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INTERNATIONAL SYMPOSIUM ON MULTIPLE-USE WATER SERVICES

## **Multiple uses of water: a view from the reality of rural communities and national politics in Colombia**

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*The water needs of people living in rural areas are integrated, and take into account personal hygiene, drinking water, food preparation and small scale productive activities. These activities are all important to provide food security, income and reduce the vulnerability of poor people. The interventions made by water supply projects that follow national policies and regulations in Colombia are, like in many other countries, fragmented and usually neglect innovative approaches. Innovative approaches that consider all basic water related activities linked to livelihoods can make a significant difference to household economies in poor areas. This paper presents evidence on how families manage water in rural areas of the Valle del Cauca Department (Colombia), and how this reality has been ignored by national policies and regulation. Proposals to reduce the gap between rural practice and policies for this sector are also suggested. These recommendations should help policy makers to take the rural context into account, to improve the regulations, and to contribute to poverty alleviation, equity and sustainable development.*

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### **Introduction**

This paper summarizes findings from Colombia in the international Project “Models for implementing multiple uses of water systems for enhanced land and water productivity, rural livelihoods and gender equity” (mus; see [www.musproject.net](http://www.musproject.net)), sponsored by The Challenge Program on Water and Food. The paper presents evidence on how water is really used by rural communities in Colombia, and how legal and institutional frameworks for providing water in the country unfortunately fail to recognize this reality. reflections are made and proposals formulated to help find ways to reduce the gap between policies and reality. This work was carried out following the Learning Alliance and Action Research methodologies that engaged stakeholders at community, regional level and national level.

### **Methods**

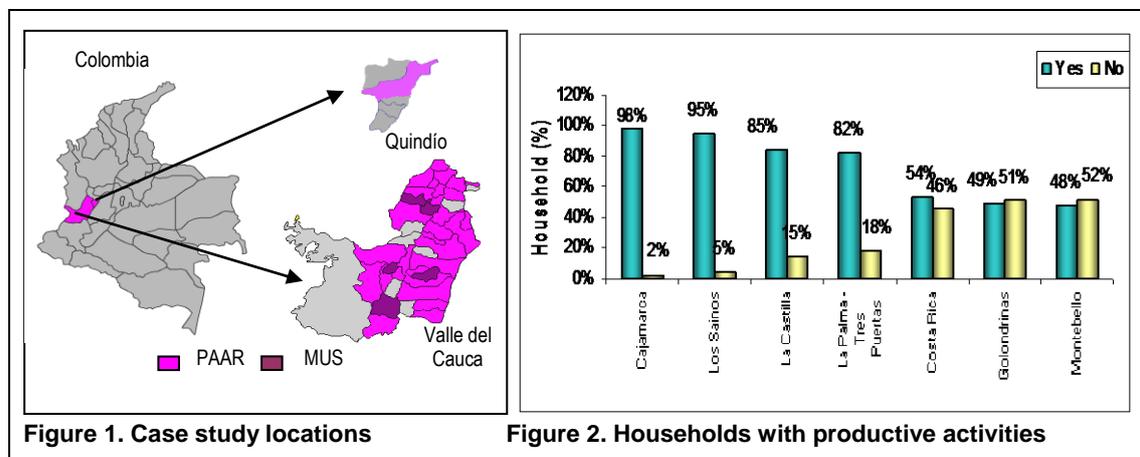
This research was implemented in three phases: 1) understanding the relevance of productive uses of water for poor rural families in Colombia; 2) analysis of the legal and institutional framework for water supply in rural areas, and 3) policy advocacy to propose changes to these frameworks which are under the responsibility of the Vice ministry of Drinking Water and Sanitation, dependent of the Ministry of Environment, Housing and Territorial Development in Colombia. Study cases were developed in five rural communities of Valle del Cauca department and in some productive farms of the Quindío department to help understand local water use practices. In addition, the interventions by the Rural Water Supply Program (PAAR<sup>1</sup>) were studied in 91 rural communities in 29 municipalities of the Valle del Cauca (Figure 1). This information was analyzed regarding the topics considered related to water for domestic and productive uses, livelihoods and sustainability. A comparison between the evidence gathered on rural water use practices and the approach of the the water sector in Colombia including policies and the legal framework was established. Through the methodology of Learning Alliances which engaged [say something about the people involved here], collective proposals were developed to improve the planning, execution and management of water supply projects and to contribute to a more integrated approach of project development. Stakeholders involved in the learning alliance selected the case studies and were involved in field visits to assess the interim research results. It was expected through this methodology to facilitate the institutionalization of knowledge and its application in several social

contexts and over x years a series of y workshops were held (I think you have some references here to the papers you produced on LAs, PAAR etc. They could be usefully cited).

## Results and discussion

### Understanding the reality of rural water uses

Productive activities at the household level were found in all the settlements studied, both where the PAAR program was working and also in all the case studies specially selected for the MUS project (Figure 2). This information is also supported by the results from the national census (DANE, 2005), which indicates that 73.4% of the rural households in Colombia developed some agricultural activity. In rural areas, some of the most intensive agriculture occurs just around the homesteads of families. In 77% of the households served by PAAR systems, coffee together with banana or fruit trees were found around homesteads. Vegetables, beans, corn and yucca were also common. Animals for own consumption and in some cases for sale were found in 67% of the households. Medicinal plants and vegetables are also an important source of income. The households without animals or crops, are often involved in activities linked to agriculture like transportation, food preparation for people working in the field, etc. In rural communities located close to urban centers, small businesses also thrive.



The size of the family plots varies, and as a consequence the space availability for productive uses, however results show that these activities are developed at small scale. The scale decreases with proximity to urban centers as land is used even more intensively. In almost all the cases studied the size of plots was under 1 ha (Figure 3). Regarding animals, the survey showed the importance of pigs, cows, chickens, and in some cases horses. The results show that most families with animals have less than 5 units of cows, horses and pigs. The number of chickens is between 6 and 30 units (Figure 4). Activities are gender related. Men are usually in charge of the most profitable crops (coffee, pineapple, corn and beans), while women share with men the responsibility for vegetables. Men care for horses and cows, and there is a shared responsibility for pigs while women are normally in charge of keeping chickens (78%).

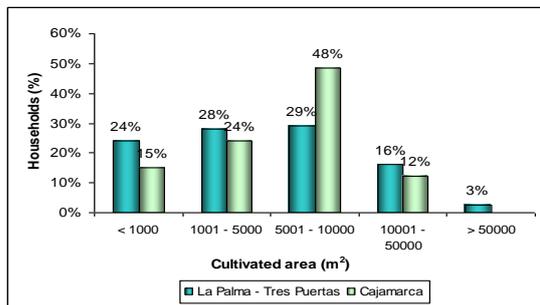
The research showed that family income is correlated to using water for livelihoods. In 61% of the households in Cajamarca, 80% of the income depends on access to water. In La Palma – Tres Puertas, income depends less on water (38%) because here many people work as labourers growing field crops on land which is not their property. In this specific settlement water availability is also much less than in Cajamarca so people have less productive activities at household level. This situation is reflected on the income level of the families: in La Palma – Tres Puertas income is around US\$150 per family per month, while in Cajamarca, with more water available at home, 70% of families have profits over US\$150 per month and 27% higher than US\$600 per family per month (Figure 5). The income produced makes it possible to pay the tariff for the water service.

The survey showed that in PAAR practice, surface water is the main source for water projects with 86% of the systems supplied by small streams and rivers. In 23% of the projects the water supply systems take water from 2 to 4 small streams but the use of other complementary sources like ??? was never considered. On the contrary, some projects were not developed in communities suffering water scarcity. It was found that most of the households use the water from the water supply system for all their activities, without considering the required quality for the use. The resource from the water supply system is used in most of the cases (90%) for cooking, drinking (human and animals), and cleaning, which includes water

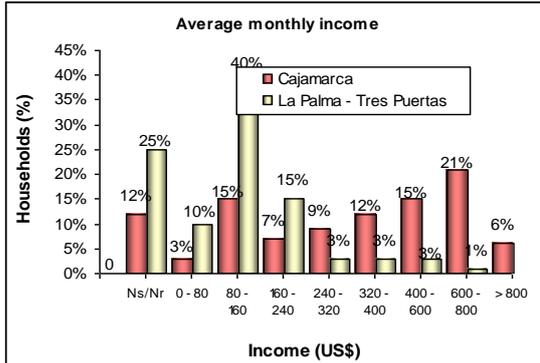
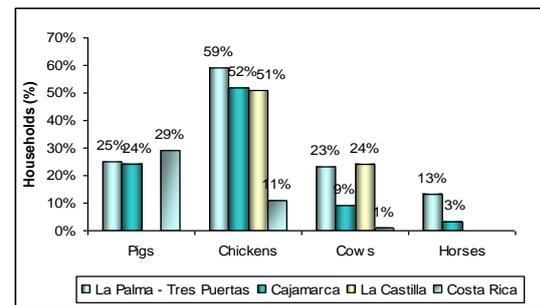
for excreta evacuation. For irrigation, the reported use is less (around 70%) which shows that these are relly multiple use systems meeting domestic and irrigation water needs (Figure 6). during the dry season, water supply systems are even more important to meet irrigation demand. The willingness to use alternative sources of water increases with the scarcity. In Montebello, 46% of the families have used rainwater and 24% greywater for activities like cleaning (floors, baths), excreta evacuation and irrigation (López 2005). In this settlement the water was only supplied for two hours every alternate day.

The total amount of water required to satisfy domestic and small scale productive uses was on an average across all systems studied found to be 213 l/person/day. In the cases of Golondrinas, La Castilla y Los Sainos, human and domestic consumption had the greatest demand because it includes water for sanitation and washing of clothes. Irrigation demands are around 100 l/person/day, due to the small size of the cultivated areas, and in several cases rain fed. The reported consumption for kept animals was between 20 – 48 l/person/day.

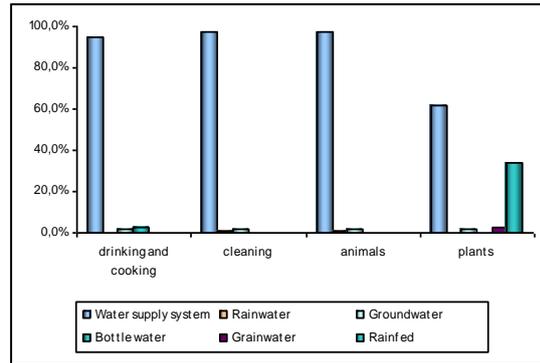
**Figure 3. cultivated area at the plots**



**Figure 4. Households with animals**



**Figure 5. Monthly income per family**



**Figure 6. Uses and water sources**

### Limitations in the legal and policy frameworks to satisfy the water needs of rural families

In Colombia, the Government is responsible for guaranteeing that public services are provided efficiently to people. Its mandate includes infrastructure investment and formulation of regulations to provide public services. At the national level the most important institutions related to water resources are the Ministry of Environment, Housing and Territorial Development, the Ministry of Social Protection, and the Agricultural and Rural Development Ministry. The Environment Ministry has a Vice Ministry of Water and Sanitation which is responsible for the formulation of policy and directives and has the role to orientate the investments made in the sector. This Vice Ministry is in charge of drinking water for “human consumption”, and as consequence, the policies and investments in this sector have this orientation. In contrary, the Ministry of Agriculture lack clear policies and regulations oriented to water supply, and its investments are sporadic programs or projects to improve competitiveness in rural areas. Thus while families use water in integrated ways in rural areas, the institutional setup of government hampers integrated water development and service delivery from the start.

The 1594 (1984) Act establishes as water uses: human and domestic consumption, biodiversity preservation, agriculture, recreation, industrial and transportation uses. Different institutions have different responsibilities over the water depending on the uses established. The 1096 (2000) Resolution, Basic Regulation for the Drinking Water and Sanitation Sector (RAS) indicates that in drinking water

projects for “human consumption”, besides domestic use the commercial, industrial, institutional and public use should also be considered. This appears to encourage provision for multiple uses. However, the 302 (2000) Act, related to water and sanitation services provision, stipulates as one of the causes to suspend the service to the customer is to use the water for a purpose which is not mentioned in the contract agreement. Generally the permitted use is the “human and domestic consumption”. The latter include just water for cleaning and washing clothes.

The RAS 2000 guideline also stated that the supply depends on the number of inhabitants in the settlement. It is lower for communities less than 2500 people (100 – 150 l/person/day) but there is no upper limit set for communities with more than 12500 people. These guidelines, although formulated for urban areas, have been traditionally used for rural communities. In 2007, a rural RAS was formulated, but it adopts the same criteria for the allocation of water and kept the orientation of systems on only human and domestic use.

The RAS 2000 defines possible water sources for human consumption as surface and groundwater. It emphasizes that just in exceptional cases may rainwater be considered. RAS 2007 makes a small advance to suggest the possibility to implement rainwater harvesting in areas of water scarcity. RAS 2000 also presented recommendations on water treatment levels, depending on water quality and the need to achieve the requirements of the 1594 (1984) Act and 2115 (2007) Resolution that establish drinking water quality criteria.

## **Conclusions and recommendations**

Policies and regulations for designing rural water supply systems do consider different categories of uses and users, but do not recognize domestic users with small scale productive activities. Rural water needs have been understood largely as domestic needs that do not include the amount of water required for small crops and animals. However these uses are important to guarantee people livelihoods.

Although rules suggest surveys to establish local conditions and the possibility to increase water allocations, the general practice for designers is to use the “number” established in the directives. It also promotes inequality, by recommending less water provision to people living in small settlements and more water for those living in more populated settlements.

The approach of the regulations to supply drinking water to accomplish an impact on health has led to the promotion of surface water and groundwater as the only source for water use. This situation has been exacerbated with the general perception of water abundance in the country. The use of alternative sources has been promoted by policies and laws, but without significant change in the regulations that actually support the practice.

Legislation to design, manage and operate rural water supply systems needs to recognize the multiple water needs of poor rural people. According to the results of the research, typical needs include: water for domestic uses, water to irrigate a cultivated area no more than 10000 m<sup>2</sup> during the dry season, and water to keep 10 chickens, 2 pigs or 2 cows. The amount required for all these uses would be around 250 lpcd but it could be less, if efforts are also made to ensure water is used more efficiently through efficient technology and good practices. It is important also to establish incentives at the policy level on the use of multiple sources for multiple uses especially, to facilitate rainwater harvesting. The use of alternative sources is a way to promote the efficient use of water and also to maintain the “better” resource for activities that demand better water quality.

The water quality standards for water supply systems in rural areas need to be more flexible and be based on the different uses of water. In some cases it could be more efficient to promote water treatment at the household level, to maximize the use of the community resources (natural, human, economic).

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## **Acknowledgements**

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### Note

<sup>1</sup>The main objective of the PAAR Program is to provide water to rural communities of the Valle del Cauca department, by building or improving water supply systems. This initiative brings together several public and private institutions of the department.

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### Keywords

Multiple uses, rural water supply, livelihoods, policy, Colombia

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