Learning to Implement and Scale-Up Multiple-Use Water Services at the Community Level

Multiple users take water from multiple sources and use and reuse it for multiple purposes. This is the reality for rural and peri-urban water users. Moreover, infrastructure designed for single use is used for multiple purposes by communities at the local level.

At the national or basin level, water managers are aware of the integrated nature of water resources and their multiple sources, uses and users. However, this is not the case at the community and household levels. At these levels, water managers carve out a particular end-use, which becomes the mandate and structuring principle of the entire water sector. Other uses, even by the same users taking water from the same source, are ignored. In addition, existing and often informal forms of storage, conveyance and use at homesteads and at the community or sub-basin level are often overlooked in externally supported water development and storage. This is the gap that the action research project, 'Multiple-Use Water

Services (MUS),' project under the CGIAR Challenge Program on Water and Food (CPWF), addressed.

The project developed and tested homestead-scale and community-scale MUS models in 30 rural and peri-urban sites in eight countries in five basins. This approach to water services takes the water needs of rural and peri-urban communities as the starting point for planning and designing new systems or for rehabilitation of older systems. By addressing the barriers often posed by sectoral approaches, MUS brings more benefits (food, health, income, ease of drudgery) than single-use approaches.

Objectives

The objectives across all sites were

- to establish generic, field-tested and convincing models of MUS at household and community levels; and
- to widely scale up these models in order to reach, ultimately, all rural and peri-urban people with water services that meet both domestic and water needs.

Process

1. Key partners who were pioneering MUS at that time were brought together. Partners were from the four main categories of water service providers: water users with self-supply, private providers, NGOs and government. It was important to include representatives from the domestic and productive water sectors, scientists and implementers.

2. Each global partner chose their national and intermediate level partner according to the criterion of being an MUS innovator and selected sites for case studies.

3. Thirty study areas were selected, each covering either one or more communities or groups of adopters of similar technology. The three main technology groups were the following: private homestead-based technologies, communal systems with single-access points and communal systems with distribution networks to public standpipes or homesteads. This selection process ensured a wide diversity of partners and contexts that explored diverse perspectives on MUS.

4. In each country, the national MUS partner forged horizontal and vertical exchanges with other water service providers in the local study area and at the intermediate, national and global levels. These exchanges, by 'learning alliances,' were able to raise awareness about the MUS models. Through 'learning by doing,' they induced institutional changes, creating an enabling environment at the intermediate, national and global levels that responds adequately to the community's multiple water needs. This enabling environment also ensures its continuity beyond the life of the project.

Lessons learned

Models for community-level MUS

- With regard to principles of livelihood-based services and affordable technologies, a strong linkage exists between levels of people's multiple water uses for livelihoods at and around homesteads and water availability as captured, conveyed and stored through technologies. This linkage is shown in Table 1.

Table 1. Relationship between technologies and water use in selected study areas			
Country	**Technology**	**Range of average daily availability of water (liters per capita per day)**	**Level**
Ethiopia	Communal piped systems with very scattered standpipes	8-17	Basic domestic
South Africa	Communal piped systems with scattered standpipes	30	Basic MUS
India	Communal piped systems with frequent standpipes	40 (design supply)	Basic MUS
Zimbabwe	a. Communal boreholes with hand pumps b. Individual shallow wells with windlass and buckets c. Individual shallow wells with rope-and-washer pumps	a. 10-15 b. 60-70 c. 80-90	a. Basic domestic b. Intermediate MUS c. Intermediate MUS
Bolivia	a. Tankers b. Piped distribution systems with household connections	a. 30-40 b. 60-80, with exceptions up to 140	
Nepal	Communal piped systems with frequent standpipes	137-225 (design supplies)	
Colombia	a. Communal piped systems with household connections (rural communities) b. Communal piped systems with household connections (peri-urban communities)	a. 190-250, with some cases much higher b. 76-118	a. High MUS b. Intermediate MUS
Thailand	Farms with ponds and other sources	80-1,000	Intermediate to high MUS

Source: CPWF Multiple-Use Water Services Project

Water-dependent productive activities that increase in number and in size with higher water availability include small and large livestock keeping; trees, crop and vegetable irrigation; craft-making and other enterprises. This confirms the project's hypothesized multiple-use water ladder.

- In terms of policy implications, the water services that aim to meet people's livelihood needs at and around homesteads should be double or triple the conventional design norms in the domestic sector [20-30 liters per capita per day (lpcd) for domestic uses only for Sub-Saharan Africa or South Asia]. Instead, 50-100 lpcd or more is required to ensure that services meet people's livelihood needs, so they can 'climb the multiple-use water ladder.'

- Increasing water availability requires incremental expansion of one type of technology or further combinations. Such incremental investments make economic sense, especially for intermediate-level MUS (50-100 lpcd).

- With regard to other principles (financing arrangements, equitable institutions and water resource availability), many challenges faced are similar to those in conventional domestic or productive water services. One unique feature of MUS, however, concerns equity notions of water sharing under scarcity. Homestead-based multiple-uses are small-scale compared with relatively few large users, most of whom use water beyond homesteads. Under scarcity, basic domestic needs should be prioritized and, after that, minimum water supplies for both domestic and small-scale productive uses should be made available. Putting in place policy and institutional and technical measures within communal systems lessens the chance that people will overuse the resource.

- When moving from homestead to community-level water development, synergies can be forged if river intakes, storage and conveyance structures are holistically designed and incrementally improved for shared water provision, whether to homesteads or fields.

Innovation and scaling up: creating a supportive environment for MUS

- At the intermediate, national and global levels, project partners initiated learning alliances that create an enabling environment for MUS.

- In all countries, the visible and documented successful performance of community-level MUS, in sufficient numbers to allow for some generic validity, appears vital for creating awareness creation.

- There are many differences between the learning alliance processes in the respective countries. The strengths and weaknesses in realizing the three principles for scaling up MUS at the intermediate level, from the perspective of each of the water service provider categories, are given in Table 2.

Conclusion and recommendation

The MUS project identified and tested new models for meeting the multiple water needs of people in rural and peri-urban areas. These multiple-use water services improve health, access to food and income more effectively than conventional single-use water development. Previously counter-productive bureaucratic water sectors started

Table 2. Strengths and weaknesses in realizing principles for scaling up MUS, by category of water service providers

Category of water service provider	Principles for scaling up at intermediate level		
	Participatory planning	**Coordinated long-term support**	**Strategic planning for scaling up**
Self-supply **Thailand** (Farmer Wisdom Network) **South Africa** (Water for Food Movement)	Multiple water needs obvious; High own contributions in cash and kind; Own experimenting, mutual learning and knowledge generation	Expansion based on mutual help with limited resources; Need-based soliciting of external support; Sustainability of movement uncertain	Strategic alliances at highest policy levels for influencing policy and support for roll-out
Private service provider **Bolivia** (Agua Tuya)	Multiple water needs obvious; Market-driven	Providing holistic support for higher sales; Private business' outlook of medium-term growth	Market-driven roll-out limited; Linking with municipality
NGOs **Ethiopia** (CRS) **Nepal** (IDE) **Zimbabwe** (various)	Responsive to multiple water needs; High own contributions to market-driven technological innovation, but otherwise limited	Poverty relief or technological innovation driving coordinated support for multiple water uses; Short-term, project-bound	Strategic alliances with local service providers and government at all levels for uptake of innovations and sustainable after-care of technologies
Government/ parastatal domestic sector **Colombia** (with university) **India** (with NGO)	Top-down, single-use and single-site planning; Unable to prevent de facto multiple-uses; Limited contributions by users	Supporting single domestic use at homesteads only; Short-term, project-bound	Lobbying at national level to increase design norms and address water quality issues; Awareness raising about livelihood benefits of de facto multiple-uses; Promoting immediate multiple-uses of domestic services planned for future expansion
Government productive sector (some Learning Alliance members)	Top-down, single-use planning biased to large-scale systems; Unable to prevent de facto multiple-uses; Limited contributions by users	Prioritizing a single productive use with add-ons for better access to other uses; Short-term, project-bound	Lobbying at national level to support small-scale productive uses at homesteads; Awareness raising about livelihood benefits of de facto multiple-uses; Promoting efficient productive water use (drip kits)

Source: CPWF Multiple-Use Water Services Project working together towards one common agenda: to plan and design new systems or rehabilitate existing ones, according to people's multiple water needs at preferred sites, providing a minimum of 50-100 lpcd to homesteads. At the level of one or more communities, communal abstraction, conveyance and storage are embedded in a holistic spatial layout.

Further research is recommended on health impacts, point-of-use water treatment, synergies and conflicts regarding specific uses of water (e.g., increasing productivity of water or market linkages). Such new research should support the common agenda of multiple water uses and not replace it by systems designed for a single end-use at one specific site.

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