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Governing Displacement in a Climate-Risked Wetland: The Case of Kuttanad, Kerala

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Abstract
This paper examines the intersection of climate change, human displacement, and livelihood transformations in Kuttanad, a low-lying wetland region in Kerala, India, renowned for its distinctive agro-ecological characteristics and rich socio-cultural heritage. Drawing on ethnographic fieldwork, official data, and extensive secondary literature, the study examines how recurring floods, rising salinity, erratic rainfall, and infrastructural degradation have contributed to a slow-moving displacement crisis, particularly among marginalised communities. The paper documents how these environmental pressures have intensified agrarian distress, altered traditional occupations, and reconfigured social relations and economic hierarchies. Despite the presence of adaptation policies such as the Kuttanad Package and decentralised governance mechanisms, the responses remain fragmented, technocratic, and insufficient in addressing the root causes of vulnerability. By situating the Kuttanad case within broader debates on climate justice, rural dispossession, and environmental governance, the study advocates for a justice-oriented framework that prioritises local knowledge systems, participatory planning, and the recognition of climate-displaced individuals. The paper contributes to ongoing discussions in rural studies, climate governance, and displacement literature, underscoring the urgency of rethinking climate adaptation beyond infrastructural resilience toward a more inclusive, ecologically grounded, and socially just rural transition.

Keywords: Kuttanad, climate change, displacement, rural livelihoods, wetland governance, agrarian distress, local governance, climate justice.

Introduction

The relationship between climate change and human displacement has emerged as a critical area of inquiry in contemporary environmental and rural studies. While much of the global discourse has focused on catastrophic displacement following cyclones, sea-level rise, or drought, the phenomenon of slow-onset climate displacement, marked by the gradual erosion of habitability and livelihoods, remains less examined, particularly in the rural wetland ecologies of the Global South. This paper explores this underexplored dimension through a case study of Kuttanad, a below-sea-level agro-ecological region in the southern Indian state of Kerala, which is facing a growing crisis of climate-induced livelihood loss, ecological fragility, and social instability.

Kuttanad is ecologically unique, distinguished by its extensive network of rivers, canals, paddy fields, and backwaters, and it holds the distinction of being one of the few regions in the world where farming occurs below sea level (Food and Agriculture Organisation [FAO], 2013). Traditionally known as the "Rice Bowl of Kerala", Kuttanad has historically supported dense agrarian and fishing-based livelihoods across caste, religious, and class divisions. However, recurring floods, especially in 2018 and 2019, erratic monsoons, salinity intrusion, declining soil fertility, and infrastructural failures have rendered agriculture and allied sectors increasingly unviable (MSSRF, 2011; Kerala State Planning Board, 2019). Over 6,000 families reportedly left their homes between 2018 and 2020, signalling a slow displacement driven not by immediate eviction but by a gradual breakdown of livelihood systems and habitability (Shaji, 2021). This paper argues that climate change in Kuttanad is not merely an environmental phenomenon but a socio-political process mediated through local governance structures, historical inequalities, and policy failures. It examines how displacement is entwined with caste, landholding, gender, and governance, resulting in uneven vulnerabilities and adaptive

capacities across different social groups. Drawing on empirical data, field observations, and official policy documents, the study shows how technocratic solutions such as the Kuttanad Package, despite their scale, failed to address the systemic issues of ecological degradation, exclusion of local voices, and fragmented institutional responses (MSSRF, 2011; Government of Kerala, 2018).

Understanding the dynamics of climate-induced displacement in Kuttanad requires a deep engagement with the everyday lived experiences of rural communities, the interplay between environmental change and governance, and the complex ways in which adaptation, resistance, and retreat are negotiated. In doing so, the analysis moves beyond simplistic narratives of resilience or vulnerability, offering a nuanced account of social churning, ecological precarity, and political exclusion unfolding in one of India's most iconic wetland landscapes.

Methodology and Sources

This study adopts a qualitative, fieldwork-based methodology grounded in the socio-ecological realities of Kuttanad. The research investigates the intersections of climate change, displacement, and rural livelihood transformation, centring on the experiences of those most vulnerable to ecological and policy failures. Given the slow-onset nature of displacement in the region, a qualitative approach was essential to capture the gradual erosion of habitability and the nuanced ways in which communities respond to climatic stress.

Primary data were gathered during field visits conducted between January and May 2025 across vulnerable panchayats in Alappuzha district. The fieldwork included 45 semi-structured interviews and five focus group discussions with smallholder farmers, fishers, tenant cultivators, women-headed households, and local elected representatives. Interviews were conducted in Malayalam and later translated and transcribed. Field observations of flood-damaged settlements, bunds, and abandoned agricultural fields provided valuable insights and enriched the data. Secondary sources included the Kuttanad Package reports (MSSRF, 2011), Kerala's State Action Plan on Climate Change, district disaster management plans, and relevant academic literature and news archives (Kerala State Planning Board, 2019; Shaji, 2021). The research is situated within a critical rural studies and political ecology framework, which views climate change not only as an environmental event but also as a socially differentiated process. It draws on the concepts of climate justice and ecological vulnerability to examine how caste, land tenure, and governance mediate exposure to climate risks. Rather than focusing solely on immediate evacuation or physical relocation, the study foregrounds slow displacement, the gradual loss of livelihood, dignity, and the ability to remain in place. This approach allows for a processual and relational understanding of displacement, one that avoids static categories such as 'climate refugees' or 'resilient communities.' Emphasis is placed on narrative accounts and situated knowledge to understand how residents interpret environmental change, negotiate adaptation, and experience governance. The interpretive, inductive mode of analysis privileges the voices and perceptions of affected populations over policy-driven categories.

Ecology, Livelihoods, and Vulnerability in Kuttanad

Kuttanad, situated across the districts of Alappuzha, Kottayam, and Pathanamthitta in central Kerala, is a unique wetland agro-ecosystem, historically renowned for its cultivation of rice below sea level. Recognised by the FAO as a Globally Important Agricultural Heritage System (GIAHS) in 2013, the region comprises an intricate network of rivers, canals, paddy fields, and water bodies that drain into the Vembanad Lake, India's second-largest Ramsar site (FAO, 2013; MSSRF, 2011). While this ecology has long enabled a mosaic of sustainable livelihoods, it is now marked by growing precarity due to accelerating climate change, unplanned infrastructural interventions, and socio-political inequalities (Kerala State Action Plan on Climate Change, 2014; Padma Kumar *et al*., 2019). The region spans approximately 900 square kilometres, of which nearly 500 square kilometres lie below mean sea level (Dwivedi, 2011; Shaji, 2021). Its location between the Western Ghats and the Arabian Sea, along with the confluence of four major rivers, Pamba, Achankovil, Manimala, and Meenachil, makes it highly susceptible to seasonal flooding and water stagnation (Kerala Planning Board, 2019; Jacob, 2020). Historically managed through traditional bunds and community-controlled water flows, the region now faces the dual pressures of hydrological disruption and ecological degradation, exacerbated by development interventions like the Thanneermukkom Bund and Thottappally Spillway, which have altered natural tidal movements and led to salinity imbalances (Vijayasree *et al*., 2014; Kolathyar *et al*., 2021).

Kuttanad's climate vulnerability is starkly evident in the 2018 and 2019 floods, which displaced thousands of households and severely damaged agricultural and public infrastructure (Kerala State Planning Board, 2019). The 2018 deluge, considered the worst in a century, resulted in 42% excess rainfall, affecting 15,000 hectares of rice crops and uprooting over 10,000 coconut trees (Padma kumar *et al*., 2019). As per the Post-Disaster Needs Assessment (PDNA), over 6,000 families in the region migrated between 2018 and 2020 due to prolonged waterlogging, house damage, and loss of livelihoods (Shaji, 2021). The increase in saline intrusion into freshwater ecosystems and agricultural fields, largely due to the malfunctioning or mismanagement of regulators like the Thanneermukkom Bund, has led to long-term soil infertility and declining crop yields (Kolathyar *et al*., 2021). Seasonal irregularities, such as untimely monsoons and dry spells, have further disrupted planting cycles, while flash floods triggered by upstream rainfall events in the Western Ghats have become more frequent (Kerala Directorate of Environment and Climate Change, 2022).

Traditionally called the 'Rice Bowl of Kerala,' Kuttanad once accounted for a quarter of Kerala's total rice production (MSSRF, 2011). However, paddy cultivation has been in steady decline. Data from the Kerala Economic Review (2016) indicate that the area and output of rice have declined sharply in recent decades. The total area under rice cultivation in Kuttanad decreased from 66,870.5 hectares to 54,935 hectares, primarily due to flooding, salinisation, labour shortages, and a lack of economic viability (Jacob *et al*., 2018). With erratic rainfall and poor drainage, fields have become increasingly inaccessible, resulting in widespread crop failures. Frequent pest outbreaks, linked to temperature fluctuations, have also affected yields (Sreeja *et al*., 2015). Labour migration to urban centres and the Gulf, alongside the shift to non-agricultural employment, has created a severe crisis in the agrarian workforce. Meanwhile, the cost of production has increased, and subsidy schemes often fail to reach tenant farmers, who operate without formal land rights and are thus excluded from official relief mechanisms (MSSRF, 2011; Government of Kerala, 2018).

Inland fisheries, which once supported large sections of the rural poor, have suffered due to pollution, declining fish diversity, and changes in water salinity (Radhakrishnan, 2014). Duck rearing and clam collection have also declined due to increasing water contamination and climatic variability (Jacob, 2020). While tourism has emerged as an alternate livelihood source in recent decades, its benefits are skewed toward outside investors, offering little security or compensation to displaced local populations (Chandran & Purkayastha, 2018). The impacts of ecological disruption in Kuttanad are socially differentiated, structured by caste, land ownership, gender, and access to political power. Dalit communities and landless labourers, often residing near vulnerable embankments or marginal lands, face the greatest exposure to floods, infrastructure collapse, and waterborne diseases (Field Interviews, 2024). Their exclusion from policy frameworks is reinforced by their lack of formal land titles, which disqualifies them from receiving compensation under disaster relief programmes (MSSRF, 2011; Government of Kerala, 2018).

Tenant farmers, who cultivate lands owned by absentee landlords under oral agreements, are especially precarious. When floods destroy crops, these cultivators bear the economic loss without any formal eligibility for state support (Kerala Institute of Local Administration & IIT Bombay, 2018). Women-headed households, particularly widows, also face multiple layers of vulnerability, from accessing shelter and credit to coping with unpaid care burdens and livelihood insecurity (Jacob, 2020). The social fabric of livelihood in Kuttanad is thus being reshaped not just by climate forces but by a longer trajectory of marginalisation and policy neglect. These structural inequities convert environmental exposure into chronic livelihood stress, pushing vulnerable populations toward cycles of debt, informal migration, and distress employment.

For centuries, the people of Kuttanad have developed innovative, ecologically attuned farming practices, including bund construction, rotational cropping, and water-sharing mechanisms, that have managed the delicate balance between land and water (Indo-Dutch Mission, 1989; Narayanan *et al*., 2011). However, many of these traditional systems have been displaced by technocratic interventions, particularly since the implementation of the Kuttanad Package (2008), which prioritised infrastructure over local adaptation (MSSRF, 2011). Modern bunds and floodgates, although intended to improve flood management, have disrupted seasonal tidal flow, which is essential for the natural desalination of paddy fields and the migration patterns of fish (Kolathyar *et al*., 2021). Artificially regulating water levels without community participation has not only undermined ecological functionality but also generated new vulnerabilities. The introduction of chemical fertilisers and pesticides during the Green Revolution period further degraded soil health and water quality, contributing to biodiversity loss and long-term productivity decline (Sreeja *et al*., 2015). Moreover, the erosion of local ecological knowledge is compounded by institutional neglect. Panchayats, despite being legally empowered under Kerala's decentralisation framework, often lack the technical capacity, budgetary autonomy, and real decision-making power to design or implement climate-resilient strategies (Kerala State Planning Board, 2017; Government of Kerala, 2019). As a result, rural communities experience adaptation not as empowerment but as external, fragmented, and depoliticised policy imposition.

Displacement, Migration, and the Crisis of Habitability

Climate-induced displacement in Kuttanad is marked not by dramatic, one-time events but by a gradual, cumulative erosion of habitability, a process driven by ecological degradation, infrastructural vulnerability, and institutional neglect. Unlike high-profile displacements caused by large dams or urban expansion, the crisis unfolding in Kuttanad represents a slow-onset environmental disaster, where loss of livelihood, repeated flooding, and deteriorating living conditions push rural communities to migrate incrementally (Shaji, 2021; Kerala State Planning Board, 2019). The phenomenon is neither fully captured by disaster management metrics nor recognised under existing legal frameworks for internal displacement, making it both underreported and under acknowledged in policy. Displacement in Kuttanad does not follow the binary model of departure and resettlement. Rather, it is characterised by cyclical, event-based, and partial forms of migration, where households move back and forth depending on monsoonal intensity, crop viability, and access to alternative incomes (Shaji, 2021; Jacob, 2020). For instance, in the aftermath of the 2018 flood, more than 6,000 families were displaced either temporarily or permanently. Some relocated to elevated regions within their Panchayat, while others migrated to urban peripheries such as Kochi, Kottayam, or Gulf countries for employment (Padma kumar *et al*., 2019).

Field interviews revealed that many displaced persons still return during the dry season to cultivate small plots or engage in fishing, reflecting a pattern of seasonal return and circular displacement. This contrasts with conventional disaster relief planning, which assumes linear rehabilitation trajectories. Displaced households often maintain dual locations, one in ancestral homes that are only intermittently habitable, and another in rented spaces or informal settlements in nearby towns. These arrangements impose significant economic and emotional burdens, especially on landless agricultural workers and elderly residents (Kerala Institute of Local Administration & IIT Bombay, 2018). One of the most visible triggers for displacement is the repeated destruction of houses, livestock shelters, and public infrastructure during monsoonal floods. The 2018 flood alone damaged more than 50,000 houses in Kerala, with a disproportionate share in Kuttanad taluks such as Kainakary, Edathua, and Champakulam (Kerala State Planning Board, 2019). Photographic evidence and satellite imagery confirm that in several low-lying villages, houses remained submerged for weeks, leaving behind fungal damage, structural cracks, and uninhabitable interiors (Jacob *et al*., 2018).

Residents frequently reported being trapped inside their homes or stranded on upper floors without access to drinking water, power, or sanitation. Once the flood receded, rebuilding efforts were delayed due to a lack of compensation, disputes over land title, and inadequate insurance coverage. Many residents, particularly from the Dalit community, reported that they had to rebuild using personal savings or informal loans, which further exacerbated indebtedness (Field Interviews, 2023). Public facilities such as schools, health centres, Anganwadis, and roads were also disrupted, affecting access to education, medical care, and social entitlements (Kerala Institute of Local Administration & IIT Bombay, 2018). Even among those who continue to reside in flood-prone areas, a pervasive psychological climate of uncertainty, fear, and fatigue prevails. Interviews revealed recurring anxiety around the monsoon months, as people begin preparing for evacuation, shifting valuables to upper levels, or

temporarily moving in with relatives. Children expressed fear about drowning or loss of school years, and many elderly residents spoke of "not wanting to rebuild again" after repeated losses (Shaji, 2021).

The cumulative mental toll is especially visible among women, who bear the burden of care work, water collection, and sanitation during and after floods. Pregnant women, the elderly, and persons with disabilities face heightened vulnerability during displacement, often lacking adequate shelter, transport, or medical support. Studies have linked such experiences to post-traumatic stress, loss of cultural identity, and breakdown of intergenerational care systems (Kerala State Action Plan on Climate Change, 2014; Sreeja *et al*., 2015). Displacement in Kuttanad is not merely spatial but deeply cultural and relational. The loss of ancestral homes, community temples, village shrines, and burial grounds erodes the sense of rootedness that defines rural life. Residents of displaced areas, such as Chathurthi, Nedumudi, and Thakazhy, reported that relocation had disrupted traditional networks of mutual aid, caste-based service exchange, and agricultural cooperation (Narayanan *et al*., 2011). In many instances, landscape features such as sacred groves, coconut groves, and local bunds, which once served as markers of memory and identity, have been submerged or concretised. Migrants interviewed in the urban edges of Kottayam and Alappuzha expressed feelings of alienation and displacement not only from their homeland but also from the rhythms of their former lives, including festivals, water rituals, and traditional fishing practices. The severing of this cultural continuity is seldom considered in adaptation policies, which tend to frame displacement in economic or infrastructural terms (Chandran & Purkayastha, 2018).

Despite growing empirical evidence, climate-displaced persons in Kuttanad remain invisible in law, welfare policy, and census data. The category of 'climate refugee' lacks legal recognition in Indian law, and the National Disaster Management Act (2005) offers no clear provision for persons displaced by slow-onset events (Jolly & Jaiswal, 2013). As a result, displaced residents are often treated as encroachers, migrants, or economically mobile individuals, which denies them entitlements to housing, food security, or targeted relocation schemes (UNHCR, 2021; El-Hinnawi, 1985). For instance, persons who migrate informally to urban slums or semi-legal colonies are not categorised as internally displaced persons (IDPs) and thus lack access to ration cards, Aadhaar-linked subsidies, or housing benefits. The absence of a legal framework means that displacement is rarely pre-empted, mapped, or addressed systematically. In Kuttanad, where the transition from habitability to uninhabitability is often incremental, the lack of recognition creates an official vacuum that deepens precarity (Warren, 2016; Jayawardhan, 2017).

Even schemes like the Kuttanad Package, while ambitious in vision, have failed to offer sustained rehabilitation or resettlement to displaced households. As MSSRF (2011) notes, the package lacked a people-centric design and prioritised infrastructure over social protection. Temporary shelters provided during floods are inadequate, gender-insensitive, and often far from people's original settlements, creating additional logistical and emotional burdens (Kerala State Planning Board, 2019). The experience of displacement is profoundly gendered, especially in a region where women's participation in agriculture, fishing, and home-based livelihoods is significant. Women not only lose income but also face increased reproductive and care burdens, compromised privacy in shelters, and exposure to harassment and gender-based violence in the aftermath of disasters (Babacan, 2021; Kerala Institute of Local Administration, 2018). Interviews with women-headed households revealed that many were excluded from flood relief or housing grants due to a lack of land titles in their name or the absence of a male head of household. This reflects a deeper structural bias in both land tenure and disaster governance, where women's vulnerability is often compounded by bureaucratic invisibility (Jacob, 2020; Sreeja *et al*., 2015). Furthermore, the loss of common lands and backyard cultivation areas, traditionally managed by women, has a cascading impact on household food security and nutrition.

Taken together, the patterns in Kuttanad suggest that climate-induced displacement is not a one-time event, but a prolonged social process deeply shaped by structures of caste, land, gender, and governance. It often occurs in the absence of formal eviction but through the slow collapse of conditions that make life sustainable, water, housing, income, and dignity (IPCC, 2014; Krupocin, 2019). By framing climate displacement merely in terms of 'vulnerability' or 'resilience', state and international agencies risk depoliticising its causes and masking the socially differentiated nature of loss. A more grounded understanding must recognise that displacement is both material and symbolic, a rupture in landscapes, memories, and community belonging. Without such recognition, policy responses will continue to lag behind the lived realities of those slowly being displaced from their homes by a changing climate and an indifferent state.

Governing a Sinking Landscape: Local Governance and Policy Failures

The governance of climate vulnerability in Kuttanad is mediated through a dense but fragmented web of institutions, marked by overlapping mandates, sectoral silos, and under-resourced local governments. While decentralisation in Kerala is often cited as a model for participatory planning, its effectiveness in dealing with environmental displacement and agrarian ecological crises remains deeply constrained (Isaac & Heller 2003; Shaji, 2021). Kuttanad, an ecologically sensitive below-sea-level agro-ecosystem, faces a policy vacuum wherein disaster management, irrigation engineering, agricultural revival, and rural development are managed by disconnected verticals with little coordination or social accountability (Jacob, 2020; Kerala State Planning Board, 2019).

At least seven major departments and agencies share jurisdiction over flood control, paddy cultivation, drainage regulation, and fisheries in Kuttanad: the Irrigation Department, the Agriculture Department, the Fisheries Department, the Revenue and Land Records Department, the Disaster Management Authority, the Panchayati Raj Institutions, and the State Planning Board. While theoretically coordinated under the District Disaster Management Authority (DDMA), their mandates often conflict; irrigation prioritises bund maintenance, while fisheries prefer seasonal inundation for breeding, and agriculture depends on staggered water release (MSSRF 2011; KILA & IIT Bombay, 2018). This leads to institutional deadlock, especially during emergencies. For instance, during the 2018 floods, delayed decision-making between the Irrigation Department and the DDMA resulted in the late opening of the Thottappally spillway, which intensified the backwater rise in Kuttanad taluks (Kerala State Disaster Management Authority, 2018; Government of Kerala, 2019). Despite the Kerala Water

Authority's Integrated Water Resources Management (IWRM) model, implementation is patchy and lacks robust village-level data inputs or real-time modelling (KSDMA 2019; Directorate of Environment and Climate Change 2021). Moreover, technocratic engineering solutions, such as de-silting canals, installing automatic sluice gates, and pumping stations, often proceed without community input or impact studies. This reproduces a model of top-down adaptation, driven by elite expertise and donor-funded infrastructure, but detached from local social realities (MSSRF 2011; Shaji, 2021). The failure to involve farmers, fishers, or women's groups in bund repair, drainage scheduling, or flood risk zoning results in maladaptation, interventions that worsen exposure or deepen social inequities (IPCC, 2014; Tyler, 2021).

Kerala's Panchayati Raj system has long been celebrated for its participatory ethos and Gram Sabha institutionalisation (Isaac & Franke, 2000; Heller *et al*, 2007). However, in disaster-prone ecosystems like Kuttanad, local governments remain woefully under-equipped to address climate-induced vulnerability. Their mandates are limited, financial devolution is inconsistent, and technical capacities are inadequate for managing integrated wetland ecosystems (Shaji, 2021; Jacob, 2020). The Three-Tier Panchayat System, comprising Grama Panchayat, Block Panchayat, and District Panchayat, is responsible for managing water resources, providing housing, and offering agricultural support. Yet, irrigation budgets and control over infrastructure remain concentrated with state-level departments. In Alappuzha district, only 8 out of 41 Panchayats were involved in formulating local climate adaptation plans, and even fewer had access to hazard maps or ecological zonation tools (KILA & IIT Bombay, 2018; Department of Local Self-Government, 2020). During post-flood rehabilitation, several Grama Panchayats were bypassed in the planning and allocation of Chief Minister's Distress Relief Fund (CMDRF) housing units, leading to political favouritism and the exclusion of marginalised households, particularly tenants, single women, and landless Dalits (Government of Kerala, 2019; Kerala Planning Board, 2020). Panchayat leaders interviewed in Nedumudi and Thakazhy expressed frustration that floodplain zoning decisions were taken in Thiruvananthapuram without consulting local bodies (Field Interviews 2023).

Even when local governments initiate participatory processes, a lack of convergence and access to data weakens their effectiveness. For example, in 2021, an adaptation planning effort in Edathua Panchayat stalled due to repeated delays in receiving rainfall and drainage maps from the Irrigation Department (Directorate of Environment and Climate Change, 2022). This reflects a wider trend of decentralisation without integration, where local aspirations are structurally constrained by state-level technocracy. The Kuttanad Package, proposed by the M. S. Swaminathan Commission in 2007 and sanctioned in 2008, aimed to combine ecological restoration and agricultural revitalisation. With a planned outlay of over ₹1,840 crore, it covered bund strengthening, modernisation of water pump-sets, canal clearance, fishery revival, and rice-pisciculture promotion (MSSRF, 2011). While the vision was holistic, its implementation has been widely criticised for bureaucratic inertia, poor fund utilisation, and social exclusion (Government of Kerala 2019; Kerala State Planning Board 2020). Over a decade later, only 37% of total projects were completed; many had stagnated due to interdepartmental disputes over jurisdiction and budget disbursement (Comptroller & Auditor General, 2019). The package's engineering-centric approach overlooked vulnerable communities. For instance, bunds were repaired in high-yield zones but left degraded in Dalit-majority hamlets, such as Karuvatta and Chathurthi (Field Observations, 2024; Jacob, 2020). Schemes on paddy replantation and machinery subsidy favoured large landholders with formal titles, excluding tenant farmers, women cultivators, and leasehold workers (MSSRF 2011; Sreeja *et al*, 2015). Moreover, the absence of climate vulnerability assessments or gender audits meant that adaptation projects often reproduced pre-existing caste and class inequalities. No dedicated provision was made for housing the displaced, despite widespread uninhabitability after 2018 (Kerala State Planning Board 2019; Directorate of Environment and Climate Change 2021). This suggests a fundamental flaw: the technocratic scale of governance outpaced the social scale of vulnerability.

In recent years, Kerala has sought to leverage international climate finance mechanisms, including the Rebuild Kerala Initiative (RKI) and proposals under the Green Climate Fund (GCF). While commendable, these efforts remain constrained by a projectized logic, wherein adaptation is parsed into discrete, fundable components, such as embankments, mobile apps, and drainage channels, often with low accountability to affected populations (Government of Kerala 2021; UNDP India 2022). Panchayats in Kuttanad rarely participate in the formulation of proposals or the monitoring and evaluation frameworks of such schemes. The scientific knowledge hierarchy privileges hydrologists, engineers, and GIS experts over traditional water stewards, fishers, and paddy cultivators, who possess deep contextual insights (Padma kumar *et al*., 2019; Narayanan *et al*., 2011). Community knowledge about sediment movement, bund breach patterns, or local water flow dynamics is thus rendered epistemically inferior.

This creates a disconnect where adaptation is increasingly outsourced to consultants and think tanks, bypassing the deliberative planning culture once nurtured by Kerala's People's Plan Campaign (Isaac & Heller, 2003). The over-reliance on technological fixes, such as automated floodgates, AI-based early warning systems, and concrete ring bunds, may even intensify social vulnerability when not grounded in local practices and inclusion (IPCC, 2014; Tyler, 2021). Perhaps the most glaring governance gap is the absence of a rights-based framework for climate-displaced persons. Unlike development-induced displacement (e.g., due to dams or SEZs), there is no national policy in India that recognises climate-induced internal displacement or ensures long-term rehabilitation (Jolly & Jaiswal, 2013; UNHCR, 2021). Displaced families in Kuttanad are not formally recorded, their entitlements are ad hoc, and they often fall through institutional cracks, no longer qualifying as disaster victims, nor as rural residents eligible for housing or livelihood schemes (Tyler, 2021; Jayawardhan, 2017). Grievance redressal mechanisms are weak. Panchayat petitions go unanswered, and there is no appellate mechanism to contest arbitrary exclusion from compensation or shelter lists. Legal aid for climate-displaced persons is non-existent, and no judicial precedent recognises their specific vulnerability. As a result, displacement becomes a bureaucratic non-event, depoliticised, disaggregated, and diluted into generic 'flood impact' categories (Shaji, 2021).

Beyond Resilience: Justice, Recognition, and Rights of the Climate-Displaced

In policy discourse, the concept of 'resilience' has become a dominant framework for addressing climate risks. While

important, the concept often shifts attention away from structural injustices, legal entitlements, and historical marginalisation. Resilience, when uncritically used, individualises adaptation and obscures the state's accountability to protect the most vulnerable (Bahadur *et al*., 2015; Meerow *et al*., 2016). In Kuttanad, the displaced are not merely at-risk populations; they are claim-making subjects whose exclusion from institutional frameworks reflects deeper crises of governance, justice, and recognition (Shaji, 2021; Jacob, 2020).

At the core of the Kuttanad crisis is a profound deficit of recognition. Neither national nor state policy frameworks explicitly identify climate-induced displacement as a distinct category deserving targeted intervention. The Disaster Management Act (2005), India's principal legislation governing disaster response, focuses on emergency relief and reconstruction but is silent on long-term, slow-onset displacements caused by salinity intrusion, waterlogging, or agrarian collapse (Jolly & Jaiswal, 2013; Tyler, 2021). The Land Acquisition, Rehabilitation and Resettlement Act (2013), while progressive in intent, is limited to development-induced displacement and does not provide coverage for those displaced by environmental degradation. This legal vacuum has material consequences. Families forced to leave flood-prone areas in Kuttanad lose access to PDS entitlements, housing support, and caste-based welfare schemes, particularly when they cross district boundaries (Government of Kerala, 2019; KILA & IIT Bombay, 2018). They are also excluded from electoral rolls, weakening political representation and rendering them voiceless in local decision-making (Tyagi & Mishra, 2020; Shaji, 2021). This invisibilization reflects what Nancy Fraser (2000) calls a 'politics of misrecognition,' where structural inequality is reproduced through administrative indifference.

Moreover, the affected population is not homogeneous; Dalits, tenant farmers, women-headed households, and informal settlers face multiple forms of exclusion. For instance, women displaced by recurrent floods often lack land titles, disqualifying them from housing subsidies under CMDRF or PMAY (Sreeja *et al*., 2015; Babacan, 2021). Dalit tenant farmers on *poramboke* land (Public Land) are denied flood compensation, since their plots are not officially registered (MSSRF 2011; Kerala Planning Board 2019). Thus, displacement is not merely ecological but structurally caste-class-gendered. To address these injustices, it is essential to reframe displacement through the lens of climate justice. Scholars such as Adger (2006) and Schlosberg (2007) have argued that climate impacts are distributed unequally across social groups, necessitating a justice-based approach that combines recognition, procedural participation, and equitable distribution of resources. In the Indian context, this translates to affirming the right to stay, to remain in place with dignity, safety, and sustainability, as a fundamental right under Article 21 of the Constitution (right to life and livelihood) (Jayawardhan, 2017; Krupocin, 2019).

In Kuttanad, this means recognising that most residents do not wish to migrate; they are attached to the land, culture, and ecology of their region. As Shaji (2021) documents through interviews, many displaced residents see relocation as a last resort, forced upon them by failing infrastructure, policy neglect, and repeated loss. Ensuring their right to stay would require prioritising in-situ adaptation: flood-proof housing, decentralised water management, and sustainable agrarian transitions that preserve livelihoods (Padma kumar *et al*., 2019; Narayanan *et al*., 2011). However, current adaptation frameworks, such as the Kuttanad Package (2008) and the Rebuild Kerala Initiative (2019), are largely technocratic and infrastructure-focused, lacking a rights-based accountability. Projects such as regulator automation, canal deepening, and pump installation often proceed without community participation and do not prioritise the socially vulnerable (MSSRF 2011; Government of Kerala 2021). The absence of legal safeguards against forced or involuntary displacement renders adaptation a displacement-inducing regime. A key demand emerging from both global and local discourses is the legal recognition of climate-displaced persons (CDPs). The UN Guiding Principles on Internal Displacement (1998) and the Sendai Framework for Disaster Risk Reduction (2015) call for states to identify, protect, and rehabilitate people displaced by environmental factors. However, India has no legal or administrative classification for CDPs, and climate displacement does not trigger any statutory rehabilitation mechanism (UNHCR, 2021; Jolly & Jaiswal, 2013).

Activists and scholars have proposed several routes forward:

1. Amending the Disaster Management Act (2005) to include provisions for slow-onset displacement and mandatory registration of CDPs (Tyler, 2021; Jayawardhan, 2017).
2. Establishing a Climate Displacement Register at the Panchayat level to track families facing recurrent uninhabitability, supported by state-level data aggregation.
3. Creating a Climate Migration Compensation Fund, analogous to the National Disaster Response Fund (NDRF), but targeted at loss of habitat, livelihood, and cultural dislocation.
4. Embedding tenure-neutral eligibility for housing and welfare schemes, so that tenant farmers, informal settlers, and women without land titles can access support.

Kerala has already taken steps toward such reforms. The Draft Climate Resilience Policy (2022) acknowledges displacement as a major risk in low-lying regions, such as Kuttanad, but lacks legal enforceability and concrete implementation guidelines (Directorate of Environment and Climate Change, 2022). Civil society organisations, such as MSSRF and NATPAC, have urged the state to integrate displacement into the Kerala State Action Plan on Climate Change (KSAPCC), but uptake remains limited (MSSRF, 2011; Government of Kerala, 2019).

For many displaced residents, justice also involves the right to return, to reclaim their ancestral lands once flood-proofing, bund repair, and ecological restoration have made it safe. This right is central to international frameworks on displacement, but it is rarely discussed in India's climate discourse (UNHCR, 2021; El-Hinnawi, 1985). Return is not always feasible, especially in chronically inundated polders, but where it is possible, rehabilitation must be comprehensive, including infrastructure, housing, healthcare, schooling, and land tenure formalisation (Padma Kumar *et al*., 2019; KILA & IIT Bombay 2018). Moreover, for communities that cannot return, the state must guarantee just relocation. This means not just shelter, but rights-based resettlement, with access to livelihood support, legal entitlements, and cultural continuity. In Kuttanad, ad hoc rehabilitation centres are often located in distant or ecologically unsuitable sites, disconnected from canal networks, temples, or schools (Field Interviews 2023; Jacob, 2020). A climate justice approach would ensure that relocation sites are socially embedded and democratically negotiated, rather than merely engineered.

Finally, justice for the climate-displaced requires a move away from risk management paradigms, which seek to contain hazard exposure, to democratic adaptation, which centres voice, accountability, and equity. This entails:

- Institutionalising Panchayat-led adaptation planning, with statutory authority and budgetary autonomy.
- Mandating Social Impact Assessments (SIA) and Gender Vulnerability Audits for all climate adaptation projects (Isaac & Heller, 2003; Tyler, 2021).
- Creating multi-stakeholder grievance redressal platforms that allow displaced persons to contest exclusion, demand inclusion, and co-create policy solutions.

Without such reforms, adaptation will remain a top-down process that benefits the few while displacing the many. Climate resilience cannot be achieved at the cost of a democratic deficit; it must be built through justice, rights, and recognition.

Conclusion and Recommendations

Displacement in Kuttanad is not an episodic aberration but the cumulative outcome of systemic ecological fragility, uneven development, and a fragmented governance regime. This paper has demonstrated that climate-induced displacement in this region, which is below sea level, unfolds through gradual attrition, cyclical distress, and permanent exit, none of which are adequately captured by existing legal or policy frameworks. The affected populations, especially Dalits, tenant farmers, women, and small-scale fishers, are not simply passive victims of climate shocks; they are active navigators of a collapsing landscape, whose claims for recognition, inclusion, and justice remain unmet.

Successive floods, infrastructure decay, and erosion of livelihoods have steadily rendered parts of Kuttanad uninhabitable. Yet the institutional response has been largely technocratic, top-down, and episodic, focusing on engineering solutions, hazard mapping, and short-term relief, while ignoring the social, political, and cultural dimensions of displacement. The celebrated decentralisation model of Kerala, while effective in many domains, struggles to manage long-term climate transitions in ecologically fragile zones, such as Kuttanad. Local governments remain peripheral to major decisions, while adaptation packages often privilege landowning elites, leaving the most vulnerable excluded from compensation, planning, and recovery processes.

The Kuttanad Package, Rebuild Kerala Initiative, and State Action Plan on Climate Change provide blueprints for infrastructural resilience, but not for safeguarding the right to stay, return, or relocate with dignity. This reflects a deeper crisis in India's climate governance regime: a refusal to legally and morally recognise climate-displaced persons. Without such recognition, displacement remains invisible, rehabilitation ad hoc, and justice elusive.

What is needed is a paradigmatic shift, from managing risks to affirming rights; from technocratic adaptation to democratic, justice-oriented climate governance. This includes:

- Legally recognising climate-induced displacement as a distinct category;
- Institutionalising Panchayat-led, gender-sensitive, and socially inclusive adaptation planning;
- Expanding eligibility for housing, health, and welfare schemes beyond landowning classes;
- Designing ecologically sustainable and socially embedded resettlement models;
- Ensuring community participation in flood control, drainage management, and wetland restoration.

Kuttanad is not alone. Across India and the Global South, wetland ecosystems and coastal deltas face a future of slow erosion, of land, livelihoods, and dignity. In these fragile landscapes, displacement is not just an outcome of climate change but a test of democracy, accountability, and the moral imagination of the state. The future of wetland justice lies not in resisting change, but in reclaiming the terms on which change unfolds, through equity, recognition, and the right to belong.

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