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RECREATION PLANNING FRAMEWORK
FOR ANnapurna CONSERVATION AREA

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DISSERTATION

RECREATION PLANNING FRAMEWORK FOR

THE ANNAPURNA CONSERVATION AREA

SUBMITTED BY

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Different People use mountain lands for different purposes, some make a living out of them and some use them for pleasure. Whatever the use is, it inevitably results in change. Now it is time to address the question, "how much change is acceptable?" before it is too late.
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Abstract

Since the 1950's, the Annapurna Area in central Nepal has been the focus of international mountain land recreation. This area is the most popular trekking and mountaineering destination in Nepal. Lack of stringent planning procedures and management actions over four decades has seen no limit to the enormous pressures being placed on local resources. Consequently there has been growth of undesirable social and environmental problems, with subsequent loss of quality of life and recreational experience for local residents and mountain recreationists, respectively.

To cope with these problems, His Majesty the King Birendra of Nepal issued directives to the King Mahendra Trust for Nature Conservation (KMTNC) for the harmonious development of tourism and rural development. As a result of these directives, in 1986 the KMTNC, a non-governmental organisation solely committed to conservation in Nepal, joined the government of Nepal to declare conservation status for the Annapurna Area.

The idea behind the Annapurna Conservation Area embraces "multiple-land" use principles and attempts to encourage maximum local involvement in the decision making process.

My dissertation examines a planning framework to integrate mountain land recreation and other non-recreation uses. I discuss the Recreation Opportunity Spectrum (ROS) and Limits of Acceptable Change (LAC) to develop an integrated planning framework for the Annapurna Conservation Area.
1.0 Introduction

This dissertation will outline a recreation planning framework for the Annapurna Conservation Area in Nepal. Mountain Land Recreation in the small Himalayan kingdom of Nepal is an "imported" leisure activity. Many indigenous people do not understand the essence of this recreation. It is however a rapidly growing phenomenon, the impacts of which need to be addressed because social and environmental problems are some of the by-products of mountain land recreation.

Nepal is a land of mountain recreation opportunities. In Nepal, mountain land recreation involves two important dimensions. One of these includes involvement in physically and mentally demanding activities using outdoor settings where environmental elements are important. The second dimension includes cultural elements, associated with trekkers' contact with Nepalese hosts. These qualities, in their context provide a unique experience which is crucial to the long-term growth and maintenance of Nepal as a tourist destination.

The question may arise, why suggest this framework for the Annapurna Area? The reason behind the establishment of the Annapurna Conservation Area is to provide the harmonious development of tourism and conservation. While much has been said about the conservation strategy, the mountain land recreation opportunity strategy has not been adequately addressed for this area. Although there is considerable over-lap between these two, I believe there is a need to address the issue of a balanced approach to meet the goals of tourism development, alongside the maintenance of healthy eco-systems and the integrity of natural and cultural environments.

In writing this dissertation I draw on three areas of personal experience. First as a local resident from the Annapurna area, I have witnessed the dramatic change that the place has gone through in a relatively short period of time. The walk in the Gorepani forest is no longer the wilderness experience of my childhood. The dense forest is half gone and a walk through the forest is now not done without meeting other people. Change is inevitable, but this accelerated pace of change is a human induced process and not the result of evolutionary change. Second, as a keen trekker, I believe I have an understanding of the diverse recreational opportunities that the mountain lands can offer to meet varying human needs and believe these opportunities should be preserved to share with those yet to come. Finally, as a Parks and Recreation student, I am aware that the accelerated changes will eventually destroy the existing recreation
opportunities. The pace of change and the need to maintain recreational opportunities should be balanced to conserve resources for the future.

The structure of this dissertation is as follows: Chapter two examines the need for a comprehensive recreation planning framework. Chapter three is a brief literature review which serves as a theoretical base for the planning framework. Chapter four introduces the Annapurna Area as a recreation resource of international importance. The application of an integrated ROS and LAC framework to the Annapurna Conservation Area (ACA) is discussed in chapter five. Chapter six discusses the implications and problems of the integrated framework and notes areas for further investigations.

1.1 Limitations

In this dissertation I do not attempt to provide a master plan for recreation planning for the Annapurna Conservation Area. Nor do I attempt to list recommendations for further management action. Rather, I hope to provide a conceptual base from which to analyse the issues and concerns that are so vital to the supply of recreation opportunities within the region.
2.0 Rationale for A Recreation Planning Framework

2.1 Worldwide Trends in Leisure and Recreation: The Case of Nepal

In the past, leisure time was the privilege of a small elite. The advent of industrialization in the West has brought a radical change in social, economic and political conditions in the developed countries. Leisure has subsequently become a way of life in those countries. The growth in world economy and technological progress has substantially reduced working hours, giving more time for leisure. For example, in Britain during the mid-nineteenth century people worked an average 70 hours of work over 6 days per week compared with 40 hours of work or less, for 5 days per week at present (Pigram 1983). In addition, there is now provision for paid annual leave and early retirement. Retirement at 60 years is the accepted norm in Australia and New Zealand. A similar trend is found in the United States of America. At present 'United States' workers have an average of 800 hours of leisure time each year and it should expand further with a substantial increase in leisure by the year 2000 (Dunn, 1976).

In 1981, at least six international meetings with leisure themes were scheduled. Numerous universities throughout the world offer courses in leisure studies. Britain and France have given recognition to the importance of leisure by each establishing a Ministry of Leisure. All of these developments are clear indications of a society in which leisure plays an important part. Ironically, the acquisition of greater amounts of leisure is emerging as a major social issue for the residents of the developed world (Pigram, 1983).

The growth in leisure is the major catalyst for booming leisure industries such as tourism and outdoor recreation. Recreational pursuits are as diversified as the interests of participants. The most noticeable feature of recreational trends over the last decade has been that of a greatly increased level of activity segmentation, diversification and specialization. For example, Campbell (1981) found that in Canada, camping is broken into nine sub-activities, each with its own unique equipment, needs, status indicators, club, magazine and jargon. There is also a rapid expansion of participation in outdoor recreation, particularly those forms based on satisfying 'inner directed' needs for activity, adventure and appreciation of the natural environment (Hanshall and Roberts, 1984). For example, in Britain active outdoor recreation activities took up approximately nineteen percent of leisure time in 1970s. The trend suggests
Outdoor recreation includes activities which use outdoor settings for recreational purposes. In Nepal, considering the nature of settings and activities, "mountain land recreation" is a more useful definition than outdoor recreation. Mountain land recreation is people using mountain lands in their leisure time. The needs for aesthetic satisfaction, adventure, closeness to nature and physical challenge are some of the motivating factors for mountain lands recreationists. This is true whether the activities are trekking, mountaineering or white water or white water rafting.

Mountain land recreation in Nepal essentially started with the moutaineering expeditions which date back to 1950 with the French expedition to Annapurna Himal (mountain). The successful ascent of Mt. Everest by Sir Edmund Hillary and Tenzing Norge Sherpa in 1953, brought the publicity that made Nepal every mountaineer's dream land. Nepal's spectrum of natural scenes combines with an exotic cultural heritage, and adds another dimension for the mountain land recreationists. Nepal's mountain lands provided a new frontier, a fresh challenge and an opportunity for thousands of

Plate 1: The mountains and the villages: combined natural and cultural dimensions are what make mountain land recreation unique to Nepal.
that by the year 2000 it will constitute twenty five percent of leisure time and eighty percent of that will be wilderness or nature-oriented recreation.

The growth in the wilderness or nature-oriented segment in leisure and recreation trends has given a hope to many developing countries. This includes Nepal, which does not have an industry based economy but still has some pristine, unspoiled lands that are so scarce in industrialized countries.

Nepal is a mountainous country. More than a quarter of the country’s land surface exceeds 3,000 metres in altitude, including 2,590 sq.kms. under the realm of snow and ice (Gurung, H., 1973). Of the total surface, 20 percent has an elevation of less than 305 metres above sea level (Bhatt 1970). The dominating terrain of Nepal and its major resource can therefore be best defined as mountain lands. The mountain land is not linked to a specific elevation, slope or vegetation type. It has a much broader definition that comprises any terrain of high relief and valleys enclosed therein (Aukerman 1980).

Nepal’s mountain lands are well populated, supporting 53 percent of the total population of 18 million (Nepal Planning Commission, 1980). Lives of millions depend on mountain lands which have been used for generations for forestry, agriculture and the grazing of livestock. The mountains are traversed by a dozen or more big rivers which run in a north-south direction, providing in their course many outstanding natural features. Nepal’s diverse landscapes are also shared by a variety of wildlife that includes 30 species of big mammals and several hundred species of birds.

For local inhabitants mountains are sacred and have a strong spiritual meaning. Before the arrival of overseas visitors, Nepal’s mountains were never used for recreational pursuits. Mountains were feared and respected.

### 2.2 When Mountains and People Meet

Participation in outdoor recreation has increased rapidly in the post second world war era. It was about this time that Nepal adopted an open door policy which ended a long period of isolation, which had been previously imposed, both by the rough physical terrain and a political decision made during the period of British colonial dominance in South Asia. The long isolation left Nepal at an economic disadvantage. On other hand, it gave an opportunity to preserve its unique cultural heritage and distinct architectural style that has since fascinated all overseas visitors.
recreationists to meet their satisfaction for inner-directed needs, for activity, adventure and appreciation of the natural environment within a different culture. As a consequence, trekking and mountaineering became the most pursued activities, bringing 34,000 recreationists (HMG 1987) to Nepal in 1986. This number represents 15.2 percent of the total visitors. Visitor to Nepal soared from 6179 in 1962 to 223,331 in 1986 with a growth of an average of 37 percent a year since 1965 (HMG 1987).

2.3 Problems and Potential Problems - Who Is Affected?

Mountain land recreationists from overseas form a broad group motivated by different purposes, all of whom, along with the locals, use the same mountain lands. These groups together use a system of geologically young and ecologically delicate mountain environments. The combined impacts of local inhabitants and the more recent mountain land recreationists have been tremendous.

These mountain lands have survived on the basis of subsistence use, and harmony with users for centuries. The recent excessive demands by both groups, to provide better services and to serve the "guests" have upset the balance that is so vital for the sustainability of both population and resources. The encounter of these two broad groups of mountain land users has accelerated the process of deforestation, soil destabilisation, erosion, landslides and downstream flooding. For example, Nepal’s largest export is the annual 240 million cubic meters of top soils that wash from the mountains and eventually find their way into the Bay of Bengal (Mishra 1985).

Along the Annapurna circuit, the wilderness area of Gorepani and the Annapurna Sanctuary are under threat as the result of the growing number of trekker lodges. The pollution problem is a common one. Sagarmatha/Mt. Everest and all other major base camps have become infamous as garbage dumping sites; garbage, discarded by the mountain lands recreationists. Changing recreational patterns have provided a new potential for economic growth in Nepal, but at the cost of an ecological deterioration of mountain lands.

It is not only the lands that are suffering from this confrontation. The meeting of hosts and guests on the mountains has resulted in a social, cultural and economic upheaval. The competition to service recreationists, and other western influences, have replaced self sufficiency by dependence on the external world (Bjónnness, 1984). The traditional subsistence agriculture is being replaced by a transitional agriculture system. The growth in the numbers of recreationists reduces supply and increases demand for
products, increasing inflation. In general, the demands for economic necessities have too often been met without considerations of their environmental, social and cultural costs.

The problems generated by recreationists are widespread. What will happen to the country and recreationists if the present trends continue? Will the goal to have one million visitors by the year 2000 be met? Will the needs of both groups be met?

There is already a growing concern that trekking routes are becoming overcrowded with negative consequences for the local people (Bjornness 1982). Crowding is generally recognised as being based on personal judgements or assessments about some physical condition. It is a normative concept which depends on circumstances. However, overcrowding is a very important concern for outdoor recreation which should not be ignored. If ignored, increasing use inevitably leads to crowding and congestion. The overall quality of the recreation experience may therefore diminish, including, the loss of solitude and self reliance. This may cause lower participation and subsequent complex socio-economic consequences. This raises the question of carrying capacity of an area. How much is too much before the experience of being there will diminish? Is it comprehensible? Is it measurable?

Wagar (1964) defined the carrying capacity of an area as the limitation on use for an area set by various natural forces of environmental resistance. The carrying capacity is not an inherent, fixed value of a particular section of land. It can be dominated by unregulated over use or enhanced by thoughtful management (Burch 1969). The carrying capacity concept is used in two different ways. First, it is used to describe the ability of the physical-biological environment to withstand recreation use. Second, carrying capacity is used to express the amount of use that is consistent with some measure of quality in the recreational experience (Wagar 1964 :3). Establishing management objectives and estimating the carrying capacity of an area are fundamental steps needed to face the problem of over use. They will give a clear indication of how a place could be managed.

One management alternative is to close over-used areas. While this may sound a reasonable and straightforward action, it may not solve the problem. As Aukerman (1980) suggests, the mountain land recreationists have the political and economic potential to support substantially the conservation of mountain lands at a time when the threat to conservation ideals is greatest and such support is most needed. Furthermore, in Nepal, mountain land recreation has a significant economic impact. The recreationists contribute greatly to the country’s balance of payments and also to local and regional
The income provided by recreationists may be used in preservation and conservation of the mountain lands and their people (according to the ACA operational plan, an entrance fee will be collected and the collected money will be used for the management and maintenance of the Area).

The prospect of greater economic benefit should not give license to actions without any reference to their social and environmental consequences. All recreation behaviour must be interpreted with reference to the ecological, environmental and behavioural setting in which it occurs. With such understanding, resource managers/planners each establish use limits that will keep the needs of recreationists and the environment intact. Failure to achieve this will have detrimental consequences, for both people and lands.

If the present trends of exploitation and degradation of mountain resources continue, the livelihood of local inhabitants will be threatened. The short term economic gain enjoyed by the hosts in their contact with the mountain land recreationists will, ironically, make their existence vulnerable.

Conversely, for recreationists their very needs for aesthetic satisfaction, experience of solitude, appreciation of natural scenes and exotic culture will be overshadowed by the lack of diverse opportunities, ecological imbalance, crowding, congestion and scarcity of the means for satisfying basic demands.

2.4 What is Required?

Mountain land recreation should be interpreted with reference to ecological and social concerns. Ecological and social concerns are complex, and can be obscured, unless there is a framework to understand resources and users. Understanding of user and resources is vital to maintain the quality experience every mountain land user seeks. The principal measure of quality is defined by satisfaction. This may sound simple, but the measurement of satisfaction is complicated. It depends on users, their perceptions, preferences, motivations, backgrounds and attitudes towards the resource. We need a framework that is broad enough to accommodate varying user tastes, and techniques that reduce conflicts among users and provides optimal uses of resources compatible with environmental and social considerations.

There have already been some positive approaches to outdoor recreation and conservation planning in Nepal. Since 1973, a total of 11 sites covering approximately six percent of the country’s surface area have been declared as National Parks and equivalent reserves (Mishra 1985). Recently, the Annapurna area has been given conservation area status based on multi-use land management practices, two of which
are recreation and tourism. I believe the considerations should be now given to alternative means of expanding recreation opportunities by provision of a range of different options, regulations and monitoring.

What is required is a recreation planning framework which will enable us to understand users’ needs and environmental needs and provide a base for resource managers to balance limited supply and increasing demand to optimal levels.

The Recreation Opportunity Spectrum and the Limits of Acceptable Change approaches have been used for developing such a framework.

A framework is an outline of ideas within which issues and concerns are discussed. It is not a prescriptive solution to a problem. It is not my intention to address the issue of prescriptions.

The Recreation Opportunity Spectrum (ROS), has been developed over the last 10 years to solve some of the problems of resource managers. The strength of ROS lies in its flexibility. It defines relationships among three basic factors which can operate within recreation settings. These are the environmental, social and managerial conditions which will apply to users (Manning 1985).

The planning approach, Limits of Acceptable Change (LAC) is an extension to the ROS framework. The LAC allows public involvement, an approach which complements the ROS.
3.0 Literature Review

3.1 Introducing the Recreation Opportunity Spectrum

The steady growth in leisure and outdoor recreation over the past three decades has challenged recreation planners and resource managers to provide a range of diverse recreation resources so that the varying desires, preferences and needs of as many people as possible can be met. Provision to accommodate such a diversity is possible only through a multidimensional approach within which all aspects of recreation and leisure can be considered systematically. Such an approach will also secure resources for the use, enjoyment and inspiration of all people by keeping a balance of supply and protection of recreation opportunities.

The introduction of the Recreation Opportunity Spectrum has potential to become an effective management tool that may lead to new and rational decision making in the allocation and management of limited resources. The ROS is based on provision of a range of recreational settings. Recreationists can undertake their activities in a setting of their choice, which will realise the kinds of satisfactions they are seeking.

3.1.1 Elements in the ROS

In simple terms, recreation is a choice of leisure activities. Demand for recreation depends on individual preferences, expressed in overt, observable behaviour or participation. It also depends on supply of recreational opportunities and facilities. Therefore, a systematic assessment of available resources and resource potential is the key to estimating the quantity and quality of available recreation opportunities. The identification and classification of the elements of resource based recreation should be described and classified according to some recognised and agreed system in order to determine the status of the resources, its deficiencies or surplus, prior to recreation planning.

The basic assumption underlining the ROS is that the quality recreation opportunity can be best assured by providing a range of recreation opportunities. Quality in outdoor recreation is based on diversity (Wagar 1966) and is properly defined as the degree to which a recreation opportunity meets the needs of those who seek it. Every recreationist makes certain choices about activities in which to engage, settings in
which to recreate and the kinds of recreation experience to seek. Recreation planning and management thus involves these three distinct elements (Driver and Brown, 1978):

1. Activity: The actual activities undertaken are a result of people's choice. Activity pursuits differ vastly from one person to another in terms of who participate, resource impacts and management implications. Therefore, particular importance should be placed on the identification of who are the users, what their expectations are, and the specific activities in which they engage, rather than simply measuring participation rates in terms of 'head counting' as found in traditional management.

11. Settings: Settings are defined as the combination of environmental conditions (bio-physical conditions), social (number of people present) and managerial conditions (level of development, rules and regulations) that give value to a place (Clark and Stankey, 1977). Within each attribute is found a range of conditions. For example, in the environmental conditions category the range runs from natural to urban. In the social conditions category, the range is from low density to high density of people present and also includes the range of activities that occur. The managerial conditions range from undeveloped to developed, and from highly regulatory to low managerial presence. It is the combination of these three setting attributes that determines the attractiveness of an area to different recreationists. A Recreation Opportunity Spectrum implies a choice for recreationists. The task of the recreation planner is to allocate areas and to make decisions on the setting attributes that will apply.

111. Experience: The third element of the ROS is the experience, or recreation product. This includes such things as challenge, risk, solitude and sociability. It represents the end product of recreation planning and management. A quality recreational experience producing desired satisfactions and benefits for participants is the primary goal of recreation management.

Recreation quality is a highly personalised matter (Wagar, 1966). Recreation is a phenomenon in which quality is in the eye of beholder. Quality is a relative notion along the entire spectrum of opportunities. The ROS helps clarify the quality issue by providing a framework that calls for the systematic provision of diverse settings for recreation. The recreationist is free to choose, and the assumption is simple that if satisfaction is not found under a particular setting, it will be sought elsewhere.
3.1.2 Setting the Recreation Opportunity Spectrum

The ROS provides a framework for defining the types of outdoor recreation the public desires. It identifies and develops a classes of recreation opportunities that are arranged along a continuum.

To provide a full spectrum of opportunities, the ROS is distinguished by varying land use classes which correspond to ranges of recreational opportunities. The classes include the range modern and developed to primitive and undeveloped. Within this range, conditions suitable for a variety of activities will be found. For example, the activities may be land-based or water-based or snow or ice-based, in locations which will range from primitive to urban. The primitive range will be characterised by essentially unmodified natural environment of fairly large size with little interaction between users as opposed to urban areas characterised by substantially "built up" environments. Experiences, too, will be different along the range. The primitive experience should have a high probability of experiencing isolation from sights and sounds of other humans. It will also require high levels of self reliance, independence, and closeness to nature. At the other end of the spectrum, the urban experience will be characterised by a high probability of experiencing interaction and affiliation with other individuals and groups.

The U.S. Forest Service has used the ROS framework and has produced a theoretical spectrum of six land use classes (Stankey and Wood, 1982). They are I. Primitive II. Semi-primitive III. Semi-urban IV. Roaded-natural V. Rural and VI. Modern-urban.

It should be noted that there is no one "best way " to define the classes of the spectrum. There are no set number of categories or levels for these opportunities. The categories will depend on the attributes of recreation areas and management technique of classification. For example, Daily and Redman (1971) considered noise as a main concern for the manager and users alike. The ROS framework provided a useful framework in determining when the level of sound seriously affected satisfaction within a recreation area. In this case, there was a four level typology of appropriateness for sounds giving four types of recreation opportunities. They are, I. Modern II. Semi-modern III. Semi-primitive IV. Primitive.
In establishing a ROS for a given area or region, four major considerations are recommended:

1. Allocating and planning for the recreation resource: The ROS determines the types of recreational opportunities that should be allowed for and provides guidance about the demand and capability of recreation resources.

11. Developing an inventory of recreation resources: Providing the framework for reviews and evaluation of inventory data.
III. Identifying the consequences of management actions: Because the ROS focuses on specific features of the physical, social and managerial settings, it facilitates analysis of how proposed management actions will alter the nature of specific opportunity.

IV. Matching derived experience with available opportunities: This provides information on existing areas to the public so they can choose the areas in which they want to recreate.

(Stankey and Clark, 1979:108-110)

There are various factors which influence recreation behaviour and management significance. Stankey and Clark (1982) have outlined the following six factors: 1. Access 11. Non-recreation resource 111. On site management 1V. Social interaction V. Level of regimentation VI. Level of visitor impacts.

Each of these six factors is characterised by a range of conditions. For example, the range of social interaction varies from place of high density use is present to places where maximum solitude occurs.

Of these factors, the level of visitor impacts is specially critical in recreation management. Managers must continually deal with questions regarding "how much is too much" or what constitute "resource damage". In considering these things which constitutes appropriate or inappropriate impact, it is helpful to distinguish between the magnitude of the impact and its importance. Magnitude refers to the quantitative aspects such as its frequency and extent. Importance, on other hand, reflects the value assigned to some phenomenon. This may vary among individuals and over space and time (Clark, George and Stankey, 1982:63).

3.1.3 Dynamic Aspects of the ROS and Management Implications

The ROS is built upon the notion that recreation opportunities are not stable. They move across the spectrum in response to people's changing tastes coupled with different pressures, stimuli and changing circumstances. This time dimension in the ROS is concerned with opportunity shift. Obviously, over a long time span, the varied structure of the outdoor recreation delivery systems is affected by social and issues such as changing demographic structures, technical innovation, and changing economic circumstances. These dynamic aspects in the ROS bring about the process of invasion and succession as users adapt to changing circumstances.
Three categories are used in measuring opportunity shift. First, a macroshift is any substantial change in the nature of opportunity brought about by major resource allocations. Examples of such shifts are, construction of new access, roads, and tourist lodges. Microshifts, on the other hand, are more subtle and less obvious and are a result of increasing user pressures, improved facilities and site hardening. This can be due to improved facilities at existing parks. A third type of opportunity shift, cyclic shift, is a temporal change in the nature of opportunities, such as peak and off peak periods. It can be seasonal or may be related to weekdays and weekends. Examples of such shifts cause overuse of facilities and overcrowding problems.

These changes affect the supply of recreation in two ways,

1. The changes create a different type of opportunity that lies elsewhere in the spectrum.

11. Over a period of time, each of these new sets of opportunities may have shifted across the spectrum, as management has adjusted to accommodate increasing use pressure.

Recreation opportunities are the end product of a complex mosaic of these three types of opportunity shifts. There is therefore a need for better communication, and coordination between various groups affecting decision making if these shifts are to be understood and monitored.
3.2 Introducing Limits of Acceptable Change

3.2.1 The Concept

The Limits of Acceptable Change Planning System (LAC), a recently developed research based planning framework. It recognises the inevitability of impacts, that occur as the result of human use. Once use occurs, resource conditions begin to change; soils are compacted, vegetation is disturbed. Change also occurs in social conditions as inter-party contacts rise and conflicts increase. However, the scale and degree of change is difficult to establish. Some natural environments can sustain a higher level of use than others. Some recreation experiences are more sensitive to increased levels of use than others. There are too many intervening variables in the relationship between use and impact. The development of a single numeric carrying capacity for an area is difficult.

A resource manager is faced with a challenge to provide an appropriate recreational use of an area while maintaining resource impacts at an acceptable level. As we know, any use will produce at least some change. Therefore, the process requires managers to identify when, and to what extent, varying degrees of change are appropriate and acceptable. The critical issue in resource management and in resource planning is not the number of people using an area but the condition of the environmental settings, which in turn determine both the conservation value of the area and the quality of recreation experience it provides. Thus, the limits of acceptable change (LAC) is not only concerned with "how much is too much" but also goes a step further and tries to assess "how much change is acceptable". The acceptable change of resource and social conditions in an area will be regarded with reference to the area's resource values and recreation potential as well as to other management considerations.

3.2.2 The Steps

The LAC system develops and extends some of the ideas underlying the ROS framework. The LAC is a nine step planning process which focuses on identifying desired resource and social conditions and then prescribing management action to preserve, or enhance those conditions. The nine steps can be grouped into four main stages as follows:

1. A set of measurable social and resource indicators is defined for each opportunity class. This stage includes steps 1 to 3,
1. Identify area issues and concerns: Citizens and managers must identify what special features or qualities within an area require attention, what management problems or concerns have to be dealt with, what issues the public considers important in the area's management, and what role the area plays in both a regional and national context. This step encourages a better understanding of the resource, a general concept of how the resource should be managed and agreement on principal management issues.

2. Define and describe recreation opportunity classes: Any natural area contains a diversity of physical-biological features, use levels, evidence of recreation and other uses, and types of experiences. The type of management needed will also vary throughout the area.

In step 2, the number of classes that will be managed are defined and a general description of the kinds of resource, social and managerial conditions appropriate to each are developed.

3. Select indicators of resource and social conditions: Indicators are specific elements of the resource and social setting whose condition is taken to represent (or to be "indicative of") the overall conditions deemed appropriate and acceptable in each condition of every resource and social feature in an area. A few indicators are selected as measures of the overall condition or "health" of the area. Examples would include the amount of bare ground at used area or average number of other groups encountered per day. Indicators should be easy to measure quantitatively, relate to the conditions specified by the opportunity classes and reflect changes in recreation use.

Indicators are an important part of the LAC process because their condition reflects the overall situation found throughout an opportunity class. It is important to understand that it is unlikely that any one individual indicator can adequately depict the overall condition of a particular area. It is the 'bundle' of indicators that is used to monitor an area.

4. Analyse the relationships between existing conditions and those judged acceptable for each opportunity class. This stage includes steps 4 and 5.

4. Inventory existing resource and social conditions: Inventories can be a framework, the inventory is guided by the indicators selected in step 3. This information is helpful later when the consequences of various alternatives are being evaluated. The inventory data are mapped so that both the condition and location of the indicators are known. The inventory provides a
measure of the indicators' existing condition through the area, as well as a database from which managers can formulate the standards for each indicator in each opportunity class.

5. Specify standards for resource and social conditions in each opportunity class: Here we identify the range of conditions for each indicator considered appropriate and acceptable for each opportunity class. By defining those conditions in measurable terms, we provide the basis for establishing a distinctive, diverse range of opportunities. Standards serve to define the "limits of acceptable change". They are the maximum permissible in each opportunity class; they are not necessarily objectives.

The inventory data collected in step 4 play an important role in setting standards. The standards defining the range of acceptable conditions in each opportunity class should be realistic and attainable; they should also do more than mimic existing conditions. Standards play the critical role of indicating when and where restoration or enhancement might be needed.
111. Identify management actions needed to achieve these conditions. This stage includes steps 6 to 8.

6. Identify alternative opportunity class allocations reflecting area-wide issues and concerns and existing resource and social conditions: Most natural areas could be managed in several different ways and still retain their basic qualities. In step 6, we begin to identify some of these different alternatives. The various opportunity classes or zones are mapped, and may cover different areas, depending on the alternatives. Using information from step 1 (area issues and concerns), managers and citizens can begin to explore how well different opportunity class allocations meet varying interests, concerns and values.

7. Identify management actions for each alternative: The alternative allocations proposed in step 6 are only the first step in the process of developing a preferred alternative. In addition to
the kinds of conditions that would be achieved, both managers and citizens need to know what management actions would be needed to achieve the desired conditions. In a sense, step 7 requires an analysis of the costs, broadly defined, that will imposed by each alternative.

8. Evaluation and selection of a preferred alternative: With the various costs and benefits before them, citizens and managers can proceed to evaluate the various alternatives. Evaluation must take many factors into consideration; one example is the responsiveness of each alternative to the issues and concerns identified in step 1. It is important that the factors figuring into the evaluation process and their relative importance be made explicit and available for public review.

IV. Monitor the indicators of condition and evaluate effectiveness of management actions. This stage includes step 9.

9. Implement actions and monitor conditions: After an alternative is selected, the necessary management actions (if any) are put into effect and the monitoring programme instituted. The monitoring programme focuses on the indicators selected in step 3 and compares their condition with those identified in the standards. This information reflects the success of the actions. If conditions do not improve, the intensity of the management effort might need to be increased or new actions implemented (McCool, 1984; Stankey et al, 1985; Tyson, 1989).

Contrary to the ROS, the LAC directs attention to use level as the key management concern for both the environmental and social condition desired for an area. It focuses directly on managing for desired conditions rather than on how recreation use per site should be managed. The LAC clearly places the issues of capacity in the prescriptive, as opposed to a technical context. However, technical information and understanding is important in the LAC process. This is used as an aid in arguing what is acceptable, but not as a determinant in itself.

The LAC framework integrates social conditions and resource or ecological conditions. The resource or ecological condition refers to maximum level of use, in terms of numbers of uses and activities that an area or an ecosystem can tolerate before an acceptable decline in resource and ecological value occurs. The resource or ecological condition is influenced by two factors. Firstly, the physical characteristics of an area, and secondly, the nature of the use activity and characteristics of users (Brotherton, 1973: 6-7).
Social conditions relate to the visitors' perceptions of the presence or absence of others and the effect of crowding on their enjoyment and appreciation of the site. It refers to the maximum use in terms of numbers of users/activities, above which there is a decline in the quality of the experience from the point of view of the participant.

This integration of ecological and social conditions represents an important reformulation of the carrying capacity concept where the emphasis is placed on the management of the impact of use towards desired conditions. The LAC also integrates the legal and political influences which shape all resource management decisions.

3.3 LAC - Public Involvement in Planning

The LAC is based on inputs from both resource managers and the public through a task force. The goals and objectives identified in the LAC process are simple, outcome oriented, quantifiable, time bounded and attainable. The provision for public involvement in the decision making process has certainly given the LAC much more strength than any other decision making framework. Experience from the Bob Marshall Wilderness has shown that public involvement can encourage dialogue and mutual learning and enhance the decision making over a more traditional planning approach (Ashor and Other, 1986:13).

The LAC encouragement for public involvement provides a focus for constructive input by interested and involved groups and individuals. After all, it is the public who can help managers to identify indicators, set standards and decide on management actions.

3.4 Implications and Problems of ROS/LAC Framework

The ROS/LAC framework can be used as an effective conceptual tool to identify:

- the carrying capacity of an area,

- relevant issues, concerns and other management planning needs,

- specification of management goals, objectives and prescriptions and

- recreation planning strategy.
The ROS/LAC framework provides a broad base for formulation of management goals and objectives. Each class is defined with specific management goals and objectives so that the continuity of spectrum can be maintained. The management goals and objectives may range from high preservation and high use to low preservation and low use or combination of both. The identification of management goals and objectives for each class will contribute to the formulation of policies which are appropriate for each class.

The opportunity classification is not static. The framework provides for management response to change and an alternative management prescription may contribute to develop a new opportunity.

The ROS/LAC can be used as a basis for preparing a regional recreation strategy. It can provide a spectrum of opportunity classes with sets of standards to guide the management process (Devlin and O'Connor, 1989). This recreation strategy will enable managers to meet recreation demands.

The ROS/LAC framework has some problems. Developing the opportunity class is not an easy task. The relationships between the physical, social and managerial settings are often complex and not well defined. One of the major problems with the defining opportunity class is that sometimes the physical, social and managerial settings are not the same on the same piece of ground. This brings 'setting inconsistencies'.

A problem also exists in setting indicators. For example, a five-year study of the St. James Walkway using indicators such as impacts on vegetation and site did not prove fruitful. Other physical factors such as storms, outweighed the human impacts on vegetation and site (Simmons, 1985).
4.0 Annapurna Conservation Area - A Recreation Resource of International Importance

The pressure exerted by mountain land recreationists is a growing concern in the Himalayas. To cope with this mounting pressure popular trekking and mountainneering areas such as Khumbu valley (Sagarmatha National Park) and Langtang valley (Langtang National Park) were given protection status. However, the protection for the most popular recreational area, the Annapurna area, came only in 1986.

The recreational potential and likely pressure on the Annapurna area has been recognised since the late 1970s. In spring 1985, His Majesty King Birendra issued directives for harmonious development of tourism and conservation in the area. These directives led to an eight month feasibility study by the King Mahendra Trust for Nature Conservation. Finally, in September 1986, the establishment of the Annapurna Conservation Area Project (ACAP) was announced by the Government of Nepal. The establishment of the ACAP has fulfilled the dream of Karna Shakya, a leading Nepalese conservationist, who, inspired by the Tourism Master Plan in 1972, was first to draw attention to the need to create a "Rastriya Manoranjan Sthal" (National Recreation Area). This project follows guidelines developed under the joint auspices of the King Mahendra Trust for Nature Conservation and the World Wildlife Fund, stressing a multi-dimensional strategy and maximum local participation.

The Annapurna Area is located in the middle of the Himalayan chain in western Nepal. It is nationally and internationally renowned for its spectacular mountains, the breathtaking valleys, marked contrast in landscapes and great biological and geographical diversity. Within an area of 2600 sq. kms., the area rises from foothills with sub-tropical farmland and temperate rainforest to steppe plateau and arctic windscape, exhibiting an ecological diversity with varied flora and fauna.

The Annapurna Area is bounded to the north by the dry alpine desert of Dolpo and Mustang, to the west by the Dhaulagiri Himal and to the South by valleys and foothills surrounding Pokhara. Besides the two mountain giants, Annapurna 1 (8091 m.) and Dhaulagiri (8167 m.), the area features the world’s deepest valley, the Kali Gandaki. The Kali Gandaki valley is said to have been formed when the Indian subcontinent collided with and plunged under the Eurasia plate, uplifting the ancient Tethys sea some 60 millions years ago. The fossilized sea ammonites, regarded as sacred stones by many Hindu, lying in the Kali Gandaki’s river beds are the proof of this extraordinary geological history (see map 1).
Map 1: Annapurna Conservation Area: Area and Location

Area, 3,200 sq.km: Population, 40,000 Recreationists/year, 32,000 (1987)

Key:

17. Prithivi Highway
The Annapurna area has been described as a "melting pot" of people, languages, races and religions. The area is inhabited by 40,000 people in approximately 300 villages. This cultural diversity has contributed to the popularity of the Annapurna Area which draws visitors of all nationalities, West Germany, American and British being the most dominant. The growing influx of mountain land recreationist from all over the world has made the Annapurna Area a recreational resource of international importance. In 1986 25,000 international recreationists visited the area, nearly five times that of the next popular destination, the Sagarmatha National Park. The average growth rate of seventeen per cent is the largest of all Nepal's recreation areas.

The southern part of the Annapurna runs parallel to the Prithivi Highway that links Kathmandu, the capital, and Pokhara. This has given two gate-ways to the Annapurna area, from Dumre, 135 kms. west of Kathmandu, and from Pokhara. There is also a new road currently under development which will eventually link Pokhara and Baglung. This will parallel current trekking routes, along the south-west boundary. The completion of this road will add a south-west gateway to the Annapurna Area.

In summary the popularity of the Annapurna Area for recreational purposes can in be attributed to,

1. The proximity to two cities, Kathmandu and Pokhara. Both cities are popular tourist resorts.

11. Accessibility by road and public transport. Dumre and Pokhara which are linked by the Prithivi Highway serve as the gate-ways to Annapurna Conservation Area.

111. The Annapurna Area is also close to other areas that provide recreation opportunities. The Trishuli river to the east is popular for white-water rafting; the Chitwan National Park to the south-east can be reached by road which provides opportunities for wildlife safaris. These features have contributed to use of the Annapurna Area for those with a combination itinerary, for example, trekking in the Annapurna and visiting the Chitwan National Park, and white water rafting.

IV. The Area provides access to high altitudes within a short trek. No other areas offer the diversity of Annapurna within a similar distance.

V. The Area is reasonably well provided with good accommodation, tea houses and tracks.
These factors combine to provide a wide range of recreational opportunities which appeal to a diverse group of mountain land recreationists.

4.1 Resource Analysis

The Annapurna Area can be divided into three recreational zones, each with distinctive features. They are:

- Marsyangdi Valley,

- Kali Gandaki Valley and

- Central Annapurna (see map 11).
Map 2: Recreational Zones

Scale, 1:5,000,000

Key:

A. Marsyangdi Valley  B. Kali Gandaki Valley  C. Central Annapurna1.


---- Trekking route
4.1.1 Marsyangdi Valley

Marsyangdi Valley can be reached by public transportation from Dumre, a little township 135 kms. west of Kathmandu. It is another two to three days walk, through sub-tropical conditions and much modified landscapes, from Dumre, before entry at the eastern boundary of Annapurna Conservation Area (ACA). During the summer, temporary transport services are available from Dumre which will take visitors to Bhoite-Odar or Beshi-Shahar. If the service is available, this will save two days for an Annapurna Circuit trip. Once the ACA is reached, the main trekking route follows the Marshyangdi river. As one moves up the valley, the difference in altitude combined with

Plate 2: The door to the Marsyangdi valley has been opened for the last 12 years. The natural attributes of the valley are still intact. But how long can this be retained under the pressure created by humans' needs and wants. Unless some measures are taken now to ensure the natural character is preserved, this beautiful valley of flowers will remain no longer.
decreasing rainfall results in changing climate and vegetation, both vertically and horizontally. The Marsyangdi Valley ends at Manang Village. From Manang Village, the main trekking route winds towards Thorang Phedi (Thorong base-camp). The climb of 5415 metres (Thorong La pass) will take trekkers over to the Kali Gandaki Valley.

Entry to the Marsyangdi Valley has been possible only in the last twelve years. The opening of this valley has made the Annapurna circuit possible. It has also made the recreational opportunities much more exciting and variable, because trekkers do not have to walk back on the same track.

The lower part of the Marsyangdi is inhabited by people of Aryan stock with predominantly Brahman, Chhetri and Newar. Further up the valley, Gurung and Manange, both of Mongolian stocks, dominate the valley. The people of Marsyangdi Valley are Hindu and Buddhist. The Marsyangdi Valley is gateway to Annapurna I, Annapurna III, Annapurna IV, Gangapurna and many other mountains.
4.1.2 Kali Gandaki Valley

Kali Gandaki Valley is the deepest valley in the world, which at its maximum towers 4.8 kms vertically and 2.4 kms wide. It can be reached from two points, from Pokhara and Baglung (once the new road is completed). The Kali Gandaki Valley can be reached after 2-3 days walk from Pokhara or a 1 day walk from Baglung. This valley has been opened to overseas visitors since the 1950s, and because of its long association with tourism, offers more professional

Plate 3: The Kali Gandaki Valley has been in the tourism business longer than the Marsyangdi Valley and offer developed services to cater for a growing number of mountain land recreationists. The question now is how much tourist related development is acceptable before the social and resource quality deteriorates?
hospitality than the Marsyangdi valley. The valley within a stretch of 40-50 kms, is marked by distinctive and changing climatic and vegetation patterns, from sub-tropical climate and dense bamboo and blue pine forests to dry arid windswept Tibetan Plateau.

The Kali Gandaki Valley is dominated by Thakali tribes of two sub-groups, the Panch Gaule (five village) and the Saat Saya Gaule (seven hundred village). There are also many other tribes, such as the Barha Gaule (twelve villages) which predominantly inhabit the upper valley. The lower valley is inhabited by Magar and Gurung. They are all of Mongolian origin. The religions of Thak Khola (another name for Kali Gandaki) is predominantly Buddhist, with Hindu and Sermons found on the lower part of the valley. The Kali Gandaki Valley gives access to Mt. Dhulagiri, Nilgiri, Annapurna 1 and to many other mountains.
4.1.3 Central Annapurna

The central Annapurna is the most heavily used area for trekking. This southern part of the Annapurna Area receives much rainfall which allows rapid regeneration of vegetation. Indeed, the central Annapurna is dominated by dense rhododendron and bamboo forests. The access to this part of Annapurna is from Pokhara township.

The central Annapurna is inhabited by Gurung and Magar, and both of these tribes have made their fortunes in British Gurkha Regiments. They are predominantly Hindu, although Buddhism and Tantrism are equally accepted and practiced.

Plate 4: The mountains are still there.... where are the forests?
The central Annapurna leads to the Annapurna base camp or Sanctuary. This Annapurna base camp is becoming one of the most popular and most used destinations among the mountain recreation.

This part of the Annapurna is developing and changing fast to cope with the growing number of overseas recreationists.

All three recreational zones show distinctive characteristics in their physical and cultural settings. Most of the villages along the Marsyangdi are either on the hills or on the river terraces, with rolling hillsides and terraced fields. Along the Kali Gandaki Valley, villages are nestled at the bottom of the valleys on old river terraces, and the fields are separated from the villages. In the central Annapurna, the villages are up on the steep terraced hillsides. All three recreational zones exhibit distinctive architectural styles. The Marsyangdi is dominated by thatched houses painted with red, often round or long in shape. The upper Marsyangdi Valley has houses built of stone and wood and flat roofs. Because of the winds, the houses in the upper Kali Gandaki are designed with no windows on the outside walls. These flat roofed houses with a central courtyard for catching the sun are painted with white lime. The houses in the central Annapurna are made from stones, and the stone roofed long houses painted with red and white are a hallmark of Gurungs’ and Magars’ architecture.

All these characteristics contribute a unique and interesting features to be experienced along the trekking and mountaineering routes. Needless to say, it is this uniqueness which provides “dependent satisfaction” (that is, in the absence of this feature, the satisfaction of the user will be significantly less) found nowhere else, and will be a draw-card to many more visitors in years to come.

4.2 Existing Recreational Opportunities.

4.2.1 Trekking Opportunities

Trekking is the most popular recreational opportunity in the Annapurna area. The trekkers and trekking opportunities can be divided into two broad types. First, are the independent trekkers whose numbers are growing each year. These are people who organise their own trek, buying food from the locals and sleeping in the locally provided lodges. Most often they do not use porters. The second group are the organised group trekkers, who come through a trekking company and are supplied with food and sleeping tents by the company. They use porters and other field staff and are catered for throughout the trek by the company.
The duration of the trek obviously depends on what trek destination the group has chosen. In general, those trekking can be classified into four broad groups, depending on the duration of trips:

1. Long Trek: The long trek usually lasts for three to four weeks or more. The long trek usually involves trekking around the Annapurna circuit, starting from Dumre and finishing in Pokhara.

11. Medium Trek: The medium trek lasts for two to three weeks. This trek usually involves a combined itinerary, trekking in Annapurna and visits to Chitwan National Park or white water rafting in Trishuli.

111. Moderate Trek: The moderate trek lasts for one to two weeks. This may involve one way trips to either the Kali Gandaki Valley or Marsyangdi valley. They may either fly to Jom-Som (Kali Gandaki Valley) or to Humde (Marsyangdi Valley) and then trek out.

IV. Short Trek: The short trek lasts for less than a week. This involves a short trek to the Annapurna area from Pokhara.

4.2.2 Mountaineering Opportunities

The Annapurna Area offers a wide range of mountaineering and climbing opportunities, from an easy day climb to physically and mentally demanding expeditions. The area is comprised of two eight thousand metre giants, Dhulagiri and Annapurna 1, several seven thousand metre peaks, and many peaks between six to seven thousands metres.

Mountaineering in Nepal has been classified into two categories; Expedition Peaks (above 7000 m.) and Trekking Peaks (below 7000 m.). On this basis the mountaineering and climbing groups are generally of two types:

1. Expedition Peaks: Expedition peaks are used by expedition groups who come with years of preparation and usually represent a nation. They are strictly motivated to climb the highest peaks. These groups tend to have very little interest for activities other than mountaineering. They are large in group size, with many group members, expedition staff and porters. They bring their own food and are well equipped. However, their staff and themselves rely heavily on local forests for firewood for cooking and warmth.
11. Trekking Peaks: Trekkers peaks are used by adventurous trekkers who primarily come through trekking companies. They may represent many nationalities. They have very little input to the organisation of the expedition, and rely on trekking companies for all the field staff and gear.

Beside these two user groups, many other trekkers use the varied terrain and lesser peaks which can offer considerable challenges and demand high levels of skill. These mountaineers are skilful and self-reliant. They are often small parties of three or four, and spend relatively short periods trying a couple of small peaks on their way to other destinations.

The Annapurna area also has a mountaineering school situated in the Manang Valley. It was established by the Nepal Mountaineering Association and offers courses for interested mountaineers and trekking guides during the autumn. It also offers advice and medical assistance to trekkers on mountain sickness.
4.3 Potential Recreational Opportunities.

4.3.1 White Water Rafting
The neighbouring Trishuli river of the Annapurna area has gained popularity since 1968 for white water rafting opportunities. The various rivers flowing in the Annapurna area may provide different grades and challenge for rafting. Rafting has its own classification for skill level and danger. This recreation activity can have its own spectrum of opportunities, as well as fitting in to the broader spectrum of ROS. However, this recreation potential should be carefully examined with all possible environmental and social consequences and conservation objectives.

4.3.2 Hunting Opportunities
Hunting is not new to the Annapurna area. Even before the arrival of overseas recreationists, hunting was the communal game among Gurung of the southern Annapurna. These days, due to the depletion of wildlife and animal protection measures initiated by the government, hunting has been made illegal. Nevertheless, once animal numbers recover, licensing for hunting opportunities may become viable on a sustainable basis.

4.4 Other Opportunities
The Annapurna Area has been used by a wide range of mountain land recreationists for many activities. Recently, mountain bikes have been introduced to the area. The deep valleys of the Annapurna also give excellent soaring opportunities, and hang-gliding is becoming a popular activity. The streams and rivers of the Annapurna Area could possibly provide fishing opportunities. However, at this stage these activities do not have high priority as the majority of mountain recreationists who come to Nepal do so to trek and mountain climb. The Annapurna experience is enhanced by spectacular scenery, and the rich cultural and religious heritage which can be experienced through walking along the tracks, passing different villages and meeting different people. These are the underlying opportunities that draw more people each year to this land.
5.0 An Integrated Planning Framework: Application of ROS and LAC to the Annapurna Area

The following is an attempt to place the planning and management of the Annapurna Conservation Area into the context of the ROS/LAC framework. It is largely hypothetical because of my limited access to the data required to fully elucidate the planning scheme. However, my discussion suggests that the planning scheme is relevant to the management of the area.

5.1 Designing An Opportunity Spectrum

Before discussing the application of ROS and LAC to the Annapurna Conservation area, I will outline the specific steps in the design of an opportunity spectrum.

Within each recreational zone, a range of Recreation Opportunity Spectrum (ROS) classes can be identified. The identification of the ROS classes can be made by analysing the physical, social, cultural and managerial settings within each recreational zone. The characteristics of each of these four types of settings will affect the kind of experience recreationists will realise from using any class. The following criteria are used to delineate each setting type:

Physical Settings:

- Level of remoteness from the sight and sound of humans.

- Level of urban influence and commercialism.

- Level of landscape modification and resource use

- Accessibility.

- Size.

- Altitude.
Social Settings:

- Use density.
- Level of user interaction.
- Level of user and non-user interaction.

Cultural Setting

- Size and number of villages
- History of settlement

Managerial Settings:

- Level of development and standard of facilities, that is, lodges and hotels.
- Level of existing rules and regulation in terms of recreation provision.

On the basis of these criteria five opportunity classes can be identified within the Annapurna Area. They are:

- Wilderness Class
- Primitive Class
- Semi-primitive Class
- Natural Class
- Rural Class (see Map 3 and Table 1).
### Table 1: Criteria for Designing an Opportunity Class for the ACAP

<table>
<thead>
<tr>
<th>Physical Settings</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<td>moderately</td>
<td>Highly modified</td>
<td>Very modified</td>
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<td>moderately difficult</td>
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<td>Interaction</td>
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<td>moderate</td>
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<td>very high</td>
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<td>low</td>
<td>moderate</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

Key,

A. Wilderness Class    B. Primitive Class    C. Semi-primitive Class    D. Natural Class    E. Rural Class    Rest., Rest.
Key:

A. Wilderness Class  B. Primitive Class  C. Semi-primitive Class  
D. Natural Class  E. Rural Class

5.1.1 Wilderness

The Wilderness class is characterised by unspoiled and unmodified natural environment of large area. Use of this class can be reached and used only through special permission from the government. This class demands a high level of physical fitness, stamina and skill. The recreationists in this class may experience isolation from human sight and sounds, adventure, independence, closeness to nature and self-reliance. This class offers a high degree of challenge and risk. This class includes the Annapurna massif, the core area of ACAP.

Plate 5: Thorang LA - unmodified and tranquil, and a place of high risk and challenge, provides the wilderness experience. However, because of moderate use levels this section does not belong to the wilderness class. The experience to be gained here belongs to the primitive class which provides low interaction among the users.
5.1.2 Primitive
The primitive class is characterised by essentially unmodified natural environment. This class may offer low interaction between the users. However, this class too offers an experience of isolation from the sight and sound of humans. The users in this class will experience closeness to nature, tranquility, self-reliance, challenge and some risk. This class also demands physical fitness and some skills. Included in this class are the upper Manang valley, the Thorang La (pass) and the Annapurna Base-camp.

5.1.3 Semi-Primitive
The semi-primitive is characterised by predominantly natural, or natural appealing environment. This class will have moderate standard of lodges and other facilities. The users of this class may experience some isolation from the sight and sound of humans, closeness to nature, tranquility and self-reliance. The users will also have cultural experiences. This class includes Chame to Manang, Muktinath to Jomsom, and Gorepani to Chhomrong.

5.1.4. Natural
The natural class is characterised by natural appearing environments with moderate evidence of sight and sound of human. In this class resource utilization and modification are evident, but are seen as harmonious with the natural environment. This class may offer low to moderate interaction between users, as well as providing good facilities.

The users of the natural class will experience some affiliation with other use groups. The cultural experience becomes quite significant. This class includes the area between the Jomsom village to Tatopani and from Gorepani to Birethanti.
Plate 6: Development and landscape characteristics should blend well in the natural class.

5.1.5 Rural

The rural class is characterised by substantially modified natural environments. The sight and sounds of human are readily evident. This class is provided with seasonal jeep roads or transport services linking to the main highway, shows urban influence and is cosmopolitan. The experience with individuals and groups is prevalent, as is the convenience of sites and opportunities in this class. This class includes Dumre to Beshi-shahar and Pokhara to Birethanti. However, these areas are not included in the Annapurna Conservation Area. Nevertheless, as these areas serve as gateways to the ACA, the rural opportunity class is part of the Annapurna experience.
5.2 Setting Indicators

Once the opportunity classes for the Annapuma Area have been developed, the next step will be to describe desired conditions for each class. The desired conditions can be assessed with appropriate indicators that, singly or in combination, can be taken as indicative of the condition of the overall opportunity class.

The indicators for each class are chosen in accordance to its specific attributes, and should be quantifiable.

Plate 7: The hillsides devoid of vegetation, prone to erosion and landslides are indicators of excessive pressures on the land.
For each setting of an opportunity class, one or more indicators can be chosen to define desired conditions and to assess the effectiveness of various management practices. Two factors, the social and physical, are considered. They are referred to as resource and social indicators. The resource factor refers to biophysical impacts in a particular opportunity class. The social factor, on the other hand, refers to the visitors' perceptions of a particular class, and the degree of interaction and encounter between individuals and parties. For example, for the designated Wilderness Class, the resource factor refers to biophysical conditions which are reflected by the level of impact on the vegetation cover, wildlife, state of forest and range land, and the size of the area. The social factor for the Wilderness class refers to the level of contact between individuals or between groups.

The Wilderness experience involves a solitary experience in unspoiled natural environment of a vast land. The indications of an increase level of use, degraded vegetation and landscape, depletion of wildlife and high rate of encounters will definitely not be acceptable for this class.

Similarly, the experience of the Natural Class will diminish, if the development projects are contrary to the natural characteristics, that is, if there is significant urban influence and heavy use of imported materials and design. The level of development in contrast to landscape characters, and site hardening can be used as resource indicators for this class, whereas, the level of western influences (music, food and clothing), and the social changes (values, beliefs and demographic changes) can be used as the social indicators.

These are some of the indicators considered for the Annapurna Area:

<table>
<thead>
<tr>
<th>Resource Conditions</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>- State of forest</td>
<td>Level of use and impacts</td>
</tr>
<tr>
<td>- State of wildlife</td>
<td>Habitat and species diversity</td>
</tr>
<tr>
<td>- State of track</td>
<td>Use and standard of track</td>
</tr>
<tr>
<td>- Vegetation cover</td>
<td>Level of use and impacts</td>
</tr>
<tr>
<td>- State of range condition</td>
<td>Degree of forage use</td>
</tr>
</tbody>
</table>
Social/Cultural Conditions

- Solitude
  Number of encounters with individuals
  Other parties

- Cultural experience
  Degree of cultural influence on the landscape
  Size and frequency of settlement (villages)

- Challenge and risk
  Degree of development and provision for recreation provision

(see Table 2)
### Table 2: Standards for Resource and Social Indicators for each Opportunity Class in the ACAP.

<table>
<thead>
<tr>
<th></th>
<th>Resource Conditions</th>
<th></th>
<th>Social Conditions</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest</td>
<td>unspoiled</td>
<td>unspoiled</td>
<td>moderately</td>
<td>moderately</td>
<td>highly</td>
<td>utilized</td>
<td>utilized</td>
<td></td>
</tr>
<tr>
<td>Wildlife</td>
<td>natural</td>
<td>Natural</td>
<td>moderately</td>
<td>moderately</td>
<td>highly</td>
<td>disturbed</td>
<td>disturbed</td>
<td></td>
</tr>
<tr>
<td>Track</td>
<td>undeveloped</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation</td>
<td>undisurbed</td>
<td>undisturbed</td>
<td>moderately</td>
<td>moderately</td>
<td>highly</td>
<td>disturbed</td>
<td>disturbed</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solitude</th>
<th>Social Conditions</th>
<th></th>
<th>Cultural experience</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>very high</td>
<td>high</td>
<td>moderate</td>
<td>nil</td>
<td>nil</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>nil</td>
<td>low</td>
<td>moderate</td>
<td>high</td>
<td>very high</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>very high</td>
<td>high</td>
<td>high</td>
<td>low</td>
<td>nil</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key:**

A. Wilderness Class  B. Primitive Class  C. Semi-primitive Class  D. Natural Class  E. Rural Class
5.3 An Analysis of existing conditions for Acceptable Level of Change

An inventory of existing conditions, guided by the indicators identified above is a key step to set standards for a class. Given the size and the complexity of the Annapurna Area, a complete inventory of the existing conditions will be expensive and time consuming. The use of available information, rather than spending time collecting new information, therefore will be more appropriate for the time being. The new information can be incorporated as it becomes available.

We already know that the Annapurna area is the most popular mountain recreational zone in the country and the trend is for steady growth. Present managers think that the Annapurna area is being overused. However, given the size and the diversity of the area, it may have capacity to sustain the growth in numbers of recreational users, if there is stringent implementation of resource and visitors/residents management.

The available information can be used as the base for an inventory to provide a measure of the indicators' existing condition throughout the area. Consequences of the various alternatives being evaluated can then be understood. An inventory also provides a data base to analyse spatial pattern and use level from which standards for each indicator in each class can be determined. For example, the Annapurna base-camp hosts 30-40 trekkers per day during the season. Given the primitive classifications of this site and the requirement for solitude and an unspoiled resource setting, 30-40 trekkers per day may exceed carrying capacity of the base camp. This needs to be examined with reference to the spatial pattern of the Annapurna base-camp area and the perceptions of users. For this class, setting standards may require particular attention to visitor numbers and social and resource impact level. Standards can then be used to define the "Limit of Acceptable Change", that is, maximum permissible impacts which will be allowed in this specific opportunity class. The given standard for a specific class plays a critical role in determining requirement for its restoration and enhancement. In the example above, to retain the primitive class of the base-camp, standards may be required to limit access with use of permits.

There are a range of standards in each opportunity class. The alternative sets of each class are subject to public reviews. The alternatives for each class may range from banning the area from total use, with emphasis on the return to pristine condition, to provision of more recreation facilities in order to increase
the carrying capacity of a particular class or alteration of designated class. The alternatives for each class are determined in accordance with issues and concerns, and existing resources and social conditions. The alternatives are outlined to meet varying interests, concerns and values within the level of the acceptability and unacceptability. Considering the issues and concerns faced by the Annapurna Area to accommodate needs and wants of both locals and recreationists, it is time to decide what kinds of recreation opportunities the area can possibly offer within the limit of acceptable change. Such a decision can be made with an integrated planning approach with other regions.

5.4 Management Actions

In developing preferred alternatives, resource managers, as well as the involved public, should know what management action will be required to achieve desired conditions. The resource manager and the public should understand the differences between alternative packages of opportunity classes. They should be able to identify:

- differences that exist between current conditions and standards, and
- the problems that may require a specific management action.

Management actions are required where standards are being violated or where desired conditions are deteriorating. Managers need to determine the priority of the problem as well as its cause before determining the most appropriate actions. The decision of appropriate management actions should be based on a cost/benefit analysis. Cost/benefit analysis should emphasise both the explicit and implicit costs and benefits. For example, limiting or partial banning of mountain land recreationists to the Annapurna area, sounds an attractive alternative in the light of existing pressure on the resources. The implementation of this decision means certain areas which are currently enjoying the prosperity brought by growth of numbers in mountain land recreationists, will have to cope with the economic disadvantage. The consequences of this may result in a series of unexpected social problems such as population drift and unemployment. On the other hand, such action may minimize impacts on the environment and resolve the conflicts between various user types. As a result, this may lead to quality recreation experiences. Alternatively, well thought out management actions such as site development, enforcement of minimum impact behavioural codes and restriction of party size in the sensitive area can enhance the carrying capacity by being compatible with desired environmental and recreational conditions. Limiting access will not therefore be necessary.
There are a range of management actions that can be considered for the Annapurna Conservation Area to improve existing conditions. These management actions are:

- Executing of formal and non-formal education programmes and dissemination of information: Education programmes need to be directed to both the local residents and mountain recreationists. The programmes should emphasise conservation values and should aim for general awareness of recreational needs and wants. It is crucial that both mountain land users, the recreationists and non-recreationists (local residents) understand the value of each other.

Plate: 8. Chautaras are common at the lower part of the Annapurna Area. This traditional resting place provides shade from sub-tropical heat and also an opportunity for many mountain land recreationists to intermix with locals. The preservation of such a traditional flavour should be included in the conservation strategy.
Information should be provided about the area and the available opportunity types. This may require the production of brochures, booklets or use of visual aids and the media. Education and Information is a two way process. The resource managers can learn as much from the users as they can learn from the managers.

- Setting minimum impact codes of behaviour for the whole area and a special code for sensitive areas: Special attention should be given to develop a minimum impact code of behaviour. It is the way people behave that cause the most impacts. Users should know about this expected behaviour within the area before the commencement of their recreational pursuit.

- Restricting activities to designated areas: Provision for activities should be examined in the light of available information. Any activity that shows incompatibility with designated areas should be restricted.

- Increasing enforcement of regulations: The regulations developed to maintain or enhance a particular condition need to be strictly enforced before the condition deteriorates.

These management actions relate to the intensity of issues and concerns particular to opportunity classes and are chosen to meet desired standards for each opportunity class.

- Restriction and regulation of party size or number of user: This is subject to the impact level of a particular class. User-pays and pre-booking arrangements can be used as the means of restriction and regulation.

- Stringently regulating of land use: Once the opportunity class is designed and approved, the locals should abide by the agreed policies.

- Controlling and reviewing development projects: Every development project needs to have its environmental impacts assessed. The area managers should set the requirements for the development projects.

- Restoring and enhancing sites: This includes the reforestation programmes which involves landscape rehabilitation, site management and fencing or restricting use.
- Overseeing building and other local developments: Managers need to give special attention to building design and other local developments such as lodges and restaurants. Emphasis should be given to retaining the architectural character of the area.

5.5 Monitoring Plan

Once the preferred management alternatives programmes are selected and implemented, periodic monitoring of performance is required. The monitoring system will provide systematic feedback on how well management actions are working and identify actions to maintain the standard set for each class. It will be important to establish how frequently monitoring should occur. A number of factors need to be taken to account for this. It may depend on the availability of resources, both financial and human; the level of impacts in the area; the quality of the data base; and degree of unexpected changes in factors such as access and adjacent land uses. Generally, priority for monitoring will be given to:

- areas that are close to standard at the time of assessment; or

- areas where social and resource changes are most apparent; or

- areas where there is high use with possible threat to the designated opportunity class.

Some conditions are monitored easily such as recording visitor numbers and new developments. Some conditions such as changes in vegetation patterns and environmental impacts are difficult to monitor and take a long time. Therefore the monitoring will be accomplished using a two stage process; long term monitoring and annual monitoring. The long term monitoring may have a 5-10 years time-frame. Those factors such included in monitoring may include:

- reviewing inventories of human impact sites,

- environmental impact assessment, and

- collection of extensive social data.
The annual monitoring will include keeping records of: visitor numbers, overall use and patterns of activities, heavily impacted sites, closed sites, etc.

### 5.6 Public Involvement

The strength of an integrated ROS and LAC planning framework lies in the provision for public involvement at various stages of the planning process. The emphasis on public participation is based on the premise that the people affected by the management decisions must be part of the decision-making process so that the public will feel involved in decisions. In the LAC framework, the managers or planners act as facilitators. They promote dialogue, and mutual learning among participants in the problem-solving process. This public participation process encourages decisions upon which all participants are prepared to agree.

Public involvement in the LAC planning process is managed through the formation of a task force representing all the groups affected by the plan. It involves resource managers, experts (technicians/scientists) and public representatives. The public representatives may include members of interest groups or parties which may likely be effected by planning decisions.

In the context of the existing political and socio-economic condition in the Annapurna Conservation Area, the existing framework for village management can be incorporated in the task force. The Annapurna Area comprises numbers of "Panchayats" (village councils). Each Panchayat has well defined boundaries and a "Panchayat Committee" to look after the welfare of villagers. A "Panchayat Committee" is headed by a mayor with 12 executive members and 45 general members (ward representatives). The incorporation of all village panchayat in the task force may not be practical given the number of members. Therefore, one or two representatives from each village panchayat (depending on the size of village) will be most appropriate.

Besides the representative from each village panchayat within the Annapurna Conservation Area, the task force should also include representatives from various other organizations that have an interest in the area. The task force could also include experts (technicians and scientists) as required.

The task force will promote public involvement through meetings, discussion and hearings. These forms of public involvement are important in all four components of the planning process.
Indicators to monitoring. In fact, it is up to the public to provide indicators and direction for desired conditions for the concerned area.

The publicised plan produced as a result of the planning process will act as a contract between managers and public regarding the way resource should be managed to meet the demands of both the local residents and the mountain land recreationists. The plan will provide the base for ongoing public involvement, together with resource managers and interested organisations for monitoring and review. The plan will be flexible and any new information can be included to meet the desired condition of the resource on the basis of mutual understanding.

This new approach to decision making based on the publics' and managers' inputs in resource management has made this framework a very flexible, issue driven and goal oriented planning tool. This has provided focus for constructive input to identify indicators, standards and management actions.
6.0 Implications and Problems of ROS/LAC for the Annapurna Conservation Area

The integrated framework enables managers to better understand the recreational carrying capacity of an area. The indicators set for each class determine the maximum number of people who can obtain given kinds of recreational experience at an established standard within the constraints of resource and social conditions. For example, the core area of the Annapurna Area, which is designated as the wilderness class is huge and contains varied terrain which reduces the interaction among the users. However, for the wilderness experience use, densities must be kept low, considering the fragile natural of the environment and the need for recreationists to experience isolation, adventure, challenge and risk. Therefore, the carrying capacity for this class is perceived as very low. On the other hand, the rural class, adjoining the Annapurna area will have a higher carrying capacity, where socialization and much more modified landscapes prevail.

The framework also provides a broad base to analyse prevailing issues and concerns regarding resource utilization and recreational experiences in the Annapurna Area. The issues and concerns focus on the conflict between the various recreational users and non-users, crowding perception and the consequent diminishing of the quality experience. Each issue and concern can be best dealt within the framework of each opportunity class for appropriate management action. In the natural class where the development projects have adverse impacts on the landscape, managers may need to manage site and landscape rehabilitation to maintain desired conditions. In the primitive and semi-primitive class, the increasing number of visitors and their movements need to be channeled and dispersed so that conflicts can be minimised. User behaviour may have to be regulated using zoning by rotating use, limiting party size or establishing reservations. It is generally thought that crowding diminishes recreational satisfaction. However, studies in recreation settings, both in the field and in laboratory situation, provide little or no support for the view that high user density invariably negatively affects satisfaction or other measures of social well being (Heberlein, 1981:29). The spectrum of opportunity gives recreationists the choice of what they want to enable maximisation of satisfaction.

The integrated framework also provides a broad base for formulation of management goals and objectives or management prescriptions. Each set of identified classes is defined with specific management goals and objectives so that the continuity of the spectrum can be maintained. For example, the management objectives and prescription for the wilderness class of the Annapurna area will have high preservation and low use. The management objectives and prescription for the natural class,
similarly have moderate use and high preservation. In the rural class, in terms of providing recreational provisions the management objective and goal may become of low preservation and low use. This class serves as the buffer for the opportunity classes that have high management profile. The identification of management goals and objectives for each class will contribute to formulation of policies appropriate for each class.

Plate 9: If the state of forest degenerates further, the natural experience of the Kali Gandaki valley will be lost. For the desired conditions, management actions in this case need to focus on afforestation programme, rotating use and landscape rehabilitation schemes.
The opportunity classification is dynamic. The "opportunity shift" occurs along the continuum. If it is a desired change, the management response to the change and ultimate alternative management prescription may contribute to developing a new opportunity. For example, if the motorised road is built to connect Manang Valley with Dumre, the semi-primitive characteristic of the Manang valley will be lost, as will be the psychological outcomes and hence, the satisfaction. Change of this magnitude is usually a political process and should be based on public consensus. Other scales of change, the micro-shift and cyclic-shift are quite common. The incremental development response of management to these changes will lead to progressive changes in opportunities. These types of changes include development of new facilities, and regulation of users from peak period to off-peak period.

The framework provides the base to examine the value of the Annapurna Area or a base for resource inventory as the supply of recreation resources in relation to other regions or areas. The inventory is an important process to allocate diverse recreational opportunities across the regions. This may help to identify the uniqueness of the regions and justify the allocation of the opportunity classes. This also help to avoid the repetition of the same opportunity class across the country. The opportunity classes identified for the Annapurna Area should complement other classes identified elsewhere, not compete for more recreationists. Such an approach can keep the demands of recreational opportunity under scrutiny.

There will be problems in developing the opportunity classification. As mentioned earlier in the literature review, the relationships between the physical, social and managerial settings are often complex and not well defined, leading to 'setting inconsistencies'. The 'setting inconsistency' is quite apparent in some of the areas defined in this study. For example, the Annapurna Base Camp provides the primitive opportunity class, where the natural features of high mountain ranges and harsh physical conditions prevail. But this area is noted for its' high use density. During the trekking season, 30-40 trekkers a day have been noted. Another example of 'setting inconsistency is found in Gorepani area.

Gorepani area the most used and the changes in the social and environmental conditions are rapidly taking place. Despite measures to protect the lush rhododendron forest of Gorepani, it is disappearing fast with the pressure exerted by the mountain land recreationists. But with all these changes and high use, the view from every hill top and the walk through the remaining dense forest, contribute to the
semi-primitive experience. Similarly, the area between Jom-Som to Tatopani is in the ROS natural class.

Plate: 10 "Setting inconsistency" in defining an opportunity class is apparent in the Annapurna Conservation Area. The physical settings of this village are indicative of the semi-primitive opportunity class. However, the disappearing forests and over terraced hill slopes are not consistent with attributes for this class.

regardless of being away from the motorised roads and being remote. The reason for this is that the awesome experience and isolation of the Kali Gandaki valley is somewhat distorted by the level of development and modern amenities such as electricity, video and occasional sounds of small aircraft.

Considering the size of the Area and that there are 40,000 inhabitants in it a problem exists for setting a good mechanism of public involvement or forming a task force. The integration of an existing system to form a task force is a positive step to solving this problem. However, the approach may not be effective because the recreation and conservation issues and concerns may be overshadowed by localised needs
for development. There is a need to examine the relevance of issues and concerns at local and regional level and have a mechanism to set public involvement in accordance to it. This means the task force and the mechanism of public involvement should be determined in a way that has an appropriate account for representation from the villages and districts.
6.1 Area for Further Investigations

1. **A comprehensive resource inventory**

There should be a comprehensive resource inventory to provide base-line data for planning and administration in the ACA. The resource inventory should include all the relevant information on resources (forests, agricultural lands, the grazing range, wildlife, and recreational provision and facilities) people (how many, what races, resource use patterns etc), within and associated with Annapurna Conservation area. This inventory should have a complete record of villages, their size, populations and boundaries. It should also include information of all the development projects.

2. **A development of a public involvement mechanism**

Given the size of the area and the 40,000 inhabitants, an investigation of an effective mechanism for public involvement and the formation of a task force is required.

3. **A user profiles**

A comprehensive recreational user profile should include information on user movements (mapping of movements), use density, duration and frequency, and their needs and wants. A recreation survey can be used to get most of the quantitative data.

4. **An inventory of potential recreational opportunities and possible impacts**

This should focus on the world trends in nature oriented recreation and its meaning for Nepal and the Annapurna Conservation Area. The study should have a special focus on the environmental and social impacts of identified recreational activities and provide a base for policies in regard to acceptance and regulation of activities of concern.

5. **An integrated regional recreation strategy**

This should be prepared in conjunction with other popular recreational areas such as Sagarmatha National Park and Langtang National Park. Particular attention should be given to the recreational demands and how the demands can be met on a regional basis.
7.0 Conclusion

The growing popularity of the Annapurna Area as an international trekking destination clearly shows its importance as a recreational resource, both at international and national level. Under existing socio-economic conditions mountain land recreation has minimal importance in meeting the 'Inner directed' needs of local residents. However the area has provided an opportunity to meet the needs of the local, regional and national economy. The importance and significance of the area, therefore, will remain as long as there is a continued supply of diverse recreational opportunities.

As a result of growth in the local population, the rapid growth in the number of recreationists, changing social and economic patterns, the recreational opportunities that exist are under the greatest threat. Consequently, the lack of a comprehensive approach to the issues of the Annapurna area, these trends will lead to the disintegration of the natural and cultural environment, and the quality of the recreational experience.

There is therefore need for a comprehensive planning framework. This framework must include the relevant biophysical, social and managerial conditions, and the input from the public, resource managers and interested parties, who are to be affected by the consequence of these decisions. The Recreation Opportunity Spectrum and the Limits of Acceptable Change, seem capable of meeting these needs. The ROS sets the provision for diverse opportunity classifications to maintain quality recreational experiences. The LAC establishes resource and social indicators in accordance with management objectives. Using this integrated approach, the recreational opportunities and the desired conditions for conservation are identified and standardised, in a situation of user understanding and public consensus. This will limit conflicts among the wide range of recreation users and non-user residents associated with the Annapurna Conservation Area. Out of this cooperative situation will come a better environment for all concerned.
Plate: 11 Why planning? Why management? ... because we know there are many more yet to come.
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