



# MULTIPLE-USE WATER SERVICES: SUPPORTING LIVELIHOODS IN THE ANDEAN REGION

Colombian and Bolivian institutes are collaborating as part of an international research effort that aims to improve the impacts of water supply projects. By planning to meet multiple needs of rural and peri-urban communities – including water for productive uses like cultivating small gardens and raising livestock as well as basic domestic needs - it is believed that overall benefits and sustainability can be enhanced. Activities are focused on improving planning of water supply projects to meet multiple uses and helping organisations involved in the sector to update policies. This brochure explains how you can get involved.

## Multiple-use water services

In rural and peri-urban areas, there is often a demand for water for small-scale productive uses such as garden irrigation, livestock, post-harvest crop processing and micro-enterprises like small restaurants and brewing beer. These productive uses can generate income, contribute to food security, and help in the fight against poverty.

However, domestic water supply systems are not usually planned to take account of small-scale productive uses, or managers prohibit such practices. This limits the beneficial impacts of water supply systems, and can have a negative impact on sustainability. It is more difficult to promote participation in operation and maintenance when systems only partially meet the needs of people. Illegal connections, made when people modify systems to better suit their unplanned needs, cause problems for tail-end households who do not

receive sufficient water. As well as domestic water supply projects, many irrigation projects also tend to be 'inward looking', in this case ignoring domestic water requirements and also small-scale productive uses.

There is a need, and demand, for more integrated approaches in the water sector: new approaches to governance, planning and local practice that move away from the narrow, traditional sub-sectors (domestic water and sanitation, irrigation, water resources management etc.). Small-scale productive uses are one issue that requires such an approach. This brochure presents an initiative to develop policy and capacity to provide multiple use water services in the Andean countries, focusing on Colombia and Bolivia.

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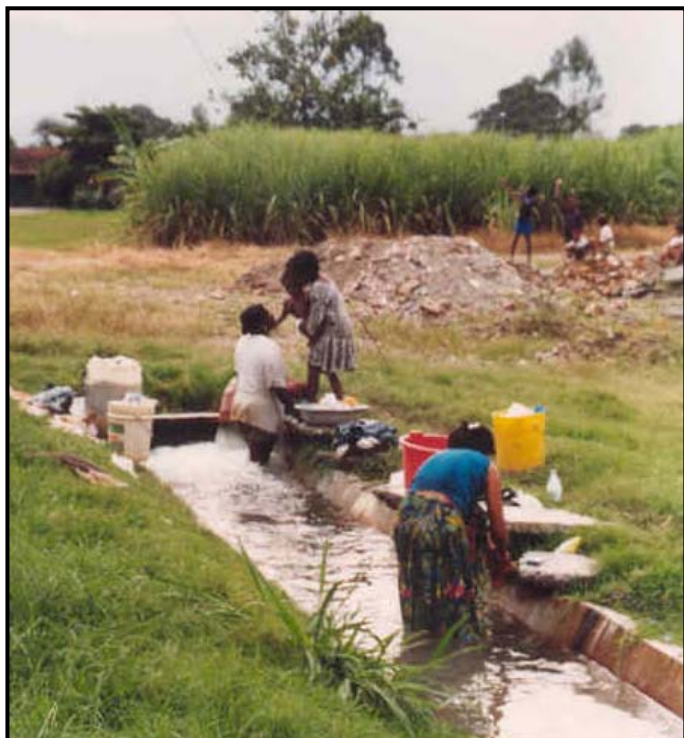


## Colombia

Traditionally, in Colombia, investments in water supply have been oriented towards solving public health problems. The focus is put on potable water and water to meet demands for improved hygiene, such as water for sanitation, washing and cleaning. Through this health focus, attempts are made to reduce peoples' expenditure on health care, to improve quality of life and peoples' dignity. However, in rural and peri-urban areas it is common to find people emphasising needs for water for small-scale productive uses, such as irrigation, livestock watering or post-harvest crop processing. The smallholders' irrigation programme is an example of the government trying to meet these demands. However, it is not feasible to develop small-scale (which often means quite large) irrigation systems across the entire country. Drinking water supply systems can and often do meet part of the demands for productive uses. They become multiple use systems.

The institutional framework of the water sector in Colombia is, as in many other countries, organised in a sectoral way. In the case of drinking water supply, municipalities are responsible for guaranteeing a service. Municipal Health Secretaries normally make investments in rural water supply and give institutional support to water service providers, focusing on public health and potable water. The State (through for example the Departmental Agricultural Secretaries, and (*Unidades Municipales de Asistencia Técnica en Agricultura* or UMATAS) invests in water supply for agricultural purposes. These efforts only focus on agriculture and often only on medium or large-scale irrigation.

No clear responsibilities exist in the country for multiple use systems. Due to the sectoral approach it is rare that a combination of efforts and resources is sought between institutions of the different sectors. This project aims to lead to change, and to encourage institutions and organisations across the water sector to consider the realities and needs of multiple use water systems and services.



### Example: Listening to communities about their needs

In 2003 I was invited to help in the design of a domestic water supply project for two rural indigenous communities (with about 100 families each). They had an "artisanal" piped water supply system already but this was in a bad state, full of leaks and with no control valves. The service was not continuous, water being distributed for only two hours to households who stored water in cement and plastic containers. This was then used for drinking, washing and watering of plants.

A problem quickly arose in the design of the system. The main interest of the communities was getting water for agricultural use, as expressed by one of the community leaders: *'we know that for you people from the city it is important for you to have water to bath, to cook, because you have money to buy things in a shop. We do not have money. We do not even have shops. We only have our hands to work, and we depend on these for our food. If we have food, we can live. Water is important and we want it for our plants. Here we know that in our houses we spill very little water, because we have to share it with the land...'*

So what happened in the two villages? After many discussions within our design team and with the client, a system was designed based upon community suggestions with a main pipeline to take water from the river and then two secondary pipelines: one for domestic supply with simple treatment and another for irrigation purposes. Contributions to the system were agreed and importantly, plans for administration, and operation and maintenance were made. Committees in both villages were trained to manage the multi-purpose systems, and rules established including an irrigation calendar that defined when irrigation is allowed, and rules like the number of turns per family. Training was also provided in irrigation and associated agricultural practices, such as composting.

*Source:* Sandra Patricia Bastidas, Instituto Cinara, Universidad del Valle, Cali. Conferencia electrónica Servicios de agua de uso múltiple como una estrategia para reducir la pobreza (2004)

### Example: Gender and productive uses

The Colombian Federation of Coffee Farmers has designed and built water supply systems since the 1950s. And the engineers clearly included water for coffee processing as well as water for domestic uses. However, watering livestock such as pigs and chicken farms was considered illegal and a waste of water. These activities are performed by women, whereas coffee processing is the realm of men.

*Source:* Inés Restrepo-Tarquino, Instituto Cinara, Universidad del Valle, Cali. Conferencia electrónica Servicios de agua de uso múltiple como una estrategia para reducir la pobreza (2004)





## Bolivia

The current policy in Bolivia is to develop more large centrally-managed water and sanitation utilities. Multiple purpose projects are also viewed at this scale. For example, Misicuni is a multi-million dollar project to construct a dam and tunnel to transfer water between basins to supply the domestic needs of Cochabamba city, for irrigation in the valley and to generate hydro-electricity.

### Scale of multiple use systems

Multiple use systems range from large dams constructed to meet requirements for irrigation, hydropower and urban communities, to smaller systems such as groundwater-based schemes and small gravity-fed piped networks serving rural and peri-urban communities. In this project, the emphasis is on smaller systems.

However, locally-managed water supply systems are common, especially in rural and peri-urban areas. In many of these systems the performance is comparable or better than the services currently provided by water supply utilities. They also often provide water at a cost that is low enough (sometimes even with a fixed charge tariff) such that people can use piped water for productive activities such as irrigation of homestead gardens (*huertas*) and watering livestock.

### Example: Productive water uses in a peri-urban area

In Tiquipaya, close to the city of Cochabamba, Bolivia, a survey of livelihood activities across 70 households in early 2004 showed that household level productive uses of water are important for families. Not usually for the main livelihood activity - this tended to be field-scale agriculture or other activities - but rather as activities of second, third or fourth importance within diversified livelihoods. A more detailed survey of 19 households showed a large proportion of domestic water use was used for these productive activities (on average 54 lpcd or 38% of the total use of 140 lpcd).

The most common supplementary livelihood activities, gardening and keeping livestock (small livestock and dairy animals) depended to a large extent upon domestic water supplies because of their ease of availability and reliability. While the families surveyed in the detailed study consumed on average 30 times more water for field-scale irrigation than their domestic water consumption, surface water for field irrigation is infrequently available during the year (mainly from reservoirs and base flows, but also high river flows, and springs).

*Source:* Alfredo Duran, Centro-AGUA, Universidad Mayor de San Simón, Cochabamba

There are completely separate national policies for irrigation development and domestic water supply, and links are rarely made, for example to improve domestic water supplies when irrigation schemes are being planned. In some exceptions, people have successfully lobbied for multiple use systems. In other areas, people have damaged irrigation canals in order to access water for domestic purposes especially washing clothes and watering animals.

### Example: The need to consider small-scale uses when planning and negotiating water allocations

In Tarata (near Cochabamba, Bolivia) disputes came to a head in 2002 over the rights to use water for urban and peri-urban agriculture from a multiple purpose water supply system. The Laka Laka dam was planned to provide water for a large irrigation scheme and to meet the basic needs of domestic users in the town, but not specifically for productive water uses within the urban area. Almost 5% of the estimated reservoir yield (or 10% of the storage capacity) was originally allocated for urban water supply, but this could not be used for drinking water supply due to the poor water quality and high costs of treatment. The urban community and water supply utility organised to utilise this water for irrigation of 'huertas' (small plots close to homesteads) instead. However, this led to violent conflicts with farmers from the irrigation scheme who faced severe water shortages, were determined to protect their irrigation water rights, and felt that this type of use had not been agreed earlier.

*Source:* Rocio Bustamante, Centro-AGUA, Universidad Mayor de San Simón, Cochabamba





## Links to international research

Research in the Andean region is linked to parallel research in four other regions: the Mekong River Basin (Thailand), the Indus/ Ganges River Basin (India), The Limpopo River Basin (South Africa, Zimbabwe) and the Nile River Basin (Ethiopia) as part of a multinational research effort. Lessons learnt will be shared between the different regions.

### E-conferences

In May and June 2004 a Spanish-language e-conference on 'Tackling poverty through multiple use water services' was coordinated by CINARA, held in parallel with an English language conference. Over 300 messages discussed different aspects associated with multiple use water services.

Links: [www.irc.nl/prodwat](http://www.irc.nl/prodwat)

### Johannesburg Symposium, 2003

This research initiative developed from a symposium held in Johannesburg, South Africa in January 2003 where water professionals met to exchange experiences with multiple use systems. This symposium statement suggested that:

- Productive use of water at household level by poor people reduces poverty;
- People require more than their domestic water needs to be productive;
- Productive use enhances the sustainability of water supply systems and services;
- People need local solutions and multiple sources for multiple uses; and
- An integrated approach is essential to achieve significant impacts on poverty.

Source: [www.irc.nl/prodwat](http://www.irc.nl/prodwat)

### How to get involved?

Towards the end of 2004 and in early 2005 the research team plan to hold initial multi-stakeholder workshops in Bolivia and Colombia. These workshops will plan detailed activities for the project that will eventually extend over four years. The project is based upon a learning alliance approach and a commitment to collaboration on the issue of multiple use water services with institutions and other initiatives across the water sector.

It is intended that learning alliances will be formed at national and local levels in Colombia and Bolivia, holding regular meetings and undertaking joint activities including advocacy and case studies. We would like you to get involved.



### Learning alliances

The project aims to develop learning alliances that are focused on multiple use water services. Learning alliances are partnerships between practitioners, researchers, policy makers and activists that are intended to lead to widespread ownership of the concepts and research process, more effective research, and findings that can be taken to scale.



### Other links to further information

[www.iwmi.org/multipleuses](http://www.iwmi.org/multipleuses)

Project website

[www.irc.nl/prodwat](http://www.irc.nl/prodwat)

Website of thematic group on 'productive uses of water at the household level'

[www.irc.nl/prodwat/espanol](http://www.irc.nl/prodwat/espanol)

A shortcut to Spanish language content on the above site.

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