

Challenges in Mountain Resource Management in Nepal

Processes, Trends, and Dynamics in Middle Mountain Watersheds



Editors
Schreier H.
Shah P.B.
Brown S.

**Proceedings of a Workshop held in
Kathmandu, Nepal
10-12 April, 1995**

**Sponsored by the International Development Research Centre (IDRC)
Ottawa, Canada, and Singapore**

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- M. Carver

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Foreword

Over the past few decades the Middle Mountains of Nepal have experienced rapid population growth which has resulted in expanding cultivation on to marginal lands and introduction of multiple annual crop rotations. This land use intensification appears to be the most widespread in the Middle Mountains, making it one of the most intensively utilised mountain regions in the world. Given the remoteness, lack of infrastructure, and difficult topography, questions have been raised as to whether such intensive cropping systems are sustainable given the naturally high rates of erosion and the relatively low availability of inputs.

The world's press has devoted much attention to the claims that rapid deforestation in the Nepal Himalayas are in part responsible for devastating floods in the Ganges Lowlands and Bangladesh. Little scientific information is available to substantiate the claims that human activities are influencing the frequency and magnitude of lowland flooding. Very little long-term data on land use, soil fertility maintenance, erosion, and hydrological and sediment processes are available, and this long-term project was initiated to understand the linkages between biophysical resources and socioeconomic variables for sustainable resource use and management.

An interdisciplinary approach was undertaken to address these issues and the micro-level resource information developed was a critical precondition for better understanding and analysis of the resource dynamics in areas where previous research work on biophysical processes has been limited and primarily *ad hoc*.

The research undertaken provides a common framework for national research organisations in ICIMOD's Regional Member Countries for demonstrating the usefulness of approaches and methods used for addressing resource problems. It is hoped that this study will provide a useful insight into the scientific and technical understanding of natural systems and their interrelationships in mountain environments as a background to sustainable development.

On behalf of ICIMOD I would like to express my gratitude to the International Development Research Centre for the generous financial support provided and our sincere appreciation for the professional contributions and commitment of the University of British Columbia team to the success of the project. We are looking forward to continuing collaboration for the benefit of mountain farmers and their environment.

Egbert Pelinck
Director General
ICIMOD

Foreword

This workshop reports on research that ICIMOD together with the University of British Columbia in Canada has been conducting in the Jhikhu Khola watershed since 1989.

Nepal faces resources constraints and problems that are somewhat unique to her mountain ecosystem. Extremely high rates of natural erosion, marginal conditions for biomass production dominated by a mountain agriculture, a distinct dry season and very high population pressure all exert extreme demands upon this resource base. Farmers in Nepal have adapted their farming systems to these difficult conditions for generations but questions about the long-term sustainability of different production practices often arise. The Jhikhu Khola watershed was chosen as a site to study long-term changes in land use, soil fertility status, erosion processes and other aspects of land management and use. Different aspects of this work are reported in these proceedings.

The general objective of this Phase II project was to develop an understanding of land use and production systems in the dryland areas of the middle mountains of Nepal and to interpret and integrate this knowledge leading to changes which result in improved ecological and economic sustainability of these systems. Specific objectives of the study are listed as:

- a) To document and begin to understand indigenous knowledge and resource management systems;
- b) To continue and expand the monitoring of hydrology, erosion and climatic processes begun in Phase I of the project;
- c) To evaluate and quantify linkages and interactions between management and use cultivated lands, forests, grazing and other land uses;
- d) To develop new methods and models for the integration and interpretation of socioeconomic and biophysical systems as these relate to sustainable development options;
- e) To identify major constraints to sustained productivity and management of dryland farming systems and to initiate selected participatory research programmes to address identified constraints and problems;
- f) To strengthen the institutional capacity of cooperating agencies.

The International Development Research Centre is extremely pleased and proud of this work. Mr. P.B. Shah who leads the work on the ICIMOD side and Dr. Hans Schreier of UBC have given more than can be expected of them. Likewise for other team members. This tremendous effort is reflected in the papers and results report. Both ICIMOD and the University of British Columbia are thanked for all the support and freedom they have given to Mr. Shah and Dr. Schreier as leaders of the project. Aside from reading these proceedings I would encourage those who can to visit Jhikhu Khola if this is possible.

IDRC thanks all those who have worked with and supported this project. This thanks also extends to farmers and their families in the watershed who have helped us in so many different ways. We hope that the knowledge gained through this research will lead to agricultural development options that are truly sustainable and that the benefits thereof will accrue directly to Nepal's farmers.

John Graham
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