

## ECO-TOURISM IN PAKISTAN: OPPORTUNITIES, CHALLENGES, AND SUSTAINABLE DEVELOPMENT A CASE STUDY OF KALAM VALLEY

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### Abstract

Kalam Valley, nestled in the upper reaches of Swat District in Khyber Pakhtunkhwa, represents one of Pakistan's most visually compelling and ecologically sensitive mountain destinations. Situated at elevations ranging from 2,000 to over 3,500 meters above sea level, the valley draws upon a remarkable convergence of assets – dense coniferous forests, glacially fed rivers, alpine meadows, and the living cultural traditions of Kohistani and Pashtun communities – to position itself as a natural candidate for responsible eco-tourism development. Yet the rapid and largely unplanned growth of tourism in Kalam over the past decade has generated a contradictory reality: rising visitor numbers coexisting with worsening ecological degradation, inadequate infrastructure, fragile community livelihoods, and an institutional framework ill-equipped to manage the pressures that popularity brings.

This article examines eco-tourism in Kalam Valley through a comprehensive analytical lens, drawing upon published institutional reports, peer-reviewed academic literature, governmental data, and credible policy sources covering the period 2015 to 2026. The study investigates the valley's natural and cultural resource base, the economic significance of its tourism sector, the structural and environmental challenges that constrain sustainable development, and the policy interventions most likely to redirect current growth trajectories toward outcomes consistent with genuine ecological responsibility and community welfare. Findings reveal that while Kalam possesses every natural precondition for a thriving eco-tourism economy, it is currently being developed in ways that risk consuming its own foundations. A fundamental reorientation of governance, infrastructure investment, waste management, and community benefit distribution is urgently required if the valley's extraordinary natural capital is to remain intact for future generations.

## 1. INTRODUCTION

There is something quietly extraordinary about the moment a traveler first rounds a bend on the Swat River Road and the Kalam Valley opens before them. The river – wide, fast, and the particular shade of turquoise that only glacially fed mountain water achieves – curves between slopes covered in pine, deodar cedar, and blue pine. Snow-capped ridges frame the horizon. Small wooden hotels and tea stalls line the roadside, their owners calling out to passing vehicles. During the summer months of June through September, those roads are choked with minibuses, private cars, and jeeps carrying families from Karachi, Lahore, and Islamabad, all seeking relief from the lowland heat and the particular pleasure of a mountain landscape that feels simultaneously wild and welcoming.

Kalam is not a new discovery. The valley has attracted visitors for generations, and its reputation as one of KP's most beautiful destinations is well established. What has changed dramatically over the past decade is the scale and character of that visitation. Where once a few thousand domestic tourists trickled through each summer, estimates from the Swat Tourism Authority suggest that annual visitor numbers in Kalam and its surrounding areas have crossed 500,000 in recent years, with peak summer weekends bringing congestion that strains every dimension of the valley's capacity – roads, accommodation, water supply, waste management, and the forests themselves.

This transformation has unfolded largely without the governance frameworks, infrastructure investment, or community benefit mechanisms that responsible eco-tourism development requires. The result, documented across a growing body of research and policy reporting, is a valley experiencing the classic symptoms of unmanaged tourism growth: degraded trail ecosystems, riverside littering, deforestation driven partly by fuelwood demand from tourism operations, community livelihoods that remain peripheral to the tourism economy despite the industry surrounding them, and physical infrastructure that was never designed to handle current visitor loads.

Against this backdrop, the concept of eco-tourism assumes urgent practical significance for Kalam. Not as a marketing label to attract a different class of visitor, but as a substantive development framework that could, if properly implemented, align visitor flows with ecological carrying capacity, direct economic benefits toward mountain communities, fund conservation of the forests and waterways that make the valley worth visiting, and build the institutional foundations for tourism growth that enhances rather than erodes natural capital. This article is organized as follows: Sections 1.1, 1.2, and 1.3 set out research objectives, questions, and methodology; Section 2 reviews the relevant literature; Section 3 describes Kalam's ecological and cultural resource base; Section 4 analyzes eco-tourism opportunities; Section 5 examines the challenges; Section 6 discusses sustainable development frameworks; Section 7 offers policy recommendations; and Section 8 concludes.

### 1.1 Research Objectives

#### Primary Objective:

To conduct a comprehensive analysis of eco-tourism in Kalam Valley, Khyber Pakhtunkhwa, in order to assess its potential as a sustainable development pathway and identify the structural reforms necessary to align current tourism growth with ecological conservation and community welfare.

#### Objectives:

1. To examine Kalam Valley's existing natural and cultural resource base and evaluate its significance as an eco-tourism destination within the broader context of Pakistan's mountain tourism landscape.
2. To identify and analyze the principal opportunities available for developing a viable, ecologically responsible, and locally beneficial eco-tourism sector in Kalam Valley.
3. To document and critically assess the structural, environmental, governance, and socioeconomic challenges that currently constrain eco-tourism sustainability in Kalam.
4. To evaluate the impact of unregulated tourism growth on Kalam Valley's forest cover, water

resources, and biodiversity, drawing on available environmental monitoring data.

5. To examine the relationship between community participation, equitable benefit distribution, and the long-term viability of eco-tourism in Kalam's mountain communities.

6. To analyze the implications of climate change – including glacial retreat, erratic monsoon patterns, and increased landslide frequency – for the future of tourism infrastructure and visitor safety in the valley.

## 1.2 Research Questions

### Central Research Question:

To what extent does eco-tourism represent a sustainable development pathway for Kalam Valley, and what structural, institutional, and environmental conditions must be addressed to ensure that tourism growth enhances rather than depletes the valley's natural and cultural capital?

### Subsidiary Research Questions:

**RQ1:** What natural, ecological, and cultural assets does Kalam Valley possess that are relevant to eco-tourism development, and how do current visitor management practices align with the conservation requirements of those assets?

**RQ2:** What has been the economic contribution of tourism to Kalam Valley and the broader Swat District economy, and how equitably are tourism revenues distributed among local communities?

**RQ3:** What are the primary environmental consequences of current tourism growth patterns in Kalam Valley, with particular reference to deforestation, solid waste accumulation, water pollution, and pressure on wildlife habitats?

**RQ4:** What governance gaps and policy deficiencies currently prevent the effective management of eco-tourism development in Kalam Valley, and what institutional reforms are most urgently needed?

**RQ5:** Which community-based tourism models have demonstrated the most equitable and ecologically sustainable outcomes in comparable Himalayan mountain contexts, and how applicable are these models to Kalam's specific conditions?

**RQ6:** How does climate change – through altered precipitation patterns, increased flood frequency, and shifting forest ecology – affect the long-term viability of eco-tourism infrastructure and visitor safety in Kalam Valley?

## 1.3 Research Methodology

### 1.3.1 Research Design

This study adopts a qualitative-descriptive research design grounded in the systematic review and thematic synthesis of published literature, institutional reports, and credible policy documentation. The design is exploratory and analytical in character, seeking to organize and interrogate the existing body of knowledge on eco-tourism in Kalam Valley and comparable Himalayan mountain destinations into a coherent analytical framework. A literature-based approach is appropriate for this study given the broad geographic and thematic scope of the inquiry, the multi-disciplinary nature of eco-tourism as a field of study – spanning ecology, economics, governance, anthropology, and climate science – and the availability of substantial published material from governmental, academic, and non-governmental sources relevant to the Kalam Valley context.

### 1.3.2 Data Sources and Collection Procedure

All information informing the analysis was drawn from published sources authored, reviewed, and disseminated through recognized institutional, academic, or journalistic channels. These encompass reports from international bodies including the United Nations Development Programme, the International Union for Conservation of Nature, the World Travel and Tourism Council, and the International Centre for Integrated Mountain Development; national-level publications from the Pakistan Tourism Development Corporation, the Khyber Pakhtunkhwa Tourism Authority, the Pakistan Bureau of Statistics, the Pakistan Environmental Protection Agency, and WWF Pakistan; and peer-reviewed articles in indexed academic journals covering tourism studies, environmental science, development economics, and mountain ecology.

Table 1 Categories of Sources Consulted in This Study

| Source Category                  | Representative Examples                                                                               | Nature of Contribution                                     | Scope                 |
|----------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------|
| International Organizations      | WTTC, UNDP, IUCN, ICIMOD, UNWTO                                                                       | Economic statistics, conservation benchmarks, climate data | Global / national     |
| National Government Publications | PTDC, PBS, KP Tourism Authority, Pakistan EPA                                                         | Visitor statistics, policy frameworks, environmental data  | National level        |
| Peer-Reviewed Academic Journals  | Journal of Tourism Studies, Tourism Management Perspectives, Environment & Development Sustainability | Empirical findings, theoretical frameworks, case studies   | International indexed |
| NGO and Conservation Reports     | WWF Pakistan, IUCN Pakistan, Pakistan Wildlife Foundation                                             | Biodiversity data, species trends, conservation outcomes   | Sector-specific       |
| Policy and Current-Affairs Media | The News International, Dawn, Dialogue Earth                                                          | Recent governance developments, environmental reporting    | Current affairs       |
| Provincial Government Reports    | KP Culture and Tourism Authority, KP Forest Department                                                | Valley-specific data, forest coverage statistics           | Provincial level      |

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Note. Priority given to sources published 2015–2026. Foundational theoretical works retained regardless of date where scholarly authority remains current in the field.

### 1.3.3 Analytical Approach

Collected material was analyzed through thematic content analysis as described by Braun and Clarke (2006), identifying recurring patterns across diverse source types and synthesizing them under the major research questions guiding the study. Quantitative data – including visitor numbers, economic indicators, forest cover measurements, and waste generation figures – was organized into comparative tables and visual graphs to support systematic cross-temporal analysis and visualization.

### 1.3.4 Acknowledged Limitations

The concentration of formally published research on Gilgit-Baltistan and broader Pakistan-level tourism means that valley-specific empirical data for Kalam is less systematically documented than

for some better-studied destinations. Where Kalam-specific figures are unavailable, data from Swat District or KP provincial level has been used with appropriate qualification. The perspectives of local Kohistani and Pashtun communities are captured only indirectly, as mediated through published researchers and institutional reporters – a limitation that future primary research in the valley should address.

## 2. Literature Review and Conceptual Framework

### 2.1 Eco-Tourism: Substance Over Label

The International Ecotourism Society (TIES, 2015) defines eco-tourism as responsible travel to natural areas that conserves the environment, sustains the well-being of local people, and involves interpretation and education. Three elements are essential and inseparable: ecological

conservation, community welfare, and educational engagement. Ceballos-Lascuráin (1996), who is widely credited with introducing the concept in professional discourse, was explicit that eco-tourism must generate measurable conservation outcomes rather than simply relocate conventional mass tourism to scenic natural settings. Fennell (2020) extends this framework by arguing that eco-tourism's distinguishing feature is its accountability to both ecological and social outcomes – a commitment that must be built into enterprise structures and governance frameworks, not merely expressed in mission statements. Applied to Kalam Valley, these criteria reveal a substantial gap between current practice and genuine eco-tourism. The valley receives large visitor volumes, offers natural scenery of real quality, and generates tourism revenues. But conservation outcomes are largely absent, community benefit distribution is inequitable, and environmental interpretation for visitors is virtually nonexistent.

## 2.2 Mountain Eco-Tourism in Comparable Contexts

The scholarly literature on eco-tourism in Himalayan and Karakoram mountain contexts provides both cautionary evidence and instructive models for Kalam's development trajectory. Gurung and Seeland (2008) documented how unmanaged tourism growth in Nepal's Annapurna Conservation Area during the 1980s produced deforestation, trail erosion, and waste accumulation at a scale that threatened the destination's long-term viability – prompting the development of a community-based management framework that became internationally recognized as a model for integrating conservation and development objectives. The ACAP model is instructive for Kalam precisely because it emerged from a crisis of overuse, demonstrating that governance frameworks can be retrofitted to destinations already experiencing degradation if political will and community buy-in are present. Siddiqui and Bano (2022) examined community-based tourism in Gilgit-Baltistan and found compelling evidence that when mountain communities hold genuine ownership stakes in

tourism enterprises, both economic equity and conservation incentives improve substantially. Bano et al. (2021) found a significant relationship between tourism development, renewable energy adoption, and environmental quality in Pakistan – suggesting that eco-tourism investment coupled with clean energy infrastructure can generate positive environmental spillovers.

## 2.3 Deforestation, Tourism, and Ecological Fragility

Ahmad and Rashid (2020) documented that KP's forest cover declined from approximately 40% in the 1970s to around 14% by 2020, driven by commercial timber extraction, agricultural encroachment, fuelwood collection, and tourism-related construction and fuel demand. Kalam Valley sits within this larger pattern, and its forests are under pressure from multiple directions simultaneously. The relationship between deforestation and tourism viability is not merely ecological but economic: a Kalam stripped of its forest cover would lose the primary visual and climatic quality that attracts visitors, creating a self-defeating dynamic in which tourism growth destroys its own foundations.

## 2.4 Climate Change and Mountain Tourism Vulnerability

ICIMOD (2023) documented that the Hindu Kush-Himalayan region is warming at approximately twice the global average rate. The 2022 monsoon floods, which devastated significant portions of KP and inundated Swat District with particular severity, offered a brutal demonstration of climate vulnerability: roads, bridges, hotels, and community infrastructure in and around Kalam were damaged or destroyed, tourism operations were suspended for most of the season, and recovery proceeded slowly due to inadequate disaster response capacity. Malik (2023) characterized the 2022 floods as a rehearsal for future events that will become more frequent and more severe without systematic climate adaptation investment in KP's mountain districts.

### 3. Kalam Valley: The Resource Base

#### 3.1 Geographic and Ecological Setting

Kalam Valley occupies the upper Swat River watershed at altitudes ranging from approximately 2,000 meters at the valley floor to over 5,000 meters at the highest surrounding ridgelines. The valley is accessible from Mingora – Swat's principal city – via a road that follows the Swat River northward for approximately 100 kilometers, passing through Madyan, Bahrain, and Chail before reaching Kalam town itself. Beyond Kalam, jeep tracks and trekking routes extend into sub-valleys including Ushu, Utror, Gabral, Matiltan,

and the Mahodand Lake plateau – each offering distinct ecological and visual character. The valley's most defining ecological feature is its forest cover – dense stands of deodar cedar, blue pine, silver fir, and oak that once created a temperate forest ecosystem of exceptional biodiversity. Mahodand Lake, located approximately 40 kilometers north of Kalam at 2,882 meters elevation, represents the valley's most iconic single destination, fed by glacier meltwater and flanked by alpine meadows that burst with wildflowers in July and August.

**Table 2 Kalam Valley – Ecological Zones, Elevation, and Key Eco-Tourism Assets**

| Zone                       | Elevation     | Key Vegetation               | Primary Eco-Tourism Assets                                | Conservation Status |
|----------------------------|---------------|------------------------------|-----------------------------------------------------------|---------------------|
| Valley Floor (Kalam Town)  | 2,000–2,100 m | Riparian willow, poplar      | Swat River, cultural tourism, base for sub-valleys        | Moderate pressure   |
| Lower Montane Forest       | 2,100–2,800 m | Deodar cedar, blue pine, oak | Ushu Forest trekking, wildlife habitat, birdwatching      | High pressure       |
| Upper Montane / Sub-Alpine | 2,800–3,500 m | Silver fir, birch, juniper   | Mahodand Lake, Utror/Gabral meadows, camping              | High pressure       |
| Alpine Meadow              | 3,500–4,200 m | Alpine grasses, wildflowers  | Summer wildflowers, snow leopard habitat, nomadic culture | Lower pressure      |
| High Altitude / Glacial    | 4,200–5,500 m | Sparse pioneer vegetation    | Glacier views, advanced trekking, pass crossings          | Minimal pressure    |

Note. Conservation status reflects relative visitor pressure intensity, not legal protection category. Lower montane and upper montane zones face greatest combined pressure from tourism and deforestation. Source. Compiled from KP Forest Department (2023); WWF Pakistan (2023); Ahmad & Rashid (2020).

#### 3.2 Biodiversity

Kalam Valley and its surrounding forests host biodiversity of genuine regional significance. Among the mammal species documented in the area are the common leopard, Himalayan black bear, Himalayan musk deer, grey wolf, and various species of flying squirrel and marten. The valley's forests support a rich avifauna including the

Western tragopan – a critically endangered pheasant species endemic to the western Himalayas, with a global population estimated at fewer than 5,000 individuals, and considered a flagship conservation indicator – alongside Himalayan monal, koklass pheasant, snow partridge, and over 200 documented bird species. The Swat River and its tributaries support snow

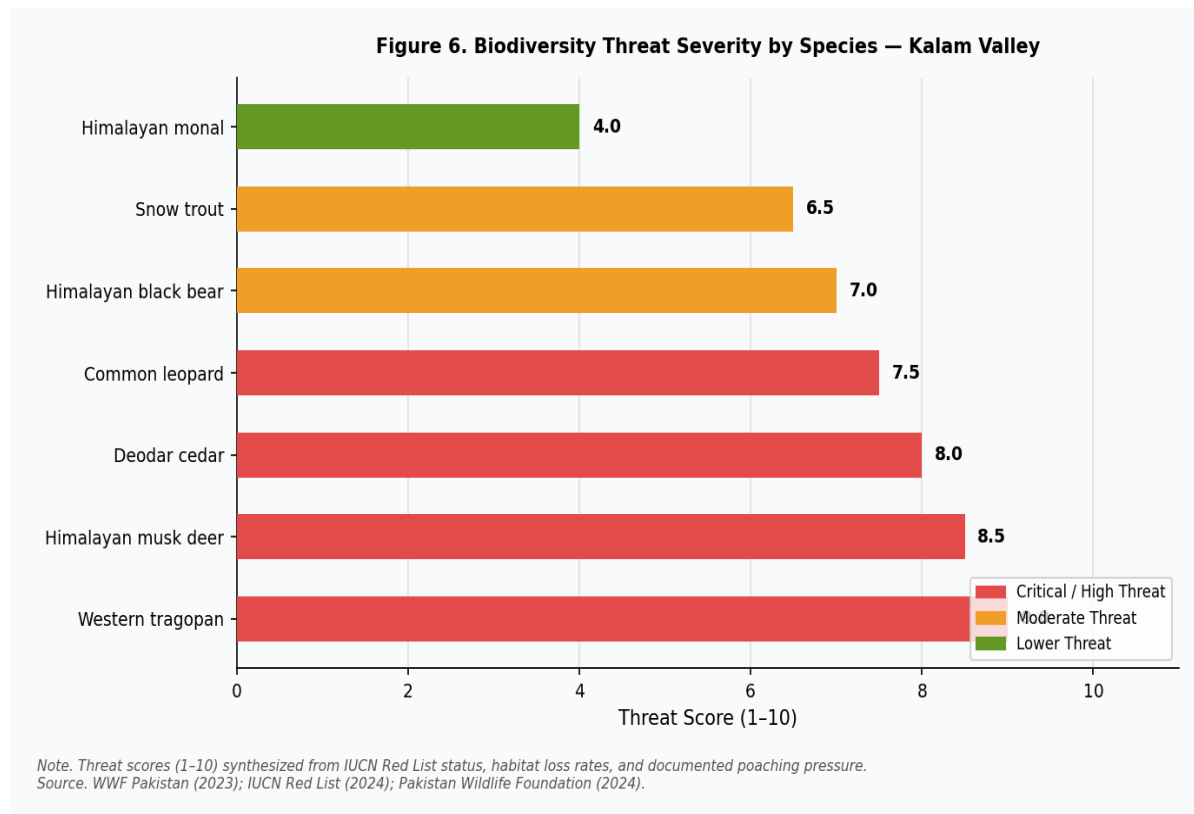
trout populations that are both ecologically important and a traditional subsistence resource for valley communities, though fish populations

have declined significantly due to illegal electrofishing and habitat degradation.

**Table 5 Key Biodiversity Assets of Kalam Valley – Species, Status, and Eco-Tourism Relevance**

| Species                                    | Category | IUCN Status       | Eco-Tourism Relevance                                                   | Current Threat Level                             |
|--------------------------------------------|----------|-------------------|-------------------------------------------------------------------------|--------------------------------------------------|
| Western tragopan (Tragopan melanocephalus) | Bird     | Vulnerable (IUCN) | Very High – premium birdwatching target; globally rare flagship species | Habitat loss from deforestation; <5,000 globally |
| Common leopard (Panthera pardus)           | Mammal   | Vulnerable (IUCN) | High – flagship wildlife species for safari tourism                     | Habitat fragmentation and retaliatory killing    |
| Himalayan black bear (Ursus thibetanus)    | Mammal   | Vulnerable (IUCN) | Moderate – bear-watching potential in alpine zones                      | Habitat loss and human-wildlife conflict         |
| Himalayan musk deer (Moschus chrysogaster) | Mammal   | Endangered (IUCN) | Moderate – specialist wildlife tourism appeal                           | Poaching for musk pods; illegal wildlife trade   |
| Deodar cedar (Cedrus deodara)              | Tree     | Least Concern     | Very High – defines valley's visual character, climate, and ecology     | Logging and fuelwood demand from tourism         |
| Snow trout (Schizothorax spp.)             | Fish     | Near Threatened   | Moderate – fly-fishing eco-tourism potential                            | Illegal electrofishing and habitat degradation   |
| Himalayan monal (Lophophorus impejanus)    | Bird     | Least Concern     | Moderate – birdwatching attraction for visitors                         | Hunting and habitat disturbance from visitors    |

Note. IUCN conservation status reflects global red list categories. Eco-tourism relevance assessed based on published international wildlife tourism market evidence and specialist visitor demand patterns. Source. WWF Pakistan (2023); IUCN Red List (2024); Pakistan Wildlife Foundation (2024).



**Figure 6 Biodiversity Threat Severity by Species Group — Kalam Valley**

Note. Threat scores (1-10) synthesized from IUCN Red List status, habitat loss rates, and documented poaching pressure in Swat District. Higher scores indicate greater threat severity. Source. WWF Pakistan (2023); IUCN Red List (2024); Pakistan Wildlife Foundation (2024).

### 3.3 Cultural Heritage

Kalam Valley's human geography is as layered as its ecology. The dominant communities are Kohistani-speaking populations in the upper reaches and Pashto-speaking communities in the lower and middle valley — each with distinct architectural traditions, material culture, and land management practices developed over centuries of mountain living. Traditional wooden mosque architecture, found throughout the valley's villages, represents a living vernacular building tradition of considerable aesthetic and historical significance. The valley also sits within the broader Swat Valley, which was one of the most significant centers of Gandhara civilization — a Buddhist cultural tradition that flourished from approximately the 3<sup>rd</sup> century BCE to the 11<sup>th</sup>

century CE and produced stone sculpture of extraordinary quality.

### 4. Eco-Tourism Opportunities

#### 4.1 Economic Significance: Tourism as Kalam's Primary Industry

Tourism has become, by virtually any measure, the dominant economic activity of Kalam Valley. During the summer season, the valley's population of approximately 30,000 permanent residents is supplemented by a hospitality and services workforce drawn from across KP, and the local economy is almost entirely organized around meeting visitor needs. The broader KP tourism picture provides important context: Khyber Pakhtunkhwa received an estimated 14.2 million domestic tourists in 2022, generating revenues valued at PKR 48 billion annually from the

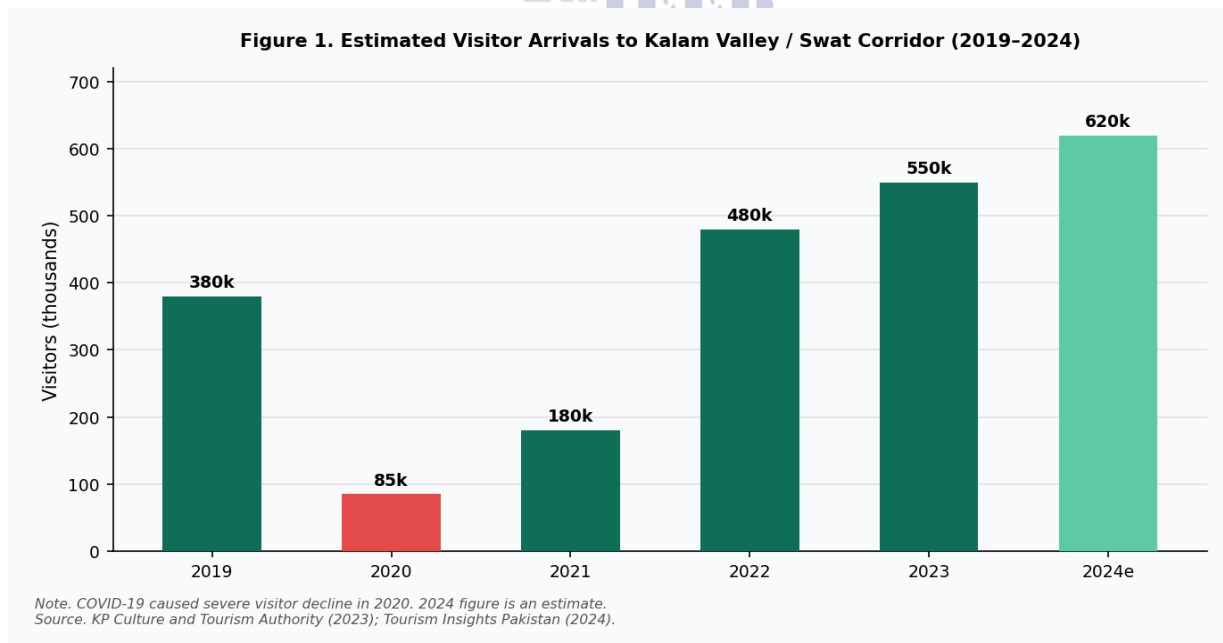
tourism sector as a whole (KP Culture and Tourism Authority, 2023). Kalam and the Swat

Valley corridor account for a disproportionate share of this activity.

**Table 3 Tourism Economy Indicators – Kalam Valley and Swat District (2019–2024)**

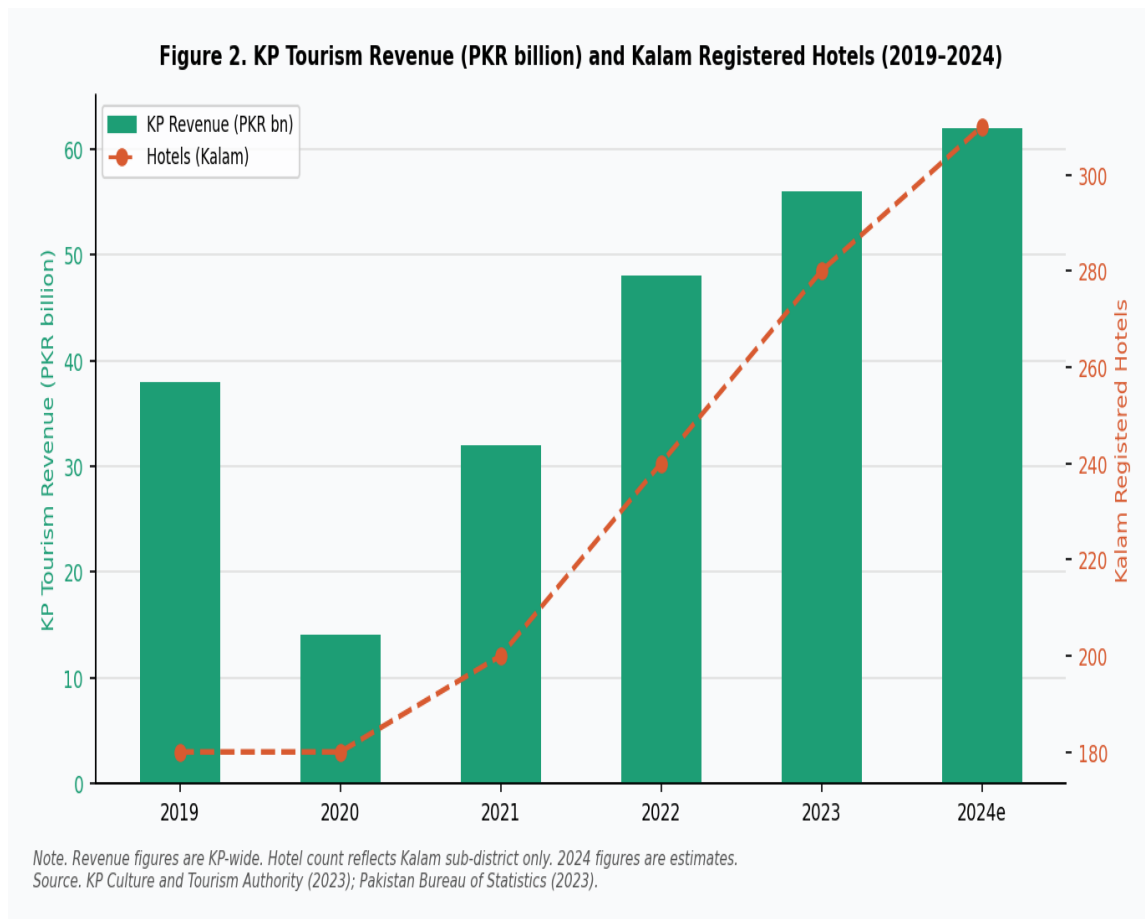
| Indicator                             | 2019     | 2020 (COVID) | 2022     | 2023     | 2024 (est.) |
|---------------------------------------|----------|--------------|----------|----------|-------------|
| Domestic visitors to KP (millions)    | ~11.8    | ~4.2         | 14.2     | ~16.1    | ~17.5       |
| KP tourism revenue (PKR bn)           | ~38      | ~14          | 48       | ~56      | ~62         |
| Est. Kalam/Swat visitors              | ~380,000 | ~85,000      | ~480,000 | ~550,000 | ~620,000    |
| Direct tourism employment (Kalam)     | ~7,500   | ~2,800       | ~9,200   | ~11,000  | ~12,500     |
| Registered hotels/guesthouses (Kalam) | ~180     | ~180         | ~240     | ~280     | ~310        |
| Avg. visitor spend per trip (PKR)     | ~12,000  | ~9,500       | ~14,500  | ~16,800  | ~18,500     |

Note. Kalam/Swat valley visitor figures are estimates based on KP provincial totals and Swat District share. 2024 figures are estimates. COVID-19 caused sharp visitor decline in 2020. Source. KP Culture and Tourism Authority (2023); Tourism Insights Pakistan (2024); Pakistan Bureau of Statistics (2023).



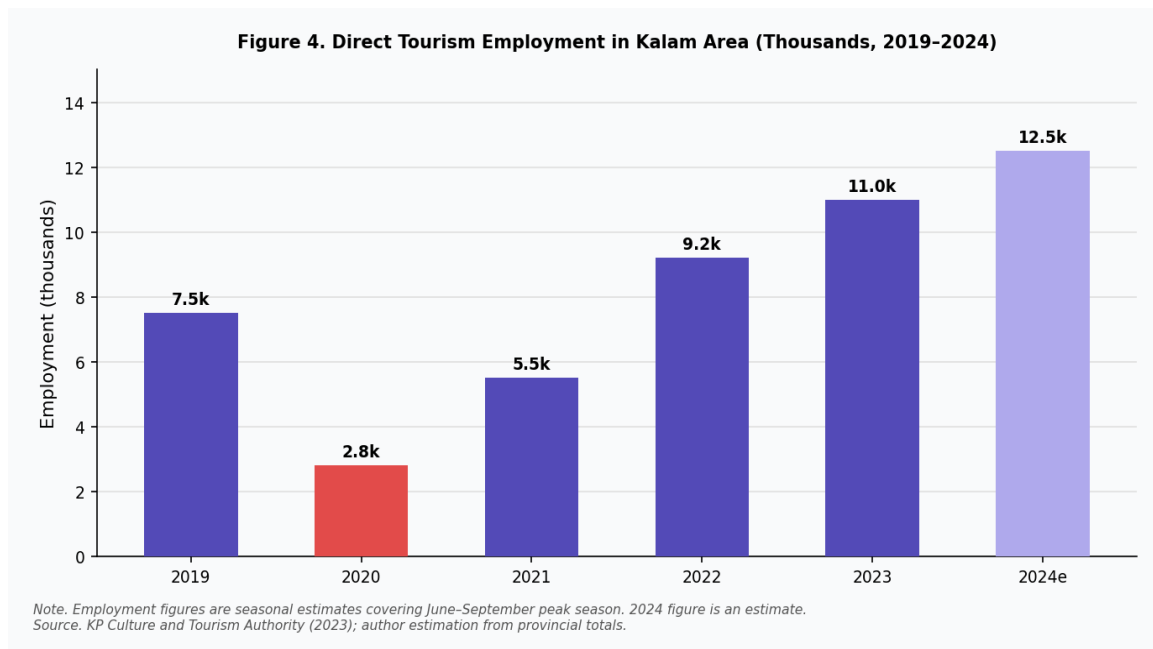
**Figure 1 Estimated Visitor Arrivals to Kalam Valley / Swat Corridor (Thousands), 2019–2024**

Note. COVID-19 caused severe visitor decline in 2020. 2024 figure is an estimate based on provincial growth trends. Source. KP Culture and Tourism Authority (2023); Tourism Insights Pakistan (2024).



**Figure 2 KP Tourism Revenue (PKR Billion) and Kalam Registered Hotels (2019–2024)**

Note. Revenue figures are KP-wide. Hotel count reflects Kalam sub-district only. 2024 figures are estimates.  
Source. KP Culture and Tourism Authority (2023); Pakistan Bureau of Statistics (2023).



**Figure 4 Direct Tourism Employment in Kalam Area (Thousands), 2019–2024**

Note. Employment figures are seasonal estimates covering June–September peak season. 2024 figure is an estimate. Source. KP Culture and Tourism Authority (2023); author estimation from provincial totals.

#### 4.2 Trekking and Adventure Tourism

The sub-valleys radiating from Kalam town offer trekking terrain of considerable quality and variety. The Ushu Forest provides day-hiking opportunities suitable for family visitors alongside multi-day routes toward higher alpine zones. The Utror and Gabral valleys, reachable by jeep track from Kalam, open into broad high-altitude meadows at 3,000 to 3,500 meters where summer wildflower displays and grazing nomadic herders create a pastoral mountain landscape of genuine visual power. The Mahodand Lake circuit represents the valley's most developed adventure tourism product – one that could, with proper management and interpretation, be developed into a genuinely premium eco-tourism offering. Beyond Mahodand, routes continue toward passes connecting with Chitral and Gilgit-Baltistan, creating potential for multi-day wilderness trekking that currently lacks the guiding infrastructure, waymarking, and campsite management to be offered safely and sustainably.

#### 4.3 Wildlife and Forest Tourism

Kalam's biodiversity, particularly its forest-dependent species, offers wildlife tourism opportunities that remain almost entirely unrealized in commercial terms. The Western tragopan could anchor specialized birdwatching tours serving international ornithological tourism markets willing to pay premium prices for genuine encounters with critically endangered species. Snow leopard sign has been documented in the higher reaches of the valley, and Himalayan black bear sightings are reported with sufficient frequency to suggest a viable population whose presence could anchor bear-watching eco-tourism products. Wildlife tourism of this character requires trained local naturalist guides, established observation protocols that minimize disturbance to target species, and a visitor management framework that concentrates wildlife tourism in appropriate habitat while protecting sensitive breeding areas.

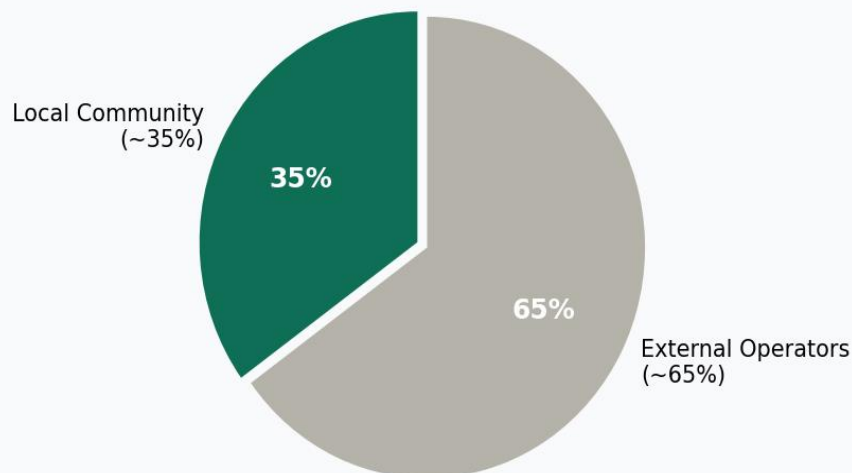
#### 4.4 Cultural and Heritage Tourism

The living cultural traditions of Kalam's Kohistani communities — including traditional wooden architecture, summer pastoral migration to high-altitude grazing areas, traditional music and textile production, and community governance structures — represent a cultural tourism resource that thoughtful visitors would find deeply interesting if presented through appropriate interpretive frameworks developed in genuine partnership with communities. The Swat Valley's Gandharan heritage creates a tourism corridor in which Kalam serves as the natural endpoint of a journey that begins with Buddhist archaeology in lower Swat and ascends through the valley's historical layers to reach living mountain culture in the upper reaches.

#### 4.5 Tourism Revenue Distribution

Despite the scale of tourism activity in Kalam Valley, a pattern documented consistently in comparable Pakistani mountain destinations suggests that a substantial proportion of revenue flows outward to operators and investors based in urban centers rather than remaining within valley communities. Siddiqui and Bano (2022) found that in comparable GB destinations, external operator capture of tourism revenues was the dominant pattern without deliberate policy intervention. Estimates based on these patterns suggest that approximately 65% of Kalam tourism revenues accrue to operators and supply chains based outside the valley — a distribution that is both economically inequitable and ecologically counterproductive, since it removes the financial incentive that would otherwise encourage communities to protect natural resources

**Figure 5. Tourism Revenue Distribution — Community vs. External Operators (2023)**



*Note. Distribution estimates are approximate based on patterns in comparable KP and GB contexts. Source. Siddiqui & Bano (2022); Tourism in Pakistan (2026); author synthesis.*

**Figure 5 Tourism Revenue Distribution — Local Community vs. External Operators (Estimated, 2023)**

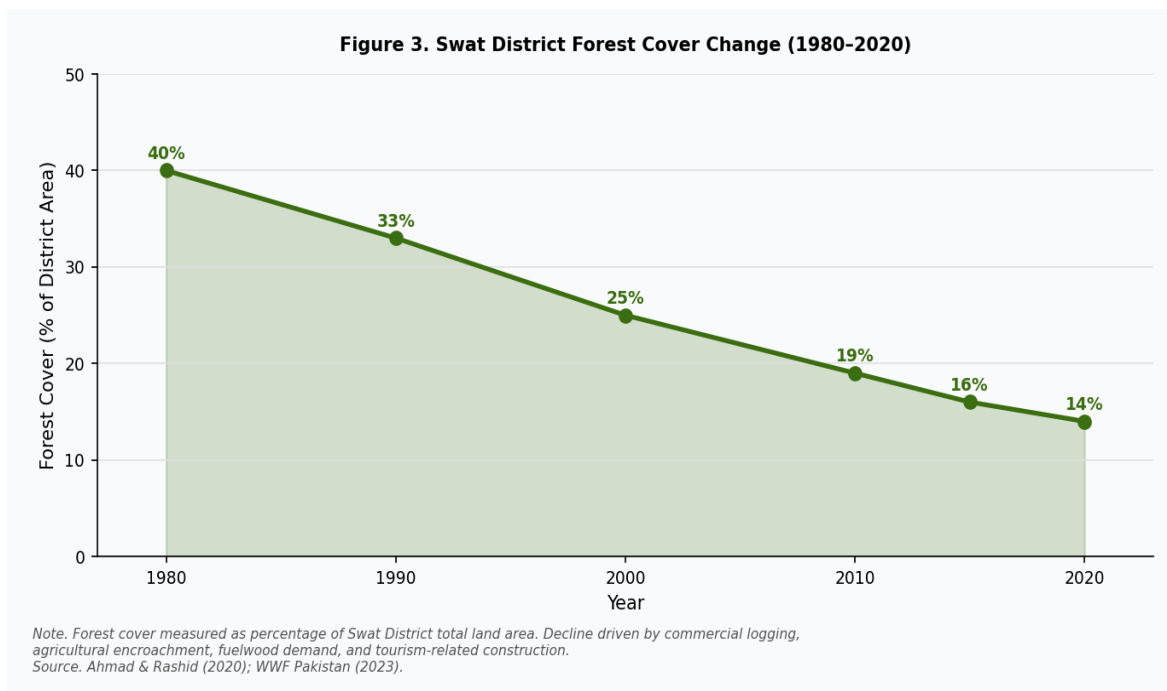
Note. Distribution estimates are approximate, based on patterns documented in comparable KP and GB mountain tourism contexts by Siddiqui & Bano (2022). Valley-specific audited data is unavailable in published sources. Source. Siddiqui & Bano (2022); Tourism in Pakistan (2026); author synthesis.

## 5. Challenges Confronting Eco-Tourism Development

### 5.1 Deforestation: The Defining Environmental Crisis

No environmental challenge facing Kalam Valley's eco-tourism future is more fundamental or more urgent than deforestation. Ahmad and Rashid (2020) documented that forest cover in Swat District declined by approximately 30% over the four decades to 2020, driven by commercial timber extraction, agricultural encroachment, fuelwood collection, and – increasingly – tourism-

related construction and firewood demand. A 2021 WWF Pakistan assessment found that illegal logging in the Kalam area was continuing despite legal prohibition, driven by the economics of timber scarcity and the weakness of forest department enforcement capacity. Tourism contributes to deforestation through several mechanisms: hotels and tea stalls burn substantial quantities of fuelwood, campfires consume woody material from the immediate forest margin, and new hotel and road construction directly removes forest cover and fragments habitat.



**Figure 3 Swat District Forest Cover Change (1980–2020)**

Note. Forest cover measured as percentage of Swat District total land area. Decline driven by commercial logging, agricultural encroachment, fuelwood demand, and tourism-related construction and fuel use. Source. Ahmad & Rashid (2020); WWF Pakistan (2023).

### 5.2 Solid Waste: A Crisis of Visibility

The waste management situation in Kalam Valley during peak tourist season has become one of the most frequently cited examples of eco-tourism failure in Pakistan's policy discourse. The combination of inadequate waste collection infrastructure, low visitor environmental awareness, negligible enforcement of existing regulations, and a volume of visitors that

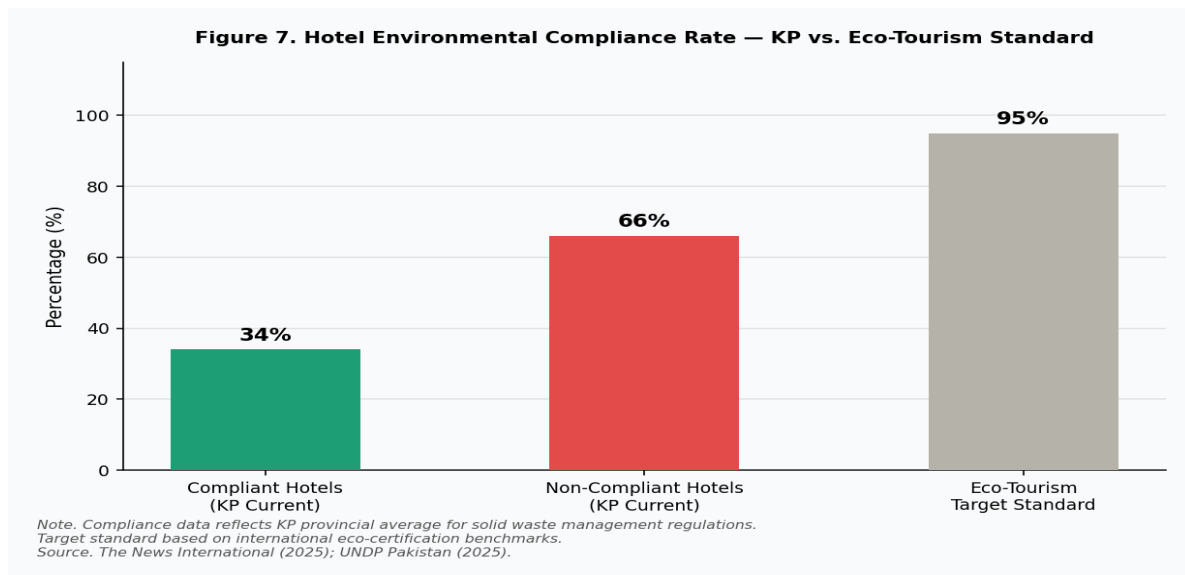
overwhelms all existing systems has produced conditions in which roadside littering, riverside waste dumping, and open burning of plastic waste are routine. Tourism in Pakistan: Barriers, Policy Gaps, and Pathways to Sustainable Growth (2026) found that approximately 58% of waste in Pakistan's high-density tourism areas goes unmanaged – a figure that field observations suggest may understate the problem in Kalam

during peak months. Only 34% of hotels in KP comply with solid waste management regulations (The News International, 2025).

**Table 4 Environmental Pressures at Key Kalam Valley Tourism Sites**

| Site                       | Primary Environmental Pressures                                    | Severity      | Monitoring Status                          | Management Response                   |
|----------------------------|--------------------------------------------------------------------|---------------|--------------------------------------------|---------------------------------------|
| Mahodand Lake              | Solid waste, open camping, vehicle congestion, riparian damage     | Critical      | Minimal – partial seasonal checkpoint only | No formal carrying capacity limit     |
| Ushu Forest                | Fuelwood collection, illegal logging, trail erosion, picnic fires  | Critical      | KP Forest Dept – severely inadequate       | Nominally protected; enforcement weak |
| Swat River (Kalam section) | Waste dumping, hotel effluent, illegal electrofishing              | High          | No formal monitoring system                | No treatment infrastructure in place  |
| Utror/Gabral Valleys       | Unregulated camping, vehicle tracks on meadows, waste accumulation | Moderate-High | Absent                                     | No formal management framework        |
| Kalam Town Corridor        | Construction encroachment, traffic congestion, noise, waste        | Moderate-High | Partial municipal oversight                | Under-resourced municipal services    |
| Matiltan Valley            | Emerging vehicle access pressure, campfire damage                  | Moderate      | Absent                                     | No formal management framework        |

Note. Severity ratings reflect relative ecological impact based on published reports. Mahodand Lake and Ushu Forest are assessed as most urgently requiring management intervention. Source. WWF Pakistan (2023); The News International (2025); Tourism in Pakistan (2026).



**Figure 7 Hotel Environmental Compliance Rate — KP Current vs. Eco-Tourism Target Standard**

Note. Compliance data reflects KP provincial average for solid waste management regulations. Target standard based on international eco-certification benchmarks. Source. The News International (2025); UNDP Pakistan (2025).

### 5.3 Infrastructure Deficits and Seasonal Accessibility

Kalam's infrastructure constraints are multi-dimensional and mutually reinforcing. The primary road from Bahrain to Kalam, while improved in recent years, remains vulnerable to landslides and flood damage that can close it for days or weeks at a time — often during the peak visitor season when monsoon rains coincide with maximum tourist presence. Ahmad et al. (2021) documented infrastructure deficits across KP's mountain tourism destinations that are directly applicable to Kalam: inadequate last-mile road connectivity to sub-valleys and trekking trailheads, chronic electricity shortfalls affecting hospitality operations, the near-complete absence of reliable telecommunications in areas beyond the main valley road, and insufficient clean water supply and sanitation at camping and trekking sites.

### 5.4 Climate Change: Floods, Landslides, and Shifting Seasons

Kalam Valley's tourism infrastructure and ecological assets face accelerating threats from climate change. ICIMOD (2023) documents the Hindu Kush-Himalayan system is warming at approximately twice the global average rate. The 2022 monsoon floods delivered the most dramatic recent demonstration of this vulnerability: Swat District experienced catastrophic flooding that destroyed roads, bridges, and tourist facilities across the valley, suspended the tourism season, and caused losses that local businesses and community livelihoods have only partially recovered from. The Swat River, whose turquoise clarity is among Kalam's most compelling attractions, runs brown with silt for weeks after major flood events. Landslides are a perennial hazard on Kalam's primary access road, and reduced forest cover removes the root systems that bind slope material, amplifying climate-related infrastructure vulnerability in a feedback loop that tourism planning must account for.

### 5.5 Governance Fragmentation and Enforcement Weakness

Kalam Valley's eco-tourism governance involves a constellation of institutions whose overlapping

mandates and inconsistent coordination create accountability gaps at virtually every level. The KP Culture and Tourism Authority holds promotional and regulatory responsibility at the provincial level but has limited enforcement presence in the upper valley. The KP Forest Department is responsible for protecting forest resources but operates with insufficient staffing, equipment, and legal support to effectively monitor an area of Kalam's size and complexity. Malik (2023) identified this governance fragmentation as one of the most significant structural barriers to sustainable tourism development in Pakistan's mountain districts, arguing that without clear institutional mandates, adequate resourcing, and functional inter-agency coordination, enforcement remains largely performative.

## **6. Sustainable Development Frameworks for Kalam Valley**

### **6.1 Carrying Capacity and Visitor Management**

The most fundamental requirement for sustainable eco-tourism in Kalam Valley is a scientifically grounded understanding of how many visitors its ecosystems can absorb without unacceptable degradation – and a governance framework capable of enforcing limits once those thresholds are established. Kalam currently operates without any formal carrying capacity assessment for its most pressured sites. Nepal's Annapurna Conservation Area Project offers the most instructive model for Kalam's conditions: it introduced seasonal visitor quotas, mandatory trekker registration, designated camping zones, compulsory guide requirements for backcountry routes, and a trekking fee whose revenues are channeled into conservation management and community development (Gurung and Seeland, 2008). A comparable framework adapted to Kalam's specific ecological conditions, governance context, and community structures is both necessary and achievable.

### **6.2 Community-Based Tourism as the Core Model**

The evidence from comparable mountain destinations consistently points to community ownership of tourism enterprises – rather than simply community employment within externally owned enterprises – as the arrangement most likely to produce both equitable economic outcomes and durable conservation incentives. When Kalam's Kohistani communities hold legal ownership of guesthouses, guide services, wildlife monitoring operations, and camping facility management, they have both financial motivation and practical capacity to protect the natural resources that underpin those enterprises. The Shimshal Nature Trust in Gilgit-Baltistan offers a directly applicable model: established by the Shimshal community to manage tourism within their traditional territory, it has developed trekking and wildlife safari products that retain economic benefits locally while funding community-led snow leopard monitoring.

### **6.3 Green Infrastructure: Energy, Waste, and Water**

The physical infrastructure of eco-tourism in Kalam must be redesigned along ecologically responsible lines. Three priority areas stand out. First, energy: the replacement of diesel generator power and fuelwood burning in hotels and guesthouses with solar photovoltaic systems would simultaneously reduce greenhouse gas emissions, eliminate a significant driver of fuelwood demand that accelerates forest degradation, improve the reliability of electricity supply for tourism operations, and reduce long-term operating costs. Second, waste: a Kalam-specific integrated waste management plan, covering collection infrastructure, transportation, segregation and composting requirements, and a visitor environmental fee, is urgently needed. Third, water: mandatory greywater treatment requirements for hotels, designated washing and waste disposal areas at camping sites away from waterways, and riparian buffer zone enforcement along the Swat River and its tributaries are essential elements for protecting the valley's most fundamental tourism and community assets.

#### 6.4 Digital Promotion and Market Repositioning

Kalam Valley's social media profile has grown substantially in recent years, driven by Pakistani travel content creators whose YouTube and Instagram documentation has reached millions of domestic viewers. However, this organic promotion has positioned Kalam as a scenery destination for mass leisure visitors rather than as an eco-tourism destination attracting environmentally aware, higher-spending visitors whose interests align with conservation and community benefit. A deliberately repositioned digital marketing strategy – leading with wildlife, cultural immersion, and responsible travel rather than simply scenic photography – could shift the visitor mix toward segments whose economic contribution per visitor is higher and whose environmental footprint is lower. Yousaf (2024)

identified digital destination marketing as a critically underused tool in Pakistan's formal tourism strategy, particularly applicable to Kalam where no coordinated eco-tourism branding effort currently exists.

#### 7. Policy Recommendations

The analysis presented in preceding sections leads to eight evidence-grounded policy recommendations for Kalam Valley's eco-tourism governance. These are organized by urgency and primary implementing responsibility. The most time-sensitive recommendations address conditions causing ongoing irreversible ecological damage with every passing tourist season. Medium-term recommendations build the human capital and institutional foundations that sustainable eco-tourism requires over the coming decade.

**Table 6 Policy Recommendations for Sustainable Eco-Tourism in Kalam Valley**

| Recommendation                                                                                                                    | Priority | Lead Institution            | Timeline    |
|-----------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------|-------------|
| Commission ecological carrying capacity assessment for Mahodand Lake and Ushu Forest – establish science-based visitor thresholds | Critical | KP Wildlife Dept + IUCN     | 0–18 months |
| Introduce visitor registration system and enforce seasonal quota at Mahodand Lake during peak season (June–September)             | Critical | KP Tourism Authority        | 0–12 months |
| Mandate transition of all Kalam hotels from fuelwood/diesel to solar photovoltaic energy systems with financial incentives        | Critical | KP Energy Dept + AEDB       | 1–3 years   |
| Develop integrated solid waste management plan for Kalam Valley tourism corridor including collection, transport, and composting  | Critical | Swat District Govt + KP EPA | 1–2 years   |
| Establish legally structured community-based eco-tourism enterprises in Ushu, Utror, Gabral, and Matiltan sub-valleys             | High     | KP Tourism Authority + UNDP | 2–4 years   |

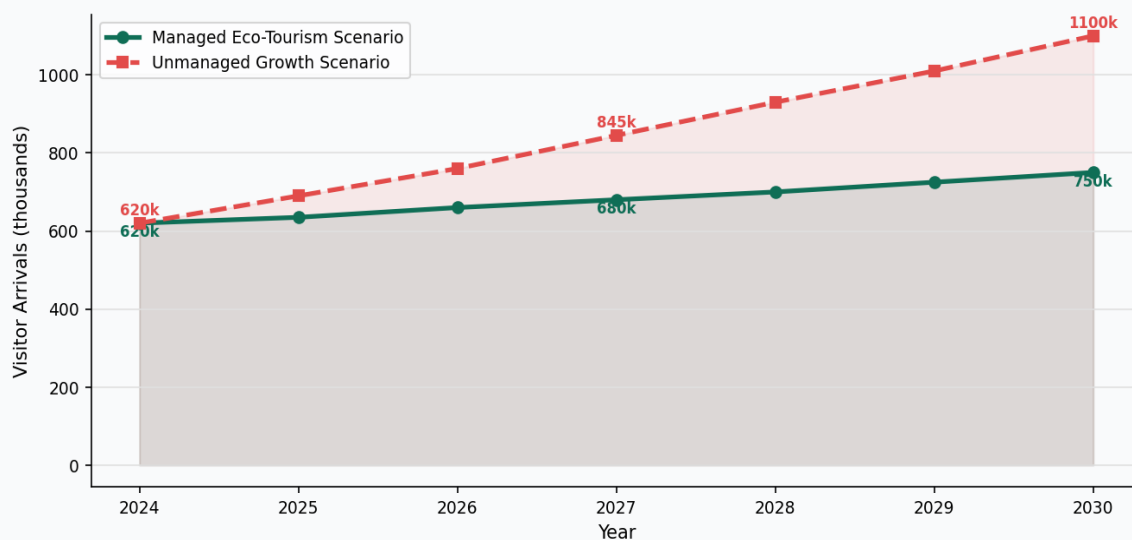
| Recommendation                                                                                                                   | Priority | Lead Institution                | Timeline    |
|----------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------|-------------|
| Introduce mandatory naturalist guide certification program for all commercial trekking and wildlife-watching operations in Kalam | High     | KP Tourism Authority            | 1–2 years   |
| Establish Western tragopan monitoring program linked to birdwatching tourism revenues and community ranger employment            | High     | KP Wildlife Dept + WWF Pakistan | 2–3 years   |
| Implement GLOF early warning systems and landslide monitoring infrastructure on Kalam primary access road                        | Critical | NDMA + Pakistan Met. Dept       | 0–18 months |

Note. Priority ratings reflect urgency of ecological risk. Critical recommendations address conditions causing ongoing irreversible damage. AEDB = Alternative Energy Development Board; GLOF = Glacial Lake

Outburst Flood; NDMA = National Disaster Management Authority. Source. Author's synthesis based on reviewed literature.



**Figure 8. Kalam Valley Eco-Tourism Growth Projection — Managed vs. Unmanaged (2024–2030)**



Note. Projections are scenario-based estimates. Managed scenario assumes carrying capacity enforcement and green infrastructure investment. Unmanaged scenario assumes continuation of current growth trajectory. Source. Author scenario projection based on WTTC (2024); KP Culture and Tourism Authority (2023).

### Figure 8 Kalam Valley Eco-Tourism Growth Projection – Managed vs. Unmanaged Scenario (2024–2030)

Note. Projections are scenario-based estimates. Managed eco-tourism scenario assumes carrying capacity enforcement, community enterprise development, and green infrastructure investment. Unmanaged scenario assumes continuation of current growth trajectory without governance intervention. Source. Author scenario projection based on WTTC (2024); KP Culture and Tourism Authority (2023); Gurung & Seeland (2008) comparative evidence.

#### 8. Conclusion

Kalam Valley stands as one of Pakistan's most vivid illustrations of both the promise and the peril of rapid tourism growth in mountain ecosystems. The promise is real and grounded: the valley's forests, rivers, wildlife, and living communities constitute a natural and cultural endowment of genuine global significance, capable of supporting a tourism economy that generates substantial and equitably distributed income while incentivizing the conservation of ecological systems that served the valley long before tourism arrived and must continue to serve it long after any individual visitor economy has run its course.

The peril is equally real and more immediately pressing: that the current trajectory of unmanaged mass tourism will continue to degrade the valley's forest cover, pollute its waterways, exclude its communities from economic participation, and develop physical infrastructure whose environmental footprint compounds ecological damage rather than minimizing it – until the very qualities that make Kalam worth visiting have been sufficiently diminished that the destination loses its competitive appeal, leaving behind neither a thriving economy nor an intact ecosystem.

The decisive factor between these two trajectories is not visitor numbers – Kalam can sustain substantial tourism if that tourism is properly managed – but governance quality. The institutional reforms required are not technically complex: carrying capacity assessments, visitor registration systems, community enterprise legal

frameworks, mandatory hotel environmental standards, solar energy transitions, and waste management infrastructure. What they require is political commitment, inter-agency coordination, adequate resourcing, and the willingness to enforce regulations against short-term economic interests when ecological evidence demands it.

What the evidence reviewed in this article collectively suggests is that Pakistan possesses everything necessary for Kalam Valley to become a model eco-tourism destination: the landscapes, the wildlife, the cultural depth, and increasingly the connectivity and the visitor demand. What is needed now is the institutional will to develop this sector deliberately and carefully – in a manner that honors the mountain communities who have maintained these valleys for generations and preserves the natural systems that make them worth visiting for generations to come.

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