Chapter Twenty-Four

Policy Responses to Climate-Induced Food Insecurity and Poverty

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Introduction

Climate-induced food insecurity and poverty are major global challenges, with the Niger Delta region of Nigeria being particularly vulnerable. The region is abundant in natural resources such as oil and gas but is severely impacted by environmental degradation, poverty, and food insecurity (Ibeanu, 2016). Its unique ecosystem includes mangrove forests, freshwater swamps, and coastal plains, rich biodiversity and substantial oil reserves are highly susceptible to the effects of climate change. Despite its natural wealth, the region confronts significant environmental and socio-economic challenges, intensified by climate change. Covering over 70,000 square kilometres, the Niger Delta includes nine states: Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers. The ecological fragility of the region makes it especially vulnerable to the impacts of climate change.

Climate change has been recognized as a major threat to food security and Niger Delta region faces severe climate-related challenges, including higher temperatures, irregular rainfall patterns, rising sea levels, and more frequent extreme weather events (World Bank, 2021). These challenges have had serious repercussions for agriculture, fisheries, and other livelihoods in the region, all of which depend heavily on the natural environment. For example, erratic rainfall and extended dry seasons disrupt farming schedules, reduce crop yields, and lead to soil degradation (UNDP, 2020). Additionally, rising sea levels lead to coastal erosion and saltwater intrusion, contaminating freshwater sources and rendering agricultural land infertile (IPCC, 2022). The combined effects of these climatic stressors severely impact food production and security in the Niger Delta. Local farmers and fishermen face reduced productivity and increased vulnerability to income shocks, exacerbating poverty levels.

The demographic and economic landscape of the region is characterized by high poverty rates, inadequate infrastructure, limited access to education and healthcare, and widespread unemployment (NBS, 2022). Despite the region's substantial oil wealth, oil exploitation has often led to environmental degradation, conflict, and social unrest (Amnesty International, 2020). Food insecurity in the region is closely linked to these socio-economic determinants. Poverty limits households' ability to purchase sufficient and nutritious food, while inadequate infrastructure hampers market access and food distribution (FAO, 2021).

Furthermore, the lack of alternative livelihood opportunities forces many residents to rely heavily on climate-sensitive activities such as farming and fishing, especially susceptible to the effects of climate change (UNDP, 2020).

The Nigerian government has implemented several policy frameworks aimed at addressing climate change, food security, and poverty alleviation. Key policies include the National Policy on Climate Change, the National Food Security Programme, and various poverty reduction initiatives such as the National Social Investment Programme (NSIP) (Federal Ministry of Environment, 2019). However, the effectiveness of these policies has been limited due to several factors such as insufficient resources and funding, coordination challenges among government agencies, non-governmental organizations (NGOs), and local communities, and limited community participation in policy formulation and implementation processes. This disconnect between policymakers and the affected populations hampers the effectiveness of adaptation and mitigation strategies.

Statement of the Problem

As earlier stated, the Niger Delta region is currently facing the severe effects of poverty and food insecurity brought on by climate change. Because of its distinct habitat, which is made up of coastal plains, freshwater swamps, and mangrove forests, the area is especially vulnerable to climate change impacts, including rising sea levels, heightened instances of flooding, and droughts. The region's residents' food insecurity and poverty have been made worse by these climate-related disasters, which have caused crop failures, lower yields, and changed growing seasons. The insufficiency, fragmentation, and lack of coordination of present-day actions regarding these issues have prevented them from addressing the intricate and interwoven nature of poverty and food insecurity brought on by climate change. The absence of a comprehensive policy framework has led to a fragmented approach towards addressing these concerns, with insufficient focus on the socio-economic and environmental elements that fuel food insecurity and poverty in the area.

The long tradition of the exploration and extraction of oil in the Niger Delta region has additionally resulted in community uprooting, environmental damage, and loss of livelihoods, which exacerbates the problems of poverty and food insecurity. With little access to essential services like clean water, sanitary conditions, and healthcare, as well as little employment prospects, the area has one of Nigeria's worst rates of poverty. Food instability and poverty brought on by climate change have far-reaching and disastrous effects on the Niger Delta, including stunted growth, higher mortality rates, and malnutrition, especially among vulnerable groups including women, children, and the elderly. Poverty and food insecurity have persisted as a result of ineffective governmental responses to these issues, hindering the region's economic and human development.

To address these related concerns, the pertinent questions are: What are the primary drivers of climate change in the Niger Delta region? How does climate change affect food security in the region? In what ways does climate change contribute to poverty? What are the existing policy responses to mitigate the impacts of climate change on food security and poverty? Therefore, the objectives include, identifying the primary causes and drivers of climate change in the Niger Delta region; examining the impacts of climate change on food security within the Niger Delta region; to analyse the relationship between climate change and poverty in the Niger Delta region; and to evaluate existing policy responses and propose strategies for mitigating the effects of climate change on food security and poverty in the Niger Delta region.

Conceptual Framework

Climate Change

Climate change is a global phenomenon characterized by long-term alterations in temperature, precipitation patterns, sea levels, and weather extremes (Intergovernmental Panel on Climate Change, 2021). In the Niger Delta region, the impacts of climate change are particularly pronounced due to its unique geographic and ecological characteristics. The region, dominated by wetlands, mangroves, and creeks, is highly vulnerable to rising sea levels, increased rainfall variability, and temperature fluctuations. These changes disrupt the ecosystem balance, leading to loss of biodiversity and degradation of arable lands. Flooding, a recurrent issue in the Niger Delta, has intensified due to climate change, submerging farmlands and displacing communities (Nigerian Meteorological Agency, 2022). Furthermore, saltwater intrusion into freshwater systems compromises the availability of potable water and affects agricultural productivity, as many crops are sensitive to salinity. The changing climate exacerbates existing vulnerabilities, making the need for adaptive and mitigation strategies critical to ensuring sustainable livelihoods in the region.

Food Insecurity

Food insecurity in the Niger Delta is a multifaceted issue stemming from both environmental and socio-economic challenges. Climate change significantly affects agricultural productivity by altering growing seasons, reducing crop yields, and increasing pest and disease prevalence (Food and Agriculture Organization, 2020). Subsistence farmers, who form the majority of agricultural producers in the region, are particularly vulnerable due to their reliance on rain-fed agriculture. Floods and droughts frequently destroy crops, leading to reduced food availability and higher market prices. Additionally, the region's heavy dependence on oil exploration has led to environmental degradation, including soil contamination and water pollution,

further limiting arable land and access to clean water for farming (Amnesty International, 2019). The high prevalence of food insecurity in the Niger Delta manifests in malnutrition, stunted growth in children, and reduced economic productivity. Addressing these challenges requires comprehensive policies that integrate sustainable agricultural practices, climate adaptation measures, and access to food for vulnerable populations.

Poverty

Poverty in the Niger Delta is deeply intertwined with environmental degradation and socio-economic inequalities. Despite the region's wealth in natural resources, particularly crude oil, many communities face significant economic hardship (United Nations Development Programme [UNDP], 2021). Oil spills and gas flaring have degraded the environment, disrupting traditional livelihoods such as farming and fishing. The destruction of these income sources pushes many residents into unemployment or low-paying jobs. Climate-induced challenges exacerbate poverty, as flooding and erosion displace communities and destroy infrastructure, leading to increased costs for rebuilding and rehabilitation. Furthermore, limited access to education, healthcare, and social services perpetuates a cycle of poverty (World Bank, 2020).

Theoretical Framework

The theory adopted in this study was the Environmental Justice Theory as articulated by Schlosberg (2004). The theory critiques the inequities that arise from policies and practices that concentrate environmental hazards in disadvantaged communities while allocating environmental amenities more equitably among wealthier or politically influential groups. In the context of the Niger Delta, the theory provides a powerful analytical tool to understand the complex interplay between environmental degradation, socio-economic vulnerability, and climate change impacts. The region, rich in natural resources like oil and gas, has experienced significant environmental degradation due to decades of oil extraction activities. This has led to widespread pollution of land, waterways, and air, severely affecting local communities whose livelihoods depend on agriculture, fishing, and natural resources (Agbiboa, 2017).

The framework highlights how environmental injustices exacerbate food insecurity and poverty in the Niger Delta. For instance, pollution from oil spills and gas flaring contaminates farmlands and water sources, reducing agricultural productivity and compromising access to safe drinking water. Coastal erosion and loss of biodiversity further threaten food sources and exacerbate economic hardships among fishing communities. Moreover, the theory underscores the intersectionality of environmental and socio-economic inequalities in shaping

vulnerability to climate change. Vulnerable populations in the Niger Delta, often marginalized based on ethnicity, socioeconomic status, and geographic location, face compounded risks from climate variability and extreme weather events. These communities typically lack the resources and political influence to advocate for their rights or access to equitable environmental protections (Schlosberg, 2004).

In applying environmental justice theory to policy responses, it becomes evident that addressing these structural inequalities requires more than just technical or regulatory solutions. It necessitates transformative changes in governance structures, decision-making processes, and resource allocation mechanisms. Policies must prioritize the participation of affected communities in decision-making, ensure equitable access to environmental resources, and hold accountable those responsible for environmental harm (Agbiboa, 2017).

Methodology

This study employed a comprehensive literature-based research design . The approach allowed for an in-depth analysis of existing research, policy documents, and grey literature to provide a nuanced understanding of the issues and potential solutions. A search of the literature was conducted to find studies, policy papers, and sources of grey literature that were relevant to our research. The search approach utilized a blend of keywords, such as "climate change," "food insecurity," "poverty," "Niger Delta," and "policy responses," to encompass a wide array of pertinent material. The search was restricted to English-language papers published from 2013 to 2023. Inclusion criteria comprised studies that were published in English between 2013 and 2023; focused on empirical research, reviews, and policy analyses specific to the Niger Delta region; examined the relationships between climate change, food insecurity, and poverty; provided insights into policy responses, challenges, and opportunities for improvement. The exclusion criteria included studies that were not directly related to climate impacts, food security, poverty, or policy responses in the Niger Delta region; were not published in English; and were published before 2013 or after 2023.

The Study Area

The research focused on the Niger Delta region of Nigeria comprising nine states: Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers. It is one of the world's largest wetlands, characterized by a network of rivers, creeks, and mangroves. The region is home to over 30 million people, comprising diverse ethnic groups such as the Ijaw, Itsekiri, Urhobo, and Ogoni. Despite its resource wealth, the Niger Delta faces significant developmental and environmental challenges. The region's economy is heavily reliant on oil production, which has led to widespread environmental degradation. This has severely affected agriculture and fishing, the

traditional livelihoods of many inhabitants (Environmental Rights Action [ERA], 2021). Furthermore, the Niger Delta is prone to climate-induced hazards such as flooding, erosion, and saltwater intrusion, which worsen food insecurity and poverty. The socio-political landscape of the region is marked by tensions over resource control and environmental justice, underscoring the need for inclusive and sustainable development policies. Addressing these challenges holistically can pave the way for improved livelihoods and resilience in the Niger Delta.

Causes of climate change

The causes of climate change can be broadly classified into natural and anthropogenic factors. While natural causes such as volcanic eruptions, solar radiation fluctuations, and changes in oceanic circulation have historically contributed to climate variability, the current pace of climate change is overwhelmingly driven by human activities. The anthropogenic causes include:

- *Burning of fossil fuels* - The combustion of fossil fuels for energy production and transportation releases significant amounts of carbon dioxide (CO2) and other greenhouse gases into the atmosphere. These gases trap heat, leading to global warming (IPCC, 2021).
- *Deforestation* - The clearing of forests for agriculture, urbanisation, or logging reduces the number of trees that can absorb CO2 from the atmosphere, exacerbating greenhouse gas accumulation (FAO, 2020).
- *Agricultural practices* - Agriculture contributes to climate change through methane emissions from livestock and rice paddies, nitrous oxide emissions from fertilisers, and land-use changes (Smith et al., 2019).
- *Industrial emissions* - Industrial processes release various pollutants, including greenhouse gases and aerosols, contributing to atmospheric warming and altering precipitation patterns (UNDP, 2021).
- *Urbanisation:* Rapid urbanisation increases energy demand and contributes to the heat island effect, which exacerbates local climate anomalies (IPCC, 2021).

Consequences of climate change

Climate change has far-reaching consequences that impact ecosystems, human health, and socio-economic systems. These consequences are:

- *Rising temperatures:* Higher global temperatures disrupt ecological balance and reduce agricultural productivity. In the Niger Delta, increased temperatures result in heat stress for crops and livestock, reducing yields and increasing the risk of food shortages (FAO, 2020).

- *Changing precipitation patterns:* Erratic rainfall disrupts planting and harvesting schedules, leading to lower agricultural output. Excessive rainfall causes waterlogging, which damages crops, while prolonged dry spells result in drought and reduced water availability (Smith et al., 2019).
- *Sea-level rise and flooding:* The Niger Delta, being a low-lying coastal region, is particularly vulnerable to sea-level rise. Frequent flooding destroys farmlands, erodes soil, and displaces communities. Floodwaters often contaminate freshwater resources, further reducing agricultural productivity (IPCC,2021).
- *Increased salinity:* Saltwater intrusion, caused by rising sea levels, affects soil and water quality. Saline soils are less fertile, making it difficult to grow crops, while contaminated water sources hinder irrigation and drinking water availability (FAO, 2020).
- *Biodiversity loss:* Changes in temperature and precipitation patterns threaten the survival of plant and animal species, disrupting food chains and ecosystems. In the Niger Delta, the loss of biodiversity directly impacts fisheries and agriculture, two critical sectors for food security (UNDP, 2021).
- *Increased pests and diseases:* Warmer temperatures and altered precipitation patterns create favourable conditions for pests and crop diseases. For example, higher temperatures can lead to an increase in locust populations, which devastate crops, while waterborne diseases become more prevalent during flooding events (Smith et al., 2019).

Climate change and food insecurity

The nexus between climate change and food insecurity is evident in the Niger Delta, where climatic disruptions exacerbate vulnerabilities in food production, access, and utilisation.

Reduced agricultural productivity - Flooding and soil degradation reduce the availability of arable land, leading to lower crop yields. Erratic rainfall patterns disrupt planting and harvesting cycles, creating seasonal food shortages and price volatility (FAO, 2020). In addition, increased temperatures affect the growth of staple crops such as cassava and maize, which are sensitive to heat stress.

Disrupted livelihoods - The reliance on agriculture as a primary livelihood in the Niger Delta means that climate-induced hazards directly impact income levels. Farmers facing crop failures due to flooding or drought are unable to afford food,

healthcare, or education, perpetuating cycles of poverty and food insecurity (IPCC, 2021).

Increased food prices - Reduced agricultural output leads to higher food prices, making it difficult for low-income households to afford sufficient and nutritious food. This economic barrier to food access disproportionately affects vulnerable populations, including women and children (Smith et al., 2019).

Nutritional deficiencies - Climate-induced disruptions in food production affect the availability of diverse and nutritious food. For example, the loss of fisheries due to biodiversity decline reduces protein intake among communities reliant on fish as a dietary staple (UNDP, 2021).

Food distribution challenges - Flooding and damaged infrastructure hinder the transportation and distribution of food, leading to localised shortages. This is particularly problematic in remote areas of the Niger Delta, where access to markets is already limited (FAO, 2020).

Policy responses to climate-induced food insecurity and poverty

There are several international, national, and sub-national policy responses to climate-induced food insecurity and poverty, some of which have been experimented in the Nigeri Delta region.

Global frameworks and agreements

Paris Agreement (2015): The Paris Agreement, adopted under the United Nations Framework Convention on Climate Change (UNFCCC), aims to limit global warming to well below 2°C above pre-industrial levels. Although the agreement does not specifically target food insecurity, it provides a framework for countries to reduce greenhouse gas emissions and adapt to climate impacts. For the Niger Delta, the agreement has facilitated access to international climate finance and technology transfer, which can support climate-resilient agriculture and food systems (UNFCCC, 2015).

Sustainable Development Goals (SDGs): The SDGs, adopted by the United Nations in 2015, include specific targets related to food security and poverty reduction. SDG 2 (Zero Hunger) and SDG 1 (No Poverty) are particularly relevant. International organizations and donor agencies have aligned their programs with these goals, providing financial and technical support to the Niger Delta to enhance food security and reduce poverty (United Nations, 2015).

I*nternational Aid and Development Programmes*

World Food Programme (WFP): The WFP has implemented several initiatives in the Niger Delta to address food insecurity. These include school feeding programs,

cash-for-work schemes, and emergency food assistance during climate-related disasters. For instance, the WFP's "Building Resilience to Climate Change" project aims to improve the resilience of vulnerable communities by promoting climate-smart agriculture practices (WFP, 2021).

International Fund for Agricultural Development (IFAD): IFAD has supported smallholder farmers in the Niger Delta through projects that enhance agricultural productivity and market access. The "Nigeria Rural Poverty Reduction Project" (NRPRP) focuses on improving the livelihoods of rural poor by providing access to credit, training, and infrastructure (IFAD, 2020).

Government Policies and Programmes

National Adaptation Strategy and Plan of Action (NASPA): The Nigerian government developed NASPA to address the impacts of climate change. The strategy includes specific actions to enhance food security and reduce poverty in the Niger Delta. For example, it promotes the use of drought-resistant crop varieties and the development of early warning systems for climate-related disasters (Federal Ministry of Environment, 2014).

Agricultural Transformation Agenda (ATA): The ATA, launched in 2011, aims to modernize Nigeria's agricultural sector. In the Niger Delta, the program has focused on improving access to inputs, credit, and markets for smallholder farmers. The ATA has also supported the development of agro-processing industries to add value to local agricultural products (Federal Ministry of Agriculture and Rural Development, 2011).

State and Local Government Initiatives

Delta State Government Initiatives: The Delta State government has implemented several programs to address climate-induced food insecurity and poverty. The "Delta State Agricultural Development Programme" (DSADP) focuses on improving agricultural productivity and promoting climate-resilient practices. DSADP has also established community-based climate adaptation committees to involve local stakeholders in decision-making processes (Delta State Ministry of Agriculture, 2018).

Community-Based Initiatives: Local communities in the Niger Delta have developed their initiatives to address climate-related challenges. For example, the "Community Climate Adaptation Fund" (CCAF) in Warri Local Government Area supports small-scale projects that enhance food security and reduce poverty. CCAF has funded projects such as the construction of community granaries and the establishment of local farmer cooperatives (Warri Local Government, 2020).

Evaluation of policy responses

While international, national, and sub-national policies have made significant strides in addressing climate-induced food insecurity and poverty in the Niger Delta, several challenges remain:

Implementation gaps: Despite the existence of robust policies, implementation often lags due to inadequate funding, poor coordination, and weak institutional capacity. For instance, NASPA has not been fully implemented due to limited financial resources and political will (Federal Ministry of Environment, 2014).

Limited community involvement: Many policies and programs are top-down approaches, with limited input from local communities. This top-down approach can lead to interventions that do not fully address the specific needs and contexts of the Niger Delta communities (Warri Local Government, 2020).

Sustainability: Some programs, particularly those funded by international donors, are often short-term and do not ensure long-term sustainability. For example, once donor funding ends, the impact of these programs may diminish (WFP, 2021).

Climate-Smart Agriculture: While some initiatives promote climate-smart agriculture, the adoption rate remains low due to limited access to information, training, and inputs. Enhancing farmer education and extension services is crucial for the widespread adoption of climate-resilient practices (IFAD, 2020).

Conclusion

The findings of the study emphasize the catastrophic impact of climate change on agricultural production, fisheries, and coastal communities, worsening food insecurity and poverty among vulnerable groups. The report suggests implementing a holistic and coordinated policy strategy that enhances the capabilities of institutions, encourages community involvement, and adopts practices that are resilient to climate change to tackle these difficulties. The study's results and suggestions offer a crucial basis for policymakers, practitioners, and academics to create and execute efficient policy measures to reduce the effects of climate change on food security and poverty in the Niger Delta region.

To address these challenges, it is recommended that governments and stakeholders promote climate-smart agriculture by improving access to drought-resistant crops, training, and essential inputs. Policy implementation should be strengthened through adequate funding, institutional capacity building, and sustained political will to ensure existing adaptation strategies are effectively executed. Efforts must also focus on enhancing community involvement by integrating local stakeholders into the planning and execution of climate adaptation projects, ensuring that interventions align with the unique needs of the region. Investing in critical infrastructure such as irrigation systems, flood control mechanisms, and transport networks is essential to mitigate flooding impacts and improve food distribution systems.

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