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Environmental And Ecological Adverse Effects After State Bifurcation – A Study For Indian State (Special Reference To Uttarakhand In The Himalayan Range)

Akhilesh kumar

Dy Manager

Bharat Heavy Electricals Limited

Abstract

The bifurcation of Indian states, though intended to improve governance and meet local aspirations, can catalyse significant environmental and ecological challenges. This is acutely evident in the case of Uttarakhand, formed in 2000 from Uttar Pradesh, which occupies a critical swath of the Himalayas—an ecologically fragile and vital region. This paper critically examines the adverse impacts on Uttarakhand's environment post-bifurcation, focusing on deforestation, biodiversity loss, glacial and riverine stress, heightened disaster vulnerability, and governance challenges. The analysis underscores the need for urgent institutional reform, participative environmental governance, and development models that align with the unique vulnerabilities of the Himalayan ecosystem.

1. Introduction

Uttarakhand's creation was championed as a step toward addressing the Himalayan region's distinct ecological conditions and socio-economic needs. However, the rush to accelerate growth has led to unsustainable patterns of infrastructure development, resource extraction, and urbanization. The consequences—deforestation, fractured habitats, river degradation, and disaster escalation—present a strong case for re-examining the ecological logic of state formation and development in sensitive regions like the Himalayas.

2. Adverse Environmental and Ecological Effects Post-Bifurcation

2.1 Deforestation and Forest Fragmentation

Post-bifurcation development in Uttarakhand has disproportionately impacted forests:

Over 45,000 hectares of forest land have been diverted for non-forest use since 1980, with nearly two-thirds of this occurring after state formation.

Roads, hydropower projects, and urban expansion have sliced through contiguous forest tracts, fragmenting habitats.

Increased frequency and intensity of forest fires, often exacerbated by climate change and weakened management structures, further degrade forest health and heighten carbon emissions.

2.2 Biodiversity Decline and Habitat Disruption

Several of India’s iconic endangered species—including the snow leopard, Himalayan black bear, and musk deer—reside in Uttarakhand’s forests. Adverse effects post-statehood includes:

Shrinking and fragmentation of habitats due to infrastructure and settlements.

Rapid proliferation of invasive plant species, partly the result of poorly planned compensatory afforestation using non-native species.

Disrupted wildlife corridors, affecting gene flow and species survival, and a noticeable decline in native pollinators and migratory bird populations.

2.3 Glacial Retreat and River System Stress

Uttarakhand’s glaciers feed major river systems vital to northern India’s water security. After bifurcation:

Accelerated glacial retreat due to climate change is compounded by land use stresses and hydropower exploitation, destabilizing river flows.

Siltation and debris from unchecked construction degrade water quality, destroy aquatic habitats, and increase flooding risks downstream.

Hydropower projects and riverbed mining alter seasonal flow regimes, impacting endemic freshwater species such as the mahseer fish.

2.4 Heightened Disaster Vulnerability

Environmental mismanagement and exposure to unchecked development have drastically increased Uttarakhand’s disaster risks:

The catastrophic 2013 Kedarnath floods were a result of both extreme rainfall and chronic neglect of zoning, riverbank encroachment, and deforestation.

There is now a marked increase in landslide frequency, particularly following heavy monsoons and earthquakes. Loss of natural vegetation and soil destabilization are key drivers.

2.5 Urbanization, Pollution, and Waste

Statehood accelerated the growth of towns such as Dehradun and Haridwar:

Urban sprawl now frequently intrudes into floodplains and forest edges, exacerbating risks of flooding and landslides.

Poor solid waste and sewage management in burgeoning hill towns leads to pollution of rivers (including the Ganga’s upper reaches), ground water, and vulnerable ecosystems.

3. Institutional and Policy Failures

3.1 Fragmented Governance, Enforcement Gaps

Uttarakhand’s transition led to administrative fragmentation and weak regulatory enforcement:

Overlapping state and central jurisdictions on rivers, forests, and land rights led to loopholes exploited by polluters and unregulated developers.

Inadequate technical capacity within state institutions hampered effective monitoring, disaster planning, and enforcement of existing environmental laws.

3.2 Erosion of Community-Based Resource Management

While Uttarakhand has a celebrated legacy of community-managed forests (Van Panchayats), these traditional systems have been undermined:

Top-down, centralized approaches sidelined local knowledge and stewardship.

Community voices are largely absent in official decision-making, hampering locally relevant, sustainable management practices.

4. Case Table: Adverse Environmental and Ecological Effects in Uttarakhand Post-Bifurcation

5. Recommendations

Strengthen Institutions: Build capacity and autonomy in state environmental agencies; foster collaborations for river and forest governance.

Mandatory Climate-Resilient Impact Assessments: Enforce rigorous, participatory environmental review for all major development, especially in ecologically sensitive locations.

Empower Community Governance: Revitalize Van Panchayat systems, recognize traditional knowledge, and embed community roles in policy implementation.

Promote Ecologically Sensitive Development: Enforce no-go zones in fragile habitats, with strict limits on extraction, and favour restoration projects over new greenfield interventions.

Advance Disaster Preparedness: Implement early warning networks for landslides and floods, restore degraded watersheds, and regulate hillside construction.

Foster a Green Economy: Incentivize organic farming, ecotourism, non-timber forest products, and sustainable rural livelihoods to reduce dependence on damaging development.

6. Conclusion

State bifurcation in the Himalayas underscores how environmental governance and regional autonomy must be integrated with robust environmental safeguards. The adverse effects witnessed in Uttarakhand—deforestation, species decline, river degradation, surging disaster risk—highlight the urgent need for a paradigm shift. Only by centering ecological resilience, community agency, and sustainability in the development agenda can similar states avert further environmental peril and secure the Himalayan region’s critical future.