

# Chapter 1 . Hill Agriculture, Environment and Development

## 1.1 Introduction

The need for economically viable and environmentally sound development programmes and their effective implementation is clearly the major concern of sustainable mountain development strategies. Poverty, both economically and environmentally, is becoming more widespread across these mountains. More and more people living in mountain areas are finding fewer easily accessible resources to meet their needs of food, fodder, fuel, and fibre. If increasing poverty of the hill environment has made it more difficult to identify and organize economically viable development projects, it has also further accelerated the process of resource degradation. The array of problems in mountain areas is already formidable, long before development forces have had a chance to establish strong institutional roots.

Characterized by widespread micro-environmental diversity, the natural basis for agriculture and forestry varies to a much larger extent in the hills than in the plains. Changes in climate, soil, and relief over small distances clearly alter development potentials and sustaining capacities of different micro ecozones in the hills. As family holdings are the most common farming unit in the hills, the integration of family units widely dispersed over different altitudes creates major problems for generating, scale economies through specialization in hill farming. If conventional integration of agriculture, livestock, and forestry have developed strong economic and environmental complementarities, these systems have not only reached a productivity threshold, but are also beginning to disintegrate under the ravages of reckless exploitation and mismanagement. Inaccessibility has added substantially to the costs of development and has severely curtailed the adoption and diffusion of improved technology. At the same time, the historical isolation of mountain areas and its people has broken down. This has resulted in increasing penetration of manufactured goods and expansion of modern commercial forces that have gradually dislocated many traditional off-farm activities,

and adversely affected groups associated with these activities, particularly craftsmen and artisans. For centuries, the hill people have been migrating both seasonally and permanently in search of alternative economic opportunities across national borders to sparsely settled areas both in the hills and in the plains. Today these options are more or less closed. Another important aspect of mountain development, whose significance has yet to be properly understood, is the changing nature of hill-plain interaction. Economically there is a growing dependency of the hills on the plains. Many physical changes in the hills are said to be resulting in not only an increasing frequency of natural disasters in the hills, but also in serious downstream effects.

Mountain areas are confronted with a myriad of problems that require very careful but difficult choices. There are still many unquestioned assumptions about the nature of mountain development processes. The understanding of many aspects of change across these mountains is very poor. Data regarding many of these processes are more impressionistic than factual. The need to carefully evaluate and translate knowledge and experience into practical development programmes, that are economically and ecologically sound, has never been so acutely felt. While there exists a great deal of experience with the organization and management of development, it is also evident that these cannot be uncritically prescribed.

Economic development typically involves a number of closely related changes for the rural household : a shift from subsistence to market oriented production, from sale of primary produce to sale of semi-processed or processed goods, from self-employment to wage employment, and so on. At a macro level, there are structural changes in the economy as a whole, most notably a shift from agriculture to industry and services, often accompanied by migration from rural to urban areas. But such changes are gradual, and some of them may not be responses to increased economic opportunities, but to reduced viability of traditional activities.

Outmoded or unproductive activities do not disappear immediately. A series of gradual displacements in different sectors occur, resulting in lowered earnings followed by lower employment, decrease in assets, increasing debts and finally, movement towards wage-earning classes or becoming unemployed. Migration is an option for some, but not all, on account of institutional, social, and cultural factors. Adjustments are therefore slow, resulting in gradual economic deprivation because of limited economic opportunities and preferences for certain lifestyles.

The process of expansion, on the other hand, creates economic opportunities brought about by changes in activities that support a new demand and production structure. The expansionary effects of some sectors are also transmitted to conventional activities. Changes in the overall employment situation can be seen as both favourable and unfavourable, caused by external factors (demand for goods and services, technological change, supply of competing products) and internal factors (most notably, the pressure on agricultural land).

Besides increasing population growth and changes in land use, the growth and penetration of commercial forces also contribute to the economic problems of the hills. As mass-produced manufactured goods substitute local artisan produced goods, many producers of local goods are brought under increasing pressure to migrate and join the wage-earning class, or become unemployed. The cumulative economic effect is the gradual attrition of incomes and employment opportunities. It is this process of economic displacement that will increase the pace of out-migration from the hills. This situation is not unique to the hills of Nepal. Many economies have undergone these almost inevitable labour pains of development. The duration of initial difficulties depends upon the rate of growth and spread of the expansionary forces like productivity growth, diversification in production, infrastructure provision and development of human resources.

While the situation of each country is in various respects unique, the fact that many countries have sustained rapid growth in expansionary forces is worth noting. Some of these changes have occurred in circumstances almost similar to that in the hills of Nepal. The most recent success story of what may be

called explosive industrial development with relatively limited natural resources like land has been the case of South Korea and Taiwan. Both have followed an aggressive export promotion strategy, an alternative that at first appears to be quite far-fetched for remote hill areas. However, on closer examination it may not be so unrealistic when we consider the potentials for development of tourism, energy, and other activities that are distinctive in the hills and enjoy favourable demand in the plain areas. Many of these experiences in other areas and regions should be more carefully appraised for their relevance to hill development, particularly as they relate to the generation of employment and income.

## 1.2 Role of Hill Agriculture in Mountain Development

Hill agriculture is obviously the starting point in any discussion of hill development. Its importance emanates from three major considerations. First is its current role in the overall hill economy. Second is its strong relationship with the hill environment, where changes in agricultural practices lead to varied environmental outcomes. Thirdly, the significance of agriculture is also evident in terms of developing and widening non-agricultural or off-the-land options for the hill farmer.

### (a) Current Role of Hill Agriculture

The economic significance of hill agriculture in the overall hill economy is fairly evident. It continues to engage the majority of the labour force, both directly and indirectly. The relative contribution of agriculture to household income has remained significantly high. Bulk of exports from the hills is also primarily agricultural in origin. Particularly from considerations of employment and income, hill agriculture is likely to play a leading role for many decades to come.

### (b) Relationship with Environmental Change

Environmental changes in the hills are partly natural (intensive rainfall, mass wasting, glacial lake outbursts, etc.) and partly human-induced (deforestation overgrazing etc.). Insofar as the latter is concerned, it is clear that agricultural activities play a leading role. Pressure on forests and pastures, cultivation of marginal land, poor maintenance of terraces, and environmentally

unsound practices of water management account for a large part of the human-induced components of environmental deterioration in the hills. Obviously, there is also an increasing pressure from non-agricultural households in terms of their demand for firewood and some adverse effects from developmental activities in the hills. In relative terms, the significance of agriculture-related environmental changes has clearly been greater and, consequently, agricultural development options need to carefully consider associated environmental changes.

### (c) Off-Farm Employment Generation

The significance of hill agriculture which emerges from another important consideration is the development and expansion of non-land employment and income generating activities. As long as the incomes of hill agricultural households remain low, the development of non-agricultural sectors will be fairly limited. This enhances the possibilities for an urban-led development of the non-agricultural sector, which is already taking place to some extent, in various parts of the mountain areas. Without a strong rural sector to actively contribute to the growth in non-farm activities, this urban-based non-agricultural development may quickly degenerate into a polarized process of development, giving rise to a pronounced dualism and its associated characteristics. The most important of these is its unfavourable effect on rural and agricultural development. It is, therefore, essential that the stimuli for promoting non-farm activities come from both rural and urban areas, and that the enhancement of agricultural incomes provide a major opportunity for diversification of product demand and markets in the hills.

The alternatives look very bleak indeed. Development of non-agricultural activities that have no linkages with hill agriculture have been either difficult to sustain, or have had no multiplier effects upon the agricultural sector. While this option may appear viable in special cases, for a large number of hill areas, the development of non-agricultural and non-land options require almost as a prior condition, a dynamic hill agriculture. This is likely to be the most economical approach, in the context of existing factor endowments in the hills.

## 1.3 Integrating Hill Agriculture into the Wider Market Economy

Hill economies have been exposed to the wider market economy, but are not being integrated into it. If major changes in hill agricultural systems, in terms of the types of products, are not introduced, it is likely that the economically unfavourable effects of exposure to wider market economy, will exacerbate in the near future. It is time now to plan for a transition from mere exposure to systematic integration with the wider market economy. Integration must start first with suitable changes in the structure of hill production, moving from a basically subsistence mode to a commercialized production system. This cannot be left to the farmer or the market force. It has to be deliberately planned and organized with careful evaluation of the potentials for commercial production in different ecozones; provision of technical and support services required for such a system; development of post harvest technology, particularly agricultural processing and market support systems that provide increased opportunities for off-farm employment and an aggressive marketing strategy backed by a realistic pricing system and well organized farmer-based institutions. The institutional implications of the above requirements are very far reaching, and the extent to which effective institutions can be created will, to a large extent determine the success or failure of this approach. The effect of such development on food security, and on the environment is likely to be very positive. Food security is guaranteed through higher incomes, generated by a rapidly developing agriculture that focuses on production of crops in the hills, based upon their comparative advantage. Insofar as the environment is concerned, it is clear that the subsistence production mode is becoming economically prohibitive for hill farmers as it is a less productive economic system. A more productive economic system is likely to have a favourable impact on hill environmental management, where scarce resources like land are likely to be better maintained, simply because it is more economical to do so. Secondly specialization generated through an improved agricultural system is likely to develop more and better skills necessary for management and maintenance of specific hill resources. Thirdly, and probably most importantly, the integration of the hill farmers through specialized systems ensures a far stronger institutional base for organizing and managing agricultural and environmental resources of the hills.

Interestingly enough, whenever we think about integration with the market economy, the difficulties arising out of inaccessibility loom very large in our minds. While this is a complicated problem, it is not an insurmountable one. Overcoming limitations imposed by inaccessibility involves selecting products that are likely to have higher value-to-weight ratios and planning accessibility improvements in stages.

#### 1.4 Organization of the Study

Against this background, the study will attempt to examine some of the key questions underlying the development of hill agriculture, off farm employment, and the integration into the wider market economy. Chapter two outlines the dimension of economic demography of the mountain and hill areas of Nepal. Chapter three discusses some major problems in subsistence hill agriculture. Chapter four examines the arguments underlying the concept of integration of hill agriculture with the wider market economy. The effectiveness of a development strategy is likely to be critically influenced by the organization and management system. Where there are inappropriate organizational systems, development programmes will easily succumb to institutional and organizational weaknesses. It also discusses the modifications necessary to promote greater integration of hill agriculture into the wider market economy with some observations on the experience of the Bagmati Zone. Chapter five reviews some of the changes experienced in the Bagmati Zone regarding transformation of hill agriculture and economy including issues of spatial linkages. The last chapter tries to highlight some of the overall issues that have emerged.

Needless to say, the entire orientation of this study is reflective of the conditions facing the middle hills of Nepal. Given the heterogeneity of these mountain ecosystems, generalizations are always difficult. To the extent, however that problems and changes are similar in nature, the experience as it relates to Nepal, the arguments made for changes in hill agricultural development thrusts, and issues raised under off farm employment generation, may be broadly relevant. As a matter of fact, development across the hills seems to have suffered less from the unique problems of different mountains ecozones and more from common problems of organization, management, and implementation. Clearly from the point of view of development policy, an understanding of these common structural weaknesses in the organization and management of development programmes has as much to offer in terms of sustainable development, as the special characteristics of mountain ecosystems. The experience of other mountain areas such as Himachal Pradesh in India and SWAT in the North West Frontier Province (NWFP) in Pakistan clearly indicate that hill farmers have benefitted immensely from a more commercialized and market oriented hill agriculture. While apples have been the dominant crop in both areas, farmers have responded to other opportunities and specific problems that have arisen. These responses of hill farmers have been extensively supported in both the areas by various institutionalised services in the fields of extension, research, marketing and agroprocessing. Nepalese hill farmers and service institutions stand to benefit immensely from the experiences in these two hill areas in their integration with the wider market economy.