Clean Technology Hub
Energy Innovation Centre

Climate Change, Human Mobility, and Development in Nigeria: Towards an Integrated Approach.

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Introduction

Nigeria, Africa's most populous country, is highly vulnerable to the impacts of climate change, due to its diverse ecological zones and heavy reliance on climate-sensitive sectors such as agriculture. Indeed, in recent years, climate change has emerged as a significant driver of human mobility, shaping migration patterns across rural and urban areas.[1] Human mobility in this context includes internal migration, seasonal movement, and forced displacement.

Both sudden environmental events—such as floods—and gradual environmental changes—including desertification, coastal erosion, declining agricultural productivity, and water scarcity— are affecting livelihoods, economic opportunities, and the ability of communities to remain in their places of residence.

A key gap lies in the way responses are often designed. Rapid-onset disasters typically attract immediate attention, emergency funding, and policy interventions due to their visibility and direct impacts. In contrast, slow-onset climate processes develop over time, gradually weakening livelihoods, social systems, and economic resilience. As a result, many vulnerable communities experience prolonged hardship before adequate support measures are implemented, often leading to displacement that could have been prevented through early and sustained intervention.

In Nigeria, strengthening resilience at the community level is critical to reducing forced and crisis-driven migration against both rapid-onset and slow-onset extreme weather events. Investments in climate-smart agriculture, food security, sustainable livelihoods, infrastructure, education, healthcare, and environmental restoration can enhance the capacity of individuals and communities to adapt to changing climatic conditions while maintaining their economic and social wellbeing.

At the same time, human mobility should not be viewed solely as a consequence of climate vulnerability. When properly managed, migration can serve as an important adaptation strategy. Safe, orderly, and well-supported mobility can provide individuals and households with alternative livelihood opportunities, relocation from flood prone areas, reduce pressure on climate-affected communities, and generate remittances that strengthen local resilience and support development.

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[1] Aweda, E. D., Okhimamhe, A. A., Obateru, R. O., Schürmann, A., Teucher, M., & Conrad, C. (2024). Assessing the impacts of migration on land degradation in the savannah region of Nigeria. *Sustainability*, *16*(18), 8157. https://doi.org/10.3390/su16188157

Despite growing evidence of the climate-migration-food insecurity nexus, stakeholders tend to treat these challenges in isolation. Existing literature tends to examine climate change as an environmental phenomenon, migration as a socio-political issue, and food insecurity as a key development concern. In an era characterised by unprecedented global challenges, it becomes important to explore the intersectionality between climate change, migration, and food insecurity. While climate policies exist in Nigeria, they are often not integrated with migration or development planning. Key challenges include limited data on climate-induced mobility, weak urban planning systems, and inadequate institutional coordination.

Addressing climate-induced mobility in Nigeria therefore requires an integrated development approach that connects climate adaptation, economic development, peacebuilding, food security, and migration governance. Policies must be people-centred, ensuring that individuals have the choice to remain in their communities with dignity where conditions permit, while also creating safe and predictable pathways for mobility when movement becomes necessary.

Ultimately, sustainable development in Nigeria will depend on the country's ability to anticipate climate risks, invest in resilience before crises emerge, and recognize human mobility as both a challenge and a potential tool for adaptation in the face of a changing climate.



Figure 1. The 2026 flood in Nigeria (Source: Pulse)

Climate-Induced Human Mobility Patterns

Climate change manifests differently across Nigeria's regions. Northern Nigeria is experiencing increased desertification, prolonged droughts, and declining soil fertility. These environmental changes reduce agricultural productivity and threaten pastoral livelihoods. In contrast, southern and coastal regions, particularly the Niger Delta, are affected by flooding, rise in sea level, and coastal erosion. Urban areas such as Lagos face recurrent flooding and infrastructure stress.

These environmental pressures disrupt livelihoods, particularly for rural populations dependent on agriculture and natural resources. Studies have shown that declining crop yields and water scarcity are key factors influencing migration decisions in Nigeria.

These climate pressures contribute to various forms of human mobility in Nigeria. The most common is rural–urban migration, as individuals move to cities in search of alternative livelihoods. Seasonal migration is also prevalent among farmers and pastoralists who adapt to changing environmental conditions. In many cases, extreme weather events such as severe floods trigger sudden displacement, forcing families and communities to relocate in search of safety and stability.

Type of impact on households

According to the Nigeria Flood Impact Recovery Mitigation Assessment Report 2023 conducted by the Nigeria Bureau of Statistics In terms of the type of impact caused by the 2022 floods, the partial destruction of crops (67.9 percent), loss of personal prop-erties (56.1 percent), loss of food stock (52.6 percent), total destruction of farmland (42.3 percent) and loss of farm assets (40.0 percent) were among the common impact cited as shown in Table 1.[2]

[2] United Nations Development Programme. (2023). *Nigeria flood impact, recovery and mitigation assessment report 2022–2023.* https://www.undp.org/sites/g/files/zskgke326/files/2023-12/nigeriafloodimpactrecoverymitigationassessmentreport2023.pdf

TABLE 1: DISTRIBUTION OF HOUSEHOLDS SHOWING VARIOUS IMPACTS OF THE FLOODS (%)

	Partial destruction of crops	Total destruction of farmlands	Loss of live-stock (Except fishery)	Loss of Fishery production	Loss of food stock	Loss of farm assets	Loss of house-hold member	Loss of business	Loss of personal properties	Job loss	Others
Total	67.9	42.3	16.8	6.9	52.6	40.0	1.7	19.7	56.1	4.0	3.9
Residence											
Urban	41.4	26.3	7.1	3.5	36.7	26.5	1.8	23.7	56.9	4.1	13.3
Rural	72.9	45.4	18.6	7.5	55.6	42.6	1.7	19.0	55.9	4.0	2.1
State											
Anambra	63.4	67.4	12.4	1.3	52.8	42.1	0.0	21.8	39.6	0.7	3.8
Bayelsa	53.3	57.6	9.3	15.4	59.6	37.0	1.7	25.6	73.5	3.7	6.0
Delta	50.2	30.9	11.3	10.9	65.3	40.8	1.5	35.0	51.2	9.6	8.8
Jigawa	80.4	35.1	18.2	3.7	38.1	23.0	2.5	8.1	55.4	1.9	1.2
Kogi	71.5	44.2	28.8	8.0	63.5	59.4	1.8	23.3	70.0	3.4	2.9
Nasarawa	75.8	42.4	12.5	0.8	47.0	63.0	0.8	13.7	29.2	5.0	3.2
Gender											
Male household head	70.0	42.0	17.6	6.7	50.7	39.6	1.7	18.8	55.5	3.2	3.4
Female household head	58.4	44.0	13.1	7.5	61.0	41.4	2.0	24.0	58.6	7.7	6.2
Age											
Household head <= 35Years	65.8	38.0	16.5	7.0	51.3	32.9	1.3	17.3	56.1	3.6	3.2
Household head > 35 years	68.5	43.6	16.8	6.8	52.9	42.1	1.8	20.5	56.1	4.1	4.1

However, migration is not always a planned or voluntary decision. For many households, the loss of livelihoods, reduced agricultural yields, and diminishing access to natural resources create conditions that compel movement as a survival strategy. Conversely, some vulnerable populations lack the financial means, social networks, or resources required to relocate, leaving them exposed to increasing environmental risks and limiting their ability to adapt.

The growing connection between climate change and human mobility has emerged as a critical development challenge for Nigeria. Both rapid-onset disasters and slow-onset environmental changes contribute to migration patterns, affecting rural and urban communities alike. Across northern Nigeria, changing rainfall patterns, prolonged droughts, declining soil fertility, and advancing desertification have disrupted farming and pastoral

livelihoods, encouraging movement toward areas perceived to offer greater economic opportunities and environmental stability.

These movements have significant implications for development planning, urbanization, resource management, and social cohesion. As populations shift, receiving communities often face increased pressure on housing, infrastructure, public services, and employment opportunities. Rapid urbanization, partly driven by climate migration, places significant strain on housing, infrastructure, and public services. Migrants often settle in informal settlements that are vulnerable to environmental hazards, thereby increasing urban poverty and inequality. At the same time, competition over scarce natural resources can heighten existing social and economic tensions, particularly in regions already facing development challenges.

Addressing climate-induced mobility in Nigeria requires a comprehensive approach that integrates climate adaptation, sustainable development, and human security. Strengthening community resilience through investments in climate-smart agriculture, environmental restoration, water resource management, livelihood diversification, and social protection can help reduce forced displacement while enhancing local adaptive capacity. Equally important is the need to recognize that mobility can serve as a positive adaptation strategy when supported by policies that ensure safe, orderly, and dignified movement.

As climate risks continue to intensify, Nigeria's development agenda must account for the growing relationship between environmental change and human mobility. Building resilient communities, protecting vulnerable populations, and creating opportunities for sustainable livelihoods will be essential to achieving long-term economic growth, social stability, and climate resilience.



Figure 2. Climate induced mobility in Nigeria. (Source: Humanitarian Practice Network)

4. Implications for Development

4.1 Economic and Livelihood Impacts

Climate-induced migration disrupts agricultural production, contributing to food insecurity and income loss. As rural populations decline, agricultural output is affected, with implications for national food systems. In Nigeria, climate change poses a significant threat to food security and migration patterns, with Nigeria being one of the most affected countries in Sub-Saharan Africa due to its ecological fragility and socio-economic vulnerabilities.[3]

Nigeria's agrarian-based rural economy is particularly susceptible to climatic variability, especially in the Northern and Middle Belt regions, which have suffered an increasing incidence of drought, floods, desertification, and erratic rainfall. These environmental

[3] Odebunmi, R. O., & Adesida, B. (2025). *Climate-induced migration and the challenges of food insecurity in Nigeria. African Journal of Stability and Development, 17*(2), 1008–1035. https://doi.org/10.53982/ajsd.2025.1702.

challenges have not only resulted in a decline in agricultural productivity but have also triggered large-scale internal migration, thereby compounding food insecurity in rural and urban settlements. Recent studies indicate that climate-induced migration is increasingly prevalent in Nigeria. The Northern part of Nigeria, especially the Sahelian states such as Borno, Yobe, and Adamawa, is grappling with prolonged dry spells and shrinking water bodies such as Lake Chad. The degradation of arable land and loss of pastoral routes have displaced thousands of farmers and herders, which has led to armed conflicts and mass movement of people towards Southern Nigeria and urban centres.

In 2021, Nigeria had over 2.6 million internally displaced persons[4] (IDPs), a significant proportion of which were displaced by climate-related disasters–such as drought and flooding. This migration has a critical implication for food security in the sense that as displaced populations settle in host communities, pressure mounts on local food systems, agricultural lands, and water resources. Moreover, many migrants have abandoned farming as a means of livelihood due to a lack of access to land, capital, and skills suitable to urban settings, which further leads to a reduction in national food production capacity. Consequently climate change impacts the socio-economic and livelihoods of people which promote human mobility, as humans are in search of better opportunities and livelihood.

As climate change continues to ravage human existence, it is therefore worthy of note that human activities contribute significantly to the environment. In Nigeria, when adequate climate policies have been enacted, the issue of human mobility and internally displaced persons would be addressed as the root cause of displacement is being tackled.

Thus having a climate mapping policy is very vital to the nation's development. The map below underscore the relevance of states with subnational climate mapping, which if adopted by all the states will foster an ecosystem of climate policies which could be used to assess climate adaptation and mitigation patterns across all the states of the federation.

[4] https://dailynigerian.com/nigeria-idps-ncfrmi/

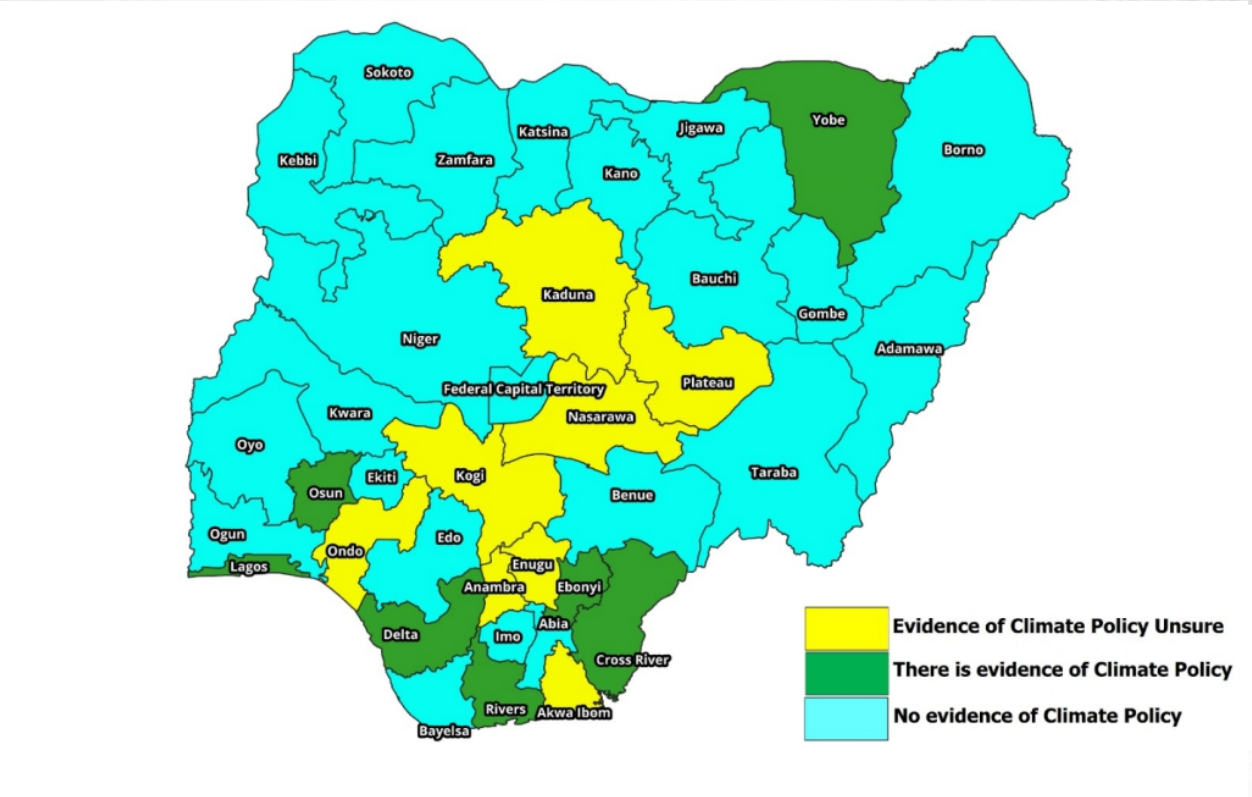


Figure 3. States with climate policy in Nigeria. (Source: The Subnational Climate Mapping Policy)

4.2 Environmental Degradation

Migration into new areas can lead to increased pressure on land and natural resources, exacerbating environmental degradation. This creates a feedback loop where environmental decline further drives migration. Globally, urban growth driven by migration has become a major driver of land degradation, particularly in peri-urban areas. Consequently, inadequate land planning increases land degradation through pressure on available resources and habitat destruction. The continuous influx of migrants into urban areas drives unplanned urban expansion, leading to encroachment of natural habitats and exacerbation of land degradation. Effective land planning is essential for sustainable development, but migration-driven urbanisation often challenges this endeavour.

In Sub-Saharan Africa, especially Nigeria, migration is a key driver of urban growth which increases the rate of land degradation. Climate change, increased population, and socio-economic conditions propel internal migration; Over 70% of Nigerians live below the national poverty line, and migration is often adopted as a way to escape poverty and conflict, further intensifying urban expansion and land degradation. This leads to the search for better economic opportunities and higher standards of living. Internal migration within

Nigeria often occurs across settlements, wards, local government areas (LGAs), and states through rural–urban, rural–rural, urban–urban and urban–rural movements. The Internal Migration Survey of 2010 showed that 23% of Nigerians were migrants, having changed residence within the last 10 years. It also reported that 46% of internal migrants were between 20 and 34 years of age, underlining the movement of young people across the country. 51% were female and 49% were male. [5]

This impacts the environment and livelihoods of the country by causing drought, erosion, food insecurity, and unemployment. Studies have shown that urban growth and industrial activities contribute to land and environmental degradation, and attract migrants to emerging urban centres, further intensifying urban expansion and land degradation.[6] The rapid and poorly managed transition from natural landscapes to built-up areas, driven by increasing demographic pressure, plays a key role in vegetation loss and expansion of impervious surfaces.

Poor land governance, characterised by inadequate incorporation of land users' perceptions and experiences, results in less efficient mitigation measures against land degradation. While remote sensing has been used for assessing urbanisation trends and land degradation, identifying actual land degradation processes from assessments of a few land use change classes with comparatively low resolution remains challenging. However, it can be suggested that integrating remote sensing with the description of site-specific processes and local community perceptions could facilitate a more comprehensive understanding of the negative trends induced by migration and the necessity for mitigation measures.

Understanding the views of communities regarding who should lead such discussions can enhance the efficacy of these interventions. This will foster sustainable development, improve resilience against environmental challenges, and ensure the well-being of present and future generations. The absence of recent, accurate data from regular population censuses in Nigeria has made it challenging to understand migration patterns. However, local knowledge and perception can provide valuable insights into migration dynamics.

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[5] https://sihma.org.za/african-migration-statistics/country/nigeria#:~:text=The%20Internal%20Migration%20Survey%20of,young%20people%20across%20the%20country.

[6] Aweda, E. D., Okhimamhe, A. A., Obateru, R. O., Schürmann, A., Teucher, M., & Conrad, C. (2024). Assessing the impacts of migration on land degradation in the savannah region of Nigeria. *Sustainability*, *16*(18), 8157. https://doi.org/10.3390/su16188157

4.3 Conflict and Human Security

Climate-induced mobility is linked to resource-based conflicts, particularly between farmers and herders competing for land and water. In northern Nigeria, these tensions have intensified due to shrinking natural resources[7]. Displacement also exposes populations to human rights risks and insecurity. This idea that climate change is a so-called threat multiplier in fragile states has been introduced to the scholarly and policy space[8]. Environmental degradation has contributed to existing resource-based tensions between herders and farmers in the Sahel region of Nigeria and has also contributed to the emergence of violent extremist groups especially in the northeast[9].

In this regard, migration turns out to be a source of conflict as it causes land possession claims, ethnicized grievances, and political manipulation[10]. Nonetheless, climate change causally linked to violence is not linear, or deterministic. It is possible to highlight the role of mediating variables, such as quality of governance, access to justice, institutional strength, and socio-economic inequality. As an example, Benjaminsen and Ba explain that so-called conflicts caused by climate stress should be evaluated through the prism of ineffective land governance, militarized answers, and ethnic politics. Therefore, one of the likely problems with viewing climate-induced migration[11] as a cause of violence is simplistic and policy-misdirecting.[12]

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[7] Hashim, S. M., & Ogundare, Y. D. (2025). *Climate-induced migration and human security in Nigeria's Sahel: Analyzing conflict dynamics and state response, 2020–2025*. *ESP International Journal of Science, Humanities and Management Studies, 3*(2), 97–104. https://doi.org/10.56472/25839756/IJSHMS-V3I2P111

[8] Rüttinger, L., Smith, D., Stang, G., Tänzler, D., & Vivekananda, J. (2015). *A New Climate for Peace: Taking Action on Climate and Fragility Risks*. Berlin: adelphi, International Alert, The Wilson Center, European Union Institute for Security Studies (EUISS).

[9] Okpara, U. T., Stringer, L. C., & Dougill, A. J. (2016). Lake drying and livelihood dynamics in Lake Chad: Unravelling the mechanisms, contexts and responses. AMBIO, 45(7), 781–795. https://doi.org/10.1007/s13280-016-0805-6

[10] Ide, T. (2021). *Security implications of climate change: The climate–conflict nexus*. In T. M. Letcher (Ed.), *The Impacts of Climate Change: A Comprehensive Study of Physical, Biophysical, Social, and Political Issues* (pp. 465–478). Elsevier. https://doi.org/10.1016/B978-0-12-822373-4.00015-X

[11] Benjaminsen, T. A., & Ba, B. (2021). *Fulani-Dogon killings in Mali: Farmer-herder conflicts as insurgency and counterinsurgency*. *African Security, 14*(1), 4–26. https://doi.org/10.1080/19392206.2021.1925035

[12] Okpara, U. T., Stringer, L. C., & Dougill, A. J. (2016). Lake drying and livelihood dynamics in Lake Chad: Unravelling the mechanisms, contexts and responses. AMBIO, 45(7), 781–795. https://doi.org/10.1007/s13280-016-0805-6

Conclusion and Recommendations

Climate change is reshaping patterns of human mobility in Nigeria, with far-reaching implications for development. While migration can serve as a coping and adaptation strategy, it also presents significant challenges, including urban pressure, environmental degradation, and conflict. Addressing these issues requires integrated and forward-looking policies that link climate resilience, migration governance, and sustainable development. Five key recommendations are presented to policymakers in order to accomplish this.

First, there is a need to integrate climate change, migration, and development policies into a coherent national framework. This includes aligning migration governance with climate adaptation strategies.

Second, investment in climate-resilient agriculture and rural development is essential to reduce forced migration. Improving water management and supporting sustainable land use can enhance resilience in vulnerable regions.

Third, urban planning systems must be strengthened to accommodate growing populations. This includes expanding infrastructure, improving housing, and upgrading informal settlements.

Fourth, policies should promote safe and productive mobility by providing skills training and employment opportunities for migrants.

Finally, improving data collection and research on climate-induced migration is critical for evidence-based policymaking.