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RESEARCH ARTICLE

CLIMATE CHANGE FINANCING ANDENVIRONMENTAL CRISIS IN NIGERIA, 2020-2022

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ABSTRACT

The paper examined the interplay between climate change financing and environmental crises in Nigeria during the period 2020-2022. Against the backdrop of escalating environmental challenges, this research investigated the allocation and utilization of climate change financing in addressing and mitigating the environmental crises such as flooding and deforestation faced by Nigerians. The primary objectives of this study were twofold: firstly, to analyze budget allotted by the Federal Government for climate change financing during the specified timeframe, and secondly, to assess the impact of such financing on mitigating environmental crises prevalent in the country. The study is qualitative research and used qualitative methods such as case studies and content analysis to discern the effectiveness of and hindrances to effective climate change financing efforts in addressing environmental challenges in the country. The study found that poor climate change financing and lack of transparency in climate funds disbursement contributed to people's vulnerability to flooding and deforestation in Nigeria within the study period. Amongst others, the study recommended that climate finance must be drastically scaled-up across the entire financial ecosystem, and especially from the private sector.

Keywords: Climate change, climate change financing, climate funds, environmental crisis, vulnerability

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1.0. INTRODUCTION

Climate change has emerged as a central topic in policy discussions, gaining prominence since the discovery of ozone layer depletion and the landmark Rio Earth Summit in 1992 (Iroegbu, 2023). It has become a factor that has harped on and compounded the problems of the globe through an environmental dimension (Edeh et al, 2014, p. 18). Climate change manifests in the form of natural disasters experienced worldwide, including droughts, rising sea levels, floods, water scarcity, food insecurity, and conflicts (Iroegbu, 2023; Williams et al, 2018; Idowu et al, 2011). These have triggered a wide variety of physical and biological changes across the world, with negative effects on agriculture, humans, and the environment (IPCC, 2014). Corroborating this, Faroog & Meraj (2017), as cited in Pona et al., (2021) stated that "climate change and the greenhouse effect are on the rise, causing a plethora of natural disasters such as glacier melt, floods, tsunamis, air pollution, and the emergence ofinfectious and non-communicable diseases, all of which endanger human health."

Nigeria, the most populous country in Africa, is very vulnerable to climate change. Nigeria is located primarily within the lowland humid tropics, and is generally characterized by a high temperature regime almost through the year. Her climate varies from a very wet coastal area with annual rainfall greater than 3,500mm to the Sahel region in the north-west and north-eastern parts, with annual rainfall less than 600mm (Edeh et al, 2014, p. 22). Incidences of environmental change in Nigeria include drought, flood, irregular rainfall pattern, deforestation (Giri et al, 2021), desert encroachment, and housing problems (Olaniyi et al, 2019), with attendant devastating effect on food production and the nation's economy (Edeh et al, 2014, p. 22). These have equally significantly influenced land use and land cover, human health, and livelihoods in the country with little or no indication of appropriate adaptation plans (Giri et al, 2021). Indeed, the country is faced with the twin challenges of sea level rise in the south and desertification in the north, indicating that vulnerabilities vary across the country (Nwankpa, 2022; AfDB, 2020). In the Southern areas of Nigeria (predominantly known for high rainfall), vegetation is currently grappling with fluctuations in the sequence of rainfall. In the savanna vegetation zone, severe heat waves are seriously confronting the area. Similarly in the Sahel region, there is a risk of losing about 30 ha of cropland per year to desertification (Ragatoa et al, 2019).

Further demonstrating the vulnerability of Nigeria to climate change, a recent report for example, shows that Nigeria is one of the top ten of the most exposed countries to the effects of climate change, with about 2.5 million people affected and about 6% of the country's land area estimated to be exposed to extreme weather events (Bouri, 2023; World Bank, 2020, Akinwumi et al,

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2019; Climate Scorecard, 2019). It is important to note that Nigeria is responsible for less than 1% of global emissions. As an oil producer, however, Nigeria is implicated as a perpetrator of the climate crisis, both by contributing to fossil fuel production and in relation to oil spills that have harmed the land, livelihoods, food security and led to internal strife. Carbon Brief reports that in 2015, Nigeria was the second highest emitter of greenhouse gases in Africa in 2015 and 17th in the world. Nigeria is also among the seven top countries responsible for gas flaring, which releases carbon dioxide, methane and black carbon into the atmosphere (Britto et al, 2021).

These climate challenges in Nigeria notwithstanding, climate change financing in the country is very poor. Financial limitations and diversion of mapped-out climate funds by authorities have continued to thwart efforts at promoting climate-healthy environment as well as mitigating climate change consequences in Nigeria, especially in recent years. For example, as a result of its relatively low economic development in addition to inadequate climate change financing in Nigeria, Nigeria's Greenhouse Gas (GHG) emissions remain relatively low (DCC, 2021). Between 2020 and 2022, poor climate change financing in the country made several Nigerians unable to cope with environmental challenges linked to climate change.

While the national focus of addressing environmental challenges in Nigeria has primarily revolved around robust policies and programs to limit and ultimately eliminate carbon emissions and other climate change consequences in the country, an undeniable truth is that inadequate climate-financing in no small measure contributed to people's inability to cope, adapt and respond to the disastrous impacts of climate change in Nigeria, especially between 2020 and 2022.

Based on this backdrop, this paper therefore interrogates the link between climate change financing and people's vulnerability to environmental challenges like flooding and environmental degradation in Nigeria between 2020 and 2022. The paper is structured into eight sub-headings. Following the introduction, the second part of the paper outlines the methodology while the third section does the conceptual and contextual clarification. The fourth section provides the theoretical framework of analysis while the fifth section examines poor climate change financing and vulnerability to flooding. The sixth section interrogates lack of transparency in climate funds disbursement and vulnerability to land degradation. The seventh section highlights the challenges to effective climate change financing in Nigeria while the last section concludes the study, proffering some recommendations.

2.0. CONCEPTUALIZATION AND LITERATURE REVIEW

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2.1. Climate Change Financing

The UNFCCC defined climate change financing as "... local, national or transnational financing—drawn from public, private and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change" (Britto et al, 2021). MSCI (2023) defined climate change financing as "the funding and investment mechanisms that support projects and initiatives aimed at mitigating and adapting to climate change. It involves allocating financial resources to activities such as renewable energy projects, sustainable infrastructure, reforestation efforts, and climate resilience programs."

Climate finance refers to the provision/availability of public and private funds channeled by national, regional and international entities through various instruments for climate change mitigation and adaptation projects and programs. They include climate specific support mechanisms and financial aid for mitigation and adaptation activities to spur and enable the transition towards low-carbon, climate-resilient growth and development through capacity building, research and development and economic development. The term has been used in a narrow sense to refer to transfers of public resources from developed to developing countries, in light of their UN Climate Convention obligations to provide "new and additional financial resources," and in a wider sense to refer to all financial flows relating to climate mitigation and adaptation (Fatoki & Sasona, 2015, p. 79).

The goal of climate financing is to facilitate the transition to a low-carbon and climate-resilient economy, helping countries and communities tackle the challenges posed by climate change." Climate finance is funding that supports the actions needed to combat climate change. It can be used to mitigate emissions, help communities and economies adapt to the impacts of climate change, or build resilience to future shocks. Climate finance can come from a variety of sources, including public, private, and alternative sources (https://www.investopedia.com/terms/c/climate-finance.asp).

2.2. Poor Climate Change Financing and Vulnerability to Flooding in Nigeria, 2020-2022

Although adequate climate change financing has been one of the key issues raised in Nigeria for decades to tackle climate changes in the country, climate change has not yet received adequate financing. Over the years, climate activities in Nigeria have not received sufficient funding to enable proactive anticipation, effective prevention and prompt response to climate change issues. In recent years, particularly between 2020 and 2022, climate activities were underfunded. For instance, between the stated period, an average USD 1.9 billion per year of public and private capital was invested in climate-related activities in Nigeria. This is only 11% of the estimated USD 17.7 billion needed annually to meet the conditional Nationally Determined Contribution

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(NDC) target of reducing emissions 47% below business-as-usual by 2030 (Stout & Meattle, 2022). As a result, several scholars are of a consensus that due to Nigeria's fragile economy which is largely dependent upon ecosystems and natural resources, the country has since the last eleven years been highly vulnerable to the impacts of climate change (DCC, 2021; Awo, 2022; MSCI, 2023).

It is important to note that Nigeria has been very pro-active in either taking part in designing (globally and nationally) policy incentives to encourage green finance. However, the actual climate funding has been at an all-time low. For instance, budget documents for the past four years show that the Nigerian government has allotted only about N200.6 million for raising public awareness for climate change and its effects on the ecosystem. However, many Nigerians are not aware of climate change and its impact on the ecosystem (Kareem, 2023).

Despite being the third top recipient of climate finance in the continent (behind Egypt and Morocco), the tracked USD 1.9 billion of climate finance flowing to and within Nigeria is minimal relative to the size of the country's economy and the opportunities for low-carbon development. Many developing countries, including Nigeria, relied on international climate funds to support their climate initiatives. However, accessing these funds often proved challenging due to bureaucratic hurdles, complex application processes, and a lack of capacity to meet the stringent requirements. Between 2020 and 2022, climate finance in Nigeria accounted for just 7% of tracked climate finance in Africa (USD 29.5 billion) and 27% of West Africa's flows (USD 7 billion). In essence, climate investment remained insufficient compared to the estimated levels needed to achieve Nigeria's NDC, with the overall gap put at USD 15.8 billion (Stout & Meattle, 2022, p. 7).

In addition, the investment gap for priority sectors looms large in the Nigerian climate finance landscape, given the estimated USD 17.7 billion needed annually to deliver on the conditional NDC (NDC (FME, 2021). At USD 663 million, adaptation finance is not consistent with the extent of the country's vulnerability to climate change (Nwankpa, 2022).

Also, external funding to climate issues in Nigeria and the African continent in general has been poor. On this note, Nigeria's former Vice President, Prof Yemi Osinbajo stated that Africa received $29.5 billion annually as opposed to the $277 billion it needs for climate financing. The size of climate financing to Nigeria over the years has not been comprehensive enough. The percentage allocated to Nigeria relative to her size and her climate change challenges, as compared with other nations is disturbing and unconvincing. The share from the Climate Technology Fund (CTF), as seen from the CTF factsheet, revealed that Nigeria has U.S$250 million approved for it in the CTF financing, while her counterpart like South Africa has

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U.S$500 million and this is the trend with other funds from climate financing institutions. According to the department of climate change, Nigeria's Federal Ministry of Environment, it was gathered that till date, Nigeria has leveraged $63 million of multilateral funds for climate change projects. This is broadly equal to that which Rwanda received, a country whose population is only 7 percent of Nigeria's while we receive just a tenth of the total funding approved for South Africa (Nigerian Tribune, 2020).

In addition, private sector investment in climate change in Nigeria was very poor between 2020 and 2022. In other words, private sector investment significantly lagged behind public investment in Nigeria. According to Itua & Esambe (2021, p. 5), "it is generally known that the private sector holds the ace to business models and innovations that drive the society to success and awaken the latent need," however, private sector investment in climate change mitigations was not sufficient or was not adequately utilized in Nigeria within the study period. Although there is growing initiatives in Nigeria, the status of private sector participation in climate financing in Nigeria remained low. For instance, amongst the private sector players, awareness about the Paris Agreement, climate change (the risk and opportunities), and the Nationally Determined Contribution (NDC) was low between 2020 and 2022. Itua and Esambe (2021, p. 7) noted that this created a significant barrier in the uptake of several actions by the private sector towards concrete climate actions (Itua & Esambe, 2021, p. 7).

According to Stout & Meattle (2022, para. 4), in 2020, private sector investment in climate change accounted for only 23% of total climate finance in the country (Stout & Meattle, 2022). Although the CFA, the Nigeria Climate Innovation Center, set up in 2018 by the World Bank and the Federal Government, worked to develop and deploy solutions to climate change by providing venture-development and capacity-building support for viable green businesses across the renewable energy, waste management, water and agricultural sectors, thus far, incubated businesses have raised only USD 1 million (Nigeria CIC, 2022).

Overall, while the necessary policy and regulatory infrastructure were in place, the financial landscape in Nigeria constrained climate-positive investment from the private sector. With low revenue-to-GDP ratio (8% of GDP) and a weak monetary and exchange rate framework, investment in Nigeria was generally low (FCDO, 2022). By continuation, the subset of climate-positive investment therein was even more limited, especially adaptation projects which tend to be inherently long-term, offering lower rates of return (GCA, 2021).

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3.0. Assessment of Poor Private Sector Investment in Climate Change Issues in Nigeria

Accordingly, Itua & Esambe (2021, p. 8) itemized the following factors as being responsible for poor private sector investment in climate change issues in Nigeria:

1. There is lack of capacity to transform NDC implementation plans into investment-ready projects and to develop appropriate financial proposals or requests for funding assistance from different sources and for the specific sectors identified in the NDC

2. Low capacity to transform NDC's implementation plans into investment- ready projects

3. Low support to create pilot projects that demonstrate new investment schemes to accelerate adaptation and mitigation actions

4. Low capacities to develop appropriate financial proposals or requests for funding assistance from different sources and for the specific sectors identified in the NDC

5. The capacity to design and implement bankable projects by the private sector in Nigeria. with scale and impact is weak.

6. Another important barrier against the private sector's involvement in Nigeria's climate financing, especially by the Small and Medium Enterprises (SMEs), is the lack of adequate knowledge of climate change/risk (flooding, extreme coastal conditions, draughts, super-hot days that cause systems to fail, etc.) and the skills and tools to protect their businesses.

7. There is also a lack of awareness on how to exploit the opportunities, avenues to profit from the challenges of climate change, especially through the transition to the green economy (designed to improve human well-being and social equity with a significant reduction of environmental risks and ecological scarcities) via innovation (designing product, process or service with the primary purpose of contributing to less polluting or more resource-efficient than equivalent normal products that furnish a similar utility) and creating green jobs.

8. Another challenge is the lack of a supportive investment environment with clear and transparent regulations and well-designed policy incentives for the private sector to contribute to financing climate actions. This has hampered the support to create pilot projects that demonstrate new investment schemes to accelerate adaptation and mitigation actions.

Overall, poor budget allocation to climate change and limited private sector investment in climate financing, led to people being vulnerable to excessive flooding and deforestation in Nigeria, particularly between 2020 and 2022. Due to limited national and international budget allocated to climate change within the period, so many people and communities in Nigeria were

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unable to cope with the increased rainfall and excessive flooding witnessed in the country within the period. Generally, rainfall for the country is usually highly variable and analysis indicates no clear trend in precipitation. Increasing climate variability in Nigeria cause more intense and untimely rainfall (World Bank, 2022). Between 2020 and 2022, the durations and intensities of rainfall increased, producing large runoffs and flooding in many places in Nigeria. According to GERICS (2022), in 2020, 2021 and 2022, heavy rainfall intensified in most parts of the country, with precipitation events and extreme rainfall, resulting in flooding events and impacting on rivers and surface water runoff during the summer rainy seasons. As a result of this, natural disasters due to the increase in the frequency and intensity of floods and droughts increased in the country.

According to Thisday (2022, online), since the flood catastrophe of 2012 and 2015, no other time has Nigeria faced severe flooding other than between 2020 and 2022. This three-year period witnessed communities becoming highly vulnerable to the risk and intensity of flooding through increased frequency and intensity of heavy rainfall events. For instance, in 2020, floods affected 320 local government areas in 35 states including the FCT, displaced over 129,000 persons, killed 68 persons, and destroyed many properties and farmlands. Similarly, in 2021, the UN reported that over 100,000 people were directly affected by flash floods in Adamawa State alone. According to Ajasa (2022), in 2022, widespread flooding caused by extreme rainfall and the release of excess water from a dam in neighboring Cameroon, left 1.4 million Nigerians displaced and claimed 500 lives, according to government officials.

Similarly, the National Emergency Management Agency, (NEMA) said that 662 persons lost their lives, 3,174 suffered injuries and 2,430,445 individuals were displaced by the 2022 flood disaster in the country. Thousands of houses, hectares of farmlands, and several critical national assets were destroyed by the raging floods (Ogune, 2023). Corroborating this, the International Rescue Committee (IRC) reported that Nigeria still ranked among top 10 countries at risk of climate disaster with about 2.5 million people affected by flooding in late 2022 (Akinduro, 2023, para. 1). Between February and November 2022 for instance, thirty-four of thirty-six Nigerian states of the country were affected by flooding and drought, and about 600 people were killed. Between these months also, 1,546 people were injured and over 100,000 persons were displaced by floods across Nigeria (Thisday, 2022; Sahara Reporters, 2022; Ajasa, 2022; Bouri, 2023).

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Table 1: *Some Major Flooding Incidence, Nature and Consequences in Nigeria, 2020 and 2022*

S/N	Date	Location	Nature of Environmental Crises	Consequences
1.	2020	Lokoja, Ibaji, Ajaokuta, Omala, Bassa, Koton and Karfe, Kogi State	Flooding	Thousands of homes were submerged, roads were rendered impassable, and many residents were displaced. Agricultural lands were heavily flooded, resulting in significant crop loss.
2.	2020	Shiroro, Lapai, Bida, Niger State	Flooding	Many villages were submerged, causing displacement of residents. The flooding also led to loss of lives, destruction of homes, and extensive damage to farmlands.
3.	2020	Ogbaru, Anambra West, Anambra East, Ayamelum in Anambra State	Flooding	Large-scale displacement of residents, destruction of homes and farmlands, leading to food shortages and economic hardship.
4.	2020	Bomadi and Burutu in Delta State	Flooding	Homes and farmlands were submerged, resulting in displacement and economic losses due to crop destruction.
5.	2021	Adamawa State	Flooding	Flash flood affected 100,000 people
6.	2021	Jalingo Local Government Area (LGA), Taraba State	Flooding	Hundreds of residents were displaced as their homes were submerged, significant damage to residential buildings, schools, and marketplaces, farmlands were flooded, leading to crop destruction and food shortages.
7.	2021	Ibaji Local Government Area (LGA), Kogi State	Flooding	Thousands of residents were forced to evacuate their homes and seek shelter in makeshift camps, roads and bridges were damaged, hampering movement and access to essential services, extensive damage to farmlands and livestock, leading to significant economic losses for farmer, and outbreaks of waterborne diseases due to contaminated water sources
8.	2021	Anambra East Local Government Area (LGA), Anambra State	Flooding	Numerous communities were displaced, with residents losing their homes and belongings, destruction of businesses and farmlands, leading to loss of livelihoods and

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				10 increased poverty levels, schools were submerged, disrupting the education of children in the affected areas, increased cases of waterborne diseases, with healthcare facilities struggling to cope with the surge in patients.
9.	2022	Rann & Damasak LGAs Borno State	Flooding	Affected roads, bridges and some communication lines. Leaving certain communities hosting displaced people, and these communities were entirely inaccessible
10.	2022	Lokoja, Kogi State	Flooding	Roughly 113.3km of roads were submerged in floodwater
11.	2022	Ogbaru, Ayamelum, Onitsha North and South, Ihiala LGAs in Anambra State	Flooding	Destroyed a major road connecting 8 communities to the rest of Anambra state, resulting in at least 76 deaths
12.	2022	Ahoada West LGA, Rivers State	Flooding	Displaced over 150,000 people and increased incidence of extreme rainfall which resulted in soil erosion and water logging of crops.
13.	2020	Borno, Adamawa and Yobe States	Flooding	Triggered a cholera outbreak, with 7,700 cases and 324 deaths

Source: Compiled by the Researchers from Daily Newspapers

Between June and October 2022, heavy rainfall and strong winds severely affected Nigeria. As at 6 October, flooding had affected 33 of its 36 states. The most affected states were Anambra, Bayelsa, Cross River, Delta, and Rivers in southern Nigeria and the Federal Capital Territory in central Nigeria. As at 20 October 2022, the crisis had displaced more than 1.4 million people and affected over 2.5 million. Bayelsa State was reported to be the worst affected, with around 700,000 people displaced or affected as at 18 October 2022. Detailed information on humanitarian needs for each state is limited as there has not been any comprehensive needs assessment yet (OCHA, 2022).

As at 18 October 2022, over 600 fatalities and more than 2,400 injured people were reported across the country. The floods also triggered a cholera outbreak in Borno, Adamawa, and Yobe

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(the BAY states). As at 30 September, 7,700 cases, including 324 deaths, were reported across these three states. 5,400 of these cases were in Borno state alone. Heavy rainfall continued over the southern states of Nigeria. The accumulation of rainwater caused further flooding along the Niger and Benue Rivers. Riverine flooding worsened as water was released from dams, such as Lagdo Dam in Cameroon (USAID, 2022; The Nation, 2022). Consequently, the number of affected and displaced people continued to rise.

Poor budget allocation to climate change issues not only led to flooding in Nigeria between 2020 and 2022, it also led to an alarming rise in sea level in most parts of Nigeria and resulted in shrinking land area, coastal flooding, and powerful storm surges (OCHA, 2022). According to Raheem (2022), Nigeria's homes vanished into the sea from climate change. Hundreds of residents watched helplessly as tidal waves devoured their homes, which experts said was a product of rising sea levels linked to climate change.

Power supply disruptions occurred as a result of the excessive flooding, isolating affected communities. Around 90% of foreign exchange in Lagos depends on fossil fuel exports, meaning the situation worsened the current economic crisis in Nigeria. The flooding affected roads, bridges, and some communication lines, leaving certain communities entirely inaccessible and cut off from services. As at 30 September, Rann and Damasak local government areas (LGAs) in Borno state, which were hosting displaced people, were only accessible via helicopter. As at 4 October, in Lokoja, Kogi state, roughly 113.3km of roads were submerged in floodwater (Ocha, 2022). As at 9 October, the floods had destroyed a major road connecting eight communities to the rest of Anambra state, forcing people to rely on boats for access. On 7 October, a locally made vessel capsized in Anambra, resulting in at least 76 deaths (The Guardian, 2022). In Ahoada West LGA of Rivers state, 150,000 people were reported to be displaced and inaccessible as at 20 October (OCHA, 2022).

Equally, changes in rainfall with increased temperature and increases in floods impacted food security and water availability in Nigeria within the study period. Increased incidence of extreme

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rainfall resulted in soil erosion and water logging of crops in Southeast, South south and northcentral Nigeria, thus decreasing yields and increasing food insecurity. This confirmed an earlier report by USAID (2018), that:

> given projected climate change trends, especially that which concerns flooding, Nigeria and the surrounding West African region is expected to be a hotspot of food insecurity in the future. This may result in significant economic losses, damage to agricultural lands and infrastructure as well as human casualties. Land degradation and soil erosion, exacerbated by recurrent flood adversely impacts agricultural production, disproportionately affecting the livelihoods of the rural poor. Food security will be influenced because of the vulnerability of some crops to increasing temperatures and/or water stress.

Heavy rainfall and floods in particular had significant consequences on the environment, society, food security situation, as well as the wider economy of affected states and by extension, the country (World Bank Group, 2021, p.15).

4.0. CRITICAL ASSESMENT OF THE RESULTS

4.1. Issue of Transparency in Climate Funds Disbursement and Vulnerability to Land Degradation, 2020 and 2022

The period between 2020 and 2022 witnessed significant lack of transparency in climate funds disbursement in Nigeria. Funds mapped out for climate change were diverted by individuals and institutions in charge of climate financing in Nigeria. As a result of endemic corruption in Nigeria, highly placed individuals (government officials and heads of climate-related agencies) easily diverted public funds meant for climate financing in Nigeria between 2020 and 2023. For instance, billions of naira meant for flood disaster victims were stolen by government officials responsible for the disbursement of these funds (Falaiye, 2022). Also, the Nigeria Extractive Industries Transparency Initiative (NEITI) audit process reported in 2021 how beneficiary agencies of government diverted or embezzled NGN94.7 billion meant for the Derivation and Ecology fund (Uduu, 2021).

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In addition, people who work with the Ministry of Niger Delta in collaboration with National Emergency Management Agency (NEMA), in 2022, diverted money and other relief materials like food stuffs, building materials and household utensils among other palliatives meant for victims of flooding (Gbadamosi, 2023, para. 1). Similarly, relief materials meant for victims of the 2022 flooding in Opuoma community in Ohaji/Egbema local government area, were diverted to another place. Some officials of National Emergency Management Agency (NEMA) and other relevant agencies were behind the diversion of the relief materials (Onukwugha, 2022, para. 1). Unfortunately, in recent years, there has not been sufficient efforts by the Federal Government to investigate and prosecute agencies and individuals responsible for climate funds diversion (Udu, 2021).

Out of 180 countries, Nigeria ranked 149 in 2020, 154 in 2021 and 150 in 2022 in the Corruption Perceptions Index (Transparency International, 2023). This perfectly demonstrates how endemic corruption has become in Nigeria, especially in recent years.

Corruption in climate finance negatively impacts climate change intervention, undermining mitigation efforts to reduce emissions and decreasing the quality of adaptation infrastructure – in both cases, donors and other funders suffer the loss or misuse of funds (Nest et al, 2020). International and national climate finance shortages are a problem, but corruption and unaccountable state spending enable climate disasters (Ojewale, 2022, para. 1). A couple of scholars believe that there is a wide gap between funds allocated for climate financing and funds eventually disbursed in Nigeria (Corfee-Morlot, Guay & Larsen, 2009; Nakhooda, Watson, & Schalatek, 2013; Fadairo, 2018; Nest, Mullard & Wathne, 2020; Ojewale, 2022). Corruption with climate finances among concerned stakeholders in Nigeria is very glaring.

In recent time, cases of corruption surrounding the administration of the Ecological Fund have drawn the attention of the National Assembly. For example, House of Representatives members raised concerns that state and federal authorities were diverting ecological funds, and in June 2022, a probe was launched into the use of the fund over the past 10 years (Ojewale, 2022, para. 9). Unfortuately, the report of the probe has not been made public as at the time of this research.

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Similar to the concerns about diversion of ecological funds, after the floods in 2022, former President Muhammadu Buhari questioned public criticism of the Federal Government since state and local authorities had received most of the ecological funds set aside for disaster management. However, evidence suggests that corrupt spending of the fund cuts across all three tiers of government (Ojewale, 2022, para. 11).

Diversion of climate funds and inherent corruption of some individuals vested with the responsibility of overseeing climate funds significantly contributed to people and communities being vulnerable to land degradation in Nigeria between 2020 and 2022. For instance, many Nigerians, especially residents in northern Nigerian, were unable to cope with the consequences that arose from deforestation between 2020 and 2022. Falaiye (2022) noted that land degradation as a result of deforestation, negatively affected food production, livelihoods, and the production and provision of other ecosystem goods and services in most parts of Nigeria, especially states in north-central and northwestern Nigeria. In the affected states, the degradation of land and its resulting impacts on other agricultural resources further exacerbated the economic and social challenges of the region, leading to hunger, poverty and loss of livelihood (Falaiye, 2022).

According to Nwankpa (2022, para. 11), funds for project and initiatives to address deforestation were not transparently used, which hindered the effective implementation of deforestation mitigation and adaptation programs in most parts of northern Nigeria. Had funds that would have been used to combat deforestation not embezzled by officials as a result of corruption, people's resilience to deforestation would have been enhanced. Akinduro (2022) noted that "in recent years, the funds for the replanting of trees are increasingly being diverted due to corruption." Similarly, as a result of diversion of climate funds for various corrupt reasons by authorities, cheap and alternative sources of energy are not invested in or provided to mitigate against deforestation. Due to this, deforestation was a major climate change issue in most part of northern Nigeria between 2020 and 2022. This greatly affected agriculture and agricultural activities particularly in northern Nigeria, which made many people poor, affected food production and caused hike in food prices nationwide. Those affected by deforestation had issues

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with effectively adapting to the situation, and this caused economic displacement and massie reduction in agricultural produce.

4.2. Challenges to Effective Climate Change Financing in Nigeria

Authors have highlighted various barriers and challenges to effective climate financing in Nigeria. First is the challenge with mobilizing private finance. According to Itua & Esambe (2021), "Nigeria's capital markets are comparatively well-developed, however, private sector climate investment accounts for only a fifth of total tracked climate finance. Given constrained fiscal space, mobilizing private sector investment is of utmost importance." With Nigeria's core infrastructure stock estimated to be only 30% of GDP - which compares to an international benchmark of 70% (CCCD, 2022). The growing infrastructure finance gap offers a key entry point for leveraging private sector participation in the climate finance space (Itua & Esamebe, 2021). Indeed, estimates suggest approximately USD 100 billion will be needed, annually, over the next 30 years for infrastructure as Nigeria grows (FC4S Lagos & CBI, 2022).

Institutional investors and asset managers represent an untapped pool of capital. Nigeria's pension sector is the second largest in Sub-Saharan Africa, growing over nine times since 2006 and valued at approximately USD 33.3 billion in 2019 (EIB, 2021). However, no climate finance was tracked (under the Institutional Investors umbrella) from pension funds and asset managers in 2019/2020. Additionally, while progress has been made establishing a robust regulatory framework for green bonds, the bond market is still underdeveloped and has only seen limited, though promising, engagement from private actors (Stout & Meattle, 2022, p. 21).

The second challenge to effective climate change financing in is capacity constraints. According to Stout & Meattle, Nigeria still faces capacity constraints to adequately implement, manage, and report on climate action. Capacity gaps exist across sectors and actors. Awareness and understanding of the challenges posed by, as well as possible cost-effective solutions to, the climate challenge in Nigeria is lacking. In order to build a more comprehensive understanding of the gaps and financing needs, better data and evidence is required. Indeed, adequate MRV

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systems are needed to assess progress relative to established baselines. However, as reported in the second Biennial Update Report (Stout & Meattle, 2022, p. 21). Nigeria continues to lack the necessary technical capacity and robust institutional arrangements for a well-functioning GHG inventory management system. A recent Initiative for the Climate Action Transparency (ICAT) scoping project also highlighted the need to develop capacities for estimating GHG emissions in Nigeria as well as quality assurance/quality control protocols, drawing on current institutional arrangements (for example, the National Bureau of Statistics) as well as third-party actors (ICAT, 2022).

Another barrier is the challenge with disclosures. Disclosures remain limited, despite initiatives spearheaded by the Central Bank of Nigeria and the Nigerian Stock Exchange. Tracking and reporting on climate finance is an essential component for effectively managing those capital flows. The work done on Nigeria's Sustainable Banking Principles needs to be further improved to integrate operational green finance definitions and methodological guidance – based on international practice - with more formal (stringent) requirement so as to improve the quantity and quality of reporting (WBG, 2021). Signatory banks should also be working towards formal assessments of portfolio climate risk, with accompanying climate risk management strategies (WBG, 2018). The current information asymmetries only serve to stifle investment while preventing a complete assessment of the landscape of private climate finance in Nigeria (Stout & Meattle, 2022, p. 22).

The fourth challenge does with technology. In line with this, NDC (2021) noted that "Nigeria lacks the necessary technological resources and expertise to implement the energy transition and adaptation action more broadly. Technology gaps – whether in relation to data, goods/services or expertise – inhibit the country from being able to adopt more advanced solutions to climate change, for example, early warning systems for adaptation or renewable energy technologies. Indeed, given that Nigeria currently does not manufacture much of the equipment needed for renewable energy, fostering technology transfer – via either north-south or south-south initiatives – is imperative for delivering on the conditional NDC, as recognized by the Government." The

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technology gap is also inhibiting the country's ability to adapt, where data and analytics are needed to identify (heterogenous) vulnerabilities and to facilitate the design of context-specific, locally-feasible solutions (Stout & Meattle, 2022, p. 22).

The fifth challenge or barrier has to do wity coordination. Coordination failures across actors and sectors undermine the potential for a "whole of government" and "whole of society" approach to climate action. While the Inter-Ministerial Committee on Climate Change facilitates cross-sector coordination between ministries and other stakeholders, the climate challenge demands a "whole of government" approach to ensure policy frameworks are directly connected to finance and cross-cutting issues involve all relevant ministries. Indeed, policymakers must ensure synergies between workstreams are enhanced rather than addressing interconnected issues (for example, air quality and climate) in isolated siloes. More broadly, a "whole of society" approach requires institutional arrangements that connect actors across sectors and geographies, essential for scalingup awareness of the climate challenge and facilitating vital public-private partnerships (Itua et al., 2021).

5.0. CONCLUSION AND RECOMMENDATIONS

Between 2020 and 2022, Africa's most populous nation, stretching from the southern fringe of the Sahara to the Gulf of Guinea, witnessed poor climate change financing which impacted on people's and local communities' inability to cope and adapt to climate change. These environmental challenges resulted in significant economic losses, loss of life, damage to property, and ecological degradation. The adverse impact on small and medium-scale farmers across affected states equally led to acute food shortages and disruptions in transportation networks. Based on the findings of this study, the paper made the following recommendations:

1. There is need to scale-up climate-resilient infrastructure by bridging the large and growing infrastructure gap in Nigeria to provide a strategic entry point for both public and private actors to work in partnership, delivering climate-resilient infrastructure that can withstand prospective climate risks.

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2. There is need for the Nigeria government to reinforce her strategy to leverage the investments by the private sector and harness the opportunities this provides to implement climate projects. A meaningful involvement of private sector actors—ranging in size, sector, motivation or operating in the formal or informal sector—in the planning, implementation, and monitoring and evaluation, will no doubt further national climate actions. In other words, there is a need to strategically include the private sector in climate change adaptation and mitigation planning and actions because of their critical roles in the economy .

3. Corrupt officials implicated in diversion of climate funds for any reason, should be investigated and prosecuted. This will serve as deterrent to others who may in the future want to conceive or get involved in acts geared towards diversion of climate funds mapped for enhancement of climate resilience and adaptation.

Competing Interest

The authors have declared that no competing interest exist in this paper.

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