

5. EFFECTS AND IMPLICATIONS OF MOUNTAIN SPECIFICITIES ON THE ENERGY SECTOR

In general, the extremely slow pace of energy transition in the mountains can be attributed to the slow growth rate of economic activities due to the prevailing rate of development as well as the aforementioned energy sector barriers. These barriers are further aggravated by mountain specificities, displayed by inaccessibility, marginality, and fragility, although the existence of several comparative advantages for the development of the HKH region has been pointed out by many studies (Jodha and Shrestha 1994, Sharma and Banskota 1992). These will have a direct bearing on the energy sector as well.

Box 1 shows the effects and implications of mountain specificities on the energy sector (Sharma 1994a; Jodha and Shrestha 1994, Sharma and Banskota 1992). Inaccessibility induces isolation which means high costs for energy supply systems, and this, in turn, forces local residents to modify their needs to what they have and develop a better understanding of sectoral links (i.e., to maintain the delicate balance between fuel, fodder, and food requirements).

Fragility reflects the vulnerability of energy resources. The decrease in productivity and low resource capability result in diverse settlements and, consequently, the establishment of an energy infrastructure system would incur extremely high costs.

Marginality means exploitation of energy resources by people living near the available resources. The rapid process of 'destruction on the margin' becomes a visible phenomenon, promoting extensive use of marginal areas by people without easy access to resources. Furthermore, people residing in the mountains have a marginal say in the development process, as the cost of not doing anything for the mountain people does

not affect the power equation. Thus, it remains outside major development negotiations and, subsequently, energy technology interventions.

Box 1: Mountain Specificities and Implications on and for the Energy Sector

Mountain Specificities	Primary Attributes	Adaptation Characteristics	Implication on Energy Sector	Implication for Energy Sector
Inaccessibility	Isolation; high cost of supply system; limited access; invisibility of problems	Multiple use of resources and technologies	Interventions failed due to a sectoral approach	Better understanding of sectoral links, i.e., fuel, fodder, and food chain
Fragility	Resource highly vulnerable to rapid deforestation; low productivity and resource capacity, dispersed settlements	High community participation; people-oriented problem-solving; integrated farming system; prevailing barter system	High cost of interventions; higher level of energy input	Augment energy supply; improve efficiency of conversion
Marginality	Limited resources and productivity; minimal consideration of areas/people	Exploitation of potentials by core areas/population, use of marginal areas by others, dependency	Destruction at margin process	Encourage forest management to provide fodder, fuel, and timber
Diversity	Subsistence economy Diverse resources and approaches; environmental situation; large-scale micro-variations in physical/biological attributes; interdependence of production bases	Low risk-taking capability Multiple cropping, diversified upland/lowland farming systems	Slow pace of dissemination Increase in energy inputs, increased dependency on a specific fuel	Link energy and income generation Adopt the need-based approach and diversify fuel use
Niche	Small-scale specialisation; location and area-specific comparative advantage; location-specificity of production and consumption	Emphasis on activities that are mostly of an extractive nature; logging; hydroelectricity	Decentralised energy system preferable	Indigenous technical knowledge-base for maintaining forest areas, traditional machinery/ water wheels

Source: Sharma and Banskota (1992), Sharma (1994a), Jodha and Shrestha (1994), PEP (1995).

Diversification means that the cost of extraction of energy resources in a usable form is high. And also realisation of the economy of scale is not feasible due to the diverse nature of economic outputs (in terms of quality and quantity of output). In order to countermand the disadvantages associated with economic outputs, particular resources and technologies tend to be used for multiple applications.

The opportunities that exist in the mountains include the huge potential of renewable energies and the indigenous technical knowledge systems that are used to maintain ecological balance and operate traditional institutions and technologies.

Given all the facts, the positive approach would be to capitalise on the diversity of the available energy resources for specific purposes by minimising the constraints imposed by mountain specificities (ICIMOD 1995). The positive outlook would be to capture the opportunities generated by mountain specific characteristics rather than harping on the constraints.