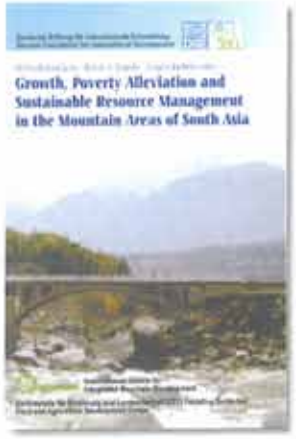
Poverty Reduction and Sustainable Livelihoods



The full text of the recommendations of the Conference is published in Mountain Research and Development (Volume 20, Number 2, May 2000) and papers and proceedings have been brought out in a volume, (Mahesh Banskota, T.S. Papola and Jurgen Richter (eds): Growth, Poverty Alleviation and Sustainable Resource Management in the Mountain Areas of South Asia) published jointly by DSE and ICIMOD.

Growth, Poverty Alleviation and Resource Management in Mountain Areas of South Asia

'While mountain areas have emerged as a significant item on the discussion agenda at national and international levels, the problems and concerns of mountain people have by and large remained neglected by development and conservation efforts. Poverty and environmental degradation, therefore, have continued unabated and aspirations of mountain people, on the other hand, have risen as a result of improvement in accessibility and communication. A crisis that has been 'silent' so far is leading to 'violent action' in several areas. At the same time, there are instances of a successful fusion of environmental and development goals leading to economic transformation of mountain communities with sustainable use and regeneration of natural environmental resources; and of greater recognition and roles of mountain people in safeguarding and conserving of natural resources.'

These were the conclusions of five-day long deliberations of an International Conference on 'Growth, Poverty Alleviation and Sustainable Resource Management in the Mountain Areas of South Asia' that had nineteen well-researched and documented papers.

ICIMOD organised this conference in an effort to raise awareness about mountain development issues, facilitate sharing and exchange of experiences, and contribute towards development of appropriate strategies and policies. The Conference was organised in collaboration with and financial support from the German Foundation for International Development (DSE). The 70 participants included high-level policy-makers, academics, development workers from five South Asian countries (Bangladesh, Bhutan, India, Nepal, and Pakistan), resource persons from Europe and China, and representatives from international development agencies and donor organisations.

The major highlight of the Conference was an agreement on and the adoption of a set of recommendations for use by policy-makers, development workers, and international agencies for evolving a strategy for sustainable development of mountain areas as follows.

- Emphasise diversification of mountain economies in national and local development plans and policies based on comparative advantage
- Provide food security through improvements in accessibility and distribution systems based on fair trade
- Increase investments in physical infrastructure using environment-friendly technologies, and social infrastructure
- Introduce compensatory mechanisms for use of mountain resources primarily benefiting lowland areas
- Develop appropriate legal frameworks to provide fair access for mountain people to natural resources for their livelihoods
- Combine appropriate use and regeneration of natural resources of economic use, instead of a complete ban or the free license regimes that often prevail
- Promote gender balance in development strategies and programmes to provide space and scope for greater participation and empowerment of women who are the backbone of mountain economies and major stakeholders in mountain environment
- Adopt effective decentralised and participatory approaches for development and conservation, given, particularly, the inaccessibility and diversity of mountain areas
- Identify and develop mountain niches and R&D efforts to develop technologies and products with unique or comparative advantages in mountain areas
- Introduce mechanisms for technology transfer across mountain areas within and among countries
- Develop human resources specially for the use of opportunities offered by improved access and processes of globalisation

The Conference also identified roles of different actors: governments, NGOs, research and development, and training organisations and multilateral and bilateral donors, and called upon the participants representing these agencies to follow up on the recommendations of the Conference.

The Globalisation Process: Threats and Opportunities

Policies and practices promoting globalisation (advocated and implemented as an approach and means of promoting global growth and prosperity) have both negative and positive implications for different participants, depending on their capacities and preparedness for the implied change. This is all the more so in the case of mountain areas. To understand the threats and opportunities of globalisation and to design coping strategies for mountain areas, ICIMOD, with support from the MacArthur Foundation, carried out an exploratory exercise, as the basis for a comprehensive and systematic study in the HKH, with a clear operational policy and programme focus.

THE GLOBALISATION PROCESS
SOME FINDINGS

(i) Increased emphasis on market-driven norms and practices influencing decisions and choices about investment, technology, production, and trading. This means the rapid globalisation process is likely to disrupt/alter resource-use systems, production patterns, and practices in mountain areas, since the latter have evolved over time within specific mountain contexts. The expected changes will have serious consequences in terms of environment and security in most mountain regions. The trends emerging show the following.

- Profit and external demand pressures can promote narrow specialisation and intensified resource use ignoring the imperatives of mountain specificities such as fragility, diversity, and marginality. For instance, the focus on tea and floriculture in some mountain areas of Nepal, China, and India.
- Trade, technology, and investment policies promoted through globalisation can erode the nature-endowed comparative advantage of mountain areas in different activities and products. For instance, growth of massive greenhouse facilities to produce off-season vegetables in the plains of India, hitherto produced mainly in mountain areas
- Marginal areas/communities may be further marginalised as a result of 'exclusion processes' resulting from the mountain communities' inability to fulfill key requirements for participation in the globalisation process.For instance, inability of mountain people to undertake aggressive marketing of niche products such as organic products.
- The reduced role of public sector and changed resource allocation norms imposed/induced by market forces may reduce support systems (including R&D) for mountain areas/people. As illustrated by reduced development subsidies in mountain areas of China, Nepal, India, reduced budgets for agricultural research in different countries.
- External demands can accentuate the process of niche-extraction as well as aggravate the unfavourable terms of trade to mountains under highland lowland economic links. Expansion of mining activities, overextraction (uprooting) of valuable herbal roots in the Indian Himalayas illustrate this.

(ii) New opportunities related to specific production, processing, and trading activities, with potential benefits under global systems; associating local communities with the external agencies as ancillaries to participate in the process and benefit from new expanded opportunities are possible, however.

(iii) To minimise negative impacts and harness positive opportunities, it is essential to:

- increase capacities and skills
- regulate market forces, and
- ensure compensation for mountain areas/people for their role in protecting the global contributions of the mountains.

SPECIAL HAPPENINGS

In 2000, ICIMOD and the International Fund for Agricultural Development (IFAD) established a partnership to implement a programme on 'Securing Livelihoods in Uplands and Mountains of the Hindu Kush-Himalayas'. The overall goal of this partnership is to secure the sustainable livelihoods of poorer households, rural women, communities of indigenous people, and socially disadvantaged groups in the upland and mountain communities of the Hindu Kush-Himalayas so as to facilitate:

- better quality of life,
- improved capabilities,
- increased self-reliance,
- recognition of their self-worth and potential,
- increased security against risks,
- increased decision-making power,
- improved nutritional status, and
- improved and diversified incomes

The programme aims to cover upland and mountain communities of seven countries of the Hindu-Kush Himalayan region; Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan.

A start up workshop between IFAD and ICIMOD was held in September 2000; and during this the major themes were identified, a common vision was established, and the basis for the forthcoming partnership was discussed. It was decided that the selection criteria for programme activities would be 'strategic' interventions that have a ripple effect and region-wide relevance, with a view to addressing issues of poverty alleviation, gender balance, and marginalisation in the upland and mountain communities. An overview scenario for forthcoming activities (fact-finding missions, participatory diagnostic studies, action research, gender analysis, training, exchange visits, focused meetings) was discussed.

The strength of the programme lies in the fact that ICIMOD could help IFAD-funded projects increase awareness of upland development conditions and mountain specificities; promote change in policies and attitudes in favour of upland and mountain communities; and provide a menu of improved, tested, and demonstrated technologies and practices in cooperation with farmers, local organisations, partner institutions, and IFAD-funded projects.

The IFAD-funded projects provide a chance to field test the innovative technological, institutional, and policy options that ICIMOD has made available. The projects will provide feedback for measuring the impact of ICIMOD's research activities. It could also provide a database of lessons learned, 'best practices', and innovations for research and development partners, participating farmers, and community-based organisations.

A core team of professionals has been set up within ICIMOD for this programme. Professionals from different backgrounds will facilitate the integration of perspectives to provide a richer synopsis.

Participatory Action Research on Community-based Energy Planning, Management, and Implementation

Participatory action research on community-based energy planning, management, and implementation was carried out in three hill and mountain communities: a) Yarsha Khola Watershed, Dolakha District, Nepal; 2) Sirubari Village Development Committee, Syangja District, Nepal; and 3) Chamba Block, Tehri District, Uttaranchal, India. The specific approach adopted for carrying out participatory action research in communities included the following.

a) Entry into the Community
b) Community mobilisation and confidence building (interaction with key informants, group leaders, village leaders; dialogues/interaction with village-level institutions, interaction with district-level line agencies)
c) Understanding energy consumption patterns, technology employed and availability of energy resources
d) Balancing energy consumption and resource availability
e) Examining the suitability of Renewable Energy Technologies (RETs) by the villagers (visit to RET promoters and Manufacturers, motivation and awareness campaign on RETs
f) Preparation of as Energy Action Programme by the community and Implementation of Selected RETs

Community's perception of various renewable energy technologies (RETs)

The general impression of the community was that most RETs are out of reach of the poor and marginalised people in spite of government subsidies. Most of the RETs are suitable for households that are willing to save energy and reduce the drudgery of women and children, thus improving the quality of life. Most poor people were keen on RETs that can provide them with opportunities for earning income. They believe that it is only after they have a decent income that they can think of sparing some amount for improving their living conditions.

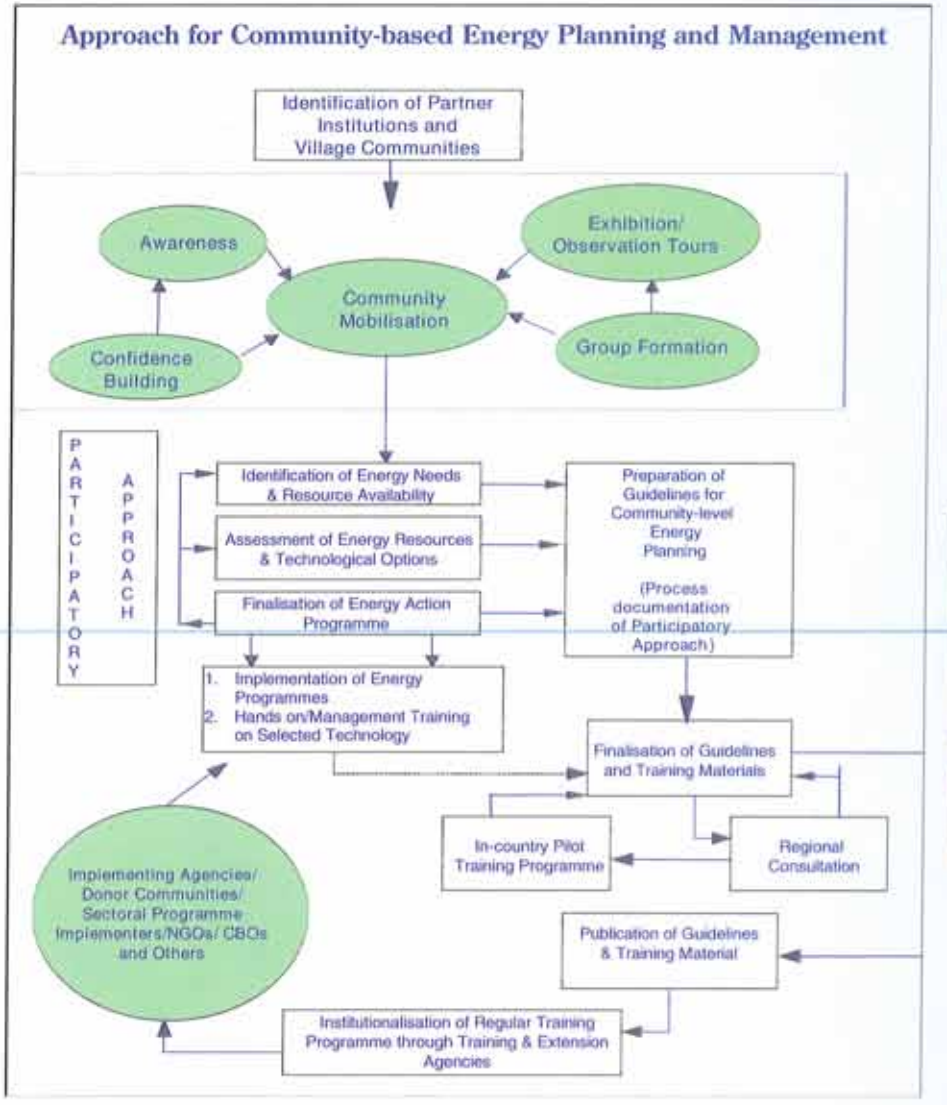
Concluding remarks

The planning and implementation of energy action programmes and projects that, although prepared with the active participation of the communities, will have to be undertaken as part of a national effort in which the institutional and administrative authorities at the community level are actively involved in the effective preparation and implementation of these programmes. For this purpose, institutional mechanisms and coordination arrangements need to be developed or organised at community level. The implementation of energy programmes and projects requires inputs from on-going development programmes such as those for agriculture, cottage industries, micro-enterprises, kitchen improvement, health and sanitation, and drinking water supply, besides energy supply programmes like those for fuelwood, rural electrification, renewable energy resources, and technologies. Further, credit schemes of development banks and subsidies available for various types of renewable energy technologies from the government and donor agencies will be instrumental in meeting the energy needs of mountain communities. What is lacking is the process of facilitation through awareness, participation, and human resource development specifically geared the energy sector.

LESSONS LEARNED

- Difficult to establish good rapport with the community.
- Slow at the beginning.
- Takes time to learn about the community dynamics.
- Takes time to win the confidence of the villagers.
- It is therefore very important for a facilitator to be calm, patient, persuasive, and result-oriented.
- No coordination at village level and too many user groups
- Drudgery of women and children (12-15 hours a day)
- It was difficult to convince women to participate in the programme which primarily focuses on improving the living standard and consumptive use of energy.
- People (women in particular) are interested in technologies that can help them to earn cash income.
- Provides ample opportunity for learning.
- It is an excellent tool for identifying the problems, priorities, needs and aspirations of communities and solving problems by themselves. Community-based energy planning and management approach is an effective tool to bring together different stakeholders

Community-based Energy Planning and Management
A Participatory Process



Improving the Living Standards of Mountain People by Using Clean Fuels: A Case of Ningnan County, China

In the case of Ningnan County, Sichuan, China, documentation on methods and approaches of disseminating various renewable energy technologies (RETs) during 1985-1990 was compiled. This provided an insight into the successful implementation of the renewable energy programme. The introduction of RETs (biogas plants, micro- and mini-hydropower plants, efficient cooking and heating appliances) resulted in a significant change in the energy-use pattern in five villages (Yuetang, Third Group - Houshan, Yongle, Dashuigou, Zhongping) in Ningnan County (See Table 1 for details). It is observed from the table that villagers consumed more energy supplied through electricity, biogas, and solar collectors, thereby substantially reducing the consumption of fuelwood and coal, which is a major concern in terms of environmental quality and health hazards, particularly for women and children. This example illustrates that the living conditions of the people can be improved without damaging the environment, if programmes are designed for the proper use of locally-available, renewable energy resources with the active participation of local people and decentralised government (county-level initiatives).

Table 1: Energy use pattern in villages households in Ningnan County, Sichuan, China before and after the implementation of RETs

Energy Sector	Quantity	Technology and its application
Electricity (kWh/hh/month) → 1988 → 1998 Change (-/+)	 70 132 + 2 times	Micro- and mini-hydropower projects primarily for lighting and to operate electrical appliances
Fuelwood (Kg/hh/month) → 1988 → 1998 Change (-/+)	 5,920 1,000 - 6 times	Energy efficient devices for cooking and space heating
Biogas (m3 /hh) → 1988 → 1998 Change (-/+)	 30 578 + 19 times	Dome type biogas plant for cooking and composting of dung and agricultural residue
Solar Collector (m2 /hh) → 1988 → 1998 Change (-/+)	 0.33 0.64 + 2 times	Hot water for household use
Coal (kg/hh/month) → 1988 → 1998 Change (-/+)	 894 204 - 4 times	Coal briquettes for cooking and heating

Note: Minus sign indicates approximate decrease; Plus sign indicates approximate increase; hh denotes household.
Source: Bao, Wei-Kai, Chen, Ke-Ming, Wang, Chun-Ming, Community-level Renewable Energy Programme Implementation and its Implications: A Case Example of Ningnan County, China, Report prepared for ICIMOD.

Methodologies for Assessing Agricultural Systems of the HKH: Characterisation, Delineation, and Planning for Sustainable Agricultural Development

In February 1999, ICIMOD and the International Service for National Agricultural Research (ISNAR) signed an agreement to implement a project under the Ecoregional Fund entitled; 'Methodologies for Assessing Sustainable Agricultural Systems in the Hindu Kush-Himalayan region: An Ecoregional Framework' funded by the Netherlands Government. Implementation of the project began on 12 February 1999 for a three-year period. ICIMOD's ecoregional programme is part of the second batch of ecoregional projects around the world to support methodological initiatives. More information about the Ecoregional Fund and other ecoregional projects can be found on the following website: www.cgiar.org/isnar/eco/index.htm.

The project was designed to explore, develop, and test a methodology for assessing mountain agricultural systems in an ecoregional framework. Focusing on the sustainability of mountain agricultural systems in the HKH region, ICIMOD's ecoregional programme tries to address aspects of sustainability in its work. Sustainability is not easy to assess, as in some agricultural systems it involves diverse perspectives, both economic and environmental. Data are not easy to come by and can be controversial in approach and use. The apparent temporal aspect of sustainable systems and their maintenance, over time, without depleting the natural resource base poses the question of what ideally should be sustained.

It was decided that the key entry into sustainability for mountain agricultural systems in the HKH should address basic needs. Many agricultural systems in the HKH have never provided for basic needs and have only partially provided people with a living. Secondly environmental sustainability, for the HKH-Region is mainly a question of gradual depletion or degradation of resources; not to mention destabilising factors such as droughts, floods, landslides, and heavy snowfall.

The third factor in sustainability and sustainable development involves the planning and decision processes at different levels, involving a wide spectrum of actors and stakeholders. Taking everything into consideration, it was decided that ICIMOD's ecoregional work is actually most relevant and applicable to planning and decision-making processes for sustainable agricultural development in the Hindu-Kush Himalayas. It was therefore decided that the study should *not attempt to assess the sustainability of mountain agriculture itself, but rather concentrate on the sustainability and strengthening of planning strategies and tools from the regional to the local level.*

The work has concentrated on developing a methodology to assess mountain agricultural systems in the HKH in a regional framework. Actual patterns of variable agricultural conditions are being described and trends and development over time incorporated in relation to the use of available resources. Procedures that can capture and discriminate regional patterns in mountain agricultural systems, in a sensible form, for a larger group of stakeholders are being developed by using multiple criteria to distinguish different aspects of agricultural systems and spatial techniques to identify natural break lines for delineation. The methodology, techniques, and procedures are imposed on existing regional structures, traditions, and activities in data collection and survey of the different countries; these are referred to as secondary data.

Using existing data collections, the aim is to incorporate the stake of the largest stakeholders: regional, national, and local planners, decision-makers, and scientists. Farmers are expected to benefit only indirectly and the work should be considered complementary to increasing trends in farmers' participation for formulation of agricultural policies. The work does not promote a classical top down approach, from agricultural research and planning agencies through extension officers to farmers, but tries to bridge the gap between agricultural planning and development activities on different scales. Assisting agricultural agencies to compare and understand regional agricultural conditions, by linking landscape-level planning and development activities within an ecoregional perspective, provides a stronger basis for improving the role of the stakeholders in setting priorities in planning for agriculture and formulating sustainable government policies for its development.

For ICIMOD's stakeholders the relevance is mostly not at the regional level, but rather at national and subnational levels. However, regional level is helpful for a different group of stakeholders. As such the ecoregional programme has two practical levels for execution and testing of methodologies to assess mountain agricultural systems. On a regional scale, the most general agricultural patterns in the HKH-region can be identified through secondary data, but with limited spatial and temporal resolutions. International, scientific, and decision-making professionals will find this useful but not national and subnational planners. On the subregional scale comparable procedures will be used with higher spatial and temporal resolutions, more advanced techniques, and details of agricultural systems; thereby useful for national, subnational, and local stakeholders. The subregional scale will be limited in spatial coverage and will be tested in three pilot areas in India, Nepal, and China. At the local level, two case studies of a different nature will be carried out in the selected pilot areas. These activities will be used as case studies to describe the experiences in terms of expectations, successes, failures, and problems encountered in scaling up from the local to the ecoregional context.

Where the project itself builds on the foundation for the ecoregional context on regional and subregional scales, its work is dependent on availability and use of reliable and sensible base data. There are two general problems in this context: they are 'Absolute' and 'Relative Data Scarcity'. Data are considered scarce if they cannot be used for applications. Absolute data scarcity means data do not exist, either because monitoring and survey are not carried out, or do not meet the resolution or quality requirements. Relative scarcity is common both in the HKH-Region and globally. It is one of the challenges to the use of data for decision support. ICIMOD's ecoregional approach tries to address the issue of data scarcity in the ecoregional context through its spatial and temporal Mountain Agricultural Systems Information Files (MASIF database). MASSIF facilitates the handling of large spatial, temporal, and multi-thematic data sets. A platform for sound integration of data from different disciplines is provided, stimulating direct use and application of data and bridging the gap in data sharing by creating an application driven process that activates from field data collection to planning and decision-making.

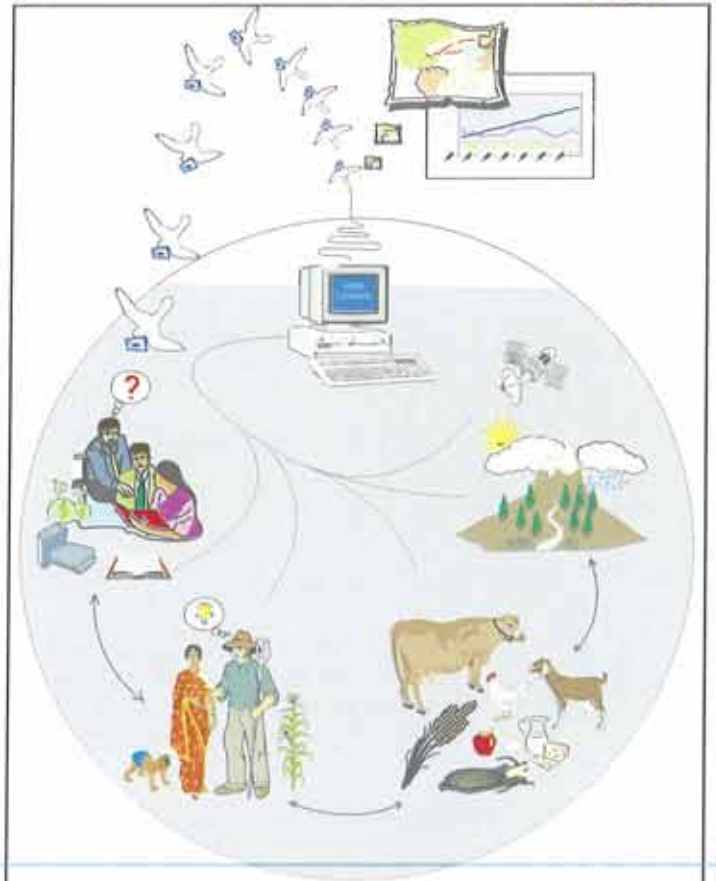


Fig 1: Schematic overview of the MASIF database context.

The concept of MASIF is given in Fig.1. It contains time series of crop, livestock, human population, and meteorological data, as well as digital maps of soil & terrain, land cover, drainage basins, and key administrative units for planning and execution of agricultural development policies.

Interactive software, called the 'Land Use Analyst', is being developed through ArcView to identify mountain agricultural resources, evaluation of resource conditions, characterisation and delineation of the agricultural systems, and assistance to planning for sustainable development.

Activities in 2000 include continuing development of the methodology, improvements, and completion of the MASIF database, (including a detailed digital Soil & Terrain database on a SOTER format basis for the whole of Nepal). Cooperation with ICIMOD's PARDYP and Rangeland Programmes on upscaling local-level activities for integrated watershed management of the Jhikhu Khola watershed in Kabhre District of Nepal and problems of rangeland degradation and grassland law in Naqu county, Tibet.

Income-generating Option: Beekeeping

ICIMOD is implementing a four-year Project on 'Indigenous Honeybees in the Himalayas: A Community-based Approach to Conserving Biodiversity and Increasing Farm Productivity'. It is funded by the Federal Chancellery of Austria through Austroprojekt. The overall objective of the Project is to promote sustainable management of *Apis cerana* and other indigenous honeybees in the Hindu Kush-Himalayan region that can be applied by mountain communities and contribute to the conservation of biodiversity in general and diversity of honeybees in particular, as well as farm productivity. The Project has two components - one part relates to regional activities in the HKH and the second part focuses on action research aspects in Nepal. Activities carried out in 2000 are highlighted below.

Studies on indigenous honeybees

Guidelines for the studies on indigenous honeybees, honey-hunting communities, market research, and micro-enterprise development were developed. On the basis of these guidelines, study formats were developed and a preliminary survey of *Apis laboriosa*, the spectacular cliff honeybee, was completed in selected areas of Nepal. Equipment required for conducting case studies was procured and a detailed plan for the *Apis dorsata* study was prepared.

Preliminary information on the status of indigenous honeybees in Bhutan has been collected and the Royal Government of Bhutan has nominated the local counterpart for furthering the activities.

Project review workshop & steering committee meeting

A project review workshop was organised from 8 to 10 November to report on progress, discuss the difficulties and their solutions, and develop a road map for the future. Participants were invited from collaborating institutions (GOs and NGOs) in India, Pakistan, and Nepal. In addition, all the Beekeeping Project staff, Ms. Heide Gockner-Mitsche of Austroprojekt and Dr. Nicola Bradbear, President, Bees for Development, also attended the workshop.

The steering committee meeting was held in the light of deliberations and discussions carried out during the project review workshop and the following decisions were made.

- It was decided that the *Apis cerana* selection programme will be concentrated on project managed and partner managed apiaries and multiplication training will be carried out with the help of Honey Bee Research Institute (HBRI), National Agricultural Research Centre (NARC) next spring.
- The project will focus more on issues related to Indigenous honeybees (IHB) in accordance with the recommendations of the external consultant's report.
- A Project staff member and one participant from DoA, Nepal, will be trained in queen rearing and multiplication by the appropriate regional institution.
- It was also decided that the project will carry out detailed internal assessment of the outputs of the former Jumla training programme.
- Austroprojekt and ICIMOD agreed on the budget-neutral extension of the Beekeeping Project up to 31 December 2001.
- It was decided that HBRI, NARC, will take care of the whole beekeeping programme in Northern Pakistan after 31st December 2000.
- Training in material development will be facilitated by Dr. Nicola Bradbear in the month of May or June 2001.

Apple Pollination Issues and Farmers' Management Approaches in the HKH Region

Issue

Agriculture in the HKH region is diversifying from traditional cereal crop farming to high-value cash crops, which poses new challenges for maintaining crop productivity and quality. Among these challenges are crop failure due to inadequate pollination. Evidence of this problem has been documented in a series of field studies carried out by ICIMOD across the HKH region.

Emerging Pollination Problems with Cash Crops in the HKH: Apples as an Example

Apples are a lead cash crop in several areas of the HKH region. They are cultivated in over 84 hilly and mountainous districts of India, China, Pakistan, Bhutan, and Nepal where they cover about 320,000 hectares (Fig. 1).

Annual production of apples totals about 2.5 million tonnes. It brings in an income of about 450 million US$ per year. However, in the past decade farmers have been complaining about declines in apple productivity and the majority of them feel it has declined by about fifty per cent.

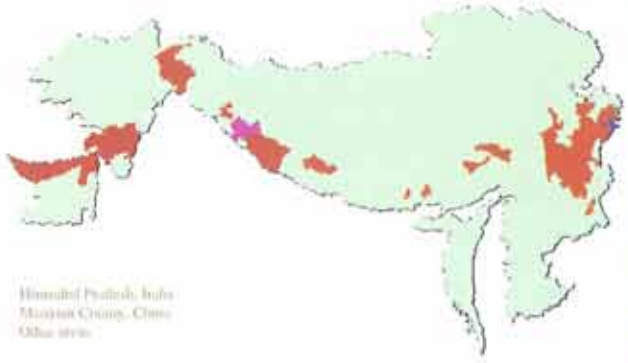


Fig. 1: Apple Farming Areas of the HKH Region

Polliniser and Pollinator Management in Himachal Pradesh, India

Pollinator Management: Using Honeybees for Pollination

Farmers in Himachal Pradesh, India, are using honeybees - both *Apis cerana* and *Apis mellifera* for apple pollination (Fig. 4). A system of hiring and renting is evolving in this state. It is the Department of Horticulture and a few private beekeepers that rent bee colonies for pollination. The current rate of renting bee colonies is US$ 20 per colony (US$ 12 as security and US$ 7.5 as rent).

Polliniser Management

Farmers in Himachal Pradesh, India, are planting polliniser trees in the orchards. Some are also grafting polliniser branches on commercially premium varieties (Fig. 2). As a short-term solution, many farmers are doing bouquet pollination (Fig. 3).

Factors Responsible for Inadequate Pollination of Apple Crop in HKH Region

- Scarcity of polliniser varieties in the orchards
- Inadequate populations of insect pollinators in the local environment
- Changes in weather conditions during flowering

Hand Pollination of Apples in Maoxian, China

Farmers in Maoxian County, China have adopted hand pollination to make sure that each flower is properly pollinated (Figs. 5 and 6). Every member of the family - men, women and children are involved in hand pollination of apples. Labourers are employed for this purpose and can better be termed 'human bees' because they do the work that honeybees do.

ICIMOD Programme on Beekeeping for Pollination

- Assess pollination problems in the HKH region
- Study the state of pollinator diversity
- Farmers'-participatory action research to refine pollination methods
- Human resource development and institutional capacity building
- Raise awareness

Honeybee pollination increases fruit set and reduces fruit drop in apples (Fig. 7). It also increases the size and weight of apples (Fig. 8)