

# Overview and Objectives of the Workshop

Pravakar B. Shah<sup>1</sup> and Hans Schreier<sup>2</sup>

<sup>1</sup>Mountain Resource Management Project, International Centre for Integrated Mountain Development (ICIMOD), P.O. Box 3225, Kathmandu, Nepal, and

<sup>2</sup>Resource Management and Environmental Studies (RMES), University of British Columbia, Vancouver, BC, V6T 1Z3, Canada

## 1. INTRODUCTION

Over the past 10 years we have become increasingly aware that the human use of natural resources exceeds the natural carrying or regeneration capacity and the question of its impact globally is increasingly being raised. This is nowhere more apparent than in the Middle Mountains of Nepal, where population pressure is placing great stress on the production capacity of the ecosystem to provide sufficient food, animal feed and fuelwood for the rapidly growing population living in this marginal environment.

In 1991 we organized a workshop in Dhulikhel (Shah, 1991) which brought together scientists working on all aspects of resource management in the Middle Mountains of Nepal. The aims were to share information, exchange ideas about resource problems and to look for common solutions to achieve a better balance between resource use and minimizing environmental degradation. This was at a time when air pollution was not yet an issue in Kathmandu and when questions about soil fertility were only starting to be raised. The questions of whether forest cover was increasing or decreasing was also a hotly debated issue at that time (Gilmour, 1991). Since 1991 Nepal has experienced a change in governance to democracy, and we thought it was appropriate to conduct another workshop in 1995 to revisit the status of the resources, to discuss the changes that have taken place since our last meeting, and to illustrate some of the issues that need urgent attention if we hope to restore the balance between adequate production and retention of a fully functional ecosystem.

## 2. ISSUES AND APPROACH

The use of resources in the Middle Mountains of Nepal is approaching the limits of the natural carrying capacity. The traditional sectoral approach to resource evaluation is no longer appropriate because forestry, agriculture, socio-economics, hydrology and climate are becoming more interdependent and environmental issues are beginning to influence the global economics. Many people talk about integrated resource management and watershed evaluations but truly integrated assessments are rare and this can in a large part be attributed to the structured disciplinary approach in which government ministries are organized. It is for this reason that we selected "CHALLENGES IN MOUNTAIN RESOURCE MANAGEMENT AND RESOURCE DYNAMICS IN MIDDLE MOUNTAIN WATERSHEDS" as the themes for our workshop. We intend to show that a watershed approach combined with Geographic Information Systems (GIS) has much to offer as an integration tool for resource evaluation, monitoring and management. This workshop is our modest attempt to foster better communication and collaboration between experts from a wide range of disciplines and point the way towards more interdisciplinary research. The farmers (male and female) in Nepal can be used as a classic example of truly interdisciplinary managers. They use their knowledge to manage all available natural resources (forests, agriculture, water) and adapt their techniques to the environmental conditions, the available infrastructure and changing market conditions. Emphasis is placed on providing examples on how researchers can

improve their understanding of the natural processes by tapping indigenous knowledge and by incorporating farmers into the research program.

We hope that the proceedings will contribute to improved communications between experts from many disciplines, all working on the common problem of balancing resource use with carrying capacity, and reducing environmental degradation, when the former exceeds the latter.

The issues of population growth, resource degradation and urbanization discussed during the Rio Conference on the Environment and the Cairo Conference on Population can readily be addressed in the context of the Middle Mountains because degradation processes and indicators of resource deteriorations are clearly visible in the marginal environments of the Middle Mountains. Much has been written about deforestation, soil erosion, crop yield declines, and lack of infrastructure support, but good documented information is rare and exaggerated reports are widespread.

A better knowledge base is needed if we hope to make more educated decisions on resource management and this workshop will address the major resource issues pertaining to the Middle Mountains of Nepal. The aims of the workshop are not only to provide a status report on the resource conditions but to gain a better understanding of the processes that govern: land use dynamics, hydrology, sedimentation, erosion, soil fertility changes, socio-economic conditions, institutions and infrastructure. One of the themes is research for development; what have we learned from research and how can we translate such information into development.

There are no standard methods of assessing resources and evaluating the results for development. We are all searching for new ways to address the problems of population increases and resource degradation. What we hope to achieve with this publication is to communicate our experience, illustrate the approaches which have been used, discuss the advantages and weaknesses of these approaches and identify the large gaps in understanding the processes that govern production, resource exploitation and environmental degradation in this part of the world.

### 3. WORKSHOP ORGANIZATION

The workshop papers are organized in three parts. Part 1 consists of twelve papers by local and international experts covering the resource issues that are most pertinent to the Middle Mountains of Nepal. Part 2 focuses on the Jhikhu Khola Watershed study which has been carried out over the past six years by an interdisciplinary ICIMOD/UBC team. The focus of this project is to develop a comprehensive quantitative resource database of the watershed, to set up a long term monitoring program of resource degradation processes, to use computer techniques to collect, analyze and communicate information, to improve our understanding of indigenous knowledge, and to translate some of these research results into action to assist development. The third part of the Proceedings contains the outcome of the workshop discussion which includes recommendations.

The main themes covered in different parts of the proceedings are:

#### **Hydrological processes:**

Storm events; flooding processes; highland - lowland interactions; the scale of hydrological processes; large dams versus small hydro; sedimentation and nutrient cycling within the watershed; stream flow dynamics; and irrigation schemes.

**Soil erosion:**

Rates of losses during unusual storm events; losses from dryland agriculture; the role of surface cover; climate; and management implications.

**Forestry:**

Capacity building for managing community forestry; rates and processes of forest degradation; forests soil fertility; the role of women in managing forests; fodder trees; and agro-forestry.

**Agriculture:**

Land use dynamics; cropping systems; crop biodiversity; soil fertility and productivity; gender issues; agro-forestry; intensification versus use of marginal lands; and soil acidification.

**Socio-economic factors:**

The invisible woman farmer; indigenous knowledge in soil classification and irrigation; the castes system; income and productivity; markets; perceptions of resource problems; and rural interviews.

**Research approaches and technology transfer:**

Geographic information systems as a tool to model watersheds; solar technology for research, electricity and trickle irrigation; building bridges for science and community development; rehabilitating degraded lands; incorporating farmers into the research monitoring program; and using hypertext to communicate scientific results.

The workshop was held on April 10-11, 1995, at the Himalayan Hotel, in Kathmandu Nepal and a field trip to the Jhikhu Khola watershed was conducted on April 12, 1995. The International Development Research Centre (IDRC) in Ottawa, Canada, encouraged us to conduct the workshop and financed both the workshop and the publication of the proceedings. We hope that this document will serve a useful purpose in informing other individuals concerned with resource management in mountain environments.

**4. REFERENCES**

- Gilmour, D. A. 1991. Trends in Forest Resource Management in the Middle Mountains of Nepal. In: Shah, P. B., H. Schreier, S. Brown, and K. W. Riley (eds). Soil Fertility and Erosion Issues in the Middle Mountains of Nepal. Workshop Proceedings, Jhikhu Khola Watershed, April 22-25, 1991, International Development Research Centre (IDRC), Ottawa, pp 33-46.
- Shah, P. B., H. Schreier, S. Brown, and K. W. Riley (eds.). 1991. Soil Fertility and Erosion Issues in the Middle Mountains of Nepal. Workshop Proceedings, Jhikhu Khola Watershed, April 22-25, 1991, International Development Research Centre (IDRC), Ottawa, 285 pp.