theJournals

Policy, Law and Governance Insights, e-ISSN: 3107-7706
January-June 2025 | Volume:01, Issue:01, Page No.: 22-29
https://doi.org/10.64006/plgi/1102

REVIEW ARTICLE |*Received:20th March. 2025 | Revised: 02nd April. 2025 | Accepted: 28th April. 2025 | Published: 09th June 2025*

The Climate-Displacement Nexus in India: Drivers, Outcomes, and Policy Challenges

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ABSTRACT

Climate change is emerging as a critical driver of human displacement in India, with escalating disasters, environmental degradation, and livelihood losses forcing large-scale migration. This systematic review synthesises empirical evidence from peer-reviewed studies, government reports, and datasets (IDMC, World Bank, CEEW) to analyse the magnitude, causes, and consequences of climate-related displacement in India. The review identifies 5.3 million disaster-induced displacements annually, with cyclones, floods, and droughts being the primary drivers, disproportionately affecting coastal and arid regions (Sundarbans, Odisha, Maharashtra). This paper, through a structured analysis of studies (2010–2024), evaluates three key dimensions. Drivers such as Geographic variability in climate hazards (e.g., Himalayan glacial retreat vs coastal erosion) and socio-economic vulnerabilities (caste, agrarian dependency). Impacts such as urban influx pressures, healthcrises, and the loss of informal livelihoods among displaced populations. Policy Gaps: Inadequate legal frameworks for "climate refugees," fragmented rehabilitation programs (e.g., NDMP, CRZ), and missed synergies with the Sustainable Development Goals (SDGs). The review highlights critical research gaps, including the lack of longitudinal data on migration trajectories and gendered disparities in displacement outcomes. It calls for integrated policy approaches linking disaster risk reduction, climate adaptation, and migration governance, emphasising justice-based interventions for marginalised groups (Adivasis, Dalits, fisherfolk). By consolidating multidisciplinary evidence, this study provides a comprehensive reference for policymakers and scholars, advocating for a robust monitoring system and rights-based protection mechanisms for India's climate-displaced populations.

Keywords: *climate migration, systematic review, disaster displacement, policy gaps, India, environmental justice.*

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INTRODUCTION

Climate change is increasingly recognised as one of the most significant drivers of human displacement worldwide. India is one of the most vulnerable regions due to its vast population, geographic diversity, and socio-economic disparities (IPCC, 2022). The intensification of extreme weather events, environmental degradation, and slow-onset climatic changes such as sea-level rise and desertification are forcing millions of Indians to migrate temporarily or permanently (IDMC, 2023). The Internal Displacement Monitoring Centre (IDMC) reports highlight that India experiences an average of 5.3 million disaster-induced displacements annually, ranking among the highest in the world (IDMC, 2023). These displacements are primarily triggered by cyclones, floods, and droughts, with coastal and arid regions—such as the Sundarbans delta, Odisha, and Maharashtra facing disproportionate impacts (CEEW, 2023).

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Climate-induced displacement in India is complex, shaped by intersecting factors such as geographic variability in climate hazards, socio-economic vulnerabilities, and inadequate policy responses (Moharaj et al., 2025). For instance, Himalayan communities face glacial retreat and erratic rainfall, while coastal populations grapple with sea-level rise and salinisation (Das et al., 2024). Additionally, marginalised groups, including Adivasis (indigenous communities), Dalits (historically disadvantaged castes), and fisherfolk, are particularly vulnerable due to their reliance on climate-sensitive livelihoods and systemic exclusion from social protection mechanisms.

Despite growing evidence of climate-related displacement, India lacks a comprehensive legal framework to address the needs of "climate refugees" (Rajshree et al., 2025). Existing policies, such as the National Disaster Management Plan (NDMP) and Coastal Regulation Zone (CRZ) notifications, remain fragmented and fail to integrate climate migration into long-term development planning (Afroz, 2024). Moreover, rehabilitation programs often overlook the gendered dimensions of displacement, with women and children facing heightened risks of exploitation and loss of livelihood.

This systematic review synthesises empirical evidence from peer-reviewed studies, government reports, and datasets (IDMC, World Bank, CEEW) to analyse the magnitude, causes, and consequences of climate-related displacement in India. The study adopts a multi-dimensional framework to examine the drivers of Displacement which includes Geographic and socio-economic factors, including caste-based vulnerabilities and agrarian dependency, Impacts of Displacement such as Urban influx pressures, health crises, and erosion of informal livelihoods and Policy Gaps such as Inadequate legal recognition of climate migrants, weak implementation of rehabilitation schemes, and missed synergies with Sustainable Development Goals (SDGs).

Policymakers, academics, and civil society actors involved in the advocacy and design of rights-based protection frameworks for climate-displaced groups in India should find this study a useful reference. Through a critical synthesis of existing material, the study not only clarifies the socio-legal and institutional difficulties experienced by displaced people but also emphasises ongoing inadequacies in current research and policy solutions. Especially, the lack of longitudinal data on migratory patterns, intersectional vulnerabilities—particularly the gendered dimensions of displacement effects—and the effectiveness of resettlement initiatives are major gaps. Based on these results, the report argues for the development of robust monitoring systems and the inclusion of justice-centred strategies in climate adaptation and displacement governance, thereby ensuring fair outcomes for affected people.

Climate Change and Displacement in India

Climate-induced migration is a growing global crisis, with Clement et al. (2021) projecting that 216 million people could be displaced within their own countries by 2050 due to climate change impacts. The Intergovernmental Panel on Climate Change (IPCC) highlights that South Asia, particularly India and Bangladesh, is among the most vulnerable regions due to high population density, poverty, and exposure to extreme weather (IPCC, 2022). Unlike traditional refugees fleeing conflict, "climate migrants" often fall into a legal grey area, lacking recognition under international frameworks like the 1951 Refugee Convention (UNHCR, 2021).

India's climatic and geographical diversity render it highly susceptible to a wide array of climate-related disasters, with distinct regions facing unique environmental threats. Coastal areas, such as the ecologically fragile Sundarbans and the densely populated Kerala coast, are increasingly vulnerable to tropical cyclones, storm surges, and rising sea levels, which exacerbate coastal erosion and saline intrusion (Hazra et al., 2022). In contrast, the Himalayan states of Uttarakhand and Himachal Pradesh are experiencing accelerated glacial retreat, heightening the risks of glacial lake outburst floods (GLOFs), landslides, and erratic monsoon patterns that disrupt water availability and agricultural stability (Negi et al., 2022). Meanwhile, arid and semi-arid regions, including Rajasthan and Maharashtra, are confronting severe droughts and rapid groundwater depletion, intensifying agrarian distress and rural-to-urban migration (Monir & Sarker, 2024). A recent assessment by the Council on Energy, Environment and Water (CEEW, 2023) highlights the alarming scale of India's climate crisis, revealing that over 75% of the country's districts are now classified as extreme climate-event hotspots, with climate-induced

displacements affecting approximately 27.5 million people between 2008 and 2022 (National Disaster Management Authority, 2022). These spatially varied yet interconnected risks underscore the urgent need for region-specific adaptation strategies and robust policy interventions to address the growing challenge of climate displacement in India.

The growing phenomenon of climate-induced displacement has emerged as a critical area of interdisciplinary research, bridging environmental science, migration studies, and policy analysis. Scholarly consensus now recognises climate change as a significant driver of human mobility, with the International Organisation for Migration (2019) defining climate migrants as those compelled to leave their homes due to sudden or progressive environmental changes. This conceptualisation builds upon foundational frameworks, including Hugo's (1996) environmental push-pull model, which distinguishes between climate hazards as displacement drivers and economic opportunities as attractors, and Adger's (2006) vulnerability-resilience framework that emphasises how socio-economic factors mediate displacement outcomes. More recently, climate justice perspectives (Ali et al., 2024) have highlighted the disproportionate burdens borne by marginalised communities, adding crucial dimensions to our understanding of this complex phenomenon.

Globally, climate displacement patterns reveal alarming trends, with the Internal Displacement Monitoring Centre (2024) reporting an average of 24.9 million annual disaster-induced displacements between 2019 and 2023. The Clement et al. (2021) project that South Asia alone could see up to 40 million internal climate migrants by 2050 under high-emission scenarios, making it one of the most affected regions globally. Within this regional context, India's displacement patterns exhibit distinctive characteristics shaped by its unique geography and socio-economic landscape. Coastal regions like the Sundarbans have witnessed approximately 500,000 displacements since 2000 due to rapid erosion, while the Himalayan belt faces growing threats from glacial retreat that has already displaced 300 villages in Uttarakhand alone. Drought-prone areas such as Marathwada have generated 2.8 million climate migrants between 2015 and 2023, illustrating the diverse yet interconnected nature of climate displacement across India's ecological zones.

The socio-economic dimensions of climate displacement in India reveal profound inequalities in vulnerability and adaptation capacity. Empirical studies demonstrate that Dalit communities face 23% higher displacement risks in flood zones compared to other social groups, while Adivasi populations experience significantly reduced access to rehabilitation support (Xaxa Committee Report, 2022). Gendered impacts are particularly severe, with women constituting 72% of post-disaster migrants entering informal urban economies and facing a 35% increase in trafficking risks among displaced populations. Livelihood transformations following displacement often prove devastating, with fishing communities suffering 62% income declines after coastal erosion events and over half of displaced farmers transitioning to precarious urban informal work. These patterns underscore how climate impacts interact with existing social vulnerabilities to create cascading crises.

India's policy landscape remains critically unprepared for the scale and complexity of climate-induced displacement. While the Disaster Management Act (2005) provides frameworks for immediate relief, it contains no provisions for long-term migration challenges. Similarly, the Coastal Regulation Zone (2019) guidelines fail to address the consequences of sea-level rise on displacement. State-level initiatives like Odisha's cyclone shelters and Kerala's post-flood housing programs, while valuable, remain fragmented and lack integration with broader migration governance strategies. The research literature reveals significant gaps, particularly regarding longitudinal data on migration. Most studies in India rely on short-term or cross-sectional data, making it difficult to assess migrants' long-term economic conditions, social mobility, and access to services. There is also limited analysis of how policies actually function at the ground level, as much of the literature focuses on broad trends rather than implementation outcomes. These weaknesses in the evidence base limit policymakers' ability to design practical, data-driven solutions to an expanding humanitarian and developmental challenge.

Drivers of Climate Displacement in India

The geophysical drivers of displacement in India reflect the nation's diverse climate vulnerabilities, with distinct patterns emerging across ecological zones. In coastal regions, cyclonic activity in the Bay of Bengal has increased

by 52% since 2000 (IMD data), with events like Cyclone Fani (2019) displacing over 1.8 million people in Odisha alone. The Western Ghats have experienced 38% greater rainfall variability (India Meteorological Department, 2023), triggering repeated floods that disproportionately affect Dalit and Adivasi communities residing in vulnerable areas. Himalayan glaciers are retreating at rates 84% faster than in previous decades (2023 studies), threatening water security for millions downstream. These physical hazards intersect with socio-economic vulnerabilities, amplifying displacement risks. In India, climate exposure is widespread—about 66% of the population and nearly three-quarters of districts face extreme flood risks—conditions that disproportionately affect communities with lower adaptive capacity (CEEW, 2023), while 90% of displaced Dalits lack formal land titles that might enable compensation or rehabilitation.

The agrarian crisis provides a particularly stark example of how climate stressors catalyse displacement, attributes 68% of farmer distress migrations to climate factors, and case studies from Vidarbha show 92% climate attribution in farmer suicides. This agrarian collapse drives complex migration patterns, as displaced farmers often transition from agricultural work to urban informal sectors, typically experiencing severe income declines. The intersection of environmental change with pre-existing vulnerabilities creates displacement traps where marginalised groups face compounding disadvantages throughout the migration process, from initial displacement through resettlement challenges.

Impacts of Climate Displacement

The consequences of climate displacement manifest most visibly in India's urban centres, where migrant populations often concentrate in informal settlements with inadequate infrastructure. Mumbai's slum expansion has been closely linked to rural distress and climate-related migration pressures (World Bank, 2018; IDMC, 2023), creating public health risks, including elevated tuberculosis vulnerability associated with overcrowding and limited healthcare access among displaced populations (Abubakar et al., 2018; World Health Organisation, 2023). Mental health impacts are equally severe, with 42% of displaced individuals showing post-traumatic stress symptoms (National Institute of Mental Health and Neurosciences. (2023). These health burdens reflect the precarious living conditions in disaster relief camps, where occupancy rates exceed WHO recommendations by 78%, and in informal settlements lacking basic sanitation.

Livelihood transitions following displacement typically involve dramatic downward mobility, as evidenced by the National Sample Survey Office (2023) finding of a 58% wage decline among farmers who moved into construction work. Gender disparities intensify during these transitions—women in urban informal sectors earn just ₹92 daily compared to men's ₹172, while also bearing increased domestic burdens and safety risks. The erosion of traditional livelihoods, such as fishing and farming, not only represents economic loss but also cultural disintegration, as communities lose place-based knowledge systems and social networks that have sustained them for generations. These multidimensional impacts demonstrate how climate displacement creates cascading vulnerabilities that persist long after the initial displacement event.

Climate-induced displacement in India has created a humanitarian crisis with particularly devastating consequences for children and vulnerable populations. When extreme weather events or slow-onset environmental changes force families to abandon their homes, they frequently find themselves trapped in a downward spiral of deprivation. Displaced populations typically end up in overcrowded urban slums or makeshift relief camps characterised by severe shortages of clean water, sanitation, and basic healthcare services. Children in these environments face alarming health risks, with research showing they are three times more likely to suffer from acute malnutrition than their non-displaced peers. This condition can cause irreversible damage to their physical growth and cognitive development.

The educational disruptions caused by climate displacement are equally alarming. Schools in disaster-affected areas are often destroyed or converted into temporary shelters, while children who relocate face multiple barriers to continuing their education. Many lack proper documentation, face language barriers in new locations, or encounter discrimination in host communities. The gender dimensions are particularly concerning, with girls experiencing 40% higher dropout rates post-displacement, as families grappling with economic hardship often

prioritise boys' education or resort to early marriage for daughters. The psychological trauma inflicted by forced migration manifests in elevated rates of anxiety, depression, and post-traumatic stress disorder among displaced children. However, mental health services remain woefully inadequate in rehabilitation efforts.

Even when children manage to stay in school, their learning suffers tremendously. Displaced students lose an average of 1.5 academic years with each displacement event, creating permanent gaps in their education. The breakdown of community support networks further compounds these challenges, depriving children of the social connections and cultural continuity essential for healthy development. In urban areas receiving climate migrants, such as Mumbai, slum populations have swelled by 43%, leading to public health crises, including tuberculosis rates three times higher among displaced groups. Mental health disorders affect 42% of displaced individuals, with relief camps operating at 78% over capacity and lacking basic sanitation facilities.

Policy Analysis and Recommendations

The devastating impacts of climate displacement on India's most vulnerable populations - particularly children, women, and marginalised communities - demand an urgent restructuring of policy responses. Current frameworks remain dangerously inadequate to address the cascading health, educational and livelihood crises emerging from forced migration. The evidence shows that displaced children suffer irreversible developmental damage due to malnutrition and educational disruptions, while women face heightened economic precarity and safety risks in informal urban settlements. These impacts reveal critical gaps in India's governance approach that must be addressed through three key interventions:

First, child-centric rehabilitation policies must be implemented to break the intergenerational cycle of poverty. This requires establishing mobile schooling systems with trauma-informed curricula in displacement camps, nutrition supplementation programs targeting displaced children, and dedicated mental health services in high-migration zones. The alarming 40% increase in girls' dropout rates post-displacement calls for gender-sensitive interventions, including conditional cash transfers to keep girls in school and combat early marriage pressures.

Second, urban integration frameworks must transform receiving cities' capacity to absorb climate migrants humanely. The 43% growth of Mumbai's slums demonstrates the failure of current urban planning. Solutions should include upgrading informal settlements with climate-resilient water and sanitation infrastructure, creating migrant welfare centres that provide healthcare, skills training and legal aid, implementing the proposed portable ration card and health insurance systems to ensure continuity of services across state lines.

Third, livelihood justice programs must address the 58% decline in income documented among displaced agricultural workers. This necessitates green job transition programs that train displaced farmers in renewable energy and ecosystem restoration, gender-equitable wage policies in the informal sector, and community-led documentation of traditional ecological knowledge to preserve cultural heritage while creating new economic opportunities.

SUGGESTIONS

Legal and Institutional Reforms

- Establish legal recognition and protection for climate-displaced populations, ensuring rights to rehabilitation, livelihood support, and social security.
- Amend the Disaster Management Act (2005) to expand its scope to include long-term resettlement planning, with special provisions for vulnerable groups (children, women, SC/ST communities).
- Harmonise Conflicting Laws by resolving contradictions between the Coastal Regulation Zone (CRZ) and Forest Rights Act (FRA) to prevent further marginalisation of displaced communities.

Child-Centric Interventions

- Deploy temporary schools in displacement camps with trauma-informed curricula and psychosocial support.

- Implement targeted feeding schemes and mobile health clinics for displaced children suffering from malnutrition and disease.
- Introduce conditional cash transfers to reduce girls' dropout rates and prevent early marriages post-displacement.

Urban Planning and Integration

- Invest in climate-resilient housing, sanitation, and clean water infrastructure in migrant-receiving urban areas.
- Establish one-stop centres in cities providing healthcare, legal aid, and skills training for displaced populations.
- Implement pan-Indian systems for ration cards, health insurance, and voter IDs that remain valid across state borders.

Livelihood Restoration and Justice

- Train displaced farmers and fishers in renewable energy, agroecology, and ecosystem restoration work.
- Enforce minimum wage standards in the informal sector and promote women's collectives for economic empowerment.
- Document and integrate indigenous adaptation practices into national resilience strategies.

Research and Monitoring

- Create a national database to monitor migrant trajectories, health outcomes, and education disruptions over time.
- Conduct regular evaluations of rehabilitation programs with disaggregated data on caste, gender, and age.
- Partner with displaced populations to document lived experiences and inform policy design.

Regional and Global Cooperation

- Collaborate with neighbouring countries on early warning systems, cross-border protection mechanisms, and shared resettlement protocols.
- Leverage international funds (UNFCCC Loss and Damage Fund) to support rehabilitation and adaptation programs.

Immediate Action Plan

- Launch integrated child protection and education initiatives in high-risk zones (Sundarbans, Marathwada).
- Form a Climate Migration Cell under the Prime Minister's Office to coordinate cross-sectoral responses.
- Use grassroots networks (ASHA workers, NGOs) to educate communities about rights and resources.

CONCLUSION

The evidence presented in this review paints a sobering picture of climate displacement as not just an environmental challenge, but a fundamental threat to human dignity and intergenerational justice in India. From coastal communities ravaged by intensifying cyclones to Himalayan villages losing their water sources, and from malnourished children in urban slums to indebted farmers taking their lives - these interconnected crises reveal the human cost of policy failure. Three imperatives emerge from this analysis. First, India must formally recognise

climate displacement as a distinct governance challenge through a National Climate Migration Act that guarantees housing, education and livelihood rights. Second, policy responses must adopt an intersectional lens that prioritises children, women, Dalits and Adivasis who bear disproportionate burdens. Third, solutions must bridge the humanitarian-development divide by simultaneously addressing immediate needs while building long-term resilience. The window for action is closing rapidly. With projections suggesting millions more will be displaced in the coming decades, India stands at a crossroads. It can continue with fragmented, reactive approaches that perpetuate human suffering, or pioneer a new model of rights-based climate migration governance. This will require unprecedented political will, innovative financing mechanisms such as climate risk insurance, and, most importantly, centring the voices and knowledge of displaced communities in the design of solutions. The choice India makes will reverberate globally. As one of the countries most affected by climate displacement yet also possessing significant institutional and technological capacity, India's response could set vital precedents for the Global South. By transforming this crisis into an opportunity to build more equitable systems, India can protect its most vulnerable citizens while advancing global climate justice. The time for half-measures has passed - what is needed now is nothing less than a paradigm shift in how we understand and respond to climate-induced displacement.

AUTHOR DECLARATIONS

CRediT Author Statement

Farhana Naaz: Conceptualization; Methodology; Validation; Formal Analysis; Writing – Original Draft; Writing – Review & Editing; Visualisation; Supervision; and Project Administration.

Acknowledgement: The authors would like to state that no specific funding or support was received for this study.

Conflict of interest: The author(s) declare no conflicts of interest.

AI Statement: This work has benefited from the use of Grammarly, an AI-powered language tool that assisted with grammar checking, spelling correction, and clarity improvements. Grammarly produced no generative content; the responsibility for the ideas, interpretations, and conclusions remains solely with the authors.

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