

## Chapter 6

# Livestock Sector Development in Mountain Areas: Planning Tools and Strategies for Uttarakhand, India

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The livestock sector is often neglected in institutional policies and planning. However, it demands well-planned institutional intervention for socioeconomic development of mountain areas. Furthermore, conventional planning – as implemented in the plains areas – is less responsive to mountain specificities. Such planning leads not only to waste of money and resources, but also seeks no participation from local people and ignores local realities.

An improvement in the livestock sector through effective local planning would lead to an improvement in the socioeconomic conditions of the local people. Local availability of feed resources, livestock genetic resources, animal health services, marketing facilities, and so on are the most important factors on which local livestock development planning can be based. Analysing the multi-faceted role of livestock in mountain farming systems, this paper critically reviews conventional planning, and presents an alternative planning strategy for livestock sector development in the mountains of Uttarakhand.

### **Livestock-centred farming systems**

Livestock acquire special importance in mountain farming systems on both ecological and socioeconomic grounds. They are an integral part of farming systems and a 'bridge' between uncultivated forest and cultivated land. This link is crucial for the ecological and economic sustainability of the system. In mountains, as in many parts of the world, the productivity of farming systems pivots on animals' ability to convert fodder into manure. In mountain areas, especially at high altitude, dead vegetative matter decomposes slowly. Passage through a ruminant's digestive system helps speed up nutrient recycling. Ruminants help transfer forest nutrients to cropland and improve the fertility status of the agro-ecosystem.

### **Critique of conventional planning**

Conventional planning for livestock is heavily dependent on investment and capital. The conventional technological approach has not shown a marked improvement in milk production in Uttarakhand and, therefore, has not been adopted by farmers to any significant extent (GB Pant University 1982; Jackson 1985; Singh and Naik 1987; Singh and Sharma 1993; Singh 1994, 1998, 1999, 2002; Tulachan 1998; Tulachan and Neupane 1999). Even for rich farmers, milk produced in a system based on the use of

costly inputs is not able to compete with prices of milk on the international market, as has been the experience in the Columbian highlands (Cadavid 1999).

The indiscriminate application of the conventional technical approach to the Indian Himalayan region imposes a high dependence on imported inputs. Smallholders cannot afford to spare land for cultivation of leguminous fodder for dairy animals from their limited, fragmented, and scattered holdings. Moreover, there are common property resources harbouring fodder-yielding species that assure some supply of dry fodder. Modern health service cover, owing to the poor accessibility of mountain areas, cannot address health-related issues.

Livestock planning does not generally involve natural resource management, which, in fact, is the key to sustainable development in mountain areas. Livestock planners never feel a need to consult the community, social workers or institutions, livestock farmers, or any other public department. However, banks and other finance agencies are often consulted or influenced to provide loans to farmers for the purchase of specific cross-bred cows. The sociocultural and ecological role of livestock is ignored in the planning process. Planning simply encompasses preconceived conventional programmes of livestock development. The approach is not holistic nor based on the farming system. It regards livestock as a separate entity rather than as part of an integrated whole.

In Uttaranchal, crossbreeding was initially started in 1956 at Vikas Nagar of Dehradun District in Garhwal Region where Jersey bulls imported from Europe were introduced. This activity was extended to Ranikhet in Almora District in Kumaon Region in 1963. In 1969, the Indo-German Project (IGADA) at Almora took up the crossbreeding programme on a massive scale (Agricultural Finance Corp. Ltd 1987).

The cattle improvement programme through crossbreeding, popularised as the White Revolution, has met little success despite huge investment. In 1982, there were 94,240 crossbred cattle out of a total of 1,909,929 cattle; this is about 5%. In 1988, crossbred cattle accounted for about 4%. Since 1993, crossbred cattle have accounted for about 6%.

## **Critical problems/constraints**

Mountain areas, owing to their specificities, are distinct from the plains. Livestock development programmes for mountain areas have to be based on an area perspective. The conventional tools of development for these areas, however, are replications of those formulated for plains areas. An inventory of critical problems and constraints responsible for the poor performance of the livestock sector would serve as a useful tool for overcoming these constraints, reversing their impacts, and improving the performance of livestock production systems.

## **Planning strategies: a framework**

Livestock farming is one of the most promising enterprises for smallholders in mountain areas. Owing to the valuable self-containment features of farming systems in the region, almost all inputs regarded as indispensable for livestock development processes grow within the system itself. Smallholder livestock farmers may be backward in economic terms, but in terms of the natural resource base they have access to they are richer than their counterparts in other areas.

The main problem of the livestock sector in Uttaranchal is the low productivity of herd and livestock production systems. The large population of livestock and their unique breeds and the natural resources that are rich repositories of quality fodder remain under-exploited. Institutional interventions focus on three aspects of animal husbandry: crossbreeding, healthcare, and fodder production. Nevertheless, this approach is not perspective-based. Smallholders are not participating in the process and, therefore, institutional strategies have had little impact on the transformation of dairy production systems.

Uttaranchal, like other mountain areas in India and other Hindu Kush-Himalayan countries, represents a unique example of a community-based system. Conventional intervention can be successful only at a family level, not at the community level. Since most hill farmers are smallholders, they cannot meet the requirements needed to sustain the production flows offered by the new development models.

Livestock development with a focus on the natural and livestock resource base is the most appropriate perspective-based strategy for smallholder communities of the region. The most severe constraint to sustainable livestock production in the region is animals. Livestock productivity could be increased by feeding adequate amounts of green fodder obtainable from common property resources, especially forests. Smallholders obtain feed free from common property resources; this results in reduced cost of livestock maintenance and consequent increases in gross returns to the farmer.

### **Primacy of natural resource management**

The mountains of Uttaranchal have large areas of uncultivated land covered with forests, grasslands, scrub (poor forest cover), and perpetual snow. A large area under forest and grassland comprises common property resources. This natural resource base is endowed with a diversity of fodder-yielding plants suitable for dairy development. Natural resource management is the key to decisive planning for livestock development in mountain areas. It can not only evolve 'green' and sustainable livestock production systems, but also infuse vitality in the whole farming system by increasing production flows from the natural resource base and strengthening organic linkages between sectors (forest/grassland, cultivated land, livestock, and households). Multiple benefits, accrued by the local community through a regenerated natural resource base, would also contribute to strengthening livelihood systems.

### **Livestock resource base**

Livestock form the core of livelihood systems that mountain communities have evolved over centuries. Many dairy breeds found in the mountains may do better than high-yielding crossbreeds or exotics, particularly in respect of traits such as energetic efficiency of milk production, adaptability to the specific environment, feed conversion efficiency, resistance against certain diseases, and use as draught animals. Scientific characterisation and economic valuation of specific hill breeds is a crucial research issue. Research should be done into their highly desirable but neglected characteristics.

Cows and buffaloes are the only two recognised dairy species in Uttaranchal. Smallholders and transhumant pastoralists in the high mountains own a large number of

goats and sheep, but these are seldom used for dairy production. Some selective breeding of these and introduction of the well-known dairy goat breed from Uttar Pradesh, Jamnapari, could contribute to dairy production in the area.

Yak, unlike in some other Himalayan areas, are not used in Uttarakhand. This multi-purpose animal is highly suitable for high Himalayan areas. Moreover, yak is a regular breeder, may live to 40 years, and may give birth to 20 or more offspring. Cheese from yak milk is popular in Nepal.

## **Balanced feeding**

Seasonality of fodder supplies coupled with acute shortage of fodder and low rates of concentrate feeding impose severe constraints on livestock production (Singh 2002). There is a need to formulate balanced rations that incorporate the local feed resources available in different seasons. Such diets will ensure adequate energy and nutrient supplies to livestock. The crop residues that make up the bulk of dry fodder are deficient in crude protein content and are of poor nutritive value. Their nitrogen content/crude protein value can be increased substantially by means of urea treatment. Feeding chemically treated dry fodder and supplementing urea, molasses, and mineral mixture in animals' diets could be of vital importance to making use of the available dry fodder of low nutritive value. Urea/molasses/mineral block licks for livestock would be an appropriate feed supplement in mountain areas. This practice could prevent diseases and physiological abnormalities borne out of mineral deficiencies and sustain the rumen ecology so vital for the health of ruminant livestock.

The feeding systems operating at present lead to enormous wastage of feed. Designing new feeding systems that ensure little or no wastage as well as increased utilisation of feed, and application of fodder preservation methods, should be implemented.

## **Health service cover**

Given the high degree of inaccessibility of mountain areas, provision of health service cover for the entire livestock population through the current infrastructure is extremely difficult. Mountain livestock have certain critical health-related problems that have to be tackled on a priority basis. A para-vet force for mountain areas could be developed. Training of biology graduates could help create para-vets. In addition to improving the condition of livestock, this approach would also generate employment opportunities.

## **Breeding**

Breeding techniques aimed at reducing first calving age and increasing lactation length and productivity should be applied. Selection and upgrading of indigenous breeds with desirable traits would yield benefits. Every gram sabha (a cluster of three or four villages) should maintain bulls of desirable breeds for natural service of cows and buffaloes. The Animal Husbandry Department could provide a maintenance cost. Some returns may come through service charges.

An area-based perspective and a participatory cattle-breeding policy would be instrumental for augmenting livestock production systems. To evolve a new breeding

policy, conventional policy needs to be reviewed thoroughly. Traditional breeding and management skills of local farmers might be pivotal in developing a new breeding planning framework for mountain areas. The new planning should conserve hill breeds with unique traits. These indigenous breeds will be an asset for evolving and developing new breeds in the future.

## Marketing infrastructure

A cooperative system of milk marketing, processing, and distribution, as envisaged in the Operation Flood programme, already exists. In mountain areas, however, most villages, particularly those not easily accessible, abstain from being members of the cooperative system. This system should be extended phase-wise to all villages in the mountains.

The cooperative system only covers dairy products. It could be diversified to cover other animal products, such as wool, eggs, and meat. Other consumable products, such as off-season vegetables, fruits, mushrooms, and flowering plants could also be covered by a cooperative system. Quality control of dairy and other animal products in the informal market is required.

Continuous exposure of livestock farmers to education and training, provision of subsidies and credit, and remunerative prices for produce, together with awareness about health and hygiene among consumers, can create an environment conducive to the development of the livestock sector in mountain regions.

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