PART – I

THE PROBLEM AND BACKGROUND OF THE STUDY AREA
1.1 Background

Throughout the ages, efforts have been made by different scholars to unfold the mystery of the intricate relationship of man with nature from different perspectives. Serious attempt to analyze this relationship with a focus on the livelihood, adaptive strategy and sustainability issues is, however, a recent phenomenon. Livelihood as a concept and focal point of study and research is still recent; it emerged as a catchword only in the mid – 1990s.

The credit for initiating a serious discourse on livelihood goes to Robert Chambers, who is often called father of the concept of sustainable livelihood. The term livelihood can be used in many different ways. A livelihood in its simplest sense is a means of gaining a living. However, the definition put forth by Chambers and Conway in 1991, captures the broad notion of livelihoods as –

A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living.

The definition covers the livelihood capabilities comprising the ability to gain a livelihood, including abilities to cope with stress and shocks and to explore and exploit opportunities. Assets include all the available resources as well as stores (tangible) and claims along with access (intangible), which a person or a household commands and can use for livelihood. The term ‘activities’ is used here in its broadest sense which includes all sorts of livelihood strategies and/or “range of combination of strategies and choices that people make/undertake in order to achieve their livelihood goals with available assets as well as existing capabilities”. Livelihood activities cover production activities, investment strategies, reproductive choices and many more.
The Brundtland Report, WCED (World Commission on Environment and Development, Our Common Future, 1987) elevated Sustainable Development as a key issue and the guiding principle of environmental policy and global development. The concept of sustainable livelihood was put forward in the report within the broad framework of sustainable development. In calling for a new analysis, WCED proposed sustainable livelihood security as an integrating concept, and made it central to its report. The definition reads:

Livelihood is defined as adequate stocks and flow of food and cash to meet basic needs. Security refers to secure ownership of, or access to, resources and income earning activities, including reserves and assets to offset risk, ease shocks and meet contingencies. Sustainable refers to the maintenance or enhancement of resource productivity on a long-term basis. A household may be enabled to gain sustainable livelihood security in many ways through ownership of land, livestock or trees; rights to grazing, fishing, hunting or gathering; through stable employment with adequate remuneration; or through varied repertoires of activities.

The report envisaged it as an integrating concept, since sustainable livelihood security is a precondition for a stable human population, a prerequisite for good husbandry and sustainable management, and a means of reversing or restraining destabilizing processes, especially rural to urban migration. Sustainable livelihoods are seen as a means of serving the objectives of both equity and sustainability. However, Chambers and Conway (1991) visualized the concept from different angles. From their perspective, sustainable livelihoods also provide the resources and conditions for the enhancement and exercise of capabilities. Modifying the WCED panel definition, they proposed the following working definition of sustainable livelihoods which gained more popularity in this field:

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which
can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contribute net benefits to other livelihoods at the local and global levels and in the short and long term (Chambers and Conway, 1991).

The importance of capabilities of the human population in evolving their livelihood strategy for optimum and best utilization of existing resources, as Chambers and Conway envisaged, can not be ruled out in sustainable studies and, in fact, it is the basic strength of the definition for gaining popularity. However, in the evaluation of livelihoods of the people in sustainable context, particularly within mountain ecosystem (rapidly changing and vulnerable environment), one must not forget the coping and adaptive strategies of individuals, households and communities.

The concept of adaptation comes originally from biology, where it has had at least two meanings: first, the genetic evolutionary, which concerns feedbacks from interactions with the environment back into the gene pool of the organism. The second meaning concerns behavior of the organism during its life-span that will permit the organism to cope with environmental factors (Bennett, 1976). In general, adaptations refer to responses or actions of individuals that have survival value for the individuals and/or the group. Adaptive strategies also constitute the plan of actions carried over a specific time by specific groups of people to allow them to adjust or to cope with their local environment. Hence, the ways of resource allocation, utilization and management of resources followed by local people to secure their livelihoods are adaptive strategies in a particular place for a particular period. It is being increasingly recognized that an understanding of the diverse number of coping and adaptive strategies employed by the individual, the household and the community can make a great contribution to the achievement of sustainable livelihoods in many ecosystems.

Coping and adaptive strategies can be differentiated based on the level of vulnerability and type of risk faced by households and communities. Coping strategies are defined as the bundle of poor people's responses to declining food availability and
entitlements in abnormal seasons or years, while adaptive strategies constitute a permanent change in the mix of productive activities required to meet livelihood needs (Davies, 1993, quoted in CIDA & CISI, 1997). Therefore, coping strategies are seen as characteristic of secured livelihood systems in abnormal periods of stress, while adaptive strategies are characteristics of more vulnerable socio-ecological systems (Singh and Titi, 1994, quoted in CIDA & CISI, 1997). Hence adaptive strategies are a mix of traditional livelihood systems, modified by local and external innovations.

Sustainability is the key concern of the present day and can be applicable in the case of individual, household, community as well as spatial analysis. The distinction between 'sustainability' and 'sustainable development' is that the first refers to the maintenance of a landscape and lifestyle in some agreed-upon form, which includes both a space for human economic activity and a space to preserve the ecosystem under natural controls and evolution. The second is primarily an economic concept, which mandates the continued human extraction of natural resources until the point at which there is a risk that it cannot be continued without a decline in production. Sustainable development may perhaps be better described as perpetual harvesting (CIDA & CISI, 1997). Sustainability means the proper use of resource fulfilling the present and long-term human needs without depleting the generation capacity of the natural resources in a given spatial context. Hence it is an environment-friendly production structure which ensures a fair distribution of income, power and opportunities, providing thereby the basis for social peace and harmony (Bhagabati, 1996). However, sustainability is now-a-days widely regarded as an essential characteristic of most human activities on practically all levels of human societies and communities, whether international, national, or local (Domroes, 2003).

Sustainability can be achieved taking into account three integrated processes - production, physical/ecological and socio-cultural functions - in any decision on natural resource management. However, the ecological dimension was often neglected in the development processes and deliberately not given priority at the times of economic
difficulty. In the same way, risk arises because of economic and social changes that are easier to recognize and deal with than the ecological changes. Furthermore, in the process of use when different interests are forced to compete for scarce resources, economic and social concerns take precedence over ecological concern. As a consequence, global and regional environmental problems are gaining ground which has threatened the very survival of humankind. Among them, mention may be made of the greenhouse effect, depletion of ozone layer, deforestation in both tropical and temperate zones, and loss of biodiversity. Thus sustainability is a function of how assets and capabilities are utilized, maintained and enhanced by a social entity so as to preserve livelihoods maintaining human-nature harmony.

The selection of sustainability indicators is not an easy task in the context of marginal mountain areas. It varies due to the variations in principles, goals, or visions. An indicator of sustainability is a quantitative or qualitative variable which can be measured or described, and when observed periodically, it can demonstrate trends (CIDA & CISI, 1997). On the other hand, the indicators should be measurable, cost effective and have predictive ability. They should cover biophysical, social and economic realms and focus on crucial factors in the human-environment system and finally should be workable. In this context, therefore, the selection of indicators should be based on broad principles of sustainability such as maintenance and enhancement of long-term multiple socio-economic benefits to meet social needs; maintenance of productive capacity of ecosystems; conservation and maintenance of soil, water resources and biological diversity; maintenance of air, water, and land quality; healthy living environment in communities; proper education facilities together with minimum amenities. The choice of sustainability indicators in the present study incorporates many of the principles and criteria described above. Furthermore, the perception of the local people on the indicators was also considered in finalizing the indicators of ecological, economic and social imperatives.
1.2 Statement of the Problem

The human-nature relationship as a part of livelihood system in the mountain environment is more typical than that of the lowlands. The mountain areas are characterized by high degree of fragility, marginality, limited accessibility and human activities and adaptation mechanisms. Moreover, mountain environments are highly susceptible to disturbance, with a low ability to rebound and to heal them after damage. The degree to which this is true varies according to regional and local conditions (Price, 1981). Because of such peculiarities of the mountain areas, although human is only a small component of the ecosystem, have the potential to produce tremendous ecological consequences.

In the mountain areas, it is the human being who often has the capacity to modify the rate of such changes or even to reverse it. Man modifies the natural environment for the production of plants and animals for subsistence and exchange. However, the interaction of human with nature for environmental management and livelihood strategy varies from place to place. Particularly the characteristics of physical environment of the existing resources together with the socio-cultural factors control human activities (Young, 1973). Furthermore, the degree of diversification of economy and technology together with modernization and globalization results in a complex state of the traditional life-style and socio-economic activities of the mountain people. As a result, mountain areas are characterized by varying degree of modification and adjustment with the biophysical environment in different localities.

Therefore it is not uncommon to observe villages and households situated within mountain areas pursuing a variety of livelihood activities and adaptation strategies in the day to day lives in response to the changes. Adjustments are required in both normal years and in seasons or periods of abnormal and unpredictable stress and uncertainty. Coping strategies are the short-term adjustment, whereas adaptive strategies are the permanent shift of activities required to meet livelihood needs by specific group of people to cope with their local environment. However, it is difficult to draw a line between the two
because adaptive strategies are coping strategies which have become permanent. Similarly, the continued availability of the coping strategies and options is necessary for adaptive strategies to work.

Despite numerous studies on livelihood and adaptive strategies of ethnic groups, a real understanding of how rural societies of the mountain areas are responding to their situations is still lacking. The theories and models already developed and tested in western context, may not only lack crucial information but also may deviate from actual scenario that the south Asian rural societies manifest practically. Caste and ethnicity have been important dimensions of rural life in Nepal as well as other parts of rural south Asia. Consequently, two sets of processes are at work in shaping customary and contemporary pattern of livelihoods and adaptive strategies. The traditional patterns reflect socio-cultural processes whereas the more recent are related more to economic processes and far more visible because of monetization of the peasant society (Subedi, 1993). In this context, a real understanding of the functioning of Nepalese rural societies and maintenance of livelihoods together with adaptive strategies needs to be developed without being solely guided by the western perception.

Theoretically mental images of space and location guided by existing technology, culture and spatial processes influence the decisions of human beings which are ultimately responsible for creating their livelihoods as well as distributions on the earth's surface. However, limited accessibility caused by difficult topography as well as resource availability together with poor basic amenities characterize the livelihoods of the people living in the mountain regions. All these act as the basic reasons for migration of people from hill to plain since long back. The hill and mountain areas of Nepal are no exception to it (CEDA, 1973; Kansakar, 1974; Baskota and Bista, 1974; CBS, 1976; Elder, 1978; CEDA, 1977; New Era, 1981 quoted in Koirala, 1987). Despite the fact, the hill areas in Nepal are supporting more than 40% of the country's total population (CBS, 2001). Hence this research attempts to understand the underlying
phenomena of human responses to mountain environment taking the Arun valley as the study area.

The Arun valley, which lies in Eastern Nepal, covers most of the areas of three districts namely Dhankuta, Bhojpur and Sankhuwasabha. It is a major region comprising Kirati communities of Nepal. However, the study area comprises three rural-based Village Development Committees (VDC, lowest administrative unit) of southern Arun valley. The area has locational importance as the corridor of the ancient Rai and Limbu dynasty. On the other hand, it also comprises diverse physiography as well as diverse caste and ethnic groups. Furthermore, the area is characterized by the presence of inaccessible to accessible areas in terms of road transportation networks. The number of settlements within the study area is 66, of which 27 are in Jitpur, 19 in Murtidhunga, and 20 in Parewadin. Limbu, Magar, Brahmin/Chetri, Dalits, Rai, Newar and Sherpas are the major ethnic groups of the region. The physiographic characteristics like varying elevation, slope and slope aspects have different meanings for different communities in selecting livelihoods. This results in spatial variation in modification of biophysical environment. Furthermore, it is important to note that Nepali societies even in the inaccessible areas are not in complete isolation from the rest of the world. The influence of globalization is penetrating into the traditional societies of the Arun valley too in different intensities.

It is in these contexts the present study adopts integrated components of livelihoods, adaptive strategy and sustainability prevalent in the mountain areas as the focal theme of research. The central concern of the work is to explore, understand and explain different livelihood mechanisms operating in the study area. In this process, one cannot neglect the importance of different coping as well as adaptive strategies of the people to survive during the failure of usual livelihood means. Appropriate livelihoods and adaptive strategies result in sustainability of the area and the communities concerned. Therefore economic, social and ecological components have been analyzed in evaluating the strength and the carrying capacity of the mountain areas within the broad conceptual framework of sustainability.
The research also identifies the status/dynamics of natural resources, and management practices of the communities in relation to livelihoods from the historical past. The study also evaluates the pattern of resource use and management of the communities in relation to different environmental variables. Because of distinguishable location, unique biophysical variables, communities with specific culture, differential resource base and livelihood opportunities, the study area – southern Arun valley of the Nepal Himalayas – has been found to be ideal to explore and understand the intrinsic relationship between nature and human culture.

### 1.3 Objectives of the Study

The main objective of the study is to explore, explain and analyze the livelihoods, adaptive strategies and sustainability of the communities living in southern Arun valley of the Nepal Himalayas, while the other specific objectives of this study may be put as follows:

(i) to identify the status and dynamics of natural resources in the study area as they relate to the livelihoods of dominant ethnic groups living in the area;

(ii) to explore the patterns of resource utilization and management of different communities from historical past with special reference to the institutions and the indigenous knowledge of environmental management;

(iii) to identify the livelihood strategies of different ethnic groups with respect to the implications of global, national and local policies adopted to adapt to the changing situations;

(iv) to explore the continuity and changes of the adaptive strategies of different ethnic groups;

(v) to develop and test the sustainability indicators in the context of rural communities living in the mountain areas of Nepal, especially the southern Arun valley.
1.4 Research Questions

The study attempts to seek answers to the following questions:

1. What is the status and dynamics of natural resources such as agricultural land, forest cover, pastures and water in relation to environmental variables such as soil quality, altitude, slope, aspects and drainage of the study area?

2. How have the different communities utilized and managed the natural resources from historical past for earning livelihoods?

3. Is there any differentiation in livelihood strategies among the communities living in different environmental conditions? What are the implications of globalization and state policies on the sustainable livelihoods of different communities?

4. What are the adaptive strategies of the communities to cope with the pressures arising out of failure of adopted livelihood means in the mountain area?

5. Is it possible to develop a model with indicators that explain the variability and sustainability which are likely to differ at community level over space and time?

1.5 Propositions of the Study

The following propositions are deduced to gain the basic understanding of the relationship between ethnicity, resource management, livelihood practices, adaptive strategies as well as environmental perception of the rural people:

1. Different communities perceive resources differently; as such their exploration as well as utilization and management vary with their indigenous knowledge system together with practices in making their livelihoods.

2. Caste/ethnicity plays significant roles in determining the livelihoods practices; different communities practice some specific livelihood practices.
3. Adaptive strategies to cope with stress vary according to communities as well as socio-economic status of the households.

4. The level of access together with market determines the diversification of livelihood activities in an area.

5. There has been consideration of environmental variables in the use of natural resources for livelihoods among the communities in the area.

6. The traditional rural agrarian societies are more sustainable than the relatively modern ones which give more emphasis on economic issues rather than sustainability of the systems.

1.6 Significance of the Study

The study tries to explore the relationships between livelihood strategies and sustainability among rural agrarian communities living in the mountainous areas of southern Arun valley of Nepal. It also attempts at understanding the adaptive strategies of local people to cope with the changing environmental resource scenario. The available literature suggests that there has been no such studies conducted so far in the area in question and it would be a unique literature of this kind in the context of mountain area. This in-depth study helps to explore and understand the existing scenario of mountain areas in relation to problems and prospects of sustainable livelihoods. It also helps in understanding the role of nature on human behavior, one of the long debated issues in human geography.

The use of the concept of sustainability in spatial, habitational and households contexts is a unique feature of the present study. Although the study of sustainability requires a multi-disciplinary expertise and a long-term time frame, it has been simplified here in order to make it feasible for a single researcher to accomplish within a limited time and resource. Hence it may prove useful for other studies of this kind. Further the selection and use of indicators of sustainability may be helpful in exercising such efforts
in other parts to understand human-resource relationship in improving livelihood mechanisms and planning and implementation of rural development projects.

The study carried in the areas of specific bio-physical set-up and characteristic local communities help foresee and predict probable scenario in other similar mountainous parts of the country.

Last but not the least, the methodology adopted in the study to handle a variety of data and information collected from different sources has been considered to be a strength in exploring, understanding and explaining the real world situation. Moreover, the extensive use of modern tools like remote sensing and geographical information system in analyzing various components of sustainability in relation to natural resource management practices of the communities may probably be a hallmark in the field of human geographical research.

1.7 Limitations of the Study

The study may have the following inherent limitations:

It is limited to the livelihods as well as adaptive strategies of the dominant communities in southern Arun valley of the Nepal Himalayas only. The area-specific communities of other parts of the Arun valley may adapt strategies which may not be similar with that of the southern Arun valley.

The study has used only few feasible sustainability indicators which are helpful to evaluate the characteristics of mountain communities of different accessibility as well as socio-economic conditions. The indicators have been developed in relation to the characteristics of the area as well as the attitudes of the local people. Therefore, the indicators used in the context of the man-nature relationship in southern Arun valley may not be equally applicable in other spatial and social contexts. In the same way, the results obtained and generalizations made in this study may not hold good for other social and biophysical settings.
The study has evaluated the status and dynamics of resources during the period of 1984 - 2004. The baseline information on land use are of 1984 and assessment of soil quality is based on existing Land Resource Mapping Project (LRMP) maps of 1983/84. Similarly, the information of the sampled household and biophysical character reflects only the situation within the time and spatial reference under consideration.

1.8 Organization of the Study

The study has been organized in three broad sections: the first part includes the problem and background of the study area followed by analysis and synthesis. The first section covers three chapters. Chapter 1 highlights the research issues and the problem formulated for study. It also includes the objectives, propositions, significance as well as limitations of the study.

Chapter 2 includes a review of the existing philosophies within the broad framework of human geography in order to place the present work properly in the current research domain of the discipline. This chapter also covers the review of literatures related to the three research issues - rural livelihood pattern, adaptive strategies and sustainability. A conceptual basis for the study has been developed taking into consideration the disciplinary research domain, current research trends and the issues raised by the present researcher. This chapter also discusses the methodology used for the work linking it with the philosophical framework under consideration. It also deals with the generation and analysis of data.

The background of the study area, which provides a glimpse of the natural as well as socio-economic characteristics of the southern Arun valley of the Nepal Himalayas, is presented in Chapter 3.

The second part of the study, that is analysis, is in fact the core part of the work. It comprises three chapters (Chapter 4 - 6). The central purpose of Chapter 4 is to cover the first and second objectives of the study; evaluation of natural resources, pattern of
utilization along with the management practices adopted by the ethnic groups. It also tries to examine the temporal dimension of the practices as well as the traditions and perceptions of the local people associated with the use of the natural resources.

The core issue of the thesis is in Chapter 5. An attempt has been made here to evaluate the livelihood pattern of the households belonging to different communities in the study area. It also deals with the coping mechanism and adaptive strategies undertaken by different communities for survival. Similarly, evaluation of the implications of the global, regional and local policies on the livelihoods and adaptive strategies of the communities in the area is made in the same chapter.

Chapter 6 tries to develop and test the sustainability indicators in the context of rural communities of the mountain areas in Nepal. Based on a specific methodology, indices are calculated categorically for ecological, economic and social sustainability. Also a composite index of sustainability in relation to overall scenario of the communities has been evolved in the chapter. Finally an attempt has also been made in this chapter to model the sustainability pattern prevalent in the mountain environment. However, the major thrust of modeling lies in the ecological sustainability of the area.

The work is synthesized in Chapter 7 which covers summary and conclusions of the work along with certain workable recommendations for further research.

References


