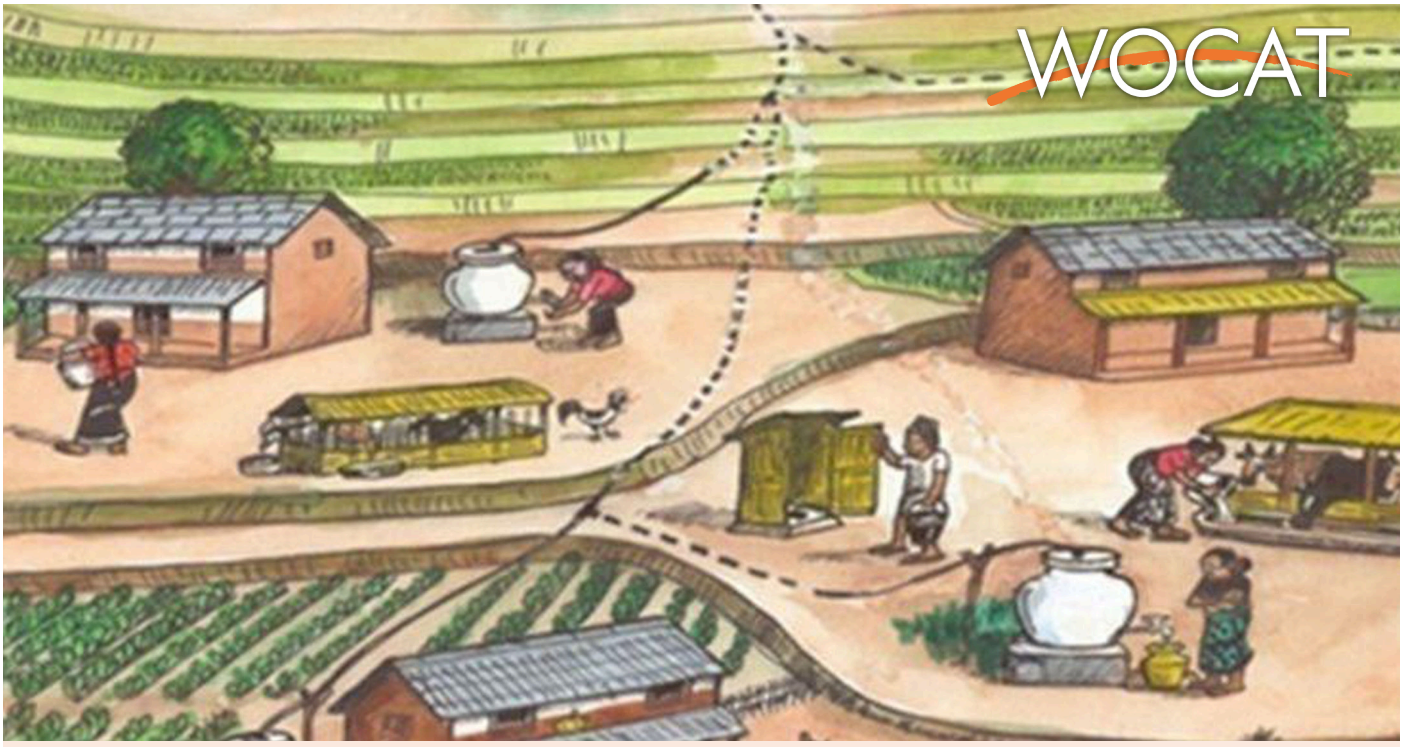


Diagrammatic illustration of a one tank system where a single tank provides water both to the domestic tap stand and to fill up drip irrigation header tanks. (IDE/Nepal)

A multiple-use water system ( )

Bahu uddhasaya Pani prayog pranali (Main contributor: Parmananda Jha, IDE/Nepal)

A multiple-use water system gives a community access to water for domestic use and water for crop irrigation.

Aims / objectives: A multiple-use water system (MUS) is a combined water facility that has proven useful as a means of providing drinking water and water for irrigation for smallholder farmers in the hilly areas of Nepal. Water is collected by gravity from a highland source into a holding tank and is shared by means of distribution lines, domestic tap stands, and irrigation off-take lines. It can also support application of micro-irrigation technologies (MIT) such as drip and micro sprinkler irrigation systems.

Methods: MUS is a community-managed system that caters mainly to smallholder landowners and marginal households in rural hilly areas. When properly implemented, it can help to alleviate poverty and increase food security for poor and marginalized groups. The first priority is to provide drinking water and water for domestic use to the community; any excess water is used for agriculture and irrigation.

Stages of implementation: The following points should be taken into consideration before a community establishes a MUS:
• The source of water should be clear of water-rights issues
• The water should be plentiful and of good quality
• There needs to be a sufficient drop in gradient between the source and the tank if the water is to be collected by gravity. If the drop is not sufficient, users should be prepared to consider lifting the water.
• The distance between the source and the village should be less than 3 km.
• The community should be ready to contribute unskilled labour as part of their contribution to the project.
• The community should be ready to put aside some funds for operational and maintenance costs; these funds can, in part, also be collected in the form of monthly users' fees.
• At least 70% of the water users should be ready to adopt micro-irrigation technologies (MIT) such as drip and sprinkler irrigation.

: Kaski, Lamjunj, Tanahun, Dhading, Sangjya, Gulmi, Arghakhanchi, Palpa, Udayapur, Pyuthan, Rolpa, Ruk,

•

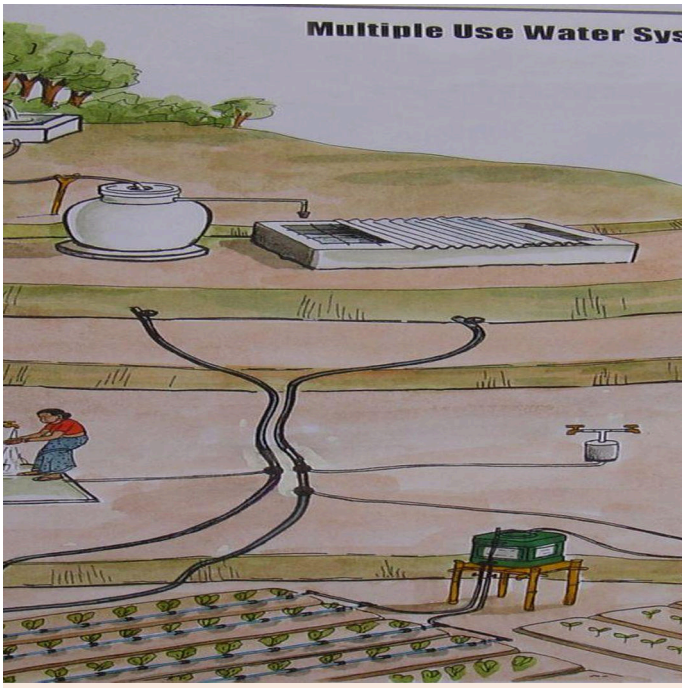
:

:

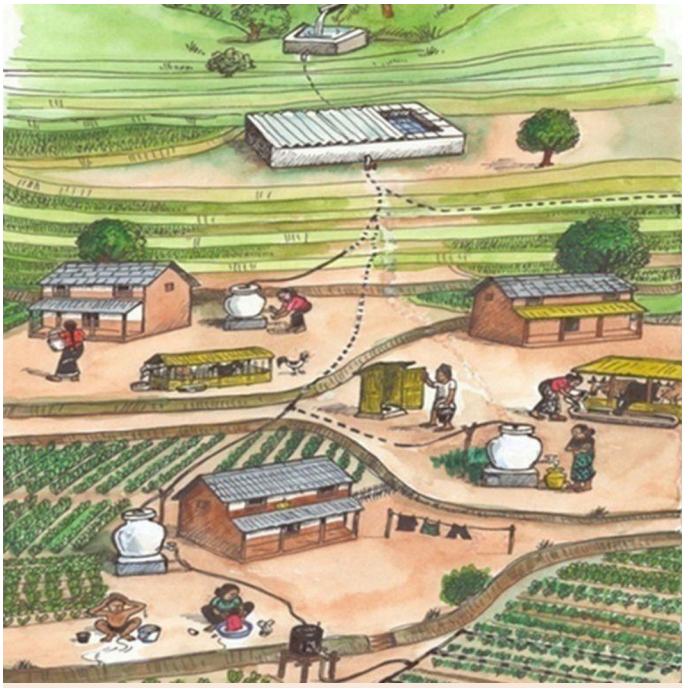
/

/

☑ /



Diagrammatic illustration of a two tank system where the source water is first collected into a tank which is dedicated for domestic use and spillover water is collected into for agricultural use ((IDE/Nepal))



Diagrammatic illustration of a one tank system where a single tank provides water both to the domestic tap stand and to fill up drip irrigation header tanks. (IDE/Nepal)

The Approach focused mainly on other activities than SLM (Collect water from a small-scale source and distribute it both for domestic use and for the production of vegetables and high value crops)

• To provide a regular supply of water for domestic and agricultural use
• To supply water for micro-irrigation technologies such as drip and sprinkler irrigation systems
• To improve health and sanitation
• To help smallholder landowners improve their incomes and livelihoods as well as to adapt to climate change by having access to a regular supply of water so that they can grow crops regardless of changes
• To conserve water by using it more wisely

The SLM Approach addressed the following problems: The community needs to prioritize how it will partition the water for domestic use and for irrigation.

- **( ):** The existing land ownership, land use rights / water rights helped a little the approach implementation: Since this approach uses small spring sources of water, there is usually only a minimum risk of conflict for water use. When the water source is registered with the local authorities, it helps to reduce potential conflicts over water rights between communities.

- **/ /** : Management and operation of system Treatment through the SLM Approach: Strong social mobilization is needed
- **SLM** : Water supply insufficient to meet the demand Treatment through the SLM Approach: Increase the capacity of the storage tank
- : The community often cannot agree whether to scale up the domestic or the irrigation water supply. Treatment through the SLM Approach: Concerned stakeholders need to confer and agree

/ ?		
/	This included women, men, dalits, janjati, brahmin, chhetri	
/		
/ / -		
	IDE Nepal	
( )		

/

The community comes to a consensus on their water needs. They identify a source that it is within the 3 km limit and investigate the water use rights.
Technical aspects are dealt with; these include assessing the source to verify whether it has an adequate supply of water, assessing different schemes (for intake, take off, tap stands, and the like), preparing a design and estimating the cost, and discussing funding.
A users' committee is formed and the community provides unskilled labour. Technical assistance is provided by INGOs/NGOs.
The work is monitored by the users' committee but monitoring and evaluation of technical aspects are provided by INGOs/NGOs at different times during the project.

Research

Organogram
(Adapted from
(Mikhail and Yoder 2008)

Procedural Steps of MUS Design and Implementation

Pre construction phase:	Project Initiation
	Consultative meeting/application call
	Scheme screening
	Feasibility study and tentative costing
	Scheme ranking and selection
	Scheme appraisal
	Formation of water users committee
	Detailed engineering survey
	Design and cost estimation
	Approval/agreement
	Preparation of work plan
	Collection of fund for O & M and MIT kits
	Agreement between WUC and contractor
Construction phase:	Procurement of materials and tools
	Transmission section
	Tanks, taps and distribution section
	Testing
Post-construction phase:	Nomination of scheme operator and caretakers
	Training: Scheme operation
	Micro-irrigation
	Project completion meeting/social audit
Evaluation phase:	Evaluation/feedback

SLM

( )

SLM

SLM

SLM

/

/

( )

/

/

Community

The approach provided training to the community through the users' committee, field staff, and an agricultural advisor. The local skilled body is trained during site visits. For the most part, information is transferred from farmer to farmer. Much of the training is hands-on.

An advisory service is provided for the land/water users, but what is given is usually insufficient to help farmers learn new techniques such as micro-irrigation.

/

/

/

/

village development committees, local governance and community development programmes (LCGDP), community forest user groups, youth clubs, and women's groups. Village development committees can invest in MUS and micro-irrigation technologies as specified in their guidelines.

bio-physical aspects were regular monitored by project staff, land users through measurements; indicators: Project staff and land users routinely monitor the water source and other biophysical aspects to ensure that the approach remains sustainable. technical aspects were regular monitored by land users through observations; indicators: Commercial vegetable or high value crop production, micro irrigation, drinking water and sanitation socio-cultural aspects were ad hoc monitored through observations; indicators: MUS schemes help to improve sanitation and thereby reduce the incidence of waterborne diseases. They also help to improve livelihoods by making more fresh vegetables available both for immediate consumption and for sale. economic / production aspects were monitored through observations; indicators: MUS schemes help to reduce drudgery; the labour saved can be used in the production of vegetables and other high value crops. no. of land users involved aspects were monitored through measurements; indicators: From 10 to 80; on average 28 land users are involved in one MUS scheme management of Approach aspects were monitored through observations; indicators: Participatory approach with collaboration by government organizations, INGOs/NGOs and others to provide routine inspections and technical support There were no changes in the Approach as a result of monitoring and evaluation: The approach, as it is now put into practice, is a result of incorporating technological improvements that were originally identified through years of monitoring and evaluation. There were no changes in the Technology as a result of monitoring and evaluation

/

IDE has researched and implemented this type of MUS concept, system design, and methodology in Nepal since 2003; now other agencies also provide similar systems.

Research was carried out both on station and on-farm

SLM

< 2,000
2,000-10,000
10,000-100,000
100,000-1,000,000
> 1,000,000
Precise annual budget:

Approach costs were met by the following donors: international non-government: 30.0%; local government (district, county, municipality, village etc): 26.0%; local community / land user(s): 44.0%

/

/

All MUS systems in Nepal are built by communities or community groups in collaboration with the government and NGOs. The fact that MUS systems provide multiple benefits is seen as a plus point for institutions looking to invest in community projects.

SLM?

The approach supports sustainable land management because micro- irrigation technologies promote optimal use of water and help to retain nutrients in the soil. Similarly, the production of high value crops and vegetables further increases the fertility of the soil.

?

The wellbeing of marginalized and socio-economically disadvantaged groups improves significantly.

Did other land users / projects adopt the Approach?
Since the reduction in drudgery and the improvements in livelihoods are so great, many communities would like to implement this approach. INGOs/NGOs can help with the financial and technical aspects of implementation.

SLM

( )

/

( )/

/ / /

SLM

well-being and livelihoods improvement

( )?

/

Since the approach was requested by the community as a whole, they all have a vested interest in seeing that it remains sustainable. When technical support is needed, it can be obtained from the concerned agencies.

:

:

- A reliable water supply for both the domestic and irrigation needs of hill farmers (How to sustain/ enhance this strength: The continued involvement of the community, the government, and assisting INGOs/NGOs.)
- The MUS is a simple gravity system that does not require either sophisticated equipment or training. (How to sustain/ enhance this strength: Continue to investigate how it can be simplified even further)
- A MUS system has a minimum lifespan of ten years and is easy to install even in remote areas. (How to sustain/ enhance this strength: Continue to investigate how it can be improved even further)
- MUS is well suited to the dual purpose use of water for both domestic and agricultural use. (How to sustain/ enhance this strength: Continue research and development to see how it can be improved even further.)

/ / :

/ / :

- Installation costs can be a challenge for very poor communities. It can only irrigate small areas (0.1-0.15ha). Installation costs can usually be recovered within 1 year when the irrigation water is used to produce high value crops.
- The intake and reservoirs need to be inspected regularly. Either devise a means to ensure that inspections are conducted regularly or find a system that requires fewer inspections
- Reservoir tanks and intake pipes can deteriorate over time and pipes and joints can start to leak. Local skilled labour can be employed to carry out needed repairs. Pipes and fittings should be checked regularly. Routine inspection and maintenance are essential.
- Costs can be high when imported materials are needed for repair and maintenance. At the outset, some money needs to be set aside for operation and maintenance costs; additional funds should be collected by charging monthly users' fees.

Editors

Shreedip Sigdel — Fabian Ottiger

: 21 2015 : 9 2017

Shreedip Sigdel (shreedip.sigdel@icimod.org) - SLM
Parmananda Jha (pjha@idenepal@org) - SLM

https://qcat.wocat.net/km/wocat/approaches/view/approaches_2532/

SLM

- ICIMOD International Centre for Integrated Mountain Development (ICIMOD) -
- iDE Nepal (iDE Nepal) -
-

- Multiple use water service implementation in Nepal and India: Experience and lessons for scale-up, Mikhail, M; Yoder, R (2008): http://www.ideorg.org/OurStory/IDE_multi_use_water_svcs_in_nepal_india_8mb.pdf