

Sustainable Adventure Tourism Development and Community Engagement in Northern Pakistan

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Abstract

Northern Pakistan, encompassing Gilgit-Baltistan and Khyber Pakhtunkhwa, hosts some of the world's most iconic high-mountain landscapes, including five of the fourteen eight-thousanders and extensive glacial systems, making it a rapidly growing destination for adventure tourism (trekking, mountaineering, white-water rafting, and cultural immersion). Post-pandemic foreign tourist arrivals surged by over 115%, intensifying pressure on fragile ecosystems, water resources, waste management infrastructure, and local communities. This review examines the current state of sustainable adventure tourism development in the region, analyzing national and provincial policy frameworks (National Tourism Strategy 2020–2030, KITE project), environmental challenges (glacial recession, GLOF risks, solid waste accumulation, and water pollution), and socio-economic dynamics. Special attention is given to community engagement models, including the Aga Khan Development Network's Town Management Societies (TMS), revenue-sharing mechanisms from heritage sites and mountaineering royalties, women's empowerment initiatives (e.g., CIQAM project, Maizban homestays), and professionalization of local guides. The paper contrasts Pakistan's predominantly government-led approach with Nepal's community-centric Annapurna Conservation Area Project (ACAP), highlighting opportunities to strengthen local governance, introduce regenerative practices, improve climate-resilient infrastructure, and enforce stricter environmental standards. Findings underscore that long-term viability depends on shifting from volume-driven growth to inclusive, regenerative models that equitably distribute benefits, preserve cultural identity, protect ecological integrity, and build institutional trust among residents, government, and private stakeholders.

Keywords: Adventure Tourism, Sustainable Tourism, Northern Pakistan, Gilgit-Baltistan, Khyber Pakhtunkhwa, Community-Based Tourism, Glacial Lake Outburst Floods (GLOF), Waste Management, Mountaineering Royalties, Town Management Societies, Regenerative Tourism, Women Empowerment, KITE Project, National Tourism Strategy, Climate-Resilient Tourism

1. Introduction

The high-mountain regions of Northern Pakistan, where the formidable ranges of the Himalayas, Karakorams, and Hindu Kush converge, represent a geographical anomaly of immense aesthetic and strategic value (Sati, 2026). As the global tourism industry increasingly seeks out "frontier" destinations that offer a blend of physical challenge and cultural authenticity, Northern Pakistan has emerged as a focal point for international and domestic adventure seekers (Batool et al., 2025).

However, this burgeoning interest brings with it a complex array of environmental, socio-economic, and institutional challenges. The sustainability of this sector is not merely a matter of ecological preservation but is fundamentally tied to the quality of community engagement and the resilience of local governance structures (Dushkova et al., 2024). This report provides an exhaustive analysis of the current landscape of adventure tourism in Gilgit-Baltistan and Khyber Pakhtunkhwa, examining the policy frameworks, environmental impacts, and community-led models that define the region's path toward sustainable development (Ali, 2023).

2. Conceptual foundations of adventure tourism in the mountain context

Adventure tourism is distinguished from conventional mass tourism by its emphasis on physical exertion, cultural immersion, and the perception of risk within a natural setting. In Northern Pakistan, this sector spans a spectrum from "soft" adventure, such as guided trekking and cultural excursions, to "hard" adventure, including high-altitude mountaineering, technical climbing, and white-water rafting (Hussain, 2019). The region's competitive advantage lies in its unrivaled density of high peaks, hosting five of the world's fourteen "eight-thousanders," and the largest glacial systems outside the Polar Regions (Wajeesh & Noorani, 2024).

The theoretical framework for developing this sector must align with the broader principles of sustainable development, which requires economic growth to be socially and environmentally resilient (Mezentseva et al., 2024). Sustainable tourism, as defined by the International Union for Conservation of Nature (IUCN), must manage natural and cultural resources in a way that allows for continued growth while sustaining the environmental base (Mock & O'Neil, 1996). In Northern Pakistan, this resource base is exceptionally fragile. The rapid growth of the industry, characterized by a 115% to 121% surge in foreign arrivals following global pandemic disruptions, has placed unprecedented pressure on these ecosystems (UNWTO, 2023). The challenge, therefore, is to transition from an unregulated market to a managed system that prioritizes the "regenerative" capacity of the landscape and its people (KPCTA et al., 2025).

Figure 1: Integrated Strategic Framework for Sustainable Adventure Tourism and Community Engagement in Northern Pakistan.



3. Institutional frameworks and policy evolution

The governance of tourism in Pakistan has undergone a significant transformation since the 18th Constitutional Amendment in 2010, which devolved the subject of tourism to the provincial and regional governments (Malik, 2023). This decentralization aimed to empower local authorities but initially led to a fragmented policy landscape (Abbasi et al., 2025). In recent years, a concerted effort has been made to harmonize these efforts through national strategies and provincial action plans (Hanif et al., 2023).

3.1 The National Tourism Strategy 2020-2030

The National Tourism Strategy (NTS) serves as a comprehensive roadmap for positioning Pakistan as a competitive destination in the regional and global market (Pakistan Tourism Development Corporation, 2020). The strategy is anchored by the "Vision 2030" framework, which envisions tourism as a driver of economic, social, and cultural advancement (Kiani, 2026).

Table 1: Strategic Dimensions of the National Tourism Strategy (2020-2030)

Policy Dimension	Strategic Focus Area	Key Objectives
Governance	Institutional Reform	Coordination between federal and provincial bodies through the National Tourism Coordination Board (NTCB) (PTDC, 2020).
Economy	GDP and Revenue	Targeting a significant increase in tourism's contribution to GDP, currently estimated at 2.9% (Malik, 2023; PTDC, 2020).
Sustainability	Green Tourism Culture	Promoting eco-friendly practices among suppliers and consumers to ensure long-term ecological viability (PTDC, 2020).
Inclusivity	Social Integration	Integrating women, minorities, and people with disabilities into the tourism value chain (PTDC, 2020).
Digitalization	Digital Transformation	Establishing a centralized web portal and E-library for site mapping and feedback (PTDC, 2020).

3.2 Provincial and Regional Dynamics: Gilgit-Baltistan and Khyber Pakhtunkhwa

In Gilgit-Baltistan (GB), the tourism department has focused on specialized markets, leveraging the region's status as a premier mountaineering destination. The strategy includes the promotion of indigenous sports such as polo and jeep rallies, alongside seasonal cultural festivals (Sultana et al., 2025). In contrast, Khyber Pakhtunkhwa (KP) has emphasized heritage tourism and the development of integrated tourism zones through the Khyber Pakhtunkhwa Integrated Tourism Development (KITE) project (World Bank, 2023). This project, supported by the World Bank, aims to improve infrastructure, enhance assets, and strengthen destination management to attract domestic and international tourists (Negassa, 2024).

4. Environmental stewardship and the climate crisis

Northern Pakistan is an epicenter of the global climate crisis. The region's glaciers are not only a vital source of freshwater for the Indus River basin but are also the primary attraction for adventure tourists (Muhammad, 2025). The "Karakoram Anomaly," where some glaciers in the region were historically stable or advancing while others retreated, is increasingly overshadowed by the broader trend of accelerated melting (Heinrich Boll Stiftung, 2025).

4.1 Glacial recession and water security

Satellite data from 2016 to 2024 reveals significant glacial retreat, which threatens the water security of over 300 million people. For mountain communities, the melting glaciers introduce a dual threat: the risk of Glacial Lake Outburst Floods (GLOFs) and the long-term depletion of agricultural water supplies (Wang, 2024). GLOFs are particularly catastrophic, as they can trigger flash floods and landslides that destroy tourism infrastructure and local settlement. The creation of Attabad Lake in 2010 - a result of a seismic landslide - is a stark reminder of the region's geological instability (Anand et al., 2025). While it has become a scenic destination for jet-skiing and boating, its existence is rooted in a disaster that displaced thousands of people (Xu et al., 2025).

4.2 The waste management challenge

The exponential growth in tourist numbers has outpaced the development of waste management infrastructure. In the Astore Valley, municipal solid waste generation increases by nearly 40% during the peak summer months, reaching 55 tons per day (Tekalegn, 2025). Much of this waste, including plastic bottles and polyethylene bags, is openly dumped due to the lack of scientific disposal systems (Malla et al., 2024).

Table 2: Water Quality Observations in Northern Pakistan Tourist Hotspots

Water Quality Parameter	Peak Season Observation	Off-Season Observation	Implications for Sustainability
Total Dissolved Solids (TDS)	Up to 223.26 mg/l (Saqib et al., 2019)	87.34 mg/l (Saqib et al., 2019)	High TDS indicates significant contamination during peak tourist periods.
Conductivity	Up to 307 us/cm (Saqib et al., 2019)	150.32 us/cm (Saqib et al., 2019)	Increased ion concentration correlates with higher pollution loads.
Fecal Coliform Bacteria	Up to 5.1 MPN/100ml (Saqib et al., 2019)	1.0 MPN/100ml (Saqib et al., 2019)	Indicates severe biological contamination of freshwater sources.
Waste Management Compliance	48% (Saqib et al., 2019)	N/A	Over half of evaluated hotels lack adequate sewage or waste systems.

The presence of pathogens such as *Salmonella typhi* and *E. coli* in water samples from tourist hotspots highlights the critical need for a "green tourism culture" that includes mandatory environmental impact assessments and the adoption of decentralized sewage treatment technologies (Saqib et al., 2019).

5. Community engagement and institutional trust

The success of sustainable tourism in Northern Pakistan is contingent upon the level of engagement and ownership felt by the local communities (Hassan, 2021). The Aga Khan Development Network (AKDN) has provided a highly successful model for this engagement over the past four decades, particularly through its Rural Support Programmes (RSPs) and the Aga Khan Cultural Service Pakistan (AKCSP) (Ahmed & Riaz, 2024).

5.1 The Town Management Society Model

In Hunza and Baltistan, the restoration of historical sites such as Baltit Fort and Khaplu Palace was accompanied by the establishment of Town Management Societies (TMS). These societies

serve as local governance institutions that coordinate with the government and the private sector to manage the impacts of tourism (Pelmin, 2025).

The TMS in Karimabad and Altit are responsible for:

- **Infrastructure Maintenance:** They collect service fees for water and sanitation systems that were introduced alongside heritage restoration (Taufik et al., 2023).
- **Revenue Sharing:** A portion of the entrance fees from historical sites is allocated to the TMS for local community projects, ensuring that the economic benefits of tourism are shared beyond the elite (Nasution et al., 2024).
- **Cultural Preservation:** By rehabilitating traditional houses and keeping historic cores inhabited, these societies prevent the "desertion" of villages in favor of unregulated modern construction (Gharbi et al., 2025).

5.2 Livelihoods and Capacity Building

Sustainability in adventure tourism requires professionalizing the local workforce. Historically, Pakistani guides and porters have faced a competitive disadvantage due to a lack of formal training compared to international peers (Ahmed et al., 2024). Recent initiatives, such as the three-year training program launched by the GB Tourism Department and EvK2CNR, aim to align local guides with international standards set by the International Union of Mountain Guides Associations (UIAGM) (Ullah et al., 2025).

In Khyber Pakhtunkhwa, the "Maizban" Homestay Project represents an innovative approach to community-based tourism. By allowing local residents to register their homes as guest houses, the government is fostering a more inclusive economic model (Government of Khyber Pakhtunkhwa, 2025).

6. Economic dynamics of the adventure sector

The economic impact of adventure tourism in Northern Pakistan is a "double-edged sword." While it provides essential revenue and employment, it also introduces inflationary pressures and dependency on seasonal markets (Bilal & Adil, 2024).

6.1 Mountaineering Royalty Fees and Market Competitiveness

The regulation of royalty fees for climbing high-altitude peaks is a primary lever for managing tourist volume and government revenue. In 2024, the Gilgit-Baltistan government announced a significant hike in permit fees for 2025, followed by a subsequent revision by the GB cabinet in May 2025 (Zulfiqar, 2025).

Table 3: Revised Mountaineering Royalty Fees for Gilgit-Baltistan (2025)

Peak Category	Season	Revised Fee (USD)	Previous Fee (USD)
K2 (8611m)	Summer	3,500 (Zulfiqar, 2025)	5,000 (The Express Tribune, 2024)
K2 (8611m)	Autumn	1,750 (Zulfiqar, 2025)	2,500 (The Express Tribune, 2024)
Peaks 7001m-7500m	All	50% Reduction (Zulfiqar, 2025)	Variable
Trekking (Restricted Areas)	Summer	300 (The Express Tribune, 2024)	50 (Hunza Guides Pakistan, n.d.)

The environmental fee remains a mandatory component, with proceeds deposited into the GB Adventure Tourism Account to fund waste management initiatives (The Express Tribune, 2024).

6.2 Impact on Local Small and Medium Enterprises (SMEs)

In the Swat Valley, the hotel industry is primarily composed of SMEs, with over 82% of properties owned by locals (Faraz, 2024). However, studies show that while 70% of the local population is directly linked to tourism for their livelihood, over 73% feel that the industry contributes significantly to local inflation, making basic goods less affordable for residents who are not involved in the sector (Martell, 2024).

7. Socio-cultural implications and gender inclusion

Adventure tourism inevitably brings together diverse cultures, which can lead to both positive exchange and "cultural homogenization" (Sultana et al., 2025).

7.1 Cultural Preservation and Religious Tourism

Khyber Pakhtunkhwa has successfully harnessed its religious heritage to develop "specialized" tourism markets (Bilal, 2020). By promoting Buddhist heritage sites such as those linked to the ancient Gandhara civilization the province has engaged with visitors from East and Southeast Asia, projecting an image of Pakistan as a pluralistic and historically rich nation (Arain, 2025).

7.2 Gender Empowerment through Tourism

Community engagement models are increasingly focusing on the role of women in the tourism value chain. The CIQAM project in Hunza is a landmark social enterprise that trains women from low-income households in carpentry and hospitality (Ali et al., 2025). Furthermore, the KITE project has set specific targets for women's employment, with hundreds of women being trained in responsible tourism under the TREK initiative (Alam, 2026).

8. Technological integration and destination management

The modern adventure tourism industry relies heavily on digital tools for planning, safety, and monitoring. In Northern Pakistan, this is changing through the development of the Tourism Management Information System (TMIS) (KPCTA et al., 2025).

8.1 Digital Governance and Safety

The KITE project has operationalized four Tourist Rescue 1122 stations at key locations such as Ayubia and Gabeen Jabba (World Bank, 2023). Additionally, the introduction of e-booking systems and digital signboards at archaeological sites enhances the visitor experience while providing the government with real-time data on tourist flows (Rahman et al., 2025).

8.2 Accessible Tourism and Universal Design

Research conducted in Northern Pakistan highlights that accessible tourism catering to people with disabilities and the elderly has the potential to expand the market while fostering social inclusion. Implementing "Universal Design" principles in hotel construction improves the overall quality of infrastructure for all tourists and residents (Ahmed & Riaz, 2024).

9. Comparative Analysis: The Nepal Model vs. Northern Pakistan

Nepal's Annapurna Conservation Area Project (ACAP) is frequently used as a benchmark for community-based mountain tourism (He et al., 2006).

Table 4: Comparative Analysis of Mountain Tourism Models: Nepal vs. Pakistan

Feature	ACAP Nepal	Gilgit-Baltistan (Current)	Implications for Pakistan
Decision Making	Community-led (Upadhayaya, 2024)	Government-led with NGO support (PTDC, 2020; EvK2CNR, n.d.)	Need for more institutionalized community leadership.
Revenue Retention	High (approx. 50% retained locally) (Upadhayaya, 2024)	Variable (royalty fees go to GB account) (The Express Tribune, 2024)	Direct revenue sharing could increase participation.
Management Scale	Integrated Conservation Area	Fragmented Districts and Valleys	Potential for more Integrated Tourism Zones (ITZs) (World Bank, 2023).
Environmental Perception	Residents perceive fewer negatives than managers (He et al., 2006)	High resident awareness of pollution and waste (Heinrich Boll Stiftung, 2025)	High community awareness is a foundation for "regenerative" tourism.

10. Synthesis and Future Outlook

The trajectory of adventure tourism in Northern Pakistan is at a critical juncture. The region's potential to become a global hub for sustainable travel is undeniable, yet the risks are equally profound (Ramzan et al., 2025). Sustainable development in this context requires a "regenerative" approach that moves beyond simple conservation to actively restoring the natural and cultural landscape (Upadhayaya, 2024). This can be achieved through:

- **Strengthening Local Governance:** Expanding the Town Management Society model to major tourism valleys (Gharbi et al., 2025).
- **Climate-Resilient Infrastructure:** Prioritizing early warning systems for GLOFs and enforcing "green building" codes (Muhammad, 2025).
- **Professionalization and Training:** Investing in the formal certification of local guides to align with international standards (Pelmin, 2025).
- **Scientific Waste Management:** Transitioning to centralized recycling systems supported by environmental fees (The Express Tribune, 2024).

The future of adventure tourism in Northern Pakistan will be defined by the ability of stakeholders to work in concert toward a vision where the visitor's thrill does not come at the expense of the host community's stability or the mountain's majesty (Wajeeh & Noorani, 2024).

Figure 2: Multidimensional Pillars of Sustainable Infrastructure and Resource Management in Mountainous Tourism Hubs.



Conclusion

Adventure tourism in Northern Pakistan stands at a pivotal crossroads: the region possesses unparalleled natural and cultural assets capable of positioning it as a globally competitive, high-value destination, yet rapid, largely unregulated growth is generating serious environmental degradation, social tensions, and economic vulnerabilities. Accelerated glacial retreat, increasing GLOF hazards, mounting solid waste and water pollution, and localized inflation demonstrate that current development patterns are ecologically and socially unsustainable in the long term.

Successful transition toward genuine sustainability requires moving beyond conventional “do-no-harm” conservation toward genuinely regenerative tourism that actively restores ecosystems, strengthens community resilience, and rebuilds cultural vitality. Key priorities include: (1) scaling and institutionalizing proven community governance models such as Town Management Societies with greater decision-making authority and direct revenue retention; (2) enforcing rigorous environmental fees, mandatory impact assessments, and modern waste/recycling systems funded by tourism levies; (3) accelerating professional training and certification of local guides, porters, and hospitality workers to international standards; (4) mainstreaming gender-inclusive livelihood opportunities and accessible tourism design; (5) integrating early-warning systems, climate-resilient infrastructure, and digital destination management tools to enhance safety and carrying-capacity monitoring.

Comparative lessons from Nepal’s ACAP suggest that deepening community ownership, transparent benefit-sharing, and integrated conservation-tourism zoning can significantly improve local perceptions, reduce negative impacts, and increase long-term support for the sector. If stakeholders’ government agencies, development partners, private operators, and communities collaborate to implement these measures, Northern Pakistan has the potential to pioneer a model of high-altitude, adventure-based regenerative tourism that safeguards its extraordinary mountain heritage for future generations while delivering equitable, enduring socio-economic benefits to mountain residents.

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