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Fragile Ecosystem and Sustainable Governance

Policy Lessons from Eastern Himalayan States for Vision 2047

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Abstract: India's Vision 2047 outlines an ambitious roadmap toward becoming a fully developed nation by its centenary of independence in 2047, emphasising poverty alleviation, economic self-reliance, environmental sustainability, social equity, and technological development. The study looks into how delicate ecosystems, weak governance, and regional political conditions interact within the Eastern Himalayas, specifically Sikkim and parts of northern West Bengal such as Darjeeling. Home to rich biodiversity and key rivers, this area is increasingly exposed to climate threats like repeated flooding and slope failures, worsened due to major construction works. Implementation gaps in policy have repeatedly intensified existing weaknesses here. This study explores regional issues through the lens of India's Vision 2047 plan. By examining academic research papers, policy documents, government reports, and credible news sources, the research attempts to find practical insights for policymaking, offering pathways to strengthen environmental adaptability, readiness for emergencies, and broader public involvement in governance across the Eastern Himalayas and similar regions.

Keywords: Eastern Himalayas, Fragile Ecosystems, Sustainable Governance, Vision 2047

INTRODUCTION

India's Vision 2047, which emphasises sustainability, inclusivity, and resilience as fundamental pillars of development, lays out an ambitious plan to turn the country into a fully developed economy by its centennial of independence. However, despite their rich biodiversity and ecological value, the Eastern Himalayas, especially Sikkim and northern West Bengal, such as Darjeeling, face increasing threats from climate-driven events: sudden glacial lake bursts, unstable slopes, and erratic rain patterns. While home to immense natural wealth, they remain exposed due to weak oversight. Environmental regulations often go unenforced; responsibility is scattered across agencies, lacking coordination. Meanwhile, large construction efforts tend to overshadow conservation needs, deepening risks, and unpredictable rainfall.

There was a significant downpour in December 2025 that totalled more than 300 mm in just 12 hours. In Darjeeling and Sikkim, it caused numerous landslides and flooding, which resulted in at least 20 fatalities as well as significant damage to infrastructure, agriculture, and settlements. Because of blocked routes, travel along the primary highway became nearly impossible. Communication networks failed where slopes gave way near key junctions. Mirik, Jorebunglow, Maneybhanjang, and Sukhiapokhri were among the worst-hit areas. Extreme rainfall and upstream flows from Bhutan and Sikkim overwhelmed dams and settlements, resulting in catastrophic flooding of the Teesta River, a vital water source. With landslides and floods destabilising slopes, destroying drainage systems, and resulting in habitat loss, these calamities have exacerbated ecological degradation. Construction of infrastructure such as roads, dams, and tunnels on delicate ecosystems leads to the increase in frequency and severity of such events and endangers the region's biodiversity. The region's susceptibility to climate change and unplanned development has been brought to light by the 2023 Glacial Lake Outburst Flood (GLOF) in Sikkim and the recurrent Teesta floods.

The Eastern Himalayas show how ecological fragility and governance dynamics intersect, with local political institutions, federal structures, and centre-state relations influencing how effective environmental policies are. This paper argues that achieving Vision 2047's sustainability goals requires not only technical

adaptation strategies but also robust governance reforms that integrate ecological resilience, disaster preparedness, and inclusive decision-making into India's federal framework.

THEORETICAL BACKGROUND

The environmental governance of the Himalayan region is shaped by several key theoretical frameworks. The Theory of Himalayan Environmental Degradation (THED), developed in the 1970s, suggests a cause-and-effect connection between population growth in rural Himalayan communities and widespread deforestation, leading to downstream impacts such as siltation and water scarcity. This deterministic theory has influenced national adaptation plans, but it has been critiqued for overlooking the diverse, place-based adaptation practices of local communities.

Another important theoretical perspective is the role of governmental institutions in environmental management. The politics of environmental governance in the Himalayas reveal a complex interplay between state institutions, local communities, and vested interests. Governments are supposed to safeguard fragile ecosystems by enforcing rules, funding conservation, and coordinating across agencies. But in practice, these efforts often falter because of limited capacity, fragmented decision-making, and political interference. Meanwhile, local communities who depend directly on forests, pastures, and water sources have shown through grassroots conservation that inclusive governance can make ecosystems more resilient. Yet their role is often sidelined by top-down mandates that restrict access to resources, sparking resistance and conflict.

Darjeeling's illegal construction crisis is a vivid example of how politics undermines environmental safeguards. The law clearly limits building heights in the hills, but violations are everywhere; over 130 high-rises stand in defiance of the rules. What's striking is not just the scale of the problem but the complete absence of enforcement. Builders, councillors, and political groups form alliances that block demolition, even when the High Court orders action. This isn't just administrative negligence; it's a deliberate politics of non-enforcement, where regulations are ignored to protect vested interests.

The ecological fallout is severe. Fragile hill soils, already prone to erosion, are destabilised further by unregulated construction and road building. Heavy rains and earthquakes magnify the risks, making landslides and floods more frequent. Experts warn that without stringent enforcement and sustainable land-use planning, the region may face a crisis similar to Joshimath in Uttarakhand, where land subsidence resulted from unregulated construction.

Policy instruments such as Environmental Impact Assessments (EIAs) and municipal codes hold potential, but their effectiveness depends on robust monitoring and genuine stakeholder participation. Courts can push, but without political will, compliance remains tokenistic. What's really needed is a shift in how environmental governance is imagined: away from technical fixes and toward tackling the political economy of enforcement. That means holding institutions accountable, protecting community rights to manage land and forests, and insulating regulations from political capture. Only then can development in the Himalayas move hand in hand with ecological sustainability.

LITERATURE REVIEW

Research on disaster governance in Sikkim and Darjeeling reveals that, while local institutions are expected to manage landslides and floods, they often lack sufficient resources and coordination, leading to uneven outcomes (Subba, 2025). This highlights a broader challenge of decentralisation without adequate institutional support.

Environmental policies such as the Environmental Impact Assessment (EIA) were designed to safeguard fragile ecosystems, but their implementation has been inconsistent. Environmental Impact Assessments (EIAs), which were first adopted in 1994 (Paliwal, 2006), and local tourism or forest initiatives (Tiwari and Abrol, 2015; Kant, 2017) are examples of tools that show promise but tend to fall short in the absence of thorough monitoring and significant stakeholder participation (Gupta & Chanjta, 2023). Vishan and Siroya (2022) argue that overlapping centre-state responsibilities in environmental law dilute accountability, thereby weakening enforcement. This is especially visible in politically sensitive border states like Sikkim, where hydropower projects were cleared despite ecological risks.

The Teesta hydropower cascade illustrates how policy ambition collides with ecological reality. Sanctuary Nature Foundation (2023) notes that tunnels and dams along the Teesta led to the alteration of river flows and destabilised slopes. Again, weak monitoring and rushed clearances amplified disaster vulnerability. These findings suggest that Vision 2047's sustainability goals cannot be achieved without stronger enforcement and cumulative impact assessments.

CASE STUDIES

Sikkim's 2023 Glacial Lake Outburst Flood (GLOF)

In October 2023, the sudden bursting of the South Lhonak Lake in Sikkim caused massive flooding along the Teesta River. The disaster killed at least 24 people and damaged bridges, homes, and the Teesta III hydropower project. Politically, this event exposed the risks of prioritising hydropower and infrastructure projects over ecological safety. The state government sought central assistance, while civil society groups criticised the hurried clearances given to dams and tunnels in fragile zones. The National Disaster Management Authority later tested satellite-based warning systems, but the debate highlighted how centre-state relations and development priorities often overshadow ecological safeguards.

Illegal Construction in Darjeeling

Darjeeling's hills are dotted with high-rise buildings that violate municipal laws restricting construction height. Despite repeated court orders, over 130 illegal structures remain untouched. Politically, this reflects deep collusion between builders and local politicians, who stall enforcement for electoral gains. The Calcutta High Court has intervened multiple times, but local governance remains paralysed. This case shows how corruption, weak accountability, and political calculations undermine environmental law enforcement, making the region more vulnerable to landslides and soil erosion.

Himachal Pradesh Monsoon Disaster (2025)

The 2025 monsoon in Himachal Pradesh killed more than 380 people and caused damage worth nearly ₹1,000 crore. Politically, the disaster sparked tensions between the state and the centre. Chief Minister Sukhvinder Singh Sukhu demanded more central aid, arguing that relief norms were outdated and unfair to hill states. Later, the Comptroller and Auditor General (CAG) flagged irregularities in disaster fund management, noting that unspent balances reduced central assistance. This case illustrates how financial mismanagement and centre-state funding disputes weaken disaster governance, turning ecological fragility into a political issue.

Great Nicobar Island Development Project

The ₹81,000 crore Great Nicobar project aims to build a transshipment port, airport, and township. However, it involves clearing vast rainforest areas and threatens indigenous Nicobarese communities. Politically, the project has sparked heated debate. Opposition leaders like Jairam Ramesh accused the government of contradictions, denying displacement while drafting relocation plans for tribal families. Environmentalists warned that over 10 million trees could be felled, and the Galathea Bay Wildlife Sanctuary was denotified to make way for construction. This case reflects how national security and economic ambitions often override ecological and tribal rights, raising questions about India's development model under Vision 2047.

RECOMMENDATION FOR SUSTAINABLE GOVERNANCE

Effective governance in fragile ecosystems works best when national laws are closely connected to what happens on the ground. Policies made at the central or state level need to be adapted to local realities and implemented with the involvement of communities living in these areas. In Himalayan regions and fragile ecosystems, local knowledge about the environment can help design better rules for managing forests, building infrastructure, and preparing for disasters.

There is a need for strengthening local institutions such as village councils, disaster management committees, and conservation groups. This ensures that rules are followed and that people's voices are heard. Stricter implementation of environmental policies, combined with efforts to reduce corruption in practice, is essential for protecting these regions. Building large infrastructure projects in fragile ecosystems without thorough Environmental Impact Assessments (EIA) increases the risk of disasters like floods and landslides, as seen in recent years. Addressing this issue by mandating comprehensive EIAs and ensuring their strict enforcement will help prevent avoidable ecological damage and loss of life.

India can protect its fragile ecosystems by supporting inclusive and resilient development, connecting local action with national frameworks, ensuring stricter policy implementation with less corruption, and prioritising thorough EIAs for infrastructure projects. When communities are empowered to protect their environment, and policies are enforced fairly, the country moves closer to becoming truly developed, self-reliant, and environmentally conscious by 2047.

CONCLUSION

India's Vision 2047 offers a hopeful roadmap for a developed, self-reliant, and sustainable future. However, the case study of Sikkim, Darjeeling, and recent disasters in Himachal Pradesh highlights the urgent need for sustainable development in fragile ecosystems for India to achieve the goals of Vision 2047. These regions, along with other ecologically sensitive areas such as the Sunderbans, Thar Desert, Western Ghats, and coastal islands, face mounting risks from climate change and poorly planned infrastructure projects. In

Himachal Pradesh, the 2025 monsoon caused over 380 deaths and massive infrastructure damage, revealing the region's vulnerability to extreme weather events.

Moreover, large-scale infrastructure projects in the Andaman and Nicobar Islands, particularly the Holistic Development of Great Nicobar Island Project, have raised serious environmental concerns. The project, valued at ₹81,800 crore, involves clearing vast areas of tropical rainforest, threatening biodiversity and indigenous communities. Environmentalists warn that over 10 million trees may be felled, and the Galathea Bay Wildlife Sanctuary, recognised as a vital nesting site for the giant leatherback turtle, was denotified to clear land for a transshipment port project, undermining its conservation. Despite claims of compliance with environmental rules, the actual impact often exceeds mitigation measures, and the Islands Protection Zone rules have been revised, which has made it easier to approve such projects, sometimes at the cost of ecological integrity.

For Vision 2047 to be truly inclusive and sustainable, India must prioritise climate-resilient infrastructure, enforce stringent environmental regulations, and ensure meaningful community participation in decision-making. Only by balancing development with ecological protection can India secure a resilient and equitable future for all its fragile ecosystems.

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