



# AGRICULTURAL AND RURAL INCOME DIVERSIFICATION (ARID)

**T**he focus of the Agricultural and Rural Income Diversification programme is on enhancing the economic security of mountain people through the promotion of high-value farm and non-farm products and services with reliable market linkages. The programme is divided into three areas: High-Value Products and Sustainable Agriculture; Enterprise Development and Mountain Tourism; and, Decentralised Energy Options.

Arabian Sea

 River Basin Boundary  
 HKH Region Boundary





Kamal Banskota

Tourists camping in Chandanbari on the way to Gosaikunda in Langtang National Park, Nepal

Myanmar

Salween  
River  
Basin

Mekong  
River Basin

Bay of Bengal



# High-Value Products and Sustainable Agriculture

Agro-climatic conditions in mountain areas provide comparative advantages and niche opportunities for the production of a variety of high-value products such as cash crops, bee farming, medicinal herbs, and other NTFPs. Value addition of niche-based mountain agricultural products can serve as a basis for change by helping to diversify rural incomes and promote the well-being of communities.

## Beekeeping programmes

Indigenous bees have two major roles to play in the mountains of the HKH: they pollinate important mountain crops and thus increase productivity; and they also supply high-value products that can improve the livelihoods of mountain people.

Although there are many species of indigenous bees in the HKH, only *Apis cerana* can be kept in hives. However, continued use of this native species is being threatened on two fronts. Firstly, changes in land use have resulted in a loss of its natural habitat, a decline in its preferred plants for feeding, and an increase in deaths from pesticides. Secondly, as in other parts of the world, the aggressive promotion of *Apis mellifera* means that farmers are abandoning the native species in favour of the more manageable exotic species. However, for use in the HKH, *Apis cerana* has several advantages over *Apis mellifera*; e.g. its adaptation to local climatic conditions, its resistance to local pests and diseases, and its capacity to keep flying on dull days and during rain.

As part of the strategy for integrating *Apis cerana* management into local agricultural development, ICIMOD's beekeeping programme, which is co-financed by Austroprojekt, is helping partner institutions in India, Pakistan, and Nepal to select and multiply colonies that are easier to manage and which produce more honey. Fourteen selection apiaries are being used and over 250 farmers and beekeeping organisations are involved in generating data from nearly 700 colonies. In India and Pakistan, researchers are using Langstroth hives to regulate swarming and control absconding. Data show that selection has so far contributed to a 50 per cent increase in productivity as well as improvement in the manageability of the bees.



An apiary of *Apis cerana* colonies managed by a farmer in Kaski district, Nepal

S R Joshi



Gurungs  
hunting for  
*Apis laboriosa*  
honey in Kaski

Enormous amounts of information have been generated on the ecological services provided by wild bees to the environment and their linkages with the livelihoods of local communities. This provides a strong basis for developing socially acceptable, environmentally viable, and economically feasible uses of wild bees in the field of conservation apiculture. Studies on indigenous honeybees have been launched in collaboration with partner institutions in Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan. So far, a book has been produced on *Apis laboriosa* in Nepal. Another study is estimating the population of *Apis dorsata* in Nepal. Documents on Queen Rearing, Beekeeping Training and Extension Methods, Training Impact Assessment, Socioeconomic Survey findings and the Honey Market Situation in Nepal are underway.

A regional planning workshop was organised with participants from all the member countries of ICIMOD except Afghanistan. A country-specific (Nepal) consultative meeting with partners' institutions, relevant stakeholders, and beekeepers from Jumla and Dadeldhura districts of Nepal was also organised in Nepalgunj to identify and prioritise activities for the next project cycle.

Training camps on beekeeping with *Apis cerana* and their use for pollination were organised in different villages of Himachal Pradesh-India, Pakistan, and Nepal.

Project staff contributed two chapters to 'Guidelines for Policy Makers and Planners on Conservation and Use of Pollinators' at the invitation of the US State Department and gave information to several international journals. Project staff also participated in and presented papers to workshops in South Africa and Brazil.

In addition, ICIMOD has launched three FAO-funded studies with partner institutions in Pakistan, Nepal, and China on pollination of apricots, citrus pears, and vegetable crops by bees. As part of ICIMOD's work to build and facilitate networks of beekeepers, Api Net Nepal has recently been re-organised and become functional. This is a network of over 100 Nepalese beekeepers, beekeeping organisations, and scientists that focuses on sharing experiences regarding the ecological services of pollinators and pollination. Api Net members held a meeting in Kathmandu and are planning to publish a Nepali language bulletin for beekeepers.



Second issue  
of the Api Net  
Bulletin in  
Nepali  
language

# Enterprise Development and Mountain Tourism

Transformation of mountain economies from subsistence to market-oriented and diversification into activities based on the special advantages offered by mountain regions for producing high-value and value-added commodities are essential for improving the livelihoods of the rural poor in mountain regions. Horticulture, medicinal herbs, NTFPs, livestock products, mountain tourism, and beekeeping have a comparative advantage for mountain inhabitants. Enterprise development needs to be holistic, taking into consideration biological, social, cultural, financial, and economic aspects for success and replication.

## Enterprise development

Research on approaches for NTFP-based community-managed enterprise development was initiated and innovative practices and success parameters were documented. Two proposals on enterprise development were submitted: one to the World Bank Development Marketplace on developing a micro-enterprise prototype for medicinal and aromatic plants with support services in high-altitude areas of the HKH; and another to the Asian Development Bank on cardamom-based agroforestry systems in the eastern Himalayas. Five concept notes and papers were developed on conservation and sustainable use of medicinal and aromatic plants; an eco-regional approach to micro-enterprise development based on NTFPs; a marketing study of medicinal and aromatic plants in Nepal and India; improving the livelihoods of mountain communities through micro-enterprise development based on community-managed forest products in the HKH; and, developing a dissemination model for micro-enterprise development in the HKH. Natural and Organisational Resource Management Services (NORMS), a local NGO, was assisted in carrying out a case study on community-managed micro-enterprise development in Nepal. This study, funded by the FAO, documented best practices in community-based natural resource management interventions in the South East Asian region. Documentation was initiated on identifying innovative enterprise activities in India and Nepal. Features of two community-based initiatives in enterprise development – the Samridhi Mahila Cooperative Society, Changar, Himachal Pradesh, on fruit processing and the Pimmi Danda Forest User Group on lokta paper (supported by ANSAB, Bajhang, Nepal) – were examined.

The Action Initiative, Rural Enterprises and Mountain Tourism, organised a 3-day regional consultation workshop on 'Improving Livelihoods of Mountain Communities Through the Sustainable Utilisation of

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Empowering  
through  
Community  
Enterprises -  
Lokta paper in  
Bajhang



NTFPs' in December 2003 in Kathmandu. The meeting was organised to examine issues related to NTFP production, management, and trade in four regional member countries: viz., Bhutan, India, Nepal, and Pakistan. A total of 23 participants from governments, universities and research institutions, private sector, non-government organisations, entrepreneurs, and the chambers of commerce and industry attended the meeting.

During the consultation, a proposal and framework to address the regional issues of NTFP-based livelihoods in the HKH was developed together with different partner institutions. Communication with potential donor agencies is taking place in the search for project co-financing.

## Ecotourism

The development of rural enterprises, including mountain tourism, is crucial for broader development objectives, including poverty alleviation, economic development, and the promotion of more democratic and pluralistic societies in mountain regions. The impact of tourism on mountain regions is as diverse as its forms, and it has been described as the fastest-growing industry in the world. Ecotourism activities in specifically endowed Himalayan regions have a great potential for diversifying local incomes. However, it is necessary to be aware that, although mountain regions offer much scope for harnessing the potential of tourism and income generation, often benefits do not trickle down to local communities. Another pitfall is that in the desire to diversify incomes, entrepreneurs may not be sufficiently ecologically sensitive.

Although many interventions have been initiated and tested in various parts of the HKH, they have not been effectively documented. Therefore, a bibliography of tourism case studies from across the region and worldwide has been prepared. In addition, a review of state policies on ecotourism within the HKH is underway. Interactions between the state and the private sector in mountain tourism were examined at the Uttaranchal Tourism Conclave in Mussoorie, India. On a field trip to Ghandruk, Nepal, information was gathered with the aim of understanding the dynamics between tourism and common property resources. Ecotourism is often most beneficial for local communities, most sustainable, and most eco-sensitive when the resources associated with tourism are owned and managed by the local community. In this respect, a project, entitled 'Participatory Action Research on Ecotourism, Equity, and Livelihoods (PAREEL 2004-2007)', has commenced in collaboration with the Norwegian Research Institute on Nature Research (NINA) to examine the impacts of ecotourism on local communities.



Namche  
Bazaar,  
Sagarmatha,  
Nepal

## Decentralised Energy Options

### **Incorporating needs and roles of women in water and energy management in rural areas in South Asia-capacity building in rural areas of the Himalayas**

Local communities are finding it more and more difficult to meet their needs for water and energy in a sustainable manner as a result of deforestation and the scarcity of fresh water resources. A declining resource base and unequal access to resources have accentuated poverty and environmental resource degradation. The resulting impacts have hit hardest at the poorest people and women. Women have an intricate relationship with natural resources, since they are most responsible for meeting the daily food, water, and energy needs of their household.

Decentralised energy supplies through micro-hydro, solar, biogas, and wind technologies usually offer more sustainable options for providing the energy needed to support economic diversification in agro-processing, cottage industry, tourism, and pilgrimage activities. Renewable energy technologies reduce greenhouse gas emissions, reduce pressure on forests, reduce diversion of agricultural residue and animal dung from the cooking hearth to the farm, reduce drudgery, and reduce health hazards for women.

Most energy and water interventions in the past have failed to consider women as primary beneficiaries, even though women are most responsible for managing the energy and water requirements of the household. In order to focus on the needs of women, it is essential that women be at the forefront of the dissemination of technological options that are pro-environment and pro-poor. It is important to focus interventions on identifying their needs and providing them with options that they can use and control.

This project funded by the United Nations Environment Programme (UNEP) is carrying out participatory action research with women's groups at six sites in India, Nepal, and Bhutan. As a first step, training manuals were prepared on traditional and new energy and water technologies such as drip and sprinkler irrigation systems, improved cooking stoves, infiltration well, and improving sources of drinking water. These manuals were then used to train over 30 women to be trainers for their women's groups. The training led by these women trainers has produced a new self-confidence in the groups that has empowered these women



A woman washes her hands from the newly constructed water tap in Phobjikha-Bhutan

Bikesh Sharma

to implement various pilot projects that will improve these communities' self-sufficiency in meeting their energy and water needs. Groups have been provided with 'seed' money to acquire new technologies. With a revolving fund managed by the women's groups, individual women are able to use zero-interest loans to purchase and maintain the hardware for these new technologies. With their new skills and the means to purchase new technologies, women have been able to reduce the drudgery associated with energy and water collection and improve their living conditions and income-generating opportunities.

In India, women identified water scarcity as a leading need and, as a result of their training, have installed water-harvesting tanks and renovated traditional water sources. They are now installing improved cooking stoves and solar lanterns to address their energy needs. In Nepal, women have installed drip and sprinkler irrigation systems for off-season vegetable farming. This has allowed them to sell valuable produce and realise a cash income. Some women have started a collective vegetable nursery to satisfy the demand from other women in the area for seedlings of off-season vegetables. Local women have also installed improved cooking stoves to improve their kitchen environments and solar driers to process dry food products for sale in local markets. They have also recycled waste water to irrigate kitchen gardens and have renovated a traditional well. In Bhutan, women have constructed a local water supply scheme using traditional water sources.

In order to replicate these results and scale up the impact of these innovative energy and water management practices to similar environments within the region, the project is also developing policy guidelines that will include an institutional framework and will help to generate gender-responsive policies and projects that can empower women. It is envisaged that this type of intervention can be integrated into other development programmes such as the Village Development Programme in Nepal. Additionally, to raise awareness of the potential of these energy and water technologies and for use as a training tool by extension agencies, the project implementation process has been videotaped at each of the six sites.

## **Kyoto-Think Global, Act Local**

A kick-off meeting for Kyoto-Think Global, Act Local was held in the Netherlands with participants from Senegal, Tanzania, Nepal, and Netherlands to finalise the work plan for the first six months (January-June). National partners with whom ICIMOD will work were identified and a memorandum of understanding was signed. A subsequent meeting in Tanzania in July reviewed the state-of-the-art report and finalised activities for the remaining part of the year.

Two field study sites from Uttaranchal, India, and Nepal were selected for more detailed study. The forest typology and preliminary socioeconomic information of the communities at each site were also gathered. Training was provided first to the researchers from the respective national partners in India and Nepal; namely, the Central Himalayan Environment Association (CHEA) and King Mahendra Trust for Nature Conservation (KMTNC), respectively, on the use of iPAQ and GPS to mark forest boundaries and sampling plots. The training was provided subsequently to selected members of the communities from the sites in India and Nepal. The communities were able to delineate their forest boundaries to establish permanent sample plots after the training. A methodology to measure carbon stock and carbon stock analysis from biomass, soil, and forest litter was developed and field-tested.

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