



International Centre for Integrated  
Mountain Development

ANNUAL REPORT

1995

## HINDU KUSH-HIMALAYAN REGION



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# Director General's Introduction



The year 1995 has been a highly satisfying one for ICIMOD. The Regional Collaborative Programme for the Sustainable Development of the Hindu Kush-Himalayas, which had been approved by the Board of Governors in November 1994 became fully operational. It signalled a major change from a project approach to a programme approach towards sustainable mountain development.

## Support

The long-term vision and the four-year work programme and budgets contained in the Regional Collaborative Programme also facilitated dialogue with the donor community. As a result, we were also able to welcome the governments of Denmark and the Netherlands as new supporters to ICIMOD's core programme activities and UNESCO, the European Commission, and the USAID as new project-supporting agencies. We are of course also grateful to the 14 other organisations that continued their support to ICIMOD, and they are all listed in the annexes.

This feeling of confidence in the Centre was further enhanced by the outcome of the Second Quinquennial Review of ICIMOD, which took place early in the year. The Review Team, consisting of Dr. John Mellor, Dr. Kamala Chowdhury, and Dr. Rainer Zachmann concluded that the need for an organisation like ICIMOD in the region was obvious, and that the Centre had performed well within the limitations of budgetary constraints in the past. Several valuable recommendations for improving ICIMOD's operations were made, in particular recommendations related to the research component of the Centre's overall mandate.

## Partnership

Partnership with national and local institutions in the Hindu Kush-Himalayas

has continued to be a major focus of ICIMOD's policy in implementing its mandate. Investing in partnerships increases effectiveness, institutional sustainability, and efficient utilisation of limited financial resources. We are very fortunate that in this region there are numerous institutions and organisations that have the mandate and qualified staff to carry out several of the activities that ICIMOD is supposed to do:

*"documentation and information exchange, research, training, and advisory services."*

Their mandates, however, are at national or local levels. What ICIMOD can add is a multidisciplinary perspective, a regional perspective, and linkages with countries within and outside the Hindu Kush-Himalayas. In 1995, ICIMOD enlarged the number of partnerships and the list of partner institutions is presented in the annexes.

## Staffing

This year has also been a year of considerable investments, in particular in expanding the knowledge base at ICIMOD to a considerable extent. Seven internationally recruited professional staff joined the Centre in the second half of the year and five new national officers were recruited also. By doing so, 20 of the 26 positions for internationally recruited professional staff envisaged in the Regional Collaborative Programme have already been filled.

## Capacity Building

We have also made a considerable investment in developing and widening the knowledge base in the region. ICIMOD staff have personally interacted with more than 1,000 people in the region in Workshops,



Seminars, Training Courses, and field visits. Capacity building relates to face-to-face interaction between experts from one country and those of another. We expect that through this process we will strengthen mutual learning processes in the region in the field of mountain development. For this, travel is extremely important, and this year ICIMOD staff have travelled more than in any year before. Even in this day and age of electronic networking, faxes, and telephones reaching out to mountain areas, trust and partnership need face-to-face interaction.

### Outreach

In addition to our trusted partner organisations and their staff we have intensified our efforts to reach out to the general public, the scientific community, and the numerous organisations in the HKH which previously had not had access to knowledge and advice in critical issues affecting sustainable mountain development. The frequency and number of recipients of ICIMOD's Newsletter have increased and the publication policy has been modified in order to respond more quickly to emerging issues requiring basic information for discussion. As a result, we published 42 documents during the year and distributed nearly 10,000 of our publications within and beyond the HKH region. By appointing a public relations officer, ICIMOD has become even better equipped to respond to the many requests for information and to accommodate the numerous visits by outsiders to the Centre.

### Globalisation

The immense problems of the world's mountain people and their environment cannot be solved without the moral, political, and financial support of a broad constituency in the global development community. Thus, throughout the year, ICIMOD has maintained and expanded contact with institutions and organisations involved in implementing Chapter 13 of Agenda 21, "Fragile Ecosystems - Sustainable Mountain Development." In

September 1995, I participated in a global meeting, organised by the Mountain Institute in the USA that focussed on the establishment of a global mountain network. As a result, a Mountain Forum was established through which the interests of NGOs and international and bilateral organisations have converged into a major force for advocacy and decision-making on mountain development. ICIMOD, the Mountain Institute, and the International Potato Centre constitute the Executive Committee of the Mountain Forum. ICIMOD is also the focal point for Asia in the Mountain Forum and has received support from the Swiss Government to establish the Asia Pacific Mountain Network.

Significant progress has been made also in many other aspects of our mandate. They are all reported on in the following pages. This has only been possible with the guidance and support of the Members of the Board of Governors and the ICI-

*"Even in this day and age of electronic networking, faxes, and telephones reaching out to mountain areas, trust and partnership need face-to-face interaction."*



MOD Support Group, our partners in the Regional Member Countries, and my colleagues here at ICIMOD. I am extremely grateful for the commitment and dedication of all of them to the cause of poverty alleviation and environmental conservation in the Hindu Kush-Himalayas. It gives me the hope and expectation that in the coming years ICIMOD will be able to even further increase its impact in the region.

*The Director General: listening to the people of the HKH*

Egbert Pelinck  
Director General



# ICIMOD's Presence in Member Countries

*A major thrust during 1995 has been to move out of the base in Kathmandu to mountain areas in the member countries, and, to a large extent, this has been highly successful. 1995 is probably the first year when some ICIMOD activities were undertaken in all the ICIMOD member countries, with the exception of Afghanistan.*



*Tribal people from the CHT-part of the diversity of the HKH*

*(Right)  
Pastoralism: A  
dominant activity  
among the  
Bhutanese*

## ■ Bangladesh

In Bangladesh, the major highlight was the successful completion of the National Workshop on the Development Experiences of the Chittagong Hill Tracts (CHT); the Hill Tracts constituting the main areas focus for ICIMOD in Bangladesh. This was the first time that such a meeting was organised, and it has provided a very valuable database as well as important recommendations for future development activities.

In addition, strengthening institutional capacities for GIS applications and on-farm testing of soil-conserving technologies in the CHT have continued. Representatives from different Bangladesh development agencies concerned with the Chittagong Hill Tracts participated in various workshops organised by ICIMOD, e.g., Landslide Hazard Mitigation, Tourism and Local Community Development, and Mini-Micro Hydropower Development. ICIMOD publications were provided to over 55 agencies in Bangladesh concerned with and interested in integrated mountain development.

## ■ Bhutan

Bhutan was involved in a number of activities organised by ICIMOD. A number of ICIMOD professional staff also visited Bhutan for programme discussions. ICIMOD organised a six-week long GIS training programme for six Bhutanese nation-

als at the Asian Institute of Technology (AIT), Bangkok. Representatives from different agencies participated in the Regional Workshops on Tourism and Local Community Development, Mini-Micro Hydropower, and the Regional Foresters' Forum. During 1995, about 27 agencies in Bhutan received various ICIMOD publications.



## ■ China

Different national and local agencies participated in most of the activities organised by ICIMOD. The Mountain Farming Systems' Division has two activities in China, and these are on-farm testing of appropriate technologies for soil conservation and institutional strengthening for sustainable mountain agriculture. The Mountain Natural Resources' Division has supported field testing of different biomass-based activities focussed on the Rehabilitation of Degraded Lands. Participants were invited from concerned agencies to a number of Workshops, including those on Landslide Hazard Management and Tourism and Local Community De-





*(Left) Checking crop quality, Tibet*

velopment. ICIMOD also invited special delegations from the Commission on Agriculture, Forestry and Animal Husbandry (CAFA), Tibet, and the Hangzhou Institute of Micro Hydropower Development. ICIMOD facilitated the visit of a high-level delegation from China to Himachal Pradesh for observation and discussions regarding mountain development conditions and activities. The Institute of Mountain Disaster and Environment played a key role in facilitating the finalisation of the Mountain Risk Engineering training programme in China, which is being implemented by ICIMOD. A number of professional staff, including the Deputy Director General, also participated in the Agricultural Planning Discussions organised by CAFA in Tibet in July 1995. About 69 agencies received ICIMOD publications during 1995.

## ■ India

The main highlight of ICIMOD activities in India was the ICIMOD Programme Mission to Himachal Pradesh, following an invitation from the State Government. The Programme Mission was led by the Director General. Wide-ranging discussions were held with senior policy-makers, including the Chief Minister. In Himachal, a new collaborative agreement was also signed with the Dr. Y.S. Parmar University of Horticulture and Forestry covering different areas, particularly the development of Seabuckthorn, Beekeeping, Gender and Mountain Development, and GIS applications. As per earlier agreements, collaborative activities with the G.B. Pant Institute for Himalayan Envi-

ronment and Development relating to on-farm testing of appropriate technologies for soil conservation, on-farm biodiversity assessment, and GIS applications were continued. A Regional Foresters' Forum was successfully organised with the help of the Department of Forest and Conservation in which representatives from Bhutan, Nepal, India, and ICIMOD participated. Representatives from different agencies in India participated in the Regional Workshops on Tourism and Local Com-

munity Development, Landslide Hazard Mitigation, and the Development of Mini-/Micro Hydropower. The Chief Secretaries of Sikkim and Arunachal paid a visit to ICIMOD and had discussions on the different activities of ICIMOD. The Centre also facilitated the Seabuckthorn observation-cum-discussion visit to China by a team of Senior Indian Officials. In addition, a number of agencies has been provided with GIS-related hard and software, including training and support for undertaking GIS-based case studies. There are over 286 agencies in India, mainly in the mountain areas, receiving ICIMOD publications on a regular basis.

## ■ Myanmar

ICIMOD undertook two activities in Myanmar during 1995. These were on-field testing of appropriate technologies for soil conservation and GIS applications. There was also participation from Myanmar in the Workshops on MMHP, Landslide Hazard Management, and Tourism and Local Community Development. A planned



*Himachali farmers harvesting capsicums*

*Women at a local market, Myanmar*





training activity on soil-conserving farming systems was postponed at the request of the concerned agency. There are about 39 different agencies receiving ICIMOD publications.

### Nepal

The most important activity in Nepal was the development of the Department of Geography, Tribhuvan University, as the focal point for GIS training in Nepal. From now onwards the Department of Geography will conduct GIS training in Nepal, with MENRIS only playing a minor supporting role. Significant progress was made with respect to field activities for the rehabilitation of degraded lands and appropriate technologies for soil-conserving farming systems. Other activities in which development agencies participated included Tourism and Local Community Development, Mini-/Micro-Hydropower (MMHP) Development, Participatory Natural Resources' Management, and Landslide Hazard Management. Tribhuvan University has also agreed to collaborate in the Mountain Risk Engineering Programme. Following requests from different agencies, ICIMOD supported a Sericulture Observation Mission from Nepal

to China. The participants included representatives from the Government, the private sector, and farmers interested in sericulture. ICIMOD publications are being sent on a regular basis to over 212 agencies in Nepal.

### Pakistan

ICIMOD conducted a number of activities in Pakistan during 1995. The Director General led a special team for programme review and discussions. GIS-related training was organised by ICIMOD in the Pakistan Forestry Institute, following the instalment of computers. Representatives from different agencies in Pakistan participated in a three-day workshop on Sustainable Agriculture in Cold and Dry Mountain Areas organised by the Pakistan Agricultural Research Council, sponsored by ICIMOD, and held in Quetta from September 25-27, 1995. A GIS Policy Workshop was held in Peshawar, and it was attended by 70 senior executives from Pakistan. There was also participation from Pakistan in workshops relating to Tourism and Local Community Development, Mini-/Micro-Hydropower Development, and Landslide Hazard Management. Field testing of different soil-conserving farming technologies and rehabilitation of degraded lands have been taking place at a number of sites. In Pakistan, there are about 80 agencies currently receiving publications from ICIMOD.

(Right) A typical mountain household, Pakistan

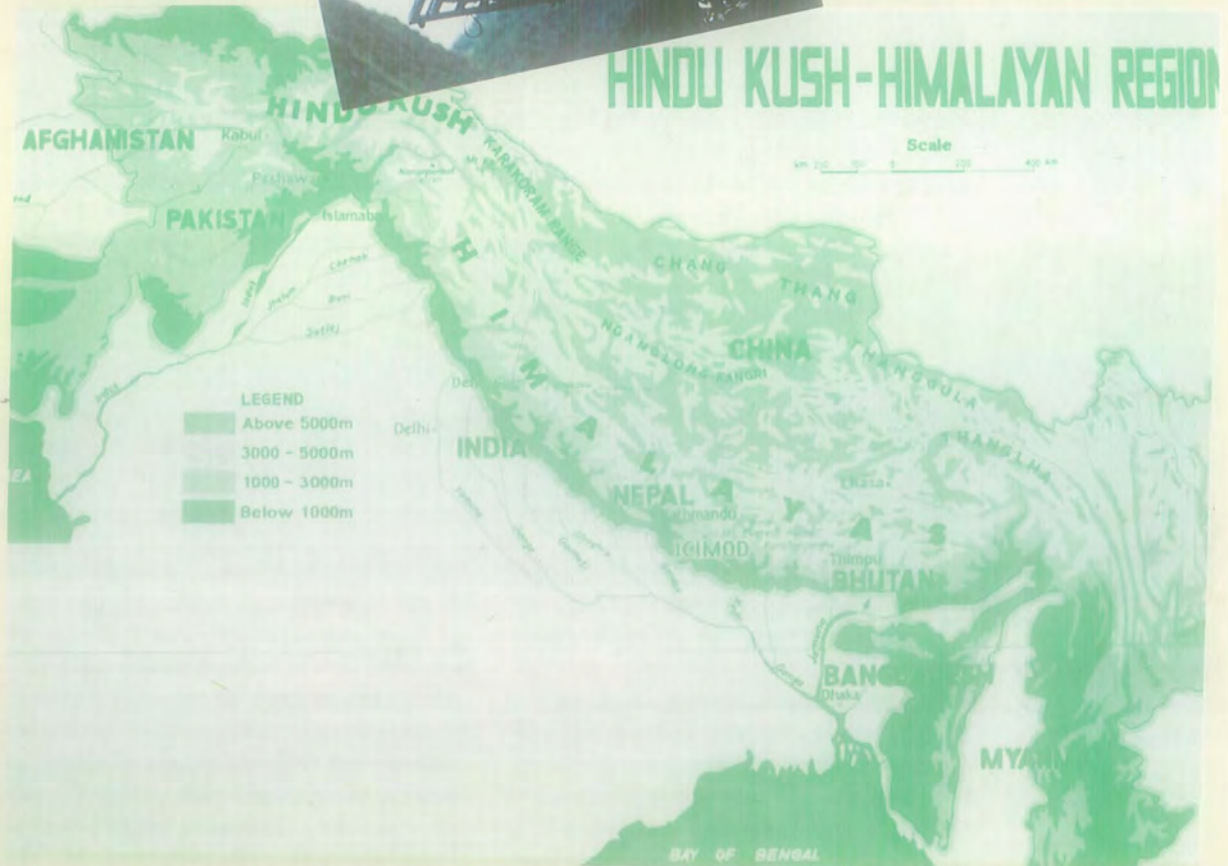
Growing up in the Himalayas, Nepal



*A more substantial role for ICIMOD in the member countries will be emphasised even more in the implementation of the Regional Collaborative Programme. This cannot, however, be successfully implemented by ICIMOD alone. It needs willing support and cooperation from ICIMOD member countries and the different collaborating partner agencies. Clearly, 1995 has seen significant progress in this direction and a good deal more can be achieved in the future.*



# RESEARCH AND INSTITUTIONAL STRENGTHENING



*Left hanging! carrying out research in inaccessible terrain*



## Introduction

1995 was the first year that the Regional Collaborative Programme (RCP) became operational as the main framework for programming, budgeting, and action for the period from 1995 to 1998. The final version of this document was published in April 1995 and is available on request. Throughout the present Annual Report, frequent reference will be made to the RCP.

The research and knowledge reviews undertaken by ICIMOD during the year have generated results in various fields that will have a likely impact on policies for sustainable mountain development in our Regional Member Countries. This section highlights the research findings of the programme activities carried out by ICIMOD during 1995 and some of the key programmes carried out in relation to institutional strengthening. The thrusts in research work conducted during 1995 have been on

- improved biomass-based technologies to mitigate soil erosion and increase

Regarding biomass interventions for controlling soil erosion and improving soil fertility, experiments with different types of hedgerows, under different climatic conditions, were carried out. The performance of some species has been encouraging. This is discussed both under Mountain Farming Systems (for on-farm experiments) and Mountain Natural Resources (for public lands). Insofar as appropriate technologies for women are concerned, the main finding has been the failure of extension services to reach mountain women. This is discussed under Mountain Farming Systems. In the case of mini-/micro-hydropower development, while some problems are still encountered with the technology, the main limitation is lack of adequate commercial demand for energy.

The focus on institutional development has been to strengthen existing mechanisms and to facilitate the emergence of new institutional mechanisms. The experience focussed on management



*Incorporating research results in institutional strengthening*



soil fertility both on farm and on public lands,

- appropriate technology assessments in the context of gender and mini-/micro-hydropower development,
- institutional mechanisms related to management of natural resources,
- overviews of development and management experiences, and
- improving planning methods.

of forest resources, and this is discussed under Mountain Natural Resources. Comparative overviews on agricultural transformation and management of landslides indicate the different stages of development in these areas, emphasising the value of learning from each other's experiences. Regarding planning methods, the focus has been on the application of GIS methods to rural development concerns.





## MOUNTAIN FARMING SYSTEMS

With over two-thirds of the 120 million mountain population of the HKH still dependent on farming as their primary source of sustenance, the task of overcoming poverty, inequality, and marginality and of improving the well-being of mountain people must begin by addressing the problems of mountain agriculture. Without improvements in the millions of small mountain farms, there will be little positive impact, either on poverty or on the mountain environment.

The primary goals of the Mountain Farming Systems' Programme are:

- to promote appropriate technology packages for improving the farm productivity of small mountain farms without degrading the resource base;
- to integrate gender concerns in mountain agricultural development;
- to strengthen the capacities of nation-

al and local agricultural development organisations; and

- to improve policies, planning, programming, and databases for sustainable mountain agriculture.

### On-farm Soil Conservation and Fertility Improving Technologies

Soil conservation and soil fertility issues have been high priority concerns for ICIMOD. On-farm demonstrations of appropriate technologies for soil conservation were promoted on the premises that terracing was not feasible on many sloping lands and yet these lands were essential for meeting the different needs of mountain farm households. Cultivation of these lands has resulted in huge losses of soil and consequent losses in agricultural outputs. Poor mountain farmers cannot afford large quantities of inorganic fertilisers and other high-cost inputs which not

*Soil conservation and soil fertility: high priority concerns in mountain farming systems*

**Technologies for Sustainable Agricultural Systems (RCP 1.1)**



only had many soil-degrading effects when overused but were also largely unavailable in remote mountain areas. It was, therefore, essential to develop a locally sustainable system that not only suited the environment and farm resource endowments but was also economically desirable and affordable by the mountain farmers living in remote and sloping areas.

One of the most promising environmentally-sound and economically-attractive packages of sloping farmland practices, being prior-tested in six of the ICIMOD member countries, has been SALT - Sloping Agricultural Land Technology. Experience with SALT had been gained earlier, following visits and training in the Philippines where SALT has been tried out for many years. SALT primarily consists of contour farming with the use of appropriate nitrogen-fixing hedgerows and



*SALT: An environmentally-sound and economically-attractive option for mountain farmers*

crops raised between the hedgerows. Regular pruning of hedgerows provides biomass for mulching and improving soil properties.

On-farm field tests and demonstrations in China during the last three years have been quite encouraging. Farmers have accepted SALT as a very useful practice for sloping areas. They have introduced some changes in the initial practices demonstrated in the Philippines. The overall conclusions are that (a) biological terracing has proved to be very advantageous as it reduces the demand for farm labour for terrace maintenance, controlling soil erosion, and improving fertility and (b) initial results have shown that crop production has also been satisfactory with-

out the use of chemical fertilisers.

On-farm experiments have used different types of SALT models and other appropriate technologies (such as low-cost water harvesting). In the Chittagong Hill Tracts of Bangladesh and the border areas of Myanmar, SALT models are being tried out in areas under shifting cultivation. In Nepal, similar experiments are underway in different agro-ecozones. Farmers experiencing serious soil erosion problems are carefully watching the effects of hedgerows on soil erosion and soil fertility, as they consider the introduction of hedgerows as increasing competition to food crops. The competition with crops and the real benefits in terms of soil retention, soil fertility, and other improved soil properties are being assessed with the help of data gathered from different sites.

The project activities are currently supported by ICIMOD and the Asian Development Bank. It is believed that several more years of on-farm work will be required to identify the most effective biological methods for reducing soil erosion and improving soil fertility in different farming systems. The most encouraging aspect is that farmers have realised the serious nature of soil erosion problems and are now willing to cooperate in testing alternative approaches to protect and improve the quality of sloping crop lands in the Hindu Kush-Himalayan Region.

### **Sustainable Mountain Agriculture: Option Enhancement and Transformation**

Because of mountain characteristics, such as inaccessibility, marginality, and diversity, most people in the mountain areas tend to adopt a wide range of options for survival. These options are related to crops, livestock, horticulture, forestry, and various non-farm activities. But most of these activities provide low returns due to low productivity, low volume of production, and lack of markets. However, people must continue with these activities because of the lack of alternatives. Even though there may be opportunities for im-



proving the quality of options by reducing the range, these are not exploited because of the absence of knowledge, lack of food security, imperfect markets, lack of technical know-how, and so on. While these are the common experiences in most parts of the mountains, in some selected pockets farmers are now moving towards fewer options which are economically superior. The standards of living of these farmers have improved considerably and such farmers are extremely market-oriented. Farmers are also more willing to make investments to improve the quality of their farm resources. What are the motivating factors behind the changes in this group? Can their experiences be replicated elsewhere? Empirical studies were undertaken to find the answers to some of these questions.

Two case studies, one each in India and Nepal, were carried out. Each study focussed its investigations on two sites, a transformed area (TA) and a non-transformed area (NTA). Study areas were selected from Kullu district in Himachal Pradesh, India, and Ilam district in Nepal. Apart from an in-depth study of 120 households in both transformed and non-transformed areas, rapid appraisal techniques and intensive interviews with different agencies and individuals were also used.

### Number and Quality of Options

Observations from Kulu in Himachal Pradesh, India, suggest that households prefer fewer higher quality production options. In the transformed area, 10 per cent of the households had only two options, while two-thirds had three to four economic activities. In the non-transformed area, over 50 per cent of the households had five to six options, with many households having even six to eight options. Interestingly, the average income of farmers with two options was higher than farmers with four options. Moreover, households with six economic activities showed only marginal income differences from the others. In all categories of households, the aver-

age income in the transformed area was two times higher than in the non-transformed area.

Several factors contributed to the low quality of options in the non-transformed area. These were poor quality of livestock, low level of education, lack of institutional infrastructure, and, most important, inaccessibility. For instance, if we deduct the cost of transportation, which is 25 per cent higher in the non-transformed area, there is no difference in the cost of one box of apples in both the areas.

It is also interesting to note that the complementarity between options appears to be of greater value in the transformed area. One good example was dairies, which use fodder from fruit orchards profitably. In the case of the non-transformed area, these linkages were no doubt there, but were of low value, mainly of a subsis-

Concepts of  
Sustainable  
Agriculture  
(RCP 1.2)



tence nature. Four major differences could be identified between transformed and non-transformed areas.

First, the **quality of life** has significantly improved in the transformed area (TA) compared to the non-transformed area (NTA). This is reflected by the improvement in consumption patterns. People now consume (50%) superior grains and are better (50%) clothed. The most noticeable changes occurred in the consumption of milk and dairy products (300%), meat products (150%), and fruits and veg-

*Floriculture: An emerging trend in Ilam district, Nepal*





*Dairy-farming: A high-value option in Himachal Pradesh, India*

etables (240%), which are all income-elastic products. The expenditure for health is less (three-fourths) than in the NTA. This is probably because of the quality of food and the reduced incidence of disease. Second, the **welfare of households** was also seen to improve from the increased level (50%) of female literacy, higher female wage rates, decrease in the number of households below the poverty line, fewer land and water disputes, and so on. The **equity** aspect was also seen to have improved. The **natural resource base** (forests, soil erosion, water availability, etc) is also reported to have improved. On account of increasing use of substitutes by the households in the TA, pressure on natural resources had declined. A shift to LPGs (Liquid Petroleum Products) by half the households, increased rural electrification (100%), imports of wooden boxes from neighbouring states for packing horticultural products, replacing unproductive animals with a smaller number of productive ones, and increased stall feeding instead of free grazing are some of the important changes that had a positive impact on natural resources. Appropriate government policies and responses of the local people have helped to relieve the pressure on forests, pastures, and other natural resources. More importantly, horticultural crops, mainly fruit trees, are perennial,

thus checking soil erosion. Dairy-farming based on stall feeding helped to maintain the quality of forests and pastures.

It must, however, be remembered that sustainability is not a **static notion**. The sustainable production options of today, may not be sustainable tomorrow because of changes in demography, people's needs and expectations, markets, technology innovation, etc. What is, therefore, essential is to ensure sustainable **enhancement processes** of high quality options. Individuals and households should be in a position to modify, change, or diversify their economic activities according to changing biophysical and socioeconomic conditions. Farmers in Himachal Pradesh are now diversifying their activities by adopting floriculture, fisheries, off-season vegetable cultivation, and dairy-farming to reduce the excessive dependence on fruits (mainly apples). Fruit production has, lately, become more unstable due to disease, changing weather, and marketing and pricing problems.

Similarly, the farmers in Ilam (one of the most transformed districts of Nepal) have been able to shift not only from traditional crops to cash crops, but, more importantly, they have also developed the capacity to adjust to changing situations over the last ten years. For instance, cardamom was an important cash crop until recently,





but farmers are now shifting to other cash crops, such as potatoes and ginger, because of the falling productivity, crop disease, and a fall in the price of cardamoms. These days dairy farming, *amlisho* (broom grass tips used for sweeping brushes which fetch a good income, stems as firewood, and leaves as winter grass), and sericulture have become promising ventures. At one time, Angora rabbits for wool became so popular that farmers kept 50 to 60 rabbits. This practice is now slowly disappearing because of marketing problems, although processing facilities are being established privately which could revive this once again. Farmers have been able to modify and diversify several activities in a very short time; actually within the last 10-15 years.

Further analysis of the critical components for replication of a successful process in a relatively marginal area is continuing. It is becoming very clear that commercialisation, support services (technical inputs and credit), and improvement in infrastructure play an enormously important role in enhancing the quality of economic options. Further analysis of the conditions in non-transformed areas will improve our understanding of the problems that cannot be discerned by looking at transformed areas also.

## Gender and Mountain Development (RCP 1.3)

In 1995, a Gender and Development position was formally created within the MFS Division to promote the full integration of gender concerns within all relevant programmes of ICIMOD. This initiative includes research, training, and networking with partner institutions in the region, focussing on those concerned with agriculture and natural resource management. 1995 was a year of planning, with the input of a interdisciplinary Gender Working Group within ICIMOD. The Gender and Development Specialist and four women professionals from member countries attended a training course on Gender in Policy Development for Sustainable Land Use in The Netherlands. This course, with alterations to include the mountain perspective, will be offered to selected regional participants at ICIMOD itself in the future.

A search for approaches that could ease the workload of rural women led ICIMOD to the development of an action research project, "Agricultural Technologies for Farm Women in Nepal," to gauge women's assessment of technologies and practices while developing methods for extending new knowledge to women who are mostly illiterate and have little spare time for training. An additional goal was to identify technologies that could be valuable to farm women, particularly those that

*Amlisho cultivation: An environmentally-friendly plant providing good-cash incomes, Ilam district*



*In search of technologies that can ease their workload*



*The mountains  
provide hope  
against all  
hardship*



could reduce their workloads and drudgery stemming from household and farm management tasks. This project produced the following outputs.

- Nepali translation of *Regenerative Agricultural Technologies for the Hill Farmers of Nepal: An Information Kit* (produced by the Nepal Rural Reconstruction Association)
- Time allocation study of 2 communities in Nepal
- Study of women's indigenous knowledge and perceptions of environmental changes
- Leadership training for men, which brought about their support for training the women
- Technical training for women with hands-on experience
- Women farmer-to-farmer tours
- Participatory evaluation of the technologies, providing reasons for acceptance or rejection of agricultural technologies, and preference ranking
- Publication - "Agricultural Technologies Selected by Farm Women in Nepal"
- Discussion Paper - *Participatory Approaches to Agricultural Technology Promotion with Women in the Hills of Nepal*.

### **Strengthening Institutional Mechanisms for Sustainable Mountain Farming Systems (RCP 1.4)**

While each of ICIMOD's programmes has a strong institutional strengthening component, the great importance of strengthening the focus of agricultural institutions on the specificities of their mandate has led ICIMOD to introduce a special programme for strengthening organisations and mechanisms to promote sustainable mountain farming systems for each of the countries, depending on needs and interest.

Institutional strengthening has been approached in a number of different ways by the Mountain Farming Systems' Division.

In **Bangladesh**, institutional strengthening activities have focussed on enhancing the awareness of the problems and opportunities in the sustainable development of the Chittagong Hill Tracts (CHT) by bringing together for the first time all the different agencies concerned with the development of CHT. ICIMOD helped to organise a three-day workshop jointly with the CHTDB and the Special Affairs' Di-



vision, Prime Minister's Office (SAD/PMO). The presentations covered a whole range of issues ranging from present-day environment and conditions of natural resources to the impact of various development schemes, both past and present. The Workshop has provided important recommendations for future activities as well as baseline data on many aspects of the CHT.

In **China** institutional strengthening activities have focussed on Tibet, helping the Commission of Agriculture, Forestry and Animal Husbandry, CAFA, to improve agricultural planning and decision-making. Activities, such as visiting other parts of China to observe agricultural development, developing a new mountain farming systems' oriented curriculum in the College of Agriculture, supporting post-graduate studies, and preparing a new long-term, agricultural development plan, have been undertaken with the help of ICIMOD. It has also provided other inputs for translation, a study tour to Nepal, and further studies for selected professionals.

In **India**, institutional strengthening activities were carried out with two agencies - (a) the G.B. Pant Institute of Himalayan Environment and Development and (b) the Y.S. Parmar University of Horticulture and Forestry. With the first agen-

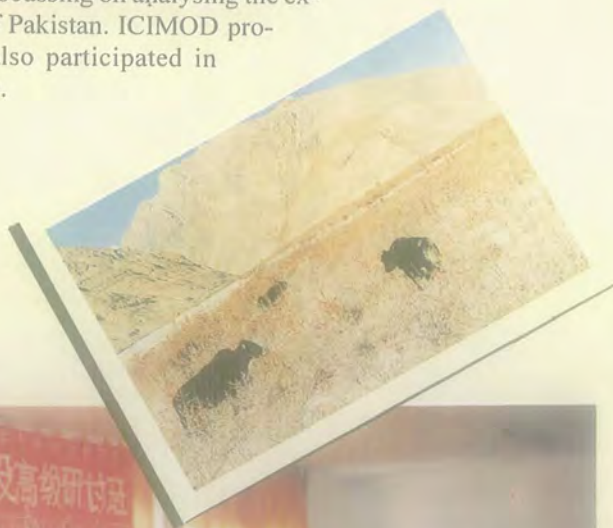
cy, activities have included the study of agro-ecological zonation, a farm biodiversity study, and field-level study for improving support lands through village-level organisations. With the second institution, the focus has been on the development of Seabuckthorn-related activities.

In **Nepal** support has been provided to various agencies to visit China and learn about sericulture development.

In **Myanmar** it was agreed to support the training of concerned professionals in using SALT in the hilly areas of Myanmar, but this was postponed at the request of the concerned agency.

In **Pakistan**, support was provided for NARC/PARC to bring together professionals to prepare and host a Workshop on Sustainable Agriculture in Dry Mountain Areas, focussing on analysing the experiences of Pakistan. ICIMOD professionals also participated in this exercise.

*Providing a mountain perspective to agricultural planning in Tibet & implementing it in Himachal Pradesh (seabuckthorn demonstration plot)*





*Scope exists for harnessing the abundant natural resources in the HKH*



### **MOUNTAIN NATURAL RESOURCES**

As development processes and interventions will continue, and even need to be accelerated, mountain resources will be subjected to even greater changes in the future. There is an urgent need to look for strategies and approaches for better and more efficient management of mountain natural resources in order to ensure sustainable use. Diversity of mountain environments and mountain cultures make the search for improved management systems a challenging task.

Unlike privately-owned and managed farm resources, most of these rapidly degrading resources, such as forests, water, ranges, wildlife, and biodiversity, are common property resources and managing them is both complex and difficult. Improving the management of mountain natural resources is essentially an endeavour to respond to the challenges of ecologically-sustainable development on mountain environments. The MNR programme approaches this with the following primary goals.

- To help sustain the use, management, and conservation of mountain natural resources

- To develop and identify improved methods for rehabilitating degraded mountain resources and environments
- To identify approaches for reducing the vulnerability of mountain people, their resources, and infrastructure to mountain hazards
- To assess and mobilise traditional and other relevant knowledge available for preserving biodiversity and genetic resources and the management of ecologically-sensitive areas.

### **Mountain Resource Management: Resource Dynamics in a Micro Watershed (Nepal)**

In 1995 six years of research in the Jikkhu Khola Watershed (11,000ha) in the Middle Mountains of Nepal was completed. Its resources and environmental conditions have been monitored since 1989. All information was placed into the Geographic Information System (GIS) for analysis and documentation of resource constraints and environmental degradation. The project has three components. First, baseline inventories were established for soils, forestry and agricultural land use, population dynamics, and socio-economic conditions. Secondly, an envi-



ronmental monitoring programme was established to determine the rates of soil erosion in agriculture, the rates of deforestation, soil fertility decline under both forestry and agriculture, and adaptations of indigenous knowledge to hydrology and soil and water management. The third part focussed on socioeconomic conditions and relationships between biophysical conditions, soil fertility, and indigenous knowledge. Steps were also taken to rehabilitate a degraded site and use it as a demonstration site, illustrating how alternative crops, fodder trees, and nitrogen-fixing hedgerows can be incorporated into the traditional system in an effort to develop it from a purely subsistence economy to a market-oriented one.

Some of the key accomplishments are given below.

i) A very *intensive monitoring* network was established to measure water and soil processes, and a mixture of automated sensors, cataloguers, and manual methods is being used. Some

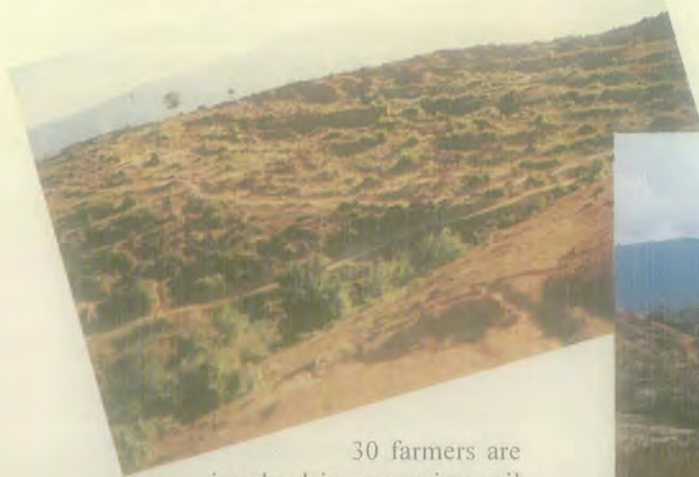
and 30 households were chosen for long-term monitoring.

ii) The baseline information and monitoring efforts are now advanced enough to derive a good understanding of some of the key *environmental processes*, and data have been generated on environmental changes as a result of both traditional and newly-introduced land management practices. Land-use changes were documented between 1947 and 1995, and the results showed that deforestation was most significant between 1947 to 1972.

**Increases in forest cover have occurred over the past 15 years**, but the quality of the forest (in terms of biodiversity/standing biomass and understorey) has declined. Forest expansion was dominated by pine plantations and occurred mostly on intermediate slopes. At the same time, **agriculture intensified from an average of 2.1 crop rotations to 2.7 annual crop**

**rotations** and expansion of agriculture also occurred in marginal environments. This expansion occurred at the expense of grazing and shrublands; the former is of particular concern since animal feed was identified

Policies and  
Programmes for  
Sustainable  
Management of  
Natural Resources  
(RCP 2.1)



30 farmers are involved in measuring soil erosion, daily temperature and rainfall measurements, streamflow measurements, and sediment and soil sampling. In addition, permanent forestry and agricultural plots were established in 1990 and are being monitored at three-year intervals for changes in biomass production and soil fertility. Three different socioeconomic surveys were conducted in the watershed,



as one of the critical resource shortages, and all hill agriculture is heavily dependant on manure supplies to maintain agriculture. Soil erosion from five upland agricultural fields was monitored, and the rates were found to be highly variable between fields and between seasons and

*Before and After:  
Giving the Jikhu  
Khola a 'face lift'*



**Table 1. Annual rate of soil loss (tonnes/ha) from all erosion plots, 1992-1994**

Plot No.	Annual Rate of Soil Loss (tonnes/ha)		
	1992	1993	1994
1	18.0	4.1	42.0
2	23.0	34.0	6.4
3	38.0	37.0	6.9
4	0.1	0.2	2.9
5	0.1	0.3	2.6

Source: Mountain Resources' Management (MRM) Project

**Table 2. Percentage of annual total soil loss occurring in the pre-monsoon and transition seasons for all erosion plots, 1992 - 1994**

Plot No.	Percentage of Annual Soil Loss Occurring in the Pre-monsoon Season (%)		
	1992	1993	1994
1	65	25	88
2	96	100	99
3	99	100	97
4	87	68	100
5	31	78	100

Source: Mountain Resources' Management (MRM) Project

years. Table 1 presents a summary of the annual rate of soil loss from each erosion plot during the period from 1992 to 1994. The large variation in soil erosion from plot to plot is a reflection of the wide differentiation in soil physical properties across the five plots. This result, stratified by seasons in Table 2, shows that, regardless of soil properties, most of the annual erosion occurs in the pre-monsoon season. Changes in vegetative cover influence inter-annual variation in soil loss. Surface vegetation cover is inadequate during the pre-monsoon season and, if intense rain occurs, significant losses are likely.

A significant finding is that between 55 and 80 per cent of the annual loss of soils occurred in two storms, and it is during the pre-monsoon season that the soils are most prone to losses. This was

confirmed by all the streamflow measurements. Ground cover during the pre-monsoon period is the critical issue controlling soil erosion in upland agriculture in the watershed, and techniques to reduce this risk by alteration of ground cover at the time the first monsoon rains arrive need to be introduced. The soil losses however appear to be of significant benefit to lowland farmers with irrigated rice land. The annual sediment input and dissolved nutrients in the water improve the nutrient status of lowland fields, suggesting that **upland farmers are rapidly losing nutrients to lowland farmers**. A further significant finding is that soil fertility problems in the watershed are widespread. Soils are acidic, low in cations and organic matter, and generally deficient in phosphorus. Since there is considerable litter transfer from forests to agriculture, soil fertility in the forest is the poorest, followed by shrub and grazing land. This could have significant implications for the future transfer of fertility from forests. Only irrigated land has a nutrient status that is considered adequate for sustained production, and higher nutrient inputs are needed in all other parts of the land-use system in the watershed.

The interpretations are based on a very large sample size and, the trends are consistent in most cases, it can be stated that land-use management has significantly influenced soil fertility and nutrient deficiencies are widespread.

iii) Steps have been taken to translate the research results into development action, and several demonstration sites have been set up in collaboration with local farmers to introduce changes in land-use practices that lead towards soil improvement, reduced use of stressed resources, rehabilitation of degraded sites, alternative production potential, and general improvement of the environmental conditions that are deteriorating rapidly. Community projects were also completed, and these include the construction of a suspension bridge, a water tank for a local school, the establishment of a trickle



irrigation system at a demonstration site, the establishment of a tree nursery consisting of native nitrogen-fixing fodder trees, and the introduction of solar technology to provide light, battery-charging facilities, and to pump water for irrigation.

iv) A highly successful workshop on "Resource Dynamics in the Middle Mountain Watersheds of Nepal" was organised in April 1995. More than 50 participants were apprised of the results of the present phase and the need for long-term research in these fields was acknowledged.

### Rehabilitation of Degraded Lands in Mountain Ecosystems

The main objectives of the project were to identify and understand processes leading to land degradation and to propose measures for restoring and developing common land properties. A framework was developed jointly by ICIMOD and national research organisations in four of ICIMOD's Member Countries (China, India, Nepal, and Pakistan) to study, test, and demonstrate various technologies for and institutional approaches to the rehabilitation of degraded common lands. Rehabilitation and development activities were continued in close cooperation with national research agencies, local government institutions, NGOs, and farmers through a participatory approach.

Nurseries were established by user groups for plantation, and paired soil erosion monitoring plots (100 m<sup>2</sup>) are being monitored with and without hedgerows to document the effects on runoff and sediment production. Sloping Agricultural Land Technology (SALT) with nitrogen-fixing hedgerows has been used extensively to increase biomass production, minimise soil erosion, and improve the soil fertility status of degraded sites.

Tree, shrub, and grass species, both indigenous and exotic, have been tested and studied to document growth and survival rates on these degraded lands. The most promising species have been screened and are being promoted for dissemination.

Training activities on SALT models and other appropriate technologies, such as water harvesting, plastic film technology, and nursery management, were conducted in collaboration with the local user groups as promotional activities, and for public awareness and wider dissemination.

The following points highlight some of the important achievements of the programme.

- Identification and testing of appropriate biomass and bioengineering technologies for restoring degraded lands; these technologies are being closely observed and monitored over a longer period to assess their impact on soil conservation, soil fertility, and water flow as well as their utility to the local people.
- A variety of species has been tested for their potential on extremely degraded lands. *Tephrosia* and *Dalbergia sissoo* have been identified as successful on several different sites.
- Full participation of local communities and forest users' groups in the management of the project has made social fencing of the sites a reality, and this has also promoted stall feeding not only on the project sites but also in the surrounding areas.
- Gaining useful experiences with respect to the role of community organisation in rehabilitating degraded lands and, in particular, the issue of sharing the ben-

ICIMOD's project site in Pakistan: ...from degraded land in 1993 to...





efits from improved common property resources through community efforts. A process of local partnership for action research between individual land owners, the local community, government, and professional groups has been introduced.

- Promoting regional sharing of information and experiences through the continuation of exchange visits, enhancing awareness, and sharing of knowledge and experiences about alternative options for the rehabilitation of degraded lands in different circumstances.

### Biodiversity Management (RCP 2.2)

This year witnessed the start of an increased focus on biodiversity conservation and management in ICIMOD. An important workshop was held on the assessment and monitoring of biodiversity in the HKH. This workshop concluded that the wealth of biodiversity that this region contains is not adequately protected against future extinction. A one-time participation by MENRIS in the activities of the Biodiversity Profiles' Project has ensured compatibility of a biodiversity data set with other data stored at MENRIS.



### Ethnobotany

A project on the promotion of sustainable and equitable use of plant resources in the HKH Region through the application of ethnobotany became operational during the year. It provides us with an opportunity to identify indigenous knowledge and people-plant relationships, and it has the potential for increasing benefits to the locals from the use of various plant species.

### Biodiversity in the Eastern Himalayas

This project also became operational in 1995 and has started different field-level activities as well as exchange programmes among biodiversity scientists and managers in this region. The main focus of the project is on participatory action research, with respect to buffer zone management in particular.

### Participatory Natural Resources' Management (PNRM)

ICIMOD's Participatory Natural Resources' Management Programme grew out of the realisation that one form of manifestation of increasing rural poverty in mountain areas is the decline in the amounts of biomass. Biomass is important for meeting basic needs such as fuel, fodder, and even food. This, in turn, is a consequence of the decline in area and productivity of community resources, often called **common property resources**, and the ineffectiveness of state interventions in ensuring protection, development, and the regulated use of community resources, despite legal, fiscal, and administrative support. The failure of custodian measures adopted by the State to protect and manage natural resources has given an urgency to the search for alternative development strategies. This has further led to the emergence of people-centred participatory management of common property resources (CPRs) such as community forestry, farmer-managed irrigation systems, and indigenous pasture management systems. Participatory management of common property resources has emerged as one of the central concerns of policy-makers, development agencies, and donors alike.

The overall goal of the programme is to promote institutional mechanisms that can actively **halt and reverse** the deterioration of the HKH ecosystem, in particular deforestation, caused by unsustainable natural resource management practices. It tries to do this by providing local communities with **more control** over their common natural resources through the spread of people-centred, participatory management systems throughout the HKH Region. Stepping up their capacity to control their own environment will lead to additional and tangible benefits at the community level to encourage and sustain the changes in how common resources are managed.

The key to providing communities with greater control over their resources



*The biodiversity of the HKH*



is **institutional change**. Governments must adapt their priorities in and approaches to dealing with their natural resource base. Yet each of the governments in the HKH is very distinct, and, even within countries themselves, there is a wide diversity of competing interests. India's HKH region, for example, spreads across twelve states. Thus, the process followed by the programme is as important as any outputs it produces. For real change at the community level to occur, all the key stakeholders must feel that they influenced and defined the results, that they were part of the process, and that they have ownership in it. The programme can in no way impose pre-packaged solutions. **Its approach is rather to create a space — an enabling environment** — in which key policy-makers can react to the lessons and adapt these to their particular circumstances and socio-political situations.

### Institutional Development

This year has built on the processes started in 1994 and has aimed to consolidate and design new institutional mechanisms. It became clear in 1994 that an emerging area of work centred around the need to establish new institutions which can address issues in different countries and the region on a continuing basis. The principle of institutional sustainability was built into processes from the very beginning.

This year has seen the emergence of the Nepal Participatory Action Network (NEPAN) as a formal autonomous institution. Today it has expanded its membership to almost 100 institutions and is establishing regional and international linkages. In order to develop mechanisms that provide a vehicle for community-based institutions, we have facilitated and supported the emergence of a National Federation of Forestry Users' Groups in Nepal. The Federation is now receiving funds from other institutions and is developing an action plan for the future. In order to provide a forum for senior and middle-level foresters in the HKH Region, the pro-

gramme has facilitated the formation of HIFCOM - 'The Hindukush Himalayan Forum for Forest Conservation and Management.' HIFCOM will initially establish national chapters in Nepal, India, and Bhutan and will expand to other countries at a later stage. Yet another process which is underway relates to designing mechanisms and strategies that address the role of women in natural resource management. A regional committee of women has been established and a workshop in December took this endeavour further.

In addition, a working group of non-government organisations in Himachal Pradesh, India, has been formed and strengthened and continues to address issues related to participatory and natural resources' management.



### Capacity Building and Training

An element of capacity building in new perspectives has been an inherent part of the programme in 1995. This has been carried out through workshops and forums which have brought together national policy-makers, non-government organisations, and community-based institutions. **Enhanced capacities are reflected also in the emergence of new institutional mechanisms which are driven by stakeholders themselves.** Specifically, a state-level training programme in Participatory Rural Appraisal was organised in Him-

**Management of Mountain Forest Resources (RCP 2.4)**

*Consultation and commitment at local level is essential in forest management*



achal Pradesh to strengthen the ability of institutions to enhance their abilities in participatory approaches to natural resources' management. A manual in Hindi has been produced and a follow-up assessment is also planned. The programme supported the writing and production of a manual on community forestry in Nepal in collaboration with the Department of Forests. A Nepali version is in use all over the country and an English version is currently being produced.

A consultation process being produced has been introduced to address issues related to human resource development in participatory forest management, and this will be continued in 1996.

### Research and Technology

ICIMOD has been successful in promoting links between research and technology with the institutions in its member countries. In relation to community forestry, issues that have been addressed include a comparative analysis of policy and institutional dimensions of community forestry in India and Nepal, recognising the latter's pioneering role in developing progressive and clear legislative frameworks and the emergence in India of similar processes. Case studies on conflicts in natural resources have been generated to fill a lacuna in this growing and critical area of work. National and regional workshops have been organised to disseminate these issues and to mainstream conflict resolution mechanisms.

Two bibliographies were prepared which document material related to participatory approaches in natural resources' management and other development sectors.

### Policy Advocacy

Several examples of policy and programme advocacy exist, and advocacy has been successfully carried out through formal and informal institutional mechanisms introduced at the behest of the PNRM Programme. Analysis of the HP Government order on joint forestry man-

agement, mainstreaming and integrating conflict resolution mechanisms within existing law, guidelines and training courses, a possible government order supporting joint forest management in the mountain states of India, the potential role of the Federation of Community Forestry Users' Groups, and discussion on issues related to community forestry in the *Tera*i and Shivaliks of Nepal are some of the processes in which the PNRM programme was an initiator, facilitator, and participant. The role which NEPAN is playing to encourage participatory approaches in development is perceived as effective programme advocacy. We will need to wait and see how HIFCOM and the regional women's network develop, but they do promise to be vehicles that can undertake legitimate policy and programme advocacy.

### Landslide Hazards: A Review

The inherently unstable nature of mountain areas is well recognised. The steep slopes, unstable geology, and intense monsoon rains combine to make the Hindu Kush-Himalayas one of the most hazard-prone areas in the world. Historical and anecdotal evidence from local people suggests that natural hazards of varying intensity occurred frequently in the past. However, in the Hindu Kush-Himalayan countries, hazard-prone areas are being occupied increasingly for human activities due to population pressure and improved accessibility as a result of road construction and other infrastructural development. Consequently, disasters are on the increase and each event affects an even greater number of people than before. Floods and landslides during the monsoon season are the most common natural disasters affecting this region every year, resulting in substantial economic and environmental losses, as well as causing great suffering to many people in the region.

Despite all this, the present level of understanding and analysis of these disastrous events is very poor and databases are non-existent. No monitoring activities are carried out, even in cases where such mon-



itoring can be of direct benefit to project-related management activities. Investments in developing practical guidelines for management of such events and also for forecasting them have been inadequate.

Since its inception, ICIMOD has been promoting the development of a better understanding of landslide hazards. Various activities have been completed so far and these include training programmes dealing with mountain risk engineering, which focussed on improving road construction along unstable mountain slopes; a review of landslide hazard management activities in China; and field assessment of landslides and flood events in south central Nepal following the extreme climatic events during July 1993. In 1995, a review

the increasing frequency of landslides, removal of forest cover, and unplanned development activities, including dynamiting at road construction sites and unregulated mining and quarrying on fragile slopes.

- Landslide frequency was found to be greater along the two major thrust lines during periods of heavy monsoon precipitation and when strong earthquakes occurred.
- Preparation of hazard maps based upon land-use considerations and regional development opportunities was seen to be essential for better management of unstable slopes. An integrated approach based upon coordination of different agencies concerned with sloping lands was essential for improving the mitigation and

Management of  
Environmental  
Risks  
(RCP 2.5)



of landslide hazard management was completed from which a number of important conclusions and recommendations emerged.

- The cost of damage from landslides and mass movements in the region annually exceeded several hundred million dollars and warranted more serious attention from concerned agencies.
- A relationship was observed between

management of landslides.

- Better understanding of the economic aspects, including the value of indigenous knowledge and ethno-engineering skills in the use of unstable slopes, was considered desirable.
- Sensitisation and training of the local people were essential for mitigation.

A Regional Workshop on Landslide Hazard Management and Control in the

*Hazard  
management:  
A constant  
challenge for the  
people of the HKH*



Hindu Kush-Himalayas was organised to discuss the problems and issues, based on the reviews commissioned by the Centre. The principal concern of this workshop was to identify priorities for a regional collaborative training programme to be implemented by ICIMOD. Workshop recommended that the target group should include i) policy-and decision-makers, ii) middle-level professionals, iii) technicians, and iv) local communities/farmers.

Other recommendations that emerged from the Workshop are listed below.

- National working groups on Landslide Hazard Management and Control should be established in the HKH countries. National Focal Points (NFPs) should coordinate national-level working groups and their activities. Such NFPs should also

act as repositories of data and information, and they should preferably be located in autonomous institutions, as these might be able to function more efficiently. ICIMOD should coordinate activities at the Regional Level and, if possible, provide support to build up the capacities of the NFPs to help them function efficiently.

- Governments of the HKH countries should make the relevant data (e.g., rainfall, seismicity) and information (including topographical maps, aerial photographs, and geological maps) required for landslide hazard management and control available to their NFPs.

- Similarly, they should also facilitate exchange of data, including maps (e.g., on a scale of 1:250,000) at the regional level.

# Documenting mountain hazards





## MOUNTAIN ENTERPRISES AND INFRASTRUCTURE

Widespread and deep-rooted poverty is the single biggest challenge for sustainable development of mountain areas in the Hindu Kush-Himalayas. While improvements in agricultural productivity and employment are critical, the rapidly growing labour force in mountain areas cannot be gainfully absorbed by agriculture alone, and substantial efforts are needed to diversify the mountain economy and enhance the living standards of the mountain population.

In order for mountain economies and environments to develop in a sustainable manner, development decisions concerned with the diversification of mountain economies must be based on sound assessment of past experiences, existing constraints, and available opportunities. The MEI programme has the following goals.

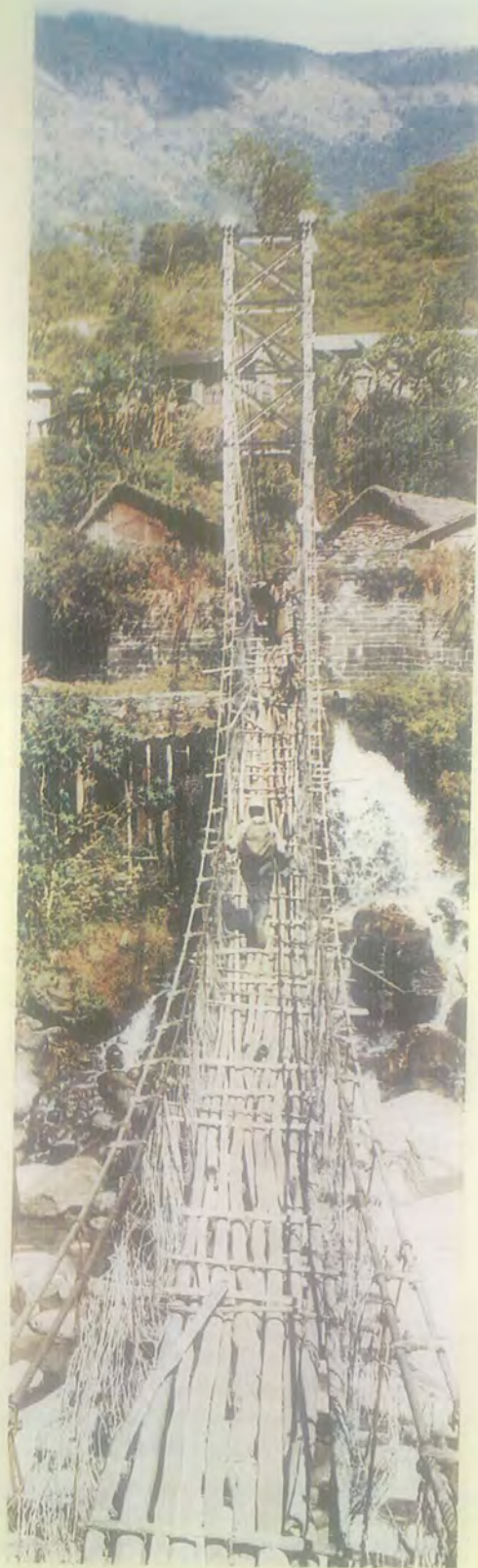
- To develop policies and programmes for expanding income and employment opportunities in high-value activities appropriate for mountain areas
- To identify low-cost and environmentally-sound approaches for improving access and communications in mountain areas
- To promote the development of sustainable energy systems
- To identify policies and programmes for decentralised urban development, focussing on small town and market centres
- To strengthen national capacities for integrated area development planning and investments

### Tourism and Local Community Development

#### Background

In 1995 the project on Tourism for Local Community Development in Mountain Areas was completed. It had four principal objectives, namely, (i) to conduct a state-of-the-art review of mountain tourism in the hill and mountain regions of Nepal, the Uttar Pradesh hills and Himachal Pradesh in India, and the North West

*Establishing infrastructure in the mountains is fraught with difficulties – immense investments match the immensity of the mountains themselves*





## Policies and Investment Strategies based on Comparative Advantages of the Mountains (RCP 3.1)

*Annapurna Conservation Area Project: Tourism and community development mutually reinforced*

Frontier Province and the Northern Areas of Pakistan; (ii) to assess, through case studies in specific tourist areas, the situation with respect to tourist 'carrying capacity' and explore alternative approaches to mountain tourism on a sustained basis; (iii) to identify possible mechanisms of integrating tourism with environmental development as well as local farm and off-farm production possibilities; and (iv) to assess and identify possible institutional and other mechanisms for strengthening the capability of local people and communities in order to derive maximum employ-

the sector to the foreign exchange earnings was quite significant. In both India and Pakistan, it was domestic tourists that made up a very large proportion of the total tourists in the mountain regions, and the relative contribution of the sector to foreign exchange earnings was small. While trekking remained the major activity in mountain tourism in Nepal, pilgrimage was quite significant in India, and resort tourism as well as trekking and mountaineering (mostly non-domestic) were important in Pakistan. Also, the impact and implications of mountain tourism tended to



ment and income benefits from mountain tourism.

### Overview Studies

The overview studies that have been conducted provide a comprehensive review of data, policies, impacts, and implications of mountain tourism in the respective contexts in India, Pakistan, and Nepal. The overview studies identify a number of common issues with respect to mountain tourism in Himachal Pradesh and the U.P. hills in India; hill and mountain regions in Nepal; and the NWFP and the Northern Areas of Pakistan. The studies reveal that the overall scale and nature of mountain tourism were different in the study regions of the three countries. In Nepal, tourism was synonymous with non-domestic tourists, and the contribution of

differ with specific eco-regional peculiarities. However, a number of common issues could be clearly discerned. Among the common elements were: lack of a defined policy perception on the role of tourism in mountain development; high leakages and weak linkages with the productive sectors; problem of seasonality and different perceptions on seasonality; *ad hoc* and generally weak government policies with respect to mountain tourism and consequent policy failures; limited understanding and analysis of the environmental as well as socioeconomic effects of mountain tourism; general lack of carrying capacity considerations and attempts to operationalise the concept in the mountain context; pervasive neglect in relating tourism to community development, local institutional development and concern



for the disadvantaged, the marginalised, and women; general neglect in human resource development, skill training oriented to local levels, and institutions to address these issues; lack of intersectoral co-ordination and institutional development to facilitate such coordinated action; and the lack of an impact monitoring framework and its operationalisation to assess the economic, environmental, social, cultural, and related impacts of mountain tourism. **As a result, and with very few exceptions, the studies show that there has been no spontaneous impact of tour-**



**ism on the major development concerns in the mountains, namely, poverty alleviation, environmental care and regeneration, and empowerment of local communities.** What emerged very strongly from the overview studies is that policy-makers, programme implementors, local community groups, and NGOs had to be sensitised on these issues and trained to be able to respond to the demands and challenges of the developments in tourism in the mountains.

Many of the above issues and their manifestations and implications were investigated in-depth through a number of case studies in the countries under study. In each country context, two case study areas were chosen; one in a relatively old and established tourist area, and the other in a relatively new area; they also reflect-

ed different types of tourism. The case study areas were the Badrinath Circuit and the Valley of Flowers in the Uttar Pradesh hills and the Kinnaur district in Himachal, India; the Ghandruk area in the Annapurna Conservation Area Project (ACAP) and the Manaslu area in Northern Gorkha in Nepal; and the Hunza Valley in the Northern Areas and the Kalam Valley in the NWFP in Pakistan. The thematic focus of case study areas was on tourism resource inventories of the areas; nature, impact, and implications of the type of tourism in the area; carrying capacity considerations for the area; analysis of the perceptions of tourism and local community-development in the area; analysis of the policy, programme, and institutional framework for sustainable tourism development in the area; and the development of strategic action plans and operational guidelines, as well as monitoring parameters, for sustainable tourism development in the area.

The state-of-the-art review of mountain tourism and its impacts and implications for the economy and environment in the study regions showed that the problems were basically related to five areas, namely, (i) impingement on natural resources and environmental degradation beyond sustainable limits, (ii) absence of tourism linkages with local production systems, (iii) nature to retain benefits in tourist areas and destinations, (iv) a high level of seasonality, and (v) absence of policy and institutional development.

### Specific Cases

The case studies in relatively old tourist areas show that there is at present no mechanism or institutional framework to monitor tourist impacts. The overall linkages of tourism with local production systems were found to be very weak, because of inadequate complementary investment programmes and the absence of supportive institutions and programmes. Even in tourist areas such as Ghandruk in Nepal, only 12 per cent of the households indicated they had direct economic skills linked to tourism. Sixty per cent of the in-

*Mountaineers scaling the heights: How far do their activities help local living standards climb the economic scale?*



come from tourism was accounted for by leakages. In areas such as the Badrinath area in India and the Kalam Valley in the NWFP, over 50 per cent of the local trade was controlled by outsiders. The distribution of benefits from tourism often went to already better-off areas, as these areas invested in tourism infrastructure as evidenced in Kinnaur District, Himachal Pradesh, India.

Little attention has been given to strengthening the entrepreneurial capabilities of villagers. In most cases there were no mechanisms to plough back revenue earned from tourism to tourist areas and

destinations. The only exception was the Annapurna Conservation Area Project in Nepal where a catalytic institution provided

an innovative example

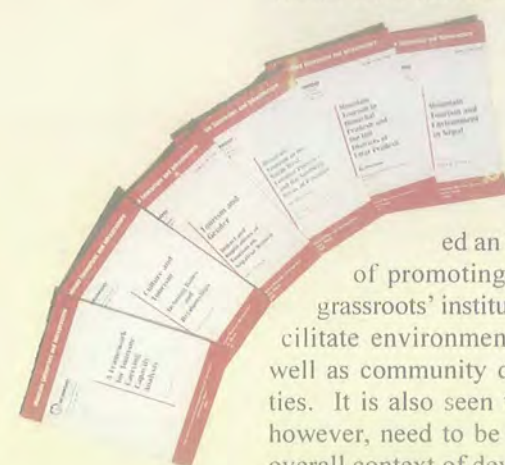
of promoting and strengthening grassroots' institutions in efforts to facilitate environmental regeneration as well as community development activities. It is also seen that such activities, however, need to be integrated with the overall context of development in the areas, and substantial efforts are required to develop human resources. Perceptions on carrying capacity vary a great deal among locals, visitors, and experts, and, therefore, this issue had to be looked at more closely to devise a generally acceptable methodology to deal with carrying capacity concerns. In newly opened areas, such as Manaslu in Nepal, planning of area-specific integrated conservation and development programmes is needed urgently. This will mean the creation of baseline data and monitoring indicators, establishment of area-specific community-based institutions, development of human resources through gender sensitive skills' training, and the creation of other infrastructure sensitive to the carrying capacity of tourist areas.

The case studies assess the role that tourism can play in the overall development process and indicate the conditions in which tourism could be a positive development intervention. What emerges very clearly from the case studies is that the different types of tourism in the mountains have to be more thoroughly understood because the problems, prospects, and relevant approaches tend to differ from one ecological zone to the other. Location-specific examples need to be developed to illustrate the problems of and approaches to the management of tourism, taking into account such factors as the carrying capacity of the area; intervention programmes for human resource development; environmental development and creation of gainful income and employment opportunities, in general, and for the disadvantaged in particular; and the development of catalytic institutions at local level to improve the capacity of communities to take advantage of the opportunities opened up by tourism.

While the project that has just been completed has contributed significantly to a better understanding of the issues and approaches at both the macro-and micro-levels and has contributed to the development of basic guidelines as well as parameters for monitoring the impact of tourism, there is a need to build on these achievements at field level. Principal lacunae in the area of mountain tourism include the lack of trained manpower, particularly at the policy, programme, and community levels and the development of training material to facilitate the translation of the guidelines into effective action. These issues will be addressed in the second phase of the project, operational from November 1995.

## Integrated Training for Mountain Risk Engineering (MRE) in the Himalayas

This programme is a continuation of the past Mountain Risk Engineering Train-



Promotion of Risk Management Techniques in Infrastructure Development (RCP 3.3)



ing Activities carried out by ICIMOD. In Phase I, ICIMOD concentrated on preparing a Training Manual on MRE and implementing a Pilot Training Programme. Under Phase II, the training handbook was revised and another eight week-long MRE training programme was conducted for professionals from the Himalayan Region. Extensive review and assessment of earlier achievements and impacts of MRE indicated that, whereas MRE concepts and methods were very valuable for mountain areas, new approaches were needed in relation to on-the-job training and wider use of MRE soft techniques for instability mitigation and control. The Third Phase, which became operational in August 1995, has been developed and designed to cater to these needs in the HKH countries.

By the end of December, work had begun in Nepal and China, with Tribhuvan University and Chengdu Institute of Mountain Hazards and Environment as the national focal points. In Nepal, the activities completed were mostly of a preparatory nature, such as establishment of a Training Team with 13 professionals. Completion of two field surveys and preparation of a draft design for stabilisation measures were also carried out as preliminaries to the actual on-the-job training planned for 1996. In China, sites for field-level training were identified and a draft training programme was completed for implementation in 1996.

## Mini-/Micro-Hydropower Development

### Background

In the field of energy, traditional resources, such as fuelwood and biomass, are disappearing quickly. On the other hand, because of the problems of cost and transportation, the supply of commercial fuels is not sufficient. In some areas of Nepal, for example, kerosene is sold at five times the Kathmandu price. Above all, the overall use per capita of non-biomass based energy is very low; and this not only creates extreme hardship for the people,

especially women, but also hampers the prospects for development.

In order to address the above problems, it is necessary to develop appropriate energy systems for underdeveloped mountain areas. These systems should be inexpensive (affordable) indigenous and sustainable at local level, and, above all, friendly to the ecosystem. It is generally believed that Mini-and Micro-Hydropower (MMHP) is one such renewable energy resource, meeting most of the above criteria. Consequently, special efforts are needed to promote the installation of MMHP plants in remote areas where oth-

Policies and Investment Strategies for the Development of Sustainable Energy (RCP 3.5)



er options are not viable. Most of the governments of the Region consider it their responsibility to provide electricity to all the rural areas, including the more difficult mountain areas. However, the concerned agencies usually follow traditional methods, e.g., grid extension or diesel generation. MMHP is considered to be not only very expensive but also unviable by these agencies; especially at levels below 200 KW.

*MMHP - reducing drudgery and promoting benefits from agro-processing*

### Reviews by ICIMOD

ICIMOD organised extensive reviews of MMHP operations in selected countries of the HKH. The experience shows that, if MMHP plants were installed and managed properly in a decentralised manner, they could become economically viable.



Therefore, private and community ownership (same owners, same users) in many cases has proven to be the most appropriate system for installing and operating such plants. However, technical and financial assistance, training, monitoring, and advisory services for operation, maintenance, and repair are needed for quite a period of time before the private sector really takes over and the whole system becomes self-sustainable. Many problems faced by current plant-owners have been identified, and they need to be adequately addressed in order to improve plant performance and economic returns.

Several national/international agencies in the region are engaged in the promotion of MMHP, especially in Nepal, particularly the promotion of micro-range private or community-owned/managed plants. These agencies usually work on the improvement of technology and performance, installation programmes, evolution, and implementation of special tariffs.

The initial review and analysis of the information contained in the Country Reports and subsequent national and regional consultations, National Seminars, and Orientation-cum-Training programme revealed that, whereas MMHP was a very valid approach to sustainable energy development in the mountains, a number of constraints still impeded its achieving full potential.

## Constraints in MMHP Development

- MMHP is not yet recognised as a viable source of energy by all policy- and decision makers concerned with energy planning and supply.
- Support provided for decentralised, private, and/or consumer-owned and managed systems is inadequate at present.
- Appropriate institutions or other management bodies are usually not in place to address problems concerning performance, management, utilisation, etc.
- Performance and reliability of indig-

enous equipment are still not adequate.

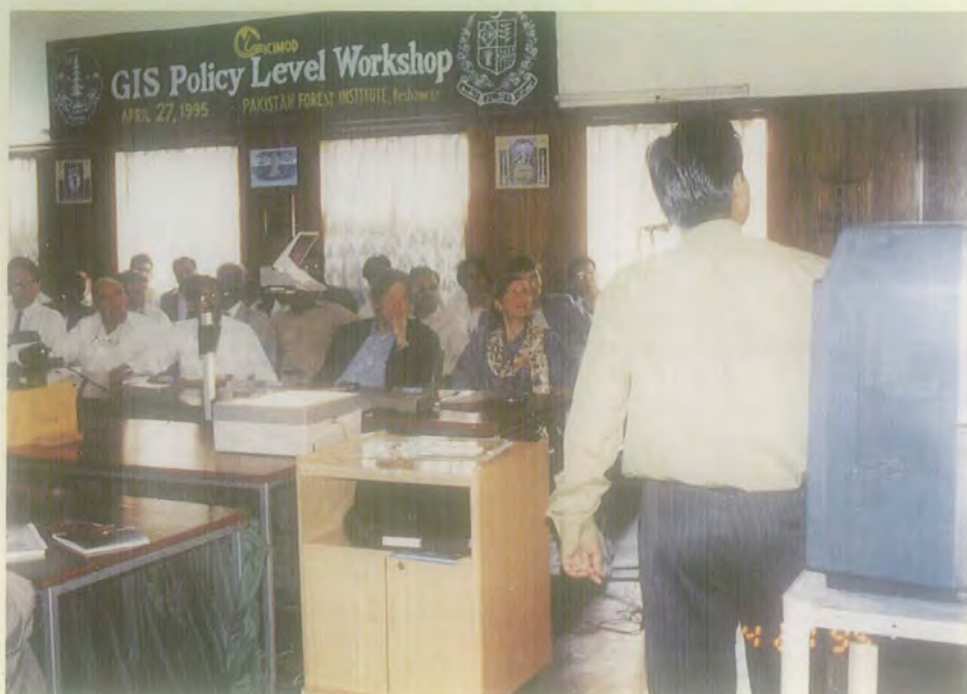
- Private owners complain about inadequate returns, frequent breakdowns, and difficulties associated with repairs.
- Serious coordination problems exist between agencies implementing public sector and private sector plants.
- Most MMHP plants producing electricity only were not making a profit.
- Diversification of end uses is not yet sufficient.
- Reliable studies regarding performance evaluation of private plants are not available.
- Most managers and operators of privately-owned plants do not have adequate knowledge or skills to manage the plants properly, whether technically, administratively, or financially.

## Conclusions

**Despite the various constraints identified, participants and resource persons at the various meetings concluded that most of the problems prevalent with MMHP could be overcome through appropriate inputs; including more thorough monitoring and evaluation of the plants, and through developing/disseminating guidelines/manuals to improve installation and operation practices.** It was also observed during these meetings that public interest and acceptance of MMHP plants were increasing. In Nepal, for example, installation of 70 pico-sized peltric sets takes place per year. Similarly, in Pakistan, the number of applications for installation of private MHP plants has been increasing steadily. It is, therefore, necessary to continue efforts to evolve and provide proper inputs for MMHP programmes in the HKH Region."

Based on the conclusions reached, ICIMOD has planned activities for the future that will address the major constraints identified above through a process of training, information dissemination, monitoring, and networking.





*Capacity building:  
The 'prime  
directive' for  
MENRIS*

## **MOUNTAIN ENVIRONMENT AND NATURAL RESOURCES' INFORMATION SERVICE (MENRIS)**

MENRIS acts as a resource centre for the HKH Region for the study and application of GIS technology in close collaboration with national and international research institutions, space agencies, and vendors in the participating countries.

Its main components are: i) Mountain Focus of Geographical Information Systems (GIS) and Remote Sensing (RS); ii) National/Subnational Capacity-building for Application of GIS/RS in Natural Resources' Management; iii) HKH Database and Network; iv) Networks in the RMCs and within the Region and the Sub-region; and iv) Computer Applications and Development

### **Mountain Areas and the GIS Concept (RCP 4.1)**

The growing concern over environmental degradation and the development of mountain areas was highlighted in the Mountain Agenda prepared for the United Nations Conference on Environment

and Development (UNCED) in 1992. Subsequently, Chapter 13 of Agenda 21 has now served to provide the basis for a global effort towards the sustainable development of mountain areas. One of the programme activities identified by Chapter 13 is that of developing an information base for mountain areas. Geographic Information Systems' software is an important tool in this process, particularly in the context of ensuring a better management of mountain environments.

Mountain areas present a great challenge to the application of GIS, due to their different physical, biological, and societal systems. The physical characteristics of the mountain environment are quite complex and need to be analysed with a three-dimensional approach/methodology, in order to integrate aspect, slope, and topography. GIS and Digital Elevation Models (DEM) are used for different types of applications in mountain environments, e.g., regional resource inventory, planning, and management; environmental impact and hazard assessment; modelling of the ecology, climate, or hydrology; geomorphology; and so on.



Several organisations, regionally and worldwide, are using GIS for long-term monitoring activities in mountain areas. Most mountain GIS case studies cover small areas because of the size of investment needed for data collection and management of large databases. Nevertheless, GIS case studies need to be conducted for particular areas, not only because of the limited amount of money but also to learn more about methodologies, to solve technical problems, and to prove the feasibility of GIS for particular applications. Only then can the information and knowledge gained through this process be transferred and applied to larger areas.

### **Capacity Building for the Application of GIS and Remote Sensing (RCP 4.2)**

In 1995, MENRIS expanded and strengthened its network of module points in the HKH Region. Several training courses were organised /supported in ICIMOD's Regional Member Countries. National capacities to provide training have increased considerably during the year and, in a few countries, the role of MENRIS staff is limited to lectures on only a few modules. In addition, MENRIS has provided hardware and software support to the following agencies during 1995.

- The Department of Geography, Tribhuvan University, Nepal
- Pakistan Forestry Institute, Pakistan
- Dr. Y.S. Parmar University of Horticulture and Forestry, Solan, Himachal Pradesh
- Commission on Agriculture, Forestry and Animal Husbandry (CAFA), China, (committed for 1995 but now possible only in 1996)
- Jahangirnagar University, Bangladesh
- The Local Government Engineering Department, Bangladesh

### **GIS Case Studies**

A study on the application of GIS for planning agricultural development in the Gorkha District of Nepal was completed

in 1995. The study addressed development problems and potentials in the agricultural sector through applying GIS technology. Five GIS case studies were conducted by ICIMOD/MENRIS in collaboration with the Gorkha Development Project.

- The assessment of agroclimatic zones in the district was conducted, based on the assumption that the zonal approach was most suitable for planning development interventions in the agricultural sector in mountain areas.

- Animal husbandry is an integral part of the mountain farming system in Nepal. However, there is a shortage of fodder and this seriously limits animal productivity. Analysis of the feed situation, i.e., feed supply, feed requirements, and livestock carrying capacity, in the Gorkha District was carried out to improve our understanding of the spatial dimension of the feed deficit problem in the district and to identify areas for immediate intervention.

- Horticulture is considered an appropriate activity for reducing environmental degradation and improving the economic situation in mountain areas. There is appreciable potential for the development of various fruits in Nepal. The case study assessed the potential of horticultural development and particularly that of fruit crops in the Gorkha District, taking into account various parameters, i.e., temperature, land use, aspect, and accessibility to marketing infrastructure.

- The suitability of a location for specific plants and crops is influenced by different parameters, e.g., temperature, moisture, slope gradient, aspect, cloud formation, etc, and the interaction between these parameters, including the human factor. The case study, 'Correlation of Land Use with Climatic Factors in the Gorkha District', tried to assess the spatial relationship between these parameters to improve understanding of the environmental system and the use practices relating to natural resources in the district

- In the Nepalese mountains, and in particular the Gorkha District, potato cultivation has a high socioeconomic value.

**MENRIS CASE STUDY SERIES  
No. 3**

Application of GIS for Planning Agricultural  
Development in Gorkha District





Potatoes are grown either as a staple crop in the high mountain areas or as an important vegetable crop in the mid-hills. Furthermore, marketing and bartering of seed potatoes contribute to the household income and to diet diversification. In general, potatoes have the potential to be grown on all cultivated land. The case study applied GIS technology to the analysis of appropriate locations for potato production during optimal growing periods (Map 1).

### Limitations

Geographic Information Systems' technology was originally developed for lowland areas and might be inappropriate for mountain environments if the great variability of these systems is not carefully addressed. Due to the complexity of mountain areas and their fast changing environments, data collection, including scale of data sources and data quality, data storage, and hardware and GIS software

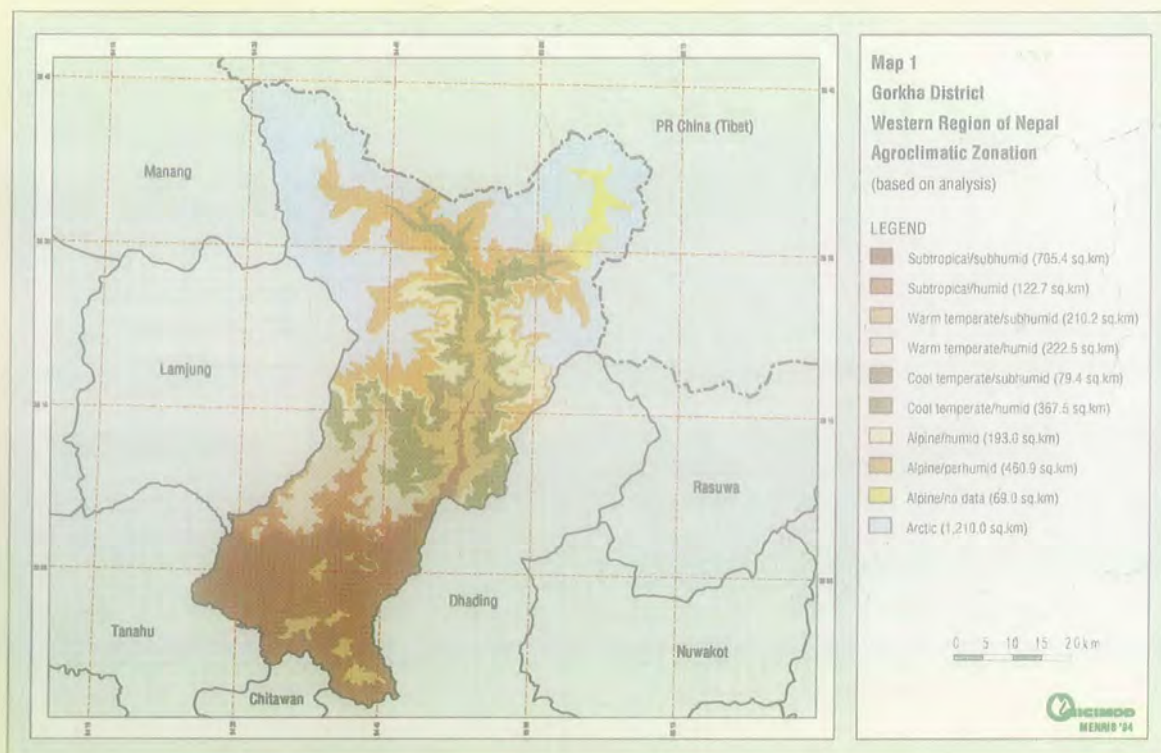
used for the analysis are the main areas of concern.

For technical reasons, modelling of terrain in mountain areas is still based on a two-dimensional view and is highly dependent on the data source used. It is only an approximate representation of the topography and has great limitations when applied to heterogeneous mountain areas.

Data availability, data quality/accuracy, and outdated information are the main constraints in the HKH Region and, in particular, in Nepal where the GIS case studies were conducted. One of the reasons for this is the lack of managerial capacity within the institutions, at both national and district levels. Geographic Information Systems are regarded as a technology for planning purposes, but understanding of the system and a sense of its reasonable application are still widely lacking.

While there are limitations in respect to the type of data and the lack of data, it is essential to make the best use of what is

Developing a  
GIS Database on  
the HKH  
(RCP 4.3)





available, knowing fully the deficiency and the need to develop as one proceeds.

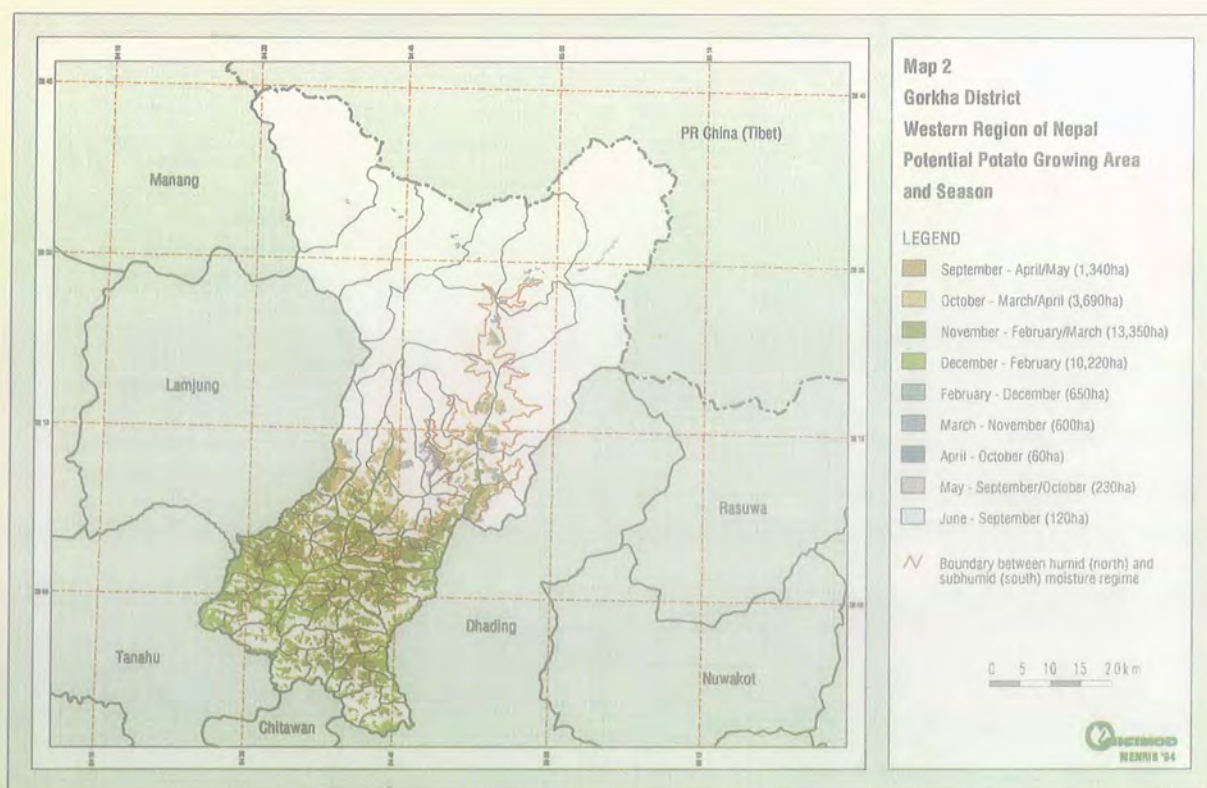
### Conclusions

One of the big advantages of GIS is its flexibility. The GIS analysis can be conducted by applying different sets of indicators based on adjusted parameters. The system is easy to update, in particular, the socioeconomic part. In general, the database can be used for the assessment of different problems and their solutions. Once a methodology as such is developed, it can be expanded and transferred to other regions with much less effort.

For the Gorkha District, the quality of the model could only be tested in two cases, potato cultivation and agroclimatic zones. For potato cultivation, the results

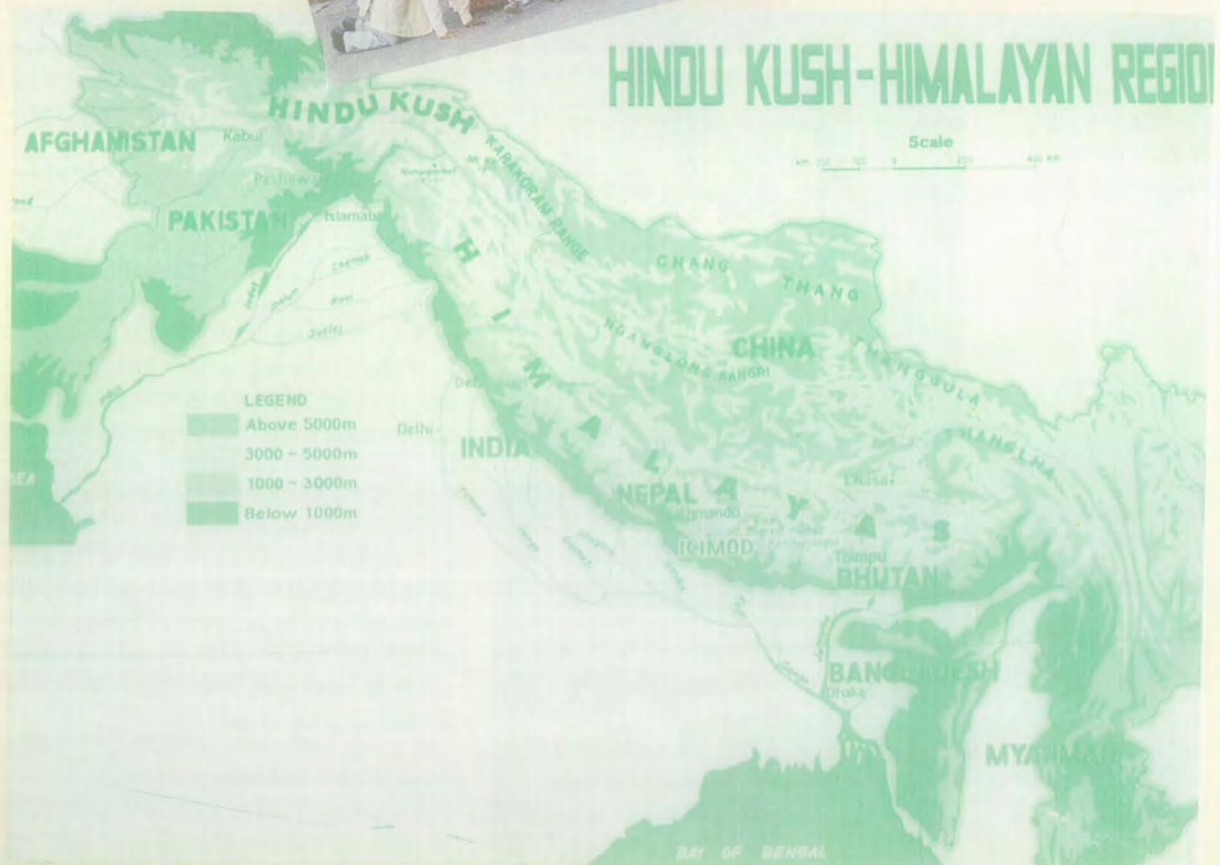
of the model proved to reflect the reality significantly. With regard to agroclimatic zones, a model was developed and compared to an already existing source, elaborated through non-GIS methodology. The GIS results were different since additional information was used and the method used to delineate the zones was also different (Map 2).

The management and use of the database are now primary tasks for the future. The first step in this direction was taken by carrying out a GIS orientation workshop in Gorkha Bazaar in April 1995 in which representatives of the Local Government (DDC), various line agencies, and NGOs working in the district participated, and where the results of the case studies were presented.





# OUTREACH ACTIVITIES



*Presenting a street drama at a workshop*



## Introduction

The very word 'Outreach' itself encompasses the action it denotes - to 'reach out'. How to "reach out" to the 120 million people in the HKH is the main challenge for ICIMOD. We (ICIMOD) and they (the mountain dwellers) both need intermediaries who are knowledgeable, committed, and aware of mountain-specific problems and opportunities for development.

Nineteen ninety-five has been a particularly encouraging and satisfactory year for ICIMOD from the perspective of outreach.

- To begin with, the Regional Collaborative Programme, which had inputs from

as many quarters as possible, became operational in the form of the main framework for ICIMOD.

- As a response to the concerns expressed at the Regional Conference on the Sustainable Development of Fragile Mountain Areas of Asia (SUDEMAA), ICIMOD has formulated a programme called the Asia Mountain Network. The programme will establish a network among concerned agencies for exchange of information related to the sustainable development of mountain and upland areas in Asia.

- Striving towards capacity building, the Centre conducted a total of 27 Workshops/Conferences, 21 Training Courses, and two study tours during the year. The Director General, The Deputy Director General, and a number of staff members were invited to attend and/or present papers at different national, regional, and international events. A list of the papers presented is given in the Annex.

- Institutional strengthening in various forms and fields was undertaken in six out of the eight member countries.

- Work on the 16 field demonstration sites in five member countries has been expanded, strengthened, and monitored.

- The Documentation, Information, and Training Service was strengthened (as can be seen from the outputs and activities listed later) to respond to an increasingly felt need for knowledge on mountain-specific issues.

- To accomplish all the above, the Centre collaborated with and entered into partnerships with a number of national, regional, and international institutions. A list of all collaborating institutions in 1995 is provided in the Annex.

*Examining the exhibits displayed at a workshop, Bangladesh*



*Inaugural session in progress at a workshop, India*





## Collaboration and Partnerships

ICIMOD conducts all of its research, training, and information exchange activities with national partners in the Hindu Kush-Himalayan Region. At times, ICIMOD also joins hands with other institutions outside the region to implement selected activities. These collaborative activities help to mobilise research, training, and field demonstration activities in areas critical to sustainable mountain development in far greater numbers than if ICIMOD had attempted this independently.

During 1995, ICIMOD collaborated with over 60 different national and local agencies in the HKH Region to implement a total of 18 different research, training, and field demonstration activities. In addition, information exchange was undertaken with over 100 agencies in the region

the year. They were held on wide-ranging and yet interrelated subjects such as, Mini-/Micro Hydropower, Community Forestry, Landslides, Tourism, Ethnobotany, Biodiversity, Agriculture, Gender, Watershed Management, and Geographic Information Systems. Some of the main ones are highlighted below. A chart that gives the total number of participants by member country and others is listed in the annexes.

National Workshop on Development Experiences of the Chittagong Hill Tracts, Rangamati, Bangladesh (January 23 -25, 1995). This workshop was held jointly with the Special Affairs' Division, CHT-DB, and the Bangladesh Institute of Development Studies. The Workshop was planned as a first step towards generating knowledge and information on agricultural development in the main hilly areas of Bangladesh. The outcomes include an assessment of the agricultural and related development policies and programmes in the hilly areas of Bangladesh and identifying sources of knowledge and information about these areas to facilitate a better understanding in order to formulate appropriate development strategies for these hilly areas.

National Seminars on Small-scale Hydropower Development in the Himalayan Region of India (January 20-21). The seminar was organised in collaboration with the Ministry of Non-conventional Energy Sources and the Alternate Hydro Energy Centre, University of Roorkee. It was attended by more than 100 participants from different Himalayan states and other parts of the country. They represented government institutions, NGOs, and the private sector. The role of the private sector in promoting and managing small-scale hydropower received particular attention during the discussions held.

First Regional Community Forestry Users' Group Workshop, Kathmandu, Nepal (May 23-27). The 77 participants at the workshop were members of forest user groups from Nepal, India, Pakistan, and



and from different parts of the world.

Collaborative arrangements have been formalised by signing MOUs with institutions in six countries. ICIMOD staff are also regularly visiting these agencies with reciprocal visits undertaken by staff members from different national agencies.

The total number of collaborating agencies by member country is given below, while both regional and international agencies are listed in the annexes.

## Workshops, Seminars, and Consultations

Several regional as well as national workshops and seminars were held over



Thailand, as well as community organisers from the Philippines and Bhutan. The key objective was to bring together women and men who had been in the forefront of community-based natural resource management and to provide them with a forum for sharing experiences and devising strategies for the future. From their practical experiences the participants were able to focus on the strengths and weaknesses in the various approaches under-



*... and thus emerged a regional women's network in the Himalayas*

taken. The workshop provided a unique opportunity to design and strengthen user-oriented strategies for sustainable forest management in the HKH. Key outputs were the emergence of a regional women's network in the Himalayas and a National Federation of Forestry Users' Groups in Nepal.

First Regional Foresters' Forum in the Hindu Kush-Himalayas - Participatory Forest Management: Coping with and Managing Change, Himachal Pradesh, India (June 14-17, 1995). The forum was hosted in collaboration with the Department of Forest Farming and Conservation and the Dr. Y.S. Parmar University of Horticulture and Forestry, HP, India. The theme of the forum was "Participatory Forest Management: Coping with and Managing Change," and it was designed to provide an opportunity for senior and middle-level forestry professionals to share their experiences. About 45 participants from Bhutan, India, and Nepal attended the workshop. A major outcome of the Workshop was the emergence of 'The Hindu Kush-Himalayan Forum for Forest Conservation and Management' - HIFCOM.

Regional Workshop on Landslide Hazard Management and Control, Kathmandu, Nepal (12-14 June, 1995). The Regional Workshop on Landslide Hazard Management and Control in the Hindu Kush-Himalayas was organised to discuss the problems and issues related to landslide hazard management and control in the Hindu Kush-Himalayan Region, based on the reviews commissioned by the Centre. The principal concern of this workshop was to identify priorities for a regional collaborative training programme, which is to be implemented by ICIMOD. In order to identify the priorities and relevance of such a training programme, and to share the experiences of the member countries in this field, presentations were made of the reviews and country papers, based on the current status of programmes and activities on Landslide Hazard Management and Control in the countries of the Hindu Kush-Himalayas.

The workshop was attended by 35 participants, including official representatives and/or experts from the six ICIMOD member countries (Bangladesh, China, India, Myanmar, Nepal, and Pakistan) and experts from Japan, the Netherlands, Germany and Switzerland, and ICIMOD.

Planning for Sustainable Agriculture, Lhasa, Tibet (July 25-29). This workshop was organised by the Commission on Agriculture, Forestry and Animal Husbandry to discuss the outcome of the first year's deliberations of an inter-agency working group for the preparation of a long-term, sustainable agricultural development plan for Tibet. The participants represented several different organisations and included staff members of ICIMOD.

Regional Workshop on Sustainable Mountain Agriculture in Cold and Dry Areas, Quetta, Pakistan (September 25-27). The workshop was organised by the Pakistan Agricultural Research Council (PARC) and the participants included representatives from China, Nepal, and Kirgizstan. Field visits focussed on the development of irrigated apple orchards, pro-



tected juniper forests, and traditional underground irrigation systems.

Regional Workshop on Mountain Tourism for Local Community Development Kathmandu, Nepal (19 - 21 June, 1995). Through this Workshop, the experiences in mountain tourism in the U.P. hills and the North-West Frontier Province and the Northern Areas of Pakistan, as well as experiences from other region-

of the work being carried out in the HKH Region by the Participatory Natural Resources' Management Programme of ICIMOD and FAO's activities on conflict resolution. Sixty participants from seven countries presented core studies on conflicts and their resolution and designed strategies to mainstream conflict resolution in forest management.

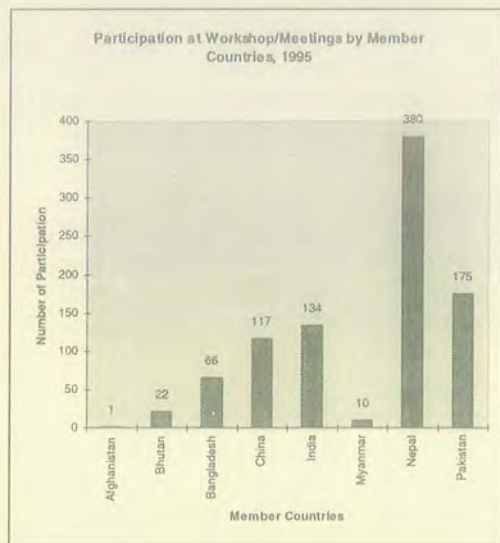
### Study Tours and Exchange Visits

ICIMOD started this year to support study tours between its Regional Member Countries, thereby making use of the considerable experience and expertise that already exists in the region. Initial assessment of this new aspect of outreach and capacity building is highly positive. In 1995 the following study tours were organised.

#### Seabuckthorn Study Mission to China for 10 people from India and Nepal

The team included a provincial leader from Himachal Pradesh who had been instrumental in shaping tribal development plans in his area, the Chief of the Forest Department in the cold and dry areas of the state; the state council staff in-charge of coordinating SBT activities in the state; the scientist in-charge of the UHF-ICIMOD Seabuckthorn Research and Demonstration Centre; and a local NGO representative-cum-progressive farmer from Lahaul. In addresses, representatives of two NGOs from Ladakh, who are working on various ways of using seabuckthorn to improve the farm economies of Ladhakhi highlanders, and a representative of the industry were also included in the delegation. Two persons from Nepal also joined the study tour, and they were from the Remote Area Development Committee of the Ministry of Local Development.

The purpose of this two-week inter-country exchange study tour was to show how resource poor areas, for example, used this plant to transform their ecologies and economies in only a decade and a half; what is the state-of-the-art in terms



al countries were brought together to search for ways through which tourism can provide the answers to some of the most challenging questions in the region: those related to poverty and environmental degradation. The purpose is to help the countries of the HKH to manage and deal with mountain tourism, so that it becomes a vehicle for economic and environmental development of local communities and for enhancing the living standards of local populations.

Regional Workshop on Conflict Resolution in Forest Resource Management, Kathmandu, Nepal (10 - 13 October 1995). This workshop was organised in collaboration with the Regional Community Forestry Training Centre and the Forests, Trees, and People Programme of FAO for Asia. The collaboration itself was a result



of the agro-industrial use of this plant; and how successful it has been.

The visit was a most useful team experience, and it clearly emerged that the tour helped strengthen the knowledge of the participants and through them their institutions.

### Sericulture Mission to China for Ten Participants from Nepal

This study tour included manufacturers, scientists, government officials, and seri-farmers from Nepal. The group members came from varied backgrounds - from pioneers in the field like the proprietor of Surya Silk, Mrs Maggie Shah, to those who have worked for the development of



*Learning on tour:  
Sericulture  
mission to China*

the silk industry in the interior of Nepal, for example, Dil Kumari Lingdem, a seri-farmer from Ilam who is chairperson of the Amar Sericulture Development Group.

The successful experiences of seri-farmers in Ningnan were discussed with the team. These covered the whole gamut of silk production: the sericulture extension system, mulberry production, egg production, cocoon grading, cocoon drying and storing, marketing system, post-cocoon reeling, and silk yarn production.

The group also studied the institutional aspects and farmers' activities and they returned with many positive ideas. "China provides 85 per cent of the world's silk and they do an excellent job of production," Mrs Shah stated. The exposure to how farm-level service is conducted has been very useful. According to her, the

initial stages are most crucial. If the egg is weak, there is no way the poor farmer can get it passed. Although the tradition of silk rearing is comparatively new in Ningnan country, their nursery rearing model is very strong. They have some advanced farmers who exclusively rear the egg/worm through its first two delicate stages.

### Field Sites and Demonstration Areas

The following demonstration areas are being supported by ICIMOD in partnership with different national agencies and are being used to generate research data, trials, and training. During 1995, research trials and monitoring continued at the following sites.

#### Bangladesh

The Chittagong Hill Tracts, Khagrachari District - Promotion of Sloping Agricultural Land Technologies in Cooperation with the Chittagong Hill Tracts' Development Board

#### China

- Damai Village in Baoshan, Yunnan - Rehabilitation of Degraded Community Land in cooperation with Kunming Institute of Botany, Kunming Institute of Ecology, Kunming Institute of Biology and Local Government.
- Tanguanyao, Pihni township, Ningnan County - Appropriate Technologies for Soil Conserving Farming Systems in cooperation with the Institute of Geography, Chengdu, the Institute of Biology, Chinese Academy of Sciences and Government of Ningnan County.
- Mashangping, Shogxin township, Ningnan County - Appropriate Technologies for Soil Conserving Farming Systems in cooperation with the Institute of Geography, Chengdu, the Institute of Biology, Chinese Academy of Sciences and Government of Ningnan County.
- Promotion of Agroforestry through Local Organisations in cooperation with Chuxiong, Yunnan Province, Kunming Institute of Botany and Churang Nature Reserve Management Committee

#### India



- Kosi, Katarmal, Almora District - Appropriate Technologies for Soil-conserving Farming Systems, in cooperation with the G.B. Pant Institute of Himalayan Environment and Development and the Local Community
- Suogjang, Chanki, Mokokchung District, Nagaland - Appropriate Technologies for Soil Conserving Farming Systems in cooperation with the G.B. Pant Institute of Himalayan Environment and Development and the Local Community
- Almora, Uttar Pradesh - Rehabilitation of Degraded Lands, in cooperation with the G.B. Pant Institute of Himalayan Environment and Development and Local Community

#### Myanmar

- Nayng Mon Farm, Lasio, Shan State - Myanmar, Appropriate Technologies for Soil Conserving Farming Systems in cooperation with the Myanmar Agricultural

Service Hillside Farming Programme and Ministry of Border Areas and National Races, Office of the Director General.

#### Nepal

- Panchkhal in Kabhre District - Rehabilitation of Degraded Lands, in cooperation with the District Forest Office and Local Forest User Groups
- Jikkhu Khola in Kabhre District - Mountain Resources' Management Study in cooperation with the Local Community.
- Paireni Pakha, Chitwan District - Appropriate Technologies for Soil-conserving Farming Systems in cooperation with the Nepal Agricultural Research Council and Local Farmers.
- Tistung, Makwanpur District - Appropriate Technologies for Soil-conserving Farming Systems in cooperation with the Department of Soil Conservation and Local Farmers





- Godavari, Lalitpur District - Appropriate Technologies for Soil-conserving Farming Systems and Land Rehabilitation Activities under ICIMOD's supervision and management.

#### *Pakistan*

- Bagar Mung, Mansehra District - Rehabilitation of Degraded Lands in Cooperation with the Pakistan Forestry Institute, Peshawar
- Begowal, Islamabad - Appropriate Technologies for Soil Conserving Farming Systems, in cooperation with the Pakistan Agricultural Research Council

### **Documentation, Information, and Training Service**

Outreach activities are a major component of the services provided under this programme. During 1995 a great deal of effort was expended to strengthen and expand this function of ICIMOD. Specific tasks carried out under each unit of this Service is outlined below.

*Signing the visitors' book at the ICIMOD library*



### **Library**

#### *Acquisition of Documents*

Documents added to the library collection: 972  
 Total current collection: 14,784  
 New serials added to the Serial's Database: 12  
 Total serials currently being received: 513

Records entered in the Books' Database: 1,550

Total current records: 15,519

The records of the current serial titles were updated, entering 765 issues into the Serial Database.

#### *Documentation Services*

- Brought out 4 issues of 'New Documents in the Library' and 12 issues of 'New Serials in the Library'.
- In response to specific demands from the readers, 24 retrospective searches of the Bibliographic Database and CD-ROM were provided. The outputs of these searches were 2,456 references in total.
- Rendered reading and reference services to 628 library users from different institutions.

### **Distribution**

Addresses added to the Mailing List: 423

Total current addresses on the Mailing List: 2,101

Documents distributed over the year: 7,622

No. of Publications' Exchange Programmes established: 16

An ICIMOD Newsletter Readership Survey was carried out





## 1995 Publications

Several documents were published over the year. The details are given below.

### Workshop Reports/Symposium Proceedings

- Sustainable Development of Fragile Mountain Areas (Regional Conference Report)
- Evolution of Mountain Farming Systems: Sustainable Development Policy Implications
- Tourism for Local Community Development in Mountain Areas: Perspectives, Issues, and Guidelines
- Challenges in Mountain Resource Management in Nepal: Processes, Trends, and Dynamics in the Middle Mountain Watersheds
- Proceedings of the Pakistan National Seminar on MMHP Development in the HKH Region
- The Orientation-cum-Training Programme on MMHP Development in the HKH Region
- Rehabilitation of Degraded Lands in Mountain Ecosystems of the HKH Region
- Hill Districts of Bangladesh: Experiences in Development

### Discussion Papers

#### MFS Series

- MFS 95/1 Participatory Approaches to Agricultural Technology Promotion with Women in the Hills of Nepal- Jeannette D. Gurung
- MFS 95/2 Organising Mountain Women - Jeannette D. Gurung
- MFS 95/3 On Farm Management of Biodiversity and Genetic Resources- W. Roder

#### MNR Series

- MNR 95/1 Agroforestry in Mountain Development: Management of Mountain Watershed and Forest Resources - A.P.Y. Djogo
- MNR 95/2 Herds on the Move: Winds of Change among Pastoralists in the Himalayas and on the Tibetan Plateau - Daniel Miller
- MNR 95/3 Biodiversity of the Qinghai-Tibetan Plateau and Its Conservation - Li Bosheng

#### MEI Series

- MEI 95/1 A Framework for Tourism Carrying Capacity Analysis - Pitamber Sharma
- MEI 95/2 Culture and Tourism: Defining Roles and Relationships- Prayag Raj Sharma
- MEI 95/3 Tourism and Gender: Impact and Implications of Tourism on Nepalese Women- Dibya Gurung
- MEI 95/4 Mountain Tourism and Environment in Nepal- Tirtha B. Shrestha
- MEI 95/5 Employment Promotion Experiences of Nepal - Madhukar SJB Rana

- MEI 95/6 Mountain Tourism in Himachal Pradesh and the Hill Districts of Uttar Pradesh: An Overview - Academy for Mountain Environments, Dehra Dun, India
- MEI 95/7 Mountain Tourism in Nepal: An Overview - Centre for Resource & Environmental Studies, Kathmandu, Nepal
- MEI 95/8 Mountain Tourism in the North West Frontier Province and the Northern Areas of Pakistan: An Overview- Development Research Group, Peshawar, Pakistan
- MEI 95/9 Economic and Natural Resource Conditions in the Districts of Bagmati Zone- Centre for Resource and Environmental Studies, Kathmandu, Nepal
- MEI 95/10 Mountain Tourism for Local Community Development: A Report on Case Studies from Badrinath Tourist Zone, U.P., and Kinnaur District, H.P. - Academy for Mountain Environments, Dehra Dun, India
- MEI 95/11 Tourism for Local Community Development: Case Study Report from Annapurna and Gorkha Regions of Nepal - Centre for Resource and Environmental Studies, Kathmandu, Nepal
- MEI 95/12 Tourism for Local Community Development: Case Studies from Kalam Valley, NWFP and Hunza, Northern Areas - Development Research Group, Peshawar, Pakistan
- MEI 95/13 Urban and Industrial Development Processes and Opportunities in the Mountains - Pitamber Sharma
- MEI 95/14 Carrying Capacity of Himalayan Resources for Mountain Tourism Development - Centre for Resource and Environmental Studies, Kathmandu, Nepal

### Special Editions

- Appropriate Technologies Selected by Farm Women (in English)
- Agricultural Technologies Selected by Farm Women (in Nepali)
- Review of Institutional Capacities for Sustainable Mountain Agricultural Development: Case Studies from Nepal (Nepal Country Report)
- Review of Institutional Capacities for Sustainable Mountain Agricultural Development: A Case Study of Himachal Pradesh, India (India Country Report)

### Others

- Sustainable Development of Fragile Mountain Areas of Asia (SUDEMAA) Declaration
- Newsletters No. 21, 22, and 23
- ICIMOD: An Overview (brochure)
- Regional Collaborative Programme Document
- Annual Report 1994
- Publications' Catalogues - Spring 1995 & Winter 1995
- MENRIS Bulletin
- Staff Orientation Handbook
- Bibliography of Meteorology, Hydrology and Glaciology of Nepal



## NEW FACES AT THE CENTRE

ICIMOD's professional staff are the major actors in promoting outreach and dissemination of knowledge generated through the different thematic programmes. In 1995 the following seven internationally-recruited professional staff joined ICIMOD.



*Head (Marketing Specialist) - Mountain Enterprises and Infrastructure Division*

**Dr. Trilok S. Papola** has an M.A and Ph.D in Economics from Lucknow University, India. He has specialised in the Economics of Labour and Employment and Industrial Economics, including rural and small and decentralised industries. Dr. Papola has written 12 books and 81 papers, for most of which he was the sole author.

Dr. Papola brings with him 30 years of experience with five different universities and research institutes. He was Founder-Director of the Giri Institute of Development Studies and supervised research in the hills of Uttar Pradesh and in other Himalayan States.



*Head - Documentation, Information, and Training Service*

**Mr. Shahid Akhtar** has a B.A. (Honours) from Carleton University, Ottawa, Canada, in Political Science. He was an M.Phil/Doctoral Candidate in International Relations at the London School of Economics, interrupting these studies to join the newly-established International Development Research Centre (IDRC) in Ottawa, Canada. Since then he has authored more than 30 professional publications and papers in international journals, many of which are on information policies and science. He is a member of the Editorial or Advisory Boards of a number of professional/scientific journals.

Mr. Akhtar was the Director, Information and Communication Systems and Networks, at IDRC. His experience is in the areas of information/communication policies and infrastructure; information management, marketing, and analysis; and development communications.



*Agricultural Extension and Training Specialist*

**Dr. Shaheena Malik** is a Doctor of Veterinary Medicine from the University of Agriculture, Faisalabad, Pakistan. She also has a BSc. in Biology and an M.Phil. in Microbiology. She has attended several training courses on environmental management and women in development.

Dr. Malik was a Programme Officer in the Women in Research and Development Cell at the Pakistan Agricultural Research Council (PARC) in Islamabad, Pakistan. Prior to this she was a livestock consultant with the Aga Khan Rural Support Programme in Northern Pakistan, a Veterinary Officer with the Livestock and Dairy Development Department, and a Lecturer at the College of Veterinary Sciences. In fulfilling these functions, she has obtained considerable experience in training and extension.



*Range Management and Pasture Specialist*

**Mr. Daniel J. Miller** is a Range Management and Livestock Specialist with practical working experience in forage agronomy and agroforestry. He earned a Master's in Forestry from the University of Montana, USA, and a BA in Biological Aspects of Conservation from the University of Wisconsin. Mr. Miller has also carried out post-graduate research focussed on range resource management and wildlife conservation on the Tibetan Plateau. Mr. Miller has published widely on range management issues, mainly based on original research and field work.

Since 1974, Mr. Miller has visited and worked in many parts of the Hindu Kush-Himalayas, in particular Bhutan, Nepal, Mongolia, Qinghai and Xansu provinces, and the Tibetan Autonomous Region of China. Mr. Miller is fluent in Nepali and Tibetan.



### *Energy Specialist*

**Dr. Kamal Rijal** has a Ph.D. in Energy Economics and Planning from the Indian Institute of Technology, New Delhi, India. He has an M.E. in Energy Technology from the Asian Institute of Technology in Bangkok and a B.E. in Mechanical Engineering from Allahabad University, India. Dr. Rijal has published widely in different international and national journals. He has also presented papers at numerous national and international conferences.

Dr. Rijal was formerly a lecturer at the Institute of Engineering, Tribhuvan University, Kathmandu, Nepal. He has carried out numerous short- and long-term consultancies in Nepal for many different agencies and organisations, among them being CIDA (Canada), ESCAP, FAO, and ICIMOD. Most recently he was the Chief Technical Adviser for the UNDP/National Planning Commission Project "Preparation of a Perspective Energy Plan for Nepal." He has a long-standing relationship with the Water and Energy Commission of HMG Nepal and was recently nominated as a member of the National Water Resources' Development Council.



### *Remote Sensing Specialist*

**Dr. Prasad S. Thenkabail**, a national of India, has a Ph. D. from the Agricultural Engineering Department of Ohio State University, USA. His thesis was based on the "Capabilities of LANDSAT Thematic Mapper Data in Studying Soybean and Corn Crop Variables." He also holds a B.Sc. and Master's in Engineering from Mysore University, Karnataka, India. He has (co-) authored 19 publications, often as the principal author, in national and international journals. He is a member of a number of international professional societies in the field of remote sensing.

Dr. Thenkabail is currently employed as a remote-sensing specialist at the International Institute for Tropical Agriculture in Ibadan, Nigeria, where he is the lead scientist conducting characterisation of Inland Valley Agroecosystems for West and Central Africa using remote sensing, GIS, and Global Positioning Systems' data. Prior to this position and his Ph.D. work in the USA, he was a Remote Sensing Applications' Engineer/Scientist at the National Remote Sensing Agency, Indian Space Research Organisation, Government of India and a Lecturer in Civil Engineering in Karnataka, India.



### *Coordinator, Integrated Training for Mountain Risk Engineering Project*

**Prof. Li Tianchi** has a long and widely-appreciated academic career in Landslide Hazard Research. Prof. Li Tianchi has a B.S. Degree from the Department of Geography and Geology, Normal University of East China, Shanghai, an M.S. degree in Soil Erosion from the Graduate School of the Chinese Academy of Sciences, Beijing, and has carried out Advanced Studies at the Goettingen Geographical Institute of Goettingen University, FR Germany. Prof. Li has many national and international honours and awards and has been elected as a member of many scientific committees. He is author and co-author of more than 80 publications and six books, mainly on landslide hazard assessment and management.

Prof. Li Tianchi is currently Research Professor and Vice-Chairman of the Academic Committee, Chengdu Institute of Mountain Hazards and Environment, Chinese Academy of Sciences and Ministry of Water Conservancy. Throughout his career he has focussed his activities on landslide research and risk engineering. Prof. Li Tianchi already has a long-standing relationship with ICIMOD, not least as the Head of the Mountain Environmental Management Division from 1988-1990.





# ANNEXES



*Snow-clad Himal: A source of inspiration*

## ANNEX I

### ICIMOD Board of Governors

(As of December 31st, 1995)

#### Regional Board Members

**Prof. Sun Honglie**, *Chairman* *China*  
Academician, The Chinese Academy of Sciences  
**Mr Ata Mohammed Noorzad** *Afghanistan*  
General President, Ministry of Agriculture  
**Major General M.A. Rahman** *Bangladesh*  
Chairman, Chittagong Hill Tracts  
Development Board  
**Dasho (Dr) Kinzang Dorji** *Bhutan*  
Secretary, Ministry of Agriculture  
**Mr N.R. Krishnan** *India*  
Secretary, Ministry of Environment and Forests  
**Lt. Col. Thane Han** *Myanmar*  
Director General, Working Committee of  
Progress for Border Areas and National Races  
and Development Affairs  
**Mr Khem Raj Regmi** *Nepal*  
Secretary, Ministry of Education  
**Dr Zafar Altaf** *Pakistan*  
Secretary, Ministry of Food and Agriculture

#### Independent Board Members

**Mr Remo Gautschi**, *Vice Chairman* *Switzerland*  
Swiss Development Cooperation (SDC)  
**Dr Li Wen Hua** *China*  
The Chinese Academy of Sciences  
**Prof. Winfried von Urff** *Germany*  
Institut für Agrarpolitik  
Technische Universität, München  
**Dr A.N. Purohit** *India*  
Director  
High Altitude Plant Physiology Research Centre  
HNB Garhwal University  
**Dr Harka Gurung** *Nepal*  
Asia Pacific Development Centre (Kuala Lumpur, Malaysia)  
**Prof. Klaasjan Beek** *Netherlands*  
International Institute for  
Aerospace Survey and Earth Sciences (ITC)  
**Dr Lynn Bennett** *USA*  
World Bank

**Mr Egbert Pelinck** *ICIMOD*  
(Ex-officio Member), Director General



## Professional Staff Members of ICIMOD

### Directorate

Mr. Egbert Pelinck	Director General
Dr. Mahesh Banskota	Deputy Director General
Mr. Milan Raj Tuladhar	Head, Adm., Finance, and Logistic Service

### Mountain Farming Systems' (MFS) Division

Dr. Tej Partap	Division Head, Agroecologist
Mr. Balram Bhatta	Agroforestry/Soil Conservation Specialist
Dr. Tang Ya	Acting Coordinator Soil Improvement Project
Ms. Jeannette D. Gurung	Gender and Development Specialist
Dr. Shaheena H. Malik	Agri. Extension & Training Specialist
Mr. Sugandha Shrestha	Project Coordinator/Strategies for Mountain Agriculture
Dr. Naomi Saville	Associate Professional Officer, Beekeeping (ODA Seconded Staff)
Dr. Uma Pratap	Research Officer (Beekeeping)

### Mountain Natural Resources' (MNR) Division

Prof. Pei Shengji	Division Head, Biodiversity Specialist
Prof. Suresh Raj Chalise	Water Resources' Specialist
Mr. Anupam Bhatia	Common Property Res. Mngt. Specialist
Mr. Zafar Karim	Water Res. Engineer
Mr. Daniel Miller	Range Management and Pasture Specialist
Mr. P.B. Shah	Coordinator, MRM Project

### Mountain Enterprises And Infrastructure (MEI) Division

Dr. Trilok. S. Papola	Division Head, Economist
Dr. Pitamber Sharma	Regional Planner
Dr. Anwar Ahmed Junejo	Coordinator, Mini- & Micro-Hydro Power Project
Dr. Kamal Rijal	Energy Specialist
Prof. Li Tianchi	Project Coordinator, Mountain Risk Engineering

### Mountain Environment And Natural Resources' Information Service (MENRIS)

Mr. Pramod Pradhan	Head, GIS Specialist
Mr. Basanta Shrestha	Systems' Specialist
Mr. Hubert Trapp	GIS Specialist
Dr. Prasad Thenkabail	Remote Sensing Specialist
Mr. Sushil Pradhan	GIS/Programme Officer
Mr. Pradeep Mool	Remote Sensing Analyst
Mr. Birendra Bajracharya	GIS Analyst
Mr. Sushil Pandey	Systems' Officer

### Documentation, Information And Training Service (DITS)

Mr. Shahid Akhtar	Head, Information & Communications' Specialist
Ms. Greta Rana	Senior Editor
Ms Archana Singh Karki	Public Relations' Officer
Mr. R. B. Shrestha	Librarian
Ms. Nira Burathoki	Distribution Officer
Ms. Anita Pandey	Assistant Editor
Mr. Dashrath Moktan	Training Officer

### Administration, Finance And Logistical Service

Mr. C. B. S. Kansakar	Personnel Officer
Mr Prem Manandhar	Budget and Finance Officer
Mr. Rajen Upreti	Travel and Hospitality Officer
Mr. Ruben Subba	Equipment and Maintenance Officer



## ANNEX III

### Collaborating Institutions in the HKH in 1995

#### **Bhutan**

- Ministry of Agriculture - Board Member/Focal Point for ICIMOD
- Land Use Planning Project - GIS training to some staff during 1995
- World Wildlife Fund - Bhutan

#### **Bangladesh**

- Chittagong Hill Tracts' Development Board (CHTDB) & the Special Affairs' Division, the Prime Minister's Office (PMO) - collaborated in organising and hosting the workshop on Development Experiences of CHT, February 1995; implementation of appropriate technologies for soil-conserving farming systems, and GIS training and support
- Bangladesh Institute of Development Studies (BIDS) - participated in the preparation of the Workshop on Development Experiences of CHT
- Jahangirnagar University - Establishment of GIS capability
- Local Government Engineering Department - Training in GIS and preparation of digital data sets

#### **China**

- Chinese Academy of Sciences - National Focal Point/Board Member
- Ningnan County, Sichuan - Participating in SALT pilot testing in Ningnan County since 1992
- Commission on Agriculture, Forestry and Animal Husbandry (CAFA) and its Sister Institutions - Tibet Institute of Agriculture, Tibet Institute of Animal Husbandry, Tibet School of Agricultural Extension Technology, Tibet College of Agriculture and Animal Husbandry - Collaborating in agricultural plan preparation dialogue, curriculum development on sustainable mountain agriculture, study tours of Ningnan and other countries, observation visit to Nepal, advanced studies and translation in the Tibetan language of the Regenerative Agricultural Technology Kit
- National Seabuckthorn Bureau & Associated Institutions, Inter-coun-

try experiences Training/Exchange programme on Seabuckthorn (Visit by Indian Delegation)

- Kunming Institute of Botany, CAS - Rehabilitation of Degraded Lands in Mountain Ecosystems, Agroforestry and Forest Management in Buffer Zones
- Kunming Institute of Ecology, CAS - Rehabilitation of Degraded Lands
- Institute of Mountain Disaster and Environment, Chengdu, Chinese Academy of Sciences - Case Studies on Landslide Hazard Management; Training in Mountain Risk Engineering
- Hangzhou Regional Centre for Small Hydropower, Hangzhou, China - Case Study on Mini- and Micro-Hydropower Development
- Laboratory of Resources and Environmental Information Systems (LREIS), Chinese Academy of Sciences - GIS applications and facilities

#### **India**

- Ministry of Environment and Forests - National Focal Point/Board Member
- G.B. Pant Institute of Himalayan Environment and Development (GBPIHED) - Rehabilitation of degraded lands, assessment of agricultural experiences, implementation of sloping agricultural land technology, seabuckthorn promotion training, database on mountain agriculture, and GIS applications and facilities
- Himachal Agricultural University, Palampur - Case Study on Transformation Processes in Himachal Pradesh
- Himachal State Council for Science Technology & Environment - Seabuckthorn replication, Regenerative technologies for sustainable mountain agriculture training
- YS Parmar University of Horticulture & Forestry - Seabuckthorn replication, Gender and development, and GIS applications
- Indian Council of Forest Research & Education, Dehra Dun - ICIMOD member in advisory task force for Eco Rehabilitation Project.

- Department of Forests, H.P., India, and other Himalayan States including the Office of the Inspector General of Forests, Society for Promotion of Wastelands' Development, Different NGOs and community-based institutions working in Natural Resources - Participatory Natural Resources' Management Programme.
- Dept. of Planning, Roorkee University - Case studies on market towns
- Tata Energy Research Institute and Alternative Hydro Electricity Centre - Case Studies and collaboration for workshop/training in mini-/micro-hydropower development
- National Remote Sensing Agency, Hyderabad - Acquiring GIS-related data (Satellite imagery)
- GIS- Bihar - training in GIS
- Academy of Environics - tourism studies
- Academy of Environics - Tourism studies

#### **Myanmar**

- Ministry of Border Areas and National Races - National Focal Point/Board Member and Development of GIS Training and Facilities
- Myanmar Agricultural Service and its Sister Institutions, Shan State (MAS Provincial Dept.) - Appropriate Technologies, Testing/Demonstrations in Hillside Farming Programme, Training/Extension, and capacity building (Institutional Strengthening)
- Dept. of Forestry - Agro-ecozoning/ GIS training and facilities

#### **Nepal**

- Ministry of Education - National Focal Point/Board Member
- Karnali Technical School, Jumla, Kathmandu - Beekeeping training
- HMG/N FAO - Vegetable Seed Production Division - Crop Pollination Productivity Research
- District Forest Office of Kabhre Palanchowk - Rehabilitation of Degraded Lands
- HMG/N Dept. of Hydrology & Meteorology, Dept. of Meteorology, Tribhuvan University, Nepal Elec-



tricity Authority, Kathmandu - Mountain Hydrology (Network)

- Community and Private Forestry Division, HMG/N, Dept. of Forests - Participatory Natural Resources' Management
- HMG/N Dept. of Soil Conservation - Participatory Natural Resources' Management and appropriate technologies for soil conservation.
- Department of Forests, Institute of Forests, Bilateral Forestry Projects, INGOs, NGOs and community level institutions - Participatory Natural Resources Management Programme.
- Department of Geography, T.U. - Review of small towns/GIS training and facilities
- Centre for Resource and Environmental Studies (CREST) (Private)

- Review and analysis of mountain tourism

- National Planning Commission - GIS training and facilities including digitisation of maps

#### **Pakistan**

- Ministry of Agriculture - National Focal Point/Board Member
- Pakistan Agricultural Research Council, Mountain and Desert Research Cell - Institutional Strengthening, training, agroecological zoning, mountain development action plan, etc
- Pakistan Forest Institute, Peshawar - Rehabilitation of Degraded Lands/GIS Training and Facilities.
- Karakoram Agricultural Research Institute of Northern Areas (KARINA)

- Aga Khan Rural Support Programme, Chitral - SALT Training, Sustainable Mountain Agriculture/ Case Studies on Role of Small Towns

- Development Research Group, Peshawar - Case Study/Field research on mountain tourism
- University of Engineering and Technology, NWFP, Peshawar - Assessment of experience in mini-/micro-hydropower development and mountain risk engineering
- Pakistan Council of Appropriate Technology - Assessment of experience/policies in mini-/micro-hydropower development
- Centre for Excellence in Water Resources' Engineering University of Engineering and Technology, Lahore - Mountain Hydrology (Network)

## **ANNEX IV**

### **Regional/International Collaborating Agencies in 1995 \***

- International Institute for Aerospace Surveys and Earth Sciences (ITC) - participation in ICIMOD Board Meetings and Landslide Hazard Management Workshop
- International Board for Soil Research and Management (IBSRAM) - Expert inputs in ICIMOD's Appropriate Technology for Soil-conserving Farming Systems being tested in six ICIMOD countries
- Asian Rural Life Development Foundation (ARLDF), the Philippines- Expert inputs in ICIMOD's Appropriate Technology for Soil-conserving Farming Systems being tested in six ICIMOD countries.
- Food and Agriculture Organisation (FAO) of the United Nations - Inter-

actions as - Chapter 13 focal point in the UN and convenor of all *ad hoc* meetings. Other areas such as watershed management, GIS training, Sustainability Analysis, Farming Systems, and Participatory Natural Resources Management

- UNEP - Providing Project Support for GIS equipment, training, and database development activities
- The Mountain Institute (TMI) - Focal point for NGO World Mountain Forum and ICIMOD, interacting and participating regularly in their Global activities
- UNESCO - Jointly working on the project People and Plants; Various activities related to water resources

- International Food Policy Research Institute (IFPRI) - ICIMOD participated in 'A 2020 Vision for Food, Agriculture, and the Environment' followed by discussions on possible areas for collaboration in future.
- Hangzhou Regional Centre (Asia & Pacific) for Small Hydropower (HRC-SHP) - Collaboration on Networking and improvement/promotion of MMHP.
- World Conservation Monitoring Centre - Biodiversity
- University of British Columbia - partner in Mountain Resource Management Project
- International Potato Institute (CIP) - Mountain Agricultural Research
- Swiss National Hydrological and Geological Survey - Hydrology



## ANNEX V

### Workshops/Seminars and Training Courses Held in 1995

#### Workshops/ Seminars

- National Seminar on Small-scale Hydropower Development in the Himalayan Region of India (20 - 21 January)
- Hill Districts of Bangladesh: Experience in Development, Rangamati, Bangladesh. (23-25 January)
- National Seminar on Technologies for Farm Women in Nepal, ICIMOD, Kathmandu, Nepal (13 February)
- Nepal Working Group Planning Retreat. Kathmandu (23 - 25 February)
- Mountain Tourism for Local Community Development Project (2nd review meeting) Kathmandu (15 - 17 March)
- A GIS Orientation Workshop, Nepal (3 - 4 April)
- International Himalayan/Tibetan Paleoclimatic Workshop. Kathmandu (3 - 8 April)
- National Workshop on Resource Dynamics in a Middle Mountain Watershed of Nepal, Kathmandu, Nepal (10 - 12 April)
- ICIMOD organised a two-day Gender and Development Planning Workshop to sensitise ICIMOD staff to Gender Issues (24 - 25 April).
- Seminar on Conflict Resolution in Natural Resources. Kathmandu (25 April)
- Second Consultation on Human Resources' Development in Participatory Forestry Management. Kathmandu, (26 April)
- Cycle II Policy Workshop on GIS, Peshawar, Pakistan (27 April)
- First Regional Community Forestry Users' Group Workshop. Kathmandu (22 - 27 May)
- First Regional Foresters' Forum in the HKH, Participatory Forestry Management: Coping with and

Managing Change. Himachal Pradesh, India (14 - 17 June)

- Hindu Kush-Himalayan Regional Workshop on Mountain Tourism for Local Community Development Project. Kathmandu, Nepal (19 - 21 June)
- Regional Workshop on Landslide Hazard Management and Control in the HKH. Kathmandu (12 - 14 July)
- Planning for Sustainable Agriculture, Tibet (25 - 29 July)
- Summer School on Sustainable Mountain Agriculture Teaching and Curriculum, Tibeti College of Agriculture, Thungi Bye, Tibet (1 - 5 August)
- Summer School on Regenerative Technologies for Tibetan Farmers at the Agricultural Extension Technique School, Lhasa, Tibet (5 - 10 August)
- Nepal *Madhyastha Samuha* Planning Retreat. Kathmandu (18 August)
- HIFCOM Executive Committee Planning Meeting. Kathmandu (20 - 21 September)
- Regional Workshop on Sustainable Mountain Agriculture in Cold and Dry Areas, Quetta, Pakistan (25 - 27 September)
- Regional Workshop on Conflict Resolution in Forestry Resource Management. Kathmandu (10 - 13 October)
- Planning Meeting on Community Forestry in Nepal. Kathmandu (18 October)
- Meeting of Nepal *Madhyastha Samuha*. Kathmandu, Nepal (21 November)
- Planning Meeting of the Executive Committee of Regional Community Forestry Users' Group Network. Administrative Staff College, Kathmandu, Nepal (6 - 8 December)

- Regional Women Users' Group Workshop, Kathmandu, Nepal (16 - 14 December)
- Workshop on Application of Ethnobotany in the Hindu-Kush Himalayan Region, Kathmandu, Nepal (4 - 11 December)
- Workshop on Regional Collaboration on Biodiversity Assessment, Monitoring, and Management in the Hindu-Kush Himalayan Region, Kathmandu, Nepal (19 - 20 December)

*Apart from these, a number of planning meetings were also held for small groups.*

#### Training Courses

- Regional Orientation-cum-Training Programme on Mini-/Micro-Hydropower Development in the Hindu Kush-Himalayan Region, Nagarkot, Nepal (13 - 18 February)
- Altogether ICIMOD (MENRIS) conducted ten training programmes for different levels on the Application of Geographical Information Systems (GIS) in Bangladesh, Bhutan, Nepal, and Pakistan.
- Two training courses on Sloping Agricultural Land Technologies were conducted in ARLDF, Davao, the Philippines.
- Altogether six training courses on Beekeeping were given to Nepalese farmers in Jumla, Gorkha, and the Arun Valley.
- A preparatory training programme on the State-of-the-Environment was held in Bangkok.
- Two study tours-cum-training courses were undertaken separately to China on sericulture and seabuckthorn for participants from Nepal and India and Nepal respectively.



## Presentations by Professional Staff Members

In addition to the numerous presentations made at ICIMOD-sponsored meetings, Professional Staff Members of ICIMOD were invited to present papers at the following meetings:

- **Dr. Tej Partap**, *Issues in the Management of Sloping Land Farming in Mountain Areas* - International Meeting organised by IBSRAM to establish a consortium for the management of soil erosion and sloping land farming, Phitsanulok - Thailand, 1-4 March.
- **Sugandha Shrestha**, *Reviving the Lost Commons through Farming Systems' Perspectives-Lessons from a Watershed in Nepal* - International Conference on Common Property Resources: Reinventing the Commons, Bodo, Norway, 24-28 May.
- **Dr. Pitamber Sharma**, *Non-wood Forest Products and Integrated Mountain Development: Observations from Nepal* - Experts Conference on Non-forest Products, Yogyakarta, Indonesia, 17-27 January.
- **Dr. A.A. Junejo**, *Mini-and Micro-Hydropower Development in the Hindu Kush-Himalayan Region: Achievements, Impact and Future Prospects and Problems Associated with Mini- and Micro-Hydropower Plants in the HKH Region and Some Possible Redressals* - National Seminar on Small scale Hydropower Development in the Himalayan Region, Achievements, Issues, and Constraints, New Delhi, 20-21 January.
- **Prof. Pei Shengji**, *Marketing of Non-timber Forest Products in Phuwang District of Thailand* - University of Chiang Mai, 16 March.
- **Prof. Suresh R. Chalise**, *Headwaters in Changing Climates: A Review of Hydrological and Related Issues in the Hindu Kush-Himalayas* - in International Seminar on Sustainable Reconstruction of Highland and Headwater Regions, Delhi, October 6-8, 1995. Department of Geography, Delhi School of Economics.
- **S.R. Chalise, ICIMOD, ML Shrestha, DHM, RP Nayaju, DHM**; *Rainfall as the Primary Indicator of Water Induced Disasters in Nepal*.
- **K.B. Thapa, S.R. Chalise**; *Basic Hydrometeorological Data Requirement for Improved Understanding and Preparedness for Water Induced Disasters*. (Paper 2.1 and 2.2 prepared for Presentation at the International Seminar on Water Induced Disasters" Organised by His Majesty's Government of Nepal, Ministry of Water Resources, Water Induced Disaster Prevention Technical Centre, in cooperation with Japan International Cooperation Agency, Kathmandu, Nepal, March 20-24, 1995)
- **Mr. Daniel Miller**, *Rangeland Dynamics of the Chang Tang Wildlife Reserve, Tibet* - International Symposium on Karakorum-Hindu Kush-Himalayas: Dynamics of Change, Islamabad, Pakistan, 25-28 September.
- **Mr. Pramod Pradhan and Mr. Basanta Shrestha**, *Implementing GIS in the Mountain Regions: An Experience from the HKH Region*. Fourth ESRI South Asia Conference, Singapore, 4-6 September.



## ANNEX VII

# ICIMOD Income and Expenditure Accounts, 1986 to 1995

The financial management of the Centre is implemented through the establishment of Core Funds and Project Funds. All unrestricted contributions made by sponsors and member countries are credited to the Core Funds. All restricted contributions, made by sponsors, governments, and non-government sources, for specific projects are credited to Project Funds.

### Core Funds

(In US Dollars)

Source of Fund	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
His Majesty's Government of NEPAL	24,243	24,028	39,841	17,523	10,987	11,737	11,737	10,204	20,408	8,993
Federal Republic of GERMANY	680,041	735,807	715,530	568,967	629,186	555,212	635,040	596,939	561,878	728,507
Government of SWITZERLAND	340,000	283,907	325,697	424,210	367,403	254,577	349,200	349,200	349,200	360,000
People's Republic of CHINA	--	50,930	--	19,158	18,380	14,836	20,000	20,000	20,000	20,000
Government of INDIA	94,608	--	80,319	--	--	92,958	46,479	39,184	--	34,532
Government of PAKISTAN	--	5,820	26,766	23,771	--	17,136	20,188	19,184	16,327	--
Royal Government of BHUTAN	--	10,186	--	5,895	--	3,873	--	--	--	--
People's Republic of BANGLADESH	--	--	--	9,614	--	--	10,000	10,000	9,905	10,000
Federal Chancellery of AUSTRIA	--	--	--	--	--	222,000	222,965	215,827	229,620	234,336
Union of MYANMAR	--	--	--	--	--	--	--	--	20,000	10,000
Government of DENMARK	--	--	--	--	--	--	--	--	--	200,000
Sale of Assets	--	--	--	22,280	--	--	--	--	--	--
Other Income	22,755	67,771	55,363	88,169	105,605	158,052	214,539	137,446	309,060	232,946
Opening Balance	47,048	23,879	(38,684)	12,276	(47,305)	(140,915)	160,847	191,489	139,422	204,822

**TOTAL** 1,208,695 1,202,328 1,204,832 1,191,863 1,084,256 1,189,466 1,690,995 1,589,473 1,675,820 2,044,136

### EXPENDITURE

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Programme Cost	760,605	889,093	607,312	628,917	563,368	462,839	523,959	615,910	624,197	711,922
Support Cost	305,031	238,166	331,832	311,370	372,957	305,214	424,965	418,729	408,786	439,674
Directorate Cost	119,616	120,230	246,769	302,035	345,397	260,565	333,828	415,412	410,427	334,436
Termination Cost	--	--	--	--	--	--	187,985	0	--	--
Total Expenditures	1,185,252	1,247,489	1,185,913	1,242,322	1,281,722	1,028,618	1,470,737	1,450,051	1,443,410	1,486,032
Closing Balance	23,443	(45,161)	18,919	(50,459)	(197,466)	160,848	220,258	139,422	232,410	558,104

**TOTAL** 1,208,695 1,202,328 1,204,832 1,191,863 1,084,256 1,189,466 1,690,995 1,589,473 1,675,820 2,044,136

### Project Funds

Source of Fund	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Netherlands	--	--	--	--	--	--	313,262	--	454,241	633,862
FORD	222,347	233,209	141,633	--	114,869	153,382	167,000	215,000	39,600	225,000
ADB	--	--	260,319	468,011	443,777	682,554	428,188	453,000	315,000	--
IDRC	3,204	24,400	23,570	6,600	129,327	69,001	179,722	122,544	176,935	40,832
FAO	33,779	21,018	5,209	--	2,401	8,856	5,000	--	20,560	10,000
UNESCO	16,092	3,300	21,397	194	7,069	2,519	7,000	--	--	27,033
NORAD, Norway	--	--	--	--	--	--	--	450,749	114,808	181,762
GTZ	--	261,781	--	--	--	59,725	6,052	118,098	214,334	210,342
SDC	--	--	--	--	--	109,281	27,726	65,000	50,000	122,235
EEC	--	154,974	188,384	135,765	169,484	--	64,768	--	--	192,645
USAID	--	--	--	--	--	22,961	49,156	69,571	26,664	5,988
MacArthur Foundation	--	--	--	--	--	--	65,000	85,000	36,000	24,000
Japan	--	--	--	--	--	--	--	100,000	--	100,000
Austria	--	--	--	--	--	--	--	71,386	125,658	--
UNEP	--	--	--	--	--	--	--	113,000	126,250	212,250
Others	7,833	71,579	110,173	52,830	32,276	35,485	49,483	23,538	45,017	10,000
Opening Balance	(13,980)	158,370	338,787	241,130	221,322	285,853	138,179	397,585	998,614	690,834

**TOTAL** 269,275 928,632 1,089,472 904,530 1,120,525 1,429,618 1,500,536 2,284,471 2,743,671 2,686,583

### EXPENDITURE

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Total Expenditure	104,026	415,687	823,611	691,712	707,663	1,291,438	1,043,221	1,285,857	1,758,173	2,062,290
Closing Balance	165,249	512,945	265,861	212,818	412,862	138,180	457,315	998,614	985,498	624,293

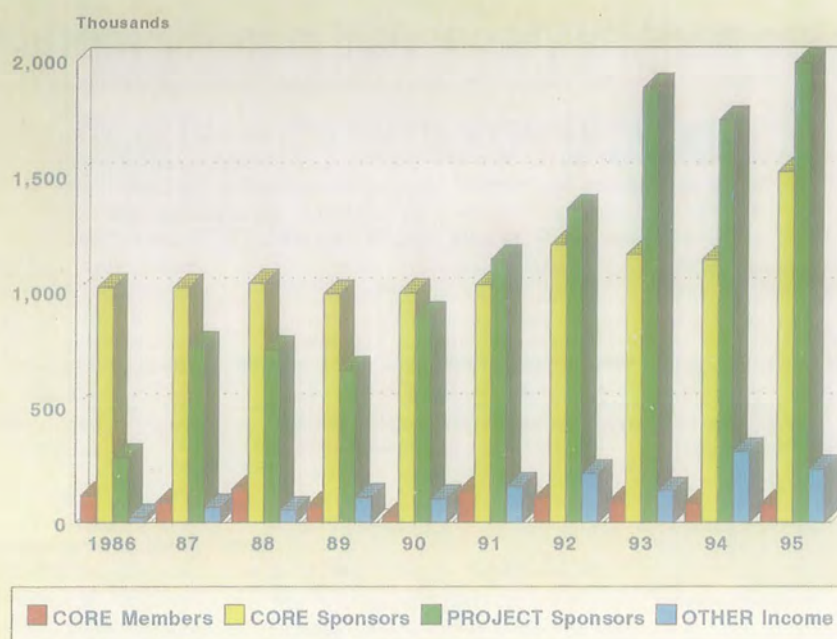
**TOTAL** 269,275 928,632 1,089,472 904,530 1,120,525 1,429,618 1,500,536 2,284,471 2,743,671 2,686,583

Note: Opening and closing balances may vary because of the different exchange rates being used and adjustments for the closing projects.



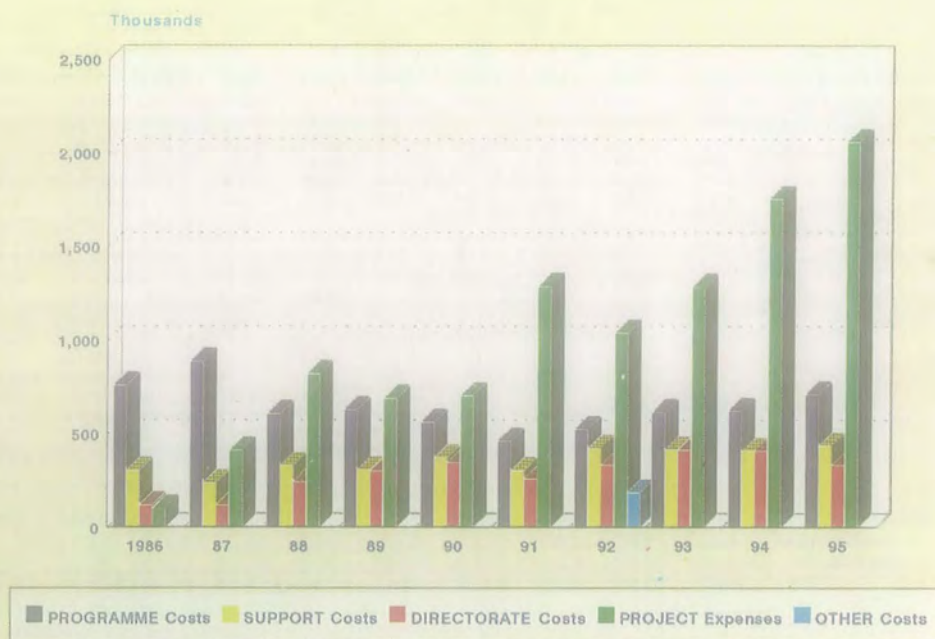
## CONSOLIDATED ANNUAL INCOME

(In US Dollars)



## CONSOLIDATED ANNUAL EXPENDITURE

(In US Dollars)





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Netaji Subhas Road  
Calcutta-700 001  
PO Box 2238

Telephone : 220 9001/2/3/4/6  
Telex : (021) 2176  
Telecopier : (33) 2202420

*Price Waterhouse*



Auditors' Report to the Board of Governors of  
International Centre for Integrated Mountain Development

We have examined the accompanying financial statements of the International Centre for Integrated Mountain Development comprising Statement of Assets, Liabilities and Fund Balances as of 31st December 1995 and Operating Statement for the year ended that date, which have been signed by us under reference to this report. Our examination was made in accordance with generally accepted auditing standards, and accordingly, included such tests of accounting records and such other auditing procedures as we considered necessary in the circumstances.

The financial statements have been prepared on the basis of accounting policies described in Schedule 9 to the financial statements. On such basis, in our opinion, the financial statements give a true and fair view of the state of affairs of the Centre as at 31st December 1995, and the results of its operation for the year ended on that date.

Kathmandu  
16th February, 1996

*Price Waterhouse*  
CHARTERED ACCOUNTANTS



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Netaji Subhas Road  
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Auditors' Report to the Board of Governors of  
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Kathmandu  
16th February, 1996

*Price Waterhouse*  
CHARTERED ACCOUNTANTS



**International Centre for Integrated Mountain Development**  
**Statement of Assets, Liabilities and Fund Balances**  
**As of 31st December, 1995**

	Schedule Reference	Nepalese Rupees	US Dollar Comparative
<b>Fund Balances</b>			
General Reserve			
Opening Balance		11,388,117	204,822
Project Cost Recovery for Institutional Support		4,452,305	80,078
Surplus Transferred from Operating Statement		15,190,139	273,204
Closing Balance		31,030,561	558,104
Miscellaneous Reserves	1	50,061,251	900,382
Special Support Projects Balance (Net)	2	34,710,717	624,293
<b>TOTAL</b>		<b>115,802,529</b>	<b>2,082,779</b>
<b>Investments</b>	3	12,099,633	217,619
<b>Current Assets</b>			
Cash at Bank			
Current Accounts		22,469,946	404,136
Time Deposits		109,770,000	1,974,280
Advances and Deposits		12,500,779	224,834
		144,740,725	2,603,250
<b>Less Current Liabilities and Provision</b>			
Accounts Payable		11,896,632	213,968
Provision for Severance Pay		1,341,197	24,122
Remittance from Swiss Development Cooperation for 1996		27,800,000	500,000
		41,037,829	738,090
Net Current Assets		103,702,896	1,865,160
<b>TOTAL</b>		<b>115,802,529</b>	<b>2,082,779</b>
Significant Accounting Policies	9		
Notes on Financial Statements	10		

*[Signature]*  
 Budget and Finance Officer

*[Signature]*  
 Head  
 Administration and Finance

*[Signature]*  
 Director General

This is the Statement of Assets, Liabilities, and Fund Balances referred to in our report of even date.

Kathmandu  
 16th February, 1996

*[Signature]*  
 CHARTERED ACCOUNTANTS



Centre for Integrated Mountain Development  
December, 1995

Income

Remittances from Donors  
Other Income  
Surplus Transferred from Completed  
Projects

97,813,472

Expenditure

Programme Cost	6	39,582,839	711,922
Support Cost	7	24,445,866	439,674
Directorate Cost	8	18,594,628	334,436

82,623,333

1,486,032

Surplus for the Year being Excess of Income  
over Expenditure Transferred to General  
Reserve

15,190,139


273,204

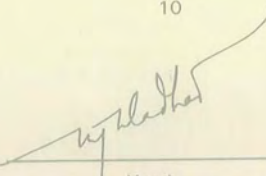
Significant Accounting Policies

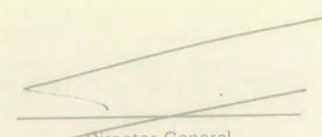
9

Notes on Financial Statements

10

  
Budget and Finance Officer

  
Head  
Administration and Finance

  
Director General

This is the Operating Statement referred to in our report of even date.

Kathmandu  
16th February 1996

*Pooni Waterhouse*  
CHARTERED ACCOUNTANTS



**International Centre for Integrated Mountain Development**  
**Schedules forming part of Financial Statements for the year ended**  
**31st December, 1995**

		Nepalese Rupees	US Dollar Comparative
<b>1</b>	<b>Miscellaneous Reserves</b>		
	Exchange Equalisation Reserve	32,543,428	585,313
	Fixed Assets Reserve	5,141,178	92,467
	Personnel Reserve	3,124,863	56,203
	Publications Reserve	2,329,613	41,900
	Building Reserve	988,247	17,774
	MENRIS Project Reserve	5,933,922	106,725
		<u>50,061,251</u>	<u>900,382</u>
<b>2</b>	<b>Special Support Project Balances (Net)</b>		
	Projects	Donors	
	Appropriate Tech. Soil	ADB	(4,614,384) (82,992)
	Apis Cerana	Austria	619,465 11,141
	Godavari Complex	Bangladesh	230,527 4,146
	Mountain Risk Engineering	CEC	5,761,413 103,623
	Agriculture, Phase III	Ford Foundation	3,587,036 64,515
	Participatory Natural Resource Mgmt.	Ford Foundation	(2,121,487) (38,156)
	RDSP - Lumjung	GTZ	527,375 9,485
	Mountain Resource Management	IDRC	(752,947) (13,542)
	Rehabilitation of Degraded Eco-System	IDRC	(784,231) (14,105)
	Hazard Mitigation	ITECO	505,908 9,099
	Natural Hazard Study	Japan	3,100,325 55,761
	Biodiversity Study	MacArthur	1,398,251 25,148
	Mountain Farming System	Netherlands	12,206,155 219,535
	Tourism for Community Dev II	NORAD	6,091,363 109,557
	Sustainable Dev. of Mountain	SDC	4,156,100 74,750
	Environmental Assessment	UNEP	4,907,250 88,260
	Application of Ethnobotany	UNESCO	(107,402) (1,932)
			<u>34,710,717 624,293</u>

Note : Figures in brackets represent carried forward expenses recoverable from donors.

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**International Centre for Integrated Mountain Development**  
**Schedules forming part of Financial Statements**  
**for the year ended 31st December, 1995**  
**(continued)**


	Nepalese Rupees	US Dollar Comparative
<b>3. Investments</b>		
In 17089 units of State Street Research US Government Income Fund (Unit Certificates are held in custody with A. G. Edwards and Sons Inc.)	12,099,633	217,619
<b>4. Remittances from Donors (For unrestricted Core Support)</b>		
His Majesty's Government of Nepal	500,000	8,993
Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ)	40,505,000	728,507
Swiss Confederation	17,639,265	317,253
Government of Denmark	10,000,000	179,856
People's Republic of China	1,116,000	20,072
People's Republic of Bangladesh	540,000	9,712
Federal Chancellery of Austria	13,029,066	234,336
Government of India	1,920,000	34,532
Government of Myanmar	497,000	8,939
	<u>85,746,331</u>	<u>1,542,200</u>
<b>5. Other Income</b>		
Interest on Time Deposits	4,597,228	82,684
Income from Investments	255,209	4,590
Professional Services	920,714	16,560
Vehicle Use	1,477,379	26,571
Communication Facilities	406,808	7,317
Reprographics	898,519	16,160
Miscellaneous Income	1,960,663	35,264
Scrap Disposal	25,050	451
Liabilities no longer required written back	15,736	283
	<u>10,557,306</u>	<u>189,880</u>

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PRICE WATERHOUSE.



**International Centre for Integrated Mountain Development**  
**Schedules forming part of Financial Statements**  
**for the year ended 31st December, 1995**  
**(continued)**

	Nepalese Rupees	US Dollar Comparative
<b>6. Programme Cost</b>		
Professional Staff	28,535,686	513,232
Short Term Staff	283,078	5,091
Travel	1,184,266	21,300
Meetings	265,358	4,773
Field Study	5,359,159	96,388
Supply and Services	3,439,366	61,859
Communication	515,926	9,279
	<hr/> 39,582,839	<hr/> 711,922
<b>7. Support Cost</b>		
Administrative Staff	14,826,535	266,664
Operational	5,929,491	106,646
Building Rent and Maintenance	3,689,840	66,364
	<hr/> 24,445,866	<hr/> 439,674
<b>8. Directorate Cost</b>		
Remuneration	10,622,676	191,055
Board of Governors Meeting	4,013,707	72,189
Travel	824,211	14,824
Communication	588,518	10,585
Programme Development	2,545,516	45,783
	<hr/> 18,594,628	<hr/> 334,436

  
**PRICE WATERHOUSE**



## International Centre for Integrated Mountain Development

### 9. Significant Accounting Policies

#### General:

The Centre operates as a non-profit making, autonomous institution.

#### Basis of Accounting:

All income are accounted for on cash basis and all expenditure are accounted for on accrual basis.

#### Functional and Reporting Currencies:

The contributions are received in functional currencies of the donor's country or in US Dollars. The reporting currency is the Nepalese Rupees and the financial statements are expressed in Nepalese Rupees.

#### Foreign Currency Translations:

- (i) Assets and liabilities are translated from functional currencies and US Dollars to the reporting currency at the official exchange rate of Rs. 55.60 = US \$ 1 as applicable in December 1995. Income and expenditure are translated at official rates prevailing on the 1st day of the transaction month. Exchange gains or losses are transferred directly to Exchange Equalisation Reserve.
- (ii) The US Dollar comparatives have been translated at the aforesaid rate of Nepalese Rupees 55.60 = US \$ 1. Hence these comparatives do not necessarily reflect the actual transaction in US Dollars.

#### Severance Pay Liability:

With effect from 1st January 1993, the Severance Pay benefit scheme has been withdrawn. According to the new Staff Regulations, the liabilities accrued upto 31st December 1992 are payable to staff concerned at the time of separation together with the proportionate amount of interest earned on investment of such amount provided for.

#### Fixed Assets:

Cost of fixed assets purchased during the year is charged off in the accounts of related projects and core operation. Memorandum records are, however, maintained for all fixed assets in use where those are stated at cost at the date of acquisition or at fair market value at the date of donation (if received by way of gift). Depreciation on Fixed Assets although calculated in memorandum records, the same is not considered in the Operating Statement. Adjustments for short and excess found in physical verification are also made in memorandum records.



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## International Centre for Integrated Mountain Development

### Investments:

Investments are stated at cost.

### Inventories:

Consumable stores like office supplies, stationeries, fuel, etc. and cost of publications are charged to revenue as and when purchased/incurred and no value is carried forward for the stock lying unutilised at the year end. Memorandum records are, however, maintained for all categories of stock at cost or in case of deterioration in quality, etc. are adjusted appropriately as considered necessary.

### Sundry Recoveries:

Recoveries on account of use of cars, photocopiers, computers, telex, telephone, stationeries etc. for private purpose are recognised as income. Recovery of overheads for institutional support cost from special support project expenditure at predetermined agreed rates are allocated to following reserves at the rates indicated below:

(i)	General Reserve	@	64%	
(ii)	Personnel Reserve	@	14%	
(iii)	Fixed Asset Reserve	@	19%	(together with sale proceeds of fixed assets)
(iv)	Publication Reserve	@	3%	(together with sale proceeds of publications)

---

100%

Further, income generated through the programme activities of "MENRIS" project is credited to "MENRIS" Project Reserve to meet the expenditure of the project which are not covered by Donor sources.

### Special Support Projects:

Total of contributions received for Special Support Projects is shown under "Fund Balances" net of expenditure on such projects. Similarly, aggregate of expenditure incurred in excess of contributions received for special support projects is carried forward to set off against contribution receivable or expected to be received in future years. The deficit/surplus (where permissible) on Special Support Projects is finally transferred to Operating Statement on completion of projects.

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## International Centre for Integrated Mountain Development

### 10. Notes on Financial Statements

#### a. Fixed Assets:

In accordance with the policy of the Centre:

- i) Cost of fixed assets purchased during the year amounting to Rs. 8,958,284 has been charged off in the accounts of various Projects and Core operation.
- ii) Sale proceeds of Fixed Assets amounting to Rs. 27,100 has been credited to Fixed Assets Reserve.

Details of Fixed Assets as per Memorandum Records as at 31st December, 1995 are:

	At Cost / Valuation	
	Nepalese Rupees	US Dollars
Vehicles	8,010,689	144,077
Computers	29,515,097	530,847
Office Equipment	9,495,822	170,788
Furniture	4,156,385	74,755
<b>Total</b>	<b>51,177,993</b>	<b>920,467</b>


#### b. Time Deposits:

Time deposits include Rs. 1,350,000 being fund created for Severance Pay.

#### c. Advances and Deposits:

Advances and Deposits include:

- Rs. 1,757,869 being balance amount of 2nd Quinquennial Review expenditure recoverable from donors.
- Rs. 7,551,036 for purchase of computers.

  
 PRICE WATERHOUSE

## International Centre for Integrated Mountain Development

### d. Remittances from Donors:

Remittances received by the Centre from Donors for Unrestricted Core Support and Special Support Projects during 1995 are set out below:

Donor		Functional Currencies	Nepalese Rupees
<b>(For unrestricted Core Support)</b>			
Deutsche Gesellschaft fur Technische Zusammenarbeit	DMK	1,100,000	40,505,000
Federal Chancellory of Austria	ATS	2,800,000	13,029,066
Government of Denmark	USD	200,000	10,000,000
Government of India	INR	1,200,000	1,920,000
Government of Myanmar	USD	10,000	497,000
His Majesty's Government of Nepal	NPR	500,000	500,000
People's Republic of Bangladesh	USD	10,000	540,000
People's Republic of China	USD	20,000	1,116,000
Swiss Confederation	USD	360,000	17,639,265
	<b>Total:</b>		<b>85'746'331</b>
<b>(For Special Support Projects)</b>			
CEC	USD	192,645	10,711,062
FAO	USD	10,000	500,000
Ford Foundation	USD	225,000	11,362,500
GTZ	DMK	300,000	10,945,000
GTZ	USD	15,000	750,000
IDRC	USD	40,632	2,025,999
ITECO	USD	20,000	1,000,000
Government of Japan	USD	100,000	4,970,000
McArthur Foundation	USD	24,000	1,200,000
Netherlands	USD	633,862	31,693,114
NORAD	NOK	1,155,951	10,105,943
SDC	USD	122,235	6,534,425
UNEP	USD	187,250	9,817,500
UNDP	USD	10,000	497,000
UNESCO	USD	52,033	2,709,782
USAID	USD	5,988	299,385
	<b>Total:</b>		<b>105,121,710</b>

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e Abbreviations and Acronyms used in the Financial Statements:

ADB	Asian Development Bank
CEC	Commission of the European Community
FAO	Food and Agriculture Organisation
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
IDRC	International Development Research Centre
ITECO	Company for International Technical Cooperation and Development
NORAD	Norwegian Agency for Development Cooperation
SDC	Swiss Development Cooperation
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USAID	United States Agency for International Development
ICIMOD	International Centre for Integrated Mountain Development

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PRICE WATERHOUSE

Participating Countries of the  
Hindu Kush-Himalayan Region

Afghanistan  
Bhutan  
India  
Nepal  
Bangladesh  
China  
Myanmar  
Pakistan

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