



Protected gullies – a traditional sustainable land management practice

Nepal: खोल्से एक परम्परागत दीगो भू-ब्यवस्थापन विधि

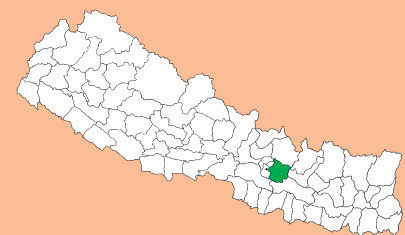
Protected gullying is a sustainable land management practice initiated and maintained by the traditional community approach; it is based on indigenous knowledge and uses only locally available materials.

Sustainable land management aims to prevent soil erosion and to increase productivity; it can take on different forms depending on the exigencies of the terrain. In Kabhrepalanchok District, where the slope of the land is not too steep, farmers use gullies controlled using indigenous techniques to protect fertile agricultural land, to minimize erosion, and to help prevent landslides near villages. For more than two hundred years, land users in jagidol (jagi=rice, dol=gully) villages practiced gully control and they have developed innovative methods for deployment and maintenance of gullies. Periodically, the whole community is involved in discussions for planning and implementation of new measures, but for the most part only routine repairs are needed and the individual farmers whose properties border the gullies shoulder the main responsibility for maintaining them. When severe flooding events cause many gullies to collapse, materials are collected locally and the whole village cooperates in the rebuilding. Both men and women are involved; men usually help with the heavy digging when new gullies are established or during crises when many gullies collapse at once and women are involved in the day-to-day maintenance of the gullies. Communities in villages higher up in the hills have used this approach for a long time; their gullies are more mature and well-entrenched and are reinforced by mature bio-engineering measures. Gullies in villages situated lower down the slope are usually more recently established and typically still require regular maintenance.

The jagidol village community, the Newari guthi (religious group) in the area, and the Hindus who worship the snake god Nagdevata and Shivadevata along the stream banks are particularly conscientious in maintaining the gullies that border the shrine(s). In this example, maintenance of the gullies is a collective effort through social networks.

Left: Members of the community gather for a focus group discussion on the approaches for gully conservation. (Sabita Aryal Khanna)

Right: Community worship for Nagadevta along the gully, devotees take extra care and consciousness for the protection of the gully (Sabita Aryal Khanna)



WOCAT database reference: QA NEP 25

Location: Sharada Batase VDC, Kabhrepalanchok District, Nepal

Approach area: Approximately 1 km²

Land use: Waterways, drainage lines, ponds, and dams

Type of approach: This is a traditional approach that has been practised for at least 200 years.

Focus: Mainly on conservation with religious, cultural, and ecological significance

Related technology: Sustainable land management using controlled gullying in 'jagidol' areas (QT NEP 25)

Compiled by: Sabita Aryal Khanna, Kathmandu University

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

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Problems, objectives and constraints

Problems

This approach suffers from a lack of institutional infrastructure. Since the group that maintains the gullies is not registered as a conservation team or an organization, it is not entitled to technical or financial support of any kind from government or non-governmental organizations. The research conducted by the community is not documented anywhere, it is passed on by word of mouth. A shortage of labour (or labour saving devices) is a persistent constraint in the maintenance of the gullies.

Aims/objectives

To ensure the maintenance of the system of gullies that acts to help prevent soil erosion and protect against flooding. During the rainy season the gullies channel water away, and during the dry season they can be modified to collect water for irrigation. Maintenance is especially important during the rainy season because when water is not channelled many terraces can collapse simultaneously and the ensuing landslide can threaten the stability of the entire village.

Constraints addressed

Major	Constraint	Treatment
Legal (land use and water use rights)	The landowner is mostly responsible	The landowner is encouraged by others in the community to maintain the gullies that border of his/her land
Financial	For the labour needed to perform the maintenance. During the busy parts of the farming year there is little or no labour available for land management projects.	Sustainable land management projects are scheduled for the dry season when farmers have fewer farming-related obligations.
Minor	Constraint	Treatment
Financial	To purchase tools and equipment needed for maintenance activities	Local materials are used; the community makes in-kind and (occasionally) in-cash donations
Technical	Farmers are not fully aware of the best gullying practices	New methods and the use of new materials can be learned from other projects implemented in nearby areas

Participation and decision making

Stakeholders/target groups



land users, individuals and groups



Approach costs met by:

Community/local land user(s)	100%
TOTAL	100%

Annual budget for sustainable land management: <USD 2,000

Remarks

All costs and amounts are rough estimates by the technicians and authors. Exchange rate USD 1 = NPR 71 in November 2010.

Decisions on choice of the technology: Over generations, the land users themselves have developed methods and techniques by trial and error.

Decisions on method of implementing the technology: The land users themselves make decisions concerning best practices. These decisions are based both on experimentation on their own land and on learning from nearby places where the technology has had input from conservation specialists.

Approach designed by: The elders in the community are the repositories of traditional knowledge and best practices on gullying. The community discusses with them and together they decide on a plan of action that best suits the existing conditions. The solution is usually implemented by the men during the dry season and the women maintain the gullies during the rainy season.

Implementing bodies: The land users and the village as a whole are responsible. Generally the farmer owning the land that borders on the gullies maintains them.

Land user involvement

Phase	Involvement	Activities
Initiation/motivation	Self-mobilization	The community as a whole decides when it needs to initiate sustainable land management in order to prevent erosion, to increase the amount of available farmland, and to protect the village from landslides.
Planning	Self-mobilization	The community plans to dig gullies during the dry season; during the monsoon they plant grasses whose roots help to anchor the structures.
Implementation	Self-mobilization	The land users implement protective measures during the times when they are not actively farming; they use all local materials.
Monitoring/evaluation	Self-mobilization	Gullies are monitored routinely as part of normal farming activities; the gullies are maintained and repaired as needed.

Differences in participation of men and women: Yes. Usually the gullies are dug by young men. Men are also involved when gullies collapse and heavy digging is needed. Women conduct routine maintenance throughout the year.

Involvement of disadvantaged groups: Not specifically.

Technical support

Training and awareness raising: None

Advisory service: None

Research: Research was not part of the approach.

External material support/subsidies

Contribution per area (state/private sector): None

Labour: Volunteered by land users

Inputs: No outside input. The full costs is borne by the land users

Credit: None

Support to local institutions: None

Monitoring and evaluation

Monitored aspects	Methods and indicators
Biophysical and technical	Gullies are regularly monitored by the land users but there is no formal reporting; the community observes the evolution of the approach
Socio-cultural/religious	When there are temples or shrines near the gullies, these are also places of worship for Nagadevta (the snake god) and Shivadevata. The villagers make a special effort to maintain the gullies.
Continuity of the approach	The community has for generations used gullying as a practice for sustainable land management.

Changes as result of monitoring and evaluation: Few. The practice has not changed significantly for generations; however, the use of new materials and techniques can be observed in communities farther downhill where the practice is a more recent innovation.

Impacts of the approach

Improved sustainable land management: Yes, gullying helps to reduce the incidence of erosion, landslides, and floods as a result of which the dwellings in the village are more stable and everyone enjoys a greater sense of security.

Adoption by other land users/projects: Yes, there are a few incidences where farmers from neighbouring valleys have observed the gullying and have implemented similar sustainable land management measures in their own villages.

Improved livelihoods/human wellbeing: Yes, the water and soil conservation afforded by the gullies means that there is more arable land available for quality crop production. More abundant crops ensure a marked improvement in the health and wellbeing of the whole community.

Improved situation of disadvantaged groups: Not specifically.

Poverty alleviation: Yes, moderate. Farmers can now produce more crops so that families have more food available and can even earn some cash income by selling some of their excess produce. The entire village has benefited from this approach and everyone is better off.

Training, advisory service and research: None.

Land/water use rights: It is generally accepted that since the farmer whose land borders the gullies gets the most benefit by having access to the water, that it is his responsibility to maintain and repair them. In times of crises, when gullies collapse beyond his individual ability to repair them, he can ask the community for help.

Long-term impact of subsidies: Subsidies were not provided.

Concluding statements

Main motivation of land users to implement sustainable land management: 1) Improved production: creating better soil conditions and making water available for irrigation. 2) Increased profitability, improve cost-benefit-ratio: when better quality farm land is available and when farmer have access to water for irrigation more profits can be obtained. 3. Risk minimization: flooding, soil erosion (runoff), and landslides are a constant threat for hillside farmers.

Sustainability of activities: Uncertain. In recent times there is a shortage of local labour and volunteers. Some form of subsidy or external aid will be needed to support this land management practice and keep it sustainable. With funding, the village can purchase better materials and create longer lasting structures which need less maintenance.

Strengths and →how to sustain/improve

The community works together for the benefit of all. → Continue to support the community in their traditional land management practices.

Everyone's suggestions, including those of nearby communities, are taken into serious consideration when planning sustainable land management.

→ Continue to promote a regard for others sharing the same landscape.

Weaknesses and →how to overcome

There is no formal planning and no contact with either the local authorities or potential funding agencies for conservation work → Formalize planning and implementation and become recognized as a legitimate conservation group.

Farmers are leaving the area in search of paid employment. New actors are moving into the area and the larger community is changing. There are recurrent incidents of land use change such as brick factories moving into the area. → The government can institute zoning to regulate what land is deemed for cultivation only.

Key reference(s): None

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