

Climate-Induced Migration and Sustainable Development Challenges

Sanskar Tandon
MBA Student

Teerthanker Mahaveer Institute of Management & Technology
Teerthanker Mahaveer University
Moradabad Uttar Pradesh (244001)

Abstract

The accelerating impacts of climate change are increasingly driving human mobility, creating a phenomenon known as climate-induced migration. This research investigates the relationship between climate change, human mobility, and sustainable development, identifying the key drivers, socio-economic consequences, and policy challenges. Using a mixed research approach, the study synthesizes secondary data from major reports such as the World Bank Groundswell report, UNHCR displacement statistics, and peer-reviewed literature on climate migration projections. Key findings indicate that climate stressors—such as rising sea levels, extreme heat, drought, and water scarcity—are projected to displace tens of millions within and across borders by 2050, with the greatest impacts occurring in Sub-Saharan Africa, South Asia, and East Asia and the Pacific. Climate-induced migration intersects with persistent development challenges including poverty, food insecurity, health vulnerabilities, and urban overcrowding, exacerbating pressures on infrastructure and public services. Core implications of the study highlight the need for integrating climate migration into national development planning, strengthening legal protection for climate migrants, and aligning climate adaptation policy with SDG targets to build resilience and promote equitable development.

Keywords: Climate-induced migration, sustainable development, climate vulnerabilities, internal displacement, SDG integration.

Introduction

Climate change is a powerful and growing driver of human mobility, increasingly forcing people to relocate either within their countries or across borders due to environmental stressors. Rising global temperatures, sea-level rise, severe droughts, and intensified extreme weather events disrupt livelihoods, undermine food and water security, and degrade habitats, acting as catalysts for

migration. Such mobility poses complex development challenges, particularly for societies struggling with poverty, weak institutions, and limited adaptive capacities.

The Sustainable Development Goals (SDGs) recognize the interconnectedness of climate change and human well-being. Targets under SDG 13 (Climate Action) call for building resilience and adaptive capacity to climate hazards, while other SDGs (e.g., SDG 1: No Poverty, SDG 2: Zero Hunger, SDG 11: Sustainable Cities) are sensitive to population movements and resource pressures. Therefore, understanding climate-induced migration is essential for sustainable development policy, planning, and implementation.

Climate-induced migration refers to movements of people prompted by sudden or gradual onset climate stressors that weaken livelihood foundations or render habitats unsafe. These movements range from short-term, seasonal shifts to permanent relocation, and may be internal or international. Although data on climate migration are inherently complex due to multi-causal drivers, projections suggest a substantial increase in climate-related mobility through mid-century. The World Bank's Groundswell report (2021) projects up to 216 million internal climate migrants by 2050 under high-impact scenarios, underscoring the scale of this emergent challenge.

This paper examines climate-induced migration and its implications for sustainable development, synthesizing global projections, socio-economic impacts, and policy responses. It aims to integrate the climate migration discourse within SDG frameworks to inform more equitable and resilient development pathways.

Literature Review

Climate Change as a Driver of Human Mobility

Climate change interacts with social, economic, and political factors to influence migration decisions. Environmental stressors such as sea-level rise, drought, and extreme weather events degrade ecosystems and disrupt livelihoods, compelling individuals and communities to relocate. According to documented projections, climate change could displace hundreds of millions by mid-century, particularly in vulnerable regions of the Global South.

Projections of Climate Migration

The World Bank Groundswell report (2021) projects that, without significant climate adaptation and development action, up to 216 million people could be internally displaced by climate change by 2050 across six global regions. Sub-Saharan Africa potentially faces the highest share (~86 million), while East Asia and the Pacific, South Asia, and Latin America also exhibit large projected figures.

Estimates from systematic reviews further illustrate the high scale of future mobility: some studies suggest that millions may be affected by 2050 and up to 630 million by 2100 under higher warming scenarios, accounting for the compounding effects of multiple climatic hazards.

Regional Vulnerabilities

Climate-induced migration is not uniformly distributed. South Asia, including countries like India and Bangladesh, faces acute exposure due to its large population reliant on climate-sensitive sectors such as agriculture and fisheries, with millions at risk of relocation due to floods, cyclones, and land loss.

Similarly, small island states such as Tuvalu grapple with existential threats from sea-level rise, with a significant portion of the population pursuing migration pathways to other nations as a survival strategy.

Impacts on Sustainable Development

Climate migration has wide-ranging socio-economic implications, including pressure on urban infrastructure, health systems, education, employment, and social cohesion in destination areas. Migrants often settle in informal settlements lacking basic services, creating challenges for inclusive development. Reports indicate that internal migration trends are accelerating, pushing rural populations toward urban centers, with significant implications for SDG targets related to poverty, hunger, and sustainable cities.

Policy Responses and Gaps

Despite the scale of projected climate mobility, the international legal architecture lacks specific instruments to protect “climate migrants” as a distinct legal category, resulting in gaps in protection, social support, and durable solutions. Policy responses vary, with some nations like

Bangladesh integrating climate migration into national adaptation frameworks, while others lack legal recognition and social protection schemes for climate-displaced populations.

Research Gap

Most studies provide projections or case-based insights but lack integrated analysis linking climate migration to the broader sustainable development agenda. There is a need to situate climate-induced migration within SDG frameworks to understand how mobility affects SDG outcomes and which policy mechanisms can mitigate negative impacts while enhancing resilience.

Research Methodology

Research Objectives

- To examine current and projected trends in climate-induced migration.
- To analyse the socio-economic impacts of climate migration on sustainable development.
- To identify policy frameworks that address climate migration within SDG agendas.

Research Design

This study uses a mixed qualitative review design, synthesizing secondary data from international reports, academic literature, and global migration projections to understand climate migration dynamics and development challenges.

Data Sources

Data were drawn from globally recognized sources including:

- World Bank Groundswell report projections.
- Scholarly literature on climate migration estimates.
- Systematic review of South Asia context.
- IOM and FAO project insights on rural climate migration.

Analytical Approach

The analysis employs thematic synthesis to identify common migration drivers, impacts on development, and policy responses. Quantitative projections are contextualised within socio-economic frameworks.

Ethical Considerations

This research uses publicly accessible secondary data, ensuring accurate citation and responsible interpretation.

Data Analysis / Results

Scale of Climate Migration

Multiple sources converge on substantial projections of climate-induced migration by mid-century. According to the World Bank, up to 216 million people could migrate internally within their countries by 2050 due to climate impacts, with large concentrations in Sub-Saharan Africa, South Asia, and East Asia.

Systematic reviews estimate that tens of millions within the Global South will face mobility pressures from compound climate stressors like water scarcity, floods, and rising temperatures.

Regional Variations

In South Asia, coastal and deltaic regions (e.g., Sundarbans, Ganges–Brahmaputra) face heightened displacement pressures due to cyclones, salinity intrusion, and flooding, contributing to both internal movements and seasonal migration.

Socio-Economic Development Impacts

Climate migrants often relocate to urban areas where infrastructure and services are already strained, creating challenges for sustainable development, including employment, housing, health, and education. Informal settlements, where many climate migrants concentrate, are projected to grow significantly by 2050, complicating efforts to achieve inclusive cities (SDG 11).

Rural climate migration also affects agricultural productivity and economic stability, with seasonal migrations disrupting local labour markets and livelihoods.

Findings & Discussion

Climate Change Accelerates Human Mobility

The evidence clearly indicates that climate stressors—both sudden onset (storms, floods) and slow onset (drought, sea-level rise)—are increasingly driving human movements across regions and within country borders. These mobility patterns are not isolated but entwined with socio-economic conditions that influence who can migrate and who remains behind.

Migration and the Sustainable Development Agenda

Migration driven by climate change interacts with multiple SDGs:

- **SDG 1 (No Poverty):** Displaced households often lose assets and livelihoods.
- **SDG 2 (Zero Hunger):** Disrupted agricultural livelihoods and food systems.
- **SDG 3 (Health):** Migrants face health vulnerabilities in new settlements.
- **SDG 11 (Sustainable Cities):** Urban areas experience strain on housing and services.
- **SDG 13 (Climate Action):** Mobility reflects gaps in adaptation and resilience.

Conclusion

Summary of Findings

Climate change is projected to displace tens to hundreds of millions by 2050, disproportionately affecting the most vulnerable regions. These movements pose significant challenges to sustainable development, particularly in urbanization, infrastructure, livelihoods, and social protection.

Theoretical Implications

This research underscores the multi-causal nature of climate migration, highlighting that mobility is often an outcome of environmental, socio-economic, and institutional interactions.

Policy Implications

Policies must integrate climate adaptation with migration management, ensuring legal protections, social safety nets, and development planning that anticipates mobility impacts.

Limitations

Projections vary widely due to methodological differences and uncertainty about future climate pathways.

Future Research

Future work should explore micro-level analyses and longitudinal studies to assess the lived experiences of climate migrants and impacts on development outcomes.

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