

Integrated watershed management for landslip and stream bank stabilisation

Nepal: पहिरो र नदीकिनार कटान रोकथामका लागि एकीकृत जलाधार व्यवस्थापन

Integrated watershed management as an example for landslip and stream bank stabilisation based on fostering a partnership between community institutions, line agencies, district authorities and consultants

The sustainable management of mountain watersheds is a huge challenge for watershed management programmes due to the lack of collaboration between the various institutions involved. Building of synergies between these institutions is crucial for improved management. The Bagmati Integrated Watershed Management Programme (BIWMP) started in 1986, initiated, coordinated, and organised by the Department of Soil Conservation and Watershed Management with support from the European Commission. The programme aimed to help overcome natural resource degradation and thereby raise the standard of living of the rural population.

The main causes of degradation and options to address the related problems were identified through participatory action research. Landslip and stream bank stabilisation was identified as one of the most promising and needed options to conserve soil and water, whilst providing direct livelihood benefits to local people, for example planting of large cardamom, later used as a cash crop, and reestablishment of damaged agricultural terrace above the landslip. The approach was to foster partnership between and among communities, district authorities, line agencies, and consultants. Key priorities were to ensure the equitable involvement of women and socially disadvantaged people and to promote local ownership, institutional capacity building, and sustainability. The programme used participatory extension methods such as farmer-to-farmer exchange, training workshops, and on-site demonstrations, with participatory approaches to planning, implementing, and monitoring. The activities were based on villager's priorities and were implemented by individual households, farmer groups, and village institutions. The local village development committee, local NGOs, community forest user group, and individual households worked together on landslip and stream bank stabilisation. Involving a range of stakeholders was paramount for success.

The first phase began in 1986 and focused on developing technical packages which were implemented through user groups. The second phase focused on improvements to implementation procedures, especially community organisation, extension, and income generation activities. The capacity of community groups was developed by establishing communication facilities, building up community networks, and empowering women and disadvantaged groups. BIWMP ended in 2003 with much of its success attributed to the close involvement of all the main stakeholders, and especially the local people, in all the activities. It successfully helped land users to adopt improved livelihood options.

Left: On-site training for members of Salambudevi Community Forest User Group, Sankhu, Salambutar, organised by the Department of Soil Conservation and Watershed Management. (BIWMP)

Right: A farmer with a mature cardamom plant – one of the vegetative measures which add a productive component to the landslip and stream bank rehabilitation technology (Hanspeter Liniger)



WOCAT database reference: QA NEP11

Location: Lalitpur, Kathmandu, Makwanpur, Bhaktapur, and Sindhuli districts; Bagmati river basin, Nepal

Approach area: 570 km²

Land use: Wasteland (before), mixed agrosil-vopastoral (after)

Climate: Humid subtropical

Related technology: Landslip and stream bank stabilisation, QT NEP11

Compiled by: Dileep Kumar Karna, Department of Soil Conservation and Watershed Management, District Soil Conservation Office, Kathmandu, Nepal

Date: December 2003, updated August 2004

The technology was documented using the WOCAT (www.wocat.org) tool.



Problem, objectives and constraints

Problem

- Lack of institutional capacity and collaboration for managing watershed resources

Objectives

- To overcome the constraints to effectively implementing a watershed management programme by building synergies between diverse stakeholder institutions. In the case of landslip and stream bank stabilisation work, the specific objective was to come up with a technology that conserved soil and water whilst also providing direct livelihood benefits to local people.

Constraints addressed

Major	Specification	Treatment
Institutional	Lack of inter-institutional collaboration	Building and ensuring collaboration
Technical	Lack of new options	Training on new technologies
Minor	Specification	Treatment
Social/cultural/ religious	Following conventional top-down approaches	Introduction of improved methods with more participation and involvement of land users

Participation and decision making

Target groups



Land users SWC specialists/
extensionists Planners Politicians/
decision makers Teachers and
students

Approach costs met by:

International agency: the European Commission	81%
Community/local people	15%
National government	4%
TOTAL	100%

Decisions on choice of the technology: Mainly made by soil and water conservation (SWC) specialists in consultation with land users as the land users did not know about the technologies

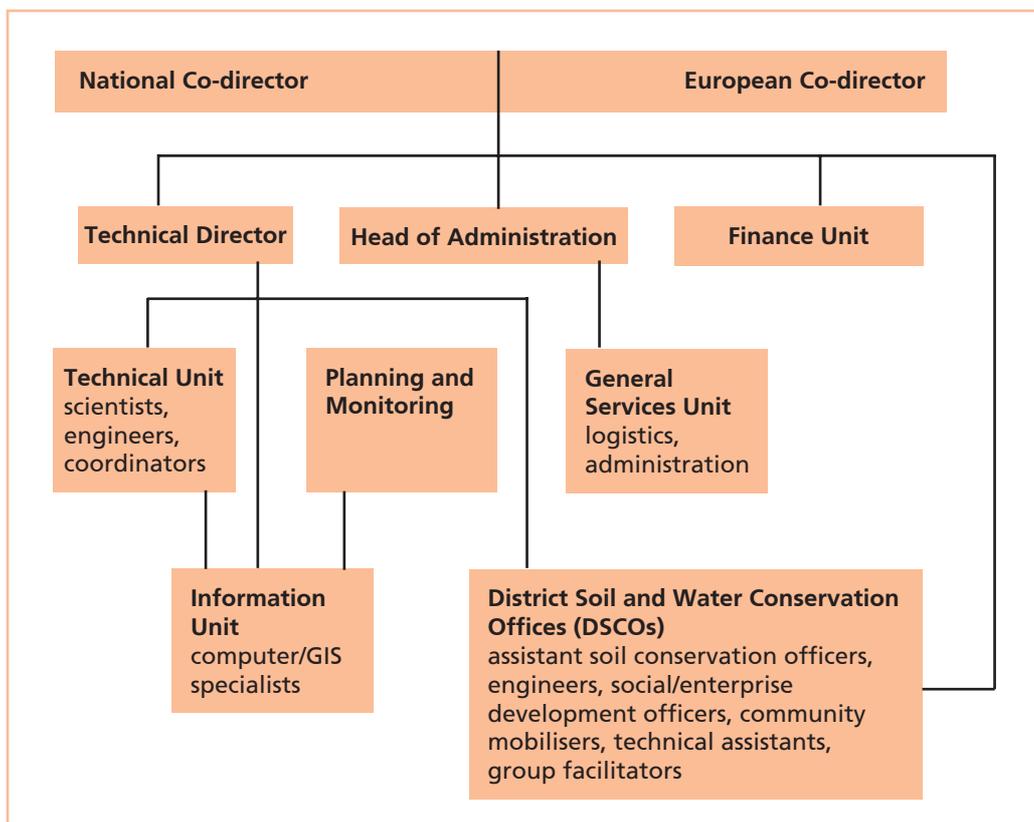
Decisions on method of implementing the technology: Mainly made by SWC specialists in consultation with land users as measures required technical know-how

Approach designed by: Mainly by international and national specialists, and partly by land users. For the landslip and stream bank stabilisation technology, the approach was mainly designed by programme staff of the Kathmandu District Soil Conservation Office

Community involvement

Phase	Involvement	Activities
Initiation	Interactive	Rapid/participatory rural appraisal
Planning	Interactive	Rapid/participatory rural appraisal
Implementation	Interactive	Responsible for major steps
Monitoring/ evaluation	Interactive	Reporting, measurements/observations, public meetings, workshop/ seminars
Research	Interactive	On-farm trials

Differences in participation of men and women: BIWMP took a bottom-up approach to planning and implementation and encouraged the equitable involvement of women in its activities. The decisions about implementing the landslip and stream bank stabilisation technology were taken jointly by men and women. However, contributions to establishing and maintaining the technology were made according to the traditional pattern of work allocation with, for example, digging mainly done by men and planting and watering mainly done by women.



Organogram

Organogram of the Bagmati Integrated Watershed Management Programme (BIWMP). The landslip and stream bank stabilisation work was implemented by the Kathmandu District Soil Conservation Office supervised by an assistant soil conservation officer (engineer).

Extension and promotion

Training: Training was provided to local people on soil and water conservation by arranging visits to demonstration sites and farms and at public meetings. This had a very positive impact on land users and SWC specialists, enabling them to easily implement horticultural, bioengineering, and agroforestry practices. The effectiveness of the training on extension agents, planners, and politicians was good, but only fair for teachers and students who are only using the programme's educational materials to a limited extent.

Extension: The extension approach taken was integrated watershed management using participatory rural appraisal, training, farmer-to-farmer exchange, workshops, seminars, and on-site demonstration. The impact on land users was excellent. Extension focused on land users and SWC specialists acting together, and provided opportunities for them to test various technologies for watershed management. The involvement of village politicians, project decision-makers, and planners in monitoring the impact of the extension work helped to develop watershed management activities for use in other areas.

Research: Research was an important part of the approach. All research components (sociology, economics/marketing, ecology, and technology) were covered (see key references below) by consultants and staff members. The participatory action research activities made a large contribution to the approach's effectiveness while involving many stakeholders.

Importance of land use rights: The fact that the land was communal land (state property, use right with community) greatly helped smooth implementation of the approach as it was not necessary to deal with different land users.

Incentives

Labour: About 75% of the labour for the landslip and stream bank stabilisation work was voluntar. The remainder was paid for in cash.

Inputs: Cement, bricks, and stones for community infrastructure were fully financed by the programme, whereas seeds, seedlings, and saplings were either not or only partly financed.

Credit: No credit was provided.

Support of local institutions: The programme provided considerable support to local institutions in the form of training and equipment.

Long-term impact of incentives: While clear positive environmental effects resulted from providing incentives such as cement, bricks, and stone, which led to improved management of the watershed and improved livelihood security, there is a risk that local communities could become too dependent on external funds for future work.

Monitoring and evaluation

Monitored aspects	Methods and indicators
Biophysical	ad hoc measurement of land use change
Technical	regular observations
Socio-cultural	regular observations of status
Economic/production	regular observations of cash income
Area treated	ad hoc measurements: GIS mapping
No. of land users involved	irregular observations of numbers
Management of approach	regular monitoring reports

Impacts of the approach

Changes as a result of monitoring and evaluation: The approach described was designed on the basis of the results shown through monitoring and evaluating the first phase of BIWMP (1986-1992). In the second phase from 1992, more attention was focused on building up the capacity of community groups to plan, implement, and continue development activities. Capacity was built through (1) community-level training; (2) supporting the installation of communication facilities (telephone, radio, etc.); (3) developing a strategy for empowering women and disadvantaged groups; and (4) assisting the establishment of community networks.

Improved soil and water management: The approach helped to improve soil and water management by promoting many activities related to agroforestry, water harvesting, landslip stabilisation, and community forestry. Many local land users adopted these technologies.

Adoption of the approach by other projects/land users: It is not known whether this approach has been taken to address landslip and stream bank erosion problems in other areas by other projects.

Sustainability: The land users were keen on maintaining the implemented technologies due to the benefits they could get from it. There has to be a strong driving force within the land users and the community to continue this approach.

Concluding statements

Strengths and →how to sustain/improve

Involves all key actors in watershed management → Institutionalise the approach

Helped land users improve their livelihoods → Similar approaches should be implemented by government and community programmes

The approach encourages land users communities and local institutions to get involved in planning and decision making → Involve them more in planning and decision making

The implementation of technologies through this approach is cost-effective and socio-culturally acceptable → Take into account local resources and knowledge

Weaknesses and →how to overcome

The approach is 'project focussed' → Institutionalise the approach

The approach does not focus on landless families → Implement watershed management activities that involve and benefit landless people

Some activities with high input requirements may not be spontaneously adopted by poor land users → Further research on how to reduce inputs or provide specific incentives for such disadvantaged groups

Key reference(s): BIWM (1998 to 2001) *Annual Workplans for Project Years 1998 to 2002*, prepared for Government of Nepal, Ministry of Forest and Soil Conservation, Department of Soil Conservation and Watershed Management and the Commission of European Communities. Kathmandu, Nepal ■ Mallik, D.B. (2000) 'Working with Community'. In Jaladhar-Quarterly Newsletter of Bagmati Integrated Watershed Management Programme, Issue 2

Contact person(s): HIMCAT/WOCAT Coordinator, International Centre for Integrated Mountain Development (ICIMOD), GPO Box. 3226, Kathmandu, Nepal, himcat@icimod.org

 ICIMOD © 2008 DSCWM, ICIMOD, published by ICIMOD