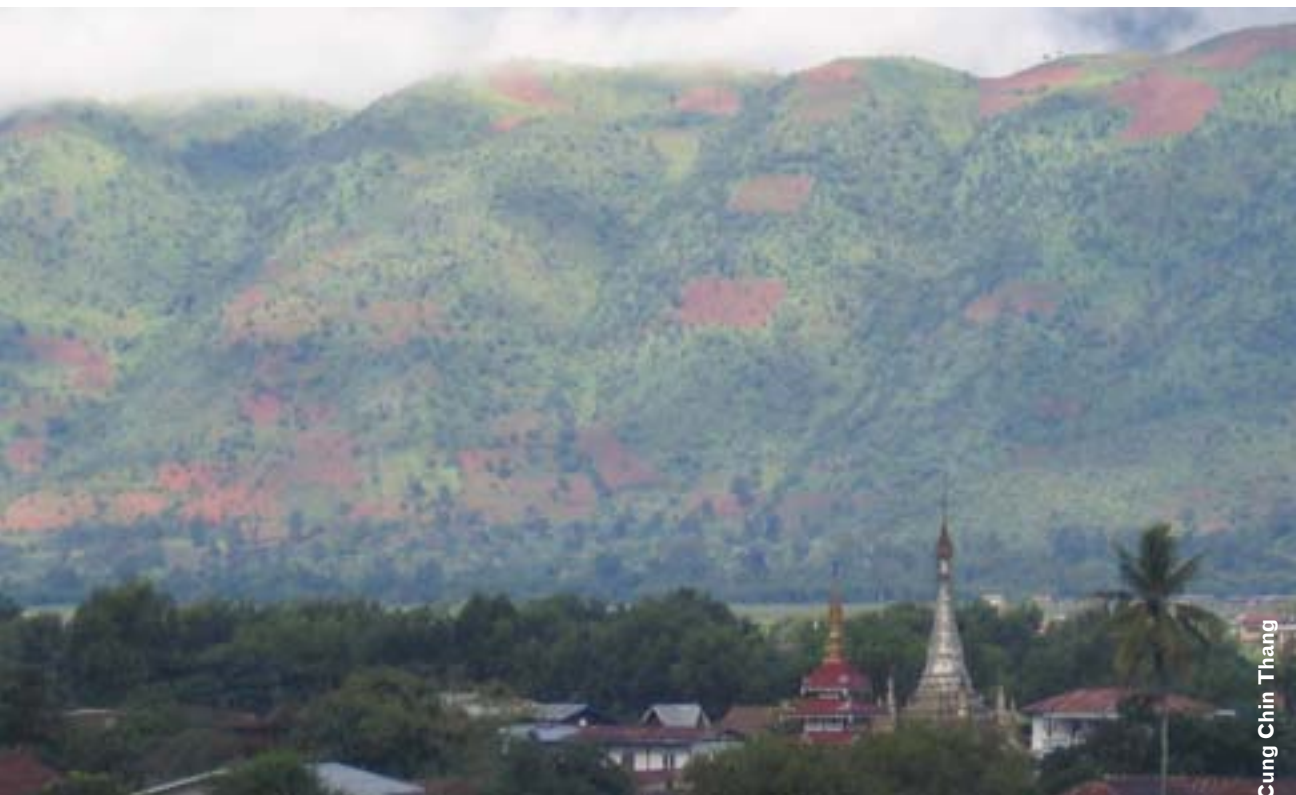


4 A Framework for Facilitating Sustainable Agriculture and Rural Development in Mountain Areas



Cung Chin Thang

The policy bias against upland areas needs to be removed to promote sustainable agricultural practices in mountain areas. One of the major initiatives needed is a fundamental change in perception and approaches. It is important to understand the specificities and livelihood options of mountain farmers within the constraints of inaccessibility, marginality, and fragility. Appropriate policies need to be developed to compensate mountain farmers for the production of national and public goods and environmental services including soil and biodiversity conservation, watershed protection, and carbon sequestration. Sustainable agriculture, rural development, and natural resources management are inextricably linked. Therefore, a holistic and integrated perspective and strategy needs to be developed, one that addresses the complex issues facing mountain farmers.

The policy changes may create facilitating and enabling conditions for promoting mountain agriculture, but they are not enough to alleviate pervasive mountain poverty. In the Himalayan region, the majority of the farmers are poor and do not have easy access to formal credit, technology, extension services, and marketing facilities. Policy reforms alone may not be enough. Mountain farmers need mountain-specific information, knowledge, technologies, skills, capital, and marketing facilities to move to more productive and sustainable agricultural practices. It is necessary to strengthen the provision of effective institutional support including research, extension services, and credit facilities, and to reorient agricultural and extension service institutions to serve the needs of poor mountain communities based on participatory approaches. Close coordination among public institutions needs to be developed and strengthened.

Given the variability of mountain areas in terms of agroecological potential (soil fertility, rainfall, terrain, and fragility) and market access, different types of development strategies need to be adopted based on agroecological potential and market access (Table 7). In areas with better agroecological conditions and access to markets and infrastructure, the strategies should be promoting land use intensification, crop diversification, and growing of cash crops which offer higher incomes. Agro-processing industries may also be developed and promoted. When market access is constrained and infrastructure is poor, less perishable high value (relative to volume), and non-perishable agricultural commodities such as honey, mushrooms, dry fruits and nuts, medicinal, aromatic and dye plants that suffer lower post-harvest losses should be promoted. Under conditions of high population density, strategies for development of non-farm activities (such as processing and trade) should be pursued in more accessible areas, while in remote areas labour can be absorbed in soil conservation and maintenance activities through popular programmes such as food for work programmes.

Table 7. Development strategy based on agroecological potential and market access

Agro-ecological Potential	Market Access	
	High	Low
High	<ul style="list-style-type: none"> • High-value cash crops • Horticulture, commercial dairy, intensive food crop production, others • Private investments in irrigation, land management, and the agro-processing industry through institutional support 	<ul style="list-style-type: none"> • High-value, low volume crops such as NTFPs and medicinal plants • Subsistence food crops • Infrastructure development to utilise the mountains' high agroecological potential
Low	<ul style="list-style-type: none"> • Commercial agroforestry, farm forestry livestock, pastoralism, off-farm employment • Crafts and services for markets • Promote technologies that enhance agricultural potentials and utilise local niches 	<ul style="list-style-type: none"> • Agroforestry, tree farming for timber and NTFPs, medicinal plants • Subsistence agriculture with zero-tillage, mixed cropping, livestock production • Tourism and recreation • Promotion of out-migration and conservation activities and development of environmental services

Source: Adapted from Ruben and Pender (2004)

Mountain areas with lower agroecological potentials need a more diversified and sustained strategy to overcome poverty and arrest resource degradation. When market access is guaranteed local niches for small-scale irrigation may be exploited and non-farm activities could flourish. With lower market access, urban or third country migration and reliance on low input agricultural systems for local consumption are the remaining options. In settings where population and land pressure are less severe, land consolidation, extensive livestock (small ruminants) production, and conservation agriculture are possible alternatives.

Generally, emphasis, however, should be given to harnessing the mountain's comparative advantages. For example, climatic and ecological variation in hills and mountain areas provide opportunities for ecological niche products such as fruits, vegetables, medicinal plants, herbs, spices, agroforestry, tree farming, seed production, and many other high-value crops.

One of the greatest strengths of mountain agriculture is its largely organic nature. The use of chemical fertilisers is almost negligible. This feature can be leveraged to the advantage of mountain farmers by using organic certification, preferably community- or group-based, thereby adding value to mountain products and improving their market access. Appropriate mechanisms need to be developed to provide adequate compensatory benefits for a variety of environmental services provided by mountain farmers through environmentally and conservation compatible land use practices. In several countries in Europe mountain farmers receive financial benefits from government for generating positive externalities (Hovorka 2001, Flury et al. 2005); mountain farmers in HKH region in comparison receive nothing for their environmental services.

Part of action research and extension services should be reoriented towards mountain areas to take into account mountain specificities, diversities, niches, socioeconomic and cultural factors, and market access. Extension messages should be developed based on local agroecological and socioeconomic conditions. Extension materials and a package of practices should be developed according to area-specific situations including development potentials and problems. In selecting crops and tree species along with biophysical suitability, distance from roads and accessibility factors should be taken into account as they influence the performance of land use systems, which determine farmers' land use preferences. Extension services should be provided in a package form that may include knowledge, tools, and inputs necessary to promote location suitable agricultural practices. Attention should be paid to the promotion of cost-effective technologies suitable to an area's biophysical conditions and farmers' socioeconomic conditions. Special attention should be given to generating off-farm and non-farm employment opportunities to reduce pressure on mountain farmlands.

A broad framework for sustainable agriculture and rural development is outlined in Figure 2. The enabling conditions discussed in this section should be interpreted as generic and are necessary conditions to support poverty reduction and sustainable agriculture development, but not sufficient conditions as there is a large variation in agroecological and socioeconomic conditions in countries of the region, and often in different parts of mountain regions within the same country.

Figure 2. **Framework for Sustainable Agriculture and Rural Development in the Himalayas**

