into the atmosphere. These emissions generated by human activities accentuate the natural 'greenhouse effect'.

The unprecedented speed of change in greenhouse gases and effect is threatening social and environmental systems that cannot adjust at the same pace. More extreme weather events are occurring worldwide, sometimes in unexpected ways such as the flooding in the dry regions of Ethiopia in 2007; the onset of the rainy season in Nigeria; drying of some rivers and less productive lands etc. A false start of the rains for example, may lure farmers to plant crops early and this can turn out to be disastrous for them if the first rains are followed by a long period of drought.¹⁰⁹⁶ The great loss suffered by farmers practicing "dry farming" especially in the dry belt of Nigeria, resulting from false onset of the raining season is a common phenomenon. We may wish to note that, while only 4% of farmers in Africa practice irrigated farming, it is as high as 40% in some Asian countries. Our farmers should therefore be less dependent on rain fed agriculture. It must be noted however, that transition from one system of agricultural practice to another requires planning and persuasion before implementation. The Nigerian Government at a time encouraged the use of other alternative sources of energy especially in cooking rather than wood fuel. However, because of inconsistencies in Government policies, the price of both kerosene/gas which hitherto was encouraged has gone out of the reach of low income earners. The result has been increased dependence on wood as a source of energy. The effect is that there is a reduction in the plants that naturally convert carbon dioxide into useful raw materials (oxygen).

Of course we all know that while plants use carbon dioxide to manufacture food for mankind, it also, in the process, releases useful oxygen - an essential gas for man's existence. Given the legacy of greenhouse emissions and rising global energy consumption, further warming is unavoidable. The UN Intergovernmental Panel on Climate Change (IPCC) says some changes may be sudden and irreversible. Developing countries with less technical, economic and institutional capacities to adapt are likely to find it hardest to cope.

VII. TYPES OF CLIMATIC CHANGES:

¹⁰⁹⁶ Adejuwon J.O. and Odekunle T.O., 'Skill Assessment of the Existing Capacity For Extended Range Weather Forecasting in Nigeria', *International Journal Climatology*, (2004) 24:124-126.

Based on the causes and the intensity of consequences, Oyegun¹⁰⁹⁷ recognized three categories of climatic changes as follows: Terrestrial Climatic Change, Man-Made and Astronomical Climatic Changes.

1. TERRESTRIAL CLIMATIC CHANGE

Change can be linked to natural terrestrial conditions which may be brought about by variation in land and sea areas, fluctuations in temperature and rainfall and meteorological variables, volcanic activities, landslides, earth-quake activities etc. These changes are not catastrophic nor are they usually sudden, but are also usually reversible. These causes are sufficiently well known to be able to proffer mitigating strategies.

2. MAN-MADE CLIMATIC CHANGE

The consequences of misusing the environment by man especially since the commencement of the industrial revolution, has led to the inadvertent change in climate.

Albedo change: occasioned by deforestation, alteration of ocean currents and Diversion of fresh water into oceans, thus changing the salinity and freezing point of sea water. These human influences will lead primarily to 3 phenomena: global warming, desertification, decreasing rainfall, and increase in open water evaporation; and a fall in water table. The earth surface reflectivity is further increased on bare surfaces; especially from the effects of overgrazing, over-cultivation and deforestation. The atmosphere warms up, clouds are dispersed and rain becomes less frequent.

3. ASTRONOMICAL CLIMATE CHANGE

This is a change that is most sudden and catastrophic; and can be caused by a violent shaking of the earth by a committal, planetal or meteoric impact that leads to a catastrophic shifting of the axis of rotation. Example is the 15th of July, 1994 crashing

¹⁰⁹⁷ Oyegun R.O. 'Global Climate Change and Water Resources Development in Nigeria', *Environmental Issues*, Vol. 2, 1997.

of a comet into one of Jupiter's moon.

VIII. CLIMATE CHANGE IN THE CONTEXT OF AFRICA

Although Africa as a continent contributes less than 4% of the total global greenhouse gas emissions, it is among the most vulnerable to climate change. Various reports indicate that Africa will be disproportionately affected, with predictions of crisis like desertification, floods, sea rise, droughts and crop failure. One adaptation option for Africa is to keep her forests standing so that they provide essential environmental services like acting as carbon sinks, reservoirs of biodiversity, water catchments and regulation of climate and rain patterns. Africa should also halt unsustainable agricultural practices like Slash-and-burn, the "shamba" system, charcoal burning and removal of vegetation. We should reduce emissions from deforestation and forest degradation (Redd), because emissions from them is about 20 percent more than what is contributed by the world transport sector put together.¹⁰⁹⁸

IX. POPULATION HEALTH AND CLIMATE CHANGE EFFECTS.

Rapid global climate change that has been forecast by the IPCC (Intergovernmental Panel on Climate Change) may affect human health both directly and indirectly.

The direct effects include injury and illness due to the more frequent heat waves and floods - expected as a result of higher temperatures, extremes of rainfall and thermal expansion of the oceans. Coping with extreme heat waves will be just one of our concerns. In August 2003 for example, when Europe suffered its worst heat wave in recent times and temperatures peaked at about 40°C, many unprepared people for the kind of heat wave, mostly the sick and elderly became victims and so many lives were lost. Nearly 15,000 deaths were recorded in France that summer, due to the high temperatures across Europe. The scorching weather may have claimed as many as 35,000 lives.¹⁰⁹⁹ At the local level, Olorunfemi,¹¹⁰⁰ discovered obvious seasonal

¹⁰⁹⁸ Maathai, *op. cit.*

variations in disease pattern in Ilorin, Nigeria. Mortality, due to climate change is therefore very likely to increase through a range of direct effects (such as more intense heat waves, floods and fires).¹¹⁰¹ In terms of health, in Africa alone, there is likely to be 16-28% more malaria cases.¹¹⁰²

Additionally, indirect effects according to Confalonieri et al,¹¹⁰³ can be linked to declines in water quality and food security, changes in disease vectors, and through social and economic disruptions.

The indirect effects are more difficult to specify, but will probably be more important in-terms of the magnitude of the disease burden they cause. These include:

- Diseases carrying vectors
- Productive agro-eco systems
- Drying up of hitherto existing rivers
- Emergence of Photochemical oxidants
- Increased psychological stress and depression
- Feeling of isolation amongst displaced people due to natural disasters.
- Decrease in nutrition due to poor agricultural yield.
- Increase in disease transmission due to a breakdown in sewerage and garbage services due to flooding.
- Rising sea levels and displacement of people from their natural habitats and the attendant effects.
- Land degradation
- Soil Erosion.
- Loss of biodiversity- loss of species e.g: some Yam varieties or plants for medicinal use.
- Urbanization and decreasing arable land.

1099 Nova 'Science in the News: Warmer and Sicker? Global Warming and Human Health', Australian Academy of Science 2004.

1100 Olorunfemi J.F. et al 'Mortality Pattern in Ilorin: A Review of Hospital Records', 1995 Trop. J. Health Sciences, Vol. 2.

1101 Confalonieri et al (eds.) 'Climate Change Impacts, Adaptation and Vulnerability: Contribution of working Group II. 4th Assessment Report of the IPCC' (Cambridge University Press, New York 2007) pp. 391-431.

1102 Tanser et al 'Potential Effect of Climate Change on Malaria Transmission in Africa. The Lancet 362(9398):1792-1798.

1103 Op. cit.

X. ADAPTATION MEASURES TO THE IMPACTS OF CLIMATE CHANGE:

The Intergovernmental Panel on Climate Change (IPCC) refers to adaptation practices as actual adjustments, or changes in decision environments, which might ultimately enhance resilience or reduce vulnerability to observed or expected changes in climate. Investment in coastal protection infrastructure to reduce vulnerability to storm surges and anticipated sea-level rise is an example of actual adjustments (e.g. Lagos Bar Beach Protection Scheme). The development of climate risk screening guidelines, which might make downstream development projects more resilient to climate risks, is an example of changes in the policy environment.¹¹⁰⁴

Adaptation to climate risks can be viewed at three levels: (1) responses to current variability (which also reflect learning from past adaptations to historical climates); (2) observed medium and long-term trends in climate; and (3) anticipatory planning in response to model-based scenarios of long-term climate change.

Adaptation measures can be further classified into proactive and reactive or ex-post.¹¹⁰⁵

Proactive measures include: (1) crop and livelihood diversification; (2) seasonal climate forecasting; (3) community-based disaster risk reduction; (4) famine early warning systems; (5) water storage; (6) insurance; (7) supplementary irrigation and so on.

Reactive or ex-post measures: include: (1) emergency response; (2) disaster recovery; and (3) migration. Recent reviews indicate that the “wait-and-see” or reactive approach is often inefficient and could be particularly unsuccessful in addressing irreversible damages i.e. species extinction or unrecoverable ecosystem damages that may result from climate change.

XI. MIGRATION AND CLIMATE CHANGE: THE LINK

1104 Muthukumara M.A. and Ipe V., 'Climate Change, Adaptation and Mitigation in Development Programs: A Practical Guide': The International Bank for Reconstruction & Development/ The World Bank, 2008

1105 Muthukumara, *ibid.*

Brown¹¹⁰⁶ rightly defined the relationship between climate change and migration as been 'Complex and Unpredictable' and the scarcity of reliable evidence on the topic has contributed to the heated and highly publicized discussion around the potential existence of environmental refugees, as well as predictions on their numbers.

Understanding how climate change may influence migration requires understanding the relationship between environmental change and migration, how climate exposes people to risks, and existing estimates of the number and distribution of likely climate migrants. According to Jacobson¹¹⁰⁷, "since at least 1988, climate change has been identified as a potential driver of migration". This recognition has been part of the relative influence of environmental change on migration, though with reference to Doos, knowledge of the relationship between environmental change and migration is limited, a point recognized by almost all researchers working on the topic. That is so in part, because of the complexity of issues that falls under the broad heading of 'environmental migration'. Migration in which environmental change may be factor can be in response to various kinds of sudden onset disasters or slow onset changes (indeed usually a combination of both), and it may comprise movements over short or long distances, and for short periods or very long periods. The causes and consequences of migration are also highly dependent on the social and ecological contexts from which people move and to which they move.

At the same time, however, there are clear pointers to the need to understand migration as one in a range of strategies that individual and households can use to adapt to climate change.¹¹⁰⁸

XII. CONCLUSION:

Over the ages, human societies have degraded or changed local ecosystems and modified regional climates. Without precedent, the aggregate human impact now has attained a global scale, reflecting recent rapid increase in population size and energy-

1106 Brown O., 'Migration and Climate Change' IOM Migration Research Series 31, International Organisation for Migration, Geneva, 2008

1107 Jacobson K. 'Migration and Climate Change' IOM Migration Research Series 31, International Organisation for Migration, Geneva, 1988

1108 Tacolli C. 'Crisis or Adaptation? Migration and Climate Change in a Context of High Mobility', UNFPA and IIED, 2009.

intensive, high output and mass consumption. The world population is encountering unfamiliar human-induced changes in the lower and middle atmosphere and worldwide depletion of various other natural systems (e.g. soil fertility, aquifers, ocean fisheries and biodiversity in general).

Despite early recognition of the effects on economic activities, infrastructure and managed environment of man, there has been less awareness that such large-scale environmental change would weaken the supports for healthy life. Climate change is also expected to affect health via various indirect pathways, and may therefore weaken and destabilize the ecosystem services upon which human society depends.

Migration, often seen as 'an effect' of failure to adapt to prevailing scenario, has always been an integral part of man/environment interaction. Its role as an adaptive strategy at on-set of degradation should therefore be recognized. Finally, giving the legacy of greenhouse emissions and increasing world energy needs, further warming is unavoidable. Therefore mitigation measures meant for its reduction are crucial; and this is where the Kyoto protocol should come in.