Multiple-Use Water Services for Poverty Reduction: A Background

Since the early 2000s, multiple-use water services has emerged as a new approach to water services in rural and peri-urban areas in low- and middle-income countries. The concept of multiple-use services (MUS) is based on the truism that people use water from multiple sources for multiple uses. People's demand is multi-purpose. Yet, water services are usually provided by 'domestic' or 'irrigation' or 'fisheries' sub-sectors for a single use only. The structuring of the public water sector according to single-use mandates leads to 'projects' that operate in parallel with each other, even when they serve the same user at the same site. MUS moves beyond these narrow sector boundaries and seeks to align water services with people's multiple needs for integrated water resources.

The challenge of bridging the gap between people's water needs and water service provision was taken up by the action research project, 'Models for implementing multiple-use water supply systems for enhanced land and water productivity, rural livelihoods and gender equity',

supported by the CGIAR Challenge Program on Water and Food (CPWF). Envisaging multiple-use services as a promising new approach, the project expanded and deepened knowledge of what MUS is and could be in a range of different contexts. Its aims were twofold: identifying how MUS could best be implemented in communities and how MUS models identified in communities could be scaled up to ensure better services for, in principle, everybody.

Multiple uses from multiple sources versus single-use mandates

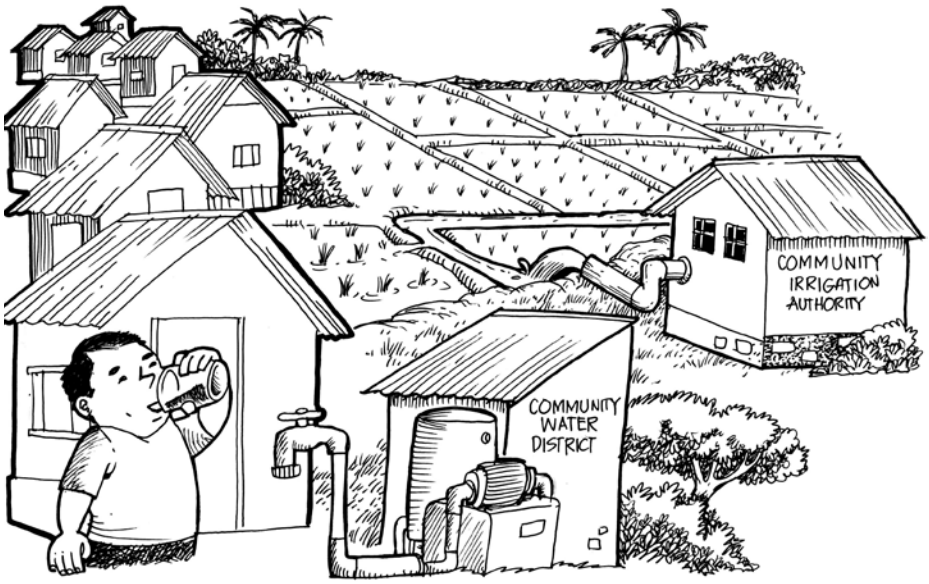
Water professionals have become increasingly aware over the past 20 years of the gap between their professional single end-use water system and the practice of communities. Their mandates to provide water services primarily for one single end use—domestic use, irrigation, livestock or fisheries—did not match the realities and water needs of their clients, who invariably used multiple water sources for multiple uses. Communities with diversified agriculture-based livelihoods depend in many ways upon water, especially in rural and peri-urban settings in low- and middle-income countries.

Communities use water for an array of domestic and productive uses. To meet these needs, they often draw upon multiple sources of water. For them, it is obvious and normal to use water from multiple sources for multiple uses. Single uses, like rain-fed on mono-cropped fields, are the exception.

In contrast, water services are organized according to sub-sectors that carve out one single end use as a priority, if not an exclusive water use. This priority end use becomes the sub-sector's mandate. Mandates, in turn, greatly influence the entire structuring of the sector. This single-use view of water becomes a professional paradigm of how to perceive the world and act accordingly (Moriarty 2008).

Most notably in the domestic and irrigation sub-sectors, the single-use mandate is often linked to an assumption that there is one single site where this use takes place. Thus, the domestic sub-sector focuses on homesteads and sites as near as possible to homesteads.

The irrigation sector focuses on water end use by plants in fields. Once, these fields were assumed to be grouped into shared irrigation schemes. More recently, however, greater attention has been paid to irrigation and agricultural water management infrastructure used by individuals, including mechanized and manual groundwater pumps, water harvesting or soil moisture retention techniques. However, the question of whether these fields are near the homestead has received less attention.



Indeed, all water sub-sectors focus on their particular end use, and no sub-sector holistically considers the entire 'water and landscape' picture in communities or sub-basins, with its spatial layout of multiple water sources, multiple users and multiple uses at various sites, the 'arenas in which humans interact with their environments on a kilometer-wide scale' (Coward 2008).

Added value of water services for domestic use and irrigation

Professionals became aware of the supply-use gap because they began to observe that systems designed for one single water use were used for multiple purposes in an unplanned way, and so became de facto multiple-use systems. 'Irrigation' systems are used for drinking, bathing, washing, cattle watering, small enterprises, fisheries or irrigation (Yoder 1983; Silliman and Lenton 1985, Meinzen-Dick 1997, Boelee *et al.* 1999, Renwick 2001).

Roads for monitoring canals became trading routes (Lee 2008). Systems planned for drinking water and other domestic uses are used for cattle watering, irrigation and a range of other small-scale productive uses (Lovell 2000, Moriarty *et al.* 2004). While some unplanned uses were absorbed by the system, others caused damage to infrastructure or deregulated planned water allocation schedules. However, measures to prevent unplanned uses, (e.g., forbidding and declaring those uses as 'illegal)', were ineffective.

Professionals started to appreciate the improvements that these unplanned uses brought to all four main water-related dimensions of livelihood well-being: freedom from drudgery, health, food production, and income. For uses that did not damage infrastructure, these livelihood benefits came at no cost other than the changing perspectives of water professionals.

Academics from both the domestic and irrigation sub-sectors corroborated the benefits of this new perspective. Various studies were undertaken to assess the 'added' value of benefits from unplanned uses (Meinzen-Dick 1997, Perez de Mendiguren 2004, Renwick *et al.* 2007). The health and hygiene benefits of using irrigation water for domestic uses received particular attention (Meinzen-Dick 1997, Van der Hoek *et al.* 2001, Boelee *et al.* 2007, Renwick *et al.* 2007).

"First you would see someone irrigating some tomatoes, and you would say that he is wasting water. Now, you see the same situation, but from the perspective of the user, and you would say that he is making good and economical use of water" (Johny Hernández, technician from Honduras).

Armed with this new understanding, the sub-sectors started proactively enhancing accessibility to water with the double aim of stimulating the livelihood benefits and avoiding damage and disturbance to the systems. They adapted their designs with 'add-ons'. Irrigation designers constructed washing steps or cattle entry points in irrigation canals. To encourage fisheries and other aquaculture, connectivity was improved and dead storage (below which water would not run off) guaranteed in reservoirs, streams and even at field level for crop-fish systems, where a crop such as rice can be grown and fin fish or prawns farmed in the same field (Nguyen-Khoa *et al.* 2005). Domestic systems were equipped with cattle troughs, washing slabs, and sometimes a communal garden. In these ways, for limited extra cost, the uses and corresponding livelihood benefits were augmented. Water services that maintain the primary mission of their own sector but accommodate uses beyond the sector's mandate are called 'irrigation-plus' or 'domestic-plus' water services (Van Koppen *et al.* 2006).

Towards multiple-use water services

Despite this trend towards recognizing the benefits from multiple use, there was hardly any cross-sectoral collaboration until the early 2000s. Each sub-sector tried to address other uses within its own domain. Gradually, realization grew that many more opportunities for better service delivery could be unlocked through a more comprehensive approach to the planning and design of new or rehabilitated infrastructure. The logical next step was taken. Practitioners and researchers from both the domestic and irrigation sub-sectors innovated and collaborated in a global endeavor to achieve 'multiple-use water services' or 'MUS'.

Understanding MUS and its emphasis on water services

MUS is a participatory, integrated and poverty-reduction-focused approach in poor rural and peri-urban areas, which takes people's multiple water needs as a starting point for providing integrated services, moving beyond the conventional sectoral barriers of the domestic and productive sectors (Van Koppen *et al.* 2006).

The 'S' in MUS stands for 'services' because the overarching goal was to unlock new potentials for better services by governmental, non-governmental and private water service providers for improved multi-faceted livelihoods in peri-urban and rural areas. MUS is about services for people rather than particular water systems. A 'water service' is defined as 'the sustainable provision of water of a given quality and quantity at a given place with predictability and reliability'. Services have hardware and software components.

Linkages to other services that enhance the benefits of water use, such as hygiene education or marketing support, are other important components. Services are not time- and location-specific 'projects' that close after an infrastructure construction or rehabilitation phase. Services are continuous and cater to post-construction technical and institutional support. Services imply accessibility to everybody, in principle; MUS should

Hardware components of water services concern infrastructure or technology–and include issues such as technology availability, spare parts, engineering skills, or water resource assessments. Software refers to all the non-hardware related issues, such as support for institution building (leadership, rule setting and enforcement), water allocation and conflict resolution.

certainly reach the poor and the marginalized. Multiple-use water 'services' refer to this sustainable holistic supportive environment to meet people's multiple water needs.

Government and NGOs in particular can invest in expensive infrastructure often with longer term benefits. They can act as a utility, facilitator, catalyst, innovator, loan provider or a combination of these. Government agencies are key for scaling up because they have a mandate to reach all citizens. Government is also in the best position to provide after-care support to ensure that projects become services. Moreover, most international water agencies and rural development organizations work through governments. While governmental line agencies tend to specialize and provide compartmentalized support, local government has the mandate to integrate services.

Conclusion

For services to be sustainable and to reach everyone, a range of stakeholders must fulfill various complementary roles. The actors in this supportive environment are the various water service provider groups: users, NGOs, domestic sub-sector, productive sub-sector, local government, and knowledge centers. Support is enhanced by searching for complementarities and synergies that lead to ever more robust networks of relationships of trust between beneficiaries or clients and service providers.

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