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Climate Change: Migration and Population Redistribution Challenges

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ABSTRACT

Discourses on climate change affecting population migration and distributional pattern has dominated the global space for the past three decades. Proffering sustainable solutions to its increasing concern is the principal focus of this study. The paper is theoretical and explored published literature in its interrogation. Results indicates that human climate impact is not only complicated, but also misunderstood by many. Attempting to solve a problem that is not understood, yet complicated will yield no positive results. Population migration concept occasioned by climatic changes requires headlong approaches to solve. Nigeria in recent times has witnessed urban floods, heat islands, and some storms that left along its path unusual negative consequences. The paper recommends holistic action to reverse global warming through adaptation, mitigation and disaster risk reduction. Again, capacity building for early warning systems, enhanced public awareness, as well as loco-specific initiatives and geo-engineering strategies. It is believed that these measures could certainly alleviate the suffering that comes from forced migrations and population redistribution or dislocation arising from inclement climate variations.

Key Words: Climate change, Population redistribution, Migrations, Human impacts, Nigeria.

INTRODUCTION

Climate change is already here with us. Indeed, it began in the mid 20th century according to the

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Intergovernmental Panel on Climate Change (IPCC[1]). over the period temperatures have been on the increase through ozone layer depletion as a consequence of atmospheric activities such as fossil fuel burning and deforestation. It is estimated that the global surface temperature will rise further by between 1.1 to 6.4 C (2.0 to 11.5 F) during the 21st century if no concerted efforts are put globally to turn around the menace.

The shrinking of Lake Chad in North Eastern Nigeria to about a third of its size a few decades ago, fluctuating rainfall regimes and changing monsoon patterns leading to the increasing incidents of tropical storms and tsunamis; the alarming advance southwards of Sahara Desert as well as the expansion of subtropical deserts, etc. are some of the apparent indications of climate change. In fact the summer of 2003 in Europe was the hottest in the past 500 years. Estimates provided by NASA's Goddard Institute for Space Studies, the World Meteorological Organization (WMO[2]) and the Climate Research Unit show that 1998 was the warmest year globally and 2005 the second warmest since reliable data and widespread instrumental measurements became available. It is believed that the exceedingly high temperatures of 1998 were as a result of the El-Nino phenomenon. Other likely effects of climate change might include species extinction, and downward fluctuation in agricultural yields. Perhaps the most profound of all climate change effects is forced migration and population redistribution within affected regions.

In deed as early as 1990 the IPCC posited that 'the gravest effects of climate change may be those on human migration'. Places of destination and routes through which migrants move can be adversely impacted particularly by mass influx of migrants and unmanaged urbanization through temporary camps and shelters. In effect migration should be construed as an integral part of the interaction of man with his environment.

MIGRATION, POPULATION REDISTRIBUTION AND CLIMATE CHANGE

Migration is as old as man himself. The Exodus in the Bible encapsulates what is bound to happen during the migration process. Migration occurs intra nationally or across international boundaries i.e. between nation states. The rural-urban component of internal migration is most significant and is the root cause of the increasing rates of urbanization particularly in Sub-Saharan Africa. Urban-rural migration erstwhile construed as a preserve of the rich is gradually gaining prominence in Sub-Saharan Africa due to urban poverty, dysfunctional infrastructure and lack of good governance in most African cities. Although migration is normally construed as an economic decision, most often people are compelled to move as a result of environmental crises such as shoreline erosion, coastal flooding, drought and agricultural disruption as caused by climate change. Forced migration or temporary migration becomes the case in these scenarios. Estimates by the World Bank shows that there will be more than 216 million internal climate migrants by 2050 across six regions, while International Organization for Migration (IOM[3&4]) indicate that about 26 million people are internally displaced globally due to environmental crises and this rise to 200 million in 2050.

Migration can also be a catalyst for social unrest if there is resource scarcity, arising from increased population density or struggle for control of existing resources as extant in the Niger Delta region of

Nigeria. It might also be a catalyst for development as migrants send remittances home to their places of origin. Individuals affected by climate change are referred to either as 'environmental migrants' or 'climate change migrants', but more appropriately as 'climate refugees' since there is destruction of property and infrastructure as well as disruption to livelihoods.

Oli Brown in his report for the International Organization for Migration (IOM) (Migration and Climate Change, No. 31[5]) avers rightly that there are two distinct drivers of migration arising from the meteorological impact of climate change. These are on the one hand, climate processes such as sea level rise, salinization of agricultural land, desertification and increasing water scarcity. On the other hand are climate events such as flooding, storms and glacial lake outburst floods that the vulnerability of the affected people is also driven by the non-climate drivers like government policy, population growth and resilience to natural disasters at the community level[7].

HUMAN IMPACT OF CLIMATE CHANGE

The human impact of climate change is as complicated and multifaceted as the concept itself. Mostly affected are human health, livelihoods, and general societal safety. Climate change incidents have caused so much human suffering through population displacement perhaps more than refugees arising from the two world wars and political persecution put together. Statistically natural disasters kill more women than men due to the inferior socio-economic status of women in most societies and restrictions on their economic and social rights. Estimates have put the figure of 'climate change migrants' or environmental refugees at 25 million, 50 million by 2010 and 200 million by 2050[8]. hurricanes, cyclones, floods and famines often result from climate variations leaving in their wake severe destruction and causing massive population displacement and migration. Hurricane Mitch which occured between October 26 - November 4, 1998 was the deadliest to hit the Americas. 11,000 people were killed in Honduras and Nicaragua and 2.5 million were left homeless. The Asian Tsunami as another example has led to the resettlement 'staged retreat of the islands' 29,000 inhabitants from the initial 200 islands to few dozen on slightly higher ground. Similar deaths and destruction as well as forced migration and population dislocation were recorded in other incidents as shown in Box 1.

BOX 1

Some cases of the Human Impact of Hurricanes, Cyclones, Floods, Famines and Droughts

Period	Climate related Incidence	Human Impact
Oct. 26 - Nov. 4, 1998	Hurricane Mitch	11,000 people in Honduras and Nicaragua killed and 2.5 million left homeless. 80,000 flee to the US and granted 2 years Temporary Immigration Protection Status.
1965-67	India drought	1.5 million estimated dead from starvation and disease. Millions were also killed in the drought of 1900 and 1942.

Annually	Desertification	Affecting Mexico's dryland regions leads to 600,000 to 700,000 environmental migrants.
1984-85	Drought and Famine	1 million Ethiopeans diefrom famine due to desperate food shortages from drought. Tens of thousands are resettled.
August 5, 1975	Flooding and Famine	About 85,000 were killed along the Yangtze River in China due to the failure of over 60 dams after a series of storms with widespread flooding and famine.
Nov. 13, 1970	Cyclone	The Bhola cyclone in the Ganges delta killed about 500,000 in Bangladesh. Some estimate final death toll above 1 million.
August, 2005	Hurricane	Hurricane Katrina struck the United States displacing about 1.5 million people. It is estimated that 300,000 may never return.
May 3, 2008	Cyclone	Cyclone Nargis struck the Irrawaddy Delta region of Myanmar and the Burmese peninsular leaving 100,000 dead, displacement of 800,000 and 2.4 million severely affected.

Sources: U.S. Geological Survey[9], WHO, IOM9, Myanmar[10] and Encyclopaedia Britannica[11]

The human impacts of climate change is aptly captured by a report released on the 29th of May, 2009 in London by the Global Humanitarian Forum chaired by Kofi Annan, former UN Secretary General titled 'The Anatomy of a Silent Crises', the report according Annan, 'documents the greatest ongoing silent crises of human history'[12]. To underscore the gargantuan nature of the crises, Rajendra Pachuari, Chairman of IPCC, and an advisory panel member on the report as well as Director of the Yale University Climate and Energy Institute succinctly posits that since up to 4 billion people in all parts of the world are vulnerable, 'Their suffering must serve as a warning signal of the greater suffering that lies in store for the rest of us if we fail to tackle climate change together'. The human impact (Today/Tomorrow) as highlighted in the report is shown in box 2.

BOX 2

Estimations of Suffering Due to Climate Change Today/Tomorrow

Today:

Deaths: Over 300,000 per year

Severely Affected: Over 300 million people

Living at Extreme Risk: 500 million people Climate Displaced People: 20 million

Economic Losses: Over 100 billion dollars

Tomorrow (in 20 years time):
Deaths: Approximately 500,000 per year
Severely Affected: Approximately 650 million people
Climate Displaced People: More than 75 million
Economic Losses: Over US 500 billion dollars

Source: Global Humanitarian Forum (2009) 'The Anatomy of a Silent Crises' p2.

The World Health Organization (WHO) in 2008 identified five major health consequences of climate change. The first is associated with food insecurity arising from climate variation due to increasing temperatures, and more frequent storms and floods. In countries where there is heavy dependence on rain-fed subsistence agriculture, malnutrition would certainly increase particularly from frequent droughts. Already, periodic droughts are responsible for about 3.5 million deaths annually globally.

Secondly, the frequent extreme weather events potend more storms and floods resulting in higher potential deaths, injuries and displacements. Flooding is often always accompanied by outbreaks of disease such as cholera etc. particularly where water and sanitation networks are damaged or destroyed.

Thirdly, scarcity or excess availability of water increases the risk of diarrheal disease as a consequence of contaminated food and water. Diaffhoeal diseases are the second most important cause of childhood mortality, resulting in about 1.8 million deaths each year.

Fourthly, heat waves created in urban 'heat islands' often lead to increase in morbidity and mortality especially among elderly people with cardiovascular or respiratory ailments. Higher temperatures also might result in increased ground level ozone layers and heighten risk of asthma attacks through the onset of the pollen season.

The fifth consequence of climate change on human health is the alteration of the geographical distribution of insect vectors through variations in temperatures and patterns of rainfall. This is particularly as concerns malaria and dengue fever. Malaria fever is of course among the highest killers in tropical geographical locations.

As has bee aptly construed, while the developed countries are the major culprits of climate change, it is the poor and vulnerable of the Least Developed Countries (LDCs) that are mostly affected by the devastating consequences. As pointed out by the report the 50 Least Developed Countries of the world contribute less than 1 per cent global carbon emissions. The attainment of the MDGs will certainly be adversely affected by climate change.

GLOBAL INITIATIVES VS NATIONAL AND LOCAL AGENDAS

Initiatives have been put in place both at the global, national and local levels since climate change became of grave concern. Among the most significant global initiatives are the Kyoto Protocol of 1997

which became ratified by 175 countries in 2007, the Montreal Protocol, Agenda 21 of the Earth Summit in Rio de Janeiro which was adopted by 179 governments as well as the Bali Action Plan, etc (See Box 3).

The United Nations Reduced Emissions from deforestation and forest Degradation (UN-REED) programme, is another global initiative aimed at checking climate change through sustainable management of world forests. Supported by Norway in the initial phase with USD 35 million, it was launched in 2008, and would be implemented by the Food and Agricultural Organization (FAO); the UN Development Programme (UUDP) and the UN Environment Programme (UNEP)at the time of its launch, nine countries (Bolivia, Democratic Republic of Congo (DRC), Indonesia, Panama, Papua New Guinea, Paraguay, Tanzania, Vietnam and Zambia) had already expressed formal interest in participating in the program. Enormous benefits could accrue to developing countries from this initiative. For instance, it is estimated that Indonesia, has the potential to be compensated $1 billion a year if it reduced its deforestation rate to one million hectares annually. Post the Copenhagen Conference of December, 2009, and a Post 2012 Climate Change Agreement, the REED programme could also result in developed countries paying for savings achieved by their developing country counterparts.

The United Nations Industrial Development Organization (UNIDO) has initiated a program to replace chillers from commercial, industrial and residential processes in six African countries: Nigeria, Cameroon, Egypt, Namibia, Senegal and Sudan. Known as the African Chiller Replacement Project (ACRP), it is aimed at reducing the consumption of fossil fuels through efficient energy use. With over 340 chiller types that utilize chloro-floro carbon (CFC) as refrigerants identified in these countries UNIDO aims to replace these with those that are 40% more energy efficient leading indirectly to the reduction of some 462,400 tons of CO2 emissions annually. It will also involve the transfer of green technology to these countries. The project worth USD 11 million, is co-funded by the French Facility for Global Environment (FFEM, 2000[14]).

Other global initiatives include the World Bank's Forest Carbon Partnership Facility; and the Global Environment Facility's Tropical Account.

A significant regional effort at combating climate change has also been put together by the European Union (EU), comprising 25 countries. These efforts are significant because the EU is made up of mostly industrial and developed countries. In broad terms the EU priority that addresses climate change is the multi-annual framework program. The past immediate program ran from 2002-2006 and had a budget of EU 17.5 billion and the allocation for climate change fixed at 2.2 billion. While Eu 900 million was allocated to 'sustainable energy systems'; 700 million was allocated to 'global change and ecosystems' and 600 million to 'sustainable surface systems. the most current multi-annual financial framework program started in 2007 and will run up to 2013.

Also the recently adopted European Economic Recovery Plan (EERP) contains some scope of proposals on climate change investments, such as modernizing European investment, the promotion of energy

efficiency in buildings and greater use of green products. Insurance is also advocated. Due to the cross-boarder effects of climate change EU-wide insurance is been promoted as opposed to rational or regional schemes.

A very appreciative modality is the revised directive governing the EU Community green house gas emission allowance trading system (EU-ETS) provides that at least beginning from 2013 at least 50% of the revenue generated other than been adopted in member countries should also be used in developing countries.

There has been a plethora of private yet global initiatives to mitigate the vagaries of climate change. Among these are:

i. The Clinton Climate Change Initiative (CCI), of the William J. Clinton Foundation launched in 2008 to create and advance solutions to the core issues driving climate change, through the people, policies and practices. This initiative targets three main areas, cities, clean energy and forests. In the cities programme projects will involve the building of ritrofits, outdoor lighting and waste management all aimed at helping municipal governments improve energy efficiency and capture the reduction of emissions. The clean energy programme will involve projects utilizing clean energy technologies with long term commercial value, while the forestry programme is aimed at the adoption of better land use practices that reduce deforestation and lower emissions by up to 30 percent. It would adopt a measuring system and a portfolio of projects in partnership with local communities in countries with tropical forests.

ii. The Google.org Predict and Prevent initiatives which support programs such as InSTEDD (Innovative Support to Emergencies, Diseases and Disasters) that aims to improve early detection, preparedness, and response capabilities for global health threats and humanitarian crises. Google.org has also donated $600,000 to Clark labs of Clark University to ‘develop a system to improve monitoring, analysis and prediction of the impacts of climate variability and change on ecosystems, food and health in Africa and the Amazon’.

BOX 3

12 Milestones in the Development of Global Initiatives against Climate Change

1971. In Osio, Norway, the Polluter Paus Principle was enacted by the Organization of Economic Corporation and Development (OECD) Council. This principle alludes that the countries causing pollution should pay the cost.

1977. In Nairobi, Kenya, the UN held a conference on deforestation and its impacts UNCOD.

1979. In Geneva, Switzerland, the World Meteorological Organization’s (WMO) World Climate Conference concludes that the ‘greenhouse effect’ demanded urgent international action.

1985. The hole in the Ozone layer over the Antarctica is first discovered, and a Convention for the protection of the Ozone Layer held in Vienna Austria by 21 countries and the European Community, EC.

1987. 'Our Common Future' the Brut land Commission Report is published and Sustainable Development is born. In Montreal, Canada, the 36 countries that together account for 80% of the CFC consumption ratify it. Known as the 'Montreal Protocol on Substances that Depletes the Ozone Layer', it would take effect from 1989.

1988. The Intergovernmental Panel on Climate Change (IPCC) is set up by the United Nations and the World Meteorological Organization (WMO). the IPCC assesses the scientific, technical and socio-economic information relevant to understanding Climate Change.

1992. The Earth Summit: The United Nations Conference on on Environment and Development holds in Rio de Janeiro, Brazil. Agenda 21 (21st Century), a blueprint of action on every aspect of human impact on the environment is adopted by 179 governments of the world[13].

The United Nations Framework Convention on Climate Change (UNFCCC), the epicenter of global efforts to combat global warming is also adopted on May, 1992. it would enter into force and become binding on member nations from May 21st 1994.

1995. World Summit for Social Development (UNWSSD) holds in Copenhagen, Denmark, where a clear commitment was made to eradicate absolute poverty, a major malaise in developing countries.

1996. The Kyoto Protocol is passed. Attended by a total of 159 countries, 38 developed countries agreed to reduce their emissions of six greenhouse gases (GHGs), by at least 5 percent below 1990 levels by 2012. China and India as rapidly industrializing countries did not get any binding targets but were awarded the option to set their own voluntary reduction targets.

2002. The World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa, to asses the global situation and progress in implementing the international agreements adopted at Rio in 1992 and the 1972 Stockholm Conference. This is also known as Rio +10.

The United Nations Centre for Regional Development (UNCRD) launches a three year project 'Sustainability in Community-Based Disaster Management' to study the efficacy of grass-root strategies for disaster management.

2007. On December 15, 2008, 187 countries at the UN Climate Change Conference in Bali, Indonesia (COP 13) agreed to launch a two year process of formal negotiations on strengthening international efforts to fight, mitigate and adapt to the problem of global warming. Attended by over 10,000 participants and represents from over 180 countries, and NGOs, 175 countries ratify the Kyoto Protocol.

The IPCC and AI Gore are awarded the 2007 Nobel Peace Price.

2009, Copenhagen (COP 15). The UN Climate Change Conference will hold in December, 2009. Perhaps a global consensus for GHG reduction in the period after 2012 might be attained.

Source: Compiled from various UN and NGO Reports.

SOME NATIONAL AGENDAS AND PROGRAMMES

Many countries around the globe have put in place concerted efforts to fight climate change generally, but very few are putting in place plans to obviate any prospect of large-scale forced climate migration. National Adaptation Programs of Action (NAPA) have been developed by some developing countries with support from the UNFCCC to help the LDCs identify and rank their priorities for adaptation to climate change, but nearly all are devoid of any specific or effective responses to forced migration and population relocation or dislocation. This might be so understandably because collectively LDCs contribute less than 5% of GHGs and global warming.

The United States of America is the largest emitter, contributing up to 25 percent of all global CO_2 emissions and 40 percent of that originating in the developed world. With this in mind it seems to be actively engaged in mitigating global warming. Ninety experts were early in 2009 constituted by the National Academies into four national panels on Climate Change. They are to report on four overarching questions:

i. What short term actions can be taken to respond effectively to climate change?

ii. What promising long-term strategies, investments and opportunities could be pursued to respond to climate change?

iii. What are the major scientific and technological advances needed to better understand and respond effectively to climate change?

iv. What are the major impediments (e.g. practical, institutional, economic, ethical, intergenerational, etc.) to responding to climate change, and what can be done to overcome these respondents?

Many US states are also making efforts to mitigate climate change. A report by the Pew Center on Climate Change: 'Greenhouse and & Statehouse: The Evolving State Government Role in Climate Change' indicates that several states have now enacted legislation requiring utilities to increase their use of renewable energy sources such as wind power and biomass in the generation of a portion of their electricity needs.

In addition, the Energy Information Administration reports that in 2003, 228 U.S. companies had voluntarily undertaken more than 1,700 projects to reduce or sequester greenhouse gases. This was equivalent to 300 million metric tons of carbon dioxide representing more than 4 percent of total U.S. greenhouse gas emissions. When compared to the 2000 levels, it represented about 20 percent company pollution emission reduction.

Also, the American Petroleum Institute has pledged to increase the aggregate energy efficiency of its U.S. refinery operations by 10 percent by 2012, while the Edison Electric Institute and six other power sector groups which account for the total electricity generation in the country have pledged to reduce its carbon impact to between 3 to 5 percent with the use of increased natural gas and clean coal technology, increased nuclear generation and expanded investment in wind and biomass projects.

Costa Rica ambitiously wants to be the first country to be carbon neutral. A set of initiatives involving decrees, laws, incentives and specific budgets was begun in 2007. Fifteen percent of the National Development Plan has been set aside to stimulate the use of biofuels, hybrid vehicles, clean energy and less polluting technologies. As part of the national strategy, a registered trademark known as C-Neutral will be created to certify that the tourism and some specified industrial processes are able to mitigate all emitted carbon dioxide. For instance, the airline Nature Air is the first to conceptualize including environmental payment in the pricing of its tickets in order to attain 'clean trips' and the money collected would be used for the conservation of natural areas and reforestation projects in the country under the Fund for National Forestry Financing.

Japan launched its policy on climate change on June 20, 2001 claiming diplomatic accomplishment in the signing of the Kyoto Protocol in 1997 and views international cooperation as 'essential steps in ensuring that the global environment is left intact for future generations'. in spite of its economic troubles, it has fixed a 6% reduction in emissions based on the 1990 levels, in its 'Guidelines of Measures to Prevent Global Warming' released shortly after the Kyoto summit in June 1998. it has also adopted a 'Top Runner Approach' to strengthen the rational use of energy. It also targeted 76.5% of emissions from the industrial and energy sectors for reduction to the 1990 levels by 2010 through voluntary measures initiated by the Keidanren and a reduction in 3 key hydro-flouro-carbon gases by 2 percent.

Australia is also at the forefront of national efforts to mitigate global warming. The government is focusing on energy efficiency and reduction of emissions in order to achieve a low carbon economy. The government has set up a Department of Climate Change. Several other initiatives are also in place. They include:

i. $4 billion Energy Efficient Homes Package;

ii. A $2.75 billion Climate Change Action Fund to support business energy efficiency, in addition to a $100 million National Energy Efficiency Initiative, and $240 million Clean Business Australia Initiative;

iii. $1.3 billion Green Car Innovation Fund;

iv. Australia Carbon Trust to be established with $75.8 million and $64.6 million for key early-start measures in the National Strategy on Energy Efficiency.

SOME LOCAL INITIATIVES

At the local levels some communities, provinces or states have put in place 'Place Specific' initiatives that are unique to their local circumstances and can to a large extent mitigate the vagaries of climate change. These projects are driven by highly principled and knowledgeable political leaders and champions of industry, NGOs or activists, etc. The Cross River State government seems to have taken the lead in Nigeria on issues concerning the Environment and Climate Change. It convened an International Conference on the Environment in 2008, has banned logging in its prestine forests and has set up a committee to plant 5 million trees. In the same vein the Ondo State Government has begun forestry regeneration and urban forestry projects aimed at combating global warming. The forest regeneration will involve the planting of trees in over 150 hectares in forest reserves located in the three senatorial areas, while the urban forestry programme will involve the planting of over one million trees in chosen urban clusters.

Makati City, Philippines has put in place a programme that would make it the region's first Energy Efficient City, by signing on to Greenspace's 'Simple Lang. Save the Climate' campaign. It is aimed at reducing the city's carbon footprint by involving the local governments and their citizens in efforts to reduce climate change thereby reducing the city's vulnerability. This it hopes to achieve through an extensive public awareness campaign and establish a multi-sectoral working group that would introduce energy efficient measures in schools, hospitals, commercial establishments and businesses.

Tokyo, the world's largest city (over 25 million people) is also at the forefront of initiatives to combat climate change. While the national policy is to reduce GHGs emissions by 6 percent, the Tokyo Municipal Government (TMG) has set its target at 25 percent from 2000 levels by 2020. In tis 'Tokyo's Big Change: the 10-year Plan' it hopes to achieve a Carbon-Minus Tokyo. The TMG established of the 'Strategic Jiont Committee for an Environment Friendly City' in January 2007, and the 'Fund to Promote Measures against Climate Change' and committed $4.3 billion for this purpose.

The 10 year plan strives to:

i. Create a mechanism to develop and enhance Japan's environmentally friendly technologies;

ii. Encourage large, small businesses and households to achieve CO2 emissions reduction in accordance with their own capacity and responsibility;

iii. Implement strategic and intensive measures during the first few years towards a low-carbon economy'

iv. Use tax incentives, private and public funds to achieve reduction in CO2 emissions.

RECOMMENDED NIGERIAN (NATIONAL) INITIATIVES TO MITIGATE CLIMATE CHANGE

Nigeria has the largest population on the African continent, with over 217 million people[12]. In addition to its extensive Atlantic coastline and the big rivers (River Niger and Benue) within the country its risk profile is considerably high in terms of the visicitudes of climate variations. The coastal towns of Lagos

(a mega-city with a population of over 18 million), Port Harcourt, Calabar, Warri, Oron, Eket, Onitsha, Lokoja, Makurdi, etc for example will all be at considerable risk with any rise in sea level. Although some of the strategies for mitigation of climate change effects mentioned below have already been undertaken by government and some ministries directly concerned with environmental matters it is recommended that these others are still imperative if the country is to be at arrow head of mitigating climate change in Africa:

1. Set up a national panel of experts to document and advice government on Climate Change. The experts should be and include the following areas: agriculture and forestry, biodiversity, environment and geography, oceanography, energy system, health, tourism, etc.

2. Set up Chairs in any six universities in the six geo-political zones of the country in further study and research on the ramifications of Climate Change. National Centers for the study and research on Climate Change could also be established. These would correspond with the geo-climatic configurations of the country.

3. Set up a desk on Climate Change in the Federal Ministry of Environment to be the arrow head of government actions patterning to Climate Change for the country.

4. Initiate a Nigerian Carbon Trust Fund and a Carbon Pollution Reduction Scheme. Under this initiative individuals and households would be encouraged to play a greater role in the fight against climate change.

5. Enhance the capacity of the National Emergency Management Agency (NEMA) to be well placed to handle the massive waves of migration and population displacement arising from climate change.

6. Enact an immigration legislation or policy to protect ‘climate change migrants’ or ‘environmental migrants.

7. Convene National Conferences on Environment and Climate Change periodically to chart a National Agenda to mitigate the effects of climate change.

8. Advocate and sustain local initiatives that can mitigate the effects of climate change.

CONCLUSION

Both climate change and migration are dynamic phenomenon that are seemingly unpredictable. The consensus among scholars, NGOs, and governments is that action must be holistic and together in tandem to effectively mitigate the damaging action of climate change and reverse global warming through adaptation, mitigation and disaster risk reduction. Early warning systems, enhanced public awareness, as well as loco-specific initiatives and geo-engineering are some of these strategies. These measures could certainly alleviate the suffering that comes from forced migrations and population redistribution or dislocation arising from inclement climate variations.

The December 2009 Copenhagen summit was most decidedly the turning point and the driver of global efforts. Energy efficiency is adjudged the best strategy to reduce the deleterious effects of climate change activities. According to the United Nation's International Panel on Climate Change (IPCC), lifestyle changes and changes in consumption patterns of a low carbon economy. But it remains to be seen whether we could ascribe to Beng Reyes Ong (a Greenpeace Energy Efficiency Campaigner) exhortations that 'it is clear that the solutions to climate change are in our hands, readily available and merely waiting to be harnessed - whether on a national, local, sectoral or individual level'.

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