



MOUNTAIN FARMING SYSTEMS

Discussion Paper Series

**PERSPECTIVES ON
POVERTY-GENERATING PROCESSES IN MOUNTAIN AREAS**

N.S. Jodha

MFS Series No. 34

1993

International Centre for Integrated Mountain Development

The opinions expressed in this publication are those of the author(s) and do not necessarily reflect the views of the International Centre for Integrated Mountain Development.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever, on the part of the International Centre for Integrated Mountain Development, concerning the legal status of any country, territory, city, or area of its authorities; or concerning the delimitation of its frontiers and boundaries.

PERSPECTIVES ON POVERTY-GENERATING PROCESSES IN MOUNTAIN AREAS

N.S. Jodha

MFS Series No. 34

N.S. Jodha is the Head of the Mountain Farming Systems' Division,
International Centre for Integrated Mountain Development (ICIMOD),
G.P.O. Box 3226, Kathmandu, Nepal

April, 1993

International Centre for Integrated Mountain Development (ICIMOD)

Kathmandu, Nepal

PREFACE

Several common attributes are shared by the poor and their poverty, in mountain areas, with their counterparts in other poor areas of the world. However, the lower range and dependability of the anti-poverty options can be treated as more specific features of the poverty situation in mountain areas. In addition, an incredibly high degrees of inaccessibility, fragility, and marginality, along with other restricting characteristics, obstruct the production and exchange processes in mountain areas and also adversely affect the policy-makers' perceptions concerning mountain problems. Their combined impacts result in processes generating and/or perpetuating poverty in mountain areas. An understanding of these processes is essential in devising anti-poverty strategies for mountain areas.

This paper presents a framework incorporating the above issues. It was presented at the "International Forum on Development of Poor Mountain Areas" held in Beijing, China (22-27 March, 1993), where evidence from several empirical studies supported the conclusions arrived at in this conceptual paper. The paper represents yet another application of the "Mountain Perspective Framework" developed by ICIMOD to examine mountain problems from an alternative perspective.

1. Introduction

Fundamentally, poverty of an area, or of its people as a group, is a product of any or all of a number of factors such as the inherent limitation on production, the inability to handle the constraints and harness the potentials of its resource base, and the lack of access to gains from associated production and exchange activities. In this broader context mountain (and hill) areas and their communities share attributes of poverty-generating processes that can be found anywhere in the world. In addition, mountain areas are

CONTENTS

	Page
1. Introduction	1
2. Mountain Habitats and Dominant Characteristics	1
3. Mountain Specificities and Poverty Implications	3
4. Traditional Coping Strategies	6
5. Development Interventions	7
<i>The Perceptions underlying Interventions</i>	7
<i>Key Features of Development Interventions</i>	8
<i>The Way Out</i>	10
References	13

1. Introduction

Fundamentally, poverty of an area, or of its people as a group, is a product of any or all of a number of factors such as the inherent limitation on productive resources, the inability to handle the constraints and harness the potentials of its resource base, and the lack of access to gains from associated production and exchange activities. In this broader context mountain (and hill) areas and their communities share attributes of poverty-generating processes that can be found anywhere in the world. In addition, mountain areas are characterised by some specific circumstances that shape the pace and pattern of activities that promote conditions of poverty and obstruct poverty alleviation efforts. These circumstances, in turn, are caused by characteristics and conditions such as inaccessibility, fragility, marginality, diversity, and under-utilised 'niche' of mountain areas. Owing to their overwhelming presence and their operational consequences, these characteristics are described as mountain specificities (Jodha 1990). This paper discusses the dynamics of poverty and poverty removal in mountain (and hill) areas in the context of these conditions. The paper discusses the implications of mountain specificities vis a vis the factors and processes which are central to the economic development and welfare of the people. This will also help indicate the specific nature of poverty-generating processes in mountain areas and the required remedial strategies. The discussion may help to develop a framework through which various poverty, development, and environment-related issues could be integrated. The paper discusses the issues central to the poverty and anti-poverty processes in the mountain context, rather than quantified dimensions of poverty and inter-class or inter-personal inequity aspects. Furthermore, it presents the synthesis of understanding generated through past and ongoing studies. It draws heavily on documentation on the above studies (Jodha et al. 1992 and Jodha 1991).

In Section 2 the aforementioned mountain specificities as a background to the discussion in Section 3, on impediments to economic activities and their consequences in terms of poverty-generating processes in mountain communities, are briefly commented upon. Section 4 briefly deals with the traditional approaches to the said constraints created by specific mountain conditions and with the reduced feasibility and efficacy of traditional measures in the changed context. Section 5 deals with the development interventions as poverty-alleviating measures and the way they manage or bypass the imperatives of mountain specificities. The paper concludes by advocating the incorporation of the mountain perspective into development interventions to make them effective means of poverty alleviation.

2. Mountain Habitats and Dominant Characteristics

The important conditions characterising mountain habitats, which separate them from the plains, include inaccessibility, fragility, marginality, diversity, and 'niche' (Jodha 1990 and 1992). In the present paper, we briefly introduce them and describe their implications in terms of the circumstances that tend to create conditions of poverty and to obstruct poverty alleviation measures in mountain areas.

Inaccessibility is a product of altitude and terrain and a major constraint in most mountain areas (Hewitt 1988). It obstructs mobility; leads to higher costs of transportation and other logistics for development interventions; imposes isolation and "closedness" on a system; and restricts the scope for higher productivity of resources through enhanced use-intensity, higher use of inputs, and resource upgrading, as these changes crucially depend upon mobility and external linkages. The sustainability of human welfare or survival under such conditions is closely associated with local, resource-centred diversification

of activities and a focus on the regeneration, protection, and recycling of resources and products, as well as collective sharing systems. The socioeconomic dimension of inaccessibility also means that people have limited access to the development gains of the mainstream economies. It also means that there are information gaps which make it difficult for decision-makers to arrive at successful intervention strategies vis a vis mountain habitats.

Fragility, a product of verticality, steep slopes, and other associated biophysical conditions, makes mountain areas most vulnerable to degradation, even with little disturbance (DEFIL 1988). Mountains thus offer limited resource use/production options which in turn have low payoffs. Fragility not only prevents a higher intensity of land use but also limits both the physical and economic scope of input use. There is limited scope for the use of external inputs, and for resource manipulation or upgrading, because of physical limitations and the associated high investment and maintenance costs. Fragility, therefore appears to be the most constraining factor in land use for high productivity through high use-intensity in mountain areas. The resource-use options, in the context of fragility, need to focus on land-extensive systems; a combination of productivity and protection measures; resource-upgrading using nature's own processes (e.g., use of soil building/binding plants); and intensification as permitted by adaptations of resource characteristics (e.g., terracing steep slopes before using them for cultivation). Delicate human life-support systems (vulnerable to collapse, following increased external pressures) also represent an aspect of fragility.

Marginality, like other mountain characteristics discussed here, has both biophysical and socioeconomic dimensions. It is a product of both natural and man-made factors (Blaikie and Brookfield 1987). Marginality shares most of the implications of fragility; e.g., limited and low payoff options and the high cost of upgrading resources which make the marginality of resources and people a major constraint to sustainable resource-use for high productivity and poverty alleviation. Accordingly, dependence on nature's processes (including regeneration), diversification, interlinkage of production activities, self-provisioning, recycling, and collective sharing are crucial to survival and growth in such an environment.

Diversity, or internal heterogeneity, resulting from a high degree of spatial, temporal, physical, and biological variability over short distances, is an important feature of mountain areas (Troll 1988 and Jochim 1981). This is a basis for both current and potential activities with significant interlinkages. If properly harnessed this offers potential for higher productivity, without damaging the production potential of the resource base. Under traditional systems, whether one looks at the human food chain, or income flows, or occupational patterns, the diversification was the linchpin of resource management and production activities. However, key requirements for such resource-use systems are the understanding and the harnessing of land resource diversity in order to avoid narrow specialisations that violate the imperatives of diversity.

'Niche' represents the special situations prevailing in mountain areas wherein the resource base and environmental conditions create the potential for products and activities that have a comparative advantage over the plains (Brush 1988). Irrigation and hydropower potential, timber and tourism, and minerals and medicinal plants, are some examples of mountain 'niche'. Most of its implications are quite similar to those of diversity as it is partly a manifestation of the diversity of mountain resources. 'Niche' offers a number of opportunities for resource and product-centred activities which could enhance both productivity and human welfare on a sustained basis. "Harnessing with protection" has to be the key focus of interventions addressed to 'niche'. Many of the multiple 'niche' in the mountains are linked to land-based activities.

It should be noted that within mountain areas or within single valleys, the above specificities vary significantly (e.g., all areas are neither uniformly fragile nor equally inaccessible, etc). Furthermore, most of the above characteristics, due to their common biophysical foundations, are interrelated. Modifying one may influence the others.

Mountain communities, through generations' of experience, have understood these differences and have evolved methods of adapting to the limitations and potential of mountain conditions (Guillet 1983). Various features of traditional farming systems and resource management reflect them. They involve either amending the circumstances to suit human needs (e.g., terracing of steep slopes for cultivation) or focussing on activities (e.g., mixed farming, intercropping) that could make efficient use of diverse resources. In addition to technological measures, the adaptations include institutional arrangements such as the provision of common property resources and the employment of social sanctions to regulate the use of fragile resources. This paper briefly refers to them under the section on traditional coping strategies.

3. Mountain Specificities and Poverty Implications

In the context of this paper's theme, the implications of the mountain specificities described above can be stated in terms of poverty-generating conditions as well as obstructions to poverty alleviation. These conditions and observations are at three interrelated levels which, on the basis of past human experience, can be considered as preconditions for the economic betterment of the people. They are given below.

- (i) Conditions reflecting **potential** or usage capacities of the natural resource base (e.g., physical production possibilities, range and quality of production options).
- (ii) Circumstances or factors that condition the **harnessing** or management of production potential (e.g., technologies, human skills, infrastructure and other support systems, capital investment).
- (iii) The circumstances that determine the nature, scope, and **opportunities for exchange** activities which are an integral part of the gainful harnessing of resource potential in an open and interlinked economic system (e.g., infrastructure, physical and market linkages, terms of exchange).

Poverty alleviation also presupposes **access to the gains** resulting from satisfaction of the above preconditions. A juxtaposition of the preconditions for gainful economic activities (reducing poverty) and the operational implications of mountain conditions (specificities) can reveal the complexity of factors and processes underlying poverty in mountain areas. These are given in Table 1.

In the light of the description of mountain specificities and their implications in the preceding section, it is not necessary to elaborate on Table 1. However, it should be reiterated that inaccessibility, fragility, and marginality, in their respective ways, tend to obstruct the fulfillment of most of the preconditions for poverty alleviation in the field of primary production, harnessing of resource - 'niche', and trade and exchange. At the same time, diversity and 'niche' offer some scope for fulfilling the aforesaid preconditions for poverty-alleviating activities.

Table 1: Poverty-reducing Processes and Mountain Specificities

Usual preconditions associated with poverty reduction processes (1)		Mountain specificities favouring (F) or obstructing (x) preconditions (1)				
		Inaccessibility	Fragility	Marginality	Diversity	'Niche'
(A)	Primary Production Level					
o	Overall physical production possibilities	x	x	x	F	F
o	High productivity/high payoff options	x	x	x	F	F
o	Resource use intensification and input absorption capacities		x	x	F	F
(B)	Harnessing Resource 'Niche'					
o	Infrastructural logistics	x	x			
o	Investable surplus and relevant transferable technologies		x	x	x	
o	Gains of scale and specialisation			x	x	F
(C)	Trade and Exchange Links					
o	Physical infrastructure and market integration	x	x			
o	Surplus production and processing	x	x	x		
o	Favourable terms of trade	x		x		
o	Transferability of external experiences	x	x		x	
(D)	Easy and Equal Access to Gains from (A to C)	x		x	x	

- a. Most of the mountain specificities have both biophysical and socioeconomic cultural dimensions which affect the above preconditions in different ways. The table gives a summary view.

Stated differently, the biophysical conditions of mountain habitats create various objective circumstances that not only impose structural constraints on production possibilities but also shape the pattern of human responses, some of which may generate and accentuate poverty conditions. To elaborate on this we reflect on both the traditional human coping strategies and present day development interventions in mountain areas. In doing so, rather than focussing on individual measures, we comment on their thrusts and approaches. Some of these are summarised in Table 2. However, before elaborating on them the following should be stated.

Table 2: Poverty-generating Circumstances in Mountain Areas

Traditional Coping Strategies and the Conventional Development Interventions

Poverty-generating/promoting circumstances	Traditional coping strategies	Development interventions
<p>A. <u>Primary production level</u></p> <p>Limited and low productivity options; low carrying capacity resources (low use intensity, low input absorption), limited non-farm activities</p>	<p>Subsistence-oriented activities; option maximisation through resource upgrading (e.g., terracing), diversified interlinked activities; low cost, local resource-centred input use; focus on self-provisioning, recycling, collective sharing, combining land intensive and land extensive activities</p>	<p>Selective upgrading of resources; resource use intensification with new technologies, subsidies; narrow specialisation ignoring imperatives of diversity, fragility, etc while promoting productivity; disregarding regenerative processes, recycling, totality of production systems; high level of subsidisation</p>
<p>B. <u>Constraints to harnessing resource potential</u></p> <p>Limited opportunities for surplus generation and reinvestment, product processing; infrastructural difficulties, technological gaps, capital scarcity</p>	<p>Subsistence-oriented, labour-intensive activities; need-based limited harnessing of 'niche'; resource recycling; folk technologies suited to resource capacities; self-provisioning oriented semi-closed system</p>	<p>Through external support, development of infrastructure, large-scale harnessing of 'niche' by ignoring local needs; extractive pattern of resource use, ignoring side effects of large-scale operations; limited local opportunities; creating a dual sector economy</p>
<p>C. <u>Exchange Links</u></p> <p>Limited tradeable surplus, processing, marketing; unfavorable terms of trade; limited transferability of external experiences, lack of information for outsiders</p>	<p>Focus on self-provisioning and petty trading; external linkages through transhumance and migration, limited need-based exchange, dependence on agronomy, ethno-engineering</p>	<p>Physical and market integration; discardment of traditional approaches; over-extraction and unfavourable terms of exchange; subsidisation of production / consumption, increased dependency; domination of external market forces</p>

Undoubtedly, when compared with the prime land situation (i.e., areas with fertile land, right topography, adequate moisture, and available infrastructural facilities), the mountain situation described above may appear to be relatively inferior. However, if the history of prosperous communities in mountain areas and the latter's present day contributions to mainstream (plains/urban) economies in the developing countries is any indicator, poverty need not be the unavoidable consequence of mountain specificities. The latter offers a complex of constraints and opportunities which if properly managed, may convert mountain areas

into poverty-free regions. Failure to relieve poverty should, therefore, be attributed to man-made circumstances rather than to the inherent limitations of mountain habitats. Seen from this perspective **"mountains plead non-guilty"** for the poverty of their inhabitants. This is elaborated upon in the following discussion.

4. Traditional Coping Strategies

The traditional measures for handling the biophysical and related constraints and harnessing the opportunities in mountains, although neither highly productive nor very effective in today's context, were able to support a sustainable lifestyle in the circumstances of low population pressure on mountain resources. The potentially poverty-promoting conditions, such as availability of limited and low productivity and low payoff-options, were met by focussing on subsistence-oriented but stable agriculture and option maximisation through diversified, interlinked land-based activities (crop, livestock, forestry, etc), a high degree of resource/product recycling, and collective sharing. The constraints imposed by the low-carrying capacity of resources (reflected through unsuitability of land-intensive practices and the low physical and economic input absorption capacities of land) were managed through resource upgrading (e.g., terracing), dependance on low-cost locally available and locally-regenerated resources, and complementary use of land-intensive and land-extensive practices. Detailed evidence of these aspects has been collected by different scholars (Jochim 1981, Hewitt 1988, Guillet 1983, Jodha 1992, and Allan et al. 1988).

However, the subsistence orientations of agriculture and related activities did not produce sufficient surplus for reinvestment or for infrastructural development. This induced the people to focus mainly on primary sector activities with very limited secondary (processing) and tertiary sector (trading) activities. This, in turn (partly due to the lack of physical and market linkages), resulted in the system becoming a semi-closed economy with limited 'niche'-based petty trading and external linkages; mainly through migration and transhuman, which did not need a high level of communication infrastructure. Under these need-based external linkages (without infrastructural support), mountain communities usually suffered unfavourable terms of exchange. In the absence of requisite levels of investment, relevant technologies, and infrastructure, mountain 'niche' were rarely harnessed on large, commercial scales, except, say, for the auctioning of timber by feudal rulers for revenue (Jochim 1981 and Guha 1989).

From the 'poverty' perspective in the context of subsistence economy, mountain communities in the past seemed to have sustained themselves (and growth in many cases) despite all of the abovementioned constraints. Besides supply-oriented measures (e.g., diversified, resource-regenerative practices, recycling) institutional means for managing pressure on the resources (e.g., regulation of the intensity of resource-use, collective sharing) were the important factors behind the sustainable survival of the people (Sharma and Partap 1993). Thus, based more on circumstantial inferences than on hard quantitative data, one could suggest that poverty was not a key feature of traditional mountain communities.

However, most of the above mechanisms facilitating sustainable survival (or the absence of stark poverty) in the past involved a high degree of diversification, land-extensive production practices, and greater social discipline for resource-use regulation, collective risk-sharing, etc. These practices are less feasible in the context of today's changed demographic and institutional environment (Jodha 1991). Moreover, through their side effects, both market and State interventions, in their respective ways, have not only added to the demand pressure on mountain resources but have also marginalised the folk technologies and the role

of community sanctions regarding resource use. The net result is the unsustainability of past survival systems and the accentuation of poverty conditions in mountain areas (Jodha 1991).

5. Development Interventions

Irrespective of whether the poverty of mountain people has increased or has acquired greater visibility, poverty issues have become part of the conscious concern of the State in recent decades. Consequently, although to a lesser extent than in the plains, the extent of development interventions in mountain areas has increased significantly in recent decades in the HKH Region (Banskota and Jodha 1992a). As a background to "the State owning the poverty" (Sharma and Partap 1993), and acting against it, the following issues should be considered.

The Perceptions underlying Interventions

If one looks through planning and development documents, including those relating to individual projects (funded internally or externally), the State's sense of poverty and of other problems in mountain areas are reflected through the following perceptions (Jodha et al. 1992, Banskota and Jodha 1992a, and Jodha 1991).

In the comparative context of the mainstream situation (i.e., the plains), economic conditions in the mountains are considered to be poor; productivity levels and production/consumption options are judged to be low and inferior respectively; mountain people are seen to be isolated and to have limited access to State-sponsored welfare and income/employment opportunities; and the mountain areas are seen to have rich potentials that are not being harnessed. However, the State (i.e., its policy-makers) does not seem to recognise and use an important invisible 'niche' of mountain habitats, i.e., the rationale behind the traditional resource management systems, which is a product of people's accumulated experiences through generations of trial and error.

Guided by the concern for poverty and for the backwardness of mountain people; the need to extend the State's welfare net to mountain people; the integration of mountain areas and people into the mainstream economy; and the need to harness the unique potential of mountain areas (hydropower, timber, etc) for national development, the States in the HKH Region (on their own or through external aid) have introduced several development interventions in recent decades. The latter could directly or indirectly relax the poverty-promoting constraints generated by mountain specificities which traditional communities find difficult to manage. The State is better equipped to do so as it has access to better technologies, skilled manpower, financial resources, macro-level perspectives, and the legal powers to accomplish the aforesaid tasks. However, one crucial thing that the State does not seem to have is the clear understanding of mountain specificities, or rather their imperatives. Nor is it concerned about acquiring it by understanding the traditional systems. This lack of understanding and 'feel' for mountain realities can be perceived as a product of the inaccessibility, marginality, diversity, etc characterising mountain areas; as they greatly contributed to information and knowledge gaps about mountains which blinded the perspectives of the mainstream decision-makers vis a vis mountain areas. Consequently, development interventions usually focussed on symptoms (e.g., low productivity, or underutilised 'niche') but could not understand the underlying driving forces or processes, e.g., interlinkages between 'niche' and fragility or between fragility and diversity, that needed more careful and integrated approaches to, say, productivity

promotion through outright increase in the use intensity of fragile land, or replacement of nature's regenerative processes by high, energy-intensive external inputs. Similarly, due to interlinkages between fragility and inaccessibility and accessibility and resource extraction rates, the increased accessibility in mountain areas is not only a matter of creating a network of roads but also of managing its side effects on fragile slopes and easily over-exploitable 'niche'.

Key Features of Development Interventions

The above factors influenced the approach, design, and consequences of public interventions in mountain areas (Jodha 1992). They are reflected through certain key features. These are given below.

- i) Extension of Generalised Approaches. As a product of decision-makers' perceptions, training, background, and biases, most of the development interventions or anti-poverty measures in mountain areas are largely unmodified extensions of programmes evolved for non-mountain areas. Whether one looks at the 'food first' focus and discouragement of 'sideline activities' (e.g., diversification) in the pre-1978 policies of China or the land reforms programme from the 1950s and integrated rural development programmes from the 1980s onwards in India or HYV-based agricultural production programmes in any of the HKH countries, a common feature is the imposition of externally evolved approaches on mountain areas. Their inappropriateness and ineffectiveness partly explain the persistence of poverty in mountain areas (Banskota and Jodha 1992a and Sanwal 1989).
- ii) Missing Mountain Perspective. Relative to the above, another feature of development interventions is their disregard of the imperatives of mountain specificities in their design and implementation which are usually based on experiences in non-mountain areas. This applies to practically all activities ranging from the choice of norms and yardsticks for investment allocation and performance evaluation to the choice of technologies, administrative arrangement, design of support services, etc (Jodha 1990, Banskota and Jodha 1992a and 1992b). A few concrete examples can be given. Whereas the fragility and marginality of mountain resources call for extensive types of land use, production programmes promote intensification even on fragile slopes with the help of subsidies and extension advice. Similarly, although diversity calls for a focus on interlinked land-based activities with multiple goals, the programmes encourage narrow specifications using high energy-intensive external inputs. Sectoral development projects segregate activities (e.g., crop, livestock, horticulture, forestry) which are organically interlinked in the mountains. The same can be said to apply to infrastructural development when it fails to balance the vulnerability of fragile slopes with the design and density of roads. While inaccessibility and diversity call for a decentralised and participatory approach, most of the support services (credit, extension, etc) are centralised and rigidly structured (Jodha 1990 and 1991 and Banskota and Jodha 1992a).
- iii) Implicit Negative Orientation. In keeping with the concerns and approach of the State towards mountain areas (e.g., relating to the backwardness and poverty of mountain areas, their integration with the mainstream systems, harnessing of mountain 'niche', etc), development interventions acquire a specific focus and orientation which have serious negative side effects on the mountain areas and on their people. These attributes could be categorised as inappropriate overemphasis on: (a) intensification, (b) integration, (c) extraction, and (d) substitution or impositions (Jodha 1991).

- (a) **Intensification** of mountain resource use is the hallmark of all programmes directed towards raising productivity, especially the productivity of mountain agriculture. However, their focus is on short-term considerations, guided by pressure to produce more even from marginal and fragile resources. Thus, the intensification approach becomes indiscriminate. This disregards the value of diversification and the complementarity of intensive and extensive types of land use; productivity of the total system (covering biomass as well); and the importance of resource regenerative processes. The final consequence of indiscriminate intensification means resource degradation, giving rise to a vicious circle of degradation - poverty (Jodha 1991 and 1992).
- (b) **Integration** of mountain areas with mainstream plains or urban economies through physical infrastructure, market links, and legal and administrative processes is a useful approach to the reduction of inaccessibility and of its consequences. But the uncontrolled side effects of integration have several negative implications which add to the pressure of external demands on mountain resources and lead to their overextraction. As a result of the marginality characteristics of mountain areas and the marginalisation of mountain people, the situation becomes dominated by mainstream concerns. The age-old resource management systems, regenerative folk agronomy, recycling and sharing systems, and community control and regulation of resource use are marginalised and disappear in due course (Jodha 1991). The poverty implications of such changes hardly need elaboration. The creation of a dual sector economy, represented by commercialised, accessible areas and subsistence-oriented distant areas, is another side effect of unbalanced integration.
- (c) **Extraction**, although a phenomenon related to the intensification and integration processes, is separately listed because our focus here is on over-exploitation of mountain 'niche'. The products and activities with a high comparative advantage for mountain areas, such as irrigation, hydropower, timber, tourism, and minerals, are obvious examples; where guided by the needs of mainstream economies (and mountains), governed by market signals, and the State's revenue requirements, the resources and surpluses of mountain areas are syphoned out at unequal terms of exchange and compensation for local communities. Owing to the specific nature of technological, administrative, and fiscal measures involved, there are few local multiplier effects from such projects. Hence, the trickle-down benefits in terms of increased income/employment options for local people are quite limited. The environmental and resource-degrading implications of the large-scale extraction of mountain 'niche', finally influencing the people's livelihood systems, is another poverty-related consequence of over-extraction. Another related issue is that the bulk of public investment, whether for infrastructure or for other activities, is concentrated in the areas with high potential for extraction in order to help mainstream, urban economies (Banskota and Jodha 1992b).
- (d) **Substitution** (or impositions) implies the discarding of the traditional measures, both technological and institutional, which were evolved by mountain communities for their sustainable survival. Besides the several examples already mentioned in different contexts, we may further add that development interventions have tried to substitute people's systems with government measures; the natural processes of resource regeneration with bio-chemical subsidies; diversification by narrow specialisation; folk agronomic knowledge with externally evolved R & D based technologies; and self-help and collective sharing with external relief (Jodha 1991).

Productivity and poverty removal require that traditional knowledge be complemented by modern knowledge. This aspect is not a strong point in development interventions.

- iv) **Emerging Paradoxes.** As a consequence of the abovementioned features, most development interventions generate quite paradoxical situations. The biggest of the visible paradoxes is that the measures directed to relax poverty-generating circumstances (e.g., land use intensification and high input use for higher agricultural productivity, large-scale harnessing of mountain 'niche', and physical and market integration for generating more income options) also contribute to the processes that tend to accentuate poverty in mountain areas. Table 3 summarises such situations with reference to the interventions focussed on managing poverty-generating constraints.

Table 3 lists the measures or development interventions directed towards raising productivity, harnessing mountain 'niche', and bringing about appropriate gains through trade and exchange. Without belittling their success in a number of areas, it should be added that, owing to their short-term focus and their emphasis on symptoms rather than on basic processes (associated with mountain specificities and their interlinkages), these interventions in many mountain areas are inducing the process of change; which is leading to the emergence of unsustainability and prospects of increased poverty. This is because although the interventions fully match the requirements in terms of responses to poverty-generating constraints (e.g., increased resource-use intensity to raise productivity or harness mountain 'niche' for high income and investable surplus), they fail, at the same time, to respond to the imperatives of resource characteristics (i.e., mountain specificities and their interlinkages). Thus, once again, it is a case of the missing mountain perspective which in turn results in the paradox of development interventions leading to a situation in which anti-poverty measures accentuate poverty. This explains the emerging dominant scenario in mountain areas where, despite increased development efforts, poverty is increasing, especially in terms of health, the productivity of the resource base, and the per capita availability of products (Jodha 1992). ICIMOD has put together nearly two dozen indicators of such measurable or verifiable negative changes, and these are described as indicators of unsustainability (Jodha 1992 and Shrestha 1992).

The Way Out

This calls for a fresh look at the development strategies for mountain areas. The linchpin of the new strategies has to be mountain development with a mountain perspective (Jodha 1991 and 1992).

A few important considerations for such a development strategy are given here.

- (a) **An Integrated Approach.** A full understanding of mountain specificities and their imperatives is the first important step. Since most of the mountain specificities have common biophysical foundations, the handling of one also affects the other. We have mentioned already the example of roads that reduce inaccessibility, but which concomitantly adversely affect the fragile slopes, pace and pattern of extraction, and finally the depletion of mountain 'niche'; as well as the narrow specialisation in agriculture which adversely affects diversity and the sustainability of resource use. In fact the interrelationships of mountain specificities serve as a compelling basis for an integrated approach to mountain development (Jodha 1990 and 1992).

Table 3: The Paradox of Poverty Alleviating Strategies Accentuating Poverty in Mountain Areas

Poverty-alleviation Measures	Poverty-accentuating Processes	The Reasons behind the Paradox
<p>A. Productivity Promotion</p> <p>High land use intensity; high energy-intensive external input use; high payoff options; narrow specialisation; subsidised support services</p>	<p>Depletion of land resources; increased bio-chemical, economic subsidisation; reduced diversification, resource regeneration and recycling; increased external dependency; breakdown of the systemic integrity of total production systems; emergence of a dual-sector economy with associated inequities; operation of poverty-induced and profitability-induced resource depletion process</p>	<p>Disregard of mountain specificities, e.g., fragility, diversity, marginality, and their interrelationship; discard of the rationale of indigenous resource management practices, institutional arrangements regulating resource use, community obligations, self-provisioning, sharing, etc</p>
<p>B. Harnessing Mountain 'Niche'</p> <p>Large-scale commercial use of the mountain potential (water, hydropower, timber, tourism, horticulture), infrastructural network; technological, fiscal support systems</p>	<p>Choice of scale, technology, support systems with limited local level multiplier effects; environment-degrading side effects; marginalisation of multiple petty 'niche' and people's livelihood systems; infrastructure, concentrated in high potential areas; resource degradation exceeding resource regeneration; creation of pockets of prosperity only</p>	<p>Segregation of high potential areas/activities from total ecosystems; with little concern for fragility and diversity as well as integrity of ecosystem/resource base; insensitivity to long-term consequences and interrelationships of different mountain specificities</p>
<p>C. Integration/Exchange Links</p> <p>Physical and market integration; product processing and exchange; diversification in income sources, gains of trade, exchange; network of the communication infrastructure</p>	<p>Focus on selective areas and products; increased pressure of unregulated external demand, causing resource extraction, degradation; insensitivity to resource limitation; terms of exchange unfavourable; bulk of the subsistence producers by-passed; marginalisation of petty exchange systems</p>	<p>Disregard of imperatives of marginality, inaccessibility, and diversity characteristics; insensitive to carrying capacity of mountain resources; failure to have integrated approach balancing profitability and protection; little regulation of demand pressures</p>

- (b) The Rationale of Folk Knowledge. Despite better technological and fiscal support and the legal authority of the State, development decision-makers cannot replace the mountain people's understanding of mountain conditions and their imperatives. At the same time, because of low productivity and other changed contexts, traditional production systems are neither an answer to the current problems of poverty nor can they be rehabilitated in their old form. However, their rationale is amply relevant today. Hence, a need for understanding this rationale and integrating it into development interventions to avoid or minimise the "paradoxes" mentioned earlier (Jodha and Partap 1992).
- (c) A Two-pronged Approach. An important aspect of the diversity of mountain areas relates to the degree of accessibility. Depending upon the other conditions, such as fragility, marginality, resource diversity, and 'niche', the accessible and remote or inaccessible areas require a different focus. Building on the already visible process of transformation in accessible areas, agro-business oriented measures may need greater emphasis in accessible areas. ICIMOD studies in some areas of Himachal Pradesh (India), Ningnan County (West Sichuan, China), and Ilam district (Nepal), to cite a few cases, have demonstrated that it is possible to raise income and welfare options for the people through commercialisation and diversification without undue resource degradation. For inaccessible areas, a focus on biomass productivity and stability, with an orientation towards harnessing specific 'niche' for commercial purposes, seems to be the better strategy. However, external, commercial linkages will help mountain people only if they are equitable and unexploitative. The investment, R & D, and support service logistics will have to be designed in keeping with the two-pronged approach.
- (d) De-marginalisation of Mountain People/Areas. One of the primary reasons for the disregard of mountain specificities by mainstream decision-makers is the 'marginal status' of mountain areas, mountain production systems, mountain people, and their knowledge vis a vis their counterparts in the plains/urban areas. As a result of marginality, not only do mountain people count least in the decision-making processes affecting the mountains, but they are also subject to exploitation by means of unfavourable terms of exchange when mountain areas/people are integrated into the mainstream situation. Lipton (1977) elaborates upon such issues in a wider context. This could be a long process with several political implications, yet the de-marginalisation of mountain people is an essential step in mountain development with a mountain perspective. In concrete terms, it may involve the mountain people's command over mountain resources and consideration of their knowledge and concerns while designing development interventions, ensuring a fair share in gains from harnessing their 'niche' with external assistance. This also implies the empowerment of groups (such as mountain women), which are key managers of the environment and resources at village level.

The ongoing work at ICIMOD is focussed on redesigning the thinking process, project formulation, and field action incorporating the above (a to d) considerations.

References

- Allan, N.J.R., Knapp, G.W., and Stadel, C. 1988. *Human Impacts on Mountains*. New Jersey: Rowman & Littlefield.
- Banskota, M. 1990. "Economic Policies for Sustainable Development in Nepal". Kathmandu: ICIMOD.
- Banskota, M. and Jodha, N.S. 1992a. "Mountain Agricultural Development Strategies: Comparative Perspectives from the Countries of the Hindu Kush-Himalayan Region". In *Sustainable Mountain Agriculture*. Jodha, N.S., Banskota, M., and Partap, T. (eds). Delhi: Oxford and IBH Publishing Co.
- Banskota, M. and Jodha, N.S. 1992b. "Investment, Subsidies, and Resource Transfer Dynamics: Issues for Sustainable Mountain Agriculture". In *Sustainable Mountain Agriculture*, op.cit.
- Blaikie, P.M. and Brookfield, H. 1987. *Land Degradation and Society*. London: Methuen.
- Brush, S.B. 1988. "Traditional Agricultural Strategies in Hill Lands of Tropical America". In *Human Impacts on Mountains*, op. cit.
- Development Strategies for Fragile Lands (DESFIL). 1988. *Development of Fragile Lands: Theory and Practice*. Washington D.C.: DESFIL.
- Guha, R. 1989. *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya*. Delhi: Oxford University Press.
- Guillet, D.G. 1983. "Towards a Cultural Ecology of Mountains : The Central Andes and the Himalaya Compared". In *Current Anthropology*, 24, 561-574.
- Hewitt, K. 1988. "The Study of Mountain Lands and Peoples: A Critical Overview". In *Human Impacts on Mountains*, op. cit.
- Jochim, M.A. 1981. *Strategies for Survival: Cultural Behaviour in an Ecological Context*. New York: Academic Press.
- Jodha, N. S. 1990. *Sustainable Agriculture in Fragile Resource Zones: Technological Imperatives*. MFS Discussion Paper No. 3. Kathmandu, Nepal: ICIMOD.
- Jodha, N. S. 1991. "Agricultural Growth and Sustainability: Perspectives and Experiences from the Himalayas". In *Agricultural Sustainability Growth and Poverty Alleviation: Issues and Policies*. Vosti, S.A., Reardon, K.T., and Von Urff, W. (eds). Feldafing, Germany: Food and Agricultural Development Centre.
- Jodha, N. S. 1992. "Mountain Perspective and Sustainability: A Framework for Development Strategies". In *Sustainable Mountain Agriculture*, op.cit.

- Jodha, N. S., Banskota, M., and Partap, T. 1992. "Strategies for Sustainable Development of Mountain Agriculture: An Overview". In *Sustainable Mountain Agriculture*, op.cit.
- Jodha, N. S. and Partap, T. 1992. *Folk Agronomy in the Himalayas: Implications for Agricultural Research and Extension*. Kathmandu: ICIMOD (pending publication).
- Lipton, M. 1977. *Why Poor People Stay Poor*. London: Temple Smith.
- Sanwal, M. 1989. "What We Know about Mountain Development: Common Property, Investment Priorities, and Institutional Arrangements". In *Mountain Research and Development*, Vol. 9(1).
- Sharma, P. and Partap, T. 1993. "Population, Poverty, and Development Issues in the Hindu Kush-Himalayas". Paper presented at the International Forum on Development of Poor Mountain Areas, Beijing, China, 22-25, March.
- Shrestha, S. 1992 *Mountain Agriculture: Indicators of Unsustainability and Options for Reversal*. MFS Discussion Paper No. 32. Kathmandu: ICIMOD.
- Troll, C. 1988. "Comparative Geography of High Mountains of the World in View of the Landscape Ecology : A Development of Three and a Half Decades of Research and Organisation". In *Human Impacts on Mountains*, op. cit.

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

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

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

Mountain Farming Systems constitutes one of the four thematic research and development programmes at ICIMOD. The programme deals with agriculture defined broadly to cover all land-based activities (cropping, horticulture, forestry, livestock farming, etc) and their support systems. Currently the major focus of the programme is on the factors and processes contributing to the sustainability/unsustainability of mountain agriculture. This is carried out by examining (through both knowledge reviews and field studies) the sensitivity of public and private interventions to specific mountain conditions. The explicit consideration of the latter conditions can alone assure a mountain perspective to public policies and programmes in the agricultural sector.

Director General: Dr. E.F. Tacke

International Centre for Integrated Mountain Development

G.P.O Box 3226, Kathmandu, Nepal

Telex : 2439 ICIMOD NP

Cable : ICIMOD NEPAL

Telephone : (977-1) 525313

Fax : (977-1) 524509