

# Trouble in Paradise: Evaluating the Effects of Unorganized Tourism on the Himalayan Ecology



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**Abstract** The Indian Himalayan Region (IHR) has drawn visitors and pilgrims from all over the world due to its towering peaks, majestic landscapes, rich biodiversity and cultural heritage. Tourism not only provides valuable economic and business opportunities and jobs for local mountain people, but also generates revenue and profits for state governments and private entrepreneurs. The modern tourism industry is closely linked to development, and frequently includes a strategy aimed at covering as many new destinations as possible. Tourism in the IHR has grown steadily and diversified over the last few decades to become one of India's fastest growing economic sectors. Tourism in the IHR range is currently viewed as a source of environmental damage and pollution, a threat to socio-cultural heritage, a heavy user of scarce resources, and a potential source of negative externalities in society. The uncontrolled growth of tourism resulted in a construction boom in hazardous areas such as river valleys, floodplains, and landslide-prone slopes, exacerbating the disaster. Erratic rainfall and environmental degradation caused by land use change for infrastructure development are already having an impact on mountain aquifer systems. These internal tourism development dynamics, including the effects of climate change, are significant change agents influencing sustainable tourism development in the IHR. In this review we analyze the current trend of environmental impacts associated with rampant tourism and consequent infrastructure, we conclude the discussion with possible mitigation measures.

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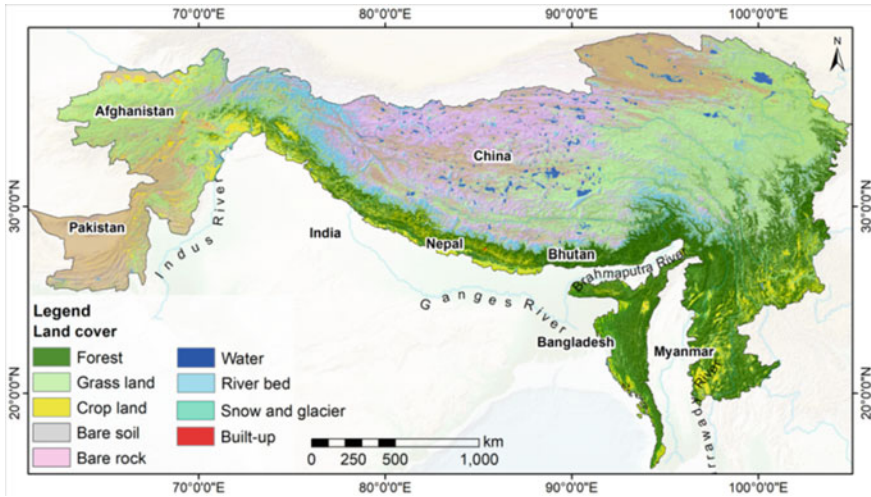
## 1 Case Study-I: Disaster in the *Devbhoomi*

June 2013, The Monsoon came early that year and in plenty. IMD reported an unprecedented increase in rainfall (440% more than usual for that time of the year). Meteorologists blamed the phenomenon on the collision between the advancing monsoon winds and the westerlies.

On June 16 and 17, 2013, the Gaurikund-Rambara-Kedarnath region was more crowded than usual for this time of the year. Gangotri and Yamunotri were opened to the public only a month ago, and the holy shrines of Kedarnath and Badrinath followed suit; the opening was delayed by almost two weeks. The delay, with the pleasant pre-monsoon weather and ongoing vacations resulted in a record breaking gathering of devotees. Uttarakhand High Court had suspended the use of horses and mules, owing to the hygiene for the pedestrians. Forcing people to move slowly or stay back at Rambara or Kedarnath, even people who could have gone back to Gaurikund if they could travel on horseback or mules. The persistent rains made air travel difficult. This included suspension of the helicopter service between Guptakashi and Kedarnath. Passengers who could have opted to travel by air had little option but to proceed further on foot with the procession. One that was already grinding to the halt at most places due to incessant rain and the low visibility that came with it. People returning from the shrines had no choice but to wait out the rain at Rambara or Kedarnath. In the face of heavy rains, plans had to be altered. More people continued to gather in the area. At the peak of pilgrimage season and with no pre-registration system, there is no way to be sure of how many people were in the region when the “Himalayan Tsunami” struck.

Heavy rain combined with increasing pace of melting glaciers triggered a lake outburst flood, landslides and flash floods. The resultant disaster ravaged Uttarakhand, with worst damage in Rudraprayag, Chamoli, Uttarkashi, Bageshwar and Pithoragarh. Rough estimates put the human casualties in the upwards of 4000. Besides the massive loss of lives, the disaster was an unimaginable blow to the state’s economy. The large scale destruction of infrastructure and costs of search, rescue and evacuation spelled a terrible loss of livelihood for most survivors. The aftermath saw a steep decline in the tourist foot fall in the region, yet another insufferable blow to the state’s economy so dependent on the tourism and pilgrimage for their revenue. Government tried to bail out small businesses and victims through tax exemptions and fiscal aid even for loss not directly under the purview of the intended fund. An act of goodwill that only worsened government’s financial woes.

It wasn’t long before the media trial started, and people looked for someone to blame. Widespread public discourse included everything from climate change to divine wrath, yet peculiar by its absence was the topic of ever-expanding tourism in the state. Tourism and pilgrimage have a longstanding history in the Himalayan states, yet somehow ever-expanding urban growth and socioeconomic dependencies and vulnerabilities it entails escaped public eye. This ignorance becomes especially important when we remember how many of the victims in the Uttarakhand tragedy were actually tourists and pilgrims.



**Fig. 1** Geographical depiction of Hindukush Himalayas (HKH) including Indian Himalayan Region

### 1.1 *The Abode of Snow: A Primer to Himalayas*

The Himalayan Mountain chain runs in an arc that passes through northern Pakistan, Nepal, Bhutan and India. A roughly 3000 km arc houses the tallest mountain peaks in the world, including Mt. Everest (*Sagarmatha* in Nepalese, *Chomolungma* in Tibetan) and some of the deepest river canyons in the world (Fig. 1).

The Yangtze,<sup>1</sup> Indus, and Ganges are just a few Asian rivers that have their primary sources in the Eastern Himalayas. Water from the Himalayas serves people all over the continent for drinking, agriculture, manufacturing, and power production. The rivers from the region serve no less than a billion people in the ten countries they flow through (Wester et al., 2019; Bhagirath, 2023).

Indian Himalayan Region (henceforth IHR) starts from the Indus River in the west to Brahmaputra in the east and spans 500,000 sq. km along the northern border for an estimated 2400 km. IHR has significant influence over the physiography and climatic conditions of the Indian subcontinent. Geographically, IHR has two distinct parts, viz. Eastern Himalayas cover the northeastern states of West Bengal, Sikkim, Assam, and Arunachal Pradesh, and Western Himalayas span Kumaon-Garhwal and northwest Kashmir. Owing to the abrupt rise in elevation in the region, less than 500 m to over 8000 m, IHR houses a wide diversity of ecosystems, often in a relatively small spatial area. These include Alluvial grasslands, some of the tallest in the world, and

<sup>1</sup> Mankabir, W. (2021). *A land cover map of the HKH region was developed using Landsat 30-m data.* <https://commons.wikimedia.org/>. Wikimedia Commons. Retrieved June 4, 2023, from [https://commons.wikimedia.org/wiki/File:A\\_land\\_cover\\_map\\_of\\_the\\_HKH\\_region\\_was\\_developed\\_using\\_Landsat\\_30-meter\\_data.png](https://commons.wikimedia.org/wiki/File:A_land_cover_map_of_the_HKH_region_was_developed_using_Landsat_30-meter_data.png).

subtropical broadleaf forests along the foothills that give way to temperate broadleaf forests in the mid hills, mixed conifer and conifer forests, and alpine meadows above tree line in only a few hundred kilometres (Bhattacharya, 2019; ENVIS 2022).

Biogeographically, IHR represents a meeting point for the Indo-Malayan, Palearctic, and Sino-Japanese domains. The resultant diversity has an intricate connection with the welfare of the billions of people around it. From a cultural perspective, the ecosystem diversity of the region has given rise to a wide range of ethnocultural diversity. Individual communities in the IHR are closely attuned to their local surroundings.

These communities are intimately dependent on IHR for several ecological services not limited to supplying essential commodities to support and regulate environmental cycles (soil formation and water cycle). That said, despite the abundance of natural resources, these mountain communities remain one of the marginalized groups in terms of socioeconomic growth. The resource utilization and the resulting social structures are a direct function of the geographical features. Compared to the plains, land is a limited commodity in the hills. Conventional wisdom of the plain finds little appeal among the hill folks. Incompatibilities between economic activities and environmental conditions can result in changes that may adversely affect social and ecological order. To better understand the socioeconomics of communities. We must study the five specificities: inaccessibility, fragility, marginality, diversity, and niche (Jodha, 1991). All of these directly impact the lives of people in IHR. Let us talk briefly about each of these points.

- Caused by the geographic conditions (altitude, steepness, unpredictable weather) and associated natural hazards, lack of access stemming from the isolation results in limited mobility, poor communication, and absence of basic amenities. The expensive transportation forces local communities to an even greater degree of dependence on the region's natural resources. The inaccessibility of the mountain communities creates an artificial close-loop economy derived entirely from the local resources. If not managed properly, these may result in severe depletion of the very resources essential for the communities in the first place.
- Despite its immense size and biological diversity, IHR is extremely vulnerable to degradation. This primarily stems from their low carrying capacity for resource-intensive economies (See Sect. 2).
- Inaccessibility combined with fragile geographic structure prone to natural disasters so commonplace in IHR create feedback loops of poverty. An inadequate resource base due to frequent natural disasters, and lack of institutional support due to the remoteness of these locations forces the communities into low-productivity practices that continue to push them into poverty over time. Historically, communities in IHR have been marginalized by policymakers who blame the remoteness and the accompanying socio-political instability for it.
- A combination of geographic and climatic facts makes IHR habitat to a wide diversity of flora and fauna often with rapid transitions between vegetation types. At the higher altitudes especially, the flora and associated hydrology changes are hard to

predict and may undergo severe fluctuations between seasons. Mountains consequently exhibit quick transitions from flora to snow and ice. The resultant landscape of ethical and cultural communities is deeply entwined with their surroundings. Thus, issues and their solutions become context-specific. The complex socioeconomic paradigm makes any attempts at generalization redundant.

- The unique climate conditions of IHR and the wide diversity of flora and fauna in the region create a market for goods, services, and activities that give IHR a competitive edge over the plains. Owing to its heterogeneous structure, locals have specialized niches for products derived locally such as traditional medicinal herbs, exotic fruits, and ornamental flora. The distinct geography of IHR is a lucrative tourism market, and communities in the IHR stand to improve their economic prospects if only they utilize the distinctive natural and cultural resources. At the same time, unsustainable use of these resources can also lead to total degradation (Jodha, 2001; Nyaupane and Chhetri, 2009).

## ***1.2 Trouble in Paradise: How Many is Too Many?***

The aforementioned factors combine to exacerbate the regional economy of IHR to a subsistence level despite the abundance of natural resources. Added to this, the relentless consumption has accelerated environmental degradation, increasing the risks associated with natural disasters in the region. Any attempt to restore the ecological balance of IHR demands a holistic shift in priorities and to strike a suitable middle ground between economic interests and environmental sanctity (Singh and Kotru, 2018).

The fragile environment of IHR has undergone severe degradation in recent history owing to unplanned land use, including unsustainable farming practices along the steep slopes and overgrazing of the vegetation essential for holding the soil together. Large-scale engineering work in the name of “development” and overharvesting of local resources by the communities have resulted in severe damage in even the most remote parts of the region. The recent loss of environmental quality, mass emigration, and fast deteriorating cultural fabric have been a serious concern for policymakers (Singh and Kotru 2018; Lorenz and Dittmer, 2021; Kuniyal and Negi, 2022).

## ***1.3 Impact of Tourism***

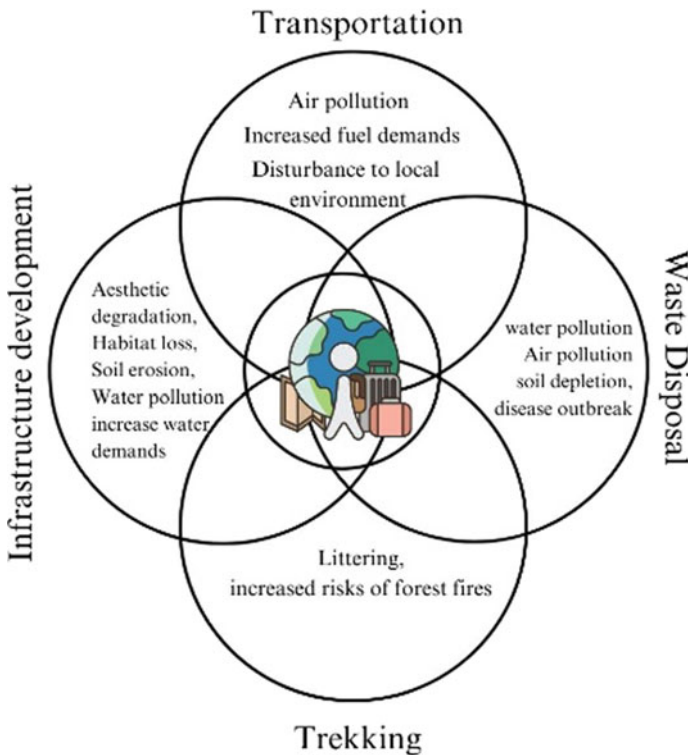
<sup>2</sup>As in the case of Uttarakhand, with the advent of connectivity, IHR has experienced an unprecedented flow of tourists over the years. The number of tourist sites, businesses involved, and the resultant capital flow have all grown to massive levels owing to word of mouth and large-scale promotions. Tourism today contributes a significant

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<sup>2</sup> By authors.

proportion of the state GDP in the IHR region, employing some local people and businesses. However, the large-scale expansion of influx had severe consequences for the environmental sanctity. With the advent of mass tourism activities, commercialization of the socio-cultural landscape has put the traditional way of life at risk at many of the previously pristine sites (Datta and Banerji 2015; Lorenz and Dittmer, 2021; Bhagirath 2023) (Fig. 2). The relentless flow of people and the resources it accompanies jeopardizes the fragile equilibrium of the local ecosystem and has been a source of worry for the locals at multiple places in the IHR (See case study II).

The alarming rate of tourism in the IHR region has raised several concerns regarding resource management and environmental quality. These include waste management, increased air pollution, depletion and degradation of water resources, accelerated loss of local resources, biodiversity extinction, and loss of ecological services in the region (Kuniyal et al. 2022). In the urban centres of IHR states, average solid waste production is roughly 6,346 tonnes/day. Jammu and Kashmir produces the most rubbish (1792 tonnes), followed by Uttarakhand (1,528 tonnes). This garbage is produced primarily by the tourism industry (Bhagirath, 2023). Sikkim alone, an otherwise small state in the Eastern Himalayas with a population of ~ 6,00,000, has had 5,00,000 domestic visitors in 2011. A number that grew to 1.4 million in 2019.



**Fig. 2** Multi-dimensional effects of rampant tourism

Similar trends for tourists are observed all over the IHR. Although the rise has a promising effect on the local economy, without proper supervision, this may cause irreparable harm to the local ecology (Datta & Banerji 2015).

## **2 Case Study-II: Woes of Tourism in Ladakh**

Ladakh is one of the largest state/union territories of India. Consisting of both Kargil and Leh Districts, the region has a total length of 54,146 km. With a land area of –1,03,000 sq. km and a population of 274,000, Ladakh is also the region with the lowest population density in the nation (Goering, 2010; Jamphel, 2023). The majority of the population relies on subsistence farming and animal rearing. The climate in Ladakh is extreme, with annual precipitation >4 inches and a minimum temperature that may dip below –40 °C. The region was opened to the international world for the first time in 1974. Government statistics report 527 tourists visited in the first year, of which only 27 were domestic. With the growth in connectivity through the air and now, roads, the traditional way of life has come under great stress. From a little more than half a thousand visitors in 1974 to 15,000 in the 1980s, to 2,50,000 in June-July 2022 alone, Ladakh continues to experience burgeoning tourist numbers every year. A number that most locals and conservationists allege to be a primary contributor to impending severe natural calamities. The distinct natural landscapes and the unique cultural appeal of the region attract visitors from all over the world. Ladakh experienced a large-scale rise in construction, especially in the areas in and around Leh.

### ***2.1 Disproportional Distribution***

A significant portion of Ladakh's cash economy comes from tourism and related activities. These benefits, however, are limited to the minority associated with the sector. More than 90% of the Ladakhi population lives beyond Leh, the hub of tourist activities, receiving little to no economic benefits from the business. Few locals operating hotels in Leh profit disproportionately from the trade. Most tour companies and vendors operating in the area are seasonal, arriving before the onset of tourist season in June and leaving afterward. These players take the lion's share of the tourist revenue. The only way the locals outside Leh earn is by hosting individual trekkers and occasional groups not part of the organized sector or renting out pack animals to them (Goering, 2010).

## 2.2 Consequences

The arrival of mass tourism in the 2020s had massive impacts on the landscape. As per the figures from the Ladakh Taxi Union, anywhere between 300 and 600 cars visit Pangong Lake daily during the tourist season. These cars, often driven by tourists, wade recklessly through some of the most fragile habitats in the area. NGOs and environmentalists have repeatedly flagged the effect of increasing tourists and vehicles on the fragile terrain of IHR (Chakravarty, 2022).

Efforts to cater to modern hospitality standards place excessive pressure on the region's water supply. Leh's total bed capacity was 12,474 in 2016, but by July 7, 2022, that number had risen to 17,104. Between 2016 and 2022, there are approximately 140 restaurants, a 145% increase from the 57 in 2016. Overall number of hotels, guest houses, and homestays has expanded from 520 to 881 in the same period. Most of the hotels and homestays use borewells to supply water and septic tanks for wastewater collection, jeopardizing the local ecology and groundwater resources in the process. Some of these hotels have access to communal water sources and are known to import water via tank trucks during particularly severe dry spells.

Up until recently, the waste was recycled into the soil and used in agriculture. The rapid growth of the hospitality sector has put the region's waste management sector under pressure. Irresponsible disposal of solid waste pollutes the environment and water supply causing disease outbreaks. Poorly constructed sewage systems, for instance, have been shown to contaminate nearby water streams. Local government initiatives for waste segregation and recycling have somewhat alleviated the problem in certain parts. However, due to the limitation of area, open burning is the most common practice for waste disposal, shifting the problem from land to air. Leh's waste management practices continue to raise concerns among locals and environmentalists alike. The problem is expected to grow as the region experiences an ever-growing number of visitors. To put matters in perspective, Leh produces 1.3 tonnes of trash per day during the winters and 12–15 tonnes per day during the summers (Jamphel, 2023).

Furthermore, tourists have higher energy demands than locals. The hotels import fossil fuels, transported via trucks from the plains for cooling, heating, lighting, and transportation needs, adding diesel fumes, coal smoke, and used oil to the growing list of environmental concerns in the region. Trekkers consume already limited fuel and feed in remote settlements, often without proper compensation to the locals.

## 2.3 Takeaways

While the socioeconomic welfare of the people in IHR cannot be compromised, there is an urgent need to educate the local populace about a sustainable economy. Furthermore, if the indigenous communities are better trained, they would be able to push for greater adherence to rules designed to protect the fragile ecological



equilibrium of their area. While the most logical route for economic growth in the IHR is through tourism, it is crucial to address the environmental concerns associated with the sector. With improvements in road connections and transportation, unregulated tourism will continue to impact the Ladakhi landscape. Policymakers must remember that the ecology and landscape are crucial for tourism. If ecology suffers, the economy will follow (Rizaal & Ashokan, 2014).

### 3 Ecotourism: Boon or Bane?

Ecotourism has had many definitions but there is little consensus over its components. Over the years, terms including ecotourism, alternative tourism, green tourism, and sustainable tourism have been used interchangeably.

Definitions of Ecotourism include:

...responsible travel to natural areas that conserves the environment and sustains the well-being of local people- International Ecotourism Society (1991)

...environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features- both past and present) that promotes conservation, has low negative visitor impact, and provides for beneficially active socio economic involvement of local population. -IUCN (1996)

All nature-based forms of tourism in which the main motivation of the tourists is the observation and appreciation of nature as well as the traditional cultures prevailing in natural areas. -The British Ecotourism Market, UNWTO (2002)

#### 3.1 Promising Future (?)

Ecotourism is recognized as the symbiotic link between ecology and tourism that safeguards ecological fragility while securing the socioeconomic interests of locals. Recent definitions include elements of environmental impact, the contribution to conservation, and community participation (Batta, 2006). The activity recognizes the stakes of both the locals and the tourists in the human component. Thus, the focus broadens to examining how local communities can adapt to the needs of the tourists and maintain the sector. Hence there is more to the activity than just tourism to natural regions (Chopra 2017).

Conventional tourism practices focus on the customer's leisure, often disregarding sustainability, leading to pollution, habitat degradation, overcrowding, and resource depletion. Ecotourism, if promoted properly, can put an end to this trend. In its essence, the activity encourages responsible travel with awareness about one's responsibility towards protecting the local environment and culture.

Ecotourism is rapidly emerging as a crucial contributor to economic growth and socioeconomic changes in regions with cultural and ecological diversity. Several estimates put ecotourism expenditures in these regions at a number ten times higher

than the conservation initiatives by various international organizations (Chopra 2017; Brandt et al., 2019; Ashok et al., 2022). From a purely economic perspective, ecotourism offers a monetary incentive to the stakeholders to preserve the local ecosystems and species that attract revenue to the region (See Case Study III). The feedback loop leads to a net increase in the biomass of the ecosystem in turn attracting more ecotourists over time. By playing to this function, ecotourism activities offer the local communities an alternative source of income, reducing resource extraction from the environment and thereby helping them overcome the challenges brought by climate change (See Case Study IV). By encouraging ecotourism in unprotected areas, locals can be encouraged to safeguard their natural resources for the long term. Things, however, are far from ideal.

### 3.2 *Yet Another Risk (?)*

As a direct consequence, the term *ecotourism* is being used willy-nilly with little regard to the actual implications, all to get a competitive edge. Tourists anticipate experiencing the natural landscape and expect a “traditional community” driving many communities to preserve the appearances to cater to these expectations despite the local urges to modernize (Chaturvedi, 2002). The absence of matrices for monitoring the impacts of tourist activities and indicators for assessment are the major hurdles in wide-scale applications of the concept (Batta, 2006).

Expansion of trails, denudation of vegetation, exposing tree roots, rampant littering of high altitude areas, contamination of water streams, unplanned constructions, and the resultant landslides, break down of conventional routes, and climate change-related fires are to name a few of many adverse effects “ecotourism” have been associated with over the years. More recently, construction in the hospitality sectors in IHR has raised concerns over the detrimental effects these economic activities have had on the biodiversity in the region (Ashok et al., 2022).

## 4 Case Study-III: From Foe to a Friend

Snow leopards (*Panthera uncia*) are apex predators of IHR and evolved over millennia to survive in some of the harshest conditions on the planet (Fig. 3).<sup>3</sup>

Their thick white–grey coat with black rosettes blends them perfectly in the high rocky mountain habitats. Their camouflage renders them nigh invisible thus the moniker of “ghost of the mountains”. As the apex predator, the snow leopard is an indicator of the ecosystem health in the mountains and increasingly of the impact of climate change on the mountain environment. The species is thought to be distributed

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<sup>3</sup> Irbis1983. (2010). *snow leopard*. Wikimedia Commons. Retrieved June 7, 2023, from <https://commons.wikimedia.org/wiki/File:Irbis4.JPG>.

**Fig. 3** Snow leopard (*Panthera uncia*) is one of the most elusive big cats in the world. Ladakhi's believe the animal doesn't eat flesh but drinks blood similar to its namesake (Balasubramanian, 2018)



across 12 countries in Asia, with 60% of its native habitat concentrated in China. The natural low-density population of the species suffers an increasing amount of duress as climate change increases the events of conflicts with humans.

The high altitude and its elusive nature make studying animals a challenge. While we don't know the exact numbers, estimates vary between 3,000 to no more than 6500, of which IHR is home to approximately 500. The species is classified as Vulnerable by the IUCN. The leading cause behind this is humans. In the absence of official figures, wildlife trade networks report that between 2008 and 2016, ~ 220–425 cats were killed or traded every year (snowleopard.org, 2018). In India alone, 21 to 45 snow leopards were killed annually till 2016 (Majumdar 2017).

#### **4.1 Roots of Contention**

With rising global temperatures damaging alpine productivity, the native territories of snow leopards and their traditional prey species increasingly overlap with the domestic livestock. As illegal trade and poaching reduce the population of its native prey, such as blue sheep, ibex, and Argali wild sheep, the cats increasingly prey on the livestock for survival. For marginalized communities such as herders, such losses are often catastrophic. As such events become more frequent, the animal has grown a negative reputation among the local communities that often trap and kill the cats in retaliation (Desai, 2016; Majumdar, 2017; snowleopard.org, 2018; Jain 2019; WWF.org, 2023).

## 4.2 *Finding Solutions*

In efforts to reduce the brewing conflict,<sup>4</sup> The Snow Leopard Conservancy-India Trust (SLC-IT) started the Himalayan Homestay Program (HHP) in 2002. Created in partnership with Hemis National Park and later the State Forest Department, the initiative originating in several valleys of Leh was an attempt to supplement the local income by providing lodging for the tourists. The project aimed to offset the monetary loss due to depredation. HHP trained locals in housekeeping, and several youths were trained as local guides to lead the visitors on environmental tours that might include occasional sightings of the snow leopard.

Since 2002, SLC-IT has trained over 130 families to offer homestays across Ladakh, with over 1200 homestays successfully operating currently (Balasubramanian 2018). Forest departments enabled local stakeholders to devise their own rules and regulations for operation in the region, allowing more autonomy and better management of the resources. Homestay owners in the area today earn anywhere between INR 2–3,00,000 per annum. In the process, the relationship between locals and the “ghost cat” has undergone drastic changes. The animal is now a crucial source of income, worth more alive than dead (Fig. 4). Visitors frequently report sightings from as little as 50 m in Hemis (Majumdar 2017).

HHP gives visitors a first-hand experience of Ladakhi culture and cuisine. Licensed homestays, registered with the tourism department, charge INR 1000 per day for lodgings, three meals, filtered water and tea. Homestays associated with HHP have ecologically sustainable dry toilets that conserve the limited fresh water supply of the region. As an additional effort to improve the social conditions of the resident village, ten per cent of each homestay’s income goes to a village fund managed by a women’s organization for the welfare of the community as a whole. Women participants experience higher economic autonomy. SLC-IT-led handicraft development programme encouraged women to produce woollen goods and souvenirs. In Ulley Village, the money gathered by local homestays was used for installing a solar-powered water heater to offer hot water to local hikers at nominal prices. The money collected is then put back into the fund. Over time, the trust assisted in procuring and installing solar-powered lights to ward off wild predators after dark (Desai, 2016).

As a result of local support, both the snow leopard population and the tourists’ numbers have experienced a period of growth. The most recent camera surveys in 2012 indicate a local rise in numbers from 40 in 2006 to 60 in 2012. Demand for wildlife guides has increased in tandem.

## 4.3 *Cautious Optimism*

As part of a study to examine changes in attitudes towards Snow leopards, a team of researchers from the University of Kent (UK) interviewed 49 villagers from seven

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<sup>4</sup> By authors.

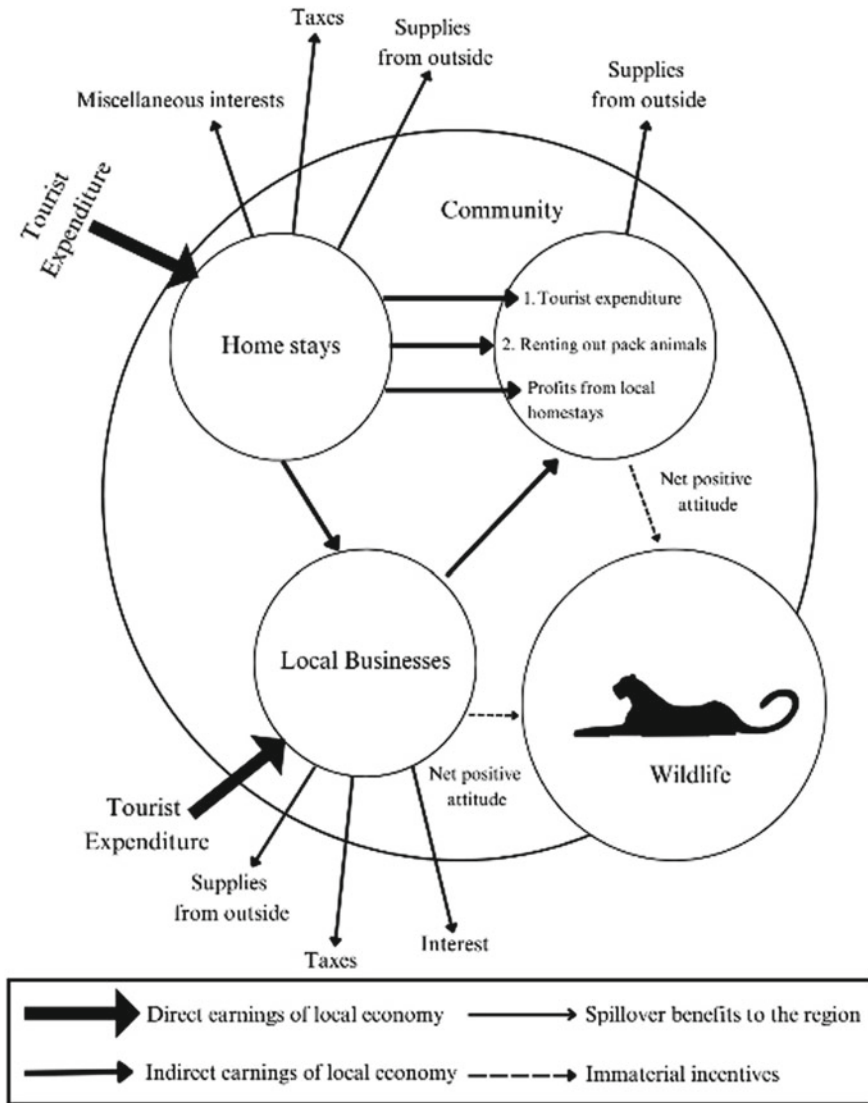


Fig. 4 Impact of Ecotourism on the local economy in HHP

villages in Ladakh in 2018. Four of these villages are in the western Sham Valley, and three are in the eastern Rong Valley (Vanelli et al., 2019). The interviews aimed at understanding if implementing HHP had altered the residents’ opinions of the animals and their general opinion about wildlife in their region.

The results found that participants directly involved in the business and (thus stakeholders) held the Snow Leopard in greater regard than non-participants. The

stakeholders also placed a higher instrumental value on wildlife, expressing significant pride in their local biodiversity. Even people not directly operating with homestays but living near the initiative appreciated the importance of Snow leopards for the region. In contrast, participants from locations away from HHP and homestays expressed a neutral or negative attitude towards the wildlife, primarily due to frequent economic losses from depredation (Vanelli et al., 2019).

If more communities can be encouraged to adopt HHP and similar initiatives for wildlife tourism, it may help mitigate the conflict situation. Incentivization is essential for changing the general public's attitudes and gaining support for conservation. These incentives can be tangible in the form of financial gains, employment, education or infrastructure or intangible in the form of ecosystem services and maintenance of cultural heritage). While material incentives may be more lucrative, awareness of immaterial incentives becomes increasingly crucial. As people grow solely reliant on tourism, the same wildlife that is the source of pride for the community may become commodities. It is, therefore, essential to educate the stakeholders and the locals about the intrinsic values of wildlife and the role of snow leopards in maintaining ecological equilibrium in IHR (Jain 2019).

## 5 Case Study-IV: Oak Country and Communal Participation

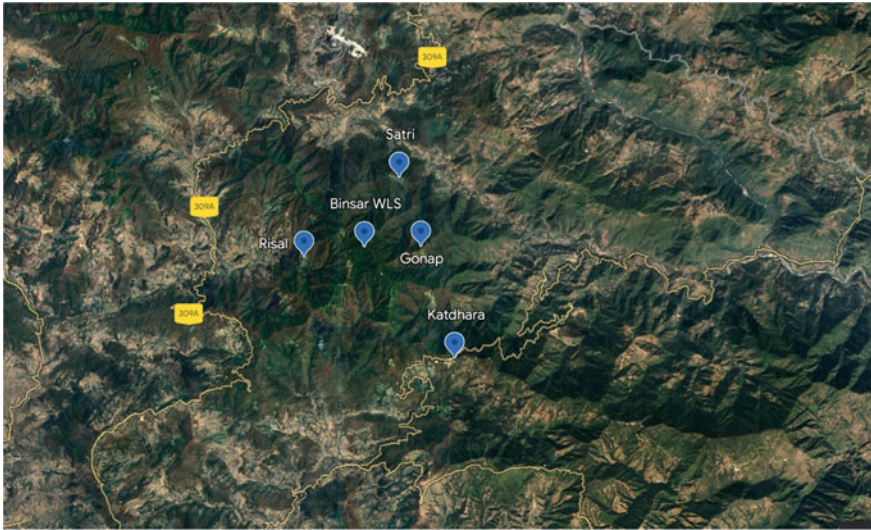
<sup>5</sup>Binsar Wildlife Sanctuary in Uttarakhand is 30 km north of Almora. The sanctuary was established in 1988 to protect the shrinking population of broadleaf oak forests (Fig. 5). The region was the former summer capital of Chandel kings, and several British officials had estates established inside the forest. Before the official order, villagers in the neighbouring areas relied on the forests for subsistence farming, small-scale logging, pine resin extraction and rearing livestock. All such activities, however, were banned afterwards.

A few years later, several entrepreneurs and the owner of the Khale estate in Binsar came together to found Village Ways, an India-based tourism company (hereafter VW). VW suggested the development of tourist lodges in villages around Binsar Sanctuary. Village Tourism Committees (VTCs) were founded to construct and operate the proposed lodges. The committees would offer guides and porters in addition to meals and lodging. As a pilot for the experiment-guest lodges were constructed in five villages-Satri, Kathdhara, Gonap, Risal, and Dalar (Fig. 5) (Peaty, 2009).

Local landowners leased the land to village committees that built the lodges using regional materials and traditional designs. VW contributed to the construction through a combination of subsidies and interest-free loans. VW further provided guiding and resort management training before the inauguration of the lodges in 2006.

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<sup>5</sup> Google Earth.



**Fig. 5** Binsar wildlife sanctuary, Uttarakhand

In March–April 2023, VW worked with the village committees to establish an annual birding festival to attract more tourists to the area (Parkes, 2023). With expert-led talks, hikes around the sanctuary’s villages, and wildlife film screenings at Khali Estate, a former colonial summer home built in 1874 by Sir Henry Ramsay, a British commissioner of Kumaon, the event aims to draw birding enthusiasts from all over the world to the park. To attract more guests during COVID-19, Risal’s community-owned guesthouse became one of the first in Binsar to update its rooms to include en suite bathrooms.

Currently, the majority of tourists travelling to Almora come from the UK. From Almora, they proceed to the Mountain Resort at Khali Estate (Peaty, 2009). From there, tourists travel by foot from village to village, staying in lodges created by *Gram Paryatan Samiti*, village tourism committees supported by grants and loans from VW, and run by the neighbourhood. A comparable product is also available from the business in Supi, a sizable village close to the Nanda Devi Biosphere Reserve.

The five villages have benefited greatly from VW. The biggest one is money. For every visitor night stayed in their community, the VTCs charge VW. The *Paryatan Vikas Samiti* is used to negotiate the fee. The training offered by VW, improved self-esteem, and a desire to learn English and other cultures are further advantages. Additionally, VW has worked to increase possibilities for women and members of lower castes.

There hasn’t been a great environmental impact from the lodges and visitors. Each lodge has electricity and hot water, thanks to the solar panels that VW purchased and put in place. The trash is burned. Septic tanks receive sewage flow. Poaching and illicit logging appeared to have increased since Binsar’s notification as a sanctuary. The rare barking deer population and other species appeared to have expanded when

the VW project started. The “green gold” oak trees, which play a vital part in the forest ecosystem by absorbing water during the monsoon season and gradually releasing it during the dry season, are among its riches. More than 200 different species of birds, including eagles, parakeets, woodpeckers, forktails, and the enormous Himalayan vulture, as well as langur monkeys, Himalayan goral goats, martens, and leopards, make up the abundant avifauna.

It is also said that there will be little cultural impact. To avoid interfering with agricultural activity and relying too much on tourism, VW opted at the outset to limit visitors to six per hamlet, which has helped avoid undesired cultural influences. By ensuring that VTCs include at least two women, training female tour guides, and pushing VTCs to use female porters, VW has made a purposeful effort to empower women (Peaty, 2009; Bhalla et al., 2015).

## 6 Fragile Geology

The Himalayas sits on the fault line between Indo-Australian and Eurasian plate due to which the region has been vulnerable to seismic activities. The past couple of decades have witnessed unprecedented growth in urban settlements in this geologically sensitive region. Growing connectivity to the erstwhile remote locations in IHR has increased the possibilities for economic growth in the region. In 2022, Joshimath and the surrounding area witnessed a footfall of 41,00,000 tourists by October (Tripathi, 2023). The land subsidence and the social crisis that followed in the area have raised serious concerns about the future of the winter abode of Lord Badrinath.

Data for Uttarakhand in 2013 (20 million) shows that tourist arrivals can decline due to calamities, with numbers falling to an all-time low over five years. Similar to this, J&K has demonstrated a notable fall in visitors over the past few years due to political instability. The region’s isolation and lack of attention reflected in fewer visitors, with Nagaland coming in last place (46,658) (Singh & Kotru, 2018). The main draws for tourists to travel to Himalayan sites today are pilgrimage, spirituality, adventure, and summer and winter joys. We must take the lessons from Uttarakhand to heart as urban planners throughout the IHR because the factors at play in Joshimath are also found in Nainital, Champawat, and Uttarkashi to name a few.

## 7 Conclusions

The Uttarakhand flood has taught us that we must develop viable models for pilgrim-based tourism in the exposed highlands. Pollution, trash, and solid waste management are problems in many high Himalayan tourist locations. Hotels and resorts are commonly constructed in vulnerable areas due to unregulated construction rules. So that the best practices may be discovered and disseminated, the shift to



ecotourism needs to be carefully encouraged. The local community must most critically benefit from the tourism business. The government has actively encouraged homestay tourism in Leh for instance, there is a stronger emphasis on environmental protection and pollution reduction. Such actions are required to increase mountain tourism for the benefit of the neighbourhood. Despite numerous natural disasters and political upheaval, tourism in the IHR has steadily increased over the years.

While the interest of the people cannot be ignored, careful planning will be critical for long-term development plans in IHR. One cannot overstate the importance of considering the unique nature of the environment and economy, partnerships with local stakeholders can prove crucial in developing viable strategies. If we must learn one thing from the past let it be that Nature has its way of claiming its resources and it is up to planners and policymakers to keep this in mind as we proceed further.

The development of tourism satellite accounts to fully measure the contributions of tourism to the state and national economy, cess or higher user charges/levies on service providers and consumers, and an assessment of the carrying capacity of tourist destinations across existing and potential tourism sites are key components towards developing sustainable and inclusive tourism in the Himalayas. Building skills and entrepreneurship in the tourism sector using a value chain approach and resulting in greater engagement of the local workforce; potential business sector reinvestments in conservation and local skill and entrepreneurship development; developing, implementing, and monitoring standards for the tourism sector (e.g., hospitality, hotel, and tour operators compliance standards); The decongestion of tourist locations or hosting of tourists following the local carrying capacity requires visitor awareness, online information on real-time carrying capacity, and the local application of safety and security regulations may go long way in alleviating the environmental stress on the IHR.

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