

II. MOUNTAIN REGIONS : NATURAL CONDITIONS AND RISK POTENTIAL

In this section, we comment on the circumstances created by the above-mentioned mountain specificities with reference to their potential role in enhancing or obstructing biophysical processes (regeneration, flexibility, resilience, energy, and material flows) in mountain ecosystems. This essentially recapitulates the natural circumstances in mountains discussed in the preceding pages. Relevant details are summarised in Table 1. Accordingly, inaccessibility, diversity, and 'niche' create circumstances that are largely conducive to the operation of biophysical processes and natural flows. Fragility and marginality, on the other hand, create circumstances less conducive to these processes.

Table 1: Mountain Specificities and Their Environmental Stability/Risk Imperatives

Mountain specificities & their implications ^{a)}	Risk reducing/stability promoting biophysical processes and flows			
	Regeneration	Variability /flexibility	Resilience	Energy/material flows
<u>Inaccessibility</u> (Isolation, limited mobility, limited external linkages, lesser disturbance to system, local resource-based diversification)	(+) ^{b)}	(+)	(+)	(+)
<u>Fragility</u> (Vulnerable to degradation through small disturbance and use intensity, slow recovery, limited and low productivity options)	(-) ^{b)}	(-)	(-)	(-)
<u>Marginality</u> (Limited, low potential, inferior options, vulnerable to shocks)	(-)	(-)	(-)	(-)
<u>Diversity</u> (Basis for diversified, interlinked activities, organic integration of potential options)	(+)	(+)	(+)	(+)
<u>'Niche'</u> (Products, resources, activities with comparative advantages for the mountains, result of diversity and specific resource conditions)	(+)	(+)	(+)	(+)

a) 'Human Adaptation Mechanisms' is another mountain specificity elaborated in the text. Its role in promoting environmental stability is sketched under Table 2.

b) (+) and (-) indicate respectively more favourable and less favourable circumstances generated by mountain specificities for the operation of biophysical processes and flows.

To elaborate, inaccessibility by restricting mobility, and limiting external linkages, helps reduce disturbances and perturbations to the basic biophysical processes. Similarly, diversity (internal heterogeneity) and specific 'niche' characterising the mountains also help in regeneration, in interlinkages between different living and non-living components of the system, and also facilitate intra-system flows of energy, nutrients, moisture, etc. In contrast, fragility and marginality, indicating vulnerability to resource degradation and slow pace of recovery and growth, offer limited scope for above biophysical processes and flows.

Thus, under their natural state, mountains have a mix of more favourable and less favourable circumstances affecting the operation of dynamic processes underlying the health and stability of the mountain environment. Depending on which circumstances (e.g., steep slopes with thin top soil or valley bottoms with rich soil, plentiful moisture, and diverse vegetation) dominate a given area, the risk potential for a mountain environment can be assessed.

Furthermore, as a part of the natural withering, stabilisation, and succession processes, especially in a young mountain system like the Himalayas, the above-mentioned circumstances and their environmental impacts do change (Thompson et al. 1986). However, the role of the natural processes is accentuated by human interventions (Ives and Messerli 1989). Hence, the latter plays a crucial role in altering the circumstances (indicated by Table 1) and their environmental impacts. This forms the subject of the following sections. In connection with the human interventions, an important feature of mountain specificities as elaborated elsewhere should be noted (Jodha 1990b). Most of the mountain characteristics are interrelated with each other because of their common cause or shared consequences in terms of disturbance to the one affecting the others too. The environmental risk or stability implications of these interrelationships of mountain characteristics, in terms of impacts on biophysical processes and flows, become more clear in the context of increased resource use intensification in the mountains to be discussed later.