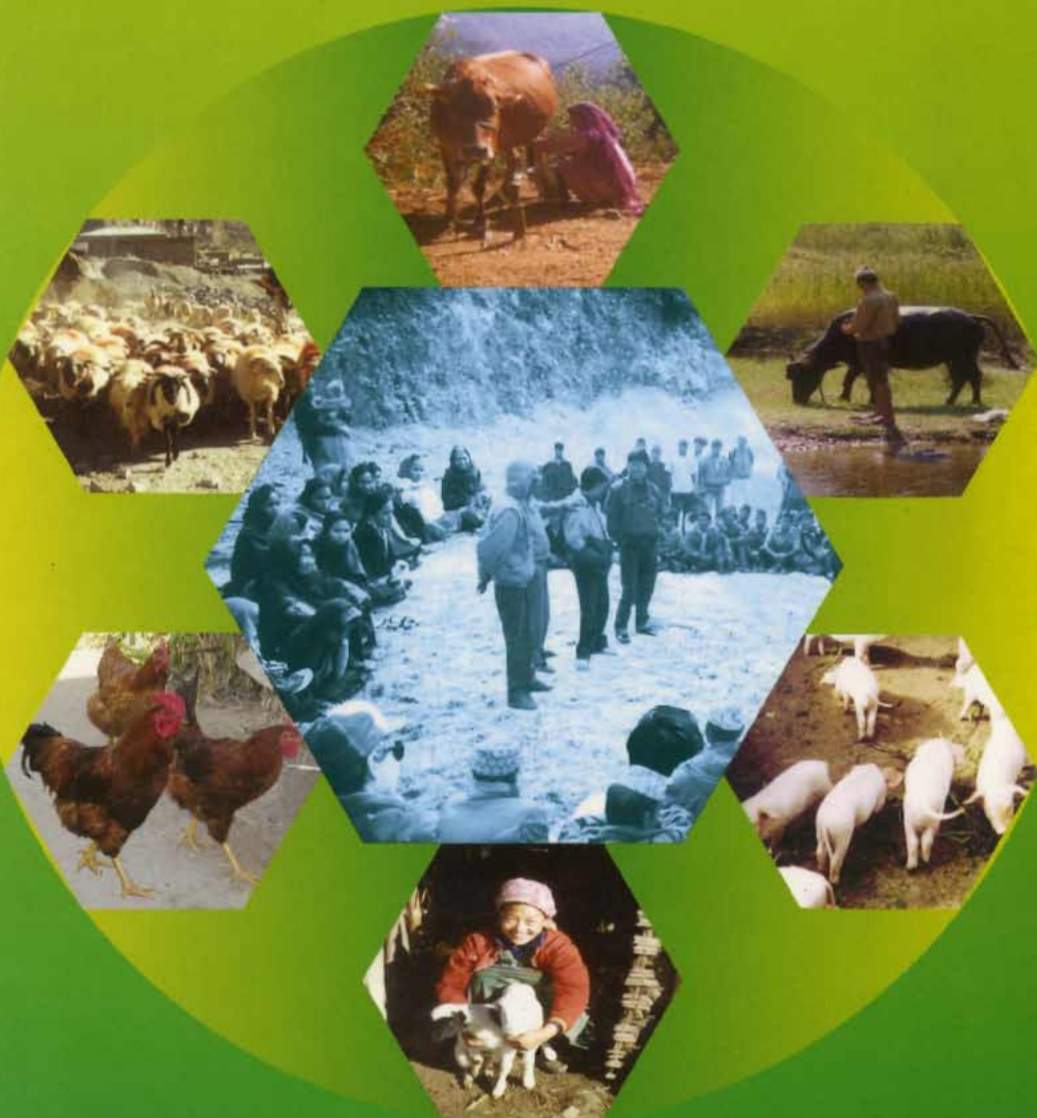


Community Empowerment in Livestock Resource Planning



Pradeep M. Tulachan
Juhani Mäki-Hokkonen

about the organisations

The International Centre for Integrated Mountain Development (ICIMOD)

The International Centre for Integrated Mountain Development (ICIMOD) is an international organisation devoted to development of the Hindu Kush-Himalayan region covering all or parts of eight sovereign states:  Afghanistan,  Bangladesh,  Bhutan,  China,  India,  Myanmar,  Nepal, and  Pakistan. The Centre is located in Kathmandu, Nepal. The primary objective of the Centre is to promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations. The Mountain Farming Systems' Division at ICIMOD was established to promote improvement of farm productivity on small mountain farms without degrading the resource base.

Food and Agriculture Organization (FAO)

The Food and Agriculture Organization of the United Nations (FAO) was founded in 1945 with the mandate to raise levels of nutrition and standards of living, to improve agricultural productivity, and to better the condition of rural populations. FAO has its headquarters in Rome, Italy, and is the largest autonomous agency within the United Nations system with 180 member nations plus the EC (member organisation). The Animal Production and Health Division (AGA) of FAO is entrusted with clarifying and facilitating the role of global livestock production in food security and food safety, as well as in poverty alleviation, while protecting the environment. The Division has six major project areas – Global Livestock Information and Policy; Decision Support for Efficient Livestock Resource Use; Livestock and Poverty Alleviation; Animal Genetic Resources; Veterinary Public Health management, which hosts the Programme Against African Trypanosomosis (PAAT); and Transboundary Animal Diseases (EMPRES).

Community Empowerment in Livestock Resource Planning a suggested participatory policy framework

**Pradeep M. Tulachan
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**Mountain Farming Systems Division
International Centre for Integrated Mountain Development (ICIMOD)**

**Animal Production and Health Division
Food and Agriculture Organization (FAO)**

**Kathmandu, Nepal
November 2002**

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Published by

**International Centre for Integrated Mountain Development
G.P.O. Box 3226
Kathmandu, Nepal**

ISBN 92 9115 653 1

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Printed and bound in Nepal by

**Hill Side Press (P) Ltd.
Kathmandu**

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Foreword

Agriculture forms the backbone of people's livelihoods across the Hindu Kush-Himalayan Region. The great majority of the 150 million people who live here are still subsistence farmers, notwithstanding the accelerating move towards a more commercial approach. At higher altitudes livestock play the most prominent role and the people are mostly pastoralists, whereas in the fertile plains the emphasis is on crops. In the broad band in between – the hill and lower mountain areas – farmers rely on a centuries old tradition of integrated and diversified mixed crop-livestock approaches designed to reap the maximum dependable benefit with the minimum of risk from the available resources. Livestock form an integral part of these systems, providing a means for producing nourishment and material for clothing from land not suitable for growing crops, a way of maintaining soil fertility through production of manure, power for ploughing and transport, and a way of recycling 'waste' products like crop and food processing residues. As the emphasis in the region moves from a subsistence to a cash economy, farmers and governments are looking at ways of turning livestock into cash income. Often, however, the approaches suggested and supported by government planning are based on a limited view of livestock as a commercial entity, which does not take into account either the diverse roles of livestock in mountain farming systems or the specific situation of the mountain farmer in terms of inputs, outputs, and access to markets. For livestock planning to be effective in mountain areas, it must be done by those who have an understanding of the situation and the potential, and the requirements, priorities, and needs of the local people – that is by the mountain farmers themselves. But communities need to develop the know-how and methodologies to carry out proper planning before they can become fully empowered in the planning process.

The International Centre for Integrated Mountain Development (ICIMOD) and the Animal Production and Health Division of the Food and Agriculture Organization of the United Nations (FAO) have been collaborating on a range of issues related to livestock in mixed farming systems in the HKH over the last four years with considerable success. Studies carried out since 1997 indicate that there is a lack of knowledge of good practices and of equitable access to resources, and that the key factor hampering sustainable development of mountain agriculture is the lack of community empowerment in local resources planning and decision-making. Community empowerment means that communities can make plans and take decisions regarding local resources without these being imposed from outside. However, under current practice local communities remain on the periphery; their extensive knowledge and skills are not incorporated in local livestock resource planning. The ICIMOD-FAO collaborative work has focused in part on this issue. Case studies were performed in the Nepal hills and in Himachal Pradesh, India, to determine the indicators and parameters that are important for livestock planning and decision-making at the local level, and reviews were made of the current local livestock planning processes in Bhutan, India, Nepal, and Pakistan. These studies and reviews were discussed at a regional stakeholders' meeting held in October 2001, and this publication is an outcome of the meeting. It summarises the findings of the case studies and reviews, and presents the suggested outline for a participatory policy

framework (PPF) prepared by the participants for community empowerment in local livestock resources planning and decision-making. This publication follows on from two previous publications on trends and sustainability of livestock in mixed farming systems and research and development issues related to the contribution of livestock to mountain livelihoods. It marks a major step forward in the move towards facilitating genuine community involvement in planning and decision-making related to livestock.

We are confident that this publication will provide a valuable basis for future activities. During the next phase the framework will be developed in detail at a further stakeholders' meeting and tested in pilot field studies before being finalised and, we hope, widely applied. Good practice in planning and decision-making by local communities can make a large contribution towards improved and sustainable livestock production, and ensure equitable access to community resources. We believe that the participatory policy framework provides a new paradigm for rethinking the formulation of policy and institutional programmes and will do much to support genuine community empowerment in planning, and we look forward to continuing fruitful collaboration with FAO in this area. This publication will be of interest to all those interested in livestock planning issues in the HKH region, and we hope that the activities will prove of lasting benefit to the people of the region.

Dr. Eklabya Sharma
Head, Mountain Farming Systems Division
ICIMOD

Acknowledgements

We would like to thank the livestock-dependent mountain farmers who have participated in our field studies over the past four years. We have also benefited considerably from inputs provided by various regional experts, especially from Bhutan, India, and Nepal. The ownership of the participatory policy framework for community empowerment presented in this paper lies with FAO and ICIMOD and all the stakeholders who participated in the October 2001 meeting and developed the framework together.

The framework was presented at the FAO in Rome in January 2002, and later at the International Conference for Sustainable Agriculture and Rural Development (SARD) in Mountain Regions held at Adelboden, Switzerland on 16–20 June 2002. Our special thanks go to Dr Samuel C. Jutzi, Dr Eve L. Crowley, and other FAO colleagues, and to Professor Fritz Schneider and Ms Linda Elswick for their comments and advice.

Finally, we would like to thank Dr J. Gabriel Campbell and other members of ICIMOD staff for providing administrative and professional support for our joint collaborative programme and its continuation.

The challenge for the future is to test and verify the policy framework at the community level, and then to revise and refine it in the light of this experience before it is implemented on a broad scale across the HKH. Field-testing and verification can also provide a new perspective to national governments on how to plan for livestock development in mountain regions. To this end, a regional stakeholders' meeting is scheduled for December 2002 to discuss and finalise the suggested PPF and formulate action plans for its field operation.

One of the framework was presented at the International Conference for Sustainable Agriculture and Rural Development (SARD) in Mountain Regions held at Adelboden, Switzerland in June 2002. The key messages, such as recognition of the rights of mountain communities and individuals to their knowledge, natural resources and livelihoods, as well as to benefit sharing and community empowerment, were discussed during the Adelboden session.

Executive Summary

This publication presents a suggested participatory policy framework (PPF) for community empowerment in livestock resource planning and decision-making. The framework outline was the primary outcome of a regional stakeholders' meeting held in October 2001 to share the findings of joint FAO and ICIMOD studies and develop a policy framework for community empowerment in livestock resource planning and decision-making. The studies comprised a series of reviews and case studies carried out over the preceding four years which had highlighted the need for such a framework and indicated some of the necessary components. After reviewing both present planning processes and past policy programme failures, FAO and ICIMOD evolved a new paradigm for empowering local communities in livestock resource planning and decision-making to be implemented in the field.

The publication presents the findings of the studies as well as the outline for the framework prepared by the meeting participants. It is divided into six parts. The first places the work in context and summarises the background, the methodology for developing the framework, the results of the joint studies, and the goals, objectives, and basic components of the suggested framework itself. Part 2 presents the results of the two case studies in India and Nepal which provided the basis for identifying some of the key indicators for livestock resource planning and decision-making, like natural resources management and feed resources, input services, and policies and markets by the community. The third part comprises six country case studies of livestock planning processes in the mountain regions of four Hindu Kush-Himalayan countries (Bhutan, India, Nepal, and Pakistan). These showed the planning processes to be generally top-down, centralised, and supply-driven, although in some cases participation of the community was being sought. Parts 4 and 5 present descriptions of the planning process from selected projects and I/NGOs. Projects and NGOs working at the grassroots level are attempting to use a participatory approach in livestock planning processes. However, in most programme plans decisions are still made by project staff. Finally the actual framework outline prepared by participants at the Stakeholders' Meeting is presented in an Annex.

The challenge for the future is to test and verify the policy framework at the community level, and then to revise and refine it in the light of this experience before it is promoted on a broad scale across the HKH. Field-testing and verification can also provide a new perspective to national governments on how to plan for livestock resources in mountain regions. To this end, a regional stakeholders' meeting is planned for December 2002 to discuss and finalise the suggested PPF and formulate detailed action plans for its field operation.

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Acronyms and Abbreviations

ACAP	Annapurna Conservation Area Project
AI	artificial insemination
AJK	Azad Jammu and Kashmir
CBO	community-based organisation
CIP	Centro Internacional de la Papa (International Potato Center)
DLSO	District Livestock Services Office
DLS	Department of Livestock Services
DYT	Dzongkhag Yargey Tshogchung (District Development Committee)
FAO	Food and Agriculture Organization
GDP	gross domestic product
GIS	geographic information system
GYT	Geog Yargey Tshogchung (Block Development Committee)
ICBA	intensive cattle-breeding area
ICIMOD	International Centre for Integrated Mountain Development
ILRI	International Livestock Research Institute
INGO	international non-governmental organisation
LAT	Livestock Action Team
LIRA	Livestock Industries Related Association
LI-BIRD	Local Initiatives for Biodiversity, Research and Development
MOAC	Ministry of Agriculture and Co-operatives
NGO	non-governmental organisation
NRMP	Northern Resource Management Project
NRs	Nepalese rupees (US\$1 = approx. NRs 75 during 1999, and approx. NRs 78 in October 2002)
NRSP	National Rural Support Programme
RNR	renewable natural resources
SLP	Systemwide Livestock Programme
TLDP	Third Livestock Development Project
UNDP	United Nations Development Programme
VDC	village development committee

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PART I

BACKGROUND AND FRAMEWORK

Chapter 1

Background, Methodology and Summary Findings

Mountains are the world's most vulnerable, fragile and poverty-stricken areas. In order to reduce global poverty, these areas need to be given priority in terms of development policy and programme interventions. Livestock, as an integral component of mountain farming systems, have a critical role to play in poverty reduction.

Four years of collaborative work by three international organisations – FAO, ILRI and ICIMOD – in poor and vulnerable areas of the Hindu Kush-Himalayan region of South Asia have generated useful knowledge on smallholder livestock farming in high-pressure mountain regions. There is now substantive information that can contribute to the Global Livestock Information Network being initiated by the FAO in Rome.

The review and field studies show that empowering local communities can make a difference to planning processes and policy reforms of mountain countries. Mainstream institutional and economic policies cannot effectively address livestock resource management issues in poor and vulnerable areas with fragile and resource-scarce environments. Although some attempts have been made to seek community participation in planning processes, up to now communities have not been empowered to make decisions regarding planning and programming of local livestock resources.

Furthermore, there is no systematic participatory policy framework for community empowerment. Therefore, development of a framework for community participation and empowerment for livestock resource planning and management, in the context of natural resource management, is critical in order to enhance the contribution of livestock to poverty reduction in mountain regions.

The main objectives of this paper are as follows.

- To develop an institutional and policy framework to empower local communities in integrated livestock resource planning and management
- To ensure maximum participation of women farmers in all stages of planning and implementation
- To emphasise an integrated approach to livestock resource development as part of natural resource management

Livestock, as an integral component of mountain farming systems, have a critical role to play in poverty reduction

- To improve income and livelihoods by promoting value addition, product diversification, and marketing development
- To operationalise the framework by testing and validation in local communities for wider application and replication

Methodology for developing the framework

The methodology for developing the framework comprised the following five phases of FAO–ICIMOD collaborative work over the past four years (1997–2001).

Phase 1 Reviews, case studies and development of a livestock resource database

Reviews and case studies identified a number of inappropriate policies and programmes being implemented in the field. However, successful livestock improvement programmes, where communities had taken the initiative, were also found. Knowledge development involved systematic collection, organisation, and computerisation of secondary data/information. This was achieved through two projects: the FAO–ICIMOD state-of-the-art review study entitled 'Livestock in Mixed Crop-Livestock Farming Systems of the Hindu Kush-Himalayas', and the parallel and complementary 'Livestock Database Inventory Project' with ILRI.

Phase 2 International Symposium on Contribution of Livestock to Mountain Livelihoods

As a follow up to the first phase and to address livestock issues of mountain regions at a global scale, an international symposium entitled 'Contribution of Livestock to Mountain Livelihoods – Research and Development Issues' was organised jointly by FAO, ICIMOD, ILRI, and CIP from 7 to 11 December 1999. This symposium provided a platform for sharing of existing knowledge, and airing of global and regional livestock issues that focused on the most vulnerable, fragile, and poverty-stricken areas of the world.

Phase 3 Case studies for identifying the key indicators

During 2000, FAO and ICIMOD jointly carried out further field studies as the basis for a stakeholders' workshop to develop a framework for community participation and empowerment in local-level livestock resource planning and decision-making. Household studies were carried out at two sites in Nepal, and at two sites in Himachal Pradesh in the western part of the Indian Himalayas. The purpose of these studies was to identify key parameters related to household-level decisions on livestock resource planning. The results were intended to provide a basis for assessing the harmony between farmers' priorities and current public-sector policies that support rural livestock development. The Livestock GIS Database, available at ICIMOD, was used to identify field sites in high-pressure mountain regions of Nepal and Himachal Pradesh. Participatory rural appraisal

techniques using structured household survey questionnaires were used to collect information on ecoregion-specific livestock resource management systems. One site in each country was selected to represent a market-accessible animal production area and the other to represent a market non-accessible area.

Phase 4 Country papers on public planning processes

Resource persons from various Hindu Kush-Himalayan government institutions were invited to prepare workshop papers on current public-sector planning processes for livestock resource development. In addition, several NGOs were also invited to prepare papers describing their methodologies and work experience in planning and implementing livestock development projects in Hindu Kush-Himalayan countries.

Phase 5 Regional workshop

A regional stakeholders workshop was held from 11–13 October 2001. This workshop facilitated sharing of the planning experience and compared it to ground-level priorities that emerged from the household surveys. The process helped participants to identify weaknesses and gaps in present planning processes. Workshop participants were divided into three groups; each group brainstormed a single agenda adopted in an initial plenary session. A concluding plenary debate developed and adopted the new planning framework for testing and validation in the field.

Summary of findings of joint FAO–ICIMOD collaborative studies

The major findings from collaborative work on mountain livestock development between FAO and ICIMOD can be summarised as follows.

- Improved breeds fail to survive with poor feed resources and insufficient animal health services.
- State-owned dairy-processing plants and distribution infrastructure are widely established (subsidised by government/donor funds).
- Dairy co-operatives, operated and managed by the state, are widely established.
- State-fixed prices favour the urban consumer over the livestock keeper.
- Private initiatives and investment are discouraged.
- Conflicts in the use of common property resources have resulted in declines in populations of sheep and cattle.

Improved breeds fail to survive with poor feed resources and insufficient animal health services

State-fixed prices favour the urban consumer over the livestock keeper

The International Livestock Symposium identified common problems faced by livestock-dependent farmers in marginal and vulnerable areas of the world.

Communities are not empowered in the planning and decision-making process

- Shortage of feed resources
- Poor animal health infrastructure
- Poor market development and product diversification
- Inappropriate policy and institutional programmes

Based on these problems/constraints, the symposium accepted that the agenda for livestock planning, programming, and policy formulation in the twenty-first century should pay greater attention to the contribution that livestock makes to poverty reduction. This agenda should emphasise the following activities.

- Generation of socially equitable and environmentally sustainable technologies and strategies
- Diversification of processing and products (technology and economics)
- Market development and market-oriented livestock production
- Credit and investment, and trade and regional integration
- Institutional strengthening and human capacity-building

Local farmers do not participate in needs assessment

The primary findings of the review of livestock planning processes can be summarised as follows.

- Decision-making is top-down and mostly centralised.
- Participation of the community is sometimes sought. However, communities are not empowered in the planning and decision-making process.
- The approach is oriented to service/output; demand is neglected.
- More time and resources are spent at the central level than at community and farmer levels.
- Local farmers do not participate in needs assessment.
- No account is taken of the location-specific resource base, and its comparative advantages and market opportunities.
- Poor communities in vulnerable areas lack a systematic planning framework.

No account is taken of the location-specific resource base

Field studies identified some successful small-scale livestock enterprises. In most cases, women were active players. Some examples are as follows.

- Smallholder dairy-farming organised and managed by women's dairy co-operatives
- Micro-livestock enterprises involving goats and poultry initiated by women's savings and credit groups
- Household biogas plants operated and managed by women (This has led to a reduction in women's workloads as well as a reduction in methane gas released into the atmosphere.)
- Informal marketing of lactating buffaloes from lowlands to mountain areas, and the return of non-lactating cows to the lowlands for insemination

Chapter 2

Empowering Communities in Livestock Resource Planning and Decision-making: A Suggested Participatory Policy Framework

The regional workshop concluded that present planning processes do not fully explore the positive contribution of livestock to mountain households. Since local communities remain on the periphery of the process, their extensive knowledge and skills have not been sufficiently incorporated into livestock resource planning and management. This calls for development of a new participatory framework that could empower local communities in planning and decision-making for their livestock resources in the context of natural resource management. When local communities are empowered, they will be able to exploit systematically the positive potentialities of livestock resources for improvement of mountain livelihoods.

The workshop was convinced that local communities play a decisive role in managing their local resources and allocating them judiciously. Therefore, a bottom-up approach with full community participation is critical for development of a resource-related policy and institutional programme at the grassroots level. Such an approach can provide a sustainable framework for communities to make efficient and productive use of local resources. The workshop further believed that the development of a participatory policy framework is essential for empowerment of local communities in their livestock resource planning and decision-making. Improved and effective participation of local communities in planning can be expected to improve livestock productivity, and thus contribute to higher economic returns from livestock-raising. The framework can be used to improve livestock production resource use as part of overall natural resource management, including better understanding of its livestock linkages. Successful implementation of the framework would reduce rural poverty, and improve the livelihoods of mountain people in the Hindu Kush–Himalayas.

Goal of the framework

The workshop's final plenary session agreed that the goal of the new planning framework should be defined as follows.

- To empower farming communities so that they can plan and manage local livestock resources in order to improve mountain livelihoods in a sustainable manner.

Local communities extensive knowledge and skills have not been sufficiently incorporated into livestock resource planning and management

Local communities play a decisive role in managing their local resources and allocating them judiciously

Objectives of the framework for community empowerment

The following objectives were agreed.

- Build capacity of communities to support empowerment and ownership of livestock resource planning and management
- Ensure maximum participation of women farmers in all stages of planning and implementing of livestock resource development
- Emphasise an integrated approach to natural resource management for livestock resource development
- Improve income generation by promoting value addition, product diversification and marketing development

Participatory policy framework

The conceptual framework incorporates four pillars of development for win-win situations. Figure 1 shows the positive outcomes, such as environmental safety, human health and safety, social equality, and people's livelihood improvements, that occur as a consequence. The details worked out by the stakeholders during the workshop are provided in the Annex.

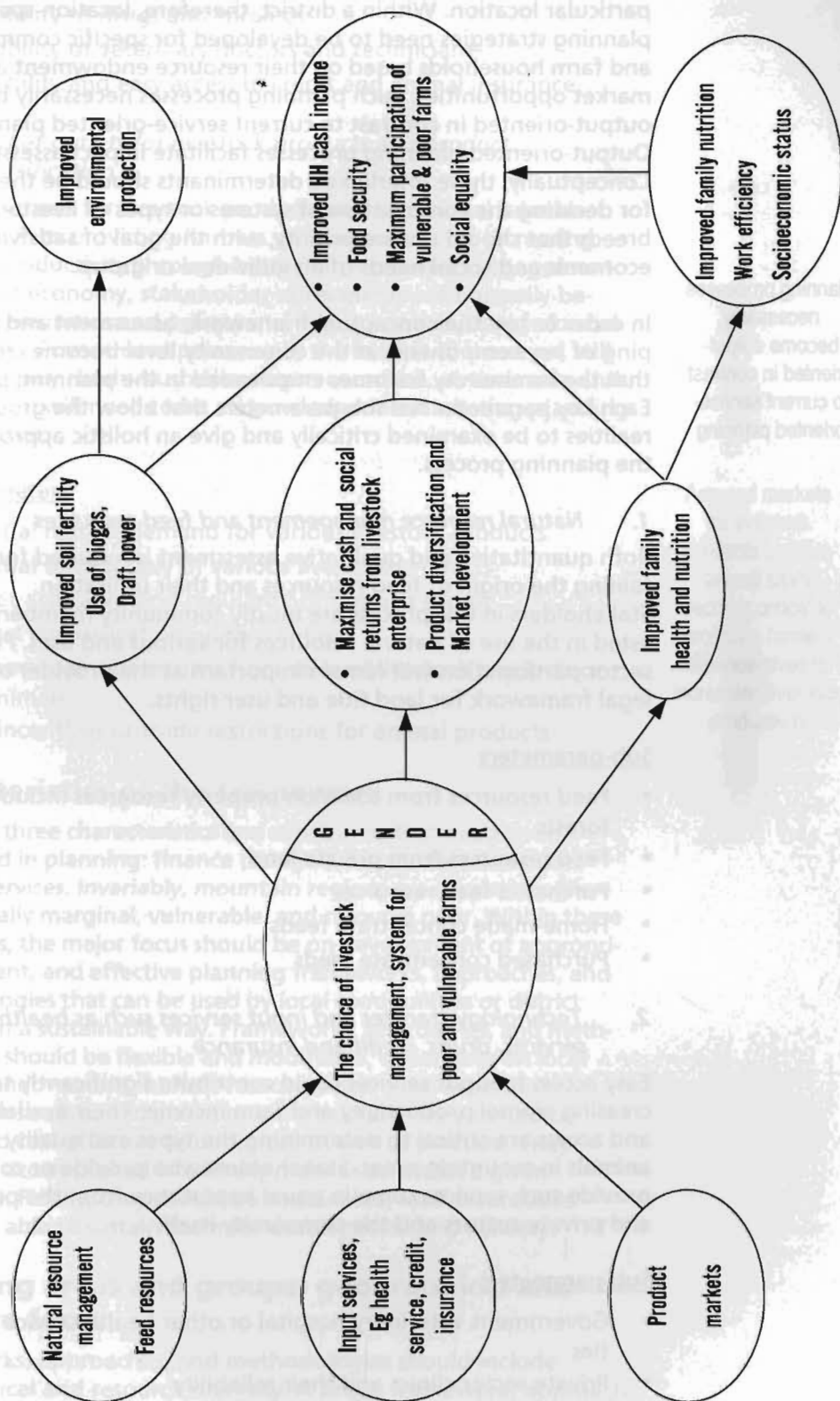
There are three critical technical and institutional dimensions: natural resource management, technology transfer and input supply services, and markets for animal products

In this policy framework, there are three critical technical and institutional dimensions: natural resource management, particularly use of animal feed resources; technology transfer and input supply services such as animal health services, farmer extension/training, animals, drugs, tools, credit, and insurance; and markets for animal products. Within these three dimensions, communities should have an equitable role with other private and public stakeholders to determine the optimal mix of social and economic roles of livestock as an integral component of farming and livelihood systems in poor and vulnerable areas. This is expected to have three ripple-off social and environmental benefits. Firstly, there can be efficient nutrient recycling by feeding manure through household biogas plants before using it as fertiliser. Methane gas can be used as an energy source for cooking. This reduces women's workloads as they no longer need to collect fuelwood. Secondly, less fuelwood collection means less pressure on forests; thus, assisting environmental protection. Thirdly, there can be improvements in human nutrition. Efficient livestock production systems result in more animal protein in family diets. This can contribute to greater work efficiency with positive implications for agricultural productivity. In addition, improved nutrition can increase a family's social status.

Key indicators for planning and decision-making

As shown in Figure 1, there are three major interlinked determinants that influence a farmer's choice of livestock farming system, and the types and breeds of livestock that he/she will raise in a

Figure 1: Participatory policy framework: pro-poor livestock policy and institutional programme development for community empowerment



Planning processes necessarily become output-oriented in contrast to current service-oriented planning

particular location. Within a district, therefore, location-specific planning strategies need to be developed for specific communities and farm households based on their resource endowment and market opportunities. Such planning processes necessarily become output-oriented in contrast to current service-oriented planning. Output-oriented planning processes facilitate impact assessment. Conceptually, these interlinked determinants should be the basis for deciding the combination of systems or types of livestock and breeds that should receive priority, with the goal of satisfying the economic and social needs of an individual or group.

In order to test the conceptual framework, assessment and mapping of key components at the community level become critical so that the community becomes empowered in the planning process. Each key parameter has sub-parameters that allow the ground realities to be examined critically and give an holistic approach to the planning process.

1. *Natural resource management and feed resources*

Both quantitative and qualitative assessment is required for ascertaining the origin of feed resources and their utilisation. Stakeholders in this process are mostly community members interested in the use of natural resources for various end uses. Public sector participation will remain important as the provider of the legal framework for land title and user rights.

Sub-parameters

- Feed resources from common property resources including forests
- Feed resources from private land
- Purchased feed resources
- Home-made concentrate feeds
- Purchased concentrate feeds

2. *Technology transfer and input services such as health services, drugs, credit and insurance*

Easy access to input services could contribute significantly to increasing animal productivity and farm income. Their availability and access are critical to determining the types and quality of animals in mountain areas. Stakeholders who provide or could provide such services come in equal importance from the public and private sectors and the community itself.

Sub-parameters

- Government veterinary hospital or other health service facilities
- Private sector clinics and their reliability

- Availability of drugs and vaccines
- Availability of veterinary doctors and technicians
- Availability and easy access to credit and animal insurance

3. *Market outlets for livestock products and product diversification*

Assured markets for livestock products and live animal sales become critical to providing farmers with incentives for increasing livestock productivity through better farm resource management. In a market economy, stakeholder agreements are normally between communities and private marketing companies or informal middlemen. Government presence in the market is, however, still strong in many Hindu Kush-Himalayan countries, so their role and participation will need to be acknowledged in marketing planning and decisions.

Sub-parameters

- Potential market demand for various livestock products
- Potential farm supply of various livestock products
- Market assurance and regularity of product supply
- Product diversification opportunities
- Economic gains or returns from sales of livestock products or live animals
- Price incentives or trade restrictions for animal products

Assured markets for livestock products and live animal sales become critical to providing farmers with incentives for increasing livestock productivity

Characteristics of the framework

There are three characteristics and constraints that need to be considered in planning: finance (budget), human resources, and support services. Invariably, mountain regions are diverse, fragile, economically marginal, vulnerable, and resource poor. Within these limitations, the major focus should be on development of appropriate, efficient, and effective planning frameworks, approaches, and methodologies that can be used by local communities or district planners in a sustainable way. Frameworks, approaches, and methodologies should be flexible and modifiable, depending on local resource endowments, human resources (technical expertise), budget constraints, and access to infrastructure. They should be simple and cost effective (economical) as well as practical. They should be accomplished in a timely manner or within a given timeframe. Finally, they should be sustainable; local institutions should be able to sustain them for development and delivery.

Targeting areas and groups: geographical and resource focus

Frameworks, approaches, and methodologies should include geographical and resource diversity. A single framework, approach,

and methodology cannot be applicable to the diverse conditions of mountain areas. In order to simplify, mountain areas can be classified into two categories from a market point-of-view: accessible and inaccessible.

Support services (social and physical infrastructures, and the private sector) should be considered to be determining factors for new interventions or technological packages in livestock sector development. Micro-level communities or farmers should be categorised in terms of their resource base. Therefore, within each geographical area, two types of farmers or communities can be targeted: relatively resource-rich and relatively resource-poor.

Operationalisation of participatory policy framework

Results of operationalisation of the institutional and policy framework for community empowerment will need further analysis through field-testing and verification. The four pillars of the new development paradigm are environmental safety, food safety and security, social equity, and people's livelihoods. Successful testing and validation will have implications for the wider applicability of the framework in mostly poor, marginal, and vulnerable areas in developing countries. Future analysis and operationalisation of the framework is proposed under the premise that it will be critical for policy and decision-makers to understand that joint action by rural communities will have positive impacts on the environment, economic growth, and social equity, both nationally and internationally.

While implementing mountain policies and plans, empowerment of local communities and traditional institutions is critical. There is a need for social mobilisation; this could be done by making use of indigenous knowledge and skills of local people. Local communities should be empowered in the formulation and implementation of mountain policies and plans. Various stakeholders, including government line agencies and I/NGOs working at grassroots levels, can act as catalysts or facilitators. It is worth noting that plans and decisions should be completely prepared and implemented by communities themselves. In addition, such policies, plans and programmes need to have institutional flexibility depending on the availability of local technical and managerial expertise, finances, and access to infrastructure. Moreover, they should be simple, practical, cost effective, and achievable within a realistic timeframe.

Operationalisation of the new institutional and policy framework can be adopted widely in the Hindu Kush-Himalayas and elsewhere. Improved and effective involvement of local communities in planning of natural resource management would contribute to

Joint action by rural communities will have positive impacts on the environment, economic growth, and social equity

While implementing mountain policies and plans, empowerment of local communities and traditional institutions is critical

Plans and decisions should be completely prepared and implemented by communities themselves

improved livestock productivity, and also result in higher economic returns from crop-livestock farming and market supply systems, and better understanding of linkages within natural resource management. This will ultimately contribute to the major goal of reducing rural poverty and improving the livelihoods of mountain people in the Hindu Kush-Himalayas.

Meeting of stakeholders

A stakeholders' workshop to discuss operational issues of the framework, in which key policy-makers, planners, community leaders, farmers, and input-output agents (local traders) will participate, has been planned. The main objective of this meeting will be for government policy/decision-makers and other participants to agree on the locations and scope of pilot schemes. The intention is to carry out field tests in selected pilot sites, including those already used for household case studies. The meeting will also draw up technical details of field-testing and verification procedures, and agree participatory planning and implementation procedures. The output of the workshop will be a project proposal and documentation of agreed procedures for local stakeholder empowerment. Draft technical process outlines will be developed for the workshop so that implementation arrangements between stakeholders can be discussed and finalised.

Improved and effective involvement of local communities in planning of natural resource management would contribute to improved livestock productivity

This will ultimately contribute to the major goal of reducing rural poverty and improving the livelihoods of mountain people

PART II

CASE STUDY PAPERS

Chapter 3

Parameters for Local-level Livestock Development Planning: a Study in Himachal Pradesh, India

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Mixed farming systems involving agricultural crops, pastures, and livestock provide optimal production, as they are able to tap rural resources efficiently. Income from crop cultivation in Himachal Pradesh, where landholdings are small, is not sufficient to meet family and farm expenditure. Commercial livestock-rearing is one of the most suitable enterprises that can be adopted by farmers in hill areas to boost incomes.

Objectives

The objectives of the study were to examine existing practices of feeding, breeding, and managing livestock; analyse farmers interaction with input and output agencies; and identify awareness of, attitude to, and adoption of improved practices among farmers and support systems.

Methodology

A cluster of four villages, representing good access to veterinary facilities, roads, transportation, and markets for farm/livestock products, was selected in Shimla District. Another cluster of villages was selected in Chaki Mor area representing poor accessibility in terms of livestock-related infrastructure. Twenty farm households were sampled from each site.

General features of sampled farm households

In the accessible area, the average landholding was 1.41 ha, and grassland covered 62% of the area. In the inaccessible area, the average landholding was 1.62 ha and 53% was grassland. Foodgrain crops dominated the cropping pattern in both areas. Fodder crops were also grown by farmers in the accessible area; this accounted for 15% of the gross cropped area. Livestock-rearing constituted 40% of total income in the accessible area and 21% in the inaccessible area.

Structure of livestock holdings

The accessible area had a larger population of crossbred cows than the inaccessible area. In the inaccessible area, buffalo-rearing was more common than in the accessible area. This is because veterinary facilities are satisfactory in the accessible area, but not in the inaccessible area. In the accessible area, each household kept an average of 3.9 cows, of which 95% were crossbred. In the inaccessible area, each household kept an

average of 0.8 cows, of which 90% were a local breed. On average, each household had 8.3 heads of livestock in the accessible area and 6.4 heads in the inaccessible area.

Feeding of green fodder on a large scale only takes place during the rainy season; a small quantity is fed during the winter and dry summer season (tree leaves only). During the winter and dry summer season, animals are fed dry fodder. Dry fodder constituted dry grass that was obtained from private grassland, common property resources, and borders of agricultural fields; this was supplemented with crop by-products. The share of green leaf fodder from common property resources was 66%, and the share from private trees raised on grassland and borders of cultivated fields was 34%. Common property resources were the major source of dry fodder, accounting for 87% of total feed. The quantity of concentrates fed to animals was highest for lactating crossbred cows and buffaloes, followed by non-lactating crossbred in-calf cows and lactating local breed cows. In Himachal Pradesh, compound feed is manufactured by H.P. Agro-Industries Corporation Ltd and distributed by the Milk Marketing Federation and the Animal Husbandry Department.

All heifer calves from local breed cows were retained in both study areas. This was also true for sheep and goats. For crossbred cows, 30% of replacement stock was purchased in the accessible area and 90% in the inaccessible area. Buffaloes and local breed cows are inseminated by natural service, whereas crossbred cows were all sired by AI. In inaccessible areas, the AI facility was poor, however. The number of AIs per conception was 1.90 in both areas.

On average, the annual quantity of milk produced per household was 7,209 l in the accessible area and 2,245 l in the inaccessible area. The marketed surplus of milk was higher in the accessible area than in the inaccessible area.

Households were engaged in the purchase and sale of crossbred cows, buffaloes, sheep, and goats. Buffaloes were purchased in milk. All cow purchases were crossbred. Crossbred cows were purchased using farmers' resources without external sources of finance. Buffaloes were purchased on a 50% cash-deposit and 50% monthly-installment basis. No example of bank loan or subsidy was found in sample households.

In the accessible area, the most important consideration in buying crossbred cows was for additional income. Self-employment was the next most important consideration. Good quality milk was the most important reason for the purchase of buffaloes. In the inaccessible area, households purchased crossbred cows for additional income and for self-employment and buffaloes as an additional source of income. The most common reasons for sale of animals were an immediate cash requirement by the household, followed by shortage of feeding materials. In the inaccessible area, buffaloes were sold after lactation to traders who take the animals to Punjab for superior feeding.

Awareness, attitudes and decision-making of farm households

Supplementing household income was the primary reason for keeping milch animals in the accessible area. Availability of grass from common property resources, requirement of good quality milk for home consumption, and the need for farmyard manure were other reasons mentioned. Households in the inaccessible area indicated their desire for good quality milk for home consumption as the most important factor

influencing their decision to keep milch animals. Employment opportunities, requirement for farmyard manure, utilisation of crop by-products, and availability of fodder from common property resources were other reasons. A bullock pair was kept specifically for ploughing. Employment opportunities was the reason for maintaining pack animals. Supplementary household income was the main reason for rearing sheep and goats in both study areas.

Most farmers mentioned that crossbred cows required more feed than local breeds. Labour requirements were also higher. There was an overwhelming feeling that crossbred cows were more susceptible to disease. All agreed that crossbred cows had a higher milk yield potential than local breeds. In both areas, all respondents felt that male calves of local breeds were superior work animals to male calves of crossbreds.

Most of the respondents who preferred crossbred cows with high milk yields were influenced by considerations of economy. Crossbred cows were considered best suited to the cold climate in the hills. Availability of grass and pasture, and a good network of veterinary services and markets, also influenced the attitude of farmers to keeping crossbred cows. Jersey was the most preferred breed in both areas. However, some farmers in the accessible area preferred Holstein. A higher butterfat content and a good demand for milk were the main reasons for preferring buffaloes. Also, respondents considered buffaloes more resistant to disease. Supplementary household income and availability of grazing on common property resources were the main reasons for keeping sheep and goats. Employment opportunities and tradition were the main reasons for keeping mules/horses.

Crossbred cows required the most green fodder, followed by buffaloes; local breed cows required the least. Animals in milk required most green fodder; those that were not lactating or were not in calf required the least. Non-lactating crossbred cows required more concentrates than non-lactating buffaloes. Compound cattle feed requirements were considered to be greater for crossbred cows than local breed cows. No farmer fed compound cattle feed to buffaloes (in milk or dry); they considered that only crossbred cows required compound cattle feed.

In the accessible area, farmers preferred not to create milk co-operatives as there was a satisfactory market for milk in neighbouring urban centres and the price was better for direct sales to consumers than through a co-operative. In the inaccessible area, the low milk price offered by traders and the small quantities of milk for sale were the main reasons for farmers forming milk marketing co-operatives.

In the accessible area, there was a high degree of awareness among farmers regarding veterinary care. Veterinary treatments and vaccination are performed at the farm. In the inaccessible area, treatment and vaccination were performed at the farm and in the hospital. More farmers contacted the pharmacist at the veterinary hospital than the veterinary doctor for treatment of sick animals.

In the majority of cases, husbands collected the money from the sale of milk in both areas. In the accessible area, most decisions regarding spending the money from sale of milk were made jointly by the husband and wife. In both areas, the husband usually took decisions on the purchase of animals, although the wife did in a few households. The wife usually took decisions regarding the feeding of animals.

Neighbours, friends, others (mostly livestock traders), and veterinary officials (doctor, pharmacist, other) were consulted before purchasing animals. In the accessible area, neighbours, friends and veterinary officials were consulted about the feeding schedule. In the inaccessible area, most households consulted others (livestock traders) regarding the feeding schedule; a few consulted neighbours and friends.

Women's work participation in animal-keeping is higher than that of men. In the accessible area, 30% of women took the decision on selection of the breed of animal for rearing; 45% of decisions were taken jointly by women and men; and 25% of decisions were made by men. Women had a greater role than men in decision-making on type of livestock, selling of livestock, and spending of livestock income. Men took the decisions regarding marketing of livestock products and borrowing money. Women and men took decisions jointly on buying inputs.

In the inaccessible area, men took most major decisions. However, women took decisions regarding investment of livestock income. Men, or women and men jointly, took decisions about borrowing money for livestock-rearing.

In the accessible area, most respondents suggested that extension services for livestock-rearing should be strengthened. They also wanted improvement in the cattle feed market. Other suggestions were improvements in veterinary facilities, arrangements for milk marketing in the winter season, and construction of rural link roads.

In the inaccessible area, most respondents suggested improvements in milk marketing, rural link roads, extension services, and veterinary facilities as key factors that would encourage livestock-rearing.

Most respondents wanted veterinary doctors to provide training for diagnosing and treating sick animals through training camps in villages. Training/awareness camps regarding AI and natural service methods, and cultivation and storage of fodder were also suggested by farmers in both areas. Respondents suggested organisation of livestock trade for selling/purchasing of animals in their areas.

In the accessible area, lack of demand for milk in winter, non-availability in the market of medicines for animal treatment, lack of quality feed, shortage of drinking water during the summer season, lack of extension services for livestock-rearing, lack of veterinary dispensary near to village, lack of quality bulls for breeding, lack of veterinary facilities, and lack of roads were constraints reported by farmers.

In the inaccessible area, lack of marketing facilities, lack of roads, lack of veterinary facilities, lack of extension services for livestock-rearing, lack of improved breeds of milch animals, and lack of quality bulls were constraints identified by farmers.

Dependence of livestock on common property resources

In the accessible area, fodder was produced on cultivated land although farmers still depend heavily on common property resources for fodder. As farm size increases, dependence on common property resources for fodder decreases. Dependence on common property resources was greater in the accessible area than in the inaccessible area.

Parameters and processes for livestock development planning

The emphasis on using dairy development not only as a means of increasing milk production, but also as an instrument for helping small and marginal farmers, reflects a change in the social content of livestock development programmes in Himachal Pradesh.

Adoption of crossbreeding has become widespread in the state. However, it is not uniform across the region. Diffusion and adoption of crossbreeding offers considerable scope for increasing milk production, employment, and income generation through cattle development. However, realisation of this potential depends on the extent to which it is possible to remove constraints that hinder dairy development.

Breed improvement

Most important for dairy development is improving cattle breeds through an efficient AI programme. This calls for improvement in the skills of AI personnel and reduction in the size of areas covered by AI centres.

Feeding of animals

Another important part of development planning should be fodder and feed. Most farmers are highly dependent on common property resources for obtaining fodder. There is vast potential for increasing fodder supply from common property resources and farmers' private land (grassland). However, this calls for organised efforts by a number of agencies. Organising farmers at panchayat level for managing common property resources can play an important role.

Attempts should be made over the long term to maximise livestock production from the limited land available. It will be difficult to sustain the milk production programme unless it is integrated with agriculture. In this context, attempts should be made to use locally available raw materials for production of concentrate feed. Even with this, the prospects for increasing production will depend on the extent to which farmers take up fodder production on-farm (grassland and agriculture land) as an integral part of milk production.

Milk marketing

Organisational support for milk producers through the co-operative infrastructure should be streamlined and expanded. Organisation of villages for milk procurement should be extended to remote areas where no marketing agency/system exists.

Processing of milk

Milk-processing and chilling should be streamlined with proper and efficient management. Traditional milk products processed at the household level should be popularised by encouraging co-operatives to market these products.

Training and human resource development

There is considerable scope for increasing milch animal productivity by improving animal husbandry practices. Farmers should be trained to identify when animals are

in oestrous, to reduce calving interval by inseminating cows early in lactation, to reduce costs by instigating optimal feeding schedules, and to take advantage of improved calf-rearing practices. This requires an effective extension service.

Since women play a crucial role in dairying, extension programmes should be oriented towards their needs. This warrants induction of women workers into the dairy extension and management services. Adoption of crossbreeding technology at the farm level demands economic viability of milk production. In turn, this requires not only reduction in the cost of milk production, but also continuous monitoring of the milk price and cattle-feed price so that farmers receive a remunerative price for milk.

Planning process for livestock development

The main parameters identified for livestock development such as breed, feed, market, and veterinary services are components of development planning at the state level. In the process of state planning, various suitable programmes for each parameter will be framed for execution. Furthermore, a target will be fixed for each specific activity/programme, keeping in view the physical and financial resources available from the government for livestock sector. Targets will be spread over a five-year plan period.

Prioritisation of activities

Prioritisation of activities is an important aspect of development. Activities/parameters that have relatively greater potential and are able to generate results in a relatively short period will be given priority. Subsequent activities will be placed accordingly. The sensitivity of particular activities/programmes will also be analysed.

Flexibility and monitoring of planning process

Flexibility in planning is also important. The plan should be adaptable to needs that arise in implementation. Monitoring is essential for smooth functioning of planned programmes. Appropriate and suitable performance indicators should be developed for monitoring. The performance of each selected indicator should be evaluated each year and the plan modified accordingly.

Chapter 4

Livestock Resource Management System for Local Planning/Decision-making in the Hills of Nepal: a Case Study from Kaski District

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Livestock-raising has always been an integral part of sustaining mountain agriculture and livelihoods in Nepal. Development of livestock can help to generate farm employment and incomes, and save the foreign exchange currently spent on importation of livestock products. For example, Nepal annually imports milk powder worth over NRs¹ 1 billion, buffaloes worth NRs 240 million, and goats worth NRs 225 million.

Study methodology

Kaski District was selected for study using the Livestock Database Inventory – a simple GIS-based analysis tool. Two study sites were chosen within the District in consultation with researchers at Lumle Agricultural Research Station, the key agricultural and livestock research and extension centre for the Western Development Region of Nepal. Selection was based on accessibility criteria. Hemja was easily accessible and Kaskikot was relatively inaccessible. Prior to carrying out the household survey, informal discussions were held in both sites. A final structured survey questionnaire was developed after pre-testing of a draft. Twenty farm households in each study site were surveyed with the help of trained field assistants from Lumle Agricultural Research Station.

Socioeconomic background of sampled households

The average household size was 6.6 in Hemja and 7.9 in Kaskikot (Table 1). The male to female ratio was 1.22 in Hemja and 1.04 in Kaskikot. The literacy rate was 61% in Hemja and 34% in Kaskikot. The average landholding per household was 0.48 ha (9.3 ropanis) in Hemja and 1.1 ha (21.4 ropanis) in Kaskikot.

Table 1: Socioeconomic data

	Hemja	Kaskikot
Average household size (individuals)	6.6	7.9
Male to female ratio	1.22	1.04
Literacy rate (%)	61	34
Average total land per household (ha)	0.47	1.09
Average lowland per household (ha)	0.35	0.74
Average upland per household (ha)	0.13	0.35
Caste and ethnic composition (%)		
Brahmin	50	50
Chhetri	40	26
Newar	10	0
Other	0	24

¹ US\$1 = approx. NRs 75 at the time of this study (1999-2000)

Lowland per household in Kaskikot was more than double that in Hemja; and the upland area nearly three times higher. Both areas were dominated by the Brahmin and Chhetri caste groups. Among ethnic groups, there were some Newars in Hemja, and some Magars and Gurungs in Kaskikot.

Land ownership

In Hemja, most farmers owned less than 0.5 ha (10 ropanis) of land (Table 2). In Kaskikot, more than half owned more than 0.5 ha of land, and 20% more than 1.5 ha.

In both areas, 15% of farmers did not own any unirrigated land (bari) and 10% did not own any irrigated land (khet), but more than half the farmers in Kaskikot had more than 0.5 ha irrigated land and only 15% of those in Hemja.

Table 2: Land and livestock holdings

Landholding area (ha)	Irrigated land (khet in %)		Unirrigated land (bari in %)		Total	
	Hemja	Kaskikot	Hemja	Kaskikot	Hemja	Kaskikot
0	10	10	15	15	–	–
0.05 – 0.5	75	35	85	65	70	25
0.5 – 1	15	35	–	20	20	30
>1	–	20	–	–	10	45
Livestock	Improved (%)		Local (%)		Average heads per HH ¹	
	Hemja	Kaskikot	Hemja	Kaskikot	Hemja	Kaskikot
Cattle	0	90	100	10	1.0	1.45
Bullocks	0	0	100	100	0.25	0.9
Buffalos	66	30	34	70	2.05	2.0
Goats	0	0	100	100	2.0	1.6
Poultry ²	0	0	–	–	1.95	0

¹ HH : Household ² Commercial

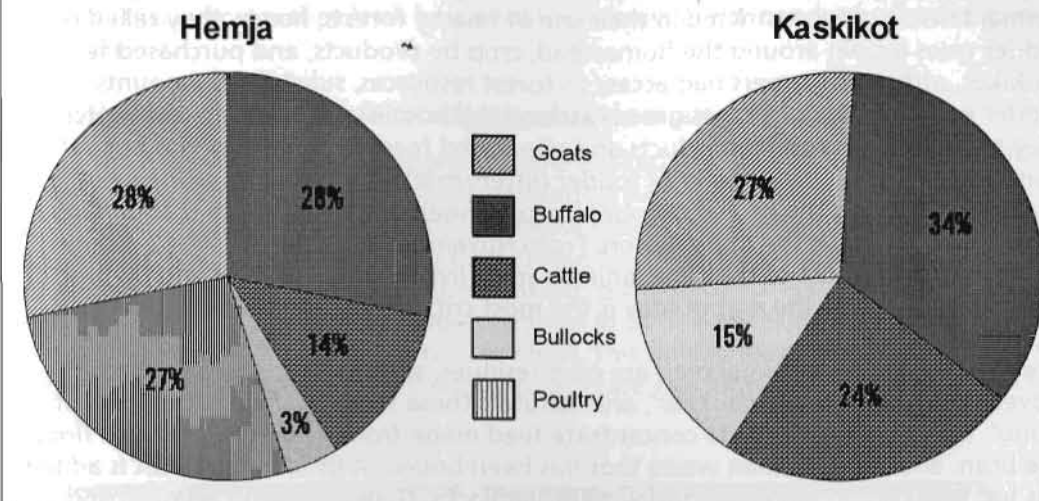
Livestock holdings

Ownership

The average livestock holdings per household are shown in Table 2. Overall buffaloes, goats, and poultry were the most numerous in Hemja (Figure 2) and buffaloes in Kaskikot. On average farmers in Kaskikot had the same number of buffaloes fewer goats and more cows than those in Hemja. In Hemja, all livestock were local breeds except for buffaloes; 66% of buffaloes were improved. In Kaskikot, 30% of buffaloes and 90% of cattle were improved.

Both large and small animals play important roles in farming systems. While buffaloes and cows are important dairy animals, goats bring in good cash returns. Since Hemja lies close to markets, poultry played an important role in cash generation. In Kaskikot, which is relatively inaccessible, poultry does not seem to offer an income-generating opportunity.

Figure 2: Share of different livestock in the total livestock population (in 2000)



Purchase and sale

The farmers in Hemja sold more livestock of all types than they purchased (Table 3), whereas in Kaskikot farmers purchased more bullocks and cattle than they sold.

Table 3: Purchase and sale of livestock from 1999-2000

	Hemja		Kaskikot	
	Purchased	Sold	Purchased	Sold
Buffalo	4	11	3	3
Bullocks	0	3	8	5
Cattle	0	0	8	2
Goats	0	8	4	6
Poultry	0	11	–	–
Total	4	33	23	16

Livestock production systems

In both areas, livestock production systems were small scale. None of the farms surveyed had a large dairy herd raised for commercial purposes. The most common management practice involved stall-feeding using family labour. Livestock feed usually comprises green grass, crop by-products, fodder tree leaves, and purchased feed. Stall-feeding is common for several reasons including restrictions on forest use and shortage of labour for herding of grazing animals.

Cows and buffaloes are mostly stall-fed. Although goats are stall-fed during the rainy season, they also graze fallow land, roadsides, and water canals in the winter and dry season. Poultry scavenge feedgrains.

Livestock-rearing has strong links with forest resources for fodder supply and nutrient recycling. Forage from fodder trees provides a significant amount of crude protein. In Hemja, farmers were restricted in their use of nearby forests; hence, they relied on fodder trees grown around the homestead, crop by-products, and purchased feed. In Kaskikot, although farmers had access to forest resources, substantial amounts of fodder were provided by trees grown around the homestead. Like farmers in Hemja, they too relied on crop by-products and purchased feed when fodder was not sufficient. In both areas, availability of fodder differs markedly throughout the year. From mid-June (Asad) to the end of October (second week of Kartik), there is abundant green grass, as this is the rainy season. From November to February, feed becomes more scarce. For most of this time, animals must live on crop residues and by-products. From March to the end of May is the most critical time for feed availability.

The major sources of animal feed are crop residues, such as paddy straw and maize stovers, purchased feed, 'chokkar', and 'dhuto'. These feeds are fed in the form of 'kudo'. Kudo is a home-made concentrate feed made from a mixture of maize flour, rice bran, and some kitchen waste that has been boiled. A little mineral salt is added. It is fed to lactating buffaloes and working bullocks. Generally, crop residues and green grass are fed to dry livestock especially cows and goats. Lactating and working livestock are fed with concentrate feed and purchased feed. These feeds are rich in protein, and are a major portion of feed for working bullocks and lactating buffaloes during the winter and dry season. Dry buffaloes are mainly fed crop residues. Young goats are fed some grains during the growing period. Poultry and laying hens receive adequate feedgrain.

Sources of income

The income of all household members was aggregated. In Hemja, remittances sent by family members working abroad (India, Middle East, and others) were the largest single source of income, 26%, followed by income as salaries and wages (25%); sale of vegetables (21%); sale of livestock and livestock products (18%); and sale of crops, mainly paddy (rice) and wheat (10%). In Kaskikot, sale of crops brought in 57% of total household income, sale of livestock and livestock products 36%, remittances from abroad 4%, and salaries and wages 3%. In Kaskikot, vegetables are only grown for household consumption. This indicates that farmers in accessible areas (Hemja) opt for off-farm activities to earn income (remittances, and salaries and wages), while farmers in inaccessible areas (Kaskikot) depend more on livestock for their livelihoods.

The smaller the size of the farm, the greater the land allocated for vegetable production. In Kaskikot, livestock as a source of income was predominant in all categories of farm-size. This reinforces the conclusion that farmers in inaccessible areas, such as Kaskikot, depend more on livestock for their livelihood than farmers in accessible areas, such as Hemja.

Per capita food availability

The main crops grown in both areas were rice, maize, wheat, and millet. Food availability per capita per year in Hemja was 90-360 l (1-4 muris) for 60% of households, 450-720 l (5-8 muris) for 35% of households and 810-900 l (9-10 muris) for 5% of households. Food availability per capita per year in Kaskikot was 90-360 l (1-4 muris)

for 35% of households, 450-720 l (5-8 muris) for 55% of households and 810-900 l (9-10 muris) for 10% of households. Food availability was comparatively better in Kaskikot. This indicates that farm households in Hemja are dependent on purchased foodgrain.

Decision-making in livestock production and marketing

During the household survey, respondents were asked about decision-making within the household regarding livestock-related matters such as selection of breed and type, marketing of livestock products, purchase of inputs, credit and investment, and spending income from livestock products (Table 4). It was found that in both Hemja and Kaskikot, men dominated decision-making, but the role of women varied considerably. In Hemja, 28% of women were involved in decision-making, in Kaskikot 12%. Joint decision-making was rare or non-existent. This difference might be attributed to women's level of education. The overall literacy rate was higher in Hemja (61%) than in Kaskikot (34%).

Table 4: Farm household decision-making regarding livestock (%)

	Hemja				Kaskikot		
	Male	Female	Joint	Never	Male	Female	Joint
Breeding selection	35	5	10	50	90	10	0
Livestock type	65	10	10	15	90	10	0
Marketing of products	60	20	20	0	90	10	0
Inputs purchase	65	20	5	10	90	10	0
Credit and investment	70	15	10	5	90	10	0
Use of income from livestock products	60	25	15	0	90	10	0
Average	60	16	12	12	90	10	0

Milk production and marketing

Both areas have milk production associations with milk collection centres from where milk is collect by tankers and delivered to the Pokhara Dairy Development Corporation for processing. Vendors carry milk containers for 2-3 hours to reach roadheads where a tanker collects milk. In Kaskikot, households produced an average of 6.4 l of milk per day, while Hemja, households produced 3 l per day.

In Hemja, milk was produced mainly for household consumption although some was sold to local tea shops. The price of milk was NRs 18-20 per litre (NRs 10-12 per mana [0.56 l]). Improved buffaloes were the main lactating animals; some 33% were lactating.

In Kaskikot, cow milk was sold at NRs 14 per l and buffalo milk at NRs 16-18 per l. Milk was taken to the collection centre. The lactating animals were mainly improved cows and buffaloes; 54% of buffaloes were lactating and 44% of cows.

Livestock feed resources

Fodder

The most common species of fodder trees found in both areas were *Ficus subincisa* (berulo), *Artocarpus lakoocha* (badahar), *Litsea monopetala* (kutmiro), and *Ficus glaberrima* (pakhure). Farmers had varying numbers of fodder trees on their own farms. There was a community forest in Hemja, but it was not operational. Farmers were seen bringing fodder from the forest of an adjoining village. Some farmers purchased fodder in bulk from a distant village.

Table 5: Fodder trees on farm (% of farmers)

Number of trees	Hemja	Kaskikot
None	40	—
1-10	30	23
11-20	15	7
21-30	5	8
31-40	5	7
41-50	5	25
>50	—	30

In Hemja, about 40% of farmers did not have any fodder trees on

their farm; they had shrubs and bushes only. About 30% of farmers had 1–10 trees and only 5% had more than 40 trees (Table 5). In Kaskikot, farmers planted more fodder trees on their own land; they needed reliable sources of fodder, since they were more dependent on livestock for their livelihoods. More than 20% had 1–10 trees, and over half had more than 40 trees.

Feed

Farmers largely depended on home-made feed made from paddy straw and maize flour. They also purchased concentrate feed of (chokkar) every month to meet the feed requirements of dairy animals. In Hemja, farmers purchased an average of 1–2 sacks (50–100 kg) of feed per month. In Kaskikot, farmers purchased an average of 2–3 (100–150 kg) sacks of feed per month. Farmers in Kaskikot relied more on purchased concentrate feed because they had improved cows; in Hemja, the main dairy animals are improved buffaloes that require less purchased feed.

Animal health and services

In both areas, larger animals (cattle, buffaloes, and bullocks) were prone to diseases such as bhyagute (cold), pneumonia, mate, khorand, dhande, eye infection, and digestive disorders. Respondents could not recall an outbreak of any serious epidemic among livestock.

In Hemja, farmers took sick animals to the nearby veterinary doctor for treatment. In Kaskikot, farmers first tried to treat sick animals by themselves; if they were unable to find a cure, they would take them to the veterinary doctor. As a precaution, farmers tested dung every six months to detect illnesses. Some farmers regularly provided their livestock with vitamins and calcium. Male members of the household were usually responsible for taking sick animals to the vet.

Use of biogas technology

Biogas was mainly used for household energy needs. Farmers used fuelwood to prepare feed for livestock in the afternoon. In Hemja, use of biogas in the household was fairly recent. Most biogas plants were found to be about a year old. Users said that 80–95%

of fuelwood needs were substituted with biogas. Some households were able to use biogas only for eight months in a year and others could use biogas for the whole year. In Hemja, 45% of households had installed a plant. Biogas was functional for 7–12 months a year and, according to users, 30–100% of fuel needs were filled by biogas. In Kaskikot, only one household had biogas and had been using it for five years. Kaskikot was higher and a little colder, so biogas plants could not function so well.

Training

Respondents in both areas were asked whether they had received training in any area of livestock production and management such as breeding, feeding, nutrition, fodder and forage management, and animal health services. There had not been much training in either area. In Hemja, a few people had received training in other subjects such as biogas maintenance, knitting (from Rural Development Project), and drinking water supply. In Kaskikot, a few had received training on livestock production and management. One respondent had received a seven-day training on milk product processing in 1999. Others had received training on goat-rearing, animal health, and credit services.

Constraints to livestock production and marketing

In Hemja, the limited availability of feed and fodder was mentioned by farmers as the main constraint to livestock-rearing. This discouraged them from expanding their numbers of livestock. In winter, fodder shortage was more severe than in other seasons. Another constraint was shortage of labour.

In Kaskikot, labour shortage and lack of technical know-how hindered farmers from taking greater advantage of livestock-rearing. In addition, farmers face a feed and fodder shortage from January to May. Inadequate credit services prevented poor and marginal farmers from purchasing improved or local breeds. According to farmers, the existing credit service did not allow loans for more than one animal.

In both study sites, knowledge of product diversification was lacking (except for traditional knowledge). Local farmers think that they could benefit from knowledge of techniques for product diversification with value addition.

Implications for development of planning tools

Accessibility of an area to roadheads influences the socioeconomic status of farmers. This, in turn, impinges on other values of farmers' lives including the livestock they raise. This is illustrated by the fact that Hemja, which is traversed by a highway, has a high population density and highly fragmented landholdings. Farmers have opted for vegetable farming and dairying with improved buffaloes for income generation. Kaskikot, which is relatively inaccessible, with some parts lying 3–4 hours walking distance from roadheads, has average farm sizes larger than in Hemja. There the main sources of household income were selling foodgrain and milk. The main dairy animals were improved cows and local buffaloes. Differences in the kinds of dairy animals (improved cows vs. improved buffaloes) raised by farmers in Hemja and Kaskikot is an outcome of several factors such as availability of fodder and grass, market assurance for the sale of livestock and livestock products, access to veterinary services, and socio-cultural values.

In Kaskikot, abundant fodder and grass is available from private land and nearby forest areas. Households had an average of 23 fodder trees. As a result of this, farmers have opted for improved cows as the main dairy animals. In Hemja, lack of animal feed posed a problem for farmers. Lack of access to nearby forest and community areas owing to restrictions imposed by forest user groups has caused fodder and feed scarcity. To adjust to poor-quality local feed resources, farmers in Hemja have opted for improved buffaloes as these buffaloes are well adapted to poor feed. In addition, dairy buffaloes that are old or not lactating have a high sale value for Hemja farmers compared with improved dairy cows that have zero sale value for meat purposes.

Market assurance for livestock and livestock products also plays a critical role in choices made by farmers. In Hemja, one of the prime reasons for farmers opting for buffaloes is that they have high salvage value and can fetch a good price at market. In Kaskikot, the establishment of milk production associations has facilitated the selling of milk to the Dairy Development Corporation in Pokhara. Market assurance for raw milk has encouraged many farmers to raise improved cows for cash generation.

Another factor for raising improved cows in Kaskikot seems to be the religious sentiment that confers high respect for cows. Therefore, when a government programme introducing improved livestock was implemented, Brahmin farmers used this opportunity to acquire improved cows rather than improved buffaloes.

The other notable fact is that no pigs were being raised in either Hemja or Kaskikot. In rural Nepal, there are social and religious reasons for keeping livestock. In Hindu culture, cattle are considered sacred animals and are worshipped. During Dasain, the most important Hindu festival in Nepal, goats and poultry are sacrificed, and during Tihar, another festival, a day is devoted to the worship of cows. In other religious ceremonies, people donate cows to their Brahmin priests. Socio-cultural values play an important role in determining the types of livestock raised by farmers. Thus, the absence of pigs in the study areas is explained by the fact that, according to Hindu religion, Brahmins should never raise or touch pigs because they are considered unclean and unfit for consumption. In both study villages, Brahmin households owned more cattle than households of other castes or ethnic groups.

Livestock planning cannot be done in isolation since it is an integral component of mixed farming systems. It is well recognised that local-level planning hinges on four key indicators: feed resources, market demand, health services, and socio-cultural values. While dairy animals play a critical role in generating household income as well as in nutrient recycling and draught power, the role of small animals such as goats also seems to be important for income generation since there is a ready market when farmers need cash. This is more evident in Hemja. It appears that farmers in Kaskikot although they have the feed resources for raising goats do not have the market for them. The success of biogas in Hemja should be taken as a model that can be replicated in other areas.

PART III
COUNTRY PAPERS

Chapter 5

Local Livestock Resource Planning in Bhutan

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Bhutan is extremely mountainous. This imposes tremendous restrictions on scope for agricultural development. Agriculture is essentially for subsistence, providing a livelihood to 85% of the population. Farming systems are generally mixed and, depending on the agro-ecological zone, crops or livestock are predominant. Among livestock, cattle predominate, with individual households owning an average of 5-6 head of cattle. Livestock production contributes 10% of GDP and crop production 25%. However, this does not take account of the value of livestock for draught power and farmyard manure. Cattle are reared mainly for draught power, milk, and manure.

Bhutan is divided into 20 dzongkhags or administrative districts. These are divided into 201 geogs (blocks). The geog is comprised of villages. Agricultural planning has centralised and decentralised phases. Centralised planning takes place at the national level; policy-making, programming, budgeting decisions, and resource allocation to the various sub-sector is undertaken. Decentralised planning and programming occur at the regional or district level, and at the geog level.

Institutional settings in the planning process

Geog Yargey Tshogchung (GYT)

The lowest level of planning is at the geog or community level. This type of planning is becoming increasingly important as decentralisation takes hold in Bhutan. Such planning has the twin functions of providing information for higher planning levels by means of participatory analysis, and also of setting community priorities and action plans that can be carried out either independently or with external assistance.

Planning at the geog level is done by the Geog Yargey Tshogchung (GYT) or Block Development Committee. The gup (village headman) is the chairman and is assisted by the mang gup (assistant to the gup). Other members of the GYT are the school headmaster, who functions as the secretary, the tshogkpas or village permanent members, and the choepoens or messengers. The gups and mang gups are elected by the villagers and have a three-year term. The job of choepoen is entrusted to all households of the village and is done on a rotational basis.

Dzongkhag Yargey Tshogchung (DYT)

District-level planning is the middle level of the decentralised planning system. It is charged with aggregating and coordinating plans and programmes initiated at lower levels. It attempts to reconcile them with policy and budgetary constraints at the national level. District planning takes place in sub-sector line agencies, such as the livestock, agriculture, and forestry extension agency. This is a multi-agency institutional setting and is called the renewable natural resources (RNR) sector in Bhutan.

At the district level, the Dzongkhag Administrator is chairman of the Dzongkhag Yargey Tshogchung (DYT) or District Development Committee. Members include the gups, mang gups, chimis or National Assembly Members, who are elected at the geog level for a term of three years, and the heads of various development sectors. The Planning Officer of the district coordinates the planning process of the various sectors.

National level

In Bhutan's decentralised system of agricultural planning, the national level focuses on setting goals and targets, and on formulating agricultural policies to guide government agency programming and project planning. National planning also provides technical support and coordination, and monitoring and evaluation services for lower levels of planning.

The Department of Agriculture and Livestock Support Services is essentially responsible for all livestock planning at the national level. The department focuses on developing strategies to meet targets that have come from the district level, and also on providing technical support and coordination, and monitoring and evaluation. The department also aggregates and coordinates all plans and programmes that come from the districts. A major task is, therefore, the need to reconcile lower level plans with policy and budgetary aspects at the national level.

Livestock resource planning: the past

Until the Eighth Five-Year Plan (1997-2002), local planning was directed from the district level. The GYT discussed needs in a series of meetings with communities and submitted their requirements to the DYT for final endorsement. In essence, planning at the grassroots level was minimal. As a result, planning was ad hoc and development activities were not focused. The result was a lack of impact on livestock development activities.

Livestock resource planning: the present

The Ninth Five-Year Plan, initiated in 2002, is essentially geog-based planning with a focus on impact-oriented development at the grassroots level. Planning begins at the geog level. It is then followed by district-level planning, and national or departmental level planning. The key aspect is participation; this refers to active involvement in planning by all stakeholders in the programme.

The current planning process is directed from the geog. The results will be geog plans (201), district plans (20) and a National Livestock Master Plan (1). The main objective is to involve local stakeholders in the planning and development process. At the same time, it will obtain an overview of people's needs, constraints, and development potentials. At the national level, workshops are conducted to discuss livestock policies and objectives framed by the department.

Geog-level planning

The GYT is the focal agency in developing the geog plan. It is assisted technically by livestock extension staff. Generally, a representative from every household in the geog participates in the planning process. Livestock extension officers are equipped

with GIS maps of the region and statistical data to supplement information generated by participatory rural appraisal. At the start, livestock extension officers explain the national livestock policy and objectives to the GYT and farmers.

Farmers are divided into groups based on criteria such as age, gender, wealth/income, and education. Each group uses participatory tools to identify group constraints, resources, needs and priorities. Specific tools used are resource mapping of the geog, envisioning mapping, problem trendlines, and institutional profiles assisting in analysis of community issues. These tools have greatly facilitated research and action processes managed by local communities. They are a powerful method for involving communities in information generation and analysis, and setting priorities. Listing constraints to livestock development, and prioritising or ranking activities using a matrix are an integral part of local livestock resource planning. Other tools, such as farming system diagrams, seasonal calendars, daily activity profiles, and household resource maps, while useful for analysis and facilitating studies on the livelihood systems of socioeconomic groups, are not commonly used in Bhutan.

Dzongkhag level and national level

Dzongkhags are responsible for co-ordinating the geog-level plans. Each DYT discusses its geog plans in depth before final endorsement. Key aspects taken into account are whether needs come within the framework of national policy and objective directives.

All district and geog plans are received by the Department of Agriculture and Livestock Support Services. They are thoroughly scrutinised and fitted into the overall national-level master plan for livestock development.

Case study: local livestock resource planning in Uesu Geog, Haa Dzongkhag

The concerned District Official of the RNR sector was contacted and a date agreed upon for the planning team to visit. Training materials were procured and logistical arrangements made. A courtesy call was paid on the Dasho Dzongkhag (District Collector) and the Sector Head of Livestock, Agriculture and Forestry.

RNR staff, the District Planning Officer, Rural Credit Officers and GYT members attended the orientation workshop. They were briefed on the Ministry of Agriculture's plans and policies pertaining to livestock, arable agriculture, horticulture, and forestry. They were then introduced to participatory planning tools such as resource mapping, envisioning mapping, problem identification, and ranking of activities. Participants were grouped by geog and taught how to use the tools.

Following the orientation workshop, the planning team consisted of members from the Ministry of Agriculture, the District Planning Officer, and dzongkhag RNR staff. They visited a pilot geog called Uesu. A representative from each household of the villages within the geog attended an introduction to the planning exercise. The gathering was briefed on the purpose of the visit and introduced to the various planning tools that they would be using to prepare a geog plan. Participants were divided into three groups: progressive farmers (both male and female), males, and

females. Two to three dzongkhag RNR staff were also put in each group to guide and advise. Villagers did the planning with support from extension agents.

Natural Resource Management Background

Uesu is a small geog in the heart of Haa Dzongkhag. It has 75-80% forest cover. The altitude ranges from 2,600 to 3,900m; the climate is cool temperate in the valleys and alpine at higher elevations. The geog has a total area of 67.7 sq.km with 12 villages and 199 households. The forest type is blue pine in valleys and mixed conifer at higher altitudes. Forest products include mushrooms, ferns, fuelwood, leaf litter, and fodder. The geog has forest roads for transporting logs, and a sawmill for rural timber-sawing. A new sawmill will soon be opened. The logging depot supplies logs and timber to the dzongkhag and other dzongkhags. This is the first geog to plant three community plantations as a trial.

Natural resource management constraints include inadequate local technical know-how for management of forest, benefits being long-term not immediate, and pressure on forest and its products by the growing population. Natural resource management potentials are good forest cover, availability of forest products required by the locality, continuous water source, training of community on silviculture, establishment of community forestry, and establishment of private forestry on registered household land.

Livestock development constraints are shortage of animal feed and fodder, inadequate landholdings for pasture development, and shortage of labour. Livestock development potentials are the high demand for milk and livestock products. The geog has the potential to intensify livestock production activities.

Farmers in the geog depend to a great extent on livestock for cash income. The main livestock reared are local cattle, Mithun cross, Jersey cross, yaks, poultry, pigs, mules, and horses. The veterinary hospital provides veterinary and livestock production services such as AI, and pasture-related services. Strengthening livestock development activities and animal quality are priorities within the geog. This will be achieved through supply of improved germplasm and development of small-scale dairy, poultry, and pig farms.

The main programmes are summarised in Table 6.

Conclusion

Previously, participation in the agricultural planning process consisted of people legitimising activities identified and formulated by the government. Farmers did not participate in the detailed planning process. Geog-level planning involves farmers, including women and the poor, in agricultural planning. However, for such a process to take root, it is important that the planning and organisational capacities of GYT members are strengthened.

Decentralisation is increasingly important in current agricultural policy-making and planning in Bhutan. This approach presents an opportunity for participatory planning that is responsive to gender and to socioeconomics. Interestingly, when men and women were separated their priority in ranking activities for livestock development

Table 6: Livestock and natural resource management programmes

Programmes	Activities	Rank
Livestock		
Rural livestock support	Yak bulls, Mithun bulls, Jersey-cross bulls, pullets, piglets, pasture seeds Training of village animal health workers	II
Income generation	Pig farms, dairy farms, poultry farms	I
Institutional and capacity building	Training of farmers; Farmers' study tours; Supply of livestock product processing equipment	III
Natural Resource Management		
Income generation		
a) Private forestry	12 ha of private land registered as private forest in geog Seedlings supplied free to farmers	II
b) Community forestry	10 ha of community forestry established in geog Dzongkhag forestry sector supply seedlings	
Nature conservation and environment protection		
a) Forest fire management	Fire-fighting equipment purchased and distributed to geog Fire lines made during forest fire outbreak	I
Institutional and capacity development		
a) Training	Farmer training Farmers' study tours	III

did not much differ. This may indicate that men and women are equally involved in the day-to-day activities of the household. Even in group discussions, women expressed their needs as much as men did.

Monitoring, through frequent visits to project areas by government officials, is also an important aspect of the planning agenda. The emphasis of these visits is to identify both positive and negative outcomes of the planning process. Use of participatory rural appraisal tools benefits the farmers, since they learn skills such as problem analysis and priority-ranking that can be used to lobby support from government and other agencies.

The goal of current local livestock resource planning in Bhutan is to increase the responsiveness of agricultural planning and policy-making to the needs of men and women farmers. This reflects national policy directives to increase participation of farmers and other local stakeholders in planning, and ensure women's interests are reflected in plans and policies.

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 Uttarakhand 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.

Uttarakhand, 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 Uttarakhand 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 Uttarakhand. 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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Chapter 7

The Local Livestock Resource Planning Process in Himachal Pradesh

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In 1991, the Government of India initiated a process of economic liberalisation. While planning livestock development and natural resource management, direct government intervention in areas such as provision of services, and processing and marketing has to be discouraged as it curbs the emergence of market-driven, private efforts. However, there are areas where there is no alternative to direct action by government. The most important is animal disease control and eradication. Others are reorganising breeding services for greater efficiency and results, and conservation of livestock germplasm in order to preserve genetic diversity.

While planning local livestock resource processes, promotion of programmes such as joint forest management, social forestry, fodder farms, and grazing land protection committees have to be given priority.

This paper attempts to focus on how the Himalayan regions of India can best navigate livestock sector policies over the coming decades. It cautions against environmental and ecological damage so that this sector can play a role in modernising the economy of hill people.

Livestock and the environment

The growing human population will have a crucial impact on the environment and ecology. Large-scale industrialisation, urbanisation, movement of people from rural to urban areas, abolition of the joint family culture, and small landholdings have negative effects on animal husbandry programmes. In addition, the terrain of hill zones has a negative impact on providing services to livestock owners. There is a large and expanding gap between feed requirements and fodder resource management. This will become progressively worse; the real problem will be availability of green and dry fodder. Concentrates may be imported. The problem can be resolved by reducing the number of indigenous animals that constitute a major proportion of the bovine population. This will reduce pressure on crops, crop residues, and grazing resources, thereby having beneficial environmental effects. The livestock sector requires a balance between man and animal to maintain the ecological biosphere and to enable economic exploitation of resources without causing irreversible damage to the environment.

Another area of environmental concern relating to the livestock sector is urban pollution caused by slaughterhouses. They are not only an environmental hazard but also a health hazard. Modern technologies and hygienic production facilities are required.

Livestock breeding plan

Emphasis should be placed on breeding plans so that animals not only produce more milk but are also resistant to disease.

Initially, government policy for the breeding plan was to introduce quality exotic milch breeds to crossbreed with local Indian cattle to boost milk production. Jersey cattle were introduced as it was believed that they thrive in a temperate to semi-temperate climate. Himachal Pradesh has the appropriate climate for Jersey cattle and was the first state to rear them.

In hill areas, Jersey crosses have proved satisfactory. Indigenous animals were crossed to Jersey bulls and a high milk yield with desired fat content was obtained. The economic status of farmers was raised; they started consuming and selling more milk. In plains and valley areas, both Jersey and Holstein breeds were adopted. However, it became more difficult to maintain the appropriate level of Jersey cross. Repeat breeding and infertility problems appeared, and people started to abandon their animals.

A new breeding plan has to be envisaged to meet the increasing demand for milk. It should provide more milk for the farmer, be more economically viable, and create fewer breeding problems and greater resistance to disease. It should augment the current breeding plan by crossing indigenous bulls or cows with Jersey cows or bulls to maintain a 50% blood level. This will be a cross that is resistant to disease and gives adequate milk with an acceptable fat content.

Aims in livestock resource planning

The following aims need to be considered while planning livestock development in the mountain areas of the Himalayas.

- Welfare of rural people
- Social justice and equality of opportunities
- Adequate distribution of income, parity in living standards, and poverty alleviation
- A progressively modern and dynamic animal economy with continuously expanding production, widest possible participation of weaker sections, and increasing self-reliance that leads ultimately to improved employment potential, increased income and self-sufficiency in food without upsetting the ecological balance

In Himachal Pradesh, the key factor in planning is budget allocation as an instrument of government policies through the Department of Animal Husbandry and other government institutions. Environmental concerns and natural resource management are directed through a regulatory framework including laws and policies that have resulted in increased green cover in the Himalayas. Direct or indirect subsidies are based on farmers' income although they are almost non-existent in the livestock sector. Communities such as shepherds and dairymen, scheduled castes and tribes, and other disadvantaged classes receive special attention in the plan programme through schemes such as the Special Component Plan, Backward Area Development Plan, and Tribal Area Sub-Plan.

While planning for livestock sector development, the major focus is on the following areas.

- Genetic upgrading of cattle and buffaloes, and expansion of existing infrastructure and delivery of inputs and services to farmers
- Systematic dissemination of appropriate technologies in such fields as animal production, management, and healthcare to increase production and productivity levels of livestock
- Intensification of sheep, goat, and dairy development
- Establishment of dairy processing and marketing infrastructure through cooperatives
- Promotion of cultivation of fodder crops and fodder trees to improve animal nutrition
- Development of adequate animal health services for protection of livestock with emphasis on the creation of disease-free zones and control of foot-and-mouth disease
- Improvement of slaughtering facilities with special emphasis on modernisation
- Extension of insurance cover to non-scheme animals of poor farmers through subsidised premium rates
- Development of poultry and Angora rabbits
- Development of equines and pack animals especially the conservation of chamurthi ponies and yaks
- Establishment and development of an information network to promote and propagate the latest animal husbandry practices and technologies, and create awareness among farmers and breeders about the potential of the livestock sector

A Livestock Development Board is being established by the government in 2001/02. It will be an autonomous body that will look after the breeding aspect of cattle and buffaloes for overall breed improvement of indigenous cattle and buffaloes through AI and embryo-transfer technology with the objective of covering 100% of the cattle and buffalo population preferably by providing facilities at the farmer's doorstep.

Conclusion

To implement cattle and buffalo development effectively, the infrastructure for doorstep delivery of the AI service needs to be expanded and strengthened. Its efficiency and effectiveness should be improved by use of frozen semen technology, and creation of a seed stock of superior bulls and bull mothers that would form the nucleus of a germplasm pool for building a herd of highly productive cattle and buffaloes. For this purpose, modern technological tools such as embryo transfer will be deployed with increasing frequency. Crossbreeding to improve low production stock, both for milk and draught purposes, should be undertaken. Indigenous breeds should be classified and preserved.

Plans should be made to intensify cooperative efforts in various sectors of animal husbandry, such as sheep, poultry, pigs, and rabbits, to prevent exploitation of primary producers by middlemen and provide requisite inputs at reasonable cost. This

will raise the incomes of the rural poor. Pasture land should be improved by introducing improved fodder seed. Wasteland should be used for fodder production, and fodder banks established for use during drought and periods of scarcity. Sheep, goat, and pig husbandry can provide livelihood support to smallholders. Planning should encourage medium-sized holdings. Angora rabbit development could be a good income-generating option.

Local planning should be as consultative as practical and elicit the participation of all stakeholders such as farmers, cooperatives, and the state and central government.

Chapter 8

Local Livestock Resource Planning in the Hills of Nepal

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Livestock play a pivotal role in the process of intensification of Nepalese agriculture. Livestock recycle nutrients on the farm, produce valuable outputs such as milk and meat from land that is not suitable for sustained crop production, and provide energy and capital for successful farm operation. Livestock raising is compatible with environmental concerns if improved management is used. Otherwise, it will bring conflict with the environment through overgrazing that can cause soil compaction and erosion, and decreased soil fertility, organic matter content, and water infiltration and storage.

Livestock sector development has featured in every plan since periodic planning started in Nepal in 1956. A Livestock Master Plan was approved by the government in 1993. Its main objective is to formulate and implement the livestock development strategy that includes five integrated sets of activities or programmes: livestock sector management, human resources development, agro-industries and market development, land-use management and environmental rehabilitation, and livestock improvement. Likewise, the Agriculture Perspective Plan (initiated in 1995) also gives a high priority to the livestock sector which is intended to contribute 45% of the agricultural GDP at the end of the 20-year plan period. At present, the livestock sector contributes 31% to agricultural GDP.

Fifty-two per cent of the population live in the hills and mountains that cover 77% of Nepal's land area. People in these two physiographic regions raise 4.3 million cattle, 2.3 million buffaloes, 4.3 million goats, 0.7 million sheep, 0.6 million pigs and 11.5 million chickens to produce 0.7 million t of milk, 0.12 million t of meat, and 276 million eggs, annually.

Existing livestock resources planning process

The National Planning Commission is the apex body that formulates the government's periodic (five-year) plans. Every year, it prepares a policy guideline on the basis of the periodic plan, and sometimes procedural guidelines with a specific format that all ministries should follow.

Once the Ministry of Agriculture and Co-operatives receives the policy guidelines, it prepares an agriculture policy and strategy (if required) in consultation with departmental heads. It then directs its four departments, including the Department of Livestock Services (DLS), to formulate an annual plan with a timeframe.

The DLS, in turn, conducts a workshop to prepare guidelines. The workshop generally consists of five regional directors, programme directors, senior livestock and veterinary officers, and officers from sample districts. The guidelines are based on the policy and strategy of the Ministry of Agriculture and Co-operatives and must be coherent with the policy of the National Planning Commission. Based on these guidelines, the DLS formulates possible programme activities. The guidelines, the format with programme activities, and the format for new projects are sent to the Regional Directorate of Livestock Services (RDLS). The guidelines and programme focus on service-oriented and output-oriented activities (Box 1).

Box 1: Pocket Package Programme (output-oriented) and Basic Livestock Services Programme (service-oriented)

The guideline focuses on the Pocket Package Programme and Basic Livestock Services Programme. The Pocket Package Programme is divided in three: commercial pocket, semi-commercial pocket, and poverty alleviation pocket. Commercial pockets for dairy cattle and buffaloes are selected on the basis of road access, availability of fodder, electricity, milk chilling/collection centre, easy access to credit and livestock services, and, of course, enthusiastic and dedicated farmers. The criteria for selection of the semi-commercial pockets are similar to the commercial pocket except that the package is recently initiated and is expected to reach commercial scale within 10 years. Commercial pockets for goats are selected on the basis of fodder availability and grazing land accessibility, easy credit access, access to markets, and nearness to livestock services. The poverty reduction programme is targeted at people who are below the poverty line (below an annual per capita income of NRs 4,440 = US\$ 60). These people are grouped into the general poor, underprivileged poor, and ethnic poor. Before planning this programme, the pocket is selected on the basis of forage availability (nearness to community forest, except for pigs), easy access to livestock services, and market access. Under this programme, at least five adult goats per family are given free to 10 families on the condition that every family should return five goats within two years. These goats are passed on to other groups of 10 families fulfilling the same conditions. For pig-raising groups, two piglets per family are provided free on the same conditions as goat-raising. This poverty alleviation programme is becoming popular in the country.

The RDLS circulates DLS's guidelines and formats to its District Livestock Services Offices (DLSO). It also fixes the date for a regional programme and budget formulation workshop for the next fiscal year with concurrence of the DLS. Every DLSO is directed to prepare an annual programme with budget that must be approved by the District Development Committee.

The DLSO asks its Livestock Services Centre and Livestock Services Sub Centres to collect programme activities according to the needs of farmers in the command areas. However, this demand collection has not been practised successfully. Usually, the DLSO conducts a district livestock services programme formulation workshop in which representatives from all livestock groups/committees, the district-based Agriculture Development Bank, District Forestry Office, District Cooperative Office, District Development Committee, Women's Development Office, and District Agriculture Development Office are requested to participate. In this workshop, major programme activities to be included are finalised. The DLSO prepares a programme with budget and submits to the District Development Committee workshop for approval. Once the programme budget is approved by the District Development Committee, the DLSO presents this programme budget at a three-day regional workshop.

DLSO staff and staff from central offices (DLS, Directorate of Livestock Production, Directorate of Livestock Services Training and Extension, Directorate of Animal Health) attend the regional workshop. Senior officers from the centre give directives and norms to facilitate easy implementation of programme activities. DLSO staff present the programme activities approved by the District Development Committee substantiated with an item-wise budget. Usually, there is a budget ceiling; this is generally an additional 10% of the current district budget. During this three-day period, there is thorough discussion of programme activities. The result is that all DLSOs should submit a final version of programme budget to the RDLS. The RDLS will compile them and send them to the DLS for approval.

The DLS collects and processes all district-level and central-level programmes within the budget ceiling and sends them to the Ministry of Agriculture and Co-operatives for further processing. The Ministry of Agriculture and Co-operatives will again ask central-level offices to defend programme activities that are mostly related to district-level programme activities.

The National Planning Commission examines the main programme activities to ensure that they comply with guidelines and policy. Central and district-level programmes should be defended by the offices concerned. At this time, representative officers from the Ministry of Finance also participate in finalising the DLS programme. The basis for approval of programme activities is as follows.

- Compliance with the strategy of the Agriculture Perspective Plan
- Linkage of proposed programme with policy and strategy of the Five-Year Plan
- Ratio of programme and administrative budget allocation (mainly, programme budget is appreciated)
- Expected benefit

Gaps

Although bottom-up planning is the main strategy for government planning, in reality, it is not effectively practised. Major weaknesses are as follows.

At the government agency level

- Junior technicians, the frontline service providers, are over-burdened with regular programme activities
- Junior technicians have little knowledge of the planning process
- DLSO officers are not committed to the programme planning process; most have poor knowledge of how to formulate new short-term projects
- Output-oriented programme coverage is small, so impact is almost negligible at the district level
- No working linkage with other line agencies
- Limited budget allocation
- Farmers' dependency on government inputs (kind and cash)

At the village level

- Generally, local farmers' groups/committees are not aware of livestock resource planning

- Farmers are not capable of identifying livestock potentialities or natural resource management because of limited knowledge
- Farmers are a heterogeneous group (ethnic and political differences)

Prerequisites for effective planning

Government agency/NGO responsibilities

- Sensitise village development committee members about livestock resource planning
- Select energetic and committed farmers from each ward
- Train these farmers as livestock promoters who will sensitise all villagers (farmers) about livestock resources management
- Help identify potentialities of specific livestock improvement

Village development committee responsibilities

- Collect basic data on livestock population, pasture, and forest coverage, markets/bazaars, electricity, road, human population, education level, per capita income and similar
- Help sensitise farmers about livestock sector development
- Provide financial help to livestock promoters
- Be actively involved in livestock resource planning, and bear responsibility for effective implementation

Chapter 9

District Livestock Service Planning: the Case of Kabhre District, Nepal

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Kabhre is situated in the central part of Nepal; the headquarters, Dhulikhel, lies 30 km east of Kathmandu. Eighty per cent of the district is mountainous and the rest is lowland. It has sub-tropical, sub-temperate, and temperate, climatic zones. Of the district's 65,154 households, 83% are engaged in agriculture.

Existing planning process for livestock development in Kabhre

For the last few years, planning has started from the bottom. The District Livestock Services Office (DLSO) solicits the opinion of farmers, local leaders, farmers' groups, and Livestock Services Sub Centres before planning livestock activities. The mandate for activities, norms, and budget ceilings is provided by government departments. All information collected is sent to the District Agricultural Body (a body of line agencies) for further discussion. It is then sent to a District Development Committee general meeting and on to the District Development Committee council.

Weakness in planning process

- Lack of sufficient manpower in the district
- Poor selection of appropriate farmers
- Lack of appropriate planning time
- Budgetary insufficiency
- Lack of norms and directions in time
- Lack of proper training for staff concerned
- Lack of incentives and facilities for staff

Successes of the DLSO in Kabhre

Training

During the last 30 years, 260 Village Animal Health Workers have been trained of whom 100 are currently employed. Most deal with veterinary medicine (agro-vet). They are involved in primary treatment, vaccination, drenching, castration, and other extension activities at the village level. They have been encouraged to keep veterinary medical shops with the help of a revolving fund, other government subsidies, and banking loans.

Cross-breeding programmes

Murrah buffalo bulls were distributed from 1975 for crossbreeding with local buffalo cows. Murrah she-buffaloes were also bought with government subsidies. This has

resulted in many pocket areas for dairy purposes. At present, there are 25,438 milch Murrah and Murrah-cross buffaloes in the district. They produce 170,000 l of milk daily; 100,000 l is sent to the Kathmandu Valley.

Insurance

The Participatory District Development Programme, an integrated project funded by the government and UNDP, has launched livestock insurance in 12 milk-producing pockets over the last four years. This programme helps dairy farmers to sustain their occupation. There are 1459 insured buffaloes.

Oat cultivation

Farmers used to be discouraged from keeping dairy animals because of the lack of green grass in the winter. For the last 20 years, farmers have been cultivating oats. They have realised the value of this fodder and have adopted it widely. As a result of sufficient green feed in the winter, milk production has been maintained year-round.

Constraints for dairy farmers in Kabhre

High cost of production

Distribution of leguminous and non-leguminous fodder trees was undertaken to fulfil forage demand. However, farmers are accustomed to feeding concentrates rather than forage, especially in milk pocket areas. This results in a high cost of milk production.

Import of milking buffaloes

Instead of rearing calves of buffaloes from the Terai and India, farmers sell buffaloes when they become dry. This results in increasing costs for milk production.

Milk holidays

The milk holidays enforced by the Dairy Development Corporation discourages farmers from producing as much milk as they would like.

Solution to constraints

Fodder and forage production

- To decrease the cost of milk, dairy farmers should minimise their use of cereal-based rations (concentrate) and maximise their use of roughage rations. For this purpose, farmers should be aware of fodder and forage cultivation
- Forage production on cultivated land
- Oat and vetch cultivation on (dry) irrigable and non-irrigated land during the winter season
- Cultivation of Napier grass on terrace boundaries during the rainy season.
- Cultivation of teosinte grass during the summer
- Forage cultivation on unproductive land

Land that is not suitable for crop production, such as community forest, leasehold forest, eroded land, banks of rivers and canals, pasture land, and sloping land, may be used for forage cultivation. Below 1700 m, such land can grow stylo, molasses, and broom grass.

Import milking buffaloes

Every year, the district imports more than 2000 milking buffaloes from India. To check this flow of buffaloes, there should be a special package for rearing buffalo calves in every milk pocket area.

The package should include the following activities.

- Murrah buffalo breeding bull distribution
- AI services
- Animal insurance programme
- Pasture and fodder production
- Farmers' training on buffalo-keeping
- Regular drenching and vaccination programme
- Inter-farmer competition for buffalo calf-rearing
- Scheduled animal health checks

Milk holidays

To overcome the milk holidays, there should be training on milk product diversification for dairy farmers and dairy entrepreneurs, and a public awareness programme on consumption of milk and milk products.

District

Kotli is one of the districts of Punjab, Pakistan. It covers 17.4% of AWP and has a population of 1.5 million. Almost 50% of the population is Muslim. It is mainly hilly and mountainous with valleys and plains in some places. The major crops are maize, wheat, millet, berseem, and oil-seeds. Wheat, oil-seeds, and pulses are intercropped with maize. There is a wide range of soil types and availability and requirement. The rangeland is almost unprotected and overgrazing in the spring, summer, and autumn. Grain is harvested from the fields for haymaking to supply animal fodder.

Current

Although buffaloes are seen in Kotli, the most common cattle are all varieties of size and colour. Adults weigh 300-400 kg, and females weigh 350-400 kg. They mature usually at a late age (over three years). They calve every 12-13 months; males and females mate together for 12-15 days. Daily milk production ranges from 1.7-3 l (Burr, 1980). Buffaloes are of many sizes. They mature sexually at a late age (over four years).

Chapter 10

Livestock Resource Planning in Kotli District, Azad Jammu and Kashmir, Pakistan

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Livestock contributes 8% to national GDP; it provides food and social security, livelihood and employment, and status in rural society. In Azad Jammu and Kashmir (AJK), 50-60% of farm income is from livestock.

In the past, not much attention was paid to livestock resource planning. It was left to the individual at the micro-level. If planning was done at central level, it was top-down. However, with the start of the UNDP-funded Neelum and Jehlum Valleys Community Development Project in 1992, followed by the World Bank funded Northern Resource Management Project (NRMP), local-level planning started in AJK. Under these projects, farmers were organised into groups and were encouraged in grassroots planning based on their needs and priorities. A District Planning Meeting system was introduced in 1996, giving representation to all Nation Building Departments and NGOs with particular responsibility for natural resource management. The purpose of this forum, which still continues, is to promote interaction amongst line agencies and communities for integrated planning and development. The devolution plan, under which district governments are being formed, is likely to give a further boost to this process.

District profile

Kotli is one of seven districts in AJK. It covers 1862 sq.km (14% of AJK) and has a population of 0.55 million. Almost 100% of the population is Muslim. It is mainly hilly and mountainous with valleys and plains in some places. The most common fodder crops are maize, wheat, millet, berseem, and oil-seeds intercropped with wheat, and legumes and pulses intercropped with maize. There is a wide gap between fodder availability and requirements. The rangeland is almost unprotected; this causes overgrazing in the spring, summer, and autumn. Grass is harvested from rangeland for haymaking to supply winter fodder.

Current livestock status

Livestock breeds

Although many breeds of cattle and buffaloes are seen in Kotli, the most significant are local or desi (nondescript). Desi cattle are all varieties of size and colour. Average adults weigh 250-300 kg, and large animals weigh 350-400 kg. They mature sexually at a late age (over three years). They calve every 12-13 months; males and females run together during grazing. Daily milk production ranges from 1.7-5 l (Balla 1996; Durrani 1998). Desi buffaloes are different sizes. They mature sexually at a late age; first calving is at around four years.

Livestock population and composition patterns

Most livestock species are raised under mixed cropping systems. Goats are most common (30%), followed by buffaloes (29%), sheep (15%) and cattle (14%). There is a higher percentage of buffaloes and goats in Kotli than in other districts of AJK (GOP 1996). Dung and bedding materials are used as manure for crops. Bullock power mostly meets the requirements for hill agriculture. The average number of livestock per household is 2.78 cattle, 2.44 buffaloes, 4.58 sheep and 5.81 goats (GOP 1996).

Livestock production systems

The buffalo and cattle production system can be broadly divided into urban intensive (near or in the city) and rural intensive. Commercial dairy farming is still gaining momentum.

The production system adopted by cattle raisers is oriented towards production of males to be used as work animals rather than females for milk production. Adult males form 52% of the population followed by adult females (31%), young stock (13%) and growing stock (4%). The trend of keeping large numbers of bulls is similar to that recently recorded in the Punjab Livestock Census (Ahmed et al. 2000).

The production system adopted for raising buffaloes is the reverse of that for cattle. There are more females (65%) than males and they are raised mainly for milk production, with 2% raised as breeding bulls and 28% as work animals.

Goat production is more common than sheep production; this is because goats' ability to browse means that they have better access to feed. Moreover, goat meat is preferred to mutton. The flock size of sheep is small.

Planning process

Livestock planning and development activities are carried out at the state level. The recurrent and development budgets are allocated to the livestock sector at the state level. The Directorate General used to distribute budgets to districts; development schemes were prepared by its planning section with or without the involvement of field officers. These schemes were appraised at the planning and development level of the state and were approved at various forums depending upon costs. Approved schemes were provided with a development budget. The recurrent budget was used for general veterinary services. The budget was barely sufficient to meet staff salaries, operation, and maintenance activities. However, within the budget, extension activities and campaigns such as deworming, vaccination, treatment, and poultry promotion were planned and executed at the local level.

Community participation process

The community participation approach was initiated in Pakistan by the Aga Khan Rural Support Programme in the mid-1980s, and has since been copied and modified by a number of other organisations.

In AJK, a number of programmes have adopted this approach. Among these are the Neelum and Jehlum Valleys Community Development Project, the Suketar Watershed Management Project, the Bhimber Upland Rehabilitation and Development Project,

the Northern Resource Management Project, the Area Development Project (South) AJK, and an NGO called the National Rural Support Programme.

Model for planning livestock activities

- At the grassroots or village level, community and user groups are mobilised through frequent interaction and dialogue.
- Data are recorded on natural resource management including livestock.
- Information is gathered on pasture, rangeland, and fodder.
- Problems are identified by the community regarding their livestock.
- Information is prioritised in a participatory manner with collaboration of the social mobilisation unit.
- An annual plan is formulated within the resources of the department and local community.
- An annual operational plan is developed showing activities (quantity), budget (both government and community share), and timeframe. It is sub-divided on a quarterly and monthly basis.
- For monthly execution of activities, a project planning meeting is held every month. Activities to be carried out are planned with coordinating agencies such as the livestock, agriculture, and forest departments.
- For actual implementation, time and venues are arranged in the district planning meeting and communicated to the local community.
- Participatory implementation is carried out at the village level.

In 1996, an NGO, the National Rural Support Programme (NRSP), was launched in 15 of 36 Union Councils of Kotli District. People were mobilised into community organisations that became the main vehicle for local-level planning and development. As with most community development organisations, there is a community commitment to savings, and this forms the basis for subsequent credit arrangements with NRSP. One criteria for judging the success of community organisations is their ability to contact government departments and obtain a desired input.

NRSP works in two ways: through social mobilisation for community organisation development, and by awareness-raising of and training on natural resource management and human resources development issues that affect the community. Physical infrastructure and technology development, and rural credit and enterprise development are also carried out. NRSP responds to community needs in the fields of agriculture, livestock, poultry, forestry, and natural resource conservation.

With the launching in 2000 of the Area Development Project in 10 Union Councils of Kotli District, village organisations are being formed to ensure community participation in the planning, implementation and evaluation processes. A credit line has also been established to provide loans against community savings and social collateral. Micro-enterprise development is the hallmark of this local-level planning process. In addition, all extension and development activities are carried out on a demand-driven basis.

Key issues in local-level planning

Baseline data

Baseline data are an important tool for successful planning. In the areas where development projects and NGOs are working, baseline data are recorded at the community level. However, there is no such practice of recording baseline data at the community level in other areas.

Training for planners

Planning is a professional job that requires expertise. Training for planning is barely provided at the local level. There is no provision for training in planning in government agencies.

Level of planning

Experience shows that implementers, especially field professionals, can provide practical and relevant information to the planning process. Professionals are usually only involved in planning in development projects. Lack of professionals can make planning defective, and result in the objectives of the programme not being translated into reality.

Community participation

The community can play a valuable role in planning. It has a good appreciation of its problems and may be able to suggest useful solutions. It is also effective at execution. At present, communities are only involved in the planning processes where NGOs and development projects work.

Budgetary allocation

In general, budgetary allocations are not based on community needs or nation-building resources; this hinders effective and productive planning.

Constraints to integrated planning

There is a lack of integrated development policies amongst government departments. This results in defective integrated planning at the local level. Departments engaged in natural resource management are divided into many sub-sectors.

Suggestions

- There should be an integrated development planning policy at the government level for all departments involved in natural resource management.
- A system should be developed for regular data collection by setting up a special section involving community organisations and experts from line departments.
- There should be regular training programmes for professionals and community members.
- All stakeholders involved in natural resource management such as different departments and communities should plan, implement, and evaluate programmes together, even at Union Council level.
- There should be an autonomous budget-handling system at the local level.

- The private sector should work on development plans at the grassroots level.
- Development of an integrated service system in the private sector should be encouraged for marketing of farmers' produce.
- Characteristics of local breeds of livestock should be described so that their productive and reproductive potentials can be identified.
- A co-operative and integrated livestock production system is needed.
- Commercial dairy and beef production systems should be developed by the livestock department in collaboration with the private sector.
- Rangeland should be protected and managed by the private sector with the collaboration of forestry and livestock departments.
- Fodder and forage production should be preferred in areas where crop production is not economical.
- Forage trees should be planted on wasteland.

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Chapter 11 Integrated Cattle Rearing Project in Sikkim, India

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The Integrated Cattle Rearing Project (ICRP) was initiated in 1991 in Sikkim, India, as a pilot project to demonstrate the feasibility of integrated cattle rearing in a mountainous region. The project was funded by the Government of India and the World Bank. The project aimed to improve the livelihoods of the people of Sikkim by providing them with a sustainable source of income through the rearing of cattle. The project was implemented in three phases: (1) identification of suitable areas for cattle rearing, (2) construction of cattle sheds and (3) provision of veterinary services. The project was successful in achieving its objectives and has been replicated in other parts of India.

Integrated Cattle Rearing Project

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PART IV PROJECT PAPERS

Chapter 11

Integrated Cattle-Breeding Project in Sikkim, India

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In 1975, Sikkim became the twenty-second state of India and initiated a number of development projects including animal husbandry and dairy development. However, the First Seven-Year Development Plan of Sikkim (1954-60) laid the foundation of the Livestock Development Plan. Prior to the First Plan, there was no organised effort to develop the poultry and livestock sector. Ninety per cent of farmers rear poultry and livestock; hence, there is enormous potential for developing this sector. Livestock is reared not only for milk and meat, but also as a primary source of draught power and manure.

Integrated Cattle-Breeding Project

Cattle-rearing is an important enterprise amongst the farmers of Sikkim irrespective of caste and creed; most households keep one or two cows. As a result of the importance of this animal, the governments of India and Sikkim, in collaboration with the Indo-Swiss Project, prepared an integrated cattle-breeding programme for Sikkim in 1995.

The breeding policy for this programme is to limit the level of exotic inheritance to 50% and increase production of high-fat milk. It employs natural service using selected crossbred bulls produced from a registered herd kept in intensive follow-up by the Animal Health and Veterinary Services Department.

In accessible areas, including intensive cattle-breeding areas, a proportion of the cattle population is covered by AI using frozen semen. Almost 20% of the breeding population of 80,000 cows/heifers are covered. About 200 breeding bulls have been distributed to bull keepers. Forty-one AI centres are in operation. A state bull-rearing farm at Karfectar (south Sikkim) has started to produce 50 bulls per year.

The breeding scheme implemented in Sikkim is explained in Figure 3. Animals covered by AI and natural service are nondescript local animals, crossbred Jersey animals, and local Siri cows. The breeding plan followed in the intensive cattle-breeding areas and organised natural service areas is presented in Figure 4. The progress achieved under these programmes is as follows.

- Two intensive cattle-breeding areas (ICBA), namely Central Pandam and Dentam, have been established.
- Identification of elite cows, maintenance of herd books, milk recording, selection of bull mothers, and so on have commenced in ICBA areas.

- Milk production of elite bull mothers has increased from 2,000 l to 25,000 l per lactation.
- Bull calf production, selection, and transfer from ICBA areas to the bull-rearing farm has started.
- Selected calves are checked by the Programme Officer five times before they are six months old.
- Growth of male calves in the initial phase of the programme was 300 g per day; it has now reached 500-600 g per day, after intensive follow-up and rejection.

In addition, the planned breeding model of Sikkim is expected to conserve the indigenous breed, Siri, and achieve higher production through crossbreeding. The cross-bred population is being constantly monitored to achieve appreciable quantities of milk under local situations. Purebred Siri selection aimed at superior draught qualities and milk production is being explored.

Figure 3: Cattle breeding scheme for Sikkim

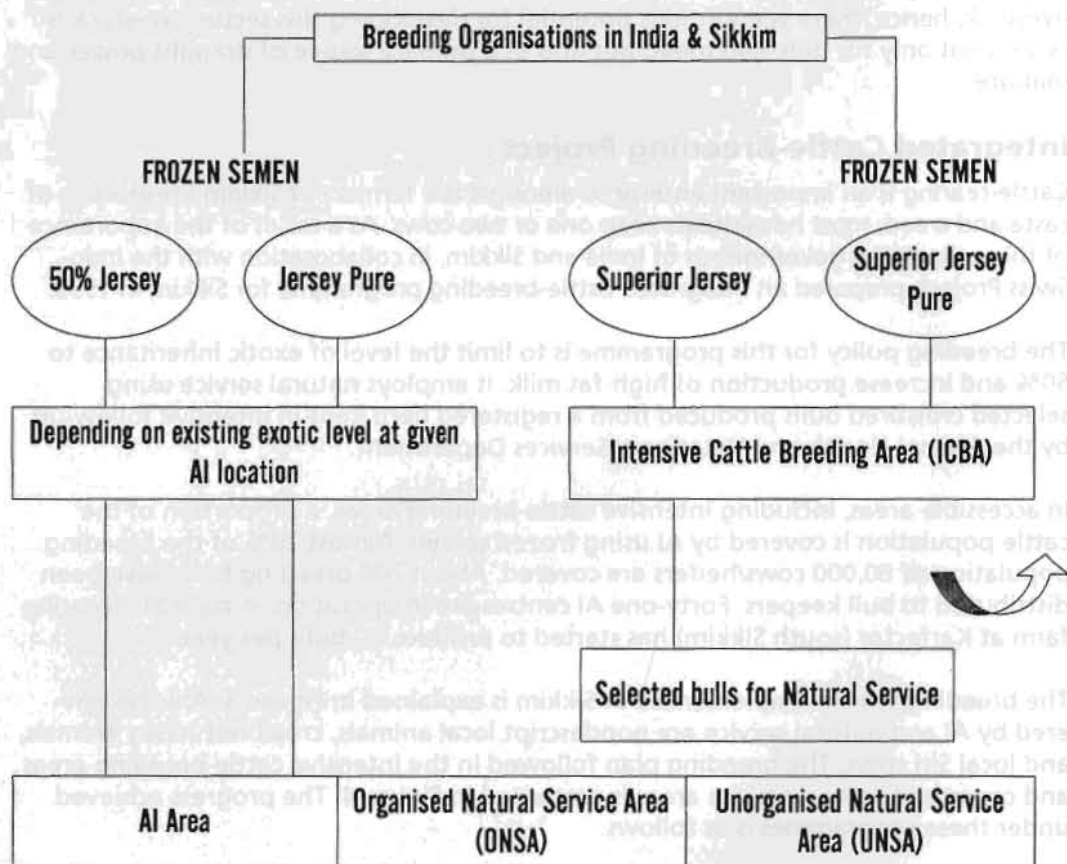
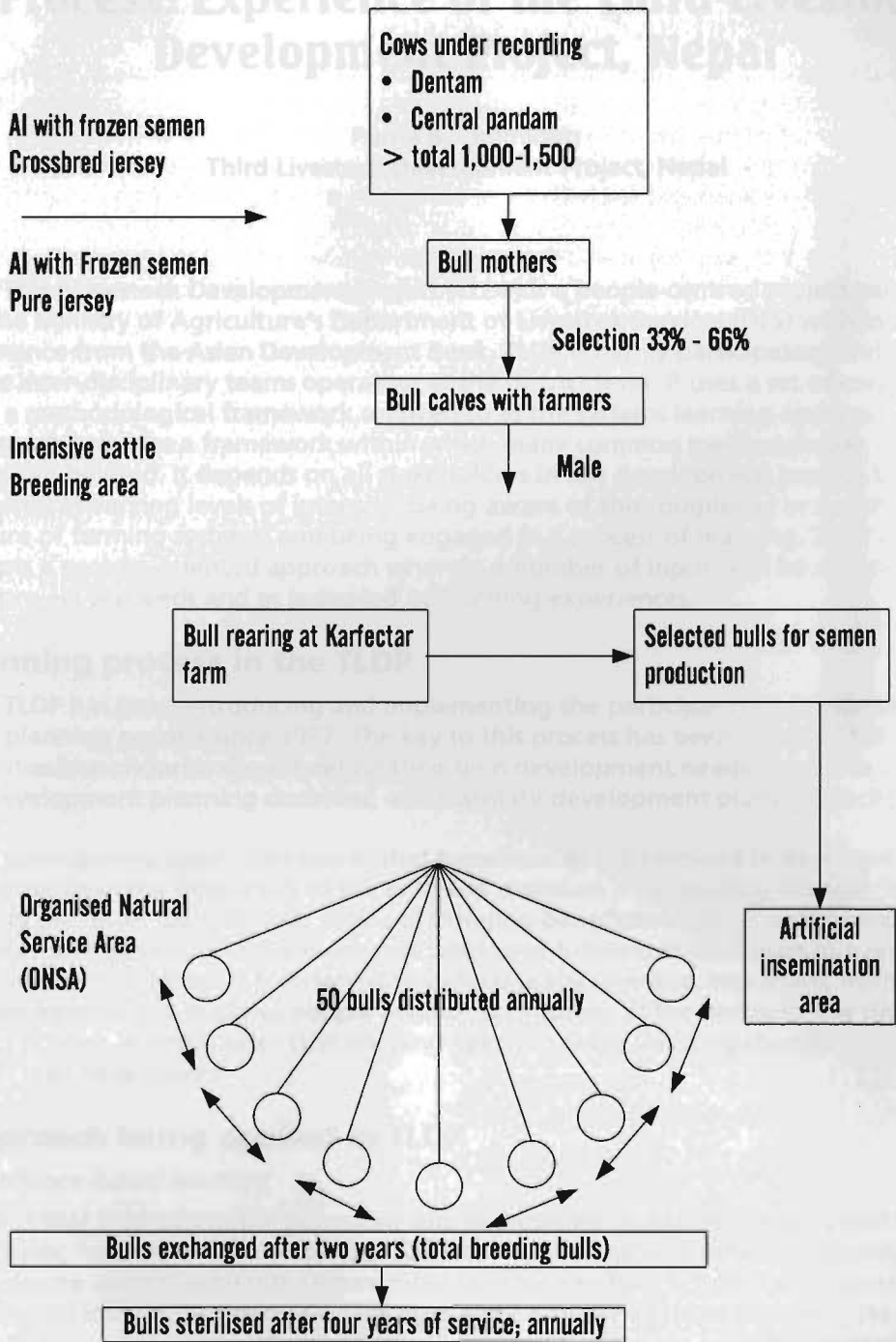


Figure 4: Breeding plan for Intensive Cattle Breeding Area (ICBA) & Organised Natural Service Area (ONSA)



Chapter 12

Participatory Systems Learning and Planning Process: Experience of the Third Livestock Development Project, Nepal

Purna B. Chemjong
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The Third Livestock Development Project (TLDP) is a people-centred project executed by the Ministry of Agriculture's Department of Livestock Services (DLS) with loan assistance from the Asian Development Bank. TLDP is highly participatory and features inter-disciplinary teams operating at the district level. It uses a set of concepts and a methodological framework referred to as the systems learning approach. This approach provides a framework within which many common methodologies and tools can be used. It depends on all stakeholders in the development process being involved at varying levels of intensity, being aware of the complexity or systemic nature of farming systems, and being engaged in a process of learning. TLDP also adopts a process-oriented approach wherein a number of inputs will be decided as the project proceeds and as indicated by learning experiences.

Planning process in the TLDP

The TLDP has been introducing and implementing the participatory systems learning and planning process since 1997. The key to this process has been a belief that communities/beneficiaries should define their own development needs, be at the centre of development planning decisions, and translate development plans into action.

The participatory approach ensures that beneficiaries are involved in development activities from the beginning to the end, and maintain it by creating change. Participatory processes are generally aimed at bringing beneficiaries (men and women), the weaker, the quieter, and the more disadvantaged forward in discussion in a way that is more on their terms. It is different from technically oriented, top-down, authority-driven approaches. It places people and not technology at the centre of the development process. It emphasises that learning needs to occur if lasting change or improvement is to be achieved.

Approach being applied in TLDP

Experience-based learning

Kolb (1984) studied human behaviour and maintained that there are different learning styles; for example, some people jump to conclusions, and others constantly investigate and theorise but seldom make decisions or take action. He suggests that we should identify our own learning style and be aware of those of others. He also says that because our upbringing and values are different, we have different views and opinions about experience. We all see the world differently. Consequently, when

we do things that affect people, it is the combination of experiences that is important and not just one person's experience. He suggests that if we recognise the stages of learning and consciously work through these stages, we will tend to make better and more complete decisions. He lays out stages in the experiential learning cycle.

Stakeholder identification and analysis

The word 'stakeholder' is commonly used by many organisations. However, it is used vaguely or in general terms. It would appear that sometimes stakeholders are considered to be beneficiaries. However, in our view, stakeholders are much more than that. The TLDP experience indicates that stakeholders should be well-defined, recognised, and analysed according to the objective of the project.

Stakeholders are those people and their organisations who directly, and indirectly, benefit from, or contribute to the process of development. Stakeholders have been grouped into broad categories.

- **Primary stakeholders.** This is the beneficiary group for whom the project/activity is intended. In the case of TLDP, it is poorer farming families in the western development regions who have livestock. These people are the focus of the project.
- **Owner stakeholders.** Those whose power is such that they could stop the project/activity if they had to or wanted to. The government and the Asian Development Bank could stop this project if they chose to by cancelling the loan or curtailing it. They have an important role that is different to that of others.
- **Secondary stakeholders.** Those who have a substantial role to play in project implementation. In this case, members of the DLS such as staff officers and field-level technicians as well as participating banks and private-sector entrepreneurs. These people tend to initiate and 'manage' the development (learning) process.
- **Supporting stakeholders.** Those persons and organisations whose support is either necessary or desirable for the success of the project, e.g., District Women Development Office, Department of Forestry, banks, District Development Committee, other projects, etc. They may contribute to, or limit, the process of development/learning. There are those that are close to the action, e.g., the Women Development Office or farmers and village development committee leaders, and those that are more distant such as the District Agriculture Development Office.

Stakeholders need to be identified and grouped according to their respective roles and responsibilities, thus making it easier to include people in various activities such as mind mapping or brainstorming. Such activities ought to be undertaken at the beginning of the project and with each component or new activity, and should be repeated as the project grows and matures. Repeat exercises should be undertaken each year as the role of stakeholders, particularly supporting stakeholders, changes.

Practical application

Identification of participatory planning participants
Identification of Livestock Action Team members
Identification of trainers and training participants

Beware. As the process develops, some stakeholders feel empowered and others disempowered. It is as important to manage the process of disempowerment as of empowerment.

Once stakeholders are classified, the next step is to identify or link them with the objective of the activity. If the objective is clear, then the process will deliver the desired output. The output of an activity may become the input of the next activity; so, all activities are linked.

Livestock Action Team

The Livestock Action Team (LAT) is the primary means by which the District Livestock Services Office (DLSO) launches its programme in village areas. An LAT has been formed in each TLDP district through a participatory approach and stakeholder analysis, where all secondary and owner stakeholders are present. The LAT consists of seven to nine members of whom two to three are from the DLSO, as core members, and five to six from supporting and primary stakeholders in the district. The LAT is considered a think-tank for livestock development in the district. It is the main thrust to help farmers in needs assessment, participatory programme planning, and monitoring and evaluation of livestock development activities.

TLDP experience

The DLS recognises the project's concept/approach as being appropriate and effective in livestock development. Achievements are beginning to appear and are considered worthwhile. Some approaches and methodologies are being incorporated into the Department's regular programme.

Means and focus

Farming families (men, women, and children) are the focus; at all times, the project focuses on what needs to be done to improve their situation. They are the primary stakeholders. TLDP/DLS believes that livestock are a means of helping farming families; livestock are not the focus. Livestock are a means to reduce poverty, and improve nutrition and incomes for rural families. Livestock productivity, processing, and marketing technologies are tools; again, they are not the focus or end point.

NGO mobilisation and private–public partnership programme

While public–private partnership programmes are currently in vogue in Nepal, there are few instances where they are demonstrated. DLS/TLDP is one of the first government departments to enter into a contractual relationship with CBOs/NGOs.

The aim is to match the strengths of the DLS (technical services, technical training, programme inputs) with the strengths of NGOs/CBOs (social mobilisation, group formation, institutional strengthening and organisation development) in the same pocket areas in jointly implemented programmes. This will serve to make livestock development more efficient, more cost effective, and more sustainable.

The Ministry of Agriculture and Co-operatives (MOAC), recognising the usefulness of the approach, has institutionalised policy/guidelines for the involvement of NGOs in annual work programmes.

Gender policy and strategy

A gender policy and strategy has been developed for the TLDP that serves as an example, and is capable of being adopted by DLS. It is consistent with ideals ex-

pressed in the Agriculture Prospective Plan and the Ninth Five-Year Plan. It emphasises the predominant role played by women in the management of livestock in Nepal, and their central role in implementation of development programmes. It also recognises that the successful involvement of women depends as much on changing male attitudes as it does on improving female capability. Women are involved in farmer-level organisations (minimum of 35%), and in processing and marketing activities.

The project shares ideas and information through workshops on gender mainstreaming in livestock development with all stakeholders, Livestock Action Team members, farmers, and DLSO staff. The workshop recommends developing roles and responsibilities amongst DLS staff for gender mainstreaming in DLS programme activities, and implementing them at all activity levels.

Putting farmers at the centre

One strength of this learning cycle lies in imaginative ability, and awareness of meaning and values. When asked what was at the centre of TLDP's development, some staff said that the DLS was at the centre or that livestock, or livestock technology, was the focus. Neither is true. People and farm families are at the centre of TLDP's development. The people-centred approach focuses on the poorer sections of the rural community in an attempt to improve their incomes and wellbeing, and bring them more positively into the mainstream of community life. When people are the focus of an activity, many more stakeholders and input factors are recognised, and development becomes more meaningful.

Participatory systems learning and planning process in TLDP

Livestock Action Teams (LAT) are multi-sectoral teams led by the DLS. They include the Women Development Office, participating banks, forestry or soil and water conservation staff, and others. Their objectives are as follow.

- Involve key stakeholders in livestock development so that the plans of various agency stakeholders become more aligned
- Involve stakeholders who will learn more about each other and become more interactive
- Involve stakeholders in a way that they pool their knowledge and begin to 'see' things differently and more as a whole
- Involve stakeholders who may 'see' the farmer as the focus for integrated activities more than as a target for a single stream of technology

Farmer groups are considered the basic unit through which support can be directed, where participants

- use their combined experience and knowledge to make plans and take action;
- combine their resources to achieve goals;
- gain confidence and knowledge in working together, and in taking action to improve their situation;
- are in control of what they decide to do; and
- learn from their experience and progress.

Livestock industries related associations (LIRA) are associations, co-operatives or other organisations that farmer groups form to advance their overall position, market their produce, organise credit/insurance and obtain inputs. Leaders of groups come together to form umbrella committees that, if they choose, may grow into co-operatives or other organisations. LIRA form a pool of leadership capability in an environment where members can begin to think and plan for 'larger' issues, such as marketing or input supplies, or seek new 'options' for group development.

Processed-oriented (non-technical) training is offered to DLS district staff in new areas such as social mobilisation, participatory rural appraisal, participatory planning, and participatory monitoring and evaluation. It is felt that new skills and experiences will lead to new attitudes and activities. Attitudes may become more open to the needs and ideas of farmers and other stakeholders. New ways of doing things are being introduced.

When becoming involved in the project, DLS staff in new districts have to learn about the project, its objectives, and approach, and their role. They are not taught in a workshop environment; they self-learn. The conduct of meetings and workshops is changing. Meetings are less inclined to be stand-deliver-listen exercises, and are becoming more participatory where people's views and opinions are sought.

It is clear that in districts where there is a better understanding of the systems learning approach and its concepts, there is better interaction among staff, more evidence of teamwork, and less of a vacuum between officers and junior technicians. There is less of a them-and-us attitude.

Participatory planning, which begins at the village/service centre level, is making its appearance at and contributing to regional planning. The interface between top-down planning and bottom-up planning is now at the regional level; it used to be lower.

The inclusion of NGOs is new for the government. NGOs' experience and resources can be added to those of the government in a complementary way. Interaction with the private sector is also a new and developing area of activity. The government realises that for the livestock sector to develop, private sector stakeholders need to be brought into effective partnership arrangements.

Benefits from TLDP

People involved with development become conscious of the need to learn their own way forward, and of the different ways of learning. Progress is built on inquiry, and the use of collective knowledge rather than bureaucratic, top-down, target-based planning and direction-setting mindsets.

Stakeholders are more likely to be correctly identified and included. Decisions are better than before and more in line with the needs of all stakeholders. Multi-disciplinary teams at the district level (LATs) and associations of farmers/processors/marketers (LIRAs) are more likely to work for the benefit of participants. Partnership arrangements between government and NGOs or government and the private sector emerge.

Although TLDP stands for the Third Livestock Development Project, it is more focused on improvements for farming families through better management of livestock. Livestock is merely a means to an end. People are the focus. This serves to take the emphasis away from the delivery of fragmented inputs to livestock, and puts emphasis on outputs and outcomes important to livestock owners. This will alter the extension approach to pocket areas, formulation of packages, and the data that are recorded (monitoring) and analysed (evaluation) for future planning.

DLS staff in project areas will have different capabilities in the area of social dimensions with which to undertake their duties. Staff will be less inclined to be technical instructors and more inclined to be development facilitators.

Development plans from the DLS will become known for being relevant to farmers' needs, and effective in delivering meat and milk products, and income and employment arising from the needs of rural and urban communities. The resources of others (NGOs, associations) will be mobilised in partnership arrangements. DLS will become a pioneer in diverting development from being donor-driven to becoming Nepal-driven.

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PART V

I/NGOs PAPERS

Chapter 13

Participatory Project Planning Process: LI-BIRD's Experience and Lessons Learned

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This paper describes LI-BIRD's experiences and the lessons learned on the participatory project planning process while implementing the In Situ Crop Conservation Project in partnership with the National Agricultural Research Centre and the International Plant Genetics Resources Institute.

LI-BIRD has a history of implementing projects in a participatory manner. The participation of client beneficiaries starts from the project proposal development phase, in which applying participatory approaches and the interest of stakeholders are understood. Site selection is accomplished using participatory rural appraisal approaches. Communities from selected areas participate intensely in designing and planning the course of project activities.

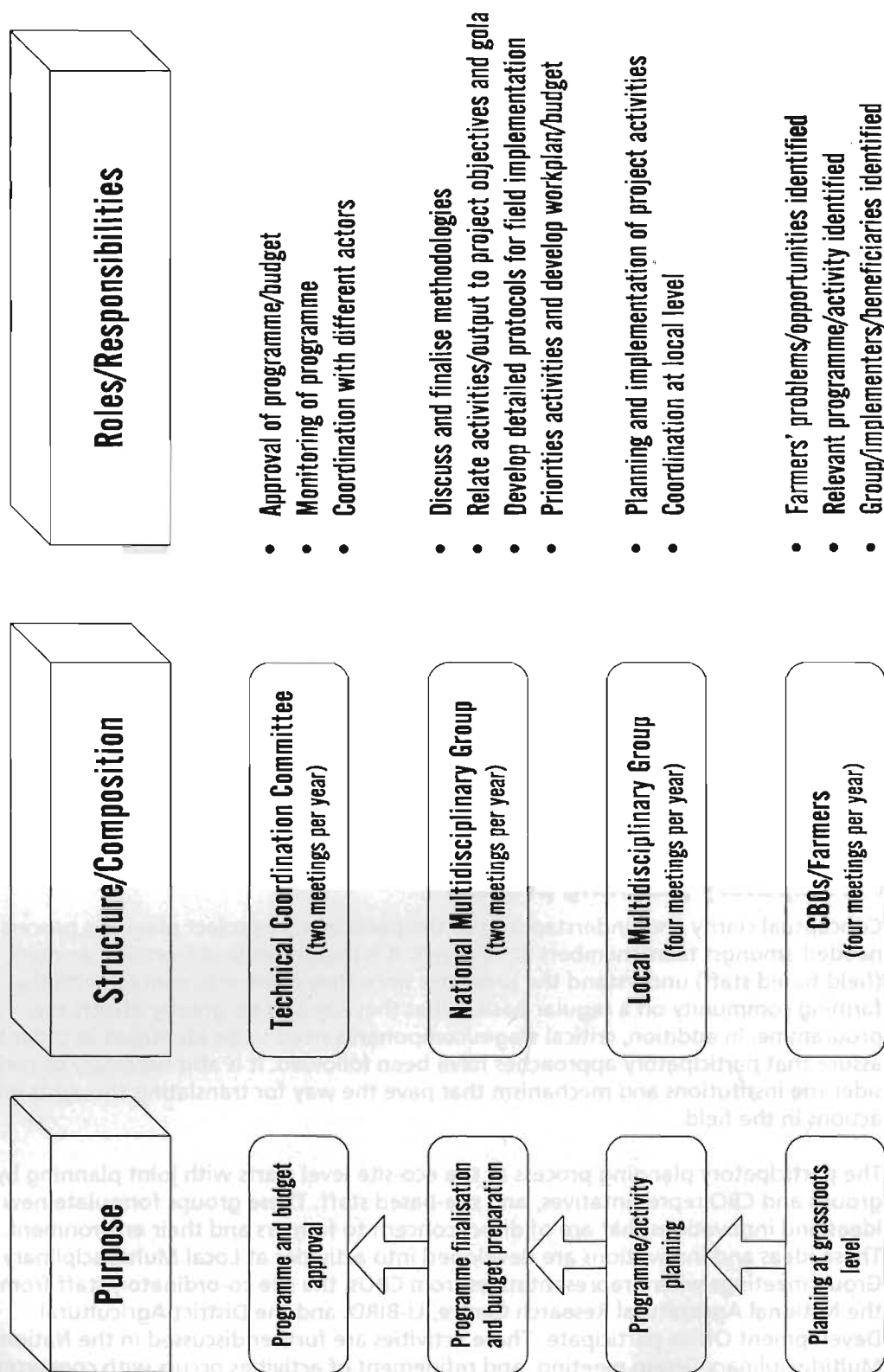
Usually, a group approach is followed to reach to the farming community, and programme planning starts at the individual group level. From there on, initiatives move to the Local Multidisciplinary Group, the National Multidisciplinary Group, and, finally, to the Technical Co-ordination Committee for approval. The planning process can be divided into three distinct components: steps/process, structures and mechanisms, and roles and responsibilities. The basic structure of the process is shown in Figure 5.

Participatory planning process

Conceptual clarity and understanding of the participatory project planning process is needed amongst team members at all levels. It is important that frontline workers (field-based staff) understand the processes since they come into contact with the farming community on a regular basis. What they say and do greatly affects the programme. In addition, critical stages/components need to be identified in order to assure that participatory approaches have been followed. It is also necessary to consider the institutions and mechanism that pave the way for translating thoughts into actions in the field.

The participatory planning process at the eco-site level starts with joint planning by groups and CBO representatives, and site-based staff. These groups formulate new ideas and innovations that are of direct concern to farmers and their environment. These ideas and innovations are developed into activities at Local Multidisciplinary Group meetings where representatives from CBOs, the site co-ordinator, staff from the National Agricultural Research Centre, LI-BIRD, and the District Agricultural Development Office participate. These activities are further discussed in the National Multidisciplinary Group meeting, and refinement of activities occurs with concurrent

Figure 5: Planning and information flow process for *in situ* project, Nepal



development of budget for agreed activities. Finally, the plan of agreed activities with its budget is submitted to the Technical Co-ordination Committee for approval. The agreed programme is conveyed back to the site co-ordinator for field implementation at site level. This information is relayed back to groups and CBOs for their involvement in the programme. In another instance, such as value addition through non-breeding approaches, there are CBO-strengthening and community awareness activities in which CBOs prepare their activities and budget, and implement the activities in the field. At the end of the agreement period (every six months), they provide a technical report and a financial statement to the project. This arrangement allows CBO members to manage the programme and the resources independently; this enhances technical as well as managerial capabilities. Hence, the planning process provides an interactive learning environment where project staff and representatives from different groups interact and share their experiences and ideas in an open manner.

Creation of institutions and mechanism

Creation or development of institutions and mechanisms lends credit and shape to the concepts and processes that are envisaged in the project. Development of a transparent and functional modus operandi should emerge from the planning meetings conducted at the initial stages of the project. However, to facilitate collaboration, a formal signing of a memorandum of understanding is desirable, especially where upper-level officials are frequently transferred. This can provide continuity and commitment at the institutional level rather than from individuals (Jarvis et al. 2000). A Local Multidisciplinary Group comprising members from the National Agricultural Research Centre, LI-BIRD, the District Agricultural Development Office, CBOs, and others is created at site level. This group is primarily concerned with bottom-up planning at the local level, and field execution of approved project activities. Similarly, there is a National Multidisciplinary Group representing members from different research themes, site co-ordinators, field officers, representatives from the International Plant Genetics Resources Institute, the Ministry of Agriculture and Co-operatives, the Department of Agriculture, and the National Project Co-ordinator. This body is essentially the 'think tank' of the project entrusted with streamlining research activities, testing new methodologies, screening activities developed by the Local Multidisciplinary Group, and preparing a budget for approved activities. Finally, a Technical Co-ordination Committee is the highest decision-making body with representative members from the National Agricultural Research Centre, the International Plant Genetics Resources Institute, the Ministry of Agriculture and Co-operatives, the Department of Agriculture, and the National Project Co-ordinator. This body is mainly responsible for approving the programme and the budget. It also monitors and supervises project activities and outputs.

In the project, farmers and their organisations (CBOs) represent one of the partners. They need adequate representation through various mechanisms; their voice needs to be heard. One effective way is to include CBO representatives (two, in this case) in structures created at different levels. Until now, CBO representatives have been included in the Local Multidisciplinary Group only; ways are being sought to extend participation to the National Multidisciplinary Group.

Local Multidisciplinary Group meetings are organised locally; they meet frequently. Technical Co-ordination Committee meetings are normally conducted twice a year. These meetings are crucial not only to developing work plans and budget at six-monthly intervals, but also to sharing experiences and promulgation of 'good practices' across project sites.

Defining clear roles and responsibilities

In order to minimise misunderstandings amongst team members, it is imperative to have a clear definition of roles and responsibilities at the onset of the project; they can be modified as the project progresses. Involvement of major stakeholders when developing roles and responsibilities, followed by agreement of the individuals and institutions involved, is a major step in the process. During the planning meeting, commitment is required from individual people associated with the project. Once commitment is forthcoming, then members become accountable for their outputs. Owing to peer pressure, professionals tend to abide by their commitments. Institutional commitment is equally important, especially in terms of releasing concerned staff for the project and reducing the frequency of staff turnover.

Detailed activity planning, including a timeframe, persons to be involved, identification of lead person, and resources required, is planned and agreed jointly. A hardcopy of the programme is made available to all participants before they depart to their respective organisations. This step is important since the phenomenon 'out of sight, out of mind' is common, and having a hardcopy reminds one of commitments and dates.

Management of Migratory Sheep and Goat Project

Capitalising on the experiences gained by LI-BIRD working with a multidisciplinary team in a multi-institutional setting, the Migratory Sheep and Goat Project, funded by the Hill Agriculture Research Project, has taken a shape that is expected to lead to stipulated outputs. The first meeting of concerned institutions agreed the following.

- Working mechanism (project management team, tri-monthly meetings, reporting system, financial norms, etc.)
- Roles and responsibilities of professional staff
- Detailed activities with timeframe
- Remit for community participation
- Monitoring of field activities

Detailed activity planning, including involvement of professionals and timeframe, was agreed. Similarly, an entry point to the community was agreed, and ways to seek community participation and strengthen local institutions were discussed. These will be implemented in the field. These steps not only fulfil project objectives but also enhance the working relationships between researchers and farmers, and between researchers themselves.

Project management team

For successful completion of the project, experiences have shown that a Project Management Team is necessary when multiple institutions are involved and the

operational area is dispersed. Decentralised decision-making is warranted. Selected individuals from partner institutions form a Project Management Team, and jointly make decisions on practical matters such as flow of information, communication modes, and hierarchy (technical, administrative and financial matters). It is more practical and easier for a smaller group to meet rather than waiting for a whole project team to decide on specific matters. This arrangement is expected to expedite the decision-making process, and keep all concerned informed about what is happening.

Tri-monthly meeting of team members

Provision of a suitable environment to discuss, plan, and review project activities on a regular basis is a must for a desirable outcome to the project. Realising this, the first planning meeting decided that project team members should meet once every three months. This forum is expected to provide a platform where open discussion, and sharing of experiences and ideas will take place. Review of progress will be monitored during the meeting. Also, team members will jointly deal with problems encountered while implementing the project.

Financial management of the project

This is one area where misunderstanding between partners usually runs high. Individual institutions have their own norms for financial disbursement. Therefore, it is wise to allocate the budget to individual institutions in a decentralised manner based on involvement of professionals in different activities. Moreover, the financial management system has to be transparent and accountable regarding the utilisation of funds. By releasing the funds at short intervals (six months), the management of project finances can be closely monitored.

Lessons learnt

The following lessons have been learned by practitioners of the participatory project planning approach.

- Intense interaction and sharing, promoted through participatory project planning, has been fruitful in programme development; it better matches activities with farmers' needs and priorities.
- Formal signing of a memorandum of understanding is desirable between partners, and even with partnership programmes at the grassroots level.
- Management support and structure/institutions are needed.
- Flexibility and commitment of team members towards the approach are needed.
- Reorientation of staff and others involved with the work is needed for this approach process as well as practical tips.
- Objectives need to be clear to staff involved at all levels.
- Financial responsibility is required. It is desirable to have a decentralised system with individual institutions made responsible and accountable.
- A Project Management Team is useful for quick decision-making and to foster teamwork when multiple institutions are involved and frequent communication amongst team members is not possible.
- Decisions have to be documented and widely circulated amongst team members.

- Protocols for field implementation of programmes and activities are needed to avoid confusion.
- Realisation of partners' strengths is essential; try to capitalise on these.
- Leave enough space for each professional to grow individually (career advancement in chosen field) and collectively (contributes as team member).

Finally, it should not be forgotten that the participatory approach takes time. Genuine participation comes only when adequate time is spent listening to client beneficiaries in the planning process. This holds true for partnerships as well. There have to be clear advantages to the partnership with a synergistic effect on partners; mutual trust is crucial for genuine partnership to take shape. Partners take time to understand each other and the working cultures of other institutions. Hence, patience is required at both the individual and institutional level.

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Chapter 14

Annapurna Conservation Area Project: Approaches to and Implications for Livestock Planning in Resource-scarce Environments

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The King Mahendra Trust for Nature Conservation is Nepal's largest NGO working in conservation and community development. Formed in 1982, the Trust has five ongoing projects including the Annapurna Conservation Area Project. The Trust's main focus lies in addressing multifaceted issues in conservation and development through an integrated approach by mobilising local communities.

Rural communities of the mountainous Annapurna Conservation Area have a biomass-based, subsistence economy that is transforming into a market economy. Major economic activities include agriculture and animal husbandry, seasonal and medium-term migrant traders and labourers, and tourism. Agro-pastoralism, a major activity in the northern belt, is becoming less dominant every year.

Communities living in the Annapurna Conservation Area have strong links with their surrounding environment. Water is the main constraint; settlements and agricultural land are found mainly in valleys with a perennial water source. The natural resource base includes agricultural land, tree plantations, and grazing lands. Water is an important resource; agriculture, micro-hydro plants, and traditional water mills are developed around perennial water sources. Population growth, coupled with an influx of tourists and others from the tourism industry, has accelerated the rate of depletion of the natural resource base in the area.

Upper Mustang is presented in this paper with an objective of better understanding the conditions of livestock systems in a resource-poor environment of the Annapurna Conservation Area.

Annapurna Conservation Area Project's approach to conservation for development

Since its inception as the Integrated Conservation and Development Project, the Annapurna Conservation Area Project's (ACAP) philosophy has been guided by a bottom-up approach that empowers stakeholders in a conservation for development programme. This philosophy is based on ACAP's view that people are recognised not only as partners in conservation but, more importantly, as managers of natural resources. The project's ultimate goal of handing over the conservation area to locals for its management is enhanced by promoting a participatory institution.

ACAP's people-first approach is guided by three principles.

- **People's participation:** At the grassroots level, various institutions are formed for the active participation of local people in planning, decision-making, and implementing phases of the programmes.
- **Catalyst or match-maker:** ACAP facilitates the process of balancing the needs of locals and tourists with natural resource conservation. It brings together international and multi-lateral donors, technicians and technology, and researchers to undertake projects that serve the local community and conserve biodiversity and natural resources.
- **Sustainability:** Economic sustainability, environmental sustainability and institutional sustainability are three important elements for ACAP's long-term goal of handing over project management to local people.

ACAP objectives

The Conservation Area Regulation, enacted in 1996, enables ACAP to conserve natural resources for sustainable development through the active participation of local communities. The project objectives are as follows.

- To conserve the natural resources of the Annapurna Conservation Area for the benefit of present and future generations
- To bring sustainable social, institutional and economic development to local people
- To develop tourism in such a way that it will have a minimum negative environmental impact

ACAP programmes

ACAP's holistic approach to conservation for sustainable development has yielded a diverse range of programmes catering to the needs of local communities. ACAP core programmes are categorised into the following sectors.

- Natural Resource Conservation Programme
- Agriculture and Livestock Development Programme
- Alternative Energy Programme
- Conservation Education and Extension Programme
- Sustainable Tourism Management Programme
- Community Development Programme
- Women in Conservation and Development Programme
- Heritage Conservation Programme
- Reproductive and General Health Programme

There are numerous activities supporting each programme. The programmes are executed through seven Unit Conservation Offices located in the Annapurna Conservation Area.

Grassroots-level institution-building

For efficient management of programmes at the grassroots level, local institutions, known as Conservation Area Management Committees, are formed at the village

development committee level. Village-nominated members constitute the Conservation Area Management Committee; they are responsible for anchoring the ACAP-supported programmes. As the programmes are diverse, the Conservation Area Management Committee has sub-committees including a Mothers' Group, Community Lodge Management Committee, Kerosene Depot Management Committee, Electrification Management Committee, Health Post Management Committee, Gompa Management Committee, and Savings and Credit Group. However, management of natural resources across the fragile ecosystem of the Annapurna Conservation Area requires more than local institutional participation; it needs enlightened institutional engagement and leadership as well. This is where ACAP provides support and leadership to the grassroots institutions it has helped to establish.

Livestock-rearing in Upper Mustang

The rangeland of Upper Mustang is important for communities rearing livestock in agro-pastoral production systems. Rangeland is rich in biodiversity and is a source of energy for livestock enterprises, although it is unsuitable for agricultural production.

Livestock as a coping strategy

Livestock enterprises in Upper Mustang are mainly based on a free-range grazing system. They are the backbone of existence, and have shaped livelihoods and traditional cultures. Livestock species include native yak and hybrid yak (chauri and dzopa), cattle (lulu), sheep, goats, horses, mules, and donkeys. For communities living at high altitude with harsh conditions unfavourable for agriculture (low and erratic rainfall, cold temperatures, rough topography, and poor soil structure), livestock enterprises have provided a coping strategy for sustenance. Livestock provides the following.

- Dairy products for daily needs
- Nutrition through protein and fats
- Supplementary food during the lean winter months
- Fibre and leather requirements for household purposes
- Cash income
- Reserve capital for risk aversion strategies, especially since the limited agriculture season is risk-prone and dependent on the vagaries of nature
- Dung for fuel needs; in the case of Dhokpa nomads, it forms the main source of energy
- Dung for fertiliser
- Transportation for goods and people in the rough terrain; and for tourism
- Draught power
- Efficient use of resources from marginal lands that may otherwise not be utilised
- Wealth and status within the community

Declining livestock population

Despite the critical role played by livestock in sustaining communities, the population has decreased rapidly within the last two to three decades.

The rangelands of the Tibetan plateau are considered more productive than the rangelands of Upper Mustang. Closure of the rangelands on the Tibetan plateau three decades ago after the Khampa War led to increased pressure and overgrazing of the rangelands of Upper Mustang (Banskota and Sharma 1998; Raut and Richard 2000). Overgrazing caused severe degradation and ultimately limited the stocking rate. This was considered to be the main cause leading to the declining population of livestock in Upper Mustang.

However, degradation of rangelands may not be the most important factor responsible for the decline in livestock population. There are other factors contributing to the declining livestock population.

Migration was a coping strategy in the subsistence economy, where family members left behind could feed themselves adequately as a consequence of the reduction in family size. Others migrated with equestrian animal herds to lower lands during the winter.

Now Upper Mustang's economy has become more integrated into the national economy, it is better linked to labour markets in the rest of Nepal and beyond. Migration from mountainous regions has constantly increased; this trend is evident in Upper Mustang. In the market economy, migration can pay better wages and open opportunities; it has transformed a coping strategy into an economic one.

In the subsistence economy of the past, seasonal migration consisted of travelling in caravans to the Terai region of Nepal and parts of the Indian subcontinent mainly as a coping strategy during the food-deficit months. Trade was done using caravans as a transportation medium, while livestock were also traded en route. However, seasonal migration has now become more diverse in terms of income-generating opportunities. Employment prospects in urban centres, the Terai region and India have created a demand for labour. Seasonal labour demands mobility of migrants between labour markets; caravans are replaced with modern-day transportation systems, and demand for livestock trade is negligible. Seasonal migrants are employed as labourers in mining and construction firms, and in small businesses and households. Many migrants have extended relations with other permanent migrants and use the network to obtain seasonal employment. Woollen wear manufacturers in India increasingly use migrants from Mustang and Tibet during the winter to sell woollen wear products, marketed as Tibetan wool, throughout India.

Uncultivated terraced lands, frequently seen in the area, are not a result of land degradation, scarcity of manure, or desertification, but more importantly, with the arrival of remittances in hard currency, people have substituted labour-intensive occupations with capital-intensive occupations. It is common to find agricultural land being converted into private tree plantations that yield better economic returns in the long run.

Remittances jump-start the local economy by increasing the spending capacity of recipient families. This creates new opportunities for those that remain. Many that migrate are risk takers with entrepreneurial skills within the economically active age group; those that do not migrate are people that prefer risk aversion strategies, have fewer skills, or are unable to work, or are from the economically inactive age group. Livestock are tended by those who do not migrate.

Chapter 15

Importance of Natural Resource Management for Livestock: Case Study from Sankhuwasabha District, Nepal

Kamala Gurung
The Mountain Institute, Nepal

Livestock play an important role in Nepalese agriculture. They provide valuable protein in the form of milk, meat, and other products to farm families. Ruminant animals supply 100% of milk and 94% of meat in the country. They also provide more than 90% of organic manure (Tulachan and Neupane 1999).

Livestock-raising is the second major occupation in Sankhuwasabha District. Cattle, goats, pigs, and chauri (yak/cattle cross) are the main livestock (Tiwari 1994). All communities raise cattle, goats, and pigs; sheep and chauri are raised by Sherpa and Bhote in the northern belt by those who have access to mountain pastures. Cattle are raised for draught power and manure. Every household raises pigs and chickens for social and religious purposes. Pigs, chickens, and goats are the main source of family income as these animals are easily sold in village and nearby markets.

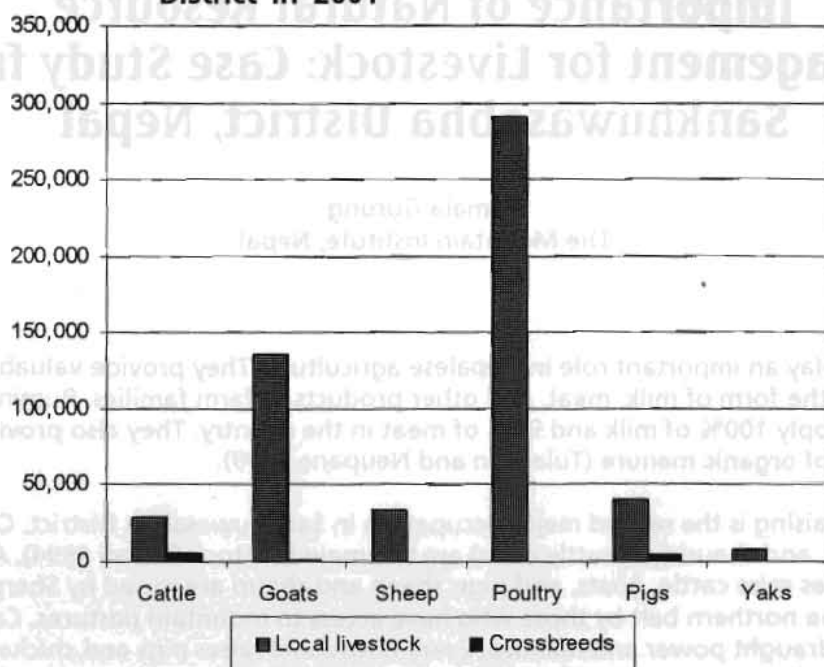
Livestock population

Figure 6 shows the numbers of livestock in Sankhuwasabha District. The average annual milk production is 2,000-2,500 l from cows and 2,400 l from buffaloes (Sankhuwasabha Livestock Service Office 2001). Crossbred buffaloes cannot survive in the northern part of the district because of the cold climate. However, upgrading with Murrah bulls has been tried in the lower belt to increase the milk production. Goats are the main livestock species in the district; they are raised mainly for meat. They are consumed by all communities and fetch the highest price in the market. The mountain goat is called Sinhal; it has long hair and is a crossbred of the hill goat (Tiwari 1994). Sheep are kept for wool and meat. The wool is coarse. Average annual wool production per animal is 1.5-2 kg in two shearings at six-month intervals. Rai, Damai, and Sherpas mostly raise pigs. Crossbred white pigs are found in some areas such as the southern belt; however, in general, black pigs are preferred for social and religious ceremonies. The District Livestock Services Office distributes improved black pigs to local farmers each year. Almost every household raises a few chickens.

Interactions between livestock and natural resources

Livestock have strong links with forest resources for fodder supply and nutrient recycling. Forests cover 39.8% of the district and pastures 10.5%. Agricultural land (8.6% of district) is mainly for food production. The size and structure of livestock populations on farms depend on the supply of crop by-products, and of fodder from forest and grazing land. Grazing is the most important animal feeding practice, contributing about 65% of total feed requirements (Tiwari 1994). Mountain grazing,

Figure 6: Total numbers of livestock in Sankhuwasabha District in 2001



Source: Sankhuwasabha Livestock Service Office (2001)

where animals are grazed on seasonal grasses of alpine, sub-alpine, and temperate pastures and forests, is usually done in spring, summer, and the rainy season. Home-stead grazing is done in autumn and winter. Animals are grazed on fallow crop fields, shrublands, wastelands, and subtropical areas.

The next most important source of green fodder is tree fodder, grown by farmers on a small scale in fields and on field borders. *Ficus semicordata* (khanyu), *Ficus lacor* (kabro), *Ficus nemoralis*, *Ficus roxburghii*, *Artocarpus lakoocha* (badahar), *Bauhinia purpurea* (tanki), *Bauhinia variegata* (koiralo), and *Leucaena leucocephala* (ipil ipil) are planted by farmers on private land. *Quercus lamellosa* (bajrant), *Quercus lanata* (banjh), *Castanopsis tribuloides*, and *Litsea elongata* are lopped from forests.

Activities of The Mountain Institute related to livestock development.

The Mountain Institute is working in the buffer zone of the Makalu-Barun National Park in 10 village development committees (VDCs) of Sankhuwasabha District and two VDCs of Solukhumbu District. The people of these VDCs have few alternatives to their usual crops of wheat, millet, and potatoes. Their main source of income is from agriculture, followed by livestock-raising.

The Mountain Institute has carried out three activities that contribute to development of the livestock sector: establishment of mini-kit nurseries, provision of a revolving fund, and provision of veterinary training and equipment.

Mini-kit nurseries

The Mountain Institute has been running a mini-kit nursery programme since 1999. Under this programme, 12 mini-kit nurseries have been established. The main purpose of these nurseries is to produce quality and healthy seedlings to meet local demand. These nurseries grow local fodder species, timber/fuelwood species, non-timber forest products species, and fruit species. Seedlings are used by private planters, farmers, community forestry user groups, women's groups, and local clubs. People plant timber and fuelwood species on marginal land; this prevents soil erosion and increases forest coverage. Farmers plant fodder species rather than timber species on their own land.

At present, project nurseries grow a higher number of timber/fuelwood species than fodder species. However, farmers and local people are more interested in fodder species to plant on their marginal land.

Use of revolving fund by local communities

The Mountain Institute has assisted in establishing local groups. It has then provided a revolving fund to 25 enterprise groups, such as women's groups, savings and credit groups, and allo groups for micro-enterprise development. These grants are provided through local NGO partners that monitor the use of funds. While monitoring these groups, it was found that farmers' groups were interested in raising small animals such as goats, pigs, and poultry to generate cash income. Farmers consider that raising these livestock was critical to improving their livelihoods. There was also a high demand for seedlings of fodder trees species for growing on private land.

Veterinary training

In The Mountain Institute project area, livestock diseases are mostly treated locally; there are no veterinary services to consult, and no veterinary doctor. Therefore, it is necessary to provide veterinary training for people so that they can perform basic treatment for infertility, delivery problems, and common diseases of livestock. They can improve animal health in inexpensive ways. The Mountain Institute has distributed some medicine and equipment including veterinary kits to trainees. The equipment and materials that are distributed during training are managed by the VDC. A memorandum of understanding is prepared and signed between The Mountain Institute, the VDC chairman, and trainees. Training seems to be effective: for example, training in *badijo castrato* means that farmers no longer castrate using vasectomy. Providing these kinds of training not only saves time and animals' health but also encourages raising of more livestock.

Gap

Groups in the project area use their loans for raising goats, pigs, and chickens, and other income-generating activities. It seems that the forest mostly meets the demand for fodder. However, there is growing pressure on the forest for fodder and bedding materials. The project needs to monitor the demand by local people for natural resource management. There is much greater demand for fodder tree species than for timber species. Therefore, more fodder tree species should be introduced in the mini-kit nurseries. Livestock in Sankhuwasabha are mostly indigenous. In general, they are smaller framed, mature later, and are less productive than improved exotic animals. However, they are well adapted to the local situation, and need little care and management.

Conclusion

This paper shows that there is a gap in the planning processes for project implementation. Income-generating farmers' and women's groups give priority to raising livestock such as goats and pigs, and raising seedlings of fodder tree species. In future, participatory approaches involving all beneficiaries should be followed in developing project implementation strategies.

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ANNEX

Annex

Participatory Policy Framework for Community Empowerment in Livestock Resource Planning: Suggested Outline

Regional stakeholders meeting: processes and outcome

A three-day stakeholders' meeting was held from 11 to 13 October 2001 as part of the process for developing a participatory policy framework for community empowerment in livestock planning. The workshop provided a platform for stakeholders from Bhutan, India, Nepal, and Pakistan to share information about their study results, work experiences, and limitations and gaps in past and present systems for local livestock resource planning, with an emphasis on linkages such as those with natural resource management. There was a brainstorming session on the components that need to be included in any framework for community based livestock resource planning following the interactions and discussions. The outcomes are summarised in the following.

The agreed goal and objectives of such a framework are as follow.

Goal

- To empower farming communities so that they can plan and manage local livestock resources in order to improve mountain livelihoods in a sustainable manner

Objectives

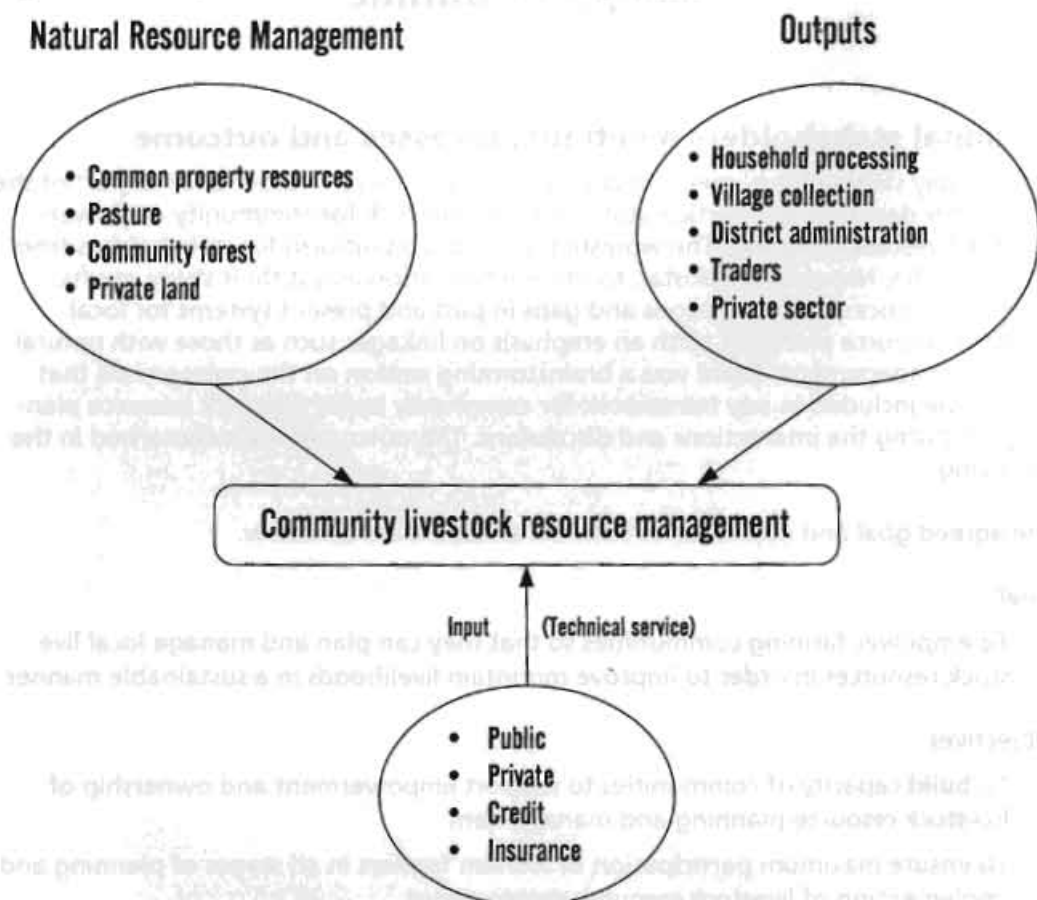
- To build capacity of communities to support empowerment and ownership of livestock resource planning and management
- To ensure maximum participation of women farmers in all stages of planning and implementing of livestock resource development
- To emphasise an integrated approach to natural resource management for livestock resource development
- To improve income generation by promoting value addition, product diversification, and marketing development

Planning should be done by community-based organisations (CBOs), in this case local 'Farmer's Groups'. Thus the suggested framework deals with what these organisations need to know, how they should be organised, the role of outside agencies, and the overall strategies for helping them obtain the necessary know-how for planning ('empowering').

Linkages of community based organisations (CBOs) with local resources

Before CBOs make plans for resource use, they need to understand the links between various components of the resource base (biophysical, plants, animals and human beings). Figure 1 illustrates some of these links.

Figure 1: Simple links between a community and the local resources



Community resource inventory

CBOs should be aware of the resource base in quantitative terms (if possible). This information becomes the basis for future projections and planning. The inventory should include the following.

- Population
 - Human
 - Livestock (by species, breeds)
- Land-use systems
- Grazing lands/pasture

- Common property resources
 - wasteland
 - barren land
- Animal health centres
 - cooperatives
 - private
- Feed (concentrate) supply

Acknowledging constraints

There are a number of constraints that should also be considered during livestock planning. CBOs and their supporting agencies and partners need to be informed about the specific situation related to these factors in the area under discussion and consider strategies to take them into account and where possible overcome them. The most common constraints can be summarised under the four main headings of

- technical and resource constraints,
- markets,
- credit, and
- animal health infrastructure.

Farmer's groups

Targeting different groups of farmers is critical in allocating resource use. Are farmers in the community homogeneous in terms of their private household resource base? This depends on communities and geographical locations. Certain communities are already recognised as vulnerable. Especially in the mountains, they are deprived of access to and control over local resources by virtue of belonging to lower castes/classes. Some areas are resource scarce. In such environments, communities in general are resource poor.

There are disparities among farmers in terms of the resource base. An example is shown in Figure 2. Farmers can be categorised into three groups on the basis of their resources: resource-rich, resource-poor, and vulnerable or landless. However, such classifications should be decided by the local communities themselves.

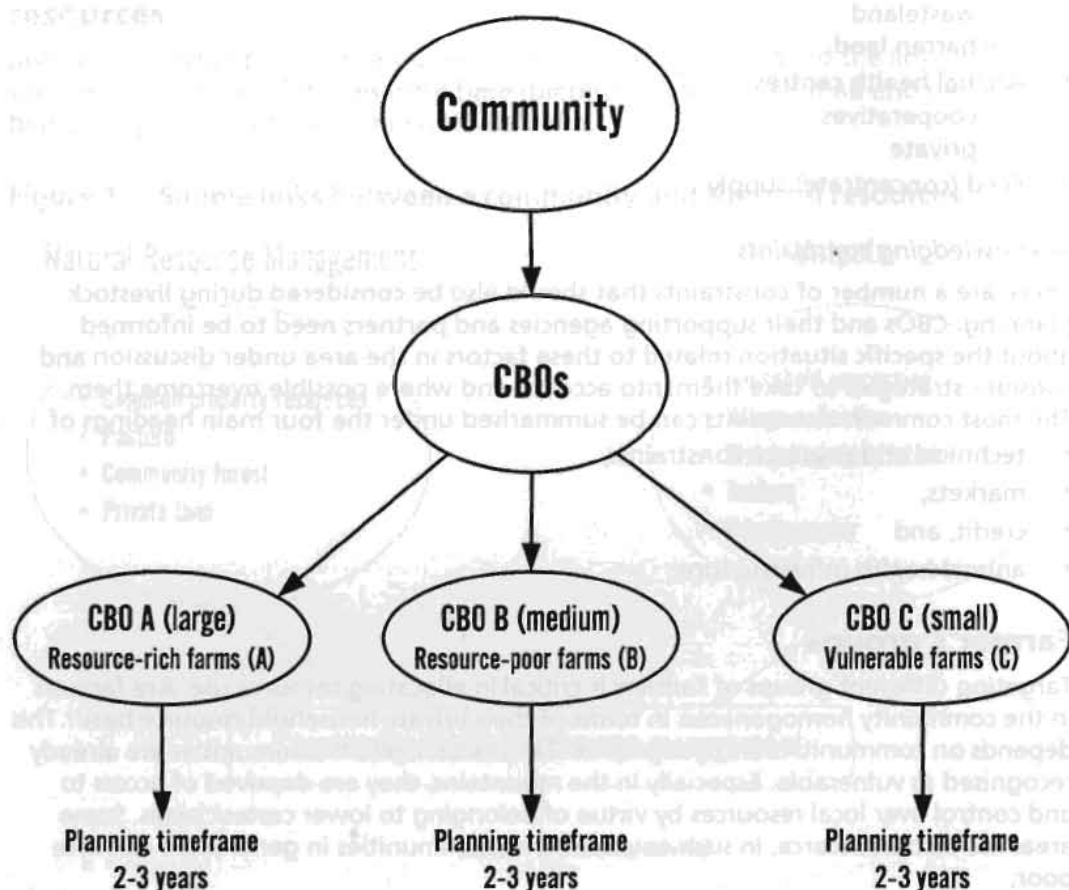
Principle for organising farm groups

- Allow farmers themselves to decide for effective planning
- Leave it to CBOs or communities to decide farmer categories.
- Monitor conflicts among farmer categories

Role of outside agencies and tasks of CBOs

CBOs need be sensitised by outside agencies, such as government line agencies or I/NGOs, in terms of providing training, and encouraging participation and empowerment of women in the planning process. They should, however, be allowed to carry out their planning independently of the influences of outside agencies. They should be able to carry out the functions listed in Figure 3 under tasks of CBOs. Once they are well trained in these tasks and capable of undertaking them independently, they

Figure 2: Categories of farmers' groups based on their resource situation



are considered to have been empowered. However, at the initial stage, they need training the assistance of external expertise, and facilitation by I/NGOs or government agencies.

Strategies for empowering CBOs in local livestock resource planning

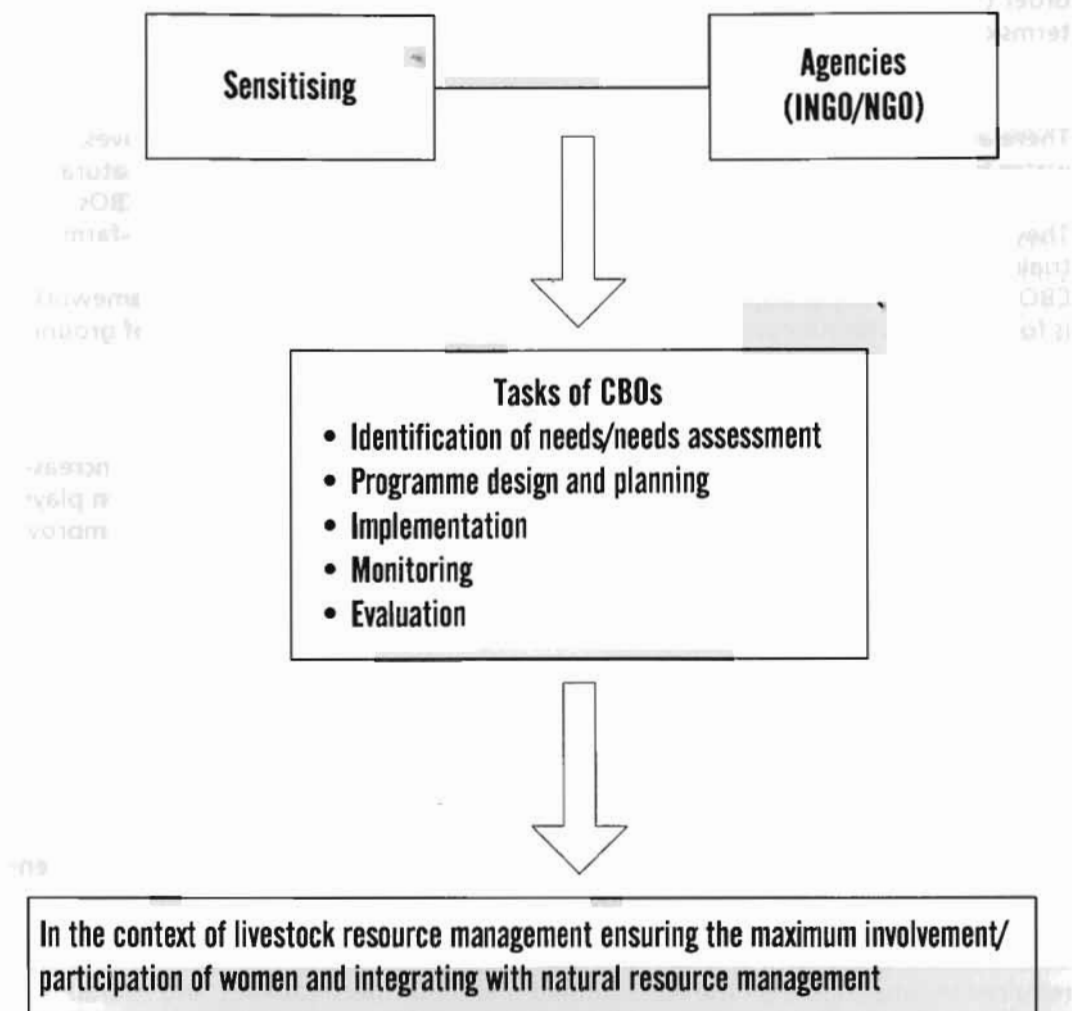
Strategic Alliances

Field-based government line agencies, I/NGOs and private entrepreneurs can play critical roles in achieving overall strategies for empowering CBOs in planning and programming of the livestock resource base in the context of natural resource management. They should form strategic alliances and partnerships to empower CBOs to operationalise plans and programmes. CBOs should actively seek alliances with private NGOs/line agencies/the private sector.

Strengthening CBOs

At the initial stage, it may be necessary for organisations to assist CBOs in building their capacity and strengthening their skills and knowledge base through awareness-building, sensitisation, and training.

Figure 3: Sensitisation by Outside Agencies and Tasks of CBOs



Enhancing women's participation

Women's participation and empowerment in local planning can be enhanced by actively involving women's groups in programmes for awareness-building, sensitisation, and training. CBO groups should have a given minimum percentage of women.

Integration of natural resource management and livestock

Livestock resources cannot be planned in isolation from natural resource management. There are strong links between keepers of livestock and natural resource management particularly for poor farmers, and conflicts can arise in the use or sharing of common property resources such as rangelands or fodder grass from forests. As poor people mostly depend on common property resources for livestock feed, improving resources through such activities as introduction of fodder grass species and

planting of fodder trees on common property resources or private lands is critical in order to improve livestock productivity. Technological interventions are required in terms of improving fodder species by selection or testing of other species.

Technical intervention

There are a number of technical interventions (biogas, improved cooking stoves, water harvesting, peltric sets, and so on) that can decrease the pressure on natural resources. The kinds of technical inventions required should be assessed by CBOs. They should be on a demand basis rather than supply-oriented. Adaptive on-farm trials of new technologies can be tested and/or demonstrated in partnership with CBOs with the full participation of local farmers. If a technological policy framework is formulated without consultation with CBOs and without understanding of ground realities it is bound to fail.

Increasing household income

The ultimate goal is to reduce poverty and increase household food security. Increasing household income through enhanced livestock productivity and production plays a critical role in achieving this. Other aspects that should be explored include improving market linkages, product diversification and value addition, and credit and insurance schemes.

Operationalisation

Once the CBOs have been formed, have developed the necessary understanding and capacity for planning, have a basic inventory of local resources, and are clear about their main strategy and priorities, the first steps can be taken in the planning process. The first step is to carry out input/output and demand/supply assessments – both actual and under various scenarios. The physical possibilities for marketing will be explored, including approaches like cooperatives and forward contracting. The potential outputs will be assessed in terms of resources, farmer capacity, marketing possibilities, and similar. Then the requirements for particular directions of expansion can be calculated, together with such factors as the availability and affordability of required inputs, impact on the environment and on farmers' families, and overall expected cost/benefit. Choices can then be made and detailed plans drawn up. The plans should include approaches to ensuring effective monitoring and evaluation. The framework should provide guidelines for all of these. It is not intended to be a detailed planning instrument, rather to provide an outline to enable CBOs to ensure that they have taken all the necessary factors into account, and to help them in their planning and decision-making processes.

Operationalisation and implementation of the strategic planning framework will be discussed in more detail at a meeting to be held in December 2002 in Kathmandu. At this meeting, details will be worked out of the knowledge to be acquired, its synthesis, the approaches that can be used by the CBOs and their partners, and the practical implementation in livestock planning. These will then be tested in the field, and the framework revised and refined accordingly. The final aim is to develop a framework for livestock planning based at the community level that can be adapted and applied across the HKH.

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ISBN 92 9115 653 1

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