

## Mountain Perspective And It's Utility: A Framework for Development Strategies

- N. S. Jodha\*

### INTRODUCTION

#### What is Mountain Perspective ?

The almost parallel emergence of unsustainability indicator (i.e. persistent negative trends), along with the acceleration in development efforts in mountain areas, particularly in the Himalayan region, is a matter of serious concern and it calls for a fresh look at the conventional approaches to mountain development. ICIMOD studies (Jodha et. al., 1992) attribute the mixed success or failures of most of the development interventions to their missing mountain perspective. The 'Mountain Perspective', described simply means explicit or implicit consideration of specific mountain conditions or characteristics and their implications while designing and implementing activities in mountain habitats. In fact, the preliminary enquiries into factors and processes contributing to the above mentioned negative changes indicated that the latter are largely a consequence of disregard of specific mountain characteristics and their operational implications by public and private interventions in the areas. A review of successful projects or programmes in mountain areas also shows that knowingly or unknowingly, they have incorporated the imperatives of mountain conditions in their design and implementation (Jodha et. al. 1992).

A rethinking on development strategies for mountain areas, in general, and mountain agriculture in particular, may start with the development of an operational framework that incorporates the imperatives of mountain conditions and sensitivity of public and private interventions to them. This can facilitate proper assessment of constraints and potentialities of mountain areas, as well as conception and designing of policy and programme options suited to the specific situation of the areas. The central focus of such a framework will be on the mountain perspective. The understanding and incorporation of which alone can determine the relevance and effectiveness of any development intervention in mountain areas (Rhodes 1988).

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\* Dr. Jodha is the Head of the Mountain Farming Systems Division, International Centre for Integrated Mountain Development (ICIMOD), Kathmandu.

## Mountain Specificities

The important conditions characterising mountain areas which, for operational purposes, separate mountain habitats from other areas are called here 'mountain specificities'. The six important mountain specificities (some of which might be shared by other areas such as deserts in the plains) are considered here. The first four, namely, inaccessibility, fragility, marginality, and diversity or heterogeneity, may be called first order specificities. Natural suitability of 'niche' (including man made ones) for some activities/ products in which mountains have comparative advantages over the plains and, 'human adaptation mechanisms' in mountain habitats are responses or adaptations of first order specificities. But nevertheless, they are specific to mountains (Jodha, 1990 a). Before describing the major mountain 'specificities', it should be noted that these characteristics are not only interrelated in several ways but within the mountains they show considerable variability. For instance, all locations in mountain areas are not equally inaccessible, fragile, or marginal, neither do human adaptation mechanisms have uniform patterns in a mountain habitats. With full recognition of such realities we may briefly introduce the mountain specificities.

### Inaccessibility

Due to slope, altitude, overall terrain conditions, and periodical seasonal hazards (e.g. landslides, snow, storms, etc.) inaccessibility is the most known feature of mountain areas (Price 1981; Allan 1986; and Hewitt 1988). Its concrete manifestations are isolation, distance, poor communication, and limited mobility. Besides the dominant physical dimension, it has sociocultural and economic dimensions (Jodha 1990 a).

### Fragility

Mountain areas, due to altitude and steep slopes in association with geologic, edaphic, and biotic factors that limit the former's capacity to withstand even a small degree of disturbance, are known for their fragility (DESFIL 1988). Their vulnerability to irreversible damages, due to overuse or rapid changes, extends to physical land surface, vegetative resources, and even the delicate economic life-support systems of mountain communities. Consequently, when mountain resources and environment start deterioration due to any disturbance, it happens at a fast rate. In most cases, the damage is irreversible or reversible only over a long period (Eckholm 1975 and Hewitt 1988).

### Marginality

'Marginal' entity (in any context) is the one that counts the least in the 'mainstream'

situation. This may apply to physical and biological resources or conditions as well as to people and their sustenance systems. The basic factors, contributing to such a status of any area or community, are remoteness and physical isolation, fragile and low - productivity resources, and several man - made handicaps which prevent one's participation in the 'mainstream' patterns of activities (Chambers 1987 and Lipton 1983). The mountain regions, being marginal areas in most cases as against prime areas share the above attributes of marginal entities and suffer the consequences of such status in different ways (Jodha 1990 a and 1990 b). Several entities acquire marginal status when they are linked to dominant entities on unequal terms. In several cases mountain areas too pass through this process.

### **Diversity or Heterogeneity**

In mountain areas, one finds immense variations among and within ecozones, even within short distances. This extreme degree of heterogeneity, in the mountain, is function of interactions of different factors such as elevation, altitude, geologic and edaphic conditions, steepness and orientation of slopes, wind and precipitation, mountain mass, and relief of terrain (Troll 1988). The biological adaptations and socioeconomic responses to the above diversities also acquire a measure of heterogeneity of their own (Price 1981 and Jochim 1981). The diversity of 'heterogeneity' phenomenon, applies to all mountain characteristics discussed here. Diversity acts as a positive attribute for the interlinked activity patterns and should serve as the true basis for assessing mountain areas' carrying capacity.

### **'Niche' or Comparative Advantage**

Owing to their specific environmental and resource-related features, mountains provide a 'niche' for specific activities or products. At the operational level, mountains may have comparative advantages over the plains in these activities. Example may include a specific valley serving as the habitat for special medicinal plants; mountains acting as a source of unique products (e.g. some fruits, flowers etc); and mountains serving as the best known sources of hydropower production. In practice, however, 'niche' or comparative advantages may remain dormant unless circumstances are created to harness them. However, mountains owing to their heterogeneity, have several, often narrow by specific 'niche' which are used by local communities in the course of their diversified activities (Whiteman 1988 and Brush 1988). Proper harnessing of 'niche' can support sustainability while their reckless exploitation can result in elimination of 'niche'.

### **Human Adaptation Mechanisms**

Mountains, through their heterogeneity and diversity, even at micro-level, offer a

complex of constraints and opportunities. Mountain communities, through trial and error over the generation, have evolved their own adaptation mechanism to handle them (Pant 1935; Guillet 1983 and Jochim 1981). Accordingly, either mountain characteristics are modified (e.g. through terracing and irrigation) to suit their needs or activities are designed to adjust the requirements to mountain conditions (e.g. by none-specific combinations of activities, crops, etc). Adaptation mechanisms or experiences are reflected through formal and informal arrangements for management of resources, diversified and interlinked activities to harness the micro 'niche' of specific ecozone, and effective use of upland - lowland linkages (Allan 1986; Forman 1988; Brush 1988; and Whiteman 1988). Adaptation mechanisms helped in the sustainable use of mountain resources in the past. However, with the changes related to population, market, and State, a number of adaptation mechanisms are losing their feasibility and efficacy. It may be noted that understanding their rationale can help in the search for sustainability.

### **OPERATIONAL IMPLICATION OF MOUNTAIN SPECIFICITIES**

There is a rich body of literature in which students of mountain ecology, mountain ethnoscience, and mountain geography in particular have described the above features for different mountain systems (Price 1981; Ives and Messerli 1989; and Allan et.al. 1988). However, to enhance their direct usability in the search for sustainable development in mountain areas, one needs to spell out their operational implications. This is essential to influence the decision processes affecting different activities in the mountains. The operational implications, can in turn be described as (i) objective circumstances which can be easily understood and incorporated into policy and programme designs and (ii) dependent patterns of activities, including traditional practices and patterns of resource use as well as conventional development intervention.

#### **Objective Circumstances**

These imply a set of constraints and potentialities that influence the choice and pattern of activities in the mountains. Distance, physical isolation, high transport cost, poor mobility, difficulties of logistics and infrastructure, vulnerability of risks due to human action and natural hazards, limited input absorption capacities, limited production opportunities, and limited exposure to and limited replicability of experiences from the plains are some of the important elements of objective circumstances in mountain areas. Mountain features such as inaccessibility, fragility, and marginality contribute to them in different ways. On the positive side, the scope for diversified activities, the presence of, often unique but narrow, high potential areas and activities are also a part of objective circumstances in mountain areas. Understanding of the objective circumstances or the complex of constraints and opportunities, created by mountain specificities and their required resource management practices,

may help in designing appropriate strategies for sustainable development of mountain areas. In other words, mountain specificities can serve as a useful tool for identification of options which can serve the goal of sustainability. This will be clear from the ensuing discussion.

### **Dependent Patterns of Activities**

These include patterns of resource use as well as types of production, consumption, and exchange activities, directly or indirectly conditioned by the above mentioned objective circumstances in mountain areas. They include both the traditional arrangements and practices as well as present day public interventions. They represent human efforts, through technological and institutional means at individual and collective levels, to adapt to mountain circumstances or to adapt the latter to human needs. Understanding of the two way adaptation processes and their consequences can help in identification of elements for sustainable development strategies.

## **MOUNTAIN DEVELOPMENT WITH THE MOUNTAIN PERSPECTIVE**

Objective circumstances associated with each mountain characteristic and their imperatives for development interventions can provide broad ideas on how a given mountain characteristics should and should not be handled. Space does not permit elaboration on development imperatives of each mountain characteristic. Hence, in the following discussion, we deal with relatively broader issues where major dimensions of mountain specificities (e.g. their interrelationships) are emphasised. Moreover, under the conventional development approaches, as under specific projects etc., imperatives of individual mountain characteristics (as constraints or opportunities) are better understood and treated than the imperatives of interrelationships between different mountain characteristics. However, for overall development strategies, consideration of the latter is more important. Hence, the development imperatives of mountain specificities as a group are discussed below. The focus of the discussion will on (i) the conventional development paradigm and the mountain context and (ii) the prospects of sustainable development for mountain agriculture - the dominant activity of mountain people.

### **Conventional Development Paradigm**

Admittedly, present day development interventions are a recent phenomenon in mountain areas. Generally, these interventions are inspired and conceived exogenously. Often, they involve pace, scale, priorities, and operation mechanism not well known to mountain areas and people. Most importantly, the development interventions are based on approaches and models which were not conceived and designed for mountain areas.

Consequently, they have generally proved to be less relevant and quite ineffective to handle the problems of mountain areas. This revealed by poor economic performance, over-exploitation of mountain resources, disregard of equity issues, and extreme environmental perturbation (Rieger 1981; Forman 1988; and Sanwal 1989). Discontinuities between conventional development approaches and mountain conditions can be demonstrated at different levels of development interventions (Sanwal 1989). This can be illustrated by comparing some essential features of the conventional development approach and the development approach based on the mountain perspective.

In conceiving a conceptual or operational framework for the development of mountain areas, the key factors to be considered are those that separate the "mountain" from other areas; for example, slope and altitude (Forman 1988). Compared to the two dimensional spatiality of the plains, mountain habitats are characterised by three dimensional spatiality. This additional dimension obstructs the applicability of developmental or other experiences of the plains to the mountains. Because of slope and altitude, and associated conditions or characteristics (which in this paper we call mountain specificities), mountains, examined from the perspective of the plains, are often considered to be relatively difficult environment to live in and in which to replicate development experiences accumulated in the plains. But despite such a perception, the fact remains that mountains have historically been the habitats of flourishing civilisations, with the clear-cut markings of mountain conditions on the complexes of production, consumption, and trading activities (Keay 1977). Furthermore, both societies and economies in mountain areas have never been static. A gradual transformation, involving a two way process of adapting sustenance strategies to mountain characteristics and vice versa, has been an integral part of the "living mountains" (Von Furer Haimendorf 1981; Ellen 1981; and Brush 1988). A clear understanding of these phenomena is a crucial prerequisite for correction the approach to mountain problems and for the initiation of relevant development interventions to handle them. The first step in this direction is to understand mountain characteristics and their development imperative.

### **DEVELOPMENT IMPERATIVES OF MOUNTAIN SPECIFICITIES**

A consideration of complex of varying degrees of the already mentioned mountain characteristics, their multiple dimensionality, and their interrelationships, would give a contextual perspective to decisions and actions in mountain areas. A sensitivity to such a mountain perspective would determine the relevance and effectiveness of any development imperatives of the major attributes of mountain specificities and circumstances created by them.

#### **Multidimensionality**

As stated earlier, most of the mountain specificities have biophysical, socioeconomic, and cultural dimensions. For instance, diversity is found in the physical and biological

features of mountains as well as in the socioeconomic and cultural life of mountain people. The same may apply to the characteristics of fragility and marginality. Incidentally, production and productivity-wise, marginal and fragile areas often coincide with the habitats of marginal plants and marginal people. Inaccessibility, too, has physical and socioeconomic (as reflected by inequalities) dimensions. 'Niche', that impart comparative advantages to the mountains, primarily related to the physical and biological resource base but may also related to the special skills, attitudes, and management approaches of mountain communities.

The complex of mountain specificities and their multiple dimensions help in presentation an array of positive and negative attributes of mountain situations. The focus of development interventions should be on protection and enhancement of positive attributes and maximisation of their role in development interventions. The opposite could be said about the negative attributes. An understanding these attributes can greatly help in determining development goals and priorities and in designing operational programmes. For instance, a reduction in physical fragility by conservation and stabilisation support, needs to be complemented but an emphasis on the protection of botanical fragility (represented by potentially disappearing, delicate plants) as a source of biological diversity. Similarly, while the maintenance of physical and biological diversity is imperative, it calls for a reduction in economic diversities (e.g. inequalities) and encouragement of social integration with protection of diverse values.

### **Interlinked Mountain Specificities**

Yet another important feature of mountain specificities is that most of them are interlinked in two ways: (a) commonality of causative factors and (b) shared consequences of disturbance to each other.

### **Common Causes**

It is well known that most mountain conditions (specificities) share common causative factors. If the relevant factors are grouped under (a) habitat and (b) society (Price 1981 and Whiteman 1988), and related to mountain specificities, the point becomes quite clear. The degrees of diversity, fragility, marginality, human adaptations, and inaccessibility are, in different measures, directly linked to factors such as elevation, slope angle, slope orientation, and exposure. Similarly, climatic factors, such as precipitation and microclimate also contribute to the degree of diversity, fragility, marginality, and human adaptations. Socioeconomic factors, such as ethnicity, type of economic activity, and resource management patterns, play a major role in determining the degree of diversity, marginality, etc. of mountain communities. Owing to the above relationships, any intervention disturbing the underlying common factor will affect other related specificities.

### **Shared Consequences or 'Externalities'**

Partly because of the commonality of causative factors and partly because of their crucial interdependence at usage level, a number of mountain characteristics are invariably influenced by any disturbance or treatment extended to any of them. The consequent impacts could be negative or positive. For instance, when an inaccessibility problem is handled by the construction of a road in mountain terrain, the fragility, due to steep slopes and associated vegetation, is negatively affected.

Similarly, in the marginal and fragile areas, the improved accessibility may encourage a rate of resource extraction higher than the rate of regeneration of the same resource. Improved accessibility may also shatter the traditional occupational patterns and survival strategies of certain mountain communities. Thus, marginal areas and people may be further marginalised (Bjonness 1983). However, improved accessibility could also integrate the hitherto remote and marginal areas (their people and activities) with mainstream situations and reduce their marginality. Such negative or positive impacts, going beyond the intended purpose, are termed negative or positive 'externalities' by economists.

For example, intervention directed to inaccessibility can have both negative and positive side effects on marginality, diversity, 'niche', and adaptation mechanisms. Any treatment of fragility may reduce the degree of marginality and create new 'niche'. But this intervention may have some negative side effects on the degree of diversity and specific adaptation mechanism associated with fragility.

Any efforts directed to reduce marginality of all types will generally have positive side effects on other specificities, apart from on people's adaptation mechanisms that have evolved over time to cope with marginal situations. Efforts to reduce diversity/heterogeneity may adversely affect fragile and marginal situations and specific 'niche' (Bjonness 1983). Steps to protect and maintain diversity will have effects almost opposite to the above. Depending on how 'niche' are harnessed (i.e. conserved and use or simply extracted), these steps will influence other mountain characteristics positively or negatively. Finally, any effort to use people's adaptation mechanisms (i.e. their rationale if not the contents) may make development initiatives more sensitive to the rest of the mountain specificities and would ensure positive side effects on them. This because people's adaptation mechanism have evolved over time through close association with mountain conditions.

### **Features Constraining Development Norms**

Even if they ignore the finer attributes and interrelationships of mountain characteristics, development experts readily perceive broad features of mountain situations which we have described as 'objective circumstances. Accordingly, infrastructure, communication,



and mobility are three interrelated basic facilities with which the pace of development is closely associated. But the conventional straight forward approach to planning and creation of these facilities is obstructed by the different physical, climatic, biological, and even socioeconomic (e.g. scattered settlement patterns) factors contributing to the 'inaccessibility' phenomenon.

Any attempt to overcome these constraints leads to a second set of constraints. The latter, expressed in the language of development economics, include high overhead costs, long gestation periods (i.e. time span between initiation and completion of a project), poor pay-off investment (due to low absorption capacity of the mountains for 'productive' investment), uncertain economics of scale (e.g. gains positively associated with scale of operations), and limited replicability of development experiences generated in the plains. Undoubtedly, other conditions such as fragility, marginality, etc also contribute to the above constraints faced by development planners.

Finally, mountain specificities and their interrelationships throw up several basic issues which are difficult to approach through narrowly conceived development norms and yardsticks. Among them are sustained bio-diversity as a part of human heritage; ecological equilibrium and environmental stability; less immediately visible, hydrological and related consequences of development intervention; a variety of upland-lowland linkages; and equity issues in sharing invisible costs and gains of mountain development. The conventional cost-benefit calculus finds it difficult to capture most of them adequately (Paranjpye 1988). Responses of development planners to them will be mentioned later.

#### **BASIS FOR A RESOURCE-CENTRED INTEGRATED DEVELOPMENT APPROACH**

The comprehension of the above attributes of mountain specificities reveal several implications and imperatives for approaches and strategies in mountain development. Although casually mentioned in the preceding discussion, they are systematically recapitulated here.

#### **Multidimensionality of Development Goals**

The multidimensionality of mountain features calls for basic changes in development goals. This is implied by the need for appropriate treatment of positive and negative attributes of mountain characteristics for the sustainable development of mountain areas. Development goals and needs should be described and defined in broader terms with an explicit focus on issues such as equity, environmental stability, and, of course, economic betterment. In view of the inter-generational equity issues and inseparability of the long-term health of natural resources and their current use pattern, sustainability should be the explicit

component of development objectives. This is in contrast to narrowly conceived goals (per capita income growth, etc.) under conventional approach to development.

### **Resource-centred Strategies**

Development strategies for mountain areas have to be resource-centred. The resource characteristics (fragility, heterogeneity, 'niche', etc.) determine the choice and pattern of resource use, and this in turn should be directed not only to current productivity but to sustained use of the resource base.

Again, due to inseparability of sustainability of the resource base, its use pattern, and its productivity, 'the sustainability goal' itself calls for a resource-centred approach to mountain development. It may be added that by sustainability we do not mean a self-sustaining system that is independent of external links. Conservation and harnessing of mountain potentialities, directly or indirectly through equitable exchange with other regions, are among the essential ingredients of an approach to sustainability.

One may easily contrast the above with the missing resource focus of service or product-centred development interventions (e.g. tourism) or the sectoral and extractive focus of resource-centred interventions (e.g. irrigation, mining, etc.) under the conventional approaches (Singh and Kaur 1985; Bandyopadhyay and Shiva 1985; Paranjpye 1988; Repetto 1988; Mahat 1987).

### **Compelling Basis for Integrated Approach**

Since most mountain characteristics-acting as constraints or indicators of resource base potentials are interlinked due to their broadly common causes and externalities when used, none of them can be treated appropriately in isolation. This forms a compelling basis for an integrated approach to development interventions.

Accordingly, while considering any development option, its backward and forward linkages, or side effects also need full consideration and incorporation into the policy and programme designs. This differs from the conventional approach where sectoral projects are also called "integrated projects" due to their administrative centralisation, etc (Bhati and Swaroop 1985; Sanwal 1989).

### **Planning from Below and Participatory Development**

The earlier mentioned "dependent patterns of activities", represent people's adaptation mechanisms to mountain habitats. They are, in a way repositories of traditional wisdom and experiences of mountain communities in managing and harnessing mountain constraints and resources. To benefit from this, and also to make development interventions relevant to

relevant to the heterogeneous conditions of mountain habitats, it is essential that "planning from below" becomes an integral part of the development approach in the mountains. This, by implication, necessitates a greater role for people's participation and decentralisation at different stages of development planning and implementation.

### **Required Broadening Norms and Procedures**

Owing to the already mentioned factors such as (i) the 'objective circumstances' of mountain habitats, (ii) their inadequate understanding and projection (by development planners) as merely "constraints to development", (iii) the inadequacies of conventional cost-benefit norms to account for negative and positive externalities associated with development interventions, and (iv) the limited replicability of plains' development experiences in the mountains, the conventional development models and approaches need significant changes to become relevant to mountain areas. This becomes all the more clear if one contrasts the major features and orientations of the conventional development approaches with these approaches conceived with sufficient recognition of the mountain perspective.

### **OPERATIONAL UTILITY OF THE FRAMEWORK**

The mountain perspective frame work discussed above is not a simple conceptual exercise. Its relevance and usability has already been proved while analysing a few success stories in Hindu Kush-Himalayas, where, knowingly or unknowingly, imperatives of mountain specificities were incorporated in the design and conduct of the projects/programmes (Jodha et. al. 1992)

Furthermore, as several contributions relating to subject as far ranging as biodiversity in mountains to rapid transformation of Himachal Pradesh a mountain state in India included in Jodha et.al. (1992), demonstrated that the above framework is an effective screening device for understanding relevance and effectiveness of any intervention in mountain areas. Besides, a number of presentations to the present workshop also demonstrate the same.

The above framework has been used for sensitising several high level decision makers including governments and donor agencies to the limitations of conventional development approaches and need for their change. Even at grass root level several NGO's and other field agencies have used some components of the frame work.

However, to make mountain perspective framework as a widely usable decision making facility, it is essential to develop simple and user friendly modules, test them and disseminate.

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