



Human-made environmental disasters and their impact on tourism in India: evidence from industrial accidents, oil spills, and development-induced risks

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Abstract

Tourism is fundamentally dependent on environmental quality, ecosystem integrity, and destination reputation, rendering it particularly vulnerable to environmental disasters. When such disasters originate from or are intensified by human activity including industrial accidents, maritime oil spills, extractive industry failures, and environmentally unsound development, their impacts on tourism tend to be severe, multidimensional, and enduring. This paper examines the effects of human-made environmental disasters on tourism in India through eleven case studies spanning the period from 1984 to 2025, with particular emphasis on recent events between 2018 and 2025. Employing a qualitative comparative case-study methodology, the study draws on academic literature, Supreme Court and National Green Tribunal jurisprudence, government reports, NGO assessments, and credible media investigations. The analysis identifies recurring impact pathways such as environmental degradation, loss of amenity value, disruption of tourism-dependent livelihoods, and sustained damage to destination image. The findings reveal that governance failures, regulatory gaps, and delayed remediation significantly prolong tourism recovery, whereas timely judicial intervention, transparent enforcement, and community-centred recovery mechanisms enhance destination resilience. The paper argues that Indian environmental jurisprudence especially the principles of absolute liability, precaution, sustainable development, and the polluter pays doctrine provides a robust legal framework for integrating tourism protection into disaster governance and environmental regulation.

Keywords: Environmental disasters, tourism impacts, anthropogenic risk, environmental jurisprudence, disaster governance, India

Introduction

Tourism is among the most environmentally sensitive sectors of the economy, fundamentally dependent on ecological integrity, public safety, and destination image. Environmental disasters undermine these foundations by degrading natural assets, damaging infrastructure, and eroding visitor confidence. While natural hazards such as floods, cyclones, and landslides have long been recognised as threats to tourism, recent experience in India demonstrates that disasters originating from or amplified by human activity including industrial negligence, maritime accidents, and environmentally unsustainable development pose particularly complex and persistent challenges for tourism governance.

Indian constitutional jurisprudence has progressively recognised environmental protection as an essential component of the right to life under Article 21 of the Constitution. This interpretation has direct relevance for tourism-dependent regions, where environmental degradation not only affects ecosystems but also undermines livelihoods, public health, and local economies. However, despite tourism's reliance on environmental quality, tourism considerations remain weakly integrated into disaster risk reduction strategies and environmental regulatory frameworks.

Against this backdrop, this paper examines how human-made environmental disasters have affected tourism in India and analyses how legal and governance responses influence tourism recovery trajectories. It argues that integrating tourism explicitly into environmental governance and disaster preparedness is essential for enhancing destination

resilience and safeguarding tourism-dependent livelihoods in an era of escalating anthropogenic risk.

Research Methodology

This study adopts a qualitative comparative case-study methodology based on secondary sources to examine the impacts of human-made environmental disasters on tourism in India. Data were collected from peer-reviewed academic literature, judgments of the Supreme Court of India and the National Green Tribunal, government and statutory reports, NGO assessments, and investigative journalism. The selected case studies span a range of disaster typologies, including industrial accidents, maritime oil spills, extractive industry failures, climate-amplified hazards, and infrastructure governance breakdowns, enabling comparative analysis across diverse tourism contexts.

Judicial decisions are treated not merely as background references but as substantive analytical sources. Particular attention is given to instances where courts and tribunals have addressed environmental harm, livelihood loss, regulatory inadequacies, and precautionary governance, as these judicial responses play a critical role in shaping environmental accountability and influencing tourism recovery trajectories.

Literature Review and Legal Context

Existing scholarship on tourism and disasters consistently identifies environmental degradation, media amplification of risk, and disruption of tourism-dependent livelihoods as key drivers of tourism decline following disaster events (Ritchie, 2009) ^[16]. Coastal tourism has been shown to be

especially vulnerable to oil spills, given the persistence of hydrocarbon contamination in marine sediments and shorelines, while industrial disasters often generate enduring reputational stigma that constrains destination recovery even after physical remediation.

Indian environmental jurisprudence complements and extends this body of literature by articulating enforceable legal principles to address anthropogenic environmental harm. In *M.C. Mehta v. Union of India* (1987)^[2], the Supreme Court developed the doctrine of absolute liability for hazardous industries, removing fault-based defences in cases of industrial accidents. Subsequently, the polluter pays and precautionary principles were affirmed in *Vellore Citizens' Welfare Forum v. Union of India* (1996)^[4] and have been consistently applied by the National Green Tribunal. Together, these doctrines provide a robust legal framework for addressing environmental damage and associated livelihood losses, including those affecting tourism-dependent communities.

Case Studies: Patterns of Anthropogenic Disaster and Tourism Impact

This section analyses eleven case studies spanning four decades, with particular emphasis on recent events between 2018 and 2025. The cases are organised to reflect the evolution of human-made environmental disasters in India—from industrial accidents and coastal oil spills to climate-amplified and infrastructure-related failures. Together, they demonstrate how environmental degradation, regulatory shortcomings, and delayed remediation translate into sustained tourism losses, livelihood disruption, and destination image damage.

Rather than treating tourism impacts as incidental, the analysis foregrounds tourism as a sector that is structurally vulnerable to anthropogenic environmental risk and governance failure.

Industrial Disasters and Long-Term Destination Stigma Bhopal Gas Tragedy (1984)

The Bhopal gas tragedy represents the foundational case of industrial disaster in India, with enduring implications for environmental governance and destination reputation. The release of methyl isocyanate gas in December 1984 resulted in mass casualties and long-term health consequences, but its impact extended beyond human suffering to the city's socio-economic identity.

In tourism terms, Bhopal experienced a prolonged decline as the city became globally synonymous with industrial negligence and environmental injustice. Cultural heritage, urban lakes, and nearby natural attractions were persistently overshadowed by disaster narratives. Despite periodic tourism promotion efforts, reputational stigma proved difficult to reverse.

Legally, the disaster catalysed the development of strict and absolute liability for hazardous industries, shaping subsequent environmental jurisprudence. While tourism losses were not litigated directly, judicial recognition of environmental harm as a violation of the right to life underscores the indirect yet profound implications for tourism-dependent livelihoods (Broughton, 2005)^[11].

Coastal Oil Spills and Maritime Risk Ennore–Chennai Oil Spill (2017)

The Ennore oil spill exposed the vulnerability of urban coastal tourism to maritime accidents and regulatory fragmentation. Oil contamination along Chennai's coastline

affected beaches, nearshore waters, and marine ecosystems, leading to temporary closures and visitor avoidance.

Tourism impacts were immediate: beach vendors, guides, and small hospitality operators reported income losses, while media imagery amplified perceived environmental risk across the Coromandel Coast. The National Green Tribunal's *suo motu* intervention, applying the polluter pays principle, marked an important accountability mechanism. However, delays in containment and communication prolonged reputational harm, demonstrating how governance quality directly shapes tourism recovery trajectories.

Mumbai Oil Spill near JNPT (2018)

The 2018 oil spill near Jawaharlal Nehru Port Trust, though smaller in scale, reinforced chronic perceptions of coastal pollution in Mumbai. Advisories against water-based activities and media coverage affected recreational and domestic tourism along the city's coast.

This case illustrates the cumulative tourism impacts of repeated, lower-intensity pollution events and highlights the need for stricter port safety regulation and real-time environmental monitoring to protect urban coastal tourism credibility.

Industrial Accidents in Mixed-Use Tourism Cities Vizag Styrene Gas Leak (2020)

The Visakhapatnam styrene gas leak underscored the risks posed by hazardous industries located within expanding urban tourism landscapes. The gas release resulted in fatalities and mass evacuations, immediately damaging Visakhapatnam's image as a coastal leisure destination.

Tourism activity declined sharply due to safety concerns, travel advisories, and cancellations. Informal tourism workers beach vendors, transport operators, and small guesthouses were disproportionately affected. The National Green Tribunal's application of absolute liability and its linkage of industrial negligence to livelihood loss reinforced the role of environmental jurisprudence in protecting tourism-dependent economies.

Extractive Industries and Nature Tourism Baghjan Oil Well Blowout, Assam (2020)

The Baghjan oil well blowout occurred near ecologically sensitive wetlands supporting eco-tourism and community-based tourism initiatives. Hydrocarbon release and prolonged fire damaged wetlands and surrounding villages, undermining emerging tourism potential in Upper Assam.

The National Green Tribunal's invocation of the polluter pays and precautionary principles reflected judicial recognition of ecosystem services and dependent livelihoods, including tourism. The case demonstrates how extractive activities in fragile regions pose systemic risks to sustainable tourism development.

Mountain Disasters and Development-Amplified Risk Uttarakhand Flash Floods (2013)

The 2013 Uttarakhand floods marked a turning point in recognising the role of unregulated development in amplifying disaster impacts. Tourism collapsed as pilgrimage routes, hotels, and transport infrastructure were destroyed.

Judicial findings reframed the disaster as a governance failure rather than a purely natural event. The Supreme Court's emphasis on sustainable development and

ecological limits has since influenced regulatory scrutiny of tourism and infrastructure projects in Himalayan regions.

Chamoli Glacier Burst (2021)

The Chamoli disaster reinforced concerns regarding hydropower expansion and construction in high-risk mountain zones. Tourism recovery following 2013 suffered renewed setbacks, particularly for pilgrimage and adventure tourism.

Judicial and policy discussions reiterated the importance of carrying capacity and cumulative impact assessment, underscoring the need for hazard-aware tourism planning in climate-sensitive regions.

Sikkim Glacial Lake Outburst Flood (2023)

The Sikkim GLOF caused extensive damage to tourism infrastructure along the Teesta River. Prolonged access disruption and heightened climate risk perception led to sustained tourism decline, affecting small operators and community livelihoods.

This case highlights the urgency of integrating climate risk into tourism development approvals and environmental clearance processes.

Infrastructure Governance and Tourism Safety

Morbi Bridge Collapse, Gujarat (2022)

The Morbi bridge collapse revealed how infrastructure governance failures can undermine tourism even in the absence of direct environmental pollution. As a heritage attraction, the bridge’s collapse eroded visitor confidence and raised serious questions about privatisation, maintenance, and regulatory oversight.

Legal scrutiny focused on negligence and accountability, reinforcing that tourism infrastructure safety is integral to destination resilience.

Contemporary Maritime Risk and Coastal Tourism Kerala Coastal Oil Spill and Cargo Vessel Incidents (2024–2025)

Recent shipping incidents off the Kerala coast illustrate the growing risks posed by intensified maritime traffic. Even precautionary advisories resulted in cancellations, reduced footfall, and livelihood losses for coastal tourism operators. These incidents underscore the importance of proactive maritime regulation, oil-spill preparedness, and environmental monitoring in safeguarding tourism resilience in high-traffic coastal corridors.

Synthesis of Trends (2018–2025)

Across recent cases, four patterns emerge:

- Disasters are increasingly compound, involving climate stress, development pressure, and governance failure.
- Tourism impacts are structural, extending beyond short-term losses to long-term destination viability.
- Judicial and tribunal interventions play a corrective role where regulatory systems fail.
- Preventive regulation is consistently more effective than post-disaster recovery.

Table 1: Comparative Analysis

Table 1 presents a comparative overview of major environmental and infrastructure disasters in India, highlighting common tourism impact pathways and governance responses.

Year	Disaster & Location	Type of Disaster	Tourism Context	Key Tourism Impacts	Governance / Legal Response
1984	Bhopal Gas Tragedy, Madhya Pradesh	Industrial chemical disaster	Urban heritage and regional tourism	Long-term reputational stigma; decline in visitor confidence; overshadowing of cultural and natural attractions	Evolution of absolute liability doctrine; prolonged litigation and compensation
2013	Uttarakhand Flash Floods, Uttarakhand	Floods with anthropogenic amplification	Pilgrimage, mountain, and nature tourism	Collapse of tourism flows; destruction of access routes; livelihood loss for local operators	Supreme Court scrutiny of development practices; emphasis on sustainable development
2017	Ennore–Chennai Oil Spill, Tamil Nadu	Maritime oil spill	Urban coastal and heritage tourism	Beach closures; cancellations; income loss for vendors and guides	NGT suo motu action; polluter pays principle applied
2018	Mumbai Oil Spill near JNPT, Maharashtra	Port-related oil spill	Urban coastal tourism	Advisories on water activities; reinforced pollution-related destination image	Administrative response; highlighted regulatory gaps
2020	Vizag Styrene Gas Leak, Andhra Pradesh	Industrial gas leak	Coastal city tourism	Sharp fall in tourist footfall; reputational damage; cancellations	NGT invoked absolute liability; compensation and remediation ordered
2020	Baghjan Oil Well Blowout, Assam	Oil and gas blowout and fire	Eco-tourism, wetland and river tourism	Damage to wetlands; disruption of eco-tourism initiatives	NGT applied polluter pays and precautionary principles
2021	Chamoli Glacier Burst, Uttarakhand	Glacier collapse and flash floods	Mountain, adventure, and pilgrimage tourism	Renewed tourism disruption; heightened risk perception	Policy and judicial focus on carrying capacity and hydropower
2022	Morbi Bridge Collapse, Gujarat	Infrastructure governance failure	Heritage and domestic tourism	Decline in tourist confidence; safety concerns	Criminal and civil liability proceedings; governance accountability
2023	Sikkim Glacial Lake Outburst Flood (GLOF)	Climate-induced flood	Mountain and eco-tourism	Prolonged tourism disruption; infrastructure loss; income loss	Policy emphasis on precautionary planning and climate risk
2024	Lakshadweep / Indian Ocean Shipping Pollution	Cumulative marine pollution	Island and marine eco-tourism	Impact on diving and lagoon tourism; advisories affecting high-value tourism	Coastal regulation and marine pollution control frameworks
2025	Kerala Cargo Vessel Oil Spill	Maritime accident with oil leakage	Coastal, beach, and backwater tourism	Cancellations; precautionary beach advisories; livelihood losses	Ongoing response guided by precautionary principle and maritime liability

Cross-Case Analysis

Across the eleven case studies, consistent patterns emerge. Environmental degradation reduces the amenity value of tourism resources, while media narratives amplify perceived risk beyond affected areas. Informal and small-scale tourism operators experience disproportionate livelihood losses. Governance quality strongly influences recovery outcomes, with judicial intervention often acting as a corrective mechanism.

Recent cases demonstrate a shift toward compound disasters, where climate stress interacts with development pressure and regulatory failure. Preventive regulation and risk-sensitive planning emerge as more effective than post-disaster recovery approaches.

Policy Implications

First, tourism must be explicitly integrated into environmental regulation and disaster risk reduction frameworks, rather than treated as an incidental economic activity. Second, preventive governance through stricter industrial safety enforcement, maritime regulation, and climate-sensitive land-use planning is more cost-effective than post-disaster remediation. Third, environmental compensation mechanisms should recognise tourism livelihood losses alongside fisheries and agriculture. Finally, transparent communication and community participation are essential for restoring destination credibility after disasters.

Conclusion

Human-made environmental disasters impose long-term and multidimensional impacts on tourism in India. The analysis demonstrates that tourism vulnerability is shaped as much by governance and legal response as by environmental damage itself. Indian environmental jurisprudence provides a robust foundation for integrating tourism protection into disaster governance. Embedding tourism explicitly within environmental and disaster policy is essential for safeguarding livelihoods and destination resilience in an era of escalating anthropogenic risk.

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