

FACTORS AND PROCESSES OF SUSTAINABLE LIVELIHOOD OPTIONS

In mountainous regions, the process of option enhancement in general and the quality of livelihood options in particular are contingent, to a great extent, on the availability of adequate infrastructural facilities such as roads. It, however, also needs to be mentioned that the introduction of new production options may take place even without the availability of these facilities. For example, apples were introduced into the study areas way back in 1870 by the British, when there were no roads. Experiences in the study areas and several other regions in the HKH, however, suggest that the availability of these facilities is of crucial importance in making these options economically viable and sustaining the process of transformation. Developments do take place in a co-evolutionary manner. For example, people modify their production environment and adapt themselves to emerging situations by developing alternatives, e.g., installing ropeways to transport high-value cash crops to the roadheads. Nonetheless, the lack of adequate facilities affects the quality of livelihood options in a variety of ways, viz., high transport costs, lack of inputs, and so on. There are numerous examples in the literature to suggest that the lack of adequate marketing facilities has obliged the mountain people to abandon high quality production options for which there is a substantial potential comparative advantage. To recall, in the non-transformed areas, apple cultivation has not spread as it did in the transformed areas, primarily because of the lack of adequate transport facilities. As noted above, as much as 23 per cent of the total production and marketing costs of a 20kg apple box is accounted for by the transportation costs up to the roadhead alone, compared to a low three per cent in the transformed areas. Of late, people have tried to overcome these constraints by installing ropeways, but wider use by a majority of small and marginal farmers is still to catch up. In brief, easy availability of transport facilities in the transformed areas, *inter alia*, has set into motion a process of sustainable development ultimately contributing towards improving the quality of livelihood options.

The experience of the transformed areas also brings home the message that to overcome the initial constraints, which are often formidable, political patronage is essential. It may be recalled that initially massive subsidies were given to popularise and promote apple cultivation; subsidies were given on plant nurseries, for digging pits, on inputs, on agricultural implements, and on foodgrains. And, in many cases, apple orchards were planted on private lands by the forest department to encourage people to adopt apple cultivation. In addition, a network of institutions was created by setting up a separate directorate of horticulture as early as 1961, appointing a district horticultural officer, opening a training school to train growers to prepare nurseries and plant the apple orchards. Political patronage has continued in one form or the other; the Himachal Pradesh Horticul-

tural Produce Marketing and Processing Corporation (HPMC) was set up in 1971 with the assistance of the World Bank to provide post-harvest infrastructural facilities such as link roads, cold storage, grading, and packing facilities. The construction of National Highway No. 21 by the central government proved a boon to the area, with no burden on the state exchequer.

A vast network of research and development (R&D) infrastructure has been created to evolve and provide technical knowhow to farmers. The state has established a fully-fledged University of Horticulture and Forestry, which is one of its kind in Asia; the university has set up research stations in all the agroclimatic zones of the state to cater to the technical requirements of fruit growers. In addition, the central government has also established a research station to strengthen R&D facilities in the state; the National Institute of Mushroom Research at Solan, the Regional Research Station of Indian Agricultural Research, and the Institute of Vegetables at Katrian (Transformed Areas) are notable examples. These institutions are playing a catalytic role in promoting the cultivation of horticultural crops in the state by providing technical knowhow to the farmers.

To insulate farmers from the fluctuations in market prices, support prices for various fruit crops have been introduced. To begin with, the HPMC used to purchase fruits offered by the producers to ensure them minimum prices. In more recent times, a market intervention scheme has been introduced under which prices are fixed for various fruits according to their grade and quality, and, if the prices fall below this level, the produce is procured by the state government at fixed prices.

Yet another important factor which also contributed towards the adoption of high-value cash crop (apple) cultivation in the 1960s and 1970s was the enactment and implementation of land reform measures under a directive of the central government. Inasmuch as the ceiling on orchard land was higher, farmers placed their marginal lands under apple cultivation not only to circumvent the ceiling laws but also to overcome the labour shortages as well. The attainment of full statehood in 1971 was yet another important milestone that helped to overcome political marginalisation. The Kullu District has always been represented by a cabinet minister in the state council of ministers. As a result, the problems of fruit growers always received adequate attention from policy-makers. This has helped to resolve the so-called 'Himalayan Dilemma' faced by most of the mountainous regions.

The above-mentioned state government policies have helped to overcome the initial constraints and to introduce a process of agricultural development which is consistent with mountain specificities. The state has acted as a watchdog in the whole process of transformation; political interventions at appropriate times have helped to conserve the natural resource base and thereby promote sustainable agricultural development. For example, the enactment and implementation of stringent forest laws have helped to check deforestation and preserve the forest wealth of the state at an appropriate time. A saying, which has gained currency in recent times, that one can get away with murder but not with cutting down a

tree, goes to prove the effective implementation of forest laws. Restrictions on the felling of forest trees have obliged fruit growers to look for alternative modes of packing fruit.

In the process of transformation, numerous processes have been created in the system itself, creating conditions that are environmentally benign and beneficial to the conservation of the local, natural resource base. For example, with the planting of apple orchards on marginal lands and encroachment on common property resources, grazing land and areas under fodder declined sharply. This, coupled with an improvement in the economic status of the households, led, on the one hand, to a steep fall in the number of animals, particularly sheep and goats, and, on the other, to replacement of low quality animals with improved quality animals. This not only improved livestock productivity but also reduced the environmental degradation commonly associated with excessive livestock populations and overgrazing. There was also not much loss in cowdung because of the complete switch over from grazing to stall feeding. Again, good quality grass is available in the orchards, and this is sufficient to meet about 60 to 70 per cent of the total fodder requirements. In the ultimate analysis, over time the relationship between fruit cultivation and livestock has tended to become mutually supportive and reinforcing, leading to substantial increases in the income of households. In the process of development, self-help institutions have emerged to meet one of the most essential conditions for the process of transformation; i.e., to be enduring and sustainable. The emergence of many cooperatives and the Fruit Growers' Association has played an important role in ensuring that farmers have access to basic facilities such as transportation.

Since sustainable development is a dynamic process, the people of the areas favourably endowed with physical, human, institutional, and social infrastructure continuously evolve and adapt to the changing environment. In our study areas, as is evident from the chronological history of the process of substitution, replacement, and addition to livelihood options, new options have been introduced whenever existing ones became unsustainable; households switched over from potatoes to peas and then to apple production. In recent times, in view of the substantial fluctuations in apple production due to climatic factors and the spread of diseases, households have started exploring alternatives and are fully geared to diversify their production options to dairy production, vegetables, mushrooms, and floriculture to lessen their excessive dependence on apple crops. Such a process is missing in the non-transformed areas, despite the fact that apple cultivation was introduced long ago, i.e., in 1957-58.

To sum up, the development process experienced in the transformed areas was a change in which, in the process of harnessing the local niche, the pattern of investment, the provision of basic infrastructural facilities, and the orientation of research and development networks were in complete harmony. This led to the minimisation of conflicts and tradeoffs between development and environmental conservation and created factors and processes that set mountain agriculture on the road to sustainability.

All is, however, not well. The process of transformation is beset with so-called 'second generation' problems. These problems are usually associated with the transition from subsistence-oriented, traditional cereal-based agriculture to high-value, cash crop-based commercial agriculture; shrinking biodiversity, disruption of social values, and emergence of plant diseases are some of the main problems. The improper use of insecticides and pesticides by farmers has taken a heavy toll on honeybees, predators, and useful insects. Diseases causing substantial fluctuations in the production of apples are now common. Many crops which used to be grown earlier have disappeared, social values indicate the increased level of materialistic and individualistic attitudes.