

Paradise in Peril: Development, Displacement, and Community Resilience in Lakshadweep-A Sociological Analysis

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Abstract

Lakshadweep, India's smallest Union Territory, represents a unique sociological case where exceptional human development indicators coexist with distinctive traditional social structures amid rapid tourism-centric development interventions. Drawing on secondary data, Census records (1981–2011), Health Management Information System data (2021–2022), policy documents, investigative journalism, and ethnographic scholarship, this study employs qualitative documentary analysis within an interpretive sociological framework. The analysis reveals structural paradox: 97.3% literacy, robust health outcomes, sex ratio of 946 females per 1,000 males, and Human Development Index of 0.75 alongside matrilineal kinship (*Marumakkathayam*), persistent caste hierarchies, and syncretic Islamic identity. However, tourism-centric development generates development-induced displacement affecting up to 50,000 islanders, coastal regulation violations, freshwater scarcity, and coral reef degradation driven by climate change. Communities demonstrate agency through coordinated protests, legal mobilization, demands for participatory planning, adaptation strategies, and cultural preservation. The study advances development sociology by conceptualizing development as contested social action; contributes to kinship sociology through documenting institutional hybridization of matrilineal systems; and extends environmental sociology through climate justice frameworks. The transformation of Lakshadweep offers lessons for small island communities globally facing intersecting pressures of climate change, development, and cultural preservation.

Keywords: *Lakshadweep, development sociology, matrilineal kinship, indigenous communities, development-induced displacement, climate justice, community resilience*

1. Introduction

1.1 Geographic and Historical Context

The Lakshadweep archipelago, comprising 32 square kilometers across 12 atolls and three reefs, represents one of India's most distinctive socio-cultural and ecological landscapes. Located approximately 300 kilometers off the coast of Kerala, these islands are home to a predominantly Muslim population of approximately 69,000 (as of 2023 projections), descendants of migrants from the Malabar Coast who arrived before the 7th century (Heidemann, 2020; Census of India, 2011). The Union Territory occupies a paradoxical position in the Indian imagination: celebrated for its pristine lagoons and coral reefs, yet largely peripheral to mainstream developmental discourse until recently. This marginality has begun to shift dramatically following the Government of India's recent commitments to transform Lakshadweep into a "smart island" destination, with significant infrastructure investments and tourism promotion initiatives (Prime Minister's Office, 2024; The Shillong Times, 2025).

1.2 Research Problem and Significance

This paper addresses a critical research gap at the intersection of development sociology and island studies: How do rapid developmental interventions

impact the living conditions and social structures of indigenous island communities? Drawing on available secondary data, including census records, health management information systems, ethnographic accounts, and policy documents, this study analyzes the socio-demographic profile, traditional social organization, contemporary development challenges, and community responses in Lakshadweep. The significance of this inquiry extends beyond the archipelago, offering insights into broader questions of indigenous development, climate justice, and the sociology of small islands in the Global South.

1.3 Research Questions and Objectives

The study is guided by three interconnected research questions: (1) What are the socio-demographic characteristics and living conditions of Lakshadweep's indigenous communities? (2) How are traditional social structures—particularly matrilineal kinship and caste hierarchies—responding to contemporary development pressures? (3) What strategies are communities employing to navigate the tensions between economic modernization, cultural reproduction, and ecological sustainability?

2. Literature Review

2.1 Foundational Scholarship on Social Stratification

Abraham George's (1987) *Lakshadweep: Economy and Society* remains the most comprehensive early study of the archipelago's social and economic structures. Drawing on extensive fieldwork conducted in the late 1970s and early 1980s, George documented a society marked by persistent economic underdevelopment and a complex system of social stratification. His central argument challenged the assumption that the islands' Muslim identity had erased caste distinctions. Instead, he demonstrated that early migrants from the Malabar Coast had brought with them a hierarchical social order rooted in Hindu caste categories, which continued to structure social relations even after conversion to Islam (George, 1987, pp. 78-92). George identified a stratified social hierarchy comprising three main groups: the *Koya* (land-owning and merchant class), the *Malmi* (maritime laborers and seamen), and the *Melacheri* (agricultural laborers and toddy tappers), sustained through endogamous marriage

practices and the economic dominance of a small Koya minority.

Subsequent anthropological work has both built upon and critiqued George's analysis. Sharma (2005) argued that while caste-like distinctions persisted, the influence of Islamic egalitarianism and modern education had begun to erode rigid hierarchies, particularly among younger generations. Similarly, Nair (2012) explored the role of women in matrilineal families, noting that despite their formal property rights under the *Marumakkathayam* system, actual decision-making power often remained with senior male members, suggesting a more complex gender dynamic than simple matriarchy.

2.2 Maritime Lives and Diasporic Communities

A second significant stream of scholarship focuses on the maritime traditions of Lakshadweep, particularly the seafaring communities of Minicoy. Frank Heidemann's (2020) oral history of seamen from Minicoy (Maliku) represents a landmark contribution, providing rich ethnographic detail on how maritime labor shaped social structures, identity, and transnational connections. Through extensive interviews with retired seamen and their families, Heidemann documented the transformation of Minicoy society from a predominantly seafaring economy to one increasingly oriented towards state employment and diaspora networks. His research detailed the matrilineal and matrilocal kinship system (*Illam*) that historically organized family life, providing women with significant social security while male seafarers were absent for extended periods (Heidemann, 2020, pp. 235-240). He also traced the evolution of the Minicoy Seamen's Association, established in the early 20th century, into the contemporary Minicoy People's Welfare Association, which functions as a "moral community" maintaining social cohesion across diaspora populations in Mumbai, Kochi, and other port cities (Heidemann, 2020, pp. 242-245). Raveendran (2018) complemented this work by documenting Minicoy's linguistic distinctiveness (Mahl) and cultural heritage, highlighting islander agency in navigating economic transitions.

2.3 Climate Change, Ecology, and Small Island Vulnerability

The Intergovernmental Panel on Climate Change's Sixth Assessment Report (IPCC, 2022) identified Lakshadweep among island systems facing "high to very high risks" from temperature rise, sea-level rise, coral bleaching, changing precipitation patterns, and increased frequency of extreme weather events (IPCC, 2022, p. 1625). Beyond biophysical impacts, Singh and Basu (2023) applied a climate justice framework to Lakshadweep, arguing that island communities are disproportionately exposed to climate impacts while possessing minimal decision-making power in national and global climate policy forums. Their research documented how islanders perceive climate change not merely as an environmental issue but as a threat to cultural survival (Singh & Basu, 2023, pp. 412-418). Pulitzer Center (2024) reporting captured tensions between ecological protection and tourism development, with marine biologists emphasizing that coral recovery requires global interventions beyond local action.

2.4 Contemporary Development Policy and Community Rights

Recent scholarship examines the dramatic shift in development policy since 2020. Thachil and Srivastava's (2024) analysis in *Economic & Political Weekly* examined the political economy of the "smart island" initiative, characterizing it as capital-intensive, tourism-focused, and implemented with minimal consultation—prioritizing economic growth over social and ecological considerations (Thachil & Srivastava, 2024, pp. 36-38). The Shillong Times (2025) documented local resistance, including coordinated protests during the COVID-19 pandemic and concerns about land acquisition under the Lakshadweep Minicoy and Amindivi Islands Land Revenue and Tenancy Regulation, 1965. Menon and Joseph (2025) analyzed constitutional dimensions, arguing that the spirit of the Panchayats (Extension to Scheduled Areas) Act, 1996 (PESA) should guide development practice in Scheduled Tribe areas.

2.5 Research Gap

This review reveals a significant gap in existing literature: foundational scholarship on social structure, ethnographic studies of maritime communities, climate research on environmental vulnerability, and policy analysis of development conflicts remain

largely disconnected. Missing is a holistic sociological framework integrating these dimensions to account for how traditional social structures intersect with contemporary development pressures and environmental threats, while capturing islander agency in navigating intersecting challenges.

3. Methodology

3.1 Research Philosophy and Approach

This study adopts a qualitative documentary analysis approach, systematically examining secondary sources to construct a holistic sociological understanding of living conditions, development interventions, and community responses in Lakshadweep. Situated within the interpretive tradition of qualitative sociology, the research prioritizes understanding social phenomena through the meanings, interpretations, and contexts that shape human action (Denzin & Lincoln, 2018). The research adopts a critical realist epistemology, acknowledging that while social reality exists independently of our perceptions, our access to it is mediated through available evidence, which is always partial and shaped by the conditions of its production (Bhaskar, 2016). This epistemological stance is particularly appropriate for studying Lakshadweep, where official data coexists with rich ethnographic accounts and journalistic documentation.

The analytical strategy is guided by thematic analysis, a flexible yet rigorous method for identifying, analyzing, and reporting patterns within qualitative data (Braun & Clarke, 2021). The analysis proceeded through six phases: familiarization with data through repeated reading of all source materials; generation of initial codes capturing key concepts and patterns; searching for themes by grouping codes into broader categories; reviewing themes to ensure they accurately represent the data; defining and naming themes with precise analytical boundaries; and producing the final analysis integrating themes into a coherent narrative.

3.2 Data Sources

This study draws on five categories of secondary sources. Demographic Data: Decennial Census of India data spanning 1981 to 2011 provide baseline indicators including total population, sex ratio, literacy rates, and population distribution across inhabited

islands. Population projections from the National Commission on Population (2020) enable analysis of demographic trends beyond the last census enumeration. Health Indicators: Health Management Information System (HMIS) data for 2021–2022 offer metrics on maternal health (antenatal registration, iron folic acid coverage), immunization coverage, and adolescent health programs. Policy Documents: Official sources include Prime Minister's Office (2024) transcripts, Ministry of Home Affairs (2025) annual reports, the Lakshadweep Development Authority Regulation (2021), and the Lakshadweep Minicoy and Amindivi Islands Land Revenue and Tenancy Regulation (1965). Journalistic Investigations: Pulitzer Center (2024) investigative reporting and The Shillong Times (2025) series provide on-the-ground documentation of local perspectives, protest movements, and implementation realities often absent from official accounts. Ethnographic and Historical Scholarship: Foundational works (George, 1987; Heidemann, 2020) and contemporary scholarship (Nair, 2012; Sharma, 2005; Singh & Basu, 2023; Thachil & Srivastava, 2024) provide analytical frameworks, historical context, and ethnographic depth.

3.3 Analytical Framework

The analysis is structured around a modified version of the Sustainable Livelihoods Framework (Scoones, 2009), adapted for the Lakshadweep context. This framework conceptualizes living conditions as outcomes of the interplay between: vulnerability context (climate change impacts, economic volatility, policy shifts); assets or capitals (human capital including health and education; social capital including kinship networks and community organizations; natural capital including coral reefs, fisheries, and freshwater; physical capital including infrastructure and housing; and financial capital including income and savings); transforming structures and processes (institutions, policies, and power relations shaping access to assets); livelihood strategies (fishing, tourism-related employment, government employment, diaspora remittances); and livelihood outcomes (food security, health, income, cultural integrity).

3.4 Methodological Limitations and Ethical Considerations

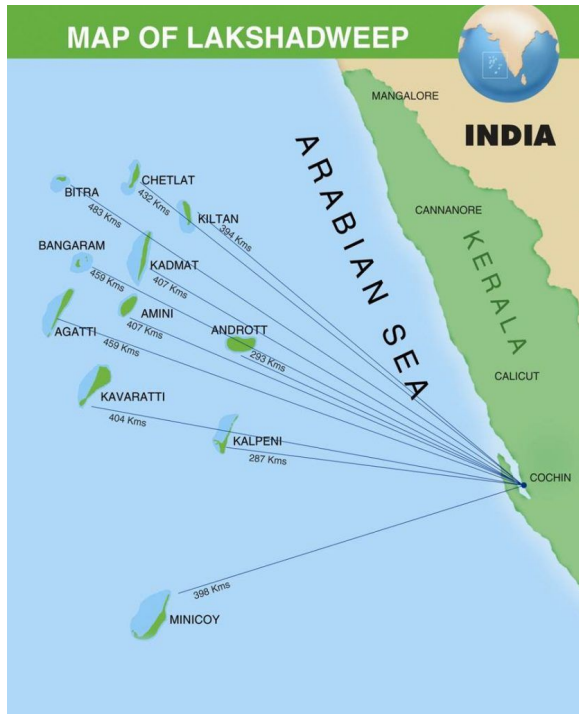
Several limitations must be acknowledged. The absence of primary data without primary qualitative fieldwork limits capacity to capture lived experiences and intra-community variation. Demographic and health data presented at aggregate levels mask variation between islands, communities, and social groups. Secondary sources vary in quality; census data are decennial, HMIS data depend on consistent reporting, and journalistic accounts reflect editorial perspectives. Data span different periods (census 2011, HMIS 2021–2022, journalism 2024–2025), complicating trend analysis. As an external researcher, interpretation is shaped by academic training and cultural background; mitigation efforts include grounding analysis in local voices and maintaining reflexive attention to assumptions. While this study does not involve primary data collection, ethical considerations guide treatment of all sources—respecting community dignity, avoiding sensationalism, and striving to represent community perspectives accurately.

4. Socio-Demographic Profile of Lakshadweep

4.1 Population Size, Distribution, and Density

Lakshadweep's total population was enumerated at 64,473 in the 2011 Census, with 33,123 males (51.4 percent) and 31,350 females (48.6 percent) (Census of India, 2011). Based on population projections from the National Commission on Population (2020), the population is estimated to have grown to approximately 69,000 by 2023, reflecting a modest annual growth rate of approximately 0.9 percent since 2011. This deceleration in population growth, from 17.19 percent during 1991–2001 to 6.30 percent during 2001–2011, represents a significant demographic transition, likely attributable to declining fertility rates, out-migration for education and employment, and the implementation of family planning programs. With a land area of only 30 square kilometers, Lakshadweep ranks among India's most densely populated territories, with a population density of 2,149 persons per square kilometer as of 2011 (Census of India, 2011), more than five times the national average of 382 persons per square kilometer. Population distribution across the ten inhabited islands

is highly uneven: Kavaratti (11,210), Andrott (11,191), Minicoy (10,447), Amini (7,661), Agatti (7,639), Kadmat (5,485), Kalpeni (4,485), Kiltan (3,951), Chetlat (2,363), and Bitra (270).



Source: Map of Lakshadweep, Government of India. Retrieved from the official website of Lakshadweep Administration (UT).

4.2 Sex Ratio and Gender Dimensions

Lakshadweep recorded a sex ratio of 946 females per 1,000 males in the 2011 Census, a favorable ratio that exceeds the national average of 940 and reflects the historical influence of matrilineal kinship traditions. The child sex ratio (0-6 years) stood at 911, somewhat lower than the overall ratio but still more favorable than many northern Indian states. The favorable sex ratio is sociologically significant, challenging the common association of patrilineal kinship with higher female survival and status. Anthropological research has documented that the *Marumakkathayam* system, the matrilineal and matrilocal kinship structure historically practiced, provided women with property rights, social security, and a recognized position within family decision-making (Nair, 2012; George, 1987). However, female labor force participation, while higher than many Indian states, remains constrained at

approximately 32 percent compared to 78 percent for men (National Commission on Population, 2020).

4.3 Literacy and Educational Attainment

Lakshadweep ranks among India's most literate regions, with literacy rates of 97.3 percent according to the latest Periodic Labour Force Survey (The Shillong Times, 2025). Gender parity in literacy is near-universal, with male literacy at 98.2 percent and female literacy at 96.4 percent according to 2011 Census data (Census of India, 2011). Educational attainment extends beyond basic literacy, with high rates of secondary and higher secondary completion. The islands have a well-developed educational infrastructure, including government high schools on each inhabited island, a higher secondary school system, and a degree college established in Kavaratti in 2007 (Department of Education, Lakshadweep, 2023). Apart from that, two university education centers affiliated with the Pondicherry Central University are situated in Andrott and Kadmat Islands. However, higher education beyond the islands presents challenges; students seeking university education or professional training must travel to mainland India, creating both opportunities and disruptions.

4.4 Health Indicators and Healthcare Infrastructure

Health indicators for Lakshadweep reveal favorable health outcomes supported by comprehensive public healthcare infrastructure. HMIS data for 2021–2022 indicate that of 1,184 pregnant women registered for antenatal care, 1,089 (92 percent) were registered within the first trimester. Full courses of iron folic acid tablets were provided to 1,272 pregnant women, exceeding the number of registered pregnancies. Institutional deliveries account for nearly 100 percent of births. Immunization coverage for children under five years exceeds 95 percent. The under-five mortality rate, estimated at 12 per 1,000 live births, is substantially lower than the national average of 35 (National Health Mission, 2023). Non-communicable diseases, particularly diabetes, hypertension, and cardiovascular disease, have emerged as leading causes of morbidity and mortality, with diabetes prevalence estimated at 15–18 percent (Department of

Health, Lakshadweep, 2023). Healthcare infrastructure includes one district hospital (Kavaratti), three community health centers, and ten primary health centers.

4.5 Human Development and Inequality

The islands exhibit a Human Development Index of 0.75, compared to 0.6 for India as a whole, with lower income inequality than national averages (Pulitzer Center, 2024). The lower inequality metrics reflect several factors: the absence of a landed gentry comparable to mainland patterns; the role of kinship networks in redistributing resources; the predominance of public sector employment providing standardized wages; and the effective implementation of social welfare programs.

5. Traditional Social Structure and Cultural Identity

5.1 The Matrilineal Foundation: Marumakkathayam

The traditional kinship system of Lakshadweep, known as *Marumakkathayam* (literally "inheritance through nieces and nephews"), represents a matrilineal structure that historically organized family relations, inheritance patterns, residence arrangements, and social identity across the archipelago (George, 1987; Heidemann, 2020). This system, characteristic of the coastal Malabar region of Kerala from which the islands' original inhabitants migrated, persisted even after the population's conversion to Islam, creating a distinctive form of Muslim social organization. Under the *Marumakkathayam* system, descent was traced through the female line, with individuals belonging to their mother's *tharavad* (lineage house). These corporate groups held joint property, managed family affairs, and provided social security, managed by the senior male (*karanavan*) on behalf of the matrilineal group (George, 1987; Nair, 2012). The matrilocal residence pattern, in which married couples resided with the wife's family, ensured women remained within their natal lineage, maintaining continuity of property, care, and social networks across generations (Heidemann, 2020). The *Marumakkathayam* system has undergone significant transformation due to legal reforms including the Indian Succession Act (1925) and economic changes, particularly the decline of traditional coconut and fishing economies and the rise of public sector employment (Nair, 2012).

Contemporary practice varies: Minicoy retains stronger matrilineal principles, while younger generations increasingly adopt nuclear family structures (Heidemann, 2020; Sharma, 2005).

5.2 Caste and Social Stratification

George's (1987) foundational work documented persistent caste-based social stratification, challenging the assumption that conversion to Islam had erased pre-existing hierarchies. George identified a stratified social hierarchy comprising three main groups: the *Koya* (landowners, merchants, boat owners) occupying high status across all islands; the *Malmi* (seamen, navigators, maritime laborers) occupying intermediate status concentrated in Minicoy, Agatti, and Kalpeni; and the *Melacheri* (agricultural laborers, toddy tappers) occupying low status concentrated in Andrott, Amini, and Kavaratti. The *Koya* traditionally constituted the dominant landowning and merchant class, controlling coconut plantations, boat ownership, and trade networks, with their economic dominance reinforced by endogamous marriage patterns and exclusionary access to religious leadership (George, 1987). The *Malmi* occupied intermediate status, with seafaring as defining identity providing both economic opportunity and social distinction (Heidemann, 2020). The *Melacheri* faced subordinate status reinforced by economic dependence on *Koya* landowners, social exclusion, and intermarriage restrictions (Sharma, 2005). Contemporary scholarship suggests that while caste hierarchies have eroded significantly due to education, public sector employment, and Islamic egalitarianism, they have not disappeared entirely. Marriage patterns remain a domain where caste distinctions continue to shape social practice, and economic inequalities originating in historical caste structures persist (Sharma, 2005; Thachil & Srivastava, 2024).

5.3 Islamic Identity and Syncretic Practices

Islam is the predominant religion of Lakshadweep, with nearly the entire indigenous population adhering to the Sunni Shafi'i school of jurisprudence. The introduction of Islam is traditionally attributed to Arab traders who arrived from the 7th century onward, gradually converting the indigenous Hindu population (George, 1987; Heidemann, 2020). The Islamic

identity of Lakshadweep has historically been characterized by syncretic practices that incorporate pre-Islamic customs, most notably the persistence of the *Marumakkathayam* matrilineal system, along with healing practices, folk rituals, and veneration of local saints (*awliya*) (Nair, 2012; Raveendran, 2018). Religious institutions include mosques in every village, Quranic schools (*madrassas*), and a tradition of religious scholarship historically drawn from Koya families (George, 1987). Contemporary religious dynamics include the influence of reformist movements emphasizing scriptural orthodoxy, generating tensions with traditional syncretic practices, though the islands have largely avoided sectarian conflicts (Sharma, 2005; Menon, 2022).

5.4 Minicoy: A Distinctive Cultural Formation

Minicoy (Maliku) possesses a distinctive cultural identity that sets it apart from the northern islands. The language of Minicoy, known as Mahl, is a variant of Dhivehi, the language of the Maldives, rather than the Malayalam-based dialects spoken in the northern islands (Raveendran, 2018). Heidemann's (2020) oral history research documents how Minicoy's maritime orientation created a cosmopolitan community connected through seafaring networks spanning the Indian Ocean. From the late 19th century onward, Minicoy men worked as seamen (*lascars*) on British, Indian, and international ships, establishing diaspora communities in Mumbai, Kochi, Kolkata, and ports across Southeast Asia and the Gulf. The Minicoy Seamen's Association, established in the early 20th century and now known as the Minicoy People's Welfare Association, functioned as a crucial support network for diaspora communities, providing mutual aid, maintaining connections to the home island, facilitating remittances, and preserving cultural identity (Heidemann, 2020). While the northern islands follow the *Marumakkathayam* matrilineal system, Minicoy's kinship structure exhibits distinctive features, including a more pronounced matrilineal residence pattern and the continued importance of the *Illam* (lineage house) (Nair, 2012).

5.5 Social Capital, Safety Nets, and Community Resilience

Contemporary community resilience in Lakshadweep is supported by strong social capital and safety nets

rooted in traditional social structure. The IPCC (2022) noted that "some island communities are resilient with strong social safety nets and social capital that support responses to severe impacts of the climate crisis" (cited in Pulitzer Center, 2024). The matrilineal kinship system, with its emphasis on collective property and mutual obligation, provides a foundation for social security, with family networks supporting vulnerable members (Nair, 2012). Beyond kinship networks, Lakshadweep has a rich tradition of community-based organizations including welfare associations, fishing cooperatives, and religious institutions that manage common resources, provide mutual aid, advocate for community interests, and preserve cultural practices (Heidemann, 2020; Raveendran, 2018). Traditional practices of reciprocity, labor exchange during agricultural seasons, collective fishing arrangements, and community support for life-cycle events—continue to operate alongside modern economic relations (George, 1987; Sharma, 2005). However, social capital faces pressures from out-migration weakening kinship networks, economic changes altering interdependence, and development pressures disrupting community organization (Thachil & Srivastava, 2024; Pulitzer Center, 2024).

6. Development Paradigms and Emerging Conflicts

6.1 The Shifting Development Paradigm

For much of the post-independence period, Lakshadweep occupied a peripheral position in India's development discourse. While the islands benefited from the extension of basic infrastructure—schools, health centers, electricity, telecommunications—development was characterized by incremental change rather than transformative intervention (George, 1987; Menon, 2022). The territory's status as a Union Territory administered directly by the central government, combined with its geographic isolation and small population, contributed to a development approach often characterized as paternalistic and lacking local participation (Thachil & Srivastava, 2024). This pattern reversed dramatically after 2020, with Lakshadweep emerging as a priority area for central government intervention. Thachil and Srivastava (2024) analyze this shift within the broader context of central government focus on peripheral territories—including Andaman and Nicobar Islands,

Ladakh, and northeastern states—as sites for strategic infrastructure development, tourism promotion, and geopolitical positioning. The framing of Lakshadweep as a "smart island" destination represents a particular development model: capital-intensive, technology-driven, and oriented toward high-end tourism (Prime Minister's Office, 2024; Ministry of Home Affairs, 2025).

6.2 Government Development Initiatives

Prime Minister Modi's visit to Lakshadweep in January 2024 inaugurated multiple projects. Energy Infrastructure: Solar power plants across multiple islands aim to reduce dependence on diesel generators (Ministry of New and Renewable Energy, 2024). Petroleum and Aviation Infrastructure: POL (Petrol, Oil, Lubricants) bulk storage facilities in Kavaratti and Minicoy, along with aviation fuel depots, support expanded air connectivity and maritime operations (Prime Minister's Office, 2024). Fisheries Support: An ice plant in Agatti supports seafood processing and storage, addressing post-harvest losses (Ministry of Fisheries, 2024). Digital Connectivity: Undersea fiber optic cable connections enable e-governance, education, and economic opportunities (Ministry of Communications, 2024). Port Modernization: A strategic partnership with Japan for port digitization and maritime security positions the islands within broader Indo-Pacific strategies (Ministry of External Affairs, 2024).

6.3 Tourism Expansion and the Smart Island Vision

The most controversial element of the development agenda is the plan to transform Lakshadweep into a premier tourism destination positioned as an alternative to the Maldives. The Lakshadweep Development Authority Regulation (2021) provides the legal framework for tourism infrastructure development, including construction of water villas, resorts, and associated facilities, enabling lease of lagoon areas to private corporations—a provision generating significant concern (The Shillong Times, 2025). The high-end tourism model raises questions about employment benefits for local communities, who may be relegated to lower-wage service roles while capital-intensive facilities are externally owned and operated (Thachil & Srivastava, 2024). With total

land area of only 30 square kilometers, limited freshwater resources, and fragile coral reef ecosystems, environmental impacts of large-scale tourism are potentially severe (Singh & Basu, 2023; Kumar, 2024). As one Agatti resident expressed: "Once people from the outside come here, and if there is a tourism boom like elsewhere, we may not be able to preserve our identity" (Pulitzer Center, 2024).

6.4 Land Acquisition Controversies and Displacement Risks

Land acquisition represents the most immediate and contentious dimension of development conflicts. The Lakshadweep Minicoy and Amindivi Islands Land Revenue and Tenancy Regulation (1965) governs land administration. Local petitioners allege the administration is reclassifying land used by fishermen and farmers for generations as "accreted land"—land formed by natural processes—claimed as government property (The Shillong Times, 2025). The Lakshadweep Development Authority Regulation (2021) enables changes in land ownership to facilitate infrastructure and tourism development; critics argue the regulation, passed without adequate consultation, provides sweeping powers for land acquisition with limited scope for community objection (Menon & Joseph, 2025). The National Human Rights Commission has issued notices regarding potential displacement of approximately 50,000 locals—nearly three-quarters of the territory's population (The Shillong Times, 2025). As a Scheduled Tribe area, Lakshadweep is subject to constitutional provisions designed to protect indigenous communities. The Panchayats (Extension to Scheduled Areas) Act, 1996 (PESA), while not automatically applicable to Union Territories, establishes principles of community consultation and consent that scholars argue should guide development practice (Menon & Joseph, 2025).

6.5 Environmental Regulation and Violations

Development projects raise concerns about compliance with environmental regulations. The Coastal Regulation Zone (CRZ) Notification (2019) establishes restrictions on coastal development. Critics argue tourism projects violate provisions on construction within specified distances from high tide lines (The Shillong Times, 2025; Kumar, 2024). A Supreme Court-appointed committee in 2014

recommended a 20-meter No-Development Zone from the high tide line, but implementation has been inconsistent (The Shillong Times, 2025). The environmental impact assessment (EIA) process has been criticized for insufficient baseline data, failure to consider cumulative impacts, and inadequate public participation (Singh & Basu, 2023). Limited administrative capacity and political pressures to expedite development result in what critics describe as a "development at any cost" approach (Thachil & Srivastava, 2024; Pulitzer Center, 2024).

6.6 Freshwater Scarcity and Resource Conflicts

The islands' freshwater aquifer—rainwater percolating through coral sand creating a freshwater lens floating atop saltwater—is a finite and vulnerable resource (Singh & Basu, 2023; Kumar, 2024). Current freshwater extraction rates already place pressure on the aquifer; excessive pumping reduces the freshwater lens, causing saltwater intrusion that can render wells unusable (The Shillong Times, 2025). Pollution from diesel power plants and inadequate wastewater treatment further contaminates groundwater. Desalination plants supplement supplies but are energy-intensive, costly, and produce brine requiring careful management (Kumar, 2024). Tourism development adds significant uncertainty; high-end facilities consume substantial freshwater, and cumulative impacts on stressed aquifers remain unassessed (The Shillong Times, 2025).

6.7 Resistance, Mobilization, and Legal Challenges

Development conflicts have generated substantial community mobilization. During the COVID-19 pandemic, islanders united against the Administrator's infrastructure plans. The Shillong Times (2025) documents how civil society groups, local politicians, and residents coordinated protests across multiple islands, with local BJP politicians resigning en masse. Home Minister Amit Shah subsequently assured that decisions would be made in consultation with residents and local bodies (The Shillong Times, 2025). Affected islanders have filed class-action suits challenging land acquisition actions and seeking enforcement of constitutional guarantees. The Kerala High Court has directed the administration to ensure constitutional guarantees for islanders (Menon & Joseph, 2025). The National Human Rights

Commission's intervention brings national scrutiny to development actions (The Shillong Times, 2025). Diaspora associations in Mumbai, Kochi, and the Gulf have mobilized resources and raised awareness (Heidemann, 2020; Pulitzer Center, 2024).

7. Environmental Vulnerability and Climate Justice

7.1 The Coral Island Ecosystem: Structure and Vulnerability

Lakshadweep is a classic example of a coral atoll system—a ring-shaped coral reef enclosing a lagoon—with landforms composed entirely of carbonate materials from coral organisms (Kumar, 2024; Singh & Basu, 2023). The coral reefs provide physical foundation for islands, with reef accretion historically keeping pace with sea-level changes; act as natural breakwaters dissipating wave energy; support marine biodiversity underpinning fisheries; and contribute to freshwater lens formation (Ministry of Earth Sciences, 2024; IPCC, 2022). Coral reefs are among the most sensitive ecosystems, responding to small changes in ocean temperature, acidity, and water quality. Sustained deviations beyond the optimal 23–29°C range trigger coral bleaching—expulsion of symbiotic algae (Hoegh-Guldberg et al., 2019; IPCC, 2022). Oceans surrounding Lakshadweep have warmed 0.5–1.0°C since the 1970s (Ministry of Earth Sciences, 2024). The Shillong Times (2025) reports "coral mass mortality induced by catastrophic climate changes, straining the accretion and buffer capacity of the reefs."

7.2 Coral Reef Degradation: Extent, Causes, and Consequences

Mass bleaching events occurred in 1998, 2010, and 2016–2017. The Minister of State for Earth Sciences has acknowledged coral bleaching severely impacts the islands, with significant mortality of key reef-building species (Ministry of Earth Sciences, 2024). The 2016–2017 event caused mortality exceeding 50 percent in some locations (Kumar, 2024). Attribution to anthropogenic climate change is well-established; return intervals between severe events have shrunk from decades to years (Hoegh-Guldberg et al., 2019). Loss of coral cover compromises coastal protection—healthy reefs reduce wave energy by 97 percent (Ferrario et al., 2014)—increasing coastal vulnerability for low-lying islands (Singh & Basu,

2023). Fisheries impacts include declines in fish populations dependent on healthy coral habitats (Kumar, 2024; Raveendran, 2018).

7.3 Climate Change Impacts: A Multidimensional Threat

The IPCC (2022) identifies multiple climate-related threats detectable in Lakshadweep. Mean annual temperatures have increased 0.5-1.0°C since the 1970s, with projections of 1.0-2.5°C further warming by 2100. Global mean sea level has risen 20-25 centimeters since 1880; with maximum elevations of 2-4 meters, the islands are highly vulnerable. Under high-emissions scenarios, sea-level rise of 0.5-1.0 meters by 2100 would render large portions permanently inundated (IPCC, 2022). Climate models project changes in monsoon precipitation patterns with increased variability. The region has experienced increased cyclone activity in recent decades (Ministry of Earth Sciences, 2024). Ocean acidification reduces carbonate availability for coral skeleton formation; combined warming and acidification create a "double stressor" accelerating degradation (Hoegh-Guldberg et al., 2019).

7.4 Freshwater Scarcity: The Hidden Crisis

The freshwater lens is vulnerable to "upconing"—saltwater intrusion when extraction rates exceed recharge (Singh & Basu, 2023; Kumar, 2024). The Shillong Times (2025) warns excessive pumping causes saltwater intrusion rendering wells unusable. Pollution from diesel power plants and inadequate wastewater treatment contaminates groundwater. Desalination supplements supply but is energy-intensive and costly (Kumar, 2024). Tourism development adds uncertainty; high-end facilities consume substantial freshwater; cumulative impacts remain unassessed (The Shillong Times, 2025).

7.5 Climate Justice: Frameworks and Implications

Climate justice demands equitable distribution of burdens and benefits. Industrialized nations contributed majority historical emissions; small island states face most severe impacts (Schlosberg & Collins, 2014; Caney, 2020). The concept of Loss and Damage recognizes some impacts cannot be adapted to; Harjeet Singh argues "true climate justice means ensuring island communities are both protected from climate

impact and fully involved in decision-making processes" (Pulitzer Center, 2024). Procedural justice demands meaningful participation in decisions; recognition justice requires respecting local knowledge and cultural practices (Schlosberg & Collins, 2014; Singh & Basu, 2023).

7.6 Ecology Versus Economy: Navigating the Tensions

Tourism development poses environmental risks: boat traffic damages reefs; coastal construction alters sediment dynamics; wastewater pollutes lagoons; freshwater consumption accelerates depletion; carbon footprint contributes to climate impacts (Pulitzer Center, 2024; Kumar, 2024). Marine biologists emphasize global interventions necessary: "if we want to save these corals, there need to be global interventions" (Pulitzer Center, 2024). Sustainable tourism models include visitor limits, anchoring restrictions, wastewater treatment, renewable energy, and local benefit-sharing (Kumar, 2024). Alternative development pathways include sustainable fisheries, value-added processing, renewable energy, and cultural tourism (Singh & Basu, 2023; Thachil & Srivastava, 2024).

8. Community Responses and Resilience Strategies

8.1 Theoretical Frameworks: Agency, Resilience, and Social Movements

Understanding community responses requires theoretical frameworks recognizing agency of marginalized communities. Development sociology recognizes communities exercise agency—capacity to act purposefully within constraints—to negotiate, resist, and appropriate development interventions (Long, 2001; Bebbington, 2007). Resilience refers to capacity to absorb disturbances, reorganize while changing, and maintain essential functions and identity (Adger, 2000; Folke, 2016). Social movement theory examines how marginalized groups organize to challenge power structures, articulate grievances, and demand change (Tarrow, 2021; McAdam et al., 2001). Legal mobilization describes strategic use of legal institutions to advance collective interests (McCann, 2006).

8.2 Civil Society Mobilization: The COVID-19 Era Protests

The most significant mobilization occurred during the COVID-19 pandemic when islanders united against unilateral administrative decisions. The pandemic created political opportunity; triggers included the Lakshadweep Development Authority Regulation (2021) and administrative decisions prioritizing tourism over consultation (The Shillong Times, 2025). Protests achieved remarkable unity across islands; local BJP politicians resigned en masse; civil society groups, residents' associations, and religious institutions coordinated across islands (The Shillong Times, 2025). Tactics included public demonstrations, petitions, media engagement, social media coordination, and national political lobbying (Pulitzer Center, 2024). Home Minister Amit Shah subsequently assured decisions would be made with resident consultation—acknowledging unsustainable opposition (The Shillong Times, 2025).

8.3 Legal Challenges: Strategic Use of Judicial Institutions

Affected islanders have filed class-action suits challenging land acquisition actions and seeking enforcement of constitutional guarantees for Scheduled Tribe communities (The Shillong Times, 2025). Legal challenges are grounded in constitutional provisions including Article 19 (right to reside), Article 21 (right to life including livelihood and cultural rights), and Fifth/Sixth Schedule provisions (Menon & Joseph, 2025). The Kerala High Court has directed the administration to ensure constitutional guarantees for islanders (Menon & Joseph, 2025). The National Human Rights Commission issued notices regarding potential displacement (The Shillong Times, 2025).

8.4 Demands for Participatory Planning and Inclusive Decision-Making

Community voices articulate positive vision: development done with communities, not to them. As a retired Agatti teacher stated: "Once people from the outside come here, and if there is a tourism boom like elsewhere, we may not be able to preserve our identity" (Pulitzer Center, 2024). Community members advocate for public-private partnership models involving locals in planning, construction, and operation; mandatory consultation; representation on development authorities; transparent land acquisition

processes; and benefit-sharing mechanisms (The Shillong Times, 2025). Participatory development theory argues interventions are more effective, equitable, and sustainable when involving affected communities (Chambers, 1997; Hickey & Mohan, 2004). Barriers include perfunctory consultation, pressure to expedite projects, and power asymmetries (Thachil & Srivastava, 2024).

8.5 Adaptation and Livelihood Diversification

Historical adaptation includes Minicoy's seafaring tradition; diaspora networks through Minicoy People's Welfare Association facilitate remittances, maintain cultural connections, create opportunities, and mobilize resources for advocacy (Heidemann, 2020). Contemporary adaptation includes sustainable tourism engagement— islanders exploring work as guides, marine protected area guardians, and eco-tourism operators (Pulitzer Center, 2024; Kumar, 2024). Fisheries adaptation includes diversification of target species, selective fishing gear, value-added processing—constrained by ecological limits and capital requirements (Raveendran, 2018; Kumar, 2024). Limits to adaptation exist; sea-level rise exceeding island elevation may require managed retreat; Loss and Damage principles recognize unavoidable loss deserves support (Caney, 2020; IPCC, 2022).

8.6 Cultural Preservation and Identity Maintenance

The controversy over replacing Mahal and Arabic under the three-language formula generated intense opposition; Kerala High Court issued stay (The Shillong Times, 2025). Matrilineal kinship is transforming, but islanders selectively adapt while preserving family solidarity and gender equity (Nair, 2012; Heidemann, 2020). Islamic identity navigates tensions between reformist orthodoxy and traditional syncretic practices (Sharma, 2005; Menon, 2022). Traditional festivals, music, dance, and cuisine maintained through community organizations (Raveendran, 2018). Cultural preservation provides meaning, social cohesion, and basis for collective action; supports adaptation through traditional knowledge (IPCC, 2022).

8.7 Building Resilience: Strategies for the Future

Strategies include strengthening participatory governance through mandatory consultation and community representation; investing in local capacity building for community organizations; supporting livelihood diversification in sustainable fisheries, value-added processing, renewable energy, and community-based tourism; protecting environmental resources through enforcement and sustainable management; preserving cultural heritage through language education and intergenerational transmission; securing constitutional rights including land rights and consultation; and building climate resilience through coastal protection, water security, and disaster preparedness.

9. Conclusion and Discussion

9.1 Synthesis of Key Findings

This sociological analysis reveals Lakshadweep as a society at critical juncture—remarkable developmental achievements including 97.3 percent literacy, robust health indicators, sex ratio of 946 females per 1,000 males, and Human Development Index of 0.75 alongside distinctive social structures rooted in matrilineal kinship (*Marumakkathayam*), persistent caste hierarchies, and syncretic Islamic identity. However, tourism-centric development operationalized through the "smart island" initiative and Lakshadweep Development Authority Regulation (2021) generates development-induced displacement affecting up to 50,000 islanders, violations of coastal regulation provisions, freshwater scarcity, and coral reef degradation driven by climate change. Communities demonstrate agency through coordinated protests during the COVID-19 pandemic, legal mobilization via class-action suits, demands for participatory planning, adaptation strategies including diaspora networks and livelihood diversification, and cultural preservation efforts resisting changes to language education.

9.2 Theoretical Contributions

This study advances development sociology by conceptualizing development as contested social action rather than unidirectional modernization—a field of struggle where multiple actors deploy various forms of capital. It contributes to kinship sociology through documenting institutional hybridization of matrilineal systems under capitalist modernization,

demonstrating that kinship transformation is not linear replacement but complex negotiation, adaptation, and selective preservation. It extends environmental sociology by illustrating environmental stratification—systematic distribution of environmental burdens along lines of existing inequality—and applying climate justice frameworks to a specific island context, demonstrating how distributive, procedural, and recognition justice intersect in local contexts.

9.3 Policy Implications

Participatory Governance: Development planning must meaningfully include local communities, respecting constitutional rights and traditional knowledge. This requires institutional mechanisms for community participation, including representation on development authorities, transparent land acquisition processes, and benefit-sharing mechanisms.

Climate Justice Frameworks: Adaptation funding and development projects must be evaluated through climate justice lenses prioritizing community protection and decision-making. Adaptation resources must reach affected communities; development decisions must not increase vulnerability; island communities must have meaningful voice in climate policy.

Ecological Sustainability: Infrastructure and tourism development must respect coastal regulation norms and ecological limits imposed by freshwater scarcity and reef fragility. Rigorous environmental impact assessment, enforcement of regulations, and precautionary approaches are required.

Social Structure Recognition: Policies must acknowledge distinctive social organization including matrilineal kinship systems and community governance structures. Development interventions should support rather than undermine traditional social institutions that provide security and resilience.

9.4 Limitations and Future Research

Limitations include reliance on secondary data without primary fieldwork limiting capacity to capture intra-community variation; aggregation masking variation between islands and social groups; temporal

gaps; and researcher positionality. Future research should employ primary ethnographic research across different islands and social groups; longitudinal studies tracking changes over time; comparative research with other small island contexts including Maldives, Andaman and Nicobar Islands, and Pacific island nations; climate adaptation research centering community knowledge; and governance research examining decision-making processes.

9.5 Final Reflection

The transformation of Lakshadweep raises fundamental questions about development paradigms in indigenous and ecologically sensitive contexts. As the islands navigate tensions between economic aspirations and social-ecological integrity, their experience offers lessons for small island communities globally facing intersecting pressures of climate change, development, and cultural preservation. The resilience documented—capacity for collective action, strategic use of legal mechanisms, determination to preserve cultural identity—gives reason for hope. The choices made in Lakshadweep in the coming years will determine not only the future of this unique archipelago but also contribute to collective understanding of how development can be pursued in ways that respect both human communities and the natural systems that sustain them.

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