chapter six

Livestock Sector Development Experiences

Over the past three decades, considerable efforts have gone into livestock research and development in the Himalayan regions of India and Nepal. Policy approaches have centred on the problems of animal breeds, animal feed, and animal health. Innovations, until now, have been designed to address technical/scientific problems and have neglected many interrelated socioeconomic and bio-physical characteristics: more specifically, they have failed to address the very particular characteristics of the mountains. Development efforts have been geared towards improving animal breeds to increase incomes and improve the living standards of mountain farmers. Ample experience has been gained in this respect. This chapter will review the development experiences of past and present institutional programmes.

Animal Breed Improvement

Institutional programmes in livestock sector development have so far focussed on improving animal breeds. The main purpose of improving animal breeds was to bring about the 'white revolution' through livestock sector development for increased family incomes and employment for mountain farmers. Technical innovations were geared to meeting this objective and did succeed in some pockets of the foothills and in the mid-hill regions that were well connected with market towns through roads. In fact, the white revolution programmes mostly benefitted comparatively well-to-do livestock farmers who happened to be located in dairy areas in the plains and had access to modern technology (SHERPA 1991). The majority of mountain households — rural and inaccessible with a marginal and fragile resource base — remained unaffected.

Experiences in the Indian Himalayas

In the UP hills, where the white revolution programme has been going on for about three decades, the number of cross-bred cattle as per the 1982 livestock census was only 28,026 out of a total breeding stock of 6 32,533: only 4.4 per cent of the total stock. Similarly, the number of bullocks in the region was 12,77,396, of which only 66,214 were cross-bred (a little over 5%). Furthermore, the number of cross-bred cows and bullocks was not evenly distributed. Out of 28, 026 breeding cross-breds (cows), 11,737 (42%) were in Nainital District alone – which has a large milk market and access to the road network (SHERPA 1991).

The reason for such poor performance was because improved breeds of cows were supplied to the weaker sections without providing poor farmers with the means of maintaining them. A large number of artificial insemination centres was opened, but these centres hardly touched the rural areas. According to recent estimates, cross-bred cattle make up less than two per cent of the total cattle population in Uttarakhand in the Central Indian Himalayas (SHERPA 1997).

The Indian State of Himachal Pradesh (HP) introduced programmes for upgrading cattle in the 1950s and again in the early 1970s. The focus was on producing Jersey cross-breeds. This succeeded to some extent in areas with access to milk markets through a well-developed road network. However, according to rough estimates, cross-bred animals constitute only six per cent of the total cattle population in Himachal Pradesh, despite three decades of planned development in improving cattle breeds (Negi 1990).

On the other hand, the buffalo improvement programmes in Himachal Pradesh were a considerable success. Buffalo breeding, until the 1980s, was introduced in only a few areas. Now, artificial insemination facilities for buffaloes are provided in 190 extension stations in the State. The technique has become so popular that demand for *murrah* semen strains far exceeds the production (Singh and Sharma 1990). A study has revealed that, in the total milk pool of the mountain villages, contribution of buffalo milk was as large as 98 per cent. The number of buffaloes in the herds of HP

increased significantly, while the number of cattle decreased or remained stagnant.

Nevertheless, the bulk of livestock population in the Indian Himalayan region still consists of local species – 95 per cent of the cattle, over 70 per cent of the sheep, and most of the goats. This evidently reveals the limited success of institutional policies geared towards promoting cross-breeding programmes.

Experiences in the Nepalese Mountains

In Nepal, the improved cattle programme was introduced three decades ago. While this approach had some visible impact in the vicinity of urban areas, almost 90 per cent of the countryside remained largely untouched by three decades of institutional programmes for upgrading local animals by crossing them with exotic stock (Joshi 1996). Private dairies started with improved cows failed in the mid-hills due to lack of quality feed and proper health services.

Today, most of the milk supplied from the mid-hills is from the buffaloes on smallholdings which raise one or two milch buffaloes to supplement their incomes (Miller 1993; Tulachan 1997). Although the milk yield of cross-bred cattle and buffaloes was marginally better than that of local livestock, farmers complained that it was only at the cost of higher feed intake and increased health care management (Joshi 1997). Similarly, the performance of exotic or cross-bred goats is also not much better than that of the indigenous goat population (Oli 1987).

Despite a 150 per cent increment in wool produced from the exotic Polwarth x native Baruwal cross-bred sheep, the animals were not adopted into the prevailing management regime and were eventually rejected by farmers (Joshi 1997). This implies that the introduction of exotic stock has not benefitted the majority of mountain households. In other words, the programme of introduction has been less than successful in meeting its targets.

In the context of Nepal, most of the development programmes have been supply driven. A good example is the introduction of improved cross-bred cows for dairy use through subsidised Asian

Development Bank (ADB) loans for farmers through heavy subsidies. After ten years or so, many farmers, especially those in the mountains who obtained these animals, complained of very little economic return from them, and many of them had even replaced the cross-bred cows with improved buffaloes. On the other hand, despite the lack of government emphasis, the raising of improved buffaloes has become popular. Private traders have done well because of the great demand from local farmers. There is no involvement of private traders in supplying improved cows. The reason for this is simple: the institutional policy to promote smallholder dairies was simply supply-driven, and not demand-driven. Private traders started introducing improved buffaloes when they saw a good potential demand for improved buffaloes in accessible areas.

As a result, the number of buffaloes increased rapidly at the household level, as more and more farmers switched from cows to buffaloes for milk production in accessible areas. Most of the small-scale commercial farmers failed to raise improved cows as a result of low milk prices, lack of salvage value, and the need for extra care and quality feed. In contrast, farmers saw that improved buffaloes had numerous advantages related to high salvage value, ability to survive on farm waste and residues, higher fat content in the milk, and lower cost of management and day-to-day care. Despite the fact that improved cows supplied milk for almost 12 months on a regular basis in each lactating period, the need for quality feed made it difficult for farmers to raise them.

Animal Feed Improvement

Feed shortage has been a serious problem for livestock farmers throughout the HKH. In Uttarakhand, the Central Indian Himalayas, the current shortage of feed and fodder is estimated to be 65 per cent (Dhar 1997). The magnitude of the problem varies from zone to zone. Similarly, in Nepal, the shortage of animal feed is acute during the dry period and winter when livestock is generally under fed by one-third of the required amount. The country as a whole has a feed shortage of 20–36 per cent; the problem being more acute in the hills and mountains (Sherchan and Pradhan 1997).

Improved forage was introduced successfully in lowland valleys or relatively better-off areas where input and irrigation were

available. Improved forage was not successful in marginal and fragile mountain areas, because of high input-dependency and excessive demand on scarce land and irrigation resources. In the mountains, usually, only a small per centage (if any) of arable land is irrigated. Moreover, it is difficult for farmers to set aside already scarce land for fodder production, since it would take away the fertile land allocated to cereal crop production and affect the food supplies of farm families.Nevertheless, now attempts are being made to introduce different forage/fodder crop species on degraded lands in the hills of Nepal. Successes have already been experienced.

High-yielding exotic varieties of fodder were introduced in several areas. However, institutional programmes for high-yielding varieties (HYVs) were delivered with subsidies, without which they could not be sustained. This indicates that HYV forage crops are not economically viable. Past initiatives in fodder development programmes in Nepal have had some success in areas with access to a market for milk. In most areas, with no access to a milk market, such as the inaccessible mountains, fodder programmes have been unsuccessful. In such areas, a few farmers adopted the improved forage technology initially, but they gave it up after subsidies were withdrawn. Indigenous and local forage species did not receive much attention, despite their great potential.

The HP Animal Husbandry Department has recently started a scheme to supply fodder crops and grasses to interested farmers in 'Fodder Mini-kits' of two to five kilogrammes of seed. The seed is multiplied and distributed through district Veterinary Hospitals and Veterinary Dispensaries.

The fodder species multiplied include forage maize and cow pea, forage oats, forage sorghums and millets, berseem, lucerne, and clovers; vetch and pea; and grasses – including perennial and Italian rye grass, broom, red fescue, Guinea grass *(Panicum maximum),* and orchard grass. These are mainly suitable for the lowlands and irrigated areas. About 200–300 mini-kits are distributed annually in Mandi District, and just less than 100 in Kullu, mainly to specialist milk producers. At present there is no demonstration or extension support programme.

Animal Health

Experience has shown that animal health problems are closely linked to animal nutrition and animal breed. The shortage of quality feed plays an important role in animal health, since nutritional stress contributes significantly to the susceptibility of animals to disease. Improved breeds are more susceptible to these diseases: cross-bred cattle are thought to be more susceptible to internal parasites, probably due to nutritional stress. Any increase in the number of cross-breeds demands the parallel development of an effective health service.

In general, the major infectious diseases are under control in Himachal Pradesh. The main endemic infectious diseases include rinderpest, foot-and-mouth disease (FMD), haemorrhagic septicaemia and blackquarter. These diseases are mostly controlled by annual vaccination campaigns throughout the state. Isolated outbreaks still occur; rinderpest was last reported in the state in 1987. FMD occurs quite widely with limited impact amongst indigenous cattle compared to the *Bos taurus,* cross-bred cattle. Contagious caprine pleuropneumonia (CCPP) occurs sporadically in goats and small ruminants and can have a significant effect on the local economy. Vaccinations are given occasionally on migration routes when vaccines are available.

Minor infectious diseases remain widespread and can harm the economy. Probably the most prevalent infections for all classes of livestock in both lowland and highland areas are internal parasites, particularly liver fluke (both *Hepatica fasciola* and *H. gigantica*) in irrigated and wet areas and lung and intestinal worms. Tick-borne disease is a potential problem in both low and highland areas. Jersey crosses are more susceptible than indigenous cattle.

Development of Veterinary Services: Case of HP

In HP, each district operates one mobile veterinary dispensary with a four-wheel drive vehicle which is used for vaccine and drug supplies, vaccination campaigns, and mobile services.

The number of veterinary hospitals and dispensaries in the state increased from 350 in 1972 to 847 in 1992. Some of the veterinary dispensaries are allied with an artificial insemination facility for breeding cattle.

Given the low density of veterinary institutions and the rugged topography, veterinary and breeding facilities are not available in most areas. Veterinary services are administered by the state and district animal husbandry departments and provided through veterinary hospitals and veterinary dispensaries. Veterinary hospitals are staffed by one graduate veterinary officer and two pharmacists (veterinary assistants with one year's training), while veterinary dispensaries are staffed by one pharmacist. The number of veterinary hospitals and dispensaries is 12 and 29 respectively in Kullu District and 25 and 97 in Mandi District. Dispensaries are distributed widely throughout the district, but practical field coverage is limited by the complete lack of transport.

Lessons from Livestock Sector Development and Past Policies

Past policies have mainly been top-down. What was 'perceived' as beneficial, for example improved breeds, was given priority and resources allocated. However, mountain farmers have, at the same time, been exercising their options themselves without much influence from ongoing institutional interventions. The choices they have made are compatible with the prevailing economic and ecological environment in the mountains and are in accord with the imperatives of mountain characteristics. Some of these choices have proved successful, if not all. Official interventions have so far failed to build on and facilitate further consolidation of farmers' own successes. The case of the official supply-driven push for improved cattle in contrast to the demand-driven experience with improved buffaloes is a pertinent example. Policy measures in the past have largely failed to recognise the prevailing ground realities/processes in community areas targetted for development interventions.

Another weakness in the livestock sector development effort was the narrow sectoral approach. For example, the problems of animal breeds, animal feed, and animal health cannot be solved through isolated interventions because they are obviously interrelated and interdependent. Moreover, intervention efforts did not take into account fully the socioeconomic dynamics prevailing in the mountain communities targetted for intervention.

Programmes for livestock sector development mainly benefitted already resource-rich farmers and were not targetted at disadvantaged groups — women and marginal farmers. Women play an especially significant role in raising and caring for livestock and have first-hand knowledge, more than men in some cases, about the problems of raising livestock. However, it is mostly men's accounts and knowledge of problems that enter mainstream perceptions.

Livestock research and development have also focussed, perhaps too much, on large ruminants. Continued focus on large ruminants (particularly milch animals) is justified to a point though, since income from milk plays a key role in bringing cash to rural households. However, there needs to be more diversification. Micro-livestock (small ruminants and poultry) should also be given due importance. Small ruminants require less investment, are less risky, and are easily marketed. They are especially important for women and poor farmers. In the case of women, the option of raising small ruminants also offers more autonomy in decision-making, and thus empowerment, as opposed to the option of large ruminants, the economic undertakings of which are mainly a male domain.

Nevertheless, the mixed crop-livestock farming system areas with accessibility and proximity to the roadhead have had success with improved breeds of cows. For example, in Himachal Pradesh, as discussed elsewhere, improved Jersey cows have contributed to mountain farm households in terms of improving the farm economy and local environment. Similarly, in those hills of Nepal that are accessible and close to the roadhead, improved buffaloes have contributed positively to the household economy. As discussed in the preceding chapters, there are many positive lessons to be learned from the transformation processes taking place in many areas of the HKH. The smallholder dairy system in mixed crop-livestock farming — the main thrust of this study — contains lessons for development of realistic strategies for sustainable management of livestock. These strategies will be described in the next chapter.

Framework for Livestock Sector Development in the Himalayas

As discussed earlier, the past high input-output, technological innovation model copied from productive areas of the world cannot be easily transferred to the Himalayan region with its diverse socioeconomic circumstances and specific mountain characteristics: inaccessibility, fragility, marginality, niches, and diversity. Therefore, a framework has been developed to address the mountain-specific characterisitics in relation to livestock sector development (Figure 6.1). This framework shows the interlinkages of research and development with three key components: conservation, bio-physical considerations, and socioeconomics. These components, need to be considered while developing new technological innovations for animal feed, health, and breeds. The various issues shown in Figure 6.1 have direct implications for

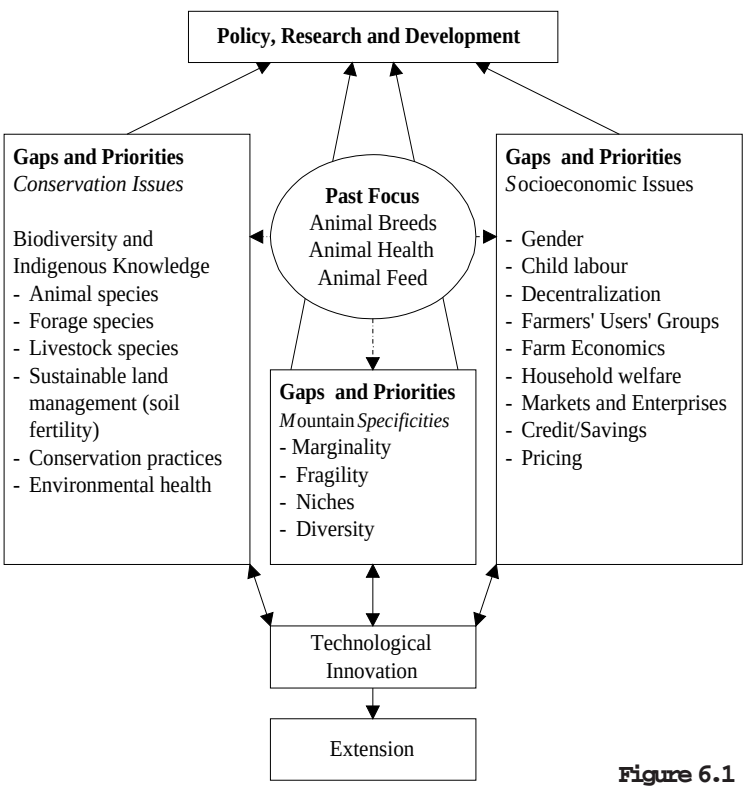

Figure 6.1
Framework for Livestock Development in the Himalayas

human welfare and environmental health vis-à-vis livestock sector development.

Conservation issues are at the fore, having direct implications on the conservation of diversity in local animal, forage, and grass species. Conservation is also vital for maintaining sustainable land-use systems and soil fertility levels and minimising soil erosion and run-off , all of which are positively related to environmental health. On the socioeconomic front, gender, child labour, indigenous knowledge, markets, farmers' groups, and community mobilisation, as well as farm economics and household welfare, are emerging as strong issues directly related to livestock sector development in the Himalayas. Above all, mountain specificities, such as marginality and fragility, diversity and niches, have a crucial role in determining livestock species and breeds.

Although most mountain areas are marginal, there are some areas that are not necessarily so. The mountain areas are rich in diversity and niches, and livestock development policies should take into account the comparative advantages of certain areas of the mountains. A 'pocket-area' approach should be adopted for improving the livestock sector in the context of local socioeconomic conditions. As discussed elsewhere, while the government policy of introducing improved cows failed in many areas of the UP hills, it succeeded in a number of pocket areas of Himachal Pradesh. Because of ecological diversity, the pocket-area approach suits mountain areas far more than a blanket approach for the entire mountains. While developing such an approach, the framework presented in Figure 6.1 should be useful for addressing interrelated issues and linkages in the mountain environment.