

## HIMALAYAN NATURE-BASED TOURISM. CHALLENGES FOR TOURISM AND PROTECTED AREAS

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### *Abstract*

*Each year, millions of tourists visit Himalayas. Sensitive to outside influences, the Himalayan environment of mountain areas has been abruptly exposed to it. The authorities of the Himalayan countries try to conserve them and currently, there are 126 areas under protection. However, due to economic and social reasons in the Himalayan countries, there is currently no possibility of realizing a comprehensive, rational and balanced approach to nature protection and tourism in the region. The reconciliation of two functions, namely nature protection and tourism, is the main challenge for all levels of management of protected areas – from the administration of specific parks or reserves to government administration. Results showed that regional and political diversity of the entire area, limited logistic, economic and technical possibilities, and often the lack of a uniform concept and strategy of actions, result in numerous and diverse problems. These include the state of the natural environment within protected areas and the trends in the changes (degradation, pollution, natural hazards), the impact of tourism on local communities (transformation of economic activities, mentality, 'tourist-local resident' relations), management (no long-term development plans, tensions on the 'government-local communities' line, poorly and unevenly developed tourist infrastructure, inefficient control system), etc. At the end of the paper, directions for action are indicated that could contribute to increasing the effectiveness of nature protection in the Himalayan Mountain areas in the face of growing tourist pressure.*

*Note: This is the second part of the two-set paper about the tourism in the Himalayan PAs. The first one can be found under the title: Himalayan nature-based tourism. Potential, regional diversity, nature conservation and touristic load.*

*Keywords: Nature based tourism; Environment; Economy; Culture; Impact; Management*

### **Introduction**

Mountains are among the most popular destinations for tourism [1]; each year, millions of mountaineers (ie. hikers, trekkers, and climbers) visit high-mountain areas [2, 3]. Thus, mountains have become a mass tourist destination [2, 4–6]. A great example of this thesis can be

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found in the Himalayas (see article 1: *Himalayan nature-based tourism. Potential, regional diversity, nature conservation and touristic load* [7]).

It is well-known that mass tourism, especially in areas with limited space like the high mountains, involves certain threats to the natural environment [8]. Mountaineering, in many different ways, interferes with the natural environment, thus changing it. With the influence of tourism (foreign cultures and ideas); economies and politics, and social, cultural, and psychological conditions are also changing [6, 9–13]. The impact of mountaineering is usually considered in the context of tourists' friendly or hostile interaction with animated and inanimate nature [10].

Protected areas (PAs) have been increasingly introduced to mitigate negative impacts and protect Himalayan natural heritage. Currently, in the Himalayas there are 34 national parks and 92 areas under other forms of protection. Overall, the whole range (547,960km<sup>2</sup>) contains over 79,008km<sup>2</sup> of PAs that account for almost 14.5% of the landmass [7], almost reaching the Aichi Target 11 benchmark of 17% by 2020. However, due to the low level of economic development in the Himalayan countries, there is currently no possibility of realizing a comprehensive, rational and balanced approach to nature protection and tourism in the region. There are ongoing attempts to selectively preserve areas characterised by primary nature and rare flora and fauna, and balance pro-poor development objectives with conservation goals. Sensing an increasingly vulnerable resource-base, more areas under protection in the near future should be introduced in line with the Convention of Biodiversity's Aichi Targets.

To understand human impacts in the Himalayas more fully, a brief historical overview is needed. What is more, a proper assessment of environmental degradation in a given area may be difficult due to the insufficient amount of objective and accurate information about the past and present functioning of the examined area [14]. A classic example of the above thesis is the so-called Theory of Himalayan Environmental Degradation. According to its assumptions, excessive population growth in the Himalayas has led to excessive deforestation, which is resulting in catastrophic natural phenomena (floods, surface runoff, landslides) both in the mountains and in the lowlands. In the 1960s, *D.C. Kaith* [15] formulated similar postulates, but the scientific editor of *The New York Times* E. Eckholm is considered the founder of this theory. *E.P. Eckholm's* [16] work showed environmental degradation in the Himalayas, but without sound scientific justification. His work was followed by both scientific studies [17, 18] and the mass media, e.g., the movie *The Fragile Mountain* [19]. A few years later, in 1986, at the Mohonk Mountain Conference, devoted to the mountains, an eight-point scenario was formulated regarding the theory of degradation of the natural environment of the Himalayas. Unfortunately, they were not laid out as hypotheses intended to be verified (tasks), but as statements [20]. Later research in this field [21–24], however, refuted this theory. Their results clearly show that it is natural factors such as tectonic movements and high rainfall that are still the dominant forces leading to changes in the natural environment, onto which human activity is superimposed [25].

Nonetheless, tourism has been blamed for the degradation of nature in the Himalayan chain [26–30]. For example, *D. Hinrichsen et al.* [27] and *B.A. Coburn* [28] associate the removal of trees by indigenous people in the Everest area with the increase in tourist traffic, completely underestimating the main reason, i.e., heating needs (surviving the winter). In this way, mountain tourism has been portrayed as the main culprit for the degradation of the Himalayan natural environment. Although this trend seems to be passing, many scientific papers are constantly highlighting the negative impacts of high-altitude tourism on the nature of the Himalayas. The delicate ecology, which has already been disturbed, has found itself under renewed threat from high-mountain tourism that affects the environment of high mountain areas. However, the balance of environmental profit and loss depends on a number of factors and circumstances. *M. Apollo and V. Andreychouk* [31] argue that within populated areas (inhabited and agricultural), mountaineering – contrary to widespread opinion – has an impact on the natural environment that is almost always positive, but above populated areas it is almost always negative. That is why

several parts of the Himalayas were placed under protection. Thus, the impact of tourism on the Himalayan natural environment is not simple and straightforward but depends on a number of factors and circumstances.

In the Himalayas the PAs (i.e. the most attractive areas for tourists) that became the most vulnerable to the influence of mountain tourism, which here is not only allowed, but largely welcome - unlike other forms of economic activity. Anyway, these other forms have little chance of development due to limited environmental resources and environmental restrictions. In this situation, alpine tourism becomes the most important form of impact on the natural environment of the PAs, as well as on the local communities inhabiting them. It also becomes “responsible” for both negative and positive effects of its presence in PAs, as well as for the various problems it causes.

These are the problems that this article is devoted to. It is a continuation of the authors' previous article describing the natural environment, PAs and tourist pressure in the Himalayas (see: *Himalayan nature-based tourism. Potential, regional diversity, nature conservation and touristic load* [7]) and describes the results of the analysis of the problem of the impact of alpine tourism on the natural environment of the Himalayas, primarily within PAs. Not only the problems resulting from the mere presence of tourism in PAs were analyzed, but also problems resulting from improper management of tourism in PAs. Instead of conclusions at the end of the article, suggestions are made to optimize the interaction between tourism and the environment (natural and social) within the PAs.

### **Methodological basis of the article**

A systematic literature review is a straightforward methodology often applied in the social sciences and this study investigates and presents nature-based tourism research normatively and quantitatively [32, 33]. The main problem identified based on systematic sustainable tourism research review is about finding possibilities to achieve all three sustainability dimensions (economic, social and environmental) together, that is, to develop competitive tourism business by addressing environmental and social challenges of tourism development in holistic way [34]. The systematic review of literature on using PAs by tourism might provide relevant answers how to trade-off between social, economic and environmental dimension of sustainable tourism development.

Thus, the methodology in a given article is based on a critical analysis of the subject literature as well as field research and observations. A large number of publications and official statistics from individual countries were analyzed with varying accuracy in the field of: the natural environment and socio-cultural diversity of the Himalayas, nature protection in the Himalayas, the development of tourism both in the entire mountain system and its individual parts, as well as the development of tourism in Himalayas and its impact on the natural environment and local communities. The materials analyzed come from reliable sources, most notably journals included in basic and well-known databases, as well as bibliographic resources from local libraries such as Keshar Library and Tribhuvan University Library and others, which the authors have had the opportunity to use. For the analysis, attempts were made to select items describing issues related to the social, economic and natural development of the Himalayan region [35]. Overall, several thousand items of scientific literature concerning the exposed topic were analysed, of which almost 100 were directly used in the given study.

The research and observations conducted by the authors in all parts of the Himalayas in 2004-2020 also contributed significantly to the conclusions presented at the end of the article. These were deliberate field trips aimed at examining the impact of elements of tourist pressure on the natural environment, as well as on social groups inhabiting the high mountain parts of the Himalayan area. Additional observations were made while climbing high Himalayan peaks (first author). The results of these studies have been partially published (see the authors' articles cited

later in the text). However, they have never been integrated into the overall conclusions presented in the article below.

### **Challenges for mountain tourism of the Himalayan PAs**

Impacts in the dynamically developing "mountain protected area" system are varied and complex. They have multiple back compressions, both positive and negative. Also, the final effects of these interactions are not satisfactory neither for the tourist nor for the natural environment of the PAs. The main problems associated with the interaction between the tourist and the environment in the Himalayas PAs are grouped below into three groups: i) problems related to the impact of tourism on the natural environment of PAs; ii) socio-economic problems caused by the presence of tourists in the PAs; iii) logistic problems related to the management of PAs under conditions of tourist pressure.

#### ***Problems concerning the natural environment***

##### ***a. Problems related to natural hazards***

In the highest mountain areas, the natural environment poses significant threats to the implementation of PAs and significant restrictions to the development of mountain tourism. There are several reasons. First, the geophysical and geomorphological features of high mountain areas are mostly (not all) situated at the boundary of tectonic plates, which makes the Himalayas extremely vulnerable and prone to increasing natural disasters including earthquakes, avalanches and unpredictable storms [36, 37]. Second, climate change with its alarming rate of global warming, is also contributing to the frequency of natural threats and conditions such as soil erosion, landslide, melting of ice causing rock and ice falls, both (e.g., human and natural) with changing new weather patterns. All of these predictable aspects of climate change are responsible for the potential problems related to the natural hazards in the Himalayas [38, 39]. Contrary to these perspectives, scholars in disaster research argue that humans constantly seek to engage and expose themselves to the high-mountain environment through various forms of activity knowing the risk is higher, and consequently the increasing rate of human interaction contributes to the increased fatality rate [40]. Nevertheless, these opposing scientific viewpoints commonly indicate that high mountains are significant to natural threats. Besides, these discussions also warn what countermeasures or assessments should be considered to minimise the natural threats, which contribute to the multifunctional values of conservation and mountain tourism both at the stage of planning and its active regulation.

Concurrently, to maintain effective conservation plans for the future, and to develop and promote mountain tourism for the present as well as for the future, is no easy task. There is a need for the Himalayan countries' governments to follow scientific tools which they often find quite hard to do. For instance, an assessment tool, such as remote sensing techniques, including visual observation and image interpretation, in the short term can track the changing pattern of regional land (e.g., applied measures on Nanda Devi Biosphere Reserve Uttaranchal State of India [41]. This scientific tool can clearly identify how the changing pattern occurred in the large area of the regional land used either by the forest-dependent communities through livestock grazing [42] and utilisation of forest fuel [43], or problems caused by natural threats due to the global or regional climate change. Answers to these different causes can be explicitly identified by adopting the effective management assessment tools in PAs and to design safe mountain tourism development plans. For instance, more recently *Lham et al.* [44] applied the Management Effectiveness Tracking Tool Plus (Bhutan METT+) to assess the effectiveness of ten PAs and one botanical park in Bhutan. The benefit of using this kind of scientific tool allows a greater degree of flexibility to adopt measures according to the needs of the country. The findings of their study revealed that the assessment tool projected that despite an increase in livestock predation and crop damage, the results showed PAs are well managed and there is generally a good relationship between officials and local communities who are mostly forest dependent. These successful

examples suggest adopting scientific tools which can efficiently guide and expand the ability of the management to understand the impacts of conservation either by humans or nature. Another was the immediate response to the identified reasons for major changes, undertaking adaptive management strategies to conserve the biodiversity of PAs and maintain the sustainable livelihood of the local communities. Once these changing patterns and their causes are identified in the regional lands, then the strategies or mechanism to develop mountain tourism plans which are in or close to PAs can be initiated.

### *b. Environmental problems*

Mountain tourism is widely acknowledged as a vehicle to stimulate the local and national economy in many developing countries. Tourist flows, particularly in mountain regions, have been steadily growing for many reasons: type of mountain activity (e.g., nature-based tourism or pilgrimage) and purpose of the activity (e.g., cultural reason), favourable currency conversion rates, easing of visa restrictions, low cost of logistics and food (e.g., depending upon the activity and services). These attractive features of mountains influence the tourist to travel to the mountainous areas of developing countries. Compounded by these reasons, the destination is another great attraction that motivates adventure and cultural enthusiasts to undertake mountain tourism of different types [45]. However, the growing influx of tourism has its drawbacks which are faced by the developing regions. According to *J. Brohman* [46], one of the significant impacts of tourism in mountainous areas or elsewhere is environmental pollution and degradation.

Take mountaineering for example, although it accelerates the local and national economy, and provides seasonal employment and business to the remotely located mountain communities, the ecological impact of mountaineering can affect the natural environment in PAs in many ways. Mountain tourism makes changes at any stage (zone) of tourism activity [47]. *M. Apollo* [48] noted that mountain tourism can affect the natural environment by: anthropogenic landslides and trail impact, anthropogenic microforms on rocks, trampling and damage to vegetation, introducing new species of plants and/or animals, disturbance or attracting animals, disruption of the natural landscape by tourist infrastructure and climbing equipment left behind, pollution by noise, rubbish and excrement.

In recent decades, alongside the rapid growth of tourism in mountain regions [49, 50], countries are facing the problem of environmental pollution more and more, due to a lack of tourism policies anticipating the potential environmental pollution tourism can cause to the local community's lives and livelihoods, disturbance to native wildlife and the biological processes of plants, as testified by the scientific literature [10, 48, 51–54].

### ***Problems impacting social-economic aspects***

#### *a. Problems resulting from low-level of economic development*

One of the immediate changes that policymakers cannot address is the low economic status of the region. Except for Bhutan, poverty is still a burgeoning reality for many of the mountainous areas of Himalayas [21, 55] which leads to obstacles in the establishment of PAs. Although the aims of biodiversity conservation are connected with social equality and democracy, where poverty reduction and welfare are the major objectives of development [56]. Despite this, *A. Rastogi et al* [57] noted that the official management plans of more than 500 PAs in India rarely take into consideration such ground-level economic perspectives as a major issue. Due to official negligence, human conflict over natural resources is a widespread issue commonly seen in India (e.g., Corbett National Park in Uttarakhand, Western Himalayas and Nepal, e.g., except in Annapurna Conservation Area). In Himalayan regions where economic activity is lower and conservation projects are often implemented with low budgets, mobilising local manpower and resources for conservation can be costly.

Previous studies have identified a few major reasons related to the poverty issues faced in PAs. There is no poverty 'compensation process' in the policy that compensates local communities for the damage caused by wildlife to their animals or crops which locals heavily rely upon. *M. Ogra and R. Badola* [58], noted similar issues faced by villagers located at the

border of Rajaji National Park situated in the north Indian state of Uttarakhand where local villagers struggled to find compensation for their damage because the government did not feel obliged to compensate the locals as the PAs are government-owned lands [59]. Secondly, when there is an implementation of PAs and tourism development in areas between the shared land of local communities and PAs [60], local communities are often deprived of receiving social equity rights from these agreements. Confirming *N.U. Sekhar's* [61] observation in India, there is a lack of policy which encourages a 'participatory governance structure'. Moreover, economic development tends to be lop-sided in the regions when PAs and tourism development are implemented - either it entirely benefits the government agencies such as park management, or it profits outside tourism businesses and hospitality investors [60, 62]. Besides, the inequitable and poor management of conservation and tourism development in India is also affected by corruption and bribery from local to state level [63, 64].

The major issue that emerged from this chain effect on the local economy is the unplanned development within and around the PAs, largely driven by tourism, both legally and illegally. The rapid growth of this migration leads to increasing occupation of many remote locations which are suitable for tourism business, some are close to, opposite or adjacent to the villagers' agricultural land. This urban sprawl leads to a rapid increase in the land value which has a profound impact on the economy of vulnerable groups. A well-known example of these spatial changes can be seen in the Solukhumbu district of Nepal, where Mount Everest is situated on the northern side, and the district also shares the land within Sagarmatha National Park. Traditionally, local communities' major source of the economy was agriculture, farming and herding, but when mountain tourism started to flourish the whole economy of the district changed exponentially. Farmers and villagers who shared the route to Everest became wealthy through direct (e.g., porter, guide) and indirect involvement (e.g., tea and souvenir shop, lodges and hotels). Communities which live near Solukhumbu work for these business owners who used to be farmers or villagers earning a daily wage [45]. This issue of economic impact related to lack of proper spatial planning policies leading to urban sprawl is seen in the Indian Himalayas as well. For example, the impact of mountain tourism in Ladakh was highlighted by *D. Geneletti and D. Dawa* [65]. Therefore, there is also a serious need to consider and monitor the relationship and economic impact of tourism growth with urban sprawl using strict spatial planning policies.

#### *b. Problems concerning to relation between tourist and locals*

Mountaineering can create sustainable development opportunities worldwide [4, 8, 9, 66–69]; however, residents' attitudes to tourism activity and the hospitality given to the guests visiting their home regions is crucial for sustainable tourism development [4, 69].

It is well known that the popularisation of mountain tourism impacts residents' way of life, culture and customs [4, 10]. Furthermore, local communities acknowledge that tourism can stimulate changes in social, cultural, environmental and economic dimensions in places where tourism activities have had a close connection with local communities [10, 55, 70, 71]. Overall, the tourism process that generates such a radical transformation must be taken into consideration when developing plans to protect the environment – without it, one cannot speak about the sustainable development of these areas [10].

*M. Apollo* [10] made five proposals for local communities (LCs): (1) LCs must monitor more critically the quality of the natural environment, because contemporary tourists wish to escape from urban pollution, noise, crime and other related stress to the relative calm of a mountain environment; (2) LCs must innovatively merge aspects of the new with the old and not lose their tradition and culture which is as valuable as the natural environment and the landscape for tourists; (3) LCs must develop new or redevelop old in situ services (i.e., accommodation, catering, transport) to ensure tourists have a comfortable stay; (4) LCs must maintain control of the local tourism market, because when locals see no material benefits from tourism, open hostility towards visitors may emerge; (5) LCs must keep the division of social roles, mostly to

moderate the diversity of employment. In times of crisis or natural disaster [72], a lack of tourists may cause a humanitarian crisis in places where the job market is dominated by the tourism.

*c. Problems resulting from changes in economic activity of local populations*

The areas of the Himalayas face several changes brought about by changes in the economic activity of local populations. Overall, *M. Mandal* [73], and also *M. Apollo and V. Andreychouk* [31], mention three main external pressures connected to the local economy: population increase, extensive agriculture (farming and grazing by livestock) and development of tourism. The average population density in the Himalayas was about 22 persons per km<sup>2</sup> in 1911, and in 2011 reached over 96 [3]. Such a transformation does not go unnoticed by the environment and society.

The tourism industry is a conduit for development (especially in Global South countries), mostly through the massive influence on the regional economy [10]. Depending on the developmental conditions, the changes that occur under the influence of mountaineering can have both negative and positive connotations. *M. Apollo and V. Andreychouk* [31] presented a simplified illustration of the evolution of the high-mountain environment due to the development of mountaineering. Thus, at the beginning, elite mountaineering (not mass mountaineering) appears in the high mountain area. The tourists were aware of the natural and cultural changes they are introducing, and therefore their impact was marginal. The main field of activity among local communities is still the traditional form of labour-consuming agriculture (crop growing and husbandry). Population increases lead to the enlargement of the agricultural areas, and therefore the pressure on the natural environment increases. The progressive environmental degradation is caused by agriculture, not mountaineering. The local population, recognizing the possibilities for increased income, starts to develop in situ services at every stage of the tourists' trip [47]. The transformation from traditional agriculture to an agro-service (mixed) economy begins, and as a consequence its negative impact on the environment decreases. The number of mountaineers grows, and tourism, consumption and commerce are increasingly important. The mass mountaineering stage starts. With time the local communities' economy is focused on service, and agriculture is reduced to a minimum (cultivation and breeding are for their own and tourists' needs only). Mass mountaineering starts to cause a higher environmental impact than agriculture.

Concluding, mountaineering can be an alternative to declines in traditional and invasive industries such as agriculture in general. The process of transformation under the influence of mountaineering has already been noticed by scholars [31]. The additional income from tourism has affected the economic structure and contributed to a shift in agricultural activities towards part-time farming [74, 75]. Furthermore, tourism development reduces the number of farms, and the number and types of animals [10] – all this leads to reducing the pressure of human activity on the high mountain environment. However, it is not always the case that people who have adopted tourism and have earned money from it use the opportunity to reduce their agricultural activities [76]. Thus, tourism development should be accompanied by policy, and we believe that our model will help understand the tremendous potential of tourism in the sustainable development of mountain regions [31].

***Logistical problems (problems of proper management)***

*a. Conflicts between governments and local mountain communities*

The designation of PAs entails some restrictive rules on the use of natural resources. Hence, the hidden cost of the establishment of PAs is borne by the local communities whose livelihoods are dependent on mostly common pool forest resources within PA boundaries [77–79]. Such communities are vulnerable because they bear the losses directly (e.g. restrictions on access to forest fuel resources) and indirectly (e.g. crops and livestock raided by wild animals displaced from PAs) [61]. Indian state officials undermine local community participation in PA policy and its implementation. Also there is unequal distribution of tangible economic benefits retained from tourism in sharing or displacing the locals who are (more often than not) displaced by the designation of PAs and tourism development [77]. These practices have had a negative impact

on local attitudes towards conservation theory and practices, and towards wildlife species that raid crops and livestock. All of the conservation practices initiated in and around forest-dependent communities' inhabited lands, and the officials prioritising local communities' resources and livelihood options over conservation objectives, where most of the tourism benefits are leaking to outsiders – tourism private investors and hoteliers [61].

Two fundamental drawbacks in the Indian scenario are repeatedly noted in the literature. One, there is a lack of a participatory governance structure and policy which strongly encourages and guarantees a certain percentage of jobs for local communities when outside private investors operate their business on the land shared between local communities and PAs [60]. This initiative, which fails to prioritise and promote locally beneficial tourism, is seen as an isolated attempt by the officials for the local communities. Second, often the existing tourism policies neglect to monitor the environmental impacts of these high and small-scale business operators who generate pollution through their tourism establishments, in and around local environment [61]. Therefore, due to the lack of enforcement capabilities, due to which locals are facing the problem of displacement issues, and policy initiatives which fail to empower local people, in India local communities often turn hostile and present challenges to management that attempts to implement conservation policies and tourism development plans [80]. Clearly, there is a need for tourism policy which encourages a participatory management approach to address these existing issues that call for the involvement of local people in decision-making, employment and active participation of locals, if officials need to gain the active support of the local people for conservation of PAs and their sustainable management.

*b. Lack of current and prospective management and development plans*

The attractions of mountain tourism include the diverse physical and geological variations of Himalayas which offer unique flora and fauna, invasive wildlife and species and a home to millions in mountain communities which have been living in this landscape for centuries. However, the assembling of these features also poses significant challenges and natural threats to the fragile ecosystem [81]. Previous studies have identified multiple challenges in India when referring to promoting or implementing mountain tourism in PAs. First, there is a lack of clearly defined tourism policies that address the ongoing challenges with regards to the conservation efforts and immediate tourism plans which could meet the tourism issues such as the controversial impacts of tourism development around PAs. According to *N.U. Sekhar* [61], officials in India are mostly of the opinion that conservation leads to restrictions on tourism development. Although the draft National Tourism Policy of India of 1997 emphasised 'maintaining a judicious balance between conservation and development', in practice tourism policies closely and instantly monitors the ongoing and future issues that fulfil the objectives of conservation and tourism development, which should be equally shared with the local communities, therefore this objective is still not sustainable [61]. This is a common problem identified by many studies conducted in India related to the impact of tourism in PAs [80], including mountain tourism in the Indian Himalayas (e.g., communities and PAs of the Western Himalayas, India [10, 65, 77, 81]).

These facts indicate that if state officials are genuinely interested in conservation and mountain tourism development, new tourism policy should be flexible in terms of addressing short-term issues, and as well as tourism plans should include the effects of tourism which can become major threats to conservation and the livelihoods of local communities who share the land with PAs. For instance, the cases of Nagarhole National Park in southern India magnifies this point. According to the researchers, when a tourism development proposal was approved by the state government in the PA, the local communities were immediately displaced from their inhabited land and local people were restricted from using the resources, without any compensation or forethought about the livelihood of the communities. According to Ioannides [82] these issues often arise if conservation and development policies are not sensitive to local communities' needs and interests. Besides, in the case of the Nagarhole local community, the



issues were evident despite the National Tourism Policy of India following the guidelines of Articles 10 and 11 of The Convention on Biological Diversity (CBD) [83] and is in stark contrast in practice, which encourages national governments to adopt sound measures to the objectives of PAs which should provide maximum incentives to the local people who support officials to undertake conservation practices and tourism development.

### *c. Infrastructure problems*

Developing proper tourism infrastructure is another major challenge for the management, given the isolated regional location of Indian Himalayas. Since mountain tourism activity is mostly chosen by tourists based on the remoteness of the destination, if proper infrastructure is not planned or developed at the outset when designing and implementing tourism policies, there are many indirect impacts on the fragile mountain environment due to the human interference [84, 85]. It is to some extent understandable that infrastructure development in the mountain regions is not as easy as in lowland regions, due to the harsh climate, rapidly changing weather and difficulty of access to the region [86]. However, in recent years, many of the high-mountain destinations in India are experiencing rapid growth, and despite this, many Himalayan destinations are still facing significant issues related to the lack of suitable infrastructure and planning tools. For example, *D. Geneletti and D. Dawa* [65] assessed the adverse environmental impacts of tourism, and in particular of trekking-related activities in Ladakh using Geographical Information System (GIS) modelling and remote sensing imagery tools, to identify the environmental impact of tourism in the region. They found that due to the lack of properly planned tourism and policy enforcement, mountain tourism is posing a significant threat to the conservation of the Ladakh regional environment. Camping and waste dumping were found to be one of the most critical trekking-related factors in the region to cause environmental pollution, followed by the noise and disturbance created through off-road driving, posing threats and disturbance to the invasive flora and fauna situated in the wetland. Besides, authors also noted that many of the species around the areas appear on the IUCN Red List. This example also illustrates that despite the rapid pace of tourist growth, tourism planners appeared ill-equipped to deal with future issues in mountain tourism and provide adequate infrastructure to minimise the impact of trekking-related activities (e.g., waste management, designated campsites) or to develop an intermediate area (e.g., buffer zone) to restrict human-induced disturbance. Together, it is causing a widespread impact on the local ecosystem [87].

Although it was different in the past, today, all of the regions of the High Himalayas are well connected to the world. Intercontinental flights operate permanently to Delhi, Kolkata or Kathmandu, which are the major transport hubs for accessing the Himalayas. Journeys onward to the Himalayan foothills (e.g., to Dehradun) or even to the High Himalayas (e.g., Leh) are possible by air [47]. Historically, accessibility was paramount for the hill stations (e.g., Mussoorie or Nagarkot), and the majority of such settlements were located within a range of less than one hundred kilometres from a railway line [88]. The travel time has shortened significantly. In 1873, a journey from Calcutta to Darjeeling (666km) could take as much as eight days. By the end of the nineteenth century, the same journey took less than 21 hours, and by 1940 travel time by train was less than 14 hours [89]. However, as in many other mountain areas throughout the world, the bus remains the most common means of transport in the Himalayas. In recent years, the Himalayan Road network has become fairly dense and thus allows relatively easy access to many tourist regions. The quality of the roads is quite poor, especially in the upper reaches of the High Himalayas, where most roads are still gravel. In the second part of twentieth century, many destinations on both sides of the Himalayan arc were already connected by several transit roads, some of them even by the world's highest vehicle-accessible passes [88, 90]. Once the last village accessible by road has been reached, onward travel is most often restricted to footpaths or trails (or by animal). While the number of trails, paths or climbing routes in the Himalayas is increasing steadily, there are still some empty, untouched spots today [91].

### *d. Lack or low effectiveness of control system*

Policies which provide effective and planned infrastructure development guidelines in mountain areas of India are a peculiar issue. Inspired by the conservation aspect of tourism development, decision-makers still undermine these marginalised areas in terms of development priorities [21]. Hence, there is a lack of effective control system that clearly defines the boundaries of the resources which should be sustainably shared between tourism and conservation. As a result, the system which is in operation in the Indian Himalayas holistically and concurrently neglects to address tourism issues and meet conservation needs [81]. For instance, physical impacts caused by mountain tourism activity due to the lack of proper monitoring, biological impacts caused by the need for clear policies and planning tools to restrict the volume of tourists. The ecological impact caused by the absence of enforced measures strongly encourages outside tourism investors and hoteliers to strictly follow sustainable measures to minimise the waste impacts caused by the business ventures. Also, a dearth of social equity and revenue-sharing mechanisms to enhance the equitable benefits with the locals, which at present are only available to government agencies, high-end stakeholders and outside tourism and hospitality operators. As a whole, these impacts constitute a complex network of direct and indirect effects which ultimately reflect the absence of proper control system, and pose a challenge to meet the conservation goals [77].

To other researchers, for instance, *S.K. Nepal and R. Chipeniuk* [92] suggest these issues exist in the Himalayas except for Bhutan. The regions share their lands near national and international borders, and political instability is noted as a major obstacle explaining why implementation of the proper and effective system is not in place. This inconsistency leads to financial and capacity constraints, as a result, and as noted by *S. Singh* [93], many tourism policies and laws are either outdated, incomplete or poorly applied in practical terms. In contrast to India and Nepal, the Government of Bhutan is proactive and adaptive, reacts to the changing nature of tourism and its conditions, tourism impacts on conservation, and undertakes countermeasures to improve the efficiency and effectiveness of the system. For instance, *D. Lham et al.* [44] noted during 2014–2016, the Government of Bhutan developed a custom-made tool for assessing management effectiveness to identify the successes and failures of the management and to initiate development response strategies. Likewise, in the awareness of the changing nature of tourism and its impacts of climate change in the PAs, government officials issued executive orders that assessment should be conducted every five years. Implementation of international tourist numbers was taken into consideration by a quota system [94], and tourist flow was channelled more to cultural attractions of the country such as monasteries. However, there were some issues noted by the researchers, such as lack of adequate staff and staff capacity to consistently monitor the program. Tourism pressure in PAs and funding were other major issues to keep up with the technological development of the assessment tool. Therefore, attempts were then undertaken to address these issues; the Government of Bhutan worked with WWF to create an innovative conservation funding mechanism to conserve the PA system referred to as the Bhutan for Life Initiative. Therefore, these experiences in Bhutan clearly illustrate that the government really prioritises the promotion of tourism and conservation of the PAs. The development and implementation of an effective control system is not a big task, especially in a country like India which in contrast to its neighbours has a larger economy and intellectual market.

#### *e. Additional consideration*

A final consideration concerns management with respect to PAs and tourism development. First, previous research has demonstrated that in planning and developing tourism in PAs, LCs' attitudes, influence and adequate involvement in tourism development and conservation practices play a very important role [10, 77, 95, 96]. If locals are given an equal leadership role in decision making and designing tourism development plans, reciprocal support for the management in terms of conservation and tourism development plans have shown some promising outcomes. *H. Karst* [97] confirmed this perspective while studying one of the indigenous groups in Bhutan and suggested that maintaining cultural traditions is crucial to the attractiveness of indigenous

ecotourism destinations. For instance, mountains' physical existence is respected as a home of local deities in most local mountain communities. The local values to protect certain wildlife and plants to conduct ritual ceremonies, or to use them occasionally for medical purposes, is derived from their devotion to local deities. These practices are also initiated to provide sanctuary to the local spirit in the belief that they will protect the communities from bad spirits. Mountain tourism in this context can be supplemented with conservation efforts and acts as a development tool without compromising or creating conflicts between management and the local communities. For example, if in and around local deities' temples land, trees or water are shared with PAs, management should use cultural reasons to promote mountain tourism and to gain the support of local communities [65]. In the meantime, management should encourage communities to preserve the local values and sacred lands, spirits, species and plants from exploitation by the potential growth of tourism [63]. From a participatory governance perspective and as noted by *S. Nautiyal and H. Kaechele* [41], in India this is one of the effective ways to build trust amongst local communities by prioritising their needs and wants first and then concurrently promoting mountain tourism and undertaking conservation practices, which at present are lacking in most cases of shared PAs with local Indian communities.

Management should create job opportunities for local communities [77]. Tour guiding is one profession that can increase the capacity of the PA management. Depending upon which conservation efforts are required, management should train and employ local tour guides. In niche tourism sectors such as eco, sustainable, adventure and nature-based tourism, tour guides play a major role in educating and steering tourist attitudes and behaviours towards sustainable goals, whether it is before, during or after the guided trips [98]. In this respect, by including these locals whose lives have been shaped by living in and around the mountains, their traditional knowledge and experiences could be of greater use and insight to management at the policy design stage. Therefore, inviting and educating locals to work as tour guides in niche tourism sectors (e.g. by holding free training courses) offers several advantages for mountain tourism policy planners.

Tour guides can provide valuable human resources to the tourism industry planners complemented by their local operational knowledge and traditional ground-level engagement. These aspects can also be used as information inputs to help tourism planners evaluate destination status and conditions [99]. Moreover, tour guides' everyday contact with the tourists can be an effective way to collect national-level data such as tourist demographics, changing demands, the purpose of travel and choices of preferred accommodation [100]. Further, tour guides' daily contact with the tourists can also provide useful information to understand the issues and challenges facing tourists at the destination [101]. Therefore, in this sense local guides can act as 'tourism concierges' who can guide and help industry officials and planners by complementing their existing data and assist with sustainable promotion of tourism and conservation efforts in many ways.

### **The conceptual framework of the management of mountain tourism in PAs of Himalayas**

The management plan should be developed as a result of cooperation between government administration, local governments, nature protection services, environmental organisations, scientific institutions, tour operators, organisations of high-altitude tourism and its participants. All stakeholders must work together, otherwise a sustainable development policy cannot be pursued. It is important, because as noted by *S.K. Nepal* [102] and *S. Singh* [93] in developing countries this shortcoming is caused by lack of proper policies and adequate planning to minimise the maximum impact of tourism in the environment.

The cooperation of the above entities must take into account the goals of each of them and should be built on the basis of consensus. The process of reaching a consensus requires serious consideration and rethinking the opinions of each member of the community. This is very important because, as the work devoted exclusively to mountaineering shows the lack of

consultation with mountaineering environments and the mountaineers themselves in the aspect of regulations that are to concern them directly are often contested by them [103–105]. The discourse of entities should be preceded by a detailed inventory and valorisation. Inventory and valorisation should refer to the specifications of the natural environment and human communities, the type of alpine activity, the attractiveness of the region and the characteristics of the participant. The data collected should then be thoroughly analysed based on actual and potential threats to the natural environment and human communities, as well as the tourist capacity of the region. Managers should also analyse the relationship (existing and anticipated) between local people and tourism participants. A critical look should be given to the relationships that accompany both groups in terms of environmental protection – with particular emphasis on regions belonging to developing countries. Overall, understanding the perceived importance and performance of various components of ecotourism to residents living in the area it is undertaken is crucial to the overall success of an ecotourism development project [96, 106, 107]. The conclusions of the analyses should be collected in a tourism management plan, and the document should be accepted by all entities concerned.

Based on the guidelines contained in the plan, the region could be made available to tourists. Site management should be under the constant control of the representatives of each of the groups concerned. Managers should act in the order shown below, as they will work if coordinated with each other. The correct implementation of the plan should be based on [108]:

- Development of more detailed guidelines (protection plans, ordinances, regulations) – their introduction should be preceded by consultations with interested entities, so that changes (restrictions) do not affect only one of them.
- Informing – all guidelines should be clear and unambiguous, and in the way they are communicated. Information on standards of conduct and the consequences of non-compliance should be widely available (e.g., on websites, boards and signs, in guidebooks, etc.).
- Educating – each party should be educated on an ongoing basis in the aspect of policy profits and losses. Information alone, without an education policy, may be disapproved of by either party.
- Monitoring – the area should be closely monitored to counteract all deviations from the adopted plan in time (improvement of one element too soon may bring negative consequences to another).
- Conducting (physical) protective measures – as a last resort, introduce physical actions to prevent changes. They concern, e.g., improvement of a route reconstruction or limitations on the number of tourists.

## Conclusions

This paper gave an overview of Protected Areas (PAs) in the whole Himalayan range. By using a comprehensive and holistic approach to PAs of the Himalayas it was possible to draw the basic conceptual framework of the management of mountain tourism. A plan for managing high-mountain tourism in PAs should be written for each place (region) separately (individually) to always include elements of an extremely sensitive and unique environment. Such uniqueness is reflected by the characteristics of the natural environment and mountain tourism of the high-mountain part of the Himalayas. The fact that all entities participating in mountain tourism will create one joint plan for managing this movement will be the best chance for maintaining sustainable development. All tasks set for managers are not intended to stop or limit development. On the contrary, their goal is for rational and mutually beneficial progress.

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