

Chapter 5

Poverty in Mountain Areas: Nature, Causes, and Alleviation Strategy

T.S. Papola¹

Professor

Institute for Studies in Industrial Development
New Delhi, India

INTRODUCTION

Conventional methods of portrayal, measurement, and diagnosis of poverty often lack a realistic assessment of the nature, extent, and causes of poverty in mountain areas. This is due to the geo-physical features and the social and economic formations conditioned by these areas. The characteristics of mountain areas that condition the lives and development of people are described as a 'mountain perspective' and consist of inaccessibility, fragility, and marginality as constraints on development; and diversity, niche, and adaptation mechanisms as windows for development opportunities (Jodha 1997 and 2000). These specificities, combined with the isolated nature of mountain economies and societies, lead to different manifestations of poverty than those obtaining in non-mountain areas. Lack of recognition and understanding of the implications of mountain specificities often lead to myths and misconceptions about the socioeconomic conditions of people and also misdirect the diagnosis of the sources of poverty. As a result, the strategies and interventions for development and poverty alleviation tend to be either unsuitable or only partially suitable, resulting in ineffectiveness.

POVERTY CONCEPTS AND MOUNTAIN CONTEXT

Poverty is a multidimensional concept. It encompasses both prevailing levels of welfare and capabilities (IFAD 2001). Most often it is measured and portrayed in terms of indicators of current welfare, disregarding the population's ability to sustain and enhance those levels. This approach to

¹ Dr. T. S. Papola is currently Professor at the Institute for Studies in Industrial Development, New Delhi. The present paper is based on his research at the International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, where he worked as Head, Mountain Enterprises and Infrastructure Division from January 1996-June 2002.

poverty has serious limitations in mountain areas. Levels of welfare are also mostly seen in terms of some economic indicator—income or consumption. Non-economic aspects of welfare and poverty are not necessarily ignored, but it is assumed that those poor in terms of income and consumption are poor in other aspects as well, or conversely that those able to meet some objectively determined minimum level of consumption are also able to enjoy other social and political aspects of a decent living.

There have been attempts both to sharpen this concept of poverty by going beyond a single income or expenditure indicator, or headcount ratio, to assess the poverty gap and poverty severity (World Bank 1999) and to include socio-political dimensions in multidimensional indicators such as a human development index (à la UNDP) for different countries and regions or by bringing aspects like vulnerability, deprivation, lack of freedom and empowerment, and exclusion (Henninger 1999) to the analysis of poverty. Vulnerability—defined as the lack of people’s capacity to withstand shock (DFID 2000)—is also to be included as a basic feature of poverty. Other phenomena considered as socio-political dimensions of poverty are lack of autonomy (the capacity to decide and act for oneself) and lack of entitlement, which together make people incapable of claiming their customary and legal rights (Harris et al. 1992; Sen 1999). In its latest exposition on poverty, the World Bank views poverty as consisting of lack of four attributes: opportunity, empowerment, security, and capabilities (World Bank 2000).

These and other approaches to defining poverty and identifying the poor are relevant to mountain areas, but none of them directly incorporates the specific manifestation of poverty in these areas. Limited options, food insecurity, and vulnerability are some of the basic features of mountain livelihoods, but their forms and sources are often different from those in other areas. IFAD’s operational approach comes closest to recognising physical location as a correlate and source of poverty. IFAD looks at poverty from different perspectives such as ‘who are the poor’, ‘where do the poor live’, ‘how do the poor get income and use it’, ‘what access do the poor have to assets’ and ‘what are the barriers to progress for the poor’ (IFAD 2001), which lists ‘high altitude’ and ‘remote’ areas among the ones with high concentrations of poverty.

Poverty is not only a multidimensional phenomenon, its manifestations vary across areas and populations as well as by levels of development. The poor are mostly identified in terms of private consumption below an objective ‘poverty line’, but those considered non-poor in terms of current

consumption and income may be poor in terms of capabilities and welfare. Such non-linearities between consumption levels and other aspects of welfare and capabilities are more prominent in mountain areas where variations in access to markets, services, and knowledge can lead to drastically different levels of welfare and capabilities not necessarily reflected in current consumption levels.

Do we need separate indicators of poverty and development in mountain areas, or should we study them in a comparative framework using common indicators and methodologies? The 'mountain perspective' framework argued that mountain areas need a separate frame of analysis due to the specificities that qualitatively distinguish them from flatlands. Furthermore, a plea has also been made to apply well-established development indicators such as 'quality of life indicators' in mountain research, even though the complex living conditions and great variations between regions, groups, and households are well recognised (Kreutzmann 2001). This view is further contested by others, not so much to argue for separate indicators for mountain areas, but on the basis that the indicator-driven research is highly aggregated, externally imposed, and de-contextualised. Emphasis, it is argued, should be not only on building relevant indicators, but should also be on the "qualitative, informal and based on cultural context" (Rhoades 2001). A more meaningful approach to research on development and poverty in mountain areas would, however, first examine how the common indicators suit the specific conditions in these areas and what modifications are needed to reflect the location specificities, and then identify what additional phenomena and processes might account for mountain specificities. Accordingly, an attempt is made here to examine the appropriateness of conventional economic measures of poverty in portraying mountain poverty, and then to indicate some of the non-economic correlates of poverty which are manifested in mountain areas.

NATURE AND MANIFESTATIONS OF POVERTY

Poverty indicators based on income-consumption: methodological limitations

The most common measure of poverty is a 'poverty line' expressed in terms of the monetary value of a consumption level reflecting a minimum fulfilment of food, clothing, shelter, and other basic needs. Generally expenditure corresponding to a normatively fixed calorie intake is taken to constitute this 'line'. Mountain conditions, terrain, and climate make it absolutely necessary that people have a higher minimum energy and caloric intake in their food than in the plains and that they have warm clothing and permanent shelters to protect themselves from extremes of weather and climate. Using common consumption norms to measure wellbeing

may therefore place many mountain people above the poverty line even though their basic needs are not met. Such consumption-based poverty ratios are thus likely to indicate a lower incidence of poverty in mountain areas than even in relatively better-off regions in the plains. This is evident in comparing the incidence of poverty in several mountain areas of the Hindu Kush-Himalayan region with national averages (Annex 1).

Even using such a conventional measure, incidence of poverty in mountain areas is generally found to be higher than in the plains. But if needs for higher energy/calorie intake and clothing and shelter, as well as the higher prices obtaining in mountain areas, are taken into account, the incidence of poverty in terms of deficiency in meeting basic needs would turn out to be much higher still (see Annex 2).

A more important feature of the consumption levels in mountain areas is that they are not always met by local income but by remittances sent by migrants, thus making their sustainability rather precarious. Studies from different areas in India suggest that about 35% of the consumption needs of mountain households are met through remittances (Khanka 1988; Bora 1996). Income levels estimated with methodologies using conventional national accounts also tend to overestimate the economic status of mountain people, as they measure income originating and not income accruing. In the case of mountain areas, the latter is much smaller than the former due to the extractive nature of several major activities (e.g., forestry, tourism, hydroelectricity, minerals) from which income is produced in the region, but mostly flows elsewhere. Thus the income available for consumption and investment locally is significantly smaller than the income generated.

Access to infrastructure and services: limitations of standard indicators

Standard indicators of access to infrastructure and services that directly reflect levels of welfare are mostly inadequate or even misleading for mountain areas. Road length per thousand of population or even per square kilometre of area, or schools and health posts per thousand of population, do not correctly reflect access to these services, as even a high density of these items may leave many settlements and groups far from them. Indicators that reflect the proportion of population within walking distance can better convey the extent of access, but even such indicators have their limitations due to the terrain that needs to be covered. Similar distance to a motorable road, school, or health post implies less access in mountain areas than in the plains. A kilometre in the mountains is much 'longer' than in the plains in terms of the time and energy it takes to walk it!

Insecurity and vulnerability

Livelihoods in mountain areas are highly insecure and vulnerable because of the limited options offered by the available resource base, fragility of resources and environment, and lack of transport due to physical inaccessibility. Food insecurity, due to limited availability and low fertility of land and difficulty in accessing food from lowland areas, is common in many mountain areas. Infrastructure like roads, which constitute lifelines for most mountain people, are often not dependable because of natural hazards and blockages. Fragility and high incidence of natural hazards often threaten the very means of survival and livelihoods such as agricultural lands, crops, and shelters, besides transport and communication channels. In other words, maintenance of livelihoods, even at the levels obtaining at any given time, is highly precarious, and the danger of relapse into poverty is ever imminent.

Social and political exclusion

Mountain areas are often located on the periphery of a nation's geographical landscape. They are too sparsely inhabited to be politically important. Often most people in the mountains are also socially secluded due to their tribal origins. As a result, they find themselves marginalised with limited or no voice, presence, or involvement in the national socioeconomic and political processes. This not only results in the absence of their concerns and issues from the national agenda, but also develops in them a sense of exclusion and deprivation, which adds a psychological dimension to the poverty of mountain people (Sadeque 2000).

Geographically endemic poverty

Poverty in mountain areas primarily results from the severity of the constraints of unfavourable geographical situations and only secondarily from the resource endowments of individual households. Thus, poverty tends to afflict the entire population of an area more often than only some households in a generally non-poor area. This is not to deny the differences and inequality among households and groups, but they are less glaring than those between the accessible and inaccessible areas, on the one hand, and between the mountains and other areas, on the other. Poverty in the mountains is more area-specific than household-specific. This has been well recognised in China's poverty alleviation approach, in which 'poor areas' rather than 'poor people' are identified and targeted for development (Banskota and Sharma 1993).

Physical stress, hazards, and risks

Among the most visible manifestations of poverty in mountain areas are the strain and drudgery that people, particularly women, must undergo to

eke out a living. A large part of the strain results from difficult access to such basic needs as water and fuel and basic inputs like fodder for livestock, which are not always available nearby and must be fetched from some distance through difficult and hazardous terrain. Various operations in the main productive activity—agriculture—are no less strenuous, as most of them have to be carried out manually. Long hours of work, drudgery, hazards, and physical strain are not only results, but in fact are also special dimensions of poverty in mountain areas that are not reflected in any of the conventional indicators.

Mountain areas, as a result, have a much higher incidence of out-migration (estimated to be around 40% among adult males) than areas in the plains, producing many impacts on mountain economies and societies. To the extent that migrants send remittances, they help to sustain their households. Since migrants are mostly males, the sex ratio is 'favourable', particularly in the working age-group, and there is a higher incidence of women-headed households. Though migration is resorted to as a coping mechanism, it often leads to accentuation of poverty due to the shortage of productive labour force. The already high workload of women increases, with accompanying adverse effects on their health and security. The trauma of separation and divided families haunts a large number of mountain households. Thus, migration is a multidimensional aspect of poverty in mountain areas, constituting not only a result, but also a cause and manifestation of poverty itself.

SOURCES OF POVERTY

The above description of the various facets of poverty in mountain areas suggests that the nature and pattern of livelihoods are primarily shaped by physical characteristics, which also condition the socioeconomic situation of the people in these areas. Inaccessibility, fragility, and marginality lead not only to a limited base for sustaining livelihoods but, more important, result in high degrees of vulnerability, risks, and uncertainty.

Limited resource base

It is often said that mountains are rich in resources. However, usable resources are extremely limited. Most mountain households depend on farming as their main source of livelihood, but as only a small fraction of the land area is arable, the per capita cultivable land is very small, even with very low population density. For example, in the Hindu Kush-Himalayan region, only 6% of the geographical area is cultivable (Banskota 2000). Over two-thirds of the households, with an average size of 5-6 persons, own less than one hectare of land each in Bhutan, the hill states of central and western India, the hills and mountains of Nepal, and the mountain

areas of Pakistan (Tulachan 2001). Per capita arable land is higher in some parts of north-east India and Bhutan, but most of it is used for low-productivity shifting cultivation. In other areas, too, most of the land is sloping and not suitable for modern agricultural technologies applied elsewhere. A good part of the arable land is marginal with very low fertility.

The resource base for non-farm activities is also limited and often not available for use due to its fragile and environmentally sensitive nature. Also, its potential is not realised due to a number of constraints. Being inaccessible and isolated, most mountain areas have little exposure to and contact with the outside commercial world. This has forced them to focus on farming for subsistence, as accessing food from outside has been difficult. A growing population with limited cultivable land has resulted in food inadequacy and insecurity. Opportunities to earn income from non-farm activities to buy food and other items have been constrained by limitations of resource base and infrastructure. Thus, over the years, the livelihoods of most mountain people have become more precarious.

Restricted access to natural resources

Resources in which mountains are rich, such as forests, minerals, and water, are not always available for use by mountain people. Besides the difficulties of physical access, they are mostly under the control of external authorities like governments, which restrict their use by local communities for various commercial and environmental reasons. When these resources are exploited either by governments or the private sector, most incomes and revenues flow out with minimal retention within the mountain regions.

Lack of access to markets, technologies, and inputs

The limited opportunities for income enhancement that exist with whatever access to natural resources is available to local people are constrained by lack of access to markets. Markets are physically distant, information about them is not available and, due to small and dispersed production, marketing costs are prohibitive. Production uses traditional techniques that are mostly manual due to the lack of other forms of energy, resulting in low productivity. The capital base of mountain people is low, and access to credit is limited due both to lack of credit outlets and the technical ineligibility of most mountain households to obtain commercial bank loans. For example, in India, with a strong state-led emphasis on extending banking outlets and services in rural areas and targeted programmes for agricultural credit, per hectare credit in mountain areas still was only INRs 150, against INRs 1,600 in the country as a whole (Chand 2000). In Nepal, of the seven major micro-credit programmes, five had no coverage in mountain districts and limited coverage in hill districts. Only the

government-run programmes reached all districts (Dhungana and Thapa 1999). Remittances that many households receive from out-migrants are mostly used to meet the deficit of subsistence-level consumption over their own production and income.

Unequal exchange

The purchasing and investing capacity of mountain people is further weakened by highly unfavourable terms of trade in their transactions with other areas. Most of their purchases are at high prices due to transportation costs and scarcity. They have to sell their produce at low prices due to lack of knowledge and accessibility to markets; poor holding capacity due to the dire necessity for cash to meet subsistence needs; and lack of bargaining power due to unorganised, individual-based, small-scale sales to middlemen. Lack of lateral trade and transport often leads to sale at low prices and purchase of the same commodities at high prices, as a result of only 'vertical' transport and trade channels between the mountains and plains being available; and not among different mountain areas—goods first flow 'down', and then 'up' for final sale to consumers in the mountains. Inequality in exchange is magnified if one considers not only traded goods but also the overall flow of natural and human resources from and to mountain areas.

Weak institutions

Mountain communities have evolved their own institutions and organisations to regulate the socioeconomic aspects of their lives and to cope with calamities and hazards. These include mechanisms for sharing labour and other household resources; management of common resources like forests, pastures, and water; and community action to meet natural disasters. They have functioned well in the context of subsistence economies and isolated societies. They are, however, increasingly inadequate in a scarcity-ridden and dynamically changing environment exposed to a wider world. Their efficacy in the spheres of development and poverty alleviation is now inadequate. For example, tribal councils in many areas have been successfully managing resources and community conflicts, but are not equipped to deal with the problems of organising production and marketing agricultural or forest-based products. On the other hand, the new institutions and organisations formed by governments and non-government agencies to carry out these tasks have had only partial success, because they are alien to the local communities (not having been built upon the local traditional, institutional and cultural base) and are not able to evoke the required enthusiasm and commitment of people around common interests and visible or potential benefits.

Neglect of mountain specificities in development policies

Mainstream development strategies, policies, and programmes are often unsuitable for mountain areas, because of either inadequate understanding of mountain specificities or lack of concern for marginal mountain areas. The dominant development strategies like those based on the green revolution and large-scale industrialisation have little relevance for mountain areas, and no special strategies based on their specific conditions have been evolved or implemented. Mountain areas are often written off as unfit for development, with any concern raised relating solely to environmental conservation. This view fails to recognise (and therefore tends to ignore) the opportunities that mountain areas have in the diversity, comparative advantage, and niche of the natural resource base and the skills and dexterity that mountain people have developed to adjust to adverse circumstances. Even when these opportunities are recognised, as in tourism, hydropower, and forest products, appropriate and integrated policy and institutional mechanisms are not developed to use them for the benefit of mountain people.

POVERTY—NATURAL RESOURCE DEGRADATION LINK: A BRIEF DIGRESSION

It is extremely important to understand and appreciate the nature and implications of the poverty—environmental resources—development links in mountain areas. Given the limitations of large-scale creation and use of man-made physical assets and technologies, mountain people primarily depend on natural resources for sustaining and improving their livelihoods. Most of these resources are environmentally sensitive, and their indiscriminate exploitation threatens the sustainability of lives of people in mountain as well as lowland areas.

Relationships between development and environment and between poverty and natural resources have been studied for over two decades within the framework of what has come to be known as ‘sustainable development’. The concept, as it evolved in the Report of the World Commission on Environment and Development, is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987). It implies prudent use of natural resources at a rate that does not exceed that of their regeneration. Studies and discussions on the subject have generated a large number of hypotheses ranging between postulating an inherent conflict between development and environment to the potential of poverty alleviation to protect the environment. Their further examination on the

basis of experiences from different mountain areas is necessary both to improve our understanding of poverty–resource degradation linkages and to devise strategies for sustainable development.

Poverty–environmental degradation: cause and effect

First we should examine whether poverty is a cause or consequence of degradation of natural resources. Most studies have established an association, but not causality between the two phenomena (Markandya 2000). In general, the poor are seen as ‘the most visible agents’ of destruction in degraded environments. The poor depend heavily on natural resources, especially in mountain regions, and their poverty offers them few choices. This lack of alternatives forces them to intensively use the available natural resources. At the same time, the poor seem to stand at the end of a long chain of cause and effect and “are the messengers of unsustainability rather than its agents” (UNFPA 2001). A growing view holds that the poor are not necessarily those mainly responsible for resource degradation: quite often the rich have made a much greater contribution to this process (Metz 1991; Prakash 1997; Jodha 1998a). Irrespective of who, the poor or the non-poor, is mainly responsible for environmental degradation, it is widely agreed that the poorest sections of society are hurt most by a declining natural environment, because the poor and the vulnerable are most often users of marginal resources and also the most dependent on common property resources (Dasgupta 1996).

Resource management systems: is community participation the solution?

The key to the poverty–environment relationship is the question of natural resource management systems. It has been argued that the traditional systems of natural resource management by communities have a great deal to offer in evolving institutional arrangements for sustainable management of natural resources and their use for the benefit of local people (Berks 1989; Jodha 1998a, 1998b). There are several cases documented of how community, rather than state or private, control and management, has succeeded in ensuring sustainable use and regeneration of natural resources. Notable examples are the land, water, and forest resources of western India (Chopra and Kadekodi 1988; Chopra and Gulati 1996; Narain 1998) and of participatory forest management arrangements, especially the community forestry in Nepal (Bhatia 2000; UNFPA 2001).

Economic growth, environment, and globalisation

An interesting aspect of the poverty–environment–development relationship is the long-term relationship between income levels and quality of

environment. As pointed out by Markandya (2001), some studies suggest a U-shaped relationship between GDP and environment—i.e., the quality of environment deteriorates initially as GDP per capita increases, and then improves after a threshold level of per capita GDP is achieved (Grossman and Krueger 1991; World Bank 1992; Barbier 1997). Other evidence has favoured an ‘inverse U-shaped’ relationship (Stern et al. 1996), suggesting a positive relationship between GDP and environment initially and a decline in quality of environment after a critical level of per capita GDP is achieved. The nature and sequence of this relationship need to be studied in the specific cases of mountain areas; the impact of globalisation on mountain communities and the environment must also be understood. It is feared that globalisation can, on the one hand, marginalise the nature-based niche of mountain areas and, on the other, be quite insensitive to their fragile ecosystems (Jodha 2000). Economic policy reforms to benefit from globalisation should therefore incorporate the social, environmental, and institutional reforms required to prevent increases in inequality, poverty, and environmental degradation (Reed and Rosa 1999).

Economy–environment trade-off: making choices of economic activities

Most development activities, either of a productive nature or for building infrastructure in mountain areas impinge on environment. Environmental impacts of different activities vary, as does the economic benefit flowing from them. At one end, there could be ‘environmentally benign’ activities with high income generating potential (e.g., growing medicinal plants and herbs, planting fruit trees, etc.), and at the other end there are ‘ecologically disastrous’ ones bringing large short-term gains, mostly to non-local entrepreneurs and contractors, but inflicting irreparable damage to environment (e.g., extractive activities such as mining and indiscriminate exploitation of forests). The latter need to be, no doubt, severely restricted; but confining economic activities to the former will leave mountain people with very limited options for their livelihoods. In between the two, there is a range of activities with varying degrees of environmental impacts and economic benefits. Each entails a trade-off, and a pattern of activities must be selected that minimises environmental impact and maximises economic benefits. Exact, quantitative measurement of each activity’s impact is not always possible, especially the environmental impacts. It should, however, be possible to rank activities by their environmental impacts and economic benefits, as illustrated in Annex 3, and use such rankings to inform decision-making and policy.

POVERTY ALLEVIATION IN MOUNTAIN AREAS

Towards a mountain-relevant integrated approach

Approaches, strategies, and interventions for poverty alleviation in mountain areas have mostly been replications and extensions of those developed for mainstream flatland areas. Most of the strategies have been sectoral, relying on a lead-sector approach. Identification of the sectors has often not been based on the area-specific approach required in mountain areas, and the requirement for intersectoral linkages in mountain areas has not been adequately recognised. Thus value-addition and marketing emerge only as afterthoughts in agricultural development and diversification programmes. Livelihoods and income generation are seen only as an appendix to the forestry sector programmes. Promotion of tourism has not always been linked to local economies, and enterprise development is seen as a function of small credit. In recent years the government and donors have tried to recognise linkages, though mostly on the basis of experiences in the plains, and to develop more comprehensive and integrated programmes. Greater investment in infrastructure and access improvement has become a major element of development strategies for mountain areas, for example, in China; sector specialisation based on comparative advantages is being tried in parts of the Indian Himalayas.

In most cases, however, the approaches and strategies of different programmes have not recognised the specificities of the forms and sources of poverty in mountain areas. Building infrastructure like roads is rightly seen as a necessary condition for improving the livelihoods of mountain people, but application of appropriate environmentally-friendly technologies and use of modes of transport and communication other than roads do not get adequate attention. Nor is it recognised that improving access without efforts to develop productive linkages may result in a drain of local resources from rather than gain for local people. On the other hand, programmes directly assisting poor households in small productive activities are undertaken without providing infrastructure and market linkages. The availability of new technologies has often prompted introduction of programmes to use them without an adequate understanding of local resources and the skill base and needs of mountain people. Training programmes have sometimes been implemented to develop skills that have no local use, whereas efforts to develop human resources appropriate for the local resource base have generally been lacking. In recent years an increasingly larger number of projects has focused on social mobilisation, but with little planning of the productive activity in which the strength of the community and group built on this basis could be fruitfully used. Concern for the mountain environment has resulted in many conservation projects, but quite often they have been at

the cost of the livelihoods of local people, as they have been introduced on the premise that the activities of the mountain people in pursuit of their livelihoods have been the main cause of environmental degradation (for more details, see Papola 2002).

Combination of approaches

The essential requirement of a relevant strategy to alleviate poverty in mountain areas is to combine the elements of various approaches, each of which may be relevant but which can become effective only in suitable conjunction with others. Each of the mainstream approaches aims at supplying one or a few missing links—physical access, organisation, credit, skills—in development and thus may suit relatively better-endowed areas. Mountain areas have several links missing due to their physical and socioeconomic characteristics. Therefore, the strategy of development and poverty alleviation for these areas needs to integrate elements of all these approaches, with suitably varying weights depending on the specificities of different areas. Some basic elements of such an integrated strategy for development and poverty alleviation in mountain areas are outlined below.

Recognition of mountain specificities: a basic prerequisite

Mountain specificities consist of a set of conditions of which one sub-set (inaccessibility, fragility, and marginality) represents constraints and another subset (diversity, niche, and adaptation mechanisms) opportunities for development and poverty alleviation. Opportunities offered by the latter are not realised because of the constraints imposed by the former. The crucial issue is to find appropriate ways of mitigating and reducing the constraining influence of the former in order to ensure sustainable use of the latter. The approach to development and poverty alleviation in mountain areas has to be two-pronged: reducing inaccessibility, minimising the impact of fragility, and bringing mountain economies and societies into the mainstream to reduce their marginality, on the one hand; and identification, development, and use of the diverse natural endowment, comparative advantages, and human adaptations and skills, on the other. The two processes have to be integrated and go on simultaneously.

Improving access: physical and social infrastructure and energy

Improvement in access of mountain people to markets, technologies, and information as well as to social services like education and health is vital for their development and ability to sustain their livelihoods. At the same time, improving access through building physical infrastructure like road

networks damages the environment and is also very expensive, particularly in relation to the prospective returns on investment. The strength of economic argument against roads in the mountains depends on the time span of assessment of returns; if planning of roads is integrated with identification and use of the economic potential of the catchment areas of the roads, data will be even more relevant. So far as the environmental argument is concerned, it seems to have been used too often without fully examining its force. Efforts nevertheless need to explore and use technologies and methods of constructing infrastructure that minimise environmental damage and hazards. There have been some experiments to deal suitably with the problems of costs, environment, and economic benefits of roads in mountain areas (Banskota 1997), which need to be carefully assessed from the perspective of their wider application. At the same time, it may not be possible, within the foreseeable future, to provide road access to all mountain settlements; therefore, alternative ways of providing physical access, such as ropeways, power driven or gravity-based, and bridges have to be seriously considered as suitable options for highly remote and inaccessible areas.

Building infrastructure to provide access to education, health services, and information on technologies and markets should generally have no adverse environmental impact. It is, however, expensive because, given the low population density, it is necessary to have more schools and health posts per thousand of population to ensure universal access. Given, however, that mountain people have as much right to these basic services as any other group of the population, society would have to bear their cost. New frontiers opened by satellite communication, information technology, and electronic media offer opportunities for distance education, as well as for accessing information on technologies and markets in a more economical and effective manner. Capturing and using these opportunities on a wide scale need to be seriously explored.

Access to modern forms of energy is extremely important for improving quality of life and the productivity of economic activities. Mountain areas suffer from a paradox in this respect: they are endowed with large amounts of energy resources—especially water, but also biomass, wind, and solar radiation—but most mountain settlements and households have no access to electricity. For example, in Nepal only about 5% of rural households have electricity; figures for rural Balochistan and north-east India are 23 and 25%, respectively (Rijal 1999). Use of water resources often gets bogged down with controversies on environmental impacts of large projects, amidst which the needs of mountain people become completely sidelined. Environmental problems apart, projects based on the

establishment of large dams, in any case, provide little benefit to upstream mountain communities. It must be ensured that they do not pose any threat to the lives and livelihoods of the mountain people, and mechanisms should be put in place to ensure that part of the revenue earned by these projects is invested in improving their lives. The solution to the energy problems of mountain areas, however, is unlikely to lie in connection to larger grid systems, but in the development of small-scale, decentralised systems based on local energy resources (Rijal 1998).

Resource base with comparative advantages: identification, assessment, and access

Development of mountain areas in ways that will alleviate poverty must be based on local resources. Therefore, such resources must be identified on an area to area basis. Uniqueness and diversity is a strength of the mountain resource base that needs to be focused, as these areas cannot compete against products and services produced in the plains. Furthermore, diverse resources require different approaches towards their identification, development, conservation, and use. The unique mountain environment, in terms of natural beauty, scenic grandeur, biodiversity, ruggedness of topography, and cultural heritage, constitutes a resource that needs to be conserved and promoted for tourism of various types. Limited arable land, the primary resource for the livelihoods of mountain people, needs to be put to uses and technological treatments that enhance its productivity; non-cultivated, non-forested land could be used in productive ways, e.g., for horticulture and commercial plantation, to combine economic and environmental benefits. Forests could similarly be developed, conserved, and used with suitable mechanisms to meet the twin objectives of environment and economy. In the case of water resources, many mountain areas face a paradox of plenty with scarcity; huge quantities of water flow down the rivers, often in deep gorges, but villages above them face acute scarcity of water for drinking and irrigation. There is heavy rainfall during a few months, while for the rest of the year there is drought. Access to water for drinking and irrigation through the use of appropriate river technologies and rainwater harvesting is of crucial importance for sustaining livelihoods. On the other hand, use of water resources for power generation, especially on a small-scale decentralised basis, would lead to the improved well-being and productive capacities of mountain communities.

Productive resources available in mountain areas are, more often than not, thinly spread over space, each location offering a small quantity and thus limiting the scale of economies of production and marketing, and are also often liable to quick exhaustion if used indiscriminately without

attempt at conservation and regeneration. This is particularly the case of non-timber forest products such as medicinal, herbal, and aromatic plant resources. A systematic assessment of the locations and quantities of such resources is therefore necessary from both the economic and conservation angles. Introduction of area-wide large-scale production and regeneration of resources can be useful and effective in this respect and needs to be systematically explored.

Mountain people should have access to their local natural resources so that they can use them productively. However, access often is denied to them ostensibly for reasons of conservation. Thus, they cannot use or have only restricted access to plant resources from the state-controlled forests, protected areas, and sanctuaries. Many communities have lost their traditional rights to use these resources, as a result of new laws relating to forests and natural resources and with the conversion of large areas into sanctuaries and reserves. Regulating use of environmentally sensitive resources is quite understandable, though it is debatable whether the environmental degradation has been caused mainly by the actions of local communities or by policies and actions of the state or large business enterprises from outside. Notwithstanding, it should be possible to find ways to conserve the environment without jeopardising people's livelihoods. Conservation efforts may have better chances of success if local people are associated with them and benefit from them. Mechanisms to entrust the management, conservation, and use of natural resources to local communities have been successfully implemented in some cases and could be emulated on a wider scale. Use of incentives and disincentives within suitable legal and institutional frameworks should be preferred over approaches like total bans or denial of access.

Collective institutions

In mountain areas, most of the productive resources are collectively, rather than privately, owned. Leaving aside a small fraction of land under cultivation and a small proportion of land under non-agricultural uses by individual households, all land, forests, pastures, and water resources are under state or community ownership. Therefore, livelihoods, to a great extent, depend on state policies and actions and the capability of communities to manage and use these resources and share the benefits among their members. Also, private actions of households in using resources under their control have significant positive and negative externalities on the well-being of the communities. The role of communities and community-based organisations, therefore, is extremely important not only for managing common resources, resolving conflicts, and determining access to and benefits from these resources, but also as channels for voicing the interests, concerns, and

claims of mountain communities. In the sphere of productive activities, the small-scale production of individual households and units suggests that producers should organise to gain access to technology and inputs and to market products in order to reduce transaction costs per unit of production and improve bargaining power to realise lower procurement costs and better product prices.

An area-based approach

Diversity in ecological conditions and resource endowment and lack of connectivity with other areas within mountain regions warrant an area-wide focus in development. This is likely to be more effective than an approach targeting households, since the area rather than household characteristics constitute the main source of poverty, as argued earlier. Delineation of an area for strategic programme interventions could best be carried out on the basis of a watershed approach, but it is necessary to combine socioeconomic features with physical characteristics to define and make a watershed the basis for planning development and poverty-alleviating interventions (Papola 1996). At the same time, a watershed, small or large, is a part of a larger economic space with linkages to and interdependence on other spatial units. In this context, it is important to explore and develop rural–urban linkages and the role of small towns as market and service centres. These towns have a vital role as links between villages and cities, which are located far way from most mountain areas. From the economic perspective, it would be useful to graduate from a watershed to a market-shed approach for development planning, with a town in the centre providing market linkages to villages in the hinterland.

Use of spatial methodologies

Unlike the plains, space in mountain areas is characterised by discontinuities and extreme and frequent variations. Therefore, any approach with a linear treatment of space is not suitable here. Methodologies for resource assessment and development planning have, therefore, to be highly sensitive to spatial variations. Mapping techniques using tools like Geographical Information Systems (GIS), therefore, have particular significance in mountain areas. Maximum use of such methodologies needs to be undertaken to portray living conditions and poverty and geographical distribution of the resource base, infrastructure, and market linkages for planning and implementation of programmes.

Role of the state

In the current context of greater reliance on markets for development and poverty alleviation with only a minimal role for the state as a facilitator,

the mountain areas are in danger of further marginalisation insofar as market failures afflict these areas more than other better-endowed ones. The state would, therefore, need to continue not only investing in infrastructure and services, but also in evolving policies that favour these areas to ensure that markets function better and that the risks and effects of market failures are minimised. Ensuring food security will be essential to facilitate diversification of mountain economies into market-oriented development of products with a comparative advantage, and the state will need to play a role initially until the markets become profitable enough for private trade to take over. Pro-mountain policies can be justified not merely on the grounds of equity, but also on the grounds that mountain people need to be compensated for the deprivation and cost involved in conserving an environment that is necessary for sustaining development and livelihoods of the people and economies in downstream areas. Investments made by governments and the society at large, including the private sector, in developing mountain areas and for the welfare of mountain people need to be seen as the price of the environmental services rendered by them rather than as dole and subsidies in the conventional sense.

Analysis and advocacy

Such an approach towards development of mountain areas and poverty alleviation among mountain people can emerge only if the government, civil society, private sector, and international organisations are convinced that the fate of larger, national and global economies and societies is linked to a great extent with that of mountain areas and people. It is, therefore, important to investigate the value of mountain resources, and the costs and benefits of mountain environments, both to the local communities and to wider national and global development and sustenance. Investigating highland–lowland linkages and sharing the results with governments, the private sector, and the international community will allow appropriate mechanisms for rational and equitable sharing of costs and benefits to evolve.

BIBLIOGRAPHY

- Banskota, M. (1997) 'Mountain Accessibility and Rural Roads: Innovations and Experiences from Nepal'. In *Issues in Mountain Development 97/5*. Kathmandu: ICIMOD
- Banskota, M. (2000) 'The Hindu Kush-Himalayas: Searching for Viable Socioeconomic and Environmental Options'. In Banskota, M.; Papola, T.S.; Richter, J. (eds), *Growth, Poverty Alleviation, and Sustainable Resource Management in the Mountain Areas of South Asia*, pp 57-

105. Kathmandu: ICIMOD and Feldafing: Food and Agriculture Development Centre (ZEL-DSE)
- Banskota, M.; Sharma, P. (eds) (1993) *Development of Poor Mountain Areas. Proceedings of an International Forum*. Kathmandu: ICIMOD
- Barbier, E. (ed) (1997) 'The Environmental Kuznets Curve', Special Issue. In *Environment and Development* (3)
- Berks, F. (ed) (1989) *Common Property Resources: Ecology and Community-based Sustainable Development*. London: Belhaven Press
- Bhatia, A. (2000) 'Participatory Forest Management (PFM): Rediscovery of a Promising Mechanism for Poverty Alleviation in the Mountain Areas of South Asia'. In Banskota, M.; Papola, T.S.; Richter, J. (eds). *Growth, Poverty Alleviation, and Sustainable Resource Management in the Mountain Areas of South Asia*, pp 445-484. Kathmandu: ICIMOD and Feldafing: Food and Agriculture Development Centre (ZEL-DSE)
- Bora, R.S. (1996) *Himalayan Migration: A Study in Hill Region of Uttar Pradesh*. New Delhi: Sage Publications
- Chand, R. (2000) 'Agricultural Development, Growth, and Poverty in India's Mountain Region'. In Banskota, M.; Papola, T.S.; Richter, J. (eds). *Growth, Poverty Alleviation, and Sustainable Resource Management in the Mountain Areas of South Asia*, pp 275-291. Kathmandu: ICIMOD and Feldafing: Food and Agriculture Development Centre (ZEL-DSE)
- Chopra, K.; Gulati S.C. (1996) 'Environmental Degradation and Population Movements: The Role of Property Rights'. In *Environmental and Resource Economics*, 9(4)
- Chopra, K.; Kadekodi, G. (1988) 'Participatory Institutions. The Context of Common and Private Property Resources'. In *Environmental and Resource Economics* 1(1)
- Dasgupta, P. (1996) *Environmental and Resource Economics in the World of the Poor*. Washington D.C.: Resources for the Future
- DFID (2000) *Sustainable Livelihoods Guidance Sheets*. London: Department for International Development
- Dhungana, S.P.; Thapa, B. (1999) *Credit-based Micro-Enterprise Development Programmes in Nepal*. Discussion Paper Series No. MEI 99/1. Kathmandu: ICIMOD
- Grossman, M.; Krueger, A. B. (1991) *Environmental Impact of a North American Free Trade Agreement*. Working paper No. 3914. Cambridge, Mass.: National Bureau of Economic Research

- Harriss, B.; Guhan, S.; Cassen, R. (eds) (1992) *Poverty in India: Research and Policy*. Bombay: Oxford University Press
- Henninger, N. (1999) *Mapping and Geographical Analyses of Human Welfare and Poverty; Review and Assessment*. Washington D.C.: World Resource Institute
- IFAD (2001) *Rural Poverty Report 2001: The Challenge of Ending Rural Poverty*. Oxford: Oxford University Press
- Jodha, N.S. (1997) 'Mountain Agriculture'. In Messerli, B.; Ives, J. (eds). *Mountains of the World: A Global Priority*, pp 313-335. New York: Parthenon Publishing Group
- Jodha, N.S. (1998a) 'Poverty and Environmental Resource Degradation: An Alternative Explanation and Possible Solutions. In *Economic and Political Weekly*, 33 (36-37): 238-239
- Jodha, N.S. (1998b) 'Poverty-Environmental Resource Degradation Links: Questioning the Basic Premises'. *Issues in Mountain Development* 98/1. Kathmandu: ICIMOD
- Jodha, N.S. (2000) 'Poverty Alleviation and Sustainable Development in Mountain Areas: Role of Highland - Lowland Links in the Context of Rapid Globalisation'. In Banskota, M.; Papola, T.S.; Richter, J. (eds) *Growth, Poverty Alleviation, and Sustainable Resource Management in the Mountain Areas of South Asia*, pp 541-570. Kathmandu: ICIMOD and Feldafing: Food and Agriculture Development Centre (ZEL-DSE)
- Khanka, S.S. (1988) *Labour Force, Employment and Unemployment in a Backward Economy*. Bombay: Himalaya Publishing House
- Kreutzmann, H. (2001) 'Development Indicators for Mountain Regions'. In *Journal of Mountain Research and Development*, 21 (2): 132-139
- Markandya, A. (2000) 'Poverty, Environment and Development', In Roze, A.; Gabel, L. (eds) *Frontiers of Environmental Economics*. Cheltenham, U.K.: Edward Elgar
- Markandya, A. (2001) 'Poverty Alleviation and Sustainable Development'. Paper Prepared for the World Bank (mimeo)
- Metz, J. J. (1991) 'A Reassessment of Causes and Severity of Nepal's Environmental Crisis', In *Journal of World Development*, 19(7)
- Narain, U. (1998) 'Resource Degradation, Inequality and Cooperation'. Working Paper, Department of Agriculture and Resource Economics. Berkeley: University of California
- Papola, T.S. (1996) *Integrated Planning for Environment and Economic Development in Mountain Areas*. Discussion Paper Series No MEI 96/2. Kathmandu: ICIMOD

- Papola, T.S. (2002) 'Poverty in Mountain Areas of the Hindu Kush-Himalayas: Some Basic Issues in Measurement, Diagnosis, and Alleviation', Talking Point 2/02, Kathmandu: ICIMOD
- Prakash, S. (1997) 'Poverty and Environment Linkages in Mountains and Uplands: Reflections on the Poverty Thesis'. *CREED Working paper Series No. 12*. London: International Institute of Environment and Development
- Reed, D.; Rosa, H. (1999) *Economic Reforms, Globalisation, Poverty and Environment*. New York: United Nations Development Programme
- Rhoades, R. (2001) 'Development Indicators for Mountain Regions: Comments'. In *Journal of Mountain Research and Development*, 21(3): 307-308
- Rijal, K. (1998) *Renewable Energy Technologies: A Brighter Future*. Kathmandu: ICIMOD
- Rijal, K. (1999) *Energy Use in Mountain Areas: Trends and Patterns in China, India, Nepal, and Pakistan*. Kathmandu: ICIMOD
- Sadeque, S.Z. (2000) 'Poverty and Social Exclusion in South Asian Highlands'. *Issues in Mountain Development Series 2000/1*. Kathmandu: ICIMOD
- Sen, A. (1999) *Development as Freedom*. New York: Knopf
- Stern, D.I.; Common, M.S.; Barbier, E.B. (1996) 'Economic Growth and Environmental Degradation: The Environmental Kuznets Curve and Sustainable Development', In *Journal of World Development*, 24(7):1151-1160
- Tulachan, P.M. (2001) *State of Mountain Agriculture in the Hindu Kush-Himalayas: A Regional Comparative Analysis*. Kathmandu: ICIMOD
- World Bank (1992) *World Development Report*. New York: Oxford University Press
- World Bank (1999) *World Development Indicators*. Washington D.C.: World Bank
- World Bank (2000) *World Development Report 2000-2001*. Washington D.C.: World Bank
- UNFPA (2001) *Footprints and Milestones: Population and Environmental Change*. New York: United Nations Population Fund
- WCED (1987) *Our Common Future: The Report of the World Commission on Environment and Development*. Oxford: Oxford University Press

Annex 1: Poverty Levels and Trends in Selected HKH Areas

| Country/Province/ Area | Incidence of Poverty (% population below poverty line) | | Trends | |
|---------------------------|--|-------|-----------|----------------------------|
| | Year | % | Period | Percentage point change |
| China (rural) | 1993 | 8.7 | 1988-93 | -5.2 |
| | 2000 | 3.0 | 1993-2000 | -5.7 |
| Sichuan | 1993 | 7.0 | 1988-93 | -9.7 |
| Yunnan | 1993 | 22.9 | 1988-93 | -0.9 |
| Tibet | 1993 | 10.1 | 1988-93 | -22.2 |
| India | 2000 | 26.10 | 1993-2000 | -9.9 |
| Arunachal Pradesh | 2000 | 33.5 | 1993-2000 | -5.9 |
| Assam | 2000 | 36.1 | 1993-2000 | -6.5 |
| Himachal Pradesh | 2000 | 7.6 | 1993-2000 | -20.8 |
| Manipur | 2000 | 28.5 | 1993-2000 | -5.2 |
| Meghalaya | 2000 | 33.9 | 1993-2000 | -4.1 |
| Mizoram | | 19.5 | 1993-2000 | -6.2 |
| Jammu & Kashmir | 2000 | 3.5 | 1993-2000 | -21.7 |
| Nagaland | 2000 | 32.7 | 1993-2000 | -5.3 |
| Sikkim | 2000 | 36.5 | 1993-2000 | -4.9 |
| Tripura | 2000 | 34.5 | 1993-2000 | -4.5 |
| Nepal | 1996 | 42.0 | 1992-96 | -7.0 |
| Mountains | 1996 | 56.0 | NA | NA |
| Hills | 1996 | 41.4 | NA | NA |
| Pakistan | 1991 | 17.2 | 1985-91 | -1.1 |
| Balochistan | 1991 | 7.1 | 1985-91 | -20.4 |
| NWFP | 1991 | 20.0 | 1985-91 | +10.4 |

Annex 2: Alternative Poverty Estimates Using Mountains/Hills Relevant Consumption Expenditure Norms (An Illustration)

| | Incidence of Poverty (% Households below Poverty Line) | | |
|--|---|------------------|------------------|
| | Plains | Hills | Mountains |
| Mountain Specific Poverty Line (Rs. 33,000) - Calorie Intake-2800 - Modified Consumption Basket (+15%) - Local Price Level (+20%) | | | +25 (70%) |
| Hills-Specific Poverty Line (Rs. 27,000) - Calorie Intake - 2500 - Modified Consumption Basket (+10%) - Local Price Levels (+15 %) | | +14 (55%) | |
| Common Poverty Line (Rs. 20,000) - Calorie Intake 2300 - Common Consumption Basket - Common Price Level | 42% | 41% | 45% |

Note: The bottom % are actual estimates for Nepal during 1994-95. Other estimates are meant to illustrate the methodology.

Annex 3: An Illustrative Listing of Activities in Mountain Areas with Varying Economic Benefits and Environmental Costs (ranks are relative among the 20 activities selected)

| Assumption I Availability of Resource (Supply Base) | Activity | Rank by Economic Benefit to Local People (Starting with Maximum) | Rank by Environ-mental Costs (Starting with Minimum) | |
|--|---|---|---|---|
| | Cereal cultivation | 1 | 10 | Assumption II Demand (Own Use or Market) |
| | Fruit cultivation | 2 | 2 | |
| | Off-season vegetables | 3 | 3 | |
| | Livestock | 4 | 13 | |
| | Agro-processing | 5 | 11 | |
| | Fruit Processing | 6 | 12 | |
| | Timber Products | 7 | 17 | |
| | Micro-hydro Plants | 8 | 5 | |
| | Medicinal Plants, Growing and Processing | 9 | 6 | |
| | Bamboo Products | 10 | 16 | |
| | Saw Mills | 11 | 18 | |
| | Wool-based Textiles | 12 | 14 | |
| | Handicrafts | 13 | 7 | |
| | Trekking Tourism | 14 | 9 | |
| | Conservation Tourism | 15 | 4 | |
| | Stone Quarries | 16 | 19 | |
| | Cement Factories | 17 | 20 | |
| | Electronic Products | 18 | 8 | |
| | Beekeeping | 19 | 1 | |
| | Natural Fibre-based Products | 20 | 15 | |

- Notes: 1: The list of activities is only illustrative, more could be identified.
 2: Rankings are also illustrative and not necessarily based on detailed examination of benefits and impacts.

