

The Context

The last few decades have seen considerable changes taking place in livestock population, structure, and management systems in the mid-mountain areas of the Hindu Kush-Himalayas (HKH) where mixed crop-livestock farming systems predominate. These changes have altered the relationship of livestock to overall farming systems and natural resources' management. In addition, changes in the natural resources themselves have also had an impact on how livestock are managed. In general, change is greater in the hill/mid-mountain regions of Nepal and in the Western Himalayas where there has been rapid population growth leading to decreased farm size and increased land fragmentation.

Several studies have been carried out in the past on the livestock sector development in the HKH by different institutions and agencies in particular areas and with different objectives. However, knowledge about how these changes affect sustainable livestock production systems has not yet been systematically integrated. This report seeks to bring together various studies on the linkages that influence the livestock sector of the HKH region and aims to provide better understanding of the changing linkages between livestock production systems and other components of the farming system such as soil fertility, crop productivity, and natural resources. It is based on a comprehensive review of relevant secondary sources and is supplemented by additional field data gathered from sites in three high-pressure hill districts of Nepal. It is acknowledged that prevailing policies and strategies for livestock sector development in the HKH hills need to be re-examined for their appropriateness in the context of a rapidly changing hill farming and livestock production system.

It is in this context that the FAO Animal Production and Health Division commissioned the International Centre for Integrated Mountain Development (ICIMOD) to carry out this study, the main purpose of which is to provide input from the Hindu-Kush Himalayas to a global FAO study on sustainable livestock production presently being undertaken in the East African highland areas and in the Andean countries of South America. The process has led to an international symposium on 'Livestock in Mountain/Highland Production Systems: Research and Development Challenges into the Next Millennium' which will be held jointly by the International Livestock Research Institute (ILRI), Food and Agriculture Organization of the United Nations (FAO), Global Mountain Programme, International Potato Centre (GMP, CIP) and International Centre for Integrated Mountain Development (ICIMOD) in Pokhara, Nepal, from December 7 to 11, 1999.

Terms of Reference/Areas of Enquiry

A Letter of Agreement between FAO and ICIMOD was signed. ICIMOD undertook the following areas of study according to the terms of reference given in this Letter of Agreement.

- What have been the changes in livestock population and composition in areas in which livestock are an integral part of the overall farming system?
- How has the growing human population affected livestock population, animal productivity, and agricultural productivity?
- How are population pressures contributing to landholding sizes and livestock holding sizes?
- What are the linkages between livestock and crops and with common property resources and private land?
- What are the changes taking place in terms of livestock holding and management practices as a result of the high pressure on land and increasing cropping intensity?
- How are livestock contributing to the sustainable management of agricultural land and how are they contributing in terms of farm power/energy?
- Are livestock contributing to an improvement in natural resources or to their degradation?
- What are the key policy issues for the Himalayas in terms of livestock sector development?

- What is the role and contribution of gender to livestock management at the household level ?
- How are gender issues addressed in livestock policy formulation, e.g., in extension service delivery systems and research?
- What are the new options for improving livestock management and productivity?

Study Areas and Methodology

This study focusses on ‘high pressure’ areas of the Himalayan region, namely, the middle hills of Nepal and the Western Indian Himalayas. These are places in which livestock densities in terms of cultivated land, grazing land, and forests are high and areas where mixed crop-livestock farming systems predominate. The areas for study were selected on the basis of these criteria. Overall, the pressure of livestock population on land resources is relatively less in the Eastern Himalayas than in the Western Himalayas.

Since this is a state-of-the-art study, it involves a comprehensive critique of relevant secondary sources and a careful review and analysis of the data and information gathered from these sources. Several case studies carried out by other organizations are reviewed and the data/information collated. In addition, a vast set of scattered data and information from government sources and other research reports are reviewed and analysed. Simple analysis in terms of percentage change between two time periods and growth rates is carried out for data from the livestock sector.

The districts for the field study in Nepal were chosen after ranking all the hill districts based on the values of ‘Livestock Pressure Indicators’. High pressure areas were determined on the basis of both livestock and human components (Annexes 1 and 2). The following parameters were used to determine the pressure indicators.

- Human population per hectare of cultivated land
- LSU (livestock units) per hectare of cultivated land
- LSU per hectare of forest and cultivated land and specifically in the case of high pressure in terms of small ruminants

- Small ruminants (sheep and goats) per hectare of cultivated land

The districts selected in Nepal were Kaski and Parbat in the western middle hills and Dolakha in the central hills. Parbat and Kaski both demonstrated intense human pressure on cultivated land. Total livestock pressure on resources is also high in both these districts. The average number of buffaloes per hectare of cultivated land is higher in both Kaski and Parbat than in Dolakha. Dolakha is subject to dense pressure in terms of small ruminants such as sheep and goats.

The information gathered was through general reconnaissance, informal survey of households, and through supplemental information from key informants on the issue of changing trends in livestock management practices and farmers' perceptions on the state of livestock feed resources.

Informal interviews and group discussions took place with farmers' groups, buffalo traders, smallholder dairy farmers, women farmers' groups, milk cooperatives, field-based technicians, and officials.

Following the completion of the draft report, a one-day workshop was carried out to discuss the findings with different stakeholders and experts who have had a lot of experience in livestock sector development. Twenty-eight individuals took part and sufficient time for discussion was provided. A checklist questionnaire was also developed to draw upon their expertise. Their suggestions are incorporated in this study.