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CHALLENGES OF CLIMATE CHANGE AND ENVIRONMENTAL MIGRATION IN THE 21ST CENTURY AND AFRICA'S 3S INITIATIVE

[1]Iyeshim, Monday
mondayiyeshim58@gmail.com
08063646187

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Abstract
This research unraveled the challenges of climate change that had resulted to series of environmentally induced migration in the 21st century Africa. The study identified flood, rising temperature, rising sea level, coastal erosion, food insecurity, and cyclones as some of the environmental crisis challenging the existence of African continent. Methodologically, the case study research design was adopted for the collection and analysis of climate change effect and environmental migration in Africa. Linkable to the stakeholders theory, the study find out that Africa contributed very little in the dwindling carrying capacity of the earth and recommend the establishment of an effective co-ordinated structure to pull international resources together, a UN climate change trust fund for Africa and a perennial African Union summit for a climate change information in Africa and to the whole world.

Introduction

The Africa's 3s initiative, is the initiative on sustainability, stability and security in Africa. The initiative which aimed at mitigating climate change and environmental migration among others became necessary because in Africa, climate change (global warming) has been identified as a leading human environmental challenge of the 21st century (Tadesse 2010). This is because climate change quagmire had posed considerable threat to the survival of the continent (Holden et al, 2009). Some of the catastrophic consequences include rising sea-levels, drought, higher temperature, changing rainfall, floods, famine and the loss of plants and animal spacies (Food and Agriculture Organization of the United Nations FAO, 2006). Others are social upheaval, food insecurity, increased pest and disease pressure, desertification, deforestation and erosion (Tadesse, 2010). Though climate system consist of the atmosphere, hydrosphere, ecosphere, lithosphere and biosphere, and it has been in constant state of change as UN Framework Convention on Climate Change (UNFCCC) may have it. The focus is carbon emissions and global warming in form of drought, flood and loss of farm land and agriculture. In recent years, food prices have sky rocketed causing severe hardship for the poor and vulnerable people of Africa. Between 2005 and 2008, prices of rice, wheat and maize doubled, pushing more than 100 million people into poverty, (against the first goal and target of SDGs) including nearly 30 million people in Africa (Bryne, 2010). Thou, impeding Sustainable Development Goals 2030 benchmark and the African 3S initiative. The Horn of Africa's pastoralist areas (Ethiopia, Kenya and Somalia have been severely hitted by recurrent droughts, causing livestock losses that have plunged approximately 11 million people who are dependent on livestock for their livelihoods into crisis and triggering the mass migration of pastoralists. Africa's food security situation is

[1] Department Of Sociology Faculty of Social Sciences Rivers State University Port Harcourt.

worrisome. Of the 36 countries worldwide identified as food insecure, 21 are in Africa. Bryne (2010) citing World Bank development report (2010) stated that all African countries face the global climate change challenge. This was also the views of Jean ping, chairperson of the (Africa Union Commission) AUC, that Africa suffers most from a problem that its has not created. Therefore, as one of the most vulnerable regions in the world to the projected impacts of climate change, Africa faces many challenges.

Africa is the most vulnerable continent to climate change impacts under all climate scenarios above 1.5 degrees Celsius and the least contributor to global warming (Vilgione, 2023). Africa's role in emission of carbon is atypically minor. Its past economic activity has not contributed to the accumulated global stock of carbon (Collier et al, 2008). Vilgione (2023) citing World Meteorological Organization (WMO) identified 1,839 disasters attributable to weather, climate or water hazards that impacted Africa since 1970 – 2012. The aforementioned disasters cumulatively led to 733,585 deaths and caused $43bn in economic losses (International Research Institute for Climate and Society – IRI, 2007).

To mitigate the aforementioned challenges the research posed the following:

Research questions

i. Is there any Africa Union body responsible for reporting and coordination of the various UN agencies for climate?.
ii. Is there a UN climate change trust fund incharge of global climate and African environmental migrants?.
iii. Is the international community aware of Africa's predicament?
iv. Are the carbon emitters that caused global warming responsible for the destruction of the earth?

Research Objective

i. To identify the various environmentally induced challenges of Africa.
ii. To canvass for the establishment of climate change trust fund
iii. For the African Union AU to perennially inform the international community that Africa contributed the least to the climate change and environmental crisis they are suffering.

African Vulnerability and the Challenges of Climate Change

Climate change represents a major threat to Africa (African Development Bank AFDB, 2023). Some of the factors that contributed and made Africa's vulnerability possible according to Bryne (2020) are: Sub-Saharan Africa with 95% of rain fed agriculture globally; a large share of agriculture in GDP and employment adds to vulnerability, as do other weather sensitive activities such as herding and fishing, leading to income losses and increased food insecurity; seven (7) of the 10 countries that are most vulnerable to climate change are in Africa (Hellmuth et al, 2007). The climate crisis is code red for African continent, while millions of people are affected by flooding each year in Nigeria West Africa, there is a rising temperature in North Africa leading to drought. Fakomogbom, (2022) citing Global Climate Risk Index, mention that five of the ten countries most affected by climate change in 2019 are African's Mozambique, Zimbabwe, Malawi, South Sudan and Niger. Some other climate change challenges and African vulnerability are:

Rising temperature

Africa warmed at an average rate of around $+0.3^0$C/decade between 1991 and 2021, faster than the warming from 1961 – 1990, at $+0.2^0$C/decade. The year 2021 was either the third or fourth warmest years on record for Africa (UN Climate Change, 2020). The year 2019 was among the three warmest years on record for the continent. The decadal predictions, covering the five – year period from 2020 to 2024, shows continued warming and decreasing rainfall especially over North and Southern Africa, and increased rainfall over the Sahel.

Rising sea levels and coastal erosion

There is significant regional variability in sea level trends around Africa. Sea – level increase reached 5mm per year more than the average global sea level rise of 3 – 4mm per year.

Coasted degradation and erosion is also a major challenge, especially in West Africa. About 56% of the coastlines in Benin, Ivory Coast, Senegal and Togo are eroding and this is expected to worsen in the future.

Extreme events

Tropical cyclone Idai was among the most destructive tropical cyclones ever recorded in the Southern hemisphere, resulting in hundreds of casualties and hundreds of thousands of displaced.

Food security impacts

In the drought-prone sub-Saharan African countries, the number of under nourished people has increased by 45.6% since 2012 according to the Food and Agriculture Organization of the United Nation (FAO). Key risks to agriculture include reduced crop productivity associated with heat and drought stress and increase pest.

Cyclones

Warming of the oceans surfaces from climate changes is leading to more intense tropical cyclones and is capable of causing flood and landslides.

In January 2022, tropical storm Ana caused devastation across Madagascar, Malawi and Mozambique causing tens of thousands of homes into rubble, and many fleed for safety. In a period of two weeks later, cyclone Batsirai and Emnati hit Madagascar, leading to more death and destruction. Batsirai knocked power grids and displaced 112,000 people. A month later tropical storm Gombe's 120mph winds ravaged northern Mozambique and Malawi. 13 million people are living with severe hunger in the Horn of Africa (UN World Food Programme (WFP). Some 86 million Africans may be forced to migrate within their own countries by 2050.

Flood

Flood occurs when the volume of sea water arriving on land exceeds its capacity to discharge it. It may also results from the accumulation of rainfall on low lying ground. Nwafor (2017) defined flooding as a natural hazard like drought and desertification which occurs as an extreme weather hydrological event. Elenwo (2005) observed that flooding have long-term hidden effects in the form of stress and trauma during and after flooding event. For Alaboh (2022), floods are one of the world's most deadly natural disasters whose catastrophes have put individuals, communities and institutions in Jeopardy. Durojoye (2012), similarly observed that flooding events are not limited to destruction of physical structures but are also accompanied with prevalence of diarrhea and other water-borne diseases. Cirella and Iyalomhe (2018); Nkwunonwo, Malcolm & Brain, (2015); writing in Alaboh (2022) agreed that in reality, the extent and nature of flooding are such that the actual figures of displacements, losses and fatalities cannot be truelly ascertained. But majorly, it leaves the people homeless, destroys properties and businesses (Echendu, 2020).

Nigeria's National Emergency Management Agency (NEMA, 2023) writing in punch Newspaper of 28 August 2023, quoting the Director of African Affairs, Federal Ministry of Foreign Affairs, Umar Salisu, reported the releasing of mass water from the Cameroonian Lagdo Dam. This untold scenario started and became common from 2012. The 2012 flood disaster affected 134,371 people, displaced 64,473, injured 202 and killed 363 persons (International Federation of the Red Cross and Red Crescent Societies – IFRC, 29, September 2012). By the end of October more than 7.7 million people had been affected by the flood, and more than 2.1 had registered as IDPs and 600,000 houses damaged. As if it was not enough during the 2015 flooding, more than 100,000 persons were displaced, with 53 deaths.

In 2016, the flood disaster happened again and again in 2017, 2018, 2019, 2020, 2021 and 2022 repeatedly. During the 2016 flood disaster, 92,000 were displaced with 38 deaths. In 2017, flood in Nigeria affected 250,000 people and killed over 200 persons. The Nigeria 2020 flood according to NEMA (2020), affected many states including the Federal Capital Territory, 320 local government areas and killed over 129,000 souls.

Just like any other part of Africa, flooding is an annual challenge in Nigeria with increasing intensity, colossal losses and trauma affecting accumulation of 192,594 person across 22 states in Nigeria with 24,134 persons displaced annually (IFRC, 2022).

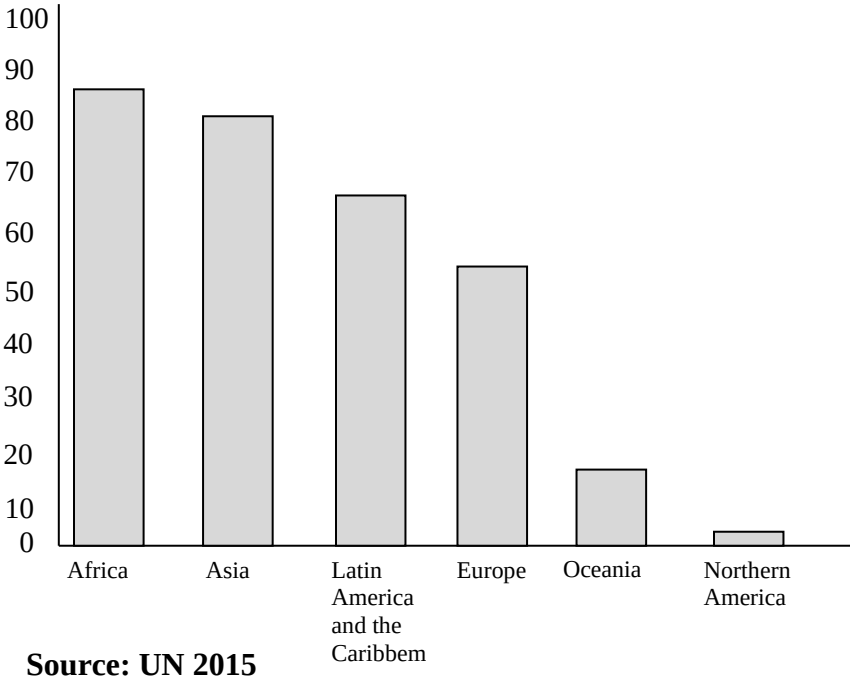
According to African Union Report (2023) other examples of human and property losses in Africa due to climate events are;

1960s to present day: Lake Chad receded from 25,000 kms in the 1960s to between 2,000 kms and 15,000 kms (depending on the season) over the last 40 years, affecting the lives of about 30 million people

- **2000:** Floods in Mozambique caused 800 deaths, affected about 2,000,000 people, 329 people were displaced and agricultural land was negatively impacted.

- **2001:** Floods in Northern Algeria resulted in approximately 800 deaths and caused an economic loss of about US$ 400 million.
- **2011-2012:** Severe drought affected the entire East Africa region and was said to be the worst drought in 60 years. Within the same year floods affected the region and caused further damage.
- **2014-2019:** In central and West Africa, a total of 700,000 people were displaced mainly due to flooding. This also resulted in localized crop and livestock losses.
- **2019:** Flooding due to Cyclone Idai destroyed about US$ 1 billion of infrastructure, about 100,000 homes were damaged and at least 400,000 crops were destroyed.
- **2019:** Heavy rainfall triggered widespread flooding, which resulted in a loss of life, displacement, damage to crops and livestock deaths, mainly in central and Southern Somalia, South-Eastern Ethiopia, Northern and Eastern Kenya and South Sudan. The heavy rains created conditions conducive to the severe desert locust outbreak, the worst in decades, affecting most parts of East Africa.

mass migration and African issue



Source: UN 2015

Climate change and environmental migration in Africa

Nipon and Pitson (2012) studying the 2011 Thailand flood, said that natural events, uncontrolled land use patterns, and flood handling were accountable for the flood hazard. During the flood one million and two hundred and eighty thousand people were affected, seven hundred and 28 thousand lives were lost, sixteen million six hundred and eighty eight thousand and 55 square km of agriculture area destroyed and nine million eight hundred fifty nine thousand employment by November 2011 (Thailand Agric Ministry, 2012).

According to World Bank, the recovery and reconstruction of the damaged item and losses will take the sum of USD 50 billion and would last for more than six months to execute. The study revealed that flooding reduced household total expenses by 5.7% to 14%. The finding was in consonance with the reported negative national GDP growth of 8.9% in the 2011 fourth quarter when Thailand was flooded. It also showed that the flowing had a significant negative effect on the income and expenditure of middle and high income households, but that its effect on poor households was not significantly statistical. The flood impacted negatively on the money and wage incomes of some middle income households residing in the flooded areas.

In South Africa, the flood of early 2008 claimed dozens of human lives and left thousands homeless. The agricultural sector was worst hit by the floods of 1980, 1984 and 1985 (DU Plessis, 1988). Farming products were imported to supply the local market. Animal husbandry was not left out as stocks were thinned because of

reduced grazing capacity. In Morocco, for instance, the coastal area constitutes the major social and economic hubs in the country. Moe than 90% of the industrial establishments and greater than 60% of the population are sited and reside in the coastal zones respectively thereby making the zone more prone to flood. In many African nations, floods generate grave natural challenges to life, health and population (Parker, 2000).

In Egypt, the flood plain regions of the Nile River are heavily populated contrast to other regions which are scantly inhabited. Not less than twenty cities in Mozambiquque are at verge of being flooded involving main settlements bordering the Zambezi and six coastal locations. The 1988 Sudanese flood disaster brought about food scarcity in the country. Flooding can affect food security in many ways. Stocks might be destroyed if the storage regions are inundated. Grave floods often disrupt food transportation and inadequate supplies will normally lead to food shortages especially in cities that are separated from sources of supply. In the 1988 Sudanese flood especially in the Khartoun province, food production fell by at least 60% and damage included irrigation Canals, sewage system, electricity, roads and water system.

The countries of the central Mediterranean Route and especially Sahel suffered a 25 year drought from 1968 – 1993. This contributed to the collapse of rural societies whose survival mechanisms have proven to be insufficient to cope with the impacts of the changing climate (Descroix et Lambert, 2018). Temperature in the region has been rising. Since 1950, weather stations in West Africa have measured an increased of around 1^0C across the region (Moric et al, 2012) and in the Sahel, the change is higher – 1.5 to 2^0C. Monthly temperature records show that the warmest months of the year April, May and June, have experienced even greater increases in temperature of up of 3^0C (Guichard et al, 2015). Niang et al (2014) cited in Bendandi (2020), stated that average temperatures in the region are projected to increased between 1.5^0C and 4^0C by mid-century compared with the period 1986 – 2005. The number of heat wave days each year is also projected to increase significantly by 2050, especially in the Western Sahel (Vizy and Cook, 2012).

Nomadic movements or occasional migrations have also been part of the livelihood strategies adopted by individuals or households living in dry lands (Abdelali – Martini and Hamza, 2014). In West African, rural populations frequently use migration to cope with seasonality of the climate (Barbier et al, 2009), sending young adults to the cities in the dry season to reduce the demands on household food supplies and in the hope they may earn money (Rain, 1999).

The implications of this warmer temperature for rainfall are less clear. A significant increase in climate variability is expected. This means more frequent droughts and heavy rainfall events and hence lower yields and falling household income. In Ghana, land degradation decreased agricultural income by US$ 4.2 billion between 2006 and 2015, and poverty increased by 5.4 per cent in the same period, due to various factors, including, land degradation. The annual cost of land degradation was estimated about 0.5 per cent of GDP in Tunisia and Morocco (IPCC, 2019) and up to 20 per cent in Burkina Faso (UNCCD, 2017). Some studies found that climate change impacts on migration by reducing crop yields (Cai et al, 2016) and GDP per capital (Cattaneo and Peri, 2016).

Theoretical Framework

This research is anchored on the stakeholder's theory. This is because Africans as stakeholders in climate change are affected by what they do not contribute and need to be compensated. A stakeholder here with is entitled to consideration same way a shareholder. Both Argenti (1993) and Freeman (1983) held that the welfare of an institution is maximized by addressing the requirement of the institution important stakeholders. And these are environmentally induced migrant and African victims of climate change.

Methodology

This study adopted a case study research design for the collection and analyzing of evidence of climate change and environmental migration in Africa. It allowed the researcher an appropriate concrete, contextual and in-depth knowledge of the African real world phenomenon.

Summarized / Recommendations

This paper is concerned with the fact that African nations are among the lightest polluter but the most sufferer of climate change challenges despite the 3^S initiative. The paper having noted the worrisome impact of climate

change, the dilemma of environmentally induced and forced mobility as a coping strategy of natural disaster and duplication of natural resources recommended:

The establishment of an effective co-ordination structure to pull together the various international agencies and stakeholders on risk reduction, humanitarian response, migration, adaptation and development. A UN climate change trust fund to review climate change protocols and compensations that will detail a pay as pollute agreement to be given to the sufferers of climate change especially Africans. This when achieved, will serve as a frame work for the protection of African environmental migrants and displaced households.

Hence, the Sustainable Development Goals 2030 is gradually coming to an end, there should be an urgent need for a perennial AU climate change summit for a climate change information in Africa.

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