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Multiple-use Water Schemes

In the northeastern hilly regions of India and Nepal, women are among the main benefactors of Multiple-Use water Schemes

Multiple-Use water Schemes (MUS) are providing more controlled and reliable water supplies for household needs and more productive agricultural activities in the northeastern hilly regions of India and Nepal. In this region, only 5% of the existing water resources are used for economic activities. A surfeit of water wreaks havoc in the rainy season, while households suffer acute water shortages in the dry season. The impact of MUS on household income and the status of women has been significant.



Photo Credit: ICAR Complex for North Eastern Hill (NEH) Region, Sikkim Centre

A reliable supply of water means these smallholder farmers can grow a wider variety of crops and more high-value crops.

Management innovation

Most farm households in this region grow rice, millet, corn and a few other crops using a traditional form of agriculture called jhum, also known as slash and burn. Most people immediately think of the negative environmental impacts of slash and burn agriculture, but one of its main drawbacks is the very low yields it returns. Slash and burn agriculture is also a poverty trap. Farmers would like to grow more vegetables and fruit trees but changing farming practices requires reliable supplies of water.

Several farm-level water management innovations and indigenous practices have been tried in the past, including integrated watershed management, water harvesting, multi-commodity farming systems, bamboo drips, and storing rainwater in plastic-lined ponds or ferro-cement tanks. Some of these methods have found favor among local authorities and policymakers, but most meet only agricultural water needs and even then they generally do not provide sufficient supplies during the dry season.

What smallholder farmers need is a water supply system that provides water for both domestic needs and high-value agricultural production, including livestock. Such a system needs to be flexible so that householders can switch from domestic to productive use to match seasonal demands. It has got to be simple with next to no maintenance costs, and it must ensure equitable access. Such systems are called MUS.

Matching MUS design with user needs

The basic designs for MUS are based on: groundwater/lake water lifting and distribution; rainwater collection and distribution;

springwater distributed by gravity system; and stream/river water supply after treatment. Most MUS are designed to cover 10 to 40 households. In some cases, up to 80 households have been provided service from MUS. Design of an MUS accords first priority to drinking water and domestic use. This is in line with the government's policy on water resources development. The design criteria assume 45 liters per person per day for domestic use, and 400-600 liters per household for productive use. The final design is decided by technicians in consultation with community users based on their local knowledge and stated needs.

Working with local authorities, researchers from the International Water Management Institute (IWMI) and International Development Enterprises (IDE) installed MUS in the hilly regions of Nepal and organized cross-learning programs between the Indian and Nepalese researchers, policymakers and farmers. A water-poverty mapping technique helped identify the best areas to target in the study villages in Nagaland and Sikkim states of India.

An evaluation of the schemes installed showed that they more than met the key criteria with the added benefit of low initial investment costs (approximately USD 200 per household) and short cost-recovery periods. With MUS, households can earn an additional annual income of about USD 190 through the sale of surplus produce, which means that the system has a payback period of only one year.

MUS also have a great many non-monetary benefits, especially for women. Women are the prime focus groups of all the multiple water use-related project activities. When villages adopt MUS, women generally take up key positions in MUS user committees, empowering them to lead and link with other agencies. The additional income they earn from the sale of vegetables and other produce provides financial independence and enhances financial decision making. MUS also reduces women's workload by decreasing the time needed to collect water (free labor). More vegetable consumption provides better nutrition for women and children, which translates into savings on medical care.

Donors and Collaborators

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For more information

For more information about this and related projects, you can contact Bharat Sharma (b.sharma@cgiar.org) or visit the IWMI website (www.iwmi.org).