

Sustainable Mountain Agriculture: The Crucial Role of Institutional Support

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Introduction

Learning from the Commonalities

Mountain areas (including the hills) are known for an incredibly high degree of diversity and heterogeneity. However, viewed from a micro-level, agro-ecological context they also have significant similarities, but, owing to inaccessibility and associated constraints, such similarities (including human experiences in managing the constraints and in harnessing potential mountain resources in agro-ecologically similar areas) remain unknown and under-utilised. One operational goal of ICIMOD is to help identify such similarities and facilitate replication of successful development experiences amongst comparable areas within the HKH Region. Such experiences may relate to technological innovations, institutional arrangements, indigenous knowledge systems, or area development/transformation processes. What has been stated above forms the central basis for the current work of the Mountain Farming Systems' Division (ICIMOD) on strengthening and reorienting institutional arrangements for the development of sustainable mountain agriculture in the HKH Region. This paper, after giving a brief background to ICIMOD's project on Institutional Strengthening, attempts to highlight the role of institutions in sustainable development and the specific orientation of institutional arrangements to suit mountain conditions. The structure and mandate of institutional arrangements in the HKH Region can be meaningfully assessed by referring to this framework.

Institutional Strengthening: Background to ICIMOD's Initiative

The past work of ICIMOD, in collaboration with national agencies and experts from the HKH Region, observed mixed performances in agricultural as well as general development in the mountain/hill areas of the region. Despite increased efforts and (low, but) enhanced investment, increased public interventions, and infrastructural support, mountain agriculture in general has continued to stagnate. A few transformed, developed pocket areas are exceptions. In fact, in several areas, one finds a rather paradoxical situation in which increased development efforts have been accompanied by a visible and measurable decline in productivity and health of the resource base and the economic conditions of the people (Jodha 1992; Shrestha 1992; Singh 1992; Hussain and Erenstein 1992; Bajracharya 1992; and Shutain and Chunru 1989).

Examination of the broad features of public interventions, including development policies, public sector investment, and technological and infrastructural support programmes, revealed that the primary reason for the ineffectiveness of most interventions is their inappropriateness or inadequacy in terms of extent. Inadequate efforts too should be regarded as inappropriate since they cannot treat problems the way they should (Jodha et al. 1992 and Banskota and Jodha 1992a and 1992b). Table 1 gives the key features of public interventions and their approaches to mountain-specific conditions in the HKH Region.

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Table 1: The Treatment of Mountain Specificities through Development Policies and Programmes in the HKH Region

Mountain specificities/ manifestations (1)	Major approaches in handling (1) and their features and implications (2)	Imperatives of (2)
Inaccessibility (poor transport logistics, high costs, isolation, slow transformation processes)	<ul style="list-style-type: none"> a. Transport subsidy, unintended packages, perpetuation of dependency, inflation-related increase in costs b. Processing and value additions; potential for low-weight, high-value products; limited coverage (horticultural products, etc); conditioned by other support facilities (marketing R & D, etc) c. Mountain roads; high-cost options; longer gestation periods, under-utilisation and immediate low pay-off, spatial inequity of benefits; high resource extraction; negative side effects on the environment; concentration on building roads, disregarding multiple options (e.g., donkey tracks) 	<ul style="list-style-type: none"> a. Integrate with long-term investment strategy, have time-bound, purpose-specific focus b. Product and area-wide coverage; potentially viable high pay-off lead sectors; prospects linked to other support services c. Focus on intra-mountain accessibility; diversification of options; monitoring/ regulation of impacts; long-term focus to satisfy pay-off considerations
Fragility (vulnerability of resources to rapid degradation with high use intensity/disturbances)	<ul style="list-style-type: none"> a. Conservation by 'non-use' (e.g., parks, reserves); limited replicability, non-viability) b. Conservation technology, (conservation measures for forests, watersheds, cropping, etc); limited, subsidy-based spread, confined to project areas; technique-dominated, indifferent to user perspective c. Disregard by default and design; failure to regulate land use/grazing intensity; deliberate measures, e.g., land distribution for cropping, increased commercial extraction (forest etc); institutional/technologies, choices and use of market forces unfavourable for fragile resources 	<ul style="list-style-type: none"> a. Search for measures to balance use and non-use options b. Conservation orientation and focus on user perspective in resource-oriented R & D c. Effective management of pressure (due to population and market) on fragile resources; strict screening of public interventions of their fragility, sensitivity; accounting resource degradation as part of formal cost
Marginality (minimal consideration of area/people by mainstream decision-makers)	<ul style="list-style-type: none"> a. Benevolence and charity focus; help without participation opportunity; generate dependency b. Integration with dominated situation (marriage of unequals); exploitation and further marginalisation of marginal entities c. Big-push approach (externally funded, manned huge projects to induce transformation); mechanisms of resource extraction with limited perceptions of gains to local areas and people 	<ul style="list-style-type: none"> a. Opportunity in decision-making process, decentralisation, local participation, etc b. Mechanisms for equal terms of exchange; priority to local needs; need bottom-up approach c. Safeguard and regulate resource use; mandatory resource reinvestment, biophysical way of compensation; sensitivity to local needs, local participation
Diversity (complex of constraints and opportunities due to diverse resource/environmental situation)	<ul style="list-style-type: none"> a. Focus on diversity of aggregate level, ignoring diversity at micro-level which is the key to resource use; disregard of vast potential associated with them b. Bias against diversity (diversity seen more as source of constraint than opportunity); focus of conventional uniform development intervention, standardised solution, their mismatch with diversity; result of top-down development approach 	<ul style="list-style-type: none"> a. Evaluation of diversity as a key factor while undertaking project formulation b. Deliberate focus on multidimensionality of institutional technological options; understanding of rationale of traditional practices for incorporation into public interventions, bottom-up approach

Mountain specificities/ manifestations (1)	Major approaches in handling (1) and their features and implications (2)	Imperatives of (2)
'Niche' (products/ activities with potential comparative advantages for mountain areas)	<ul style="list-style-type: none"> a. Focus on high potential activities (timber, hydropower, etc); extraction orientation, little sensitivity to local needs and backlash efforts b. Neglect of minor 'niche', neglect of small biophysical resources, by pass people and their diversified activities as source of resilience and growth 	<ul style="list-style-type: none"> a. Regulate extraction rates and distribution of gains; consider negative side effects as part of project cost b. Focus on decentralised, micro-level resource assessment; support for minor but special activities, local participation in project choice
Adaptation mechanisms (traditional practices, ethno-engineering, folk agronomy, collective management systems)	<ul style="list-style-type: none"> a. Anti-tradition bias (of formal policies' programme); R & D, legal, administration sectoral measures indifferent to traditional wisdom b. Institutional incapacities to understand and incorporate traditional knowhow in formal interventions c. New initiatives through NGOs, farming systems, participatory rural appraisal work to make use of traditional knowhow 	<ul style="list-style-type: none"> a. Removal of bias against non-formal initiatives b. Decentralise participatory programmes, evolution of option by working in the field c. Encouragement to new initiatives by making use of their output

Source: Adapted from Banskota and Jodha 1992a.

The inappropriateness of interventions, in turn, is reflected through their failure to fully understand and incorporate the imperatives of specific mountain conditions, such as high degrees of inaccessibility, fragility, marginality, diversity, and mountain specific niche, as well as human adaptation experiences in mountain habitats, which should in fact determine the focus, design, scale, and implementation mode of development interventions. Disregard of mountain specificities and their imperatives implies that development interventions in the mountains have lacked a mountain perspective (Jodha 1992). In other words, mountain development interventions are not designed and implemented in keeping with specific mountain circumstances (Jodha 1992 and Sanwal 1989). Usually, they represent an indiscriminate extension of development approaches evolved, or of other agro-ecological contexts (e.g., the plains). However, examination of a few successful development interventions revealed that, knowingly or unknowingly, they did incorporate the imperatives of mountain specificities in their design and implementation (Jodha et al. 1992 and Jodha 1991a).

A further examination of the "missing

mountain perspective" in mountain development strategies for the HKH Region revealed that most mountain areas did not have adequate nor appropriate mechanisms or agencies which could perceive the problems and their potential solutions in the context of the mountain perspective (i.e., mountain specificities and their imperatives).

In other words, owing to disincentives, ignorance, and paternalistic approaches (on the part of mainstream decision-makers), generated by features such as inaccessibility, marginality, diversity, etc (Jodha 1991a and b and 1993; Jodha and Partap 1992; and Sanwal 1989), development interventions are not conceived with sufficient sensitivity to mountain realities. Even in cases in which mountain areas have fairly strong institutional superstructures (e.g., agencies dealing in planning and policy-making, technology development and extension, infrastructural and other support systems, etc), their focus is on transplanting or imposing development models evolved for the plains. Due to this reason, the lack of institutional arrangements that could facilitate designing and implementation of development interventions appropriate to mountain conditions is the key

operational constraint to sustainable development of mountain areas, in general, and mountain agriculture, in particular (Jodha 1992 and 1991b). Guided by this understanding, ICIMOD, with support from the Dutch Government, started this project in 1992 with the objective of examining institutional arrangements for mountain agriculture as well as approaches and strategies to strengthen or reorient them.

What are Institutions?

The theoretical literature of social sciences distinguishes between 'institutions' and 'organisations'. They broadly define 'institutions' as norms and rules designed to regulate (or constrain) human behaviour (action/decision) vis-a-vis other members of society in the field of social, economic, political, and environmental activities. 'Organisations' are defined as the agencies (or players) that use and enforce the above 'rules of the game' (North 1993 and Ostoram 1990). However, in the context of practical field realities, this distinction between 'institutions' and 'organisations' is usually blurred. Most parastatal agencies (e.g., seeds' corporations, agricultural research councils, planning commissions, etc in the developing countries) are all referred to as institutions. To this, one may add several field agencies and NGO outfits. For our purpose, we call such agencies 'institutional arrangements' and use this description interchangeably with 'institutions' and 'organisations' (unless specified). An important reason behind this is discussed below.

In the traditional systems of resource management, the 'norms and rules' (i.e., 'institutions') and the enforcing mechanisms/agencies (i.e., organisations) such as user groups (where people and resources had direct and close links) formed parts of the same co-evolutionary process, and a meaningful separation of the two was difficult. In the changed context, where the State creates both the 'norms' and 'the enforcing agencies', the distinction between the basic norm/rule (i.e., institution) and the mechanisms, e.g., implementation regulations or bye-laws, which

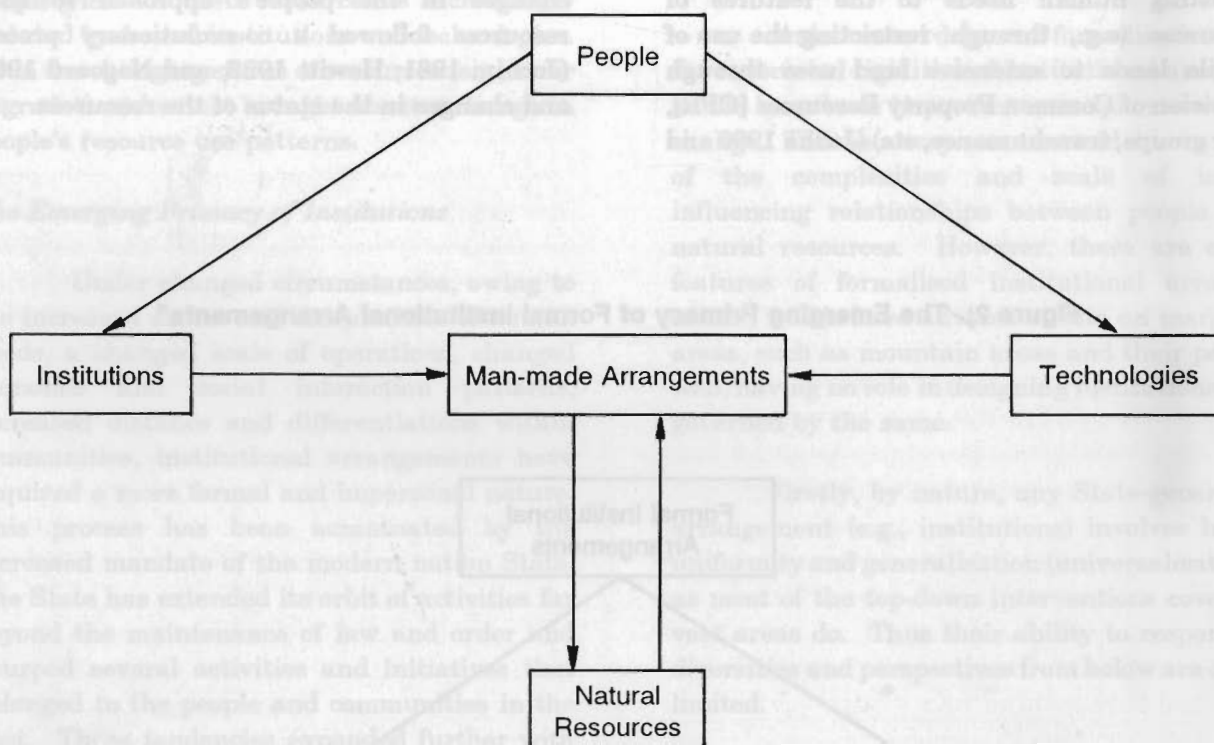
are integral parts of the creation (survival) and the effective functioning of an agency (i.e., organisation), is difficult to maintain. This makes 'institutions' and 'organisations' inseparable at the practical level.

The Critical Role of Institutions : The Generalised Framework

The critical importance of institutions is not confined to the development context of mountains alone. Institutions have a central role in any human endeavour directed to human progress. They play an important mediating role in facilitating productive and sustainable interactions between people and resources. A generalised framework highlighting this aspect can offer several leads and insights to reinforce issues vis-a-vis the mountain development interventions indicated above. However, before this, it is necessary to define 'sustainability'.

Sustainability, one of the most-used terms today, devoid of finer definitions, implies the ability of a system (e.g., of mountain agriculture) to maintain or enhance its level of performance (output/services) to meet the changing demands of the people without depleting its own long-term potential. The fulfillment of such a task depends on the match or mismatch between the key features of the natural resource base of the system and the attributes of the resource use systems adopted by the people (Jodha 1990 and 1991b). The pace and pattern of resource-use systems, in turn, are determined by the technological means used and the institutional arrangements that again regulate the use of both technology and human decisions and actions vis-a-vis the resources. The technologies and institutions are thus man-made mechanisms through which interactions between people and resources are shaped and governed. Figure 1 sketches the basic structure formed by four fundamental factors, i.e., people, resources, technology, and institutions, that determine the dynamics of human progress. It is the nature of the relationship between these four factors that generates the circumstances which ultimately promote the sustainability or unsustainability of a given production system such as mountain agriculture.

Figure 1: Co-evolutionary Institutional Arrangements under Traditional Systems



It is not difficult to explain the different facets of man and nature interactions with the help of the above 4-component framework. Man evolves rules and regulations as well as their enforcing arrangements (i.e., institutions and technologies). Through these man-made arrangements resources are harnessed for the benefit of the people. However, the nature and relationship of the components change as the scale and complexity of involved activities increase. This is discussed below to demonstrate the increasing primacy of institutions in the total structure (Figure 2).

In a wider and more fundamental context, man and nature interactions take concrete shape through multiple man-made arrangements involving input from technologies and institutions designed and periodically amended by the people themselves.

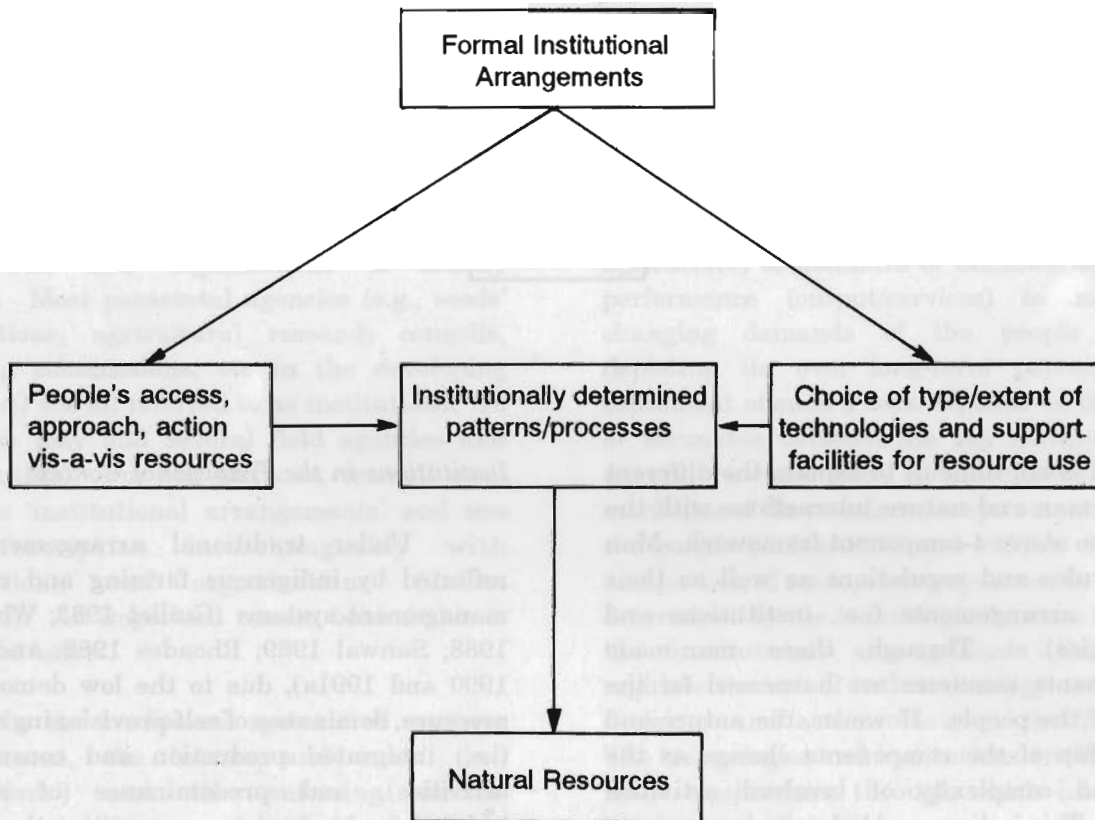
Institutions in the Traditional Context

Under traditional arrangements, as reflected by indigenous farming and resource management systems (Guillet 1983; Whiteman 1988; Sanwal 1989; Rhoades 1988; and Jodha 1990 and 1991a), due to the low demographic pressure, dominance of self-provisioning systems (i.e., integrated production and consumption activities), and predominance of smaller, isolated, and cohesive communities there were closer and direct links between the people and their resources. The institutional arrangements (both as rules and their enforcing mechanisms) were largely informal and technologies were simple, but very much in keeping with the resource features, as permitted by levels of folk knowledge and skills. In other words, both institutional arrangements and technologies had more direct and close links with the people and

their circumstances. Hence, their required enforcement and amendments took place as part of the people's two-way adaptation process (i.e., adapting resources to people's needs, e.g., through terracing or water harvesting) or adjusting human needs to the features of resources (e.g., through restricting the use of fragile lands to extensive land uses through provision of Common Property Resources [CPR], user groups, transhumance, etc) (Jodha 1990 and

1991a). Under such circumstances, the nature and type of institutional arrangements and technologies were more directly determined by the people than the other way round. Development of technologies and institutions and changes in the people's approach to their resources followed a co-evolutionary process (Jochim 1981; Hewitt 1988; and Nogoard 1984) and changes in the status of the resources.

Figure 2: The Emerging Primacy of Formal Institutional Arrangements^{a)}



- a) Because of the two-way interaction the arrows should move the other way round as well. However, the purpose of the sketch is to show how institutions have acquired a predominant role that does not decline despite the possibility of two-way interaction.

However, under changed circumstances, the whole process seems to have reversed. Not only has people's direct involvement in shaping institutional arrangements and technologies declined, but the decisions and behaviour of the people vis-a-vis their resources is increasingly dictated by formal institutions and technologies. Even the changing status of resources (e.g., their degradation) has not brought about a change in people's resource use patterns.

The Emerging Primacy of Institutions

Under changed circumstances, owing to the increased extent and complexities of human needs, a changed scale of operations, changed economic and social interaction patterns, increased distance and differentiations within communities, institutional arrangements have acquired a more formal and impersonal nature. This process has been accentuated by the increased mandate of the modern nation State. The State has extended its orbit of activities far beyond the maintenance of law and order and usurped several activities and initiatives that belonged to the people and communities in the past. These tendencies expanded further with the States assuming the responsibility for economic development and social welfare in the post-second world war era, especially in the newly independent countries which constitute most of the poor and developing world today.

In order to fulfil its newly-acquired mandates and enforce its authority in fields that never belonged to the State in the past, both rules and regimes as well as organisational super-structures were created to operate at different levels.

Thus, in the process, the State became the custodian of the country's natural resources and created a broad policy-programme framework to guide their usage pattern, even by dictating or inducing people's decisions and actions vis-a-vis their own resources. It took on itself the responsibility of deciding the nature, type, and extent of infrastructural and other support systems for resource use. It is, again, the State that selected the types of technology and means to develop and diffuse them for resource use by the people. The net result was

that institutions (both in terms of rules and regulations as well as enforcing administrative superstructures) acquired primacy over the people and their linkages to their own resources. Figure 2 depicts the changed situation.

An increased degree of formalisation and the associated rigidities of institutional arrangements have been important consequences of the change. This in a way was unavoidable in view of the complexities and scale of issues influencing relationships between people and natural resources. However, there are other features of formalised institutional arrangements, which have adverse effects on marginal areas, such as mountain areas and their people who, having no role in designing institutions, are governed by the same.

Firstly, by nature, any State-generated arrangement (e.g., institutions) involves broad uniformity and generalisation (universalisation), as most of the top-down interventions covering vast areas do. Thus their ability to respond to diversities and perspectives from below are quite limited.

Secondly, even when the State (theoretically speaking) represents the will of the (diverse) people, the general institutional arrangements created by it need not necessarily reflect the people's perspectives, especially from marginal areas which suffer from invisibility vis-a-vis mainstream decision-makers.

Thirdly, creators of State-sponsored institutional arrangements are often smarter (and learned) than wise people. This is because those who often rule the present day State are 'smart'. They have their own perceptions of reality. Most of the creators of institutional arrangements acting on behalf of the State belong to the mainstream in each country and have considerable external exposure. This in turn influences their perceptions. These perceptions in turn influence the choice of nature, design, structure, and mandate of institutional arrangements created by them. In view of the above realities, marginal, inaccessible areas and their people seldom have a chance to influence the choice of institutional arrangements.

Thus, the focus on generalisation, domination of the mainstream situation, and the invisibility of marginal (non-mainstream) areas are key features of the formal State-designed and operated institutional arrangement. This explains the complexities of the reasons for the inappropriateness of generalised institutional and other interventions in areas outside national or international mainstream situations.

This strongly applies to mountain areas in which mountain specificities, such as fragility, inaccessibility, diversity, etc, create circumstances that do not match the more generalised institutional arrangements.

How does this scenario apply to the HKH Region? Hopefully, this will be revealed by reviewing the institutional arrangements dealing with policies and planning, agricultural research

and development, and agricultural support services in the HKH countries. To facilitate such assessments one has to look at the presence or absence of specific provisions under institutional arrangements vis-a-vis the imperatives of mountain specificities as summarised in Table 2.

Key inferences, suggested by Table 2, call for a greater degree of decentralisation and diversification in the structure and mandates of institutions; a focus on local resources, local participation, and local skill enhancement as integral parts of institutional interventions; the need to evolve special norms and yardsticks to judge programme priorities and their impacts in the mountain context; and evolution of the integrated approach in programme design and implementation based on the interlinkages of different mountain specificities and their imperatives.

Table 2: Mountain Specificities and Their Imperatives for Institutional Arrangements

Imperatives for institutions (A: structure/mechanisms; B: mandate and priorities)			
Mountain specificities (manifestations/implications)	Policy and Planning	Agricultural R & D	Support Services
<p>Inaccessibility</p> <p>Distance, poor mobility, semi-closedness, high cost of logistics, low dependability of external support 'invisibility' for mainstream decision makers</p>	<p>A. Decentralisation, diversification special investment norms, de-emphasis on generalised development approach, bottom-up approach</p> <p>B. Local resource focus, infrastructural development and integration, multi-type means of communication, subsidisation of logistics</p>	<p>A. Local resource-focussed decentralisation and regionalisation of facility</p> <p>B. Local resource focus, infrastructural development and integration, multi-type means of communication, subsidisation of logistics</p>	<p>A. Decentralisation, mobile services, local, small-scale processing, development and use of local skills/knowledge, focus on off-farm employment</p> <p>B. Local resource/product focus, diversification of production, value-adding activities</p>
<p>Fragility/Marginality</p> <p>Low-carrying capacity, prone to disasters, limited and low payoff options, impediments to high intensity, high productivity options but low input absorption, low surplus, generation investment, neglect/disregard by the mainstream</p>	<p>A. Resource and problem-centred special agencies with flexibility and authority, different investment/assessment norms, special priorities, involvement of local agencies</p> <p>B. Resource upgrading and protection, anti-disaster programmes, diversification, minimise side effects of other interventions on fragile/marginal ecosystems, integrated approach, resource transfers on special terms</p>	<p>A. Special facilities for fragile/marginal resource areas, formal provisions for incorporating traditional knowledge</p> <p>B. Focus on resource and product-centred work, balancing intensive-extensive land uses, low external input, focus on total farming system, diversification</p>	<p>A. Services with diversified structure/mandate, strengthening local participation, skills, entrepreneurship</p> <p>B. Subsidised intervention with combined production/protection goals harnessing potential of fragile resources, focus on minor unconventional products, value- additions and exchange facilities</p>
<p>Diversity</p> <p>High location specificity, limits to specialisation and scale of operations, use of external experiences, basis for diversified, interlinked activities</p>	<p>A. Planning from below and decentralisation of structure/facility to address location/area-specific problems/potentialities, multiple goals of development activities, mechanism to involve local concerns, knowledge, diversification of priorities</p> <p>B. Diversified interlinked production programme with focus on biomass and value-additions, development through inter-systemic (lowland-upland) linkages, resource allocation according to importance of individual specificities</p>	<p>A. Decentralised, diversified, location-specific facilities on small scale, use of local knowledge in R & D design.</p> <p>B. Productivity of diversified systems, focus on total system recommendation.</p>	<p>A. Location/product-specific services, enhancing complementarities of diversified activities, enhancing diversification through inter-systemic linkages, development/use of local skills</p> <p>B. Harnessing gains of diversified product/processing, value-additions, using inter-systemic linkages</p>
<p>Niche</p> <p>Potential for products, activities with high comparative advantages, liable to be overexploited</p>	<p>A. Special authority to harness major niche, with involvement of local agencies</p> <p>B. Programmes/activities for harnessing niche with equal gains through sensitivity to the side effects of interventions</p>	<p>A/B Focus on identification and harnessing of niche, enhancing regional comparative advantages through product processing and R & D</p>	<p>A/B Local processing, integrating primary/secondary/ tertiary sector activities, focus on regional comparative advantage, infrastructure facility suited to niche</p>
<p>Interlinkages of different mountain specificities; requirement of integrated approach</p>	<p>A/B Integrated approach to development with multiple goals</p>	<p>Integrated approach to R & D, designs, priorities to evolve with reference to interrelated resource specificities</p>	<p>Integrated approach focussing on linkages of different resource characteristics and their imperatives</p>