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## **A Framework for Tourism Carrying Capacity Analysis**

**Pitamber Sharma**

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# PREFACE

This Discussion Paper is the first in a series of papers related to Mountain Tourism resulting from a NORAD-funded Project entitled "Mountain Tourism for Local Community Development". Project Activities include comprehensive reviews of the status of mountain tourism in the hills and mountains of Nepal; the U.P. hills and Himachal Pradesh of India; and in the North West Frontier Province and the Northern Areas of Pakistan. The major issues identified in each context are investigated in detail through a series of case studies in each country/region. Carrying capacity is a common concern in all the case studies. The present paper was prepared as an input to the case studies and was presented in the First Review Meeting of the Project held in Pokhara, Nepal, in August 1994. All of these reviews and studies are being published in the MEI Discussion Paper Series.

*Development of Action Plan and an Institutional Framework for Implementation and Monitoring*

## REFERENCES

## List of Figures

1. Carrying Capacity and Sustainable Tourism Development	7
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## List of Tables

1. Community/Area, State/Regional Characteristics, and Assets' Inventory for Carrying Capacity Analysis	19
2. Environmental Impact Assessment; Evaluation of Tourism in a Locality/Area/Route	21
3. Carrying Capacity - Questions for Discussion	22
4. Questions for Discussion for the Development of Action Plans incorporating Carrying Capacity Considerations	28
5. Maximizing Opportunities, Mitigating Problems: Checklist for Consideration in Tourism Planning	29
6. The Multiplier Effect	34

# A Framework for Carrying Capacity Analysis

## Table of Contents

Priyanka Sharma

Page

<b>Introduction</b>	<b>1</b>
<b>Carrying Capacity and the Mountain Perspective</b>	<b>2</b>
<b>Approaches to Carrying Capacity Analysis</b>	<b>4</b>
<b>A Simplified Framework for Carrying Capacity Analysis</b>	<b>6</b>
1. <i>Community/Area, Route/Regional Characteristics, and Assets</i>	<i>6</i>
2. <i>Classification of Critical Areas and Experience Zones</i>	<i>8</i>
3. <i>Environmental Impact Assessment</i>	<i>9</i>
4. <i>Setting Tolerance Levels and Carrying Capacity Standards</i>	<i>10</i>
5. <i>Development of Action Plans and an Institutional Framework for Implementation and Monitoring</i>	<i>13</i>
<b>REFERENCES</b>	<b>17</b>

### List of Figures

1. Carrying Capacity and Sustainable Tourism Development	7
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### List of Tables

1: Community/Area, Rate/Regional Characteristics, and Assets' Inventory for Carrying Capacity Analysis	19
2: Environmental Impact Assessment: Evaluation of Tourism in a Locality/Area/Route	21
3: Carrying Capacity - Questions for Discussion	22
4: Questions for Discussion for the Development of Action Plans Incorporating Carrying Capacity Considerations	26
5: Maximising Opportunities, Mitigating Problems: Checklist for Consideration in Tourism Planning	29
6: The Multiplier Effect	34



# **A Framework for Tourism Carrying Capacity Analysis**

*Pitamber Sharma*

## **Introduction**

The Hindu Kush-Himalayas (HKH), stretching across over 3,500km, manifest diverse physiographies, climatic regimes, habitats, religions, and cultures that contribute to make it a major region of tourist attraction. The HKH has some of the most diversified and lofty landscapes on the face of the earth; from the monsoon to the insular, the region covers a number of climatic regimes; it is dotted with places of pilgrimage and worship for the followers of Hinduism, Buddhism, Islam, and a number of other religious groups; and it harbours the most bewildering variety of lifestyles and cultures with histories that dates back to antiquity. In the context of the HKH, where the pressure of population and activities on the natural resource base has remained consistently on the rise for the last several decades, tourism development offers considerable prospects for alternative gainful employment and income opportunities. Although the value and importance of tourism is felt and perceived differently by different groups, tourism development, in general, can contribute to local community development in various ways: by generating revenue for the government and local communities; by creating new jobs and income-earning opportunities; by inducing new businesses and trading opportunities; by opening markets for local products; by the promotion of new skills and technologies; by the induced improvement in physical and social infrastructure and community facilities of various types; by encouraging positive changes in land use and production systems; and, not least, by enhancement in the environmental and cultural awareness as well as in the appreciation of the community's natural, historical, and cultural heritage.

These contributions, however, are not always positive for the economic and environmental development of local communities. Among the negative effects are the degradation and depletion of the environment and resource base (deforestation and erosion along trekking routes, littering, pollution, and problems of solid waste disposal along resort and trekking areas); the impact of overcrowding on fauna and flora; neglect in the management of fragile natural resources; loss of cultural elements and native values; the negative demonstration effect of tourists; income and employment leakages; take-over of business opportunities by outsiders; import of tourist needs and the lack of linkages of tourism with local production systems; and neglect of local needs

and of participation of local communities in planning and management of tourism.

In economic terms, tourism assets and resources are *in situ* export products par excellence. The paradox of tourism development is that the product needs to be consistently protected as it is being marketed. Unregulated tourism endangers and depletes the very resources and attributes that attract tourists in the first place. Development through tourism has therefore been compared to fire, which can be a creator if properly managed, and a destroyer if allowed to take its own course. Unlike other forms of development, it is mostly *in situ* resources (environment, flora, fauna, unique adventure opportunities, scenic and visual amenities, cultural elements, etc), their characteristics, quality, and "forms of consumption" that constitute the core of tourism development. Sustainable tourism has to ensure that a balance is maintained between the number and activities of tourists and the capacity of the resource system to support those activities without impairment, degradation or depletion of the resources that make development possible. The notion of carrying capacity therefore becomes a central concern in the conceptualisation of sustainable tourism. This concern has nowhere as great a relevance as in the HKH mountains. Here, the challenge of tourism lies not only in the opportunities it provides, but also in the constraints within which tourism has to be operated.

### **Carrying Capacity and the Mountain Perspective**

Mountain areas have certain objective conditions or "specificities" (Jodha 1989), and it is within the perspective of these conditions that all activities and development interventions have to be assessed (Jodha and Shrestha 1993, Sharma 1993) to ensure that they contribute to sustainable development. Tourism as an activity and as a "development intervention" in the mountains is no exception.

Among the major objective conditions prevailing in the mountains are the fact that mountains are generally inaccessible, fragile, diverse, and often marginal areas with specific 'niche' or comparative advantages. These conditions have definite implications for tourism in the mountains. Inaccessibility, for example, manifests in isolation, remoteness, restricted linkages with the outside world and, therefore, high transport costs. Mountaineering, trekking, and other wilderness adventures are comparative advantages afforded by inaccessibility. Sustainable development in such areas has to ensure that maximum advantage is taken of relative inaccessibility (ICIMOD 1992) and efforts are made to allow for local resource-focussed development, both in an economic and in an

environmental sense. Fragility, another objective condition in the mountains, implies a situation in which resources under high intensity use are vulnerable to rapid and often irreversible degradation. Increased rates of erosion, landslides, and loss of flora or fauna are examples of such degradation. The fragility factor makes environmental care and regeneration a matter of prime concern in the mountains. Tourism, in such a context, can complement environmental regeneration in a number of ways: through conservation by non-use, through recycling of resources, and through the promotion of local resources' centered production technologies. The fragility factor has the greatest bearing and relevance for the assessment of tourism carrying capacity.

Mountain areas are diverse, both in terms of resources and environment and, therefore, in terms of the opportunities and constraints to development. Because of the diverse nature of resources there is a high degree of interdependence of different production bases and a high potential for interlinked activities. Sustainable tourism in the mountains has to contribute to maintaining and enhancing this diversity and has to promote the development of interlinked economic activities. Tourism-induced demand can be a catalyst in the development of such activities.

Mountain areas are often neglected in terms of development priorities and are generally perceived by the mainstream as marginal economic and ecological entities. Mountain communities are more often marginalised in the process of economic and political decision-making. There is also a systematic bias against the mountains in the terms of exchange between the mountains and the plains or other developed urban areas. As a result, mountain areas receive little for the ecological and economic value of their resources. Development interventions in the mountains have tended to reinforce this state of affairs and, as a consequence, the dependency of mountain communities on the outside has tended to rise. The implications of this situation for tourism development is that deliberate efforts have to be made to make mountain communities the beneficiaries of tourism in terms of economic and environmental development. Local initiatives need to be encouraged and priority has to be given to local needs and local decision-making processes. Tourism, in this context, needs to be seen as a mechanism for safeguarding and regulating resource use for the benefit of mountain communities and has to be linked to a mandatory process of resources' reinvestment.

In a mountain context, carrying capacity with respect to tourism is essentially an attempt to define the level of tolerance or compatibility between tourist activities and demands and the ecological, social, cultural, and economic



support systems of the mountains to meet those demands. Therefore, in ecological terms the level of tourism and tourist activities has to be compatible with the maintenance and enhancement of the ecological balance, biological diversity, and biological resources. In social and cultural terms, tourism development has to ensure that its benefits are broadly shared, that it is compatible with the culture and the values of the people, and that it maintains and strengthens community identity and enhances people's control over their own lives. In economic terms, tourism development needs to facilitate a process of development that is economically efficient, relieves pressure on fragile resources, and allows and promotes management of resources in ways that not only support present needs but which can also support the needs and aspirations of future generations (WCED 1987). The notion of carrying capacity presumes that there is always an upper limit beyond which sustainable use of tourist resources is not possible and that, therefore, it is necessary to protect, conserve, and manage these resources so that the attributes and values that are intrinsic to the environment and society/economy are not destroyed or their quality diminished. The "mountain specificities" noted above can act as a "filter" in assessing the tourism carrying capacity in the mountains.

## **Approaches to Carrying Capacity Analysis**

Carrying capacity of any particular site or area may be seen as a function of a number of variables: the quantity and variety of tourist resources; the nature of "mountain specificities", particularly the tolerance and fragility of resources to use; the number and frequency of visitors, their activity types and intensity of resource use; provision and maintenance of infrastructural facilities; monitoring and management of resource use sites; and the expectations, attitudes, and behaviour of visitors as well as managers of resources and local communities. This approach highlights the fact that carrying capacity is a relative and dynamic concept.

The national and regional policies under which tourism is promoted have to provide the context for any carrying capacity analysis. The perceived role of tourism in overall environmental and economic development, as reflected in national policy, then becomes an important factor to be considered. In cases in which tourism is seen as the lead sector, carrying capacity considerations need to reflect comprehensively the basic strategic thrusts with regard to tourism and overall development. In cases in which tourism is perceived as just one element of an overall development strategy, the interest in carrying capacity might be in delineating and identifying the linkages of sectoral policies and programmes on tourism development. The objectives of national/regional

policy may even furnish the framework for identifying indicators, or variables, with respect to which carrying capacity is to be determined.

The relative nature of the carrying capacity concept is nowhere more revealing than in the institutional and management aspect of resources. A better institutional and management framework can contribute to significant expansions of the carrying capacity limits. Carrying capacity is also relative to the behaviour patterns of tourists. A more environmentally aware and enlightened behaviour and consequent resource use pattern on the part of visitors can result in changes in the quality of impact, thus expanding the bounds of the carrying capacity. While there might be certain attributes and policy objectives which might set an absolute limit to carrying capacity (for example, the preservation of the habitat of an endangered species of flora or fauna), in most cases, however, carrying capacity may actually be relative to the capacity and availability of investments to mitigate the perceived negative consequences. The issue might be one of tradeoff between the magnitude of investment required and the capacity of the economy or the tourist resources to generate that revenue. While these issues highlight the relativity of carrying capacity, they also manifest the dynamism inherent in the concept and underscore the importance of the information base -- information based on monitoring of key variables and processes and baseline knowledge of the environment and ecology -- in the lack of which the determination of carrying capacity may actually be misleading.

In operational terms, a major problem with the carrying capacity concept is that of objective measurement, and the relative weight assigned to different variables or indicators. The theoretical appeal of the concept is matched in equal measure by associated operational difficulties. However, it is not the exact number of visitors indicated by carrying capacity analysis which is important but rather the implicit range that can act as a guide to policy-makers and programme managers.

Figure 1 illustrates the relevance and utility of the carrying capacity concept at different stages of policy and programme formulation, development of workplans, implementation, monitoring and evaluation, as well as feedback. The main point to note is that there are different levels of carrying capacity assessments, from the general to the particular. Also, carrying capacity assessments need to be periodically reviewed in light of the changes in policy objectives, criteria, and the interaction of the various elements constituting the physical, social, and economic environment. This is also the process of imparting dynamism to the concept of carrying capacity.

## A Simplified Framework for Carrying Capacity Analysis

It has been indicated above that the notion of tourism carrying capacity includes physical, biological, social, cultural, psychological, perceptual, and economic aspects of the tourism environment. However, in a more practical sense, there are three major groups of factors to be considered in the context of mountain tourism: the biophysical or natural environment, the socioeconomic and cultural environment (encompassing the host population, their socioeconomic and cultural attributes, and their interaction and impact on the natural environment), and infrastructural facilities, including aspects of management, to serve the visitors and thereby influence their experience. The assessment of the likely interaction of tourists on the biophysical environment, the socioeconomic and cultural environments, and the infrastructure is the crux of carrying capacity analysis. The biophysical and socioeconomic environments may be considered as aspects, and often constraints, on the supply side. The managerial, infrastructural, and facility-related aspects are normally the demand side constraints. These assessments can only provide a rational basis to guide decisions; in the end carrying capacity estimates often depend on administrative decisions about approximate sustainable levels of resource use (WTO/UNEP 1992).

The different steps involved in a carrying capacity exercise are elucidated below and should be taken as indicative of the information base and modes of analysis required in such an undertaking.

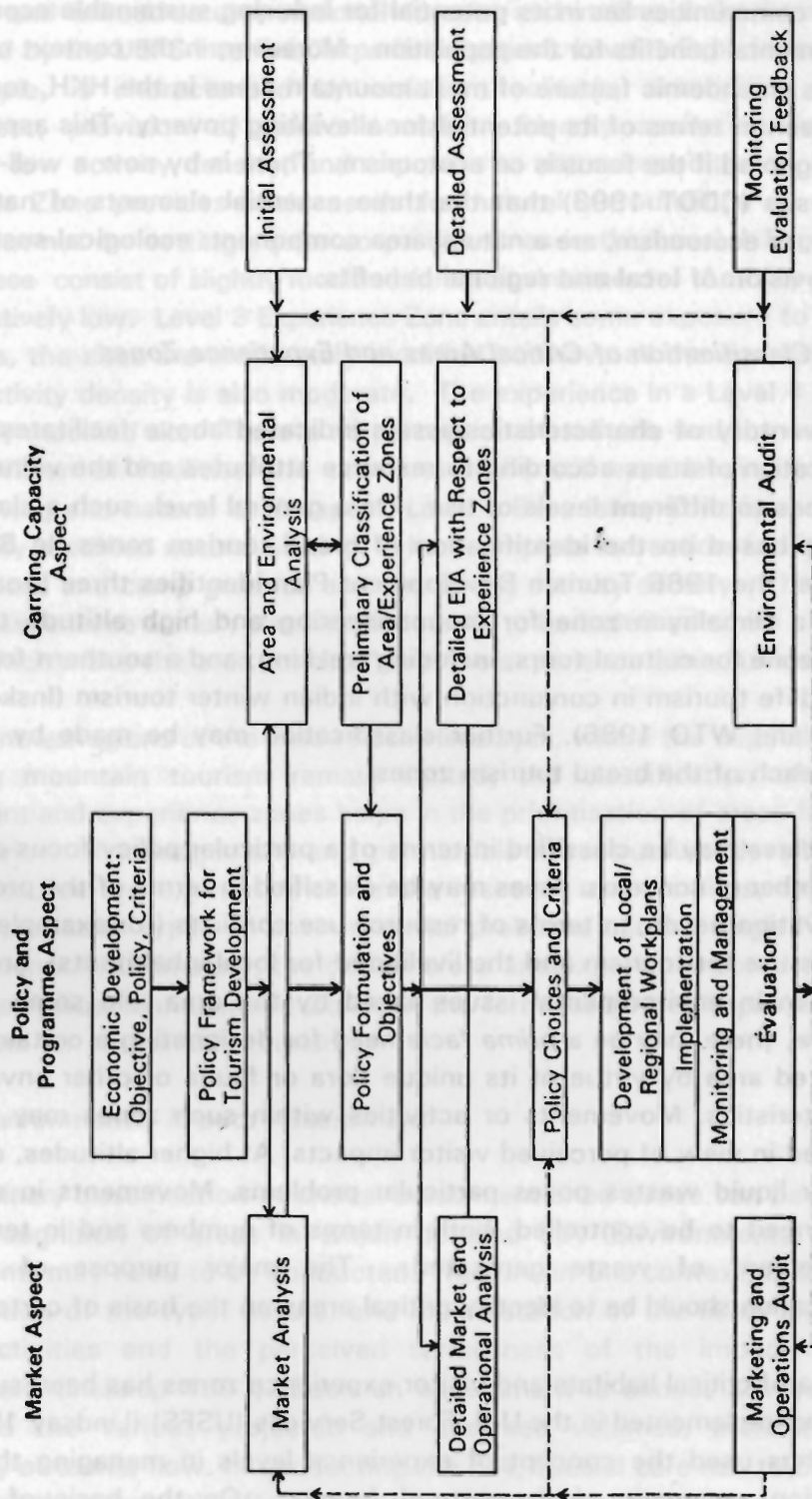
### 1. *Community/Area, Route/Regional Characteristics, and Assets*

The first task in a carrying capacity exercise is to inventorise the characteristics and status of tourism assets in the community/area, route/region under consideration. The key characteristics should include the basic aspects of the biophysical, socioeconomic/cultural, and infrastructure-related themes indicated earlier. Table 1 presents a simplified checklist for the inventory that may be applicable for an area or region. The point to note is that the inventory should not only bring out the relevant salient features of the natural, socioeconomic, and cultural resources, as well as infrastructure, but also more importantly help in the identification and appreciation of the most critical resources.

In economically poor areas, in general, and mountain areas, in particular, it is essential to assess the socioeconomic characteristics of the area, particularly those pertaining to the production system. In mountain areas, where tourism is often expected to serve a developmental function, the relevance of tourism



Figure 1: Carrying Capacity and Sustainable Tourism Development



Source: Adapted from WTO 1993

to local communities lies in its potential for inducing sustainable economic and environmental benefits for the population. Moreover, in the context of poverty, which is an endemic feature of most mountain areas in the HKH, tourism has to be seen in terms of its potential for alleviating poverty. This aspect should not be ignored if the focus is on ecotourism. There is by now a well-developed consensus (CDOT 1993) that the three essential elements of nature-based tourism, or ecotourism, are a natural area component; ecological sustainability; and provision of local and regional benefits.

## 2. *Classification of Critical Areas and Experience Zones*

The inventory of characteristics/assets indicated above facilitates a general classification of areas according to resource attributes and the vulnerability of resources to different levels of use. On a general level, such a classification may be based on the identification of broad tourism zones. In Bhutan, for example, the 1986 Tourism Development Plan identifies three broad tourism zones: a Himalayan zone for mountaineering and high altitude trekking; a central zone for cultural tours, including trekking; and a southern foothill zone for wildlife tourism in conjunction with Indian winter tourism (Inskeep 1992, UNDP, and WTO 1986). Further classification may be made by route/area within each of the broad tourism zones.

A route/area may be classified in terms of a particular policy focus or in terms of a number of concerns. Areas may be classified in terms of the protection or conservation needs, in terms of resource use conflicts (for example, between resource use for tourism and the livelihood for local inhabitants), and in terms of the main environmental issues faced by the area. In some cases, for example, there may be a *prima facie* need for designating a certain area as a protected area by virtue of its unique flora or fauna or other environmental characteristics. Movements or activities within such zones may be strictly regulated in view of perceived visitor impacts. At higher altitudes, disposal of solid or liquid wastes poses particular problems. Movements in such areas might need to be controlled, both in terms of numbers and in terms of the management of waste generated. The major purpose of route/area classification should be to identify critical areas on the basis of certain criteria.

The idea of critical habitats and visitor experience zones has been successfully used and implemented in the U.S. Forest Services (USFS) (Lindsay 1984). The USFS has used the concept of experience levels in managing the outdoor recreation resources of the natural forests. On the basis of the likely experience of visitors, the ecological situation, and the type and density of



activities and infrastructure, national forests and nature treks have been categorised by the USFS into five "experience zones". Level 1 Experience Zone, for example, is characterised by isolation, solitude, unmodified natural environment, provision of environmentally friendly sanitation facilities, extremely low activity density, and exposure to natural conditions. Level 2 Experience Zone provides basic needs for natural surroundings as well as solitude but not in settings quite so primitive as in the Level 1 Experience Zone. These consist of slightly modified forest environments. Activity density is also relatively low. Level 3 Experience Zone entails some exposure to natural conditions, the sites are moderately modified but have all the conveniences, and the activity density is also moderate. The experience in a Level 4 Zone is of a heavily modified site. There is no perception of solitude and the emphasis is on provision of facilities and comforts while still experiencing modified outdoor living and natural landscapes. Level 5 Experience Zone is comprised of a heavily modified natural setting; it has complete recreation facilities and conveniences and camp grounds and has a high activity density. The critical areas', or experience zones', classification needs to be based on some objective criteria which make the area "critical" and the experience zone "unique".

In the countries/regions of the Hindu Kush-Himalayas, where the capabilities for managing mountain tourism remain limited, the classification of critical environment and experience zones helps in the prioritisation of areas from the point of view of management and permissible infrastructure development. Fragile resource areas, areas with severe resource use conflicts, and areas prone to particular types of environmental problems can be singled out for priority attention. Ultimately, the critical areas and experience zones can also be seen as typical Management Zones in the formulation and implementation of the plans for sustainable tourism.

### 3. *Environmental Impact Assessment*

The preliminary classification of critical areas mentioned above can be a guide to the recognition of areas in which detailed EIA (Environmental Impact Assessment) may need to be conducted. The EIA, in this context, is basically an evaluation of the type, nature, and manifestation of the likely impact of tourist activities and the perceived seriousness of the impact on the environment (Inskeep 1991). Such an assessment is almost always with respect to the various projected and assumed volumes, activities, and seasonality of tourist flow. In conducting the EIA, special care has to be taken to recognise the synergetic effect of tourist activities, because often the overall impact of activities tends to be greater than the sum total of per capita

impacts. The EIA can be conducted within a framework such as that provided in Table 2. It may not always be possible to quantify the intensity of the impact. A qualitative categorisation, as indicated in Table 2, should, however, be possible. This assessment provides the technical framework for the setting up of carrying capacity standards.

#### 4. *Setting Tolerance Levels and Carrying Capacity Standards*

For operational purposes, we may define carrying capacity as the level of visitor use an area can accommodate with tolerable impact on the status and quality of resources, on the one hand, and high levels of satisfaction to visitors, on the other. The idea is to determine the maximum number of visitors that can be allowed in an experience zone or critical area. In most cases, the EIA may help in the setting of such standards. In some cases, however, such a determination may not always follow an EIA. For example, in a critical wildlife area, experts may have determined, or may be able to determine, the maximum number of visitors in a time period that could be allowed without affecting the natural habitat and behaviour of wildlife. In many countries, the number of bird shooting and hunting licenses issued for particular areas is always predetermined by the game warden. The number of back country hikers and trekkers is limited in wilderness trekking areas, due to the recognition that, beyond a certain number of visitors at a time, the generally perceived experience of isolation or solitude, or wilderness, expected of a particular experience zone is threatened. The likely factors to be considered in this particular case might be loss of ground cover, increased soil erosion and compaction, lower soil permeability, intrusion into the habitat zones of a particular species, reduction in tree growth rates due to nearness of camp grounds, "overcrowdedness" in camp grounds, etc.

Carrying capacities may also be determined on the basis of indicator flora and fauna that experts may consider critical for the particular areas and experience zones. This is particularly important in areas which already manifest human pressure on particular habitats. Shrestha (1994) shows, for example, that in the temperate zone between 2,000m to 3,000m in eastern and central Nepal, dense canopies of broad-leaved, mixed forest (oaks/rhododendron/laurels) and rich occurrences of epiphytic ferns and orchids signify a more or less pristine natural ecosystem. Transformation of this ecosystem due to increased human impact is indicated by the loss of dense canopy, Eupatorium covering large areas, abundance of regenerating young pine trees, higher occurrence of thorny shrubs and berry bearing climbers, and the virtual absence of epiphytes. Of the bird species in the temperate zone, the Tailed Wren Babbler and Common Hill-

Partridge, among other bird species, indicate a more or less undisturbed habitat. The Spiny Babbler, Peking Robin, and Nepal Parrot-bill, among others, are indicators of a disturbed habitat. A standard checklist of environmental indicator floral and faunal species can be created as a guide to setting carrying capacity standards.

In many cases, the tolerance levels and standards may be a function of the infrastructure and facilities existing. For example, in a relatively populated trekking area or hill resort, the maximum number of visitors allowed in a time period could be set on the basis of the likely impact of tourist activities on critical aspects of the environment and ecology. But this number could be restricted by the "critical" infrastructure, for example, the number, type, and quality of existing accommodation, water supply, capacity for the management of solid and liquid waste generated, energy requirements, and type and magnitude of energy available and, in remote areas, even the availability of food. In such cases the operational carrying capacity standards may be set on the basis of the determination of and availability of such "critical" facilities. Overcrowdedness, not only in terms of the impact on ecology, but also in a social sense, may be another important factor to be considered. In particularly unique cultural and ethnic areas, the "uniqueness" may be lost as a result of visitor overcrowding. Often the host population can be the better judge of visitor overcrowding and its impact on cultural systems.

It would not be possible to provide an all-inclusive list of the factors to be considered in determining the carrying capacity because the appropriateness and relevance of factors differ from area to area. However, the major environmental factors should include:

- size of area and usable space,
- fragility of the environment,
- topography and vegetative cover,
- number, diversity, and distribution of wildlife,
- sensitivity of flora and fauna to human visitation,
- environmental impact of per capita solid waste generated (pollution potential), and
- demand on environmental resources for energy.

Social and economic factors should include:

- resource use or visiting/viewing pattern (evenly distributed or concentrated in terms of area, season, time, etc),
- visitor density vis-a-vis host's perception,

- visitor's perception of experience,
- links with local production system (if any), and
- economic benefits to concerned communities.

Infrastructural/management factors should include:

- availability of accommodation facilities (lodges, beds, campsites)
- other infrastructure appropriate to experience zone,
- security,
- appropriate management measures to increase carrying capacity (for example, design for wide distribution of "use"; provision of facilities, and design of policies to encourage off-season use, etc), and
- visitor (as well as host) awareness and education through provision of appropriate information.

A special case for which carrying capacity may be exceeded for a brief period of time (irrespective of the manner and method with which the carrying capacity may be determined) is the case of religious tourism or pilgrimage in the Hindu Kush-Himalayas (Singh 1992). In the past, remoteness, inaccessibility and associated risk, a very low level of demand on local or area-specific natural resources, and the "humility" (as well as the mind-set of accepting risks and deprivation and inconvenience) on the part of most pilgrims played a part in limiting the impact of such tourism. The development of infrastructure and consequent settlements and the relatively "expanded access" to these remote areas, in recent years, have played havoc with the notion of carrying capacity.

The Badrinath-Kedarnath pilgrimage in the U.P. hills provides an educative example (TARU 1994). The U.P. hills today receive almost 22 million pilgrims each year, largely due to this "expanded access" as a result of infrastructural development. Unlike the pilgrims of the past, the demand on the resource base from the contemporary pilgrim is much greater. The traditional sanctions (circumambulation routes prescribed for various pilgrim sites, for example) are still operative but their efficacy, in many cases, remains limited due to the larger number of pilgrims and the changed nature of their demands on the resource system. Since restrictions imposed on the access to such areas, based on carrying capacity considerations, are not likely to be successful, emphasis on visitor awareness in the use of resources; promotion of grassroots' NGOs for environmental care; provision, supervision, and maintenance of basic infrastructural facilities; and involvement of pilgrims in environmental regeneration work through the use of religious sanctions, etc can be seen as ways of expanding the carrying capacity within reasonable limits.

The above discussion highlights the fact that quantitative estimates of carrying capacity ultimately depend on consideration of a variety of factors. On aspects such as biodiversity, preservation, and conservation of flora and fauna and their compatibility with tourist activities, expert opinion can be a guide. There are a number of other aspects whereby discussion with concerned communities and groups can furnish more appropriate and practical standards for setting the carrying capacity. Table 3 provides a listing of the kind of questions that can facilitate discussions on aspects of carrying capacity. The emphasis on the social and economic factors, in addition to the physical and ecological aspects, is important because carrying capacity, in the context of poor mountain areas, has, of necessity, to be appreciated in terms of local level economic and environmental development. Therefore, the relationship between tourism and the host environment (ecological, social, economic, etc) should not be regarded in isolation or in terms of one way impact. The essential point is to promote tourism in ways that ensure the maintenance and strengthening of the ecological balance and, at the same time, provide opportunities for the development of local communities so that the imperatives for impinging on the fragile and meagre natural resource base is minimised and the overall quality of life of the host population enhanced.

The above discussion also underscores the fact that carrying capacity standards once set should not be taken as sacrosanct for all times. These standards can change in relation to the factors against which they were initially set. Further, carrying capacity limits and environmental standards may differ from area to area depending on area characteristics and vulnerability. Also, carrying capacities may be subject to changes by time of year, by season, and by the existence and capability of institutions to supervise and monitor the impacts.

##### 5. *Development of Action Plans and an Institutional Framework for Implementation and Monitoring*

Carrying capacity analysis and the determination of standards have no meaning unless attempts are made to make the findings operationally relevant. Action plans incorporating carrying capacity limitations have therefore to be developed for identified critical areas or experience zones.

The development of such Action Plans, in the mountain context of the HKH, needs to be oriented by the following considerations: (a) given the tourism resources and the characteristics of the area, how to maximise opportunities and mitigate problems? (b) how to involve local communities in the planning process? and (c) how to build on or create local institutions to support



sustainable tourism and monitor and manage local economic as well as environmental development? Since these basic concerns relate to the communities, it is imperative that these issues be discussed with the leaders and representative cross-sections of the community. Rapid rural appraisal and participatory rural appraisal can, therefore, become effective methods for the development of Action Plans.

The first concern is of more direct relevance to carrying capacity in the sense that the basic purpose of tourism development in the mountains is to maximise opportunities and, in so doing, mitigate problems. Tables 4 and 5, adapted from the WTO (1993) publication, "Sustainable Tourism Development: Guide for Local Planners," provide a sampling of questions that can be used to stimulate discussions on aspects of maximising opportunities and mitigating problems and in dealing with the likely impact, opportunities, and probable mitigation measures and associated costs with respect to basic sectors and issues in tourism development. This may also include measures to increase the carrying capacity. There may be many other issues of relevance to particular case study areas and these should be considered in addressing the first question.

With regard to the second issue -- that of involving local communities in the tourism planning process -- the idea is to ensure that the community understands the implications of tourism and is enabled to participate in decision-making concerning tourism and to receive its benefits. This is more important in new tourist areas where tourism may need to be gradually developed to allow the community enough time to adapt to it. The community has to be made aware of the likely environmental and socioeconomic impacts, as well as of management and service needs. One way of looking at the economic impact might be to trace the tourism expenditure flows in the community economy in terms of the multiplier effect (Table 6) and discuss ways of enhancing them.

In dealing with socioeconomic impacts, a number of measures to mitigate the negative consequences may be called for. These may include measures to ensure economic benefits to the concerned communities; measures to maintain the authenticity of cultural traditions, rituals, and crafts; measures to safeguard valuable cultural artifacts; incentives, training, etc to encourage local ownership, management, and operation of tourist facilities and services; educating local residents on aspects of tourism and tourists on aspects of local culture and traditions; encouraging the use of local material and traditional architectural styles; encouraging selective marketing to attract the type of tourists who respect local traditions; training local residents to work at all levels

of the tourism trade and in services that may be relevant in the locality; and, not the least, applying strict controls and eradication policies on crimes, drugs, etc. As communities become exposed to tourism, they also become more aware of the negative impacts and can come up with innovative measures to mitigate such impacts. Many of the negative impacts need to be dealt with at the household level as well as at the community level, and, therefore, the institutional implications of mitigating measures need to be carefully looked into and discussed.

The third issue, that of institutions, is a central concern in sustainable tourism because if there is a lack of local institutions to monitor and manage environmental and economic impacts, the carrying capacity and action plans can easily become futile exercises. As shown in Table 7, the government, NGOs, tourist industry, and individual tourists have definite roles to play in supporting sustainable tourism, but it is the agencies and institutions working at the local level that can really make the difference. Further, the question of institutions is not merely one of promoting, identifying, or creating them, but of enabling and facilitating the institutions to monitor, manage, and initiate local environmental and community development activities. The viability of such institutions ultimately rests on the access to and use of resources -- social, economic/financial, and political. This brings to the fore the issue of ploughing back a portion of the tourist revenue to support environmental and community development activities at the local level. The Annapurna Conservation Area Project (ACAP), established in the Annapurna Trekking Region in the central hills of Nepal in the mid-eighties, elucidates the development of an institutional and management strategy that has successfully incorporated tourism management, resource conservation, and community development concerns to the benefit of the local population as well as that of international tourists (Gurung 1992). A fee of NR 600 per trekker is levied by the ACAP from tourists to the Annapurna Region. This collection goes to an endowment fund that supports local resource conservation and community development activities initiated through local institutions. The ACAP experience (Sharma 1992) shows that attempts to promote sustainable mountain tourism should focus on the promotion of sustainable institutions that can benefit from tourism and undertake the tasks of local economic and environmental development.

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**Table 1: Community/Area, State/Regional Characteristics, and Assets' Inventory for Carrying Capacity Analysis**

**A. Natural Tourism Resources: Status and Characteristics**

- ▶ Area/trail characteristics
- ▶ Specific scenic features
- ▶ Forest conditions and characteristics
- ▶ General land use and characteristics
- ▶ Protected lands and areas (national parks and conservation areas)/wildlife (animals, birds, etc)
- ▶ Vegetation and unique flora
- ▶ Waterfalls/lakes/rivers/caves, etc
- ▶ Other
- ▶ List the most critical resources and their characteristics
- ▶ Climatic conditions and convenient seasons for visiting

	High Season	Between Seasons	Low Seasons
Ave.temperatures			
Relative humidity			
Rainfall			
Sunshine			
Prevailing winds			
Air quality			
Other specifics			

**B. Socioeconomic, cultural/heritage resources**

- ▶ Settlement characteristics
- ▶ Population of immediate area and region
- ▶ Existing economic opportunities and production
- ▶ Social and economic infrastructure
- ▶ Ethnicity and unique cultural elements
- ▶ Historical building/sites/monuments
- ▶ Archaeological sites or collections
- ▶ Folklore and traditions
- ▶ Festivals
- ▶ Handicrafts



- ▶ Visual, performing, and fine arts
- ▶ Heritage of scientific and technical interest
- ▶ Other
- ▶ List (and characteristics) of most critical resources

### **C. Infrastructure**

- ▶ Transportation and access
- ▶ Road/trail network
- ▶ Energy sources (conventional/modern and intensity of use)
- ▶ Water sources (quality and quantity)
- ▶ Sanitary facilities (including management of solid waste and litter)
- ▶ Camping grounds and facilities
- ▶ Markets
- ▶ Communication facilities
- ▶ Medical emergency and other facilities
- ▶ Other
- ▶ List the most critical infrastructure gap

### **D. Accommodation and Related Services**

- ▶ Accommodation (number, quality of facilities)
  - hotel/lodges with bed capacity
  - Camping grounds/sites (capacity)
  - homestays, small inns
  - food services
  - local guides
  - recreation/entertainment
  - shopping/marketing (product specialities and convenience items)
  - sports (spectator/participation)
- ▶ Labour pool for tourism-related work (status need, availability, training)
- ▶ Potential impacts of tourism on economic activities and production structure
- ▶ List the most critical services' gap

Source: Adapted from WTO 1993

**Table 2: Environmental Impact Assessment:  
Evaluation of Tourism in a Locality/Area/Route**

	Type of Impact	No Impact	Minor Impact	Mode- rate Impact	Serious Impact	Remarks (note critical site, area, route of impact)
1	Road traffic					
2	Pedestrian traffic					
3	Noise level					
	- airport					
	- traffic					
4	Trail condition					
5	Littering/solid waste disposal					
6	Camping/picnicking					
7	Visual amenity					
8	Natural vegetation					
	- unique flora					
	- biodiversity					
9	Wildlife					
	- unique fauna					
	- birds					
10	Drainage conditions					
11	Surface water quality (pollution)					
12	Ground water quality (pollution)					
13	Air quality (pollution)					
14	Archaeological/cultur al/historic sites					

Note: This is not a complete list. This framework has to be adapted to suit local/regional conditions.

**Table 3: Carrying Capacity - Questions for Discussion**

**Physical and Ecological Factors**

- Size of the general area to be impacted by tourists?  
Area and resources available for intensive use by tourists?
- Seasonal limitations? (Viewing/visitation/impact patterns; are they evenly distributed or concentrated?)
- What space or use modifications could improve the use?
- Potential for ecological damage? (Note kind of damages from short-term resident or in transit tourists)

For instance, how fragile is the soil?  
the plant life?  
the animal life?  
other geological features?

- What facilities or policies could prevent damage? (Consider both wet and dry season patterns)
- What are the ecological indicators of visitor impact?

flora  
fauna  
other

- What are the conservation needs of

wildlife?  
plant life?  
aquatic life?

the soil and other geological features? (Carrying capacity will be affected by such factors as diversity and distribution.)

- Preservation needs of historic or archaeological features?

What places or sites, because of fragility, should be off-limits to tourists? or available only for limited use?

- ▶ Impact of infrastructure (roads, lodges, utilities, etc) on ecology?
- ▶ Who has or should have the responsibility of ensuring that the infrastructure is appropriately built for the carrying capacity of tourism resources?
- ▶ Will an increase in visitors affect the behaviour of animal life?
- ▶ Nature of conflict between competing uses?
- ▶ How can conflict between competing uses be minimised? (consider restricting human visitation to tourist zones.)
- ▶ What volume of tourism can be tolerated without impairing the quality of the environment? (seasonal, daily, etc)

## Social Factors

- ▶ Volume of tourism that can comfortably be absorbed into the day-to-day social life of the community?
- ▶ Volume of tourism that can be tolerated without destroying the cultural and social life of the community?

Variations in tolerance levels during festivals, celebrations, religious occasions, or other special events?

Desire or need to modify or limit tourist behaviour or participation in cultural activities?

If so, how might that be accomplished? (consider adequate awareness and interpretive services, as well as dispersal policies.)

- ▶ What traditions could be affected by increased tourist visitation or interaction?

How might this be made positive rather than negative?

- ▶ How will local residents be made aware and educated about the interrelationships among sustainable tourism, the environment, and the rest of the community?
- ▶ What traditional local institutions exist to monitor and manage tourism?

How can such institutions be strengthened?

## Economic Factors

- ▶ Does the community receive satisfactory economic benefits from tourism activities?

How is tourism currently related to enhancing local production?

- ▶ How can it be better and positively related to the production system?
- ▶ How are economic benefits distributed?
- ▶ How can the poorer and disadvantaged groups benefit more?
- ▶ Will the economic benefits be sufficient to motivate the community to protect the environment?
- ▶ What are (or have been) the likely social and economic impacts of tourism on women?

How can tourism impacts be used to enhance the roles and opportunities for women?

- ▶ Is the current volume of tourism providing optimal economic benefits? How can benefits be increased? (Increasing the volume is only one method. Also consider adding value to existing services and products.)
- ▶ Does the tourism industry offer jobs and opportunities for local residents?

Are they reasonably compensated?

Are work conditions acceptable?

Is job skill training available?

Are there opportunities for promotions and advancements?

- ▶ Are there opportunities for local investment in businesses serving tourists?

Or are profits drained off by outside investors?

How can this situation be remedied?

- ▶ Are locally-produced goods available in qualities and quantities sufficient to meet tourist expectations?

What are the needs to enhance the quality and quality of local tourist-oriented production?



## **Infrastructural Factors**

- ▶ What transportation facilities and services are available?  
How can facilities be provided/enhanced?
- ▶ Are accommodation and utility services, including water, power, sewage, and solid waste disposal, available and adequate for projected use?  
If not, how can they be provided?
- ▶ Are the provisions for health and public safety adequate?

If not, how can they be provided?

- ▶ In terms of infrastructure, what would be the maximum number of visitors (per day by season)?
- ▶ Overall, should the number of visitors be increased? To what extent (per day by season)?
- ▶ What are the critical infrastructural needs for absorbing such increases?
- ▶ Need for monitoring visitor impacts (on environment, culture, economy, infrastructure)?

Who should be monitoring impacts?

Can local/traditional institutions play a role in monitoring impacts? How?  
Training needs?

- ▶ What are the most critical issues of tourism management in the area?  
How can these be addressed?

Source: Adapted from WTO 1993

## **Table 4: Questions for Discussion for the Development of Action Plans Incorporating Carrying Capacity Considerations**

The following questions can be used to stimulate discussion among potential partners and concerned citizens.

### **Natural Resources**

- ▶ How will the various natural resources that are available be used -- both directly and indirectly?
- ▶ How much of each resource can be allocated for tourism development while still ensuring its preservation and enhancement?
- ▶ What are the environmental costs and benefits?
- ▶ What is the cost of environmental degradation if the resource is misused or mismanaged?
- ▶ If the resource is used appropriately, what are the economic benefits?
- ▶ Who receives the benefits?
- ▶ What are the alternative ways of using the resource in order to both benefit from its use and protect the environment?

### **Economic Issues**

- ▶ What are the economic costs and benefits if the proposed tourism development is implemented?
- ▶ What is the economic value of any improvement to the environment that would result from the proposed tourism development?
- ▶ What is the economic cost of preventing any degradation to the environment that might result from the proposed tourism development?
- ▶ How much would it cost to meet local environmental standards?
- ▶ What would be the economic cost of introducing additional environmental controls?
- ▶ How much would it cost to formulate options and alternatives?
- ▶ What would be the economic loss or gain if plans are modified to take the environment into consideration?
- ▶ Are the benefits of implementing tightened environmental standards greater than the costs? Explain.
- ▶ To what extent could profits be used to neutralise or mitigate sacrifices should some environmentally-sound conditions not be met?

## **Socioeconomic Issues**

- What social costs and benefits will occur if the proposed tourism development is implemented?
- Which of the costs and benefits will affect economic output? and which will affect social and individual welfare?
- Do any of the social benefits override the potential economic benefits of the development? If so, which ones?
- What compensation would the proposed tourism development offer to those who experience social distress related to that development?
- How do different segments of society value the social costs and benefits? the environmental costs and benefits?
- Who receives the benefits? and who bears the costs?
- What segment of society is in a position to pay to preserve and protect the environment?
- How does the proposed tourism development contribute to the satisfaction of basic human needs or alleviation of poverty?
- How will tourism development impact local production?
- Has the potential of inflation and land speculation been assessed? If so, how?
- What will be the effects of the proposed tourism development on the pattern of consumption?
- Will there be an over-use of public facilities? What will the consequences be?
- Will over-use be affected by seasonality? If so, how?
- How does the proposed tourism development address human resource development?
- To what extent can the local population be trained to benefit from tourism development?
- What will be the influence of foreigners involved in tourism on the resident community?
- How are local, regional, national, and international environmental NGOs (non-governmental organisations) participating in tourism development?

## **Sociocultural Issues**

- How have people living in the development areas participated or expected to participate in the tourism planning process?

- ▶ What ethnic or religious groups could be affected? If so, have they been involved in the planning process?
- ▶ How are women being affected or how are they expected to be affected by tourism development? How can this effect be made positive? How can women be involved in the planning process?
- ▶ How have women been involved in the planning process? Has their welfare been considered?
- ▶ What health and safety issues must be considered?
- ▶ How can drug abuse and prostitution be avoided or controlled?
- ▶ What historical sites would be affected by the proposed tourism development?
- ▶ What would be the economic costs of protecting cultural values in the development area?
- ▶ What can be done about the potential for change (perhaps even a decline) in moral and religious values?
- ▶ What can be done about the potential for a change (perhaps even an increase) in crime?

### **Tourism Market Issues**

- ▶ What are potentially the best areas for future tourism development? Which tourist market should the development be oriented to?
- ▶ What tourism products could be developed? to what capacity? are they sustainable?
- ▶ What occupancy and participation can be expected during each season?
- ▶ What environmental impacts and related restrictions must be considered?
- ▶ How will these impacts and restrictions affect the generating market segments?

Source: Adapted from WTO 1993



**Table 5: Maximising Opportunities, Mitigating Problems:  
Checklist for Consideration in Tourism Planning**

Tourism development has many consequences -- both positive and negative. These are briefly described in the chart below in terms of the impact, opportunities, problems, and ways to mitigate problems. This can be used as a checklist for consideration in the tourism planning process.

**Agriculture, Forestry, Fisheries**

<b>Impact:</b>	Increased demand for products; increased competition for land and water use
<b>Opportunities:</b>	Job creation; competition for labour can improve salaries; technology transfer can improve production methods and result in product diversification; recreational use of fishing boats can augment income; increational uses of forests can prevent over-harvesting
<b>Problems:</b>	Land speculation; inappropriate land uses
<b>Mitigation:</b>	Land use planning and zoning can limit abuses and channel development to benefit local residents.

**Infrastructure, Buildings and Roads**

<b>Impact:</b>	Increased use of land can be irreversible
<b>Opportunities:</b>	New infrastructure may benefit resident population; local building techniques and designs may be improved; use of local materials can improve the economy; beautification may occur
<b>Problems:</b>	Increased competition, especially for prime coastal or agricultural lands; degradation of landscape and biological resources; blight and overcrowding due to urbanisation;
<b>Mitigation:</b>	Enlightened and participatory land-use planning and zoning; urban renewal programmes can boost the local economy and correct past mistakes.

**Raw Materials**

<b>Impact:</b>	Increased use, processing and transporting of resources
<b>Opportunities:</b>	Increased demand for resources can boost the local economy; increased demand for value-added products can provide additional work

<b>Problems:</b>	Depletion of natural resources; deterioration of nature and landscape
<b>Mitigation:</b>	Restore land for new uses such as converting mine tailings into parks; require reforestation.

## **Land Use Patterns**

<b>Impact:</b>	Tourism competes with the traditional uses of land
<b>Opportunities:</b>	Tourism usually offers better economic returns than traditional land use
<b>Problems:</b>	Displacement and involuntary relocation of residents, agriculture, fisheries, and forestry
<b>Mitigation:</b>	Integrated planning can provide a holistic approach for those areas where displaced functions and people are relocated.

## **Consumer Activity**

<b>Impact:</b>	Increased demand for food, water, power, and luxury goods
<b>Opportunities:</b>	More options for resident population, including more and better restaurants, improved water quality and supply, improved utility systems, greater availability of luxury goods, improved lifestyles
<b>Problems:</b>	Depletion of resources; waste; dependency on imported goods; disruption of traditional values; potential for inflation
<b>Mitigation:</b>	Incorporate recycling and use of renewable resources when possible; diversification of local agriculture and food processing; increased regional trade; provide training and education for local people as needed for job, career, and business opportunities.

## **Population**

<b>Impact:</b>	Tourism is a competitive land user; bringing tourists into an area can attract outside investments and workforces
<b>Opportunities:</b>	New employment opportunities may reduce an existing pattern of emigration to urban areas or abroad, especially by the younger generation; tourism can offer higher incomes to some; outside investments can include local partnerships
<b>Problems:</b>	Construction of tourist facilities may cause displacement and involuntary resettlement; influx of foreign labour may

displace local workers; concentrations of local residents around tourist facilities may cause cultural conflict

**Mitigation:** Make affordable housing for workers an early priority; training and education can give local workers a competitive edge; awareness campaigns among both residents and tourist groups can enhance sensitivity and understanding.

## **Levels and Distribution of Income**

**Impact:** Tourism as economic development generates employment and income in a society

**Opportunities:** A wider distribution of income; tourism may generate additional incomes in other sectors because of the multiplier effects; new job opportunities

**Problems:** Changes in income levels may disturb the social structure through an increase in disparities since not all benefit from tourism; in developing countries high incomes generally benefit skilled foreign staff only; seasonable tourism generates income for a limited period only

**Mitigation:** Education and training can open opportunities for residents; targetted marketing can lengthen the season; laws can favour joint ventures and employment for residents.

## **Employment Levels**

**Impact:** Tourism demands a high volume of labour of different skill levels

**Opportunities:** Tourism generates employment, not only in the tourist trade but also in related activities; tourism businesses need a varied staff with different skills

**Problems:** Construction staff are employed for a limited period only; competitive demand between tourism and local trades or industries for workers; untrained labour remains unemployed; in developing countries there is frequently a large influx of foreign workers; employment is often seasonal and thus generates seasonal unemployment

**Mitigation:** Training and education can develop transferable skills; educational programmes and institutions can provide environmental education and hospitality training.

## **Social Structure**

<b>Impact:</b>	Interaction between host population, tourists, and foreign labour
<b>Opportunities:</b>	Cultural enrichment; increased possibilities for social mobility
<b>Problems:</b>	Influx of tourists and foreign labour may disrupt basic social cohesiveness
<b>Mitigation:</b>	Assist residents in anticipating change through awareness and education.

## **Recreation**

<b>Impact:</b>	Increased use of recreational resources
<b>Opportunities:</b>	Development of more new facilities than the community can support on its own, upgrade existing facilities
<b>Problems:</b>	Fees may exceed local residents' ability to pay; conflict over cultural differences
<b>Mitigation:</b>	Two-tiered pricing system assures lower fees and costs to residents; community participation in planning may solve problems of cultural conflict; cultural awareness campaign can help sensitise tourists.

## **Cultural Traditions**

<b>Impact:</b>	Interaction between host population, tourists, and foreign labour
<b>Opportunities:</b>	Preservation of traditions; local arts and crafts as a tourism product; stimulation of cultural pride
<b>Problems:</b>	Commercialisation; loss of authenticity of artisan products and traditional artisan skills; modification of traditions to please tourists; erosion of social values
<b>Mitigation:</b>	Community participation in the planning process may help assure that changes reflect decisions and conscious tradeoffs; awareness and education can enhance self esteem and pride so that traditions can be maintained.

## **Religious Beliefs**

<b>Impact:</b>	Interaction between host population, tourists, and foreign labour
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- Opportunities:** Stimulation and revival of religious traditions through interest by tourists; restoration of places of worship because of funds generated from tourism and pilgrimages
- Problems:** Disturbance of places of **worship** and services by curious tourists; erosion of religious traditions when they become a commodity market to tourists
- Mitigation:** Community can decide which places to share and which not to share and market.

### Archeological, Historical, and Architectural Sites

- Impact:** Increased use of sites
- Opportunities:** Chance for preservation and conservation; enhance community esteem and awareness of roots; visitor interest and support may finance maintenance and rehabilitation
- Problems:** Litter and vandalism; congestion; desecration; souvenir taking; use may exceed carrying capacity
- Mitigation:** Visitor services including interpretation, transportation, and parking; awareness campaign can help sensitise tourists; increase security and surveillance.

Adapted from WTO 1993

**Table 6: The Multiplier Effect**

The following chart demonstrates how tourism spending flows through the economy may be traced.

Tourists spend for	Second round of expenditures	Ultimate beneficiaries (a partial list)
Lodging	Wages and salaries	Accountants
Food	Tips and gratuities	Appliance repair persons
Beverages	Payroll taxes	Architects
Entertainment	Commissions	Artisans and craftspeople
Clothing	Music and entertainment	Arts and crafts suppliers
Gifts and souvenirs	Administrative and general expenses	Athletes
Personal care, medicines, cosmetics	Professional services	Attorneys
Photography	Purchase of food and beverage supplies	Auto service persons
Recreation	Purchase of goods for resale	Bakers
Tours, sightseeing, guides and local transportation	Purchase of materials and supplies	Bank workers
Miscellaneous	Repairs and maintenance	Butchers
	Advertising, promotion, and publicity	Carpenters
	Utilities	Cashiers
	Transportation	Charities
	Licenses	Cinema and video makers/distributors
	Insurance premiums	Clerks
	Rental of facilities and equipment	Clothing manufacturers
	Interest and principal payments of borrowed funds	Cooks
	Income and other taxes	Cultural organisations
	Replacement of capital assets	Dairies
	Return to government	Dentists
		Department store owners/workers
		Doctors
		Education providers
		Electricians
		Engineers
		Farmers
		Fisherpersons
		Freight forwarders
		Furniture makers
		Gardeners
		Gift shop operators
		Government workers
		Grocers
		Health care providers
		Housekeeping staff
		Insurance workers
		Laundry service providers
		Manufacturing workers
		Office equipment suppliers
		Painters
		Petrol stations
		Plumbers
		Porters
		Printers and publishers
		Recreation equipment, sales/rental
		Resort owners, operators and workers
		Restaurant owners, operators
		Road maintenance workers
		Signmakers
		Transportation workers
		Utilities, providers of and repairpersons
		Waiters and waitresses
		Wholesale suppliers

**Leakage:** When the private or public sector purchase goods or services from sources outside the community, that money is no longer subject to the multiplier effect and the economic benefits leak out of the community.

Source: World Tourism Organisation 1993

## **ICIMOD**

ICIMOD is the first international centre in the field of mountain development. Founded out of widespread recognition of environmental degradation of mountain habitats and the increasing poverty of mountain communities, ICIMOD is concerned with the search for more effective development responses to promote the sustained well being of mountain people.

The Centre was established in 1983 and commenced professional activities in 1984. Though international in its concerns, ICIMOD focusses on the specific, complex, and practical problems of the Hindu Kush-Himalayan Region which covers all or part of eight Sovereign States.

ICIMOD serves as a multidisciplinary documentation centre on integrated mountain development; a focal point for the mobilisation, conduct, and coordination of applied and problem-solving research activities; a focal point for training on integrated mountain development, with special emphasis on the assessment of training needs and the development of relevant training materials based directly on field case studies; and a consultative centre providing expert services on mountain development and resource management.

### **MOUNTAIN ENTERPRISES AND INFRASTRUCTURE DIVISION**

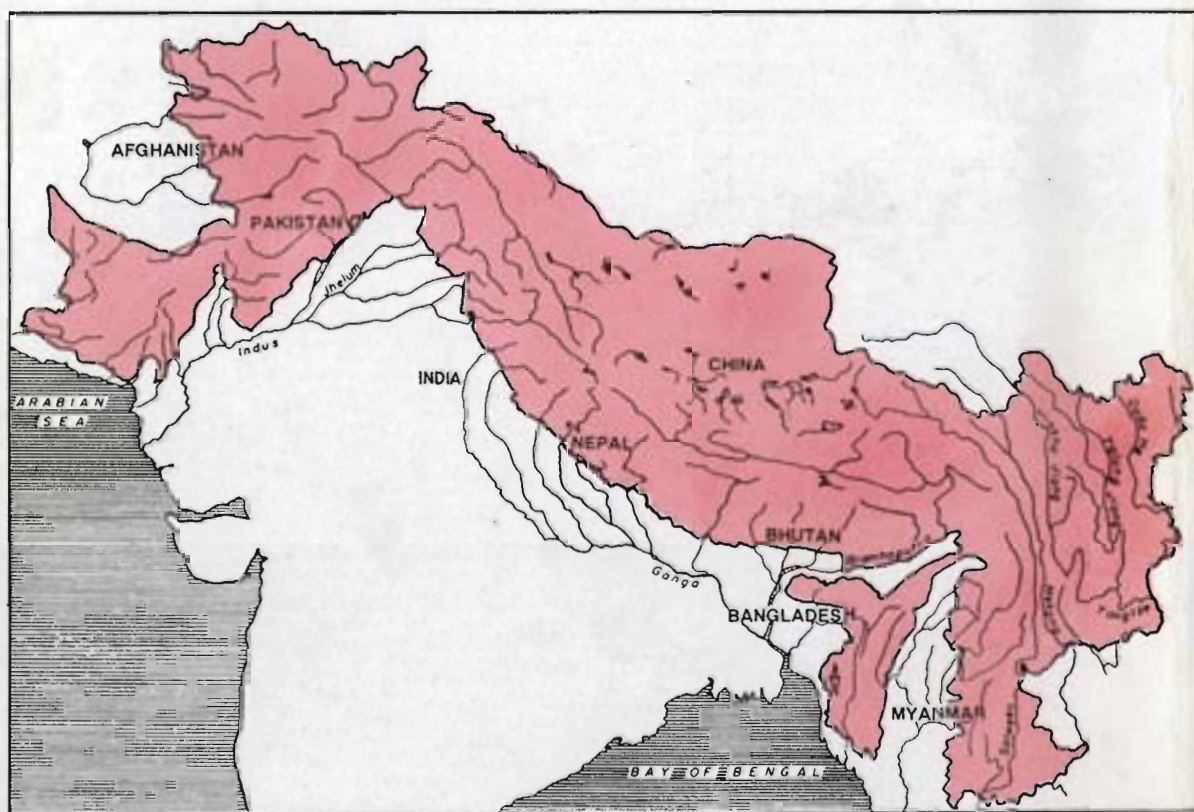
Mountain Enterprises and Infrastructure constitutes one of the thematic research and development programmes at ICIMOD. The main goals of the programme include i) gainful enterprise development and income generation; ii) harnessing mountain specific advantages; iii) infrastructural development (social and physical); iv) sustainable energy resources for mountain development; and v) capacity building in integrated mountain development planning.



## PARTICIPATING COUNTRIES OF THE HINDU KUSH-HIMALAYAN REGION

☐ Afghanistan  
☐ Bhutan  
☐ India  
☐ Nepal

☐ Bangladesh  
☐ China  
☐ Myanmar  
☐ Pakistan



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