Land Rehabilitation in the Himalayas

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PARDYP India

Sustainability of rehabilitation work depends to a large extent on women's participation in decision-making

The commons of the Himalayas are critical support lands for the majority of the rural population. In many areas, lands have degraded rapidly in recent decades because of population density, unsustainable land-use practices, and other complex, underlying socioeconomic and political factors. Their rehabilitation is not only important but also challenging for mountain societies and governments in the region and associated downstream communities. Fortunately, new policies and programmes in the region have provided bases for optimism.

Land rehabilitation activities under ICIMOD's project on 'Rehabilitation of Degraded Lands in Mountain Ecosystems' (1992-1996) followed by the 'People and Resource Dynamics' Project – PARDYP (1996-2006) were launched in response to the above concerns.

One of the focuses of these action-oriented projects involved systematically identifying and documenting land degradation problems and choosing management alternatives through field case studies. The activities were implemented with local communities in project areas in China, India, Nepal, and Pakistan with professionals working on eco-rehabilitation in the ICIMOD regional member countries (RMCs) and outside. The ultimate goal of these projects was to improve and secure people's livelihoods through sustainable management of natural resources.

Approach and methodology

The approach to rehabilitation of degraded lands was designed around basic facts in the context of Himalayan environmental degradation.

- The dynamics of human activities influencing land use in mountain areas are a result of population growth, changing farming practices, and market-driven forces.
- Land ownership and resource use patterns are critical for elaborating and defining rehabilitation

strategies. The inter-linkage of three types of land ownership (private, community, and public) at village level should be considered.

- In order to achieve long-term environmental benefits and goals, short-term economic benefits to local villages must be prioritised.
- Community participation and promoting community user group institutions with support from local government are keys to success.
- Ecosystem rehabilitation and management are dynamic processes and should be monitored continuously.

Methodologies included baseline surveys and Participatory Rural Appraisal (PRA) to identify biophysical and socioeconomic conditions along with land degradation on the project sites, participatory biomass development and soil and water management, and incorporation of indigenous knowledge and locally-used species. Environmental monitoring and evaluation were given priority.

Achievements

The efforts and results, in both participatory management and research activities, were successful and positive. The activities designed for each of the sites were determined through a participatory approach in consultation with local institutions and communities. The highlights of the major accomplishments are as follows.

Institutional collaboration. Institutional collaboration and local arrangements for rehabilitating degraded lands in four Himalayan countries were strengthened. In China, three institutions of the Chinese Academy of Sciences, four local governments in Baoshan district, and 136 households collaborated in the programmes.

In India, villages in the community forestry panchayat of Arah and Khaderiya (Bageshwar, Uttaranchal) gave proposals for programme implementation, and the G.B. Pant Institute of Himalayan Environment and Development introduced these programmes. About 140 households were involved.

In Nepal, community forest user groups in Bajrepani, Dhaireni, and Mandelidevi, and Ekanta Basti Youth Club in Dhotra, all in Kabhrepalanchowk District, participated in the programme.

In Pakistan, the Pakistan Forest Institute established collaboration with Mangla Village and Hilkot watershed in Mansehra District.

Capacity-building and people's participation. Interdisciplinary teams from different institutions in the four countries examined resource constraints and management options with land users. Scientists with technical and social backgrounds worked together with local experts and communities to develop sites and engage in research activities. The central focus of the rehabilitation work was people's participation. Social fencing and stall feeding were carried out, and these measures not only contributed to the protection of newly-planted areas but also to the natural regeneration processes of vegetation.

Baseline information. Baseline information was generated as a means of understanding key environmental processes leading to land degradation in the middle mountains of the HKH. The common concerns identified included degeneration of traditional arrangements for management of the commons, increasing water deficiencies during dry seasons, declining soil fertility, excessive use of resources and overgrazing, and shortage of fodder and fuelwood supplies from local sources.

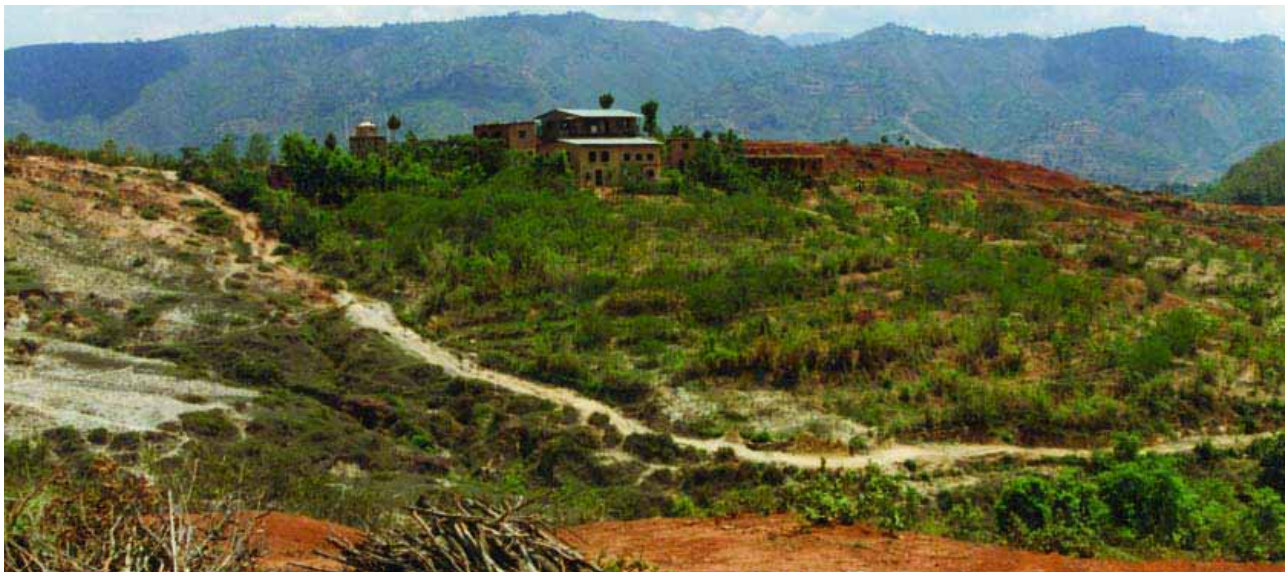
Biomass development *on sites.* Rehabilitation techniques, such as contour-line planting on slopes, hedgerow planting, the use of nitrogen-fixing, native pioneer and exotic species as facilitators, and soil and water management, had a positive effect on restoration and biomass development. Plant nursery establishments enhanced local biodiversity and assured the community of a constant supply of seedlings for the rehabilitation of degraded lands.

Erosion control and water harvesting. Construction of low-cost checkdams in gullies, e.g., stone checkdams, earth-fill dams, and planting grasses and shrubs in gullies and on channel banks all had a positive impact on soil and water erosion in the site areas.

Scarcity of water was found to be a causative factor of land degradation. Thus, different kinds of cost-effective water harvesting and water-use efficiency technologies were introduced. The stored water was sufficient to meet short-term needs.

Monitoring systems. An on-site monitoring network was established on all sites to document environmental processes. Monitoring included hydrology, soil erosion, soil fertility changes, performance of introduced plant species, rate of biomass coverage, and changes in socioeconomic conditions. Some of the results are presented in the figure.

On-site training and education. On-site training and education were part of the research programmes. Land users and community user groups were trained in nursery work, sloping agricultural land technology



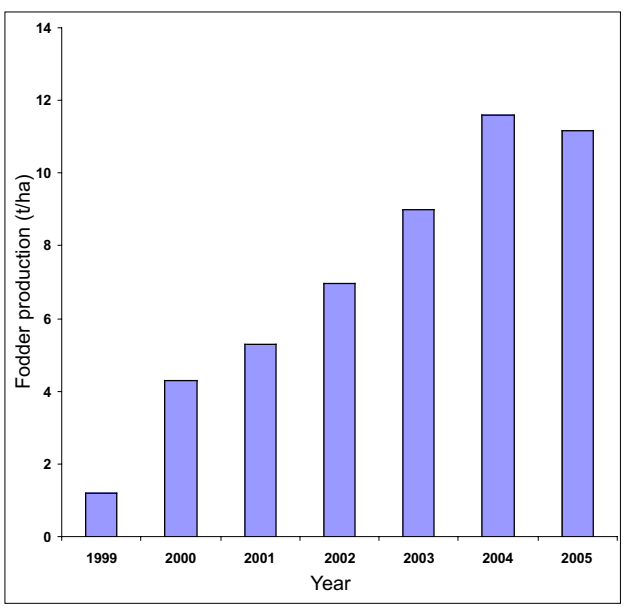
PARDYP Nepal

A rehabilitated area in a PARDYP Nepal watershed site

(SALT), water-harvesting technologies, gully management and control, and plant maintenance and management systems. College students and graduates were trained on-site as part of their studies. Village school and community environmental awareness education were carried out, and large numbers of people from rural communities visited the sites.

Conclusions and recommendation

ICIMOD's regional collaborative programmes on land rehabilitation mobilised the professional communities in the region to address the problems of land degradation through in-depth scientific assessment. The programmes focused on various aspects such as the development of a database on changes in land use, soil fertility, and socioeconomic dimensions of mountain development on micro and meso scales; identification of appropriate biomass and bioengineering technologies for restoring degraded lands; regional sharing of information and experience; and, most importantly, the role of community organisations in rehabilitating degraded lands.



source: PARDYP India

Changes in fodder production at the Khaderiya rehabilitation site in the PARDYP India watershed

The projects found that land rehabilitation requires much more effort than simply introducing technical measures. Encouraging the participation of land users, especially women, so that the measures are maintained are far more important than establishing trees. The project's experience also shows that all efforts related to rehabilitation of degraded land in the Himalayas require a multi-disciplinary approach and a sustainable network and partnership among different stakeholders.

Finally, the lessons from these projects and others in the Himalayas suggest that land rehabilitation activities have many benefits and must continue. This, however, requires political facilitation so that all efforts related to rehabilitation of degraded lands become an integral part of regional and national initiatives on natural resource management.

Further reading

Bhuchar, S.K., Shah, P. B., White, R. (2005) 'Potential Strategies for Rehabilitating Degraded Lands in the Middle Mountains of the Hindu Kush-Himalayas'. In White, R. and Bhuchar, S.K. (eds), *Resource Constraints and Management Options in Mountain Watersheds of the Himalayas: Proceedings of a Regional Workshop held 8-9 December 2003 in Kathmandu, Nepal.*

ICIMOD (1996) 'Rehabilitation of Degraded Lands in Mountain Ecosystems in the Hindu Kush-Himalayan Region (January 17, 1992–December 31, 1995)'. Final report submitted to the International Development Research Centre