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Local development in peri-urban and rural areas based on co-management for small water supplies in Colombia

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Abstract

It is estimated that more than 12.000 small water supplies are managed by communities in Colombia. Nevertheless, government has not public policies and does not exist a special legal framework for these organizations. The research called “Co-management model for small water supplies, review the state-of-the-art of co-management, describes the phenomena, and propose predefined variables to analyze some Colombian small communities located in rural areas in order to develop model based in actors and roles. It shows how the government can support this management alternative, and contribute to reach a better local development based on access to drinking water and sewage for low-income people.

Keywords

Small water supply; communitarian water management; environmental management; Colombia

INTRODUCTION

The sector of water and sewage services in Colombia have experimented a real improvement following a mayor legislative act – Law 142 of 1994. The coverage and efficiency in urban areas reach 90%, as a result of public policies that have been focused on the support for strong operators. Nevertheless, the situation in rural areas are critical, because the drinking water coverage is 55% and the sewage pipelines coverage is of 28% (DANE, 2005), and water quality its not frequently tested.

In Colombia, drinking water and sewage are provided by public or private companies, under different management models. Usually, small scale local operators provide water supply or sewage solutions in peripheral urban and rural lands, mostly found in slum areas. According to the Rural Sanitary Inventory (MAVDT, 2005), there are approximately 12.000 small water supplies for human consumption in Colombia. Although, reliable data does not exist, it could be calculated that near to 90% of these systems are operating thanks to communitarian management (SSPD, 2010)

As a central hypothesis of the research presented in this paper, it postulates that communitarian management for small water supplies is essential to satisfy food and sanitary of the Colombian peri-urban and rural population, and its also the way to empower communities and to allow them to reach an improved local development.

Conceptual Framework

According to recent academic publications, it has been postulated that communitarian management is a valuable initiative towards the enforcement of social networks, but requires institutional support provided by state to stimulate the real participation of stakeholders in the national, intermediate and local level. This conceptual scope could help communitarian organizations to improve their accountability, reach environmental, financial and social sustainability, and use technologies adapted to community capacities and needs. This vision has been named co-management, which means local community driven development - LCDD, with institutional support. (Binswanger – Mithze and De Regh, 2010)

Communitarian water and sewage systems are traditional social structures. They exist in locations where the local community has resolved the water supply problem by itself promoting participative action and collective ownership. To include communities and stakeholders, particularly women and young people, assure the social sustainability. (Lockwood, 2004)

Co-management gives feasibility to water access, allows communities to acquire experience in management of different natural resources and enforces the underlying social structures that support local development. Sometimes, communities are working together in second level associations helping to improve management performance, and generate scale economies for activities that can be managed collectively, with greater success. On the other hand, these associations could become the scenario to promote water supplies within a same river basin, working together, to improve local governance and to mitigate the impact on the ecosystems.

The doctoral research named “Communitarian Management Model for Small Water Supplies – Observation of Colombian Cases” began in September of 2010. As a first goal, the research presents the state-of-the-art of communitarian management, formulates a characterization of the studied problem and explores some Colombian cases. The intention, afterwards, is to release the constituent variables of communitarian management for small water supplies, in order to formulate a management model to explain the interaction between these variables, thus identifying improvement opportunities and applying strategies of adaptive management.

State-of-the-art

There is an important amount of documentary information of small drinking water supplies and sewage which also relates to communitarian management. The reviewed publications throughout this research, are impressive, because they show diversity and theoretical depth. Since Elinor Ostrom presented his work, (2000) the study of - auto-managed - organizations has acquired importance, like a main actor, and this is more relevant in developing countries where they are improving their quality of life.

The World Bank, and several nongovernmental organizations have become interested in the phenomenon of the communitarian management of water, and its economic, environmental, social and cultural aspects. Similarly the CEPAL has sponsored important studies about local drinking water supply and sewage solutions in Latin America (Doroujeanni, 1988 – Jouralev, 2004 – Carrasco, 2011). The diagnosis background and subsequent formulation of public policies in Bolivia, are of mandatory reference in the Andean region at have been clearly exhibited by Quiroz (2006). Here, the communitarian management as an alternative for water auto – supply, with an acquired legal route and a management model was recently published. (FPS, 2009)

In Colombia, several descriptive and exploratory studies have developed the communitarian water management from different perspectives (anthropological, economic, organizational, historical), and these reviews provide remarkable elements for the characterization of the small drinking water supplies. Without trying to be exhaustive, it is worth to emphasize the work of Mario Pérez, 2001, Ana Quintana, 2005 -2008, Ernesto Guhl, 2008, Nora Cadavid, 2008, Maya et al, 2010. Nevertheless, that works do not approach the phenomenon of communitarian management as a management problem. In consequence, this research tries to propose a model to understand the details of this type of management.

MATERIAL & METHODS

Sources

This research is based on three sources: the review of published management models, the participant observation of real cases between 2006 to 2010, with the Superintendencia de Servicios Públicos Domiciliarios –SSPD - Grupo de Pequeños Prestadores (Surveillance Institution for Public Services in Colombia – Small Scale Operators Group), and the simulation applying a modeling dynamic software.

Expected Outcomes

By this time, first stage has finalized. As a primary conclusion, it is observed that the phenomena is over-diagnosed. The elements showed before, on the characterization, were the basis to formulate a problem tree, followed by a simple model as an order criteria.

Right now, it is intended to detail the quantitative and qualitative variables and create the indicators for every one. (Table 1.) After, the variables will be checked on three or five real cases, to validate them. (Fig 1.) For the last stage, the variables will be applied on a dynamic modeling software named STELLA in order to simulate the interactions and propose alternatives to improve management strategies. (Fig 2.)

TABLE 1: Stages and research advances

Research Stage	Research advance
First stage	State-of-the-art, small water supply characterization, stakeholders map, initial model used of communitarian water management.
Second stage	The exogenous and endogenous variables will be detailed, formulating the indicators for each.
Third stage	Apply a survey or check list with three / five previously selected cases, with the purposed of validating the formulated variables
Fourth stage	The variables will be included in a dynamic modeling software (f. ex. STELLA has been used successfully to describe complex environmental and social problems) to simulate interactions

Fig. 1. Small water providers on rural that have accepted to participate as study cases



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RESULTS AND DISCUSSION

Characterization of Small Water Supplies in Colombia.

Institutional

Regulation: In Colombia, there is no law to regulate small water supplies. All operators must obey the law 142 of 1994, that is a regulation developed for big or medium size urban water supplies. The institutional invisibility of small systems has been caused by the lack of specialized regulation, accurate to rural and peri-urban life. At present, communitarian managed water supplies depend on private initiative, and they do not receive significant state support.

In 2011, The Ministry of Environment, Household and Territorial Development – Ministerio de Ambiente, Vivienda y Desarrollo Territorial – MAVDT -, began the process to formulate public policies for drinking water and sewage in rural areas, in order to develop the legal framework for small scale local operators in rural areas. The accurate and oportune treatment of conflicts is urgently required to recover the local water governance. The most remarkable conflicts are: i. degradation of water quality for inadequate use of pesticides, agro –industrial activities or minning. ii) minimal recognition of traditional customary practices of water management from rural, indigenous, afro-descendent or other ethnical communities. iii) difficulties to recognize some real rights of way, and/or iv) the absence of clear rules about ownership on the assets and the formal schemes of communitarian organization. (Carrasco, 2011)

Surveillance and control : The available information is based on a software application - an unified information system called SUI - and the data is fed on line. At the same time the authorities follow and solve the complaints and claims presented by users. Nevertheless, rural operators do not have the capacities to collect and report data, in consequence, it is impossible to maintain updated and reliable information about rural areas. The public agency for surveillance and control of the household public services – SSPD, has developed special strategies to support small scale local operators.

Local context

Traditional customary practices of water management : The cultural pluralism of Colombia constitutes a challenge for the formulation of national policies and general models. Usually, the

authorities impose water and sewage solutions but they do not consider the local particularities of the rural life, nor the social structure of the beneficiaries.

Environmental sustainability: Some initiatives of protection of river basins are taking place in Colombia. These projects have been financed with public and private resources, but it is necessary to develop and spread mechanisms to grant the preservation of environmental balance. The last rainy season, December 2010, left 2.200.000 people homeless, demonstrating that small water supplies are not ready to face the damage caused by the climatic change. Usually waters served in rural areas are not treated, which calls for urgent action to mitigate the environmental impact on rural life.

Operation

Investment: During the last decade, the state was not interested in supporting rural water or sewage solutions. In peri-urban areas, the coverage was increased through regular operators, absorbing the communitarian organizations traditionally located in these areas. The actual investment scheme, named departmental water plans – PDA -, is focused on increase coverage to small towns, with preference in urban areas.

Technology: In Colombia, it is usual to consider only technical criteria for the design, construction and maintenance of water and sewage systems, without considering community needs and preferences. The facilities given to the communities are frequently abandoned soon after, because the technology involved is not adequate to the people's payment and maintenance capacities; some civil constructions and equipments are imposed, against the traditions of ethnical communities (for example, there are systems of disinfection with application of chlorine, designed for indigenous communities, where the chlorine consumption is not accepted culturally).

Additionally, some rural people do not have tap water, and have to pay high bills to buy bottled or pumped water, because the use of alternative drinking water solutions have not been expanded. There are water supplies with no clarification and/or disinfection, and with deficient treatment too. The great distances in the rural territory limit the availability of laboratories or procedures that guarantee a suitable control and following for water quality provided.

Management: The deficient organization and qualification of small scale operators and their minimum technical and administrative capacities to develop an efficient management to offer sustainable services, are related to the informality of communitarian organizations. In order to guarantee the local operative sustainability, the state should implement strategies to support and provide technical attendance to operations and management under regional schemes, thus generating some scale economies.

Governance

Associative Estrategy: In Colombia there are some groups of water suppliers, (f. ex. -AQUACOL, FACORIS, ACUA) – which indicate that local small scale operators are interested in enforcing the intermediate level, but they are not formally identified, since it depends exclusively on private initiative.

Formal recognition : The majority of communitarian water and sewage systems are usually operated under informal organization schemes. They have difficulties to collect and keep documents and data, to celebrate formal contracts or to assume the defense of their rights by themselves. The state does not help them to structure their communitarian solutions, and to formalize their legal requirements are difficult and expensive.

Communications: Communication between communities and its stakeholders are usually direct and spontaneous, but the new technologies (internet, cellphones, networks) are stretching the linkages. Some institutional tools are not considering communitarian communication capabilities.

Models

During the first stage of the research, after the review of multiple management models applied to environmental problems, some essential elements have been identified to describe the phenomenon. The proposed models are formulated on a qualitative approach, to be understood by communities and non-scholars, and could vary in every case.

Fig. 3. Model to identify stakeholders over small water supplies.

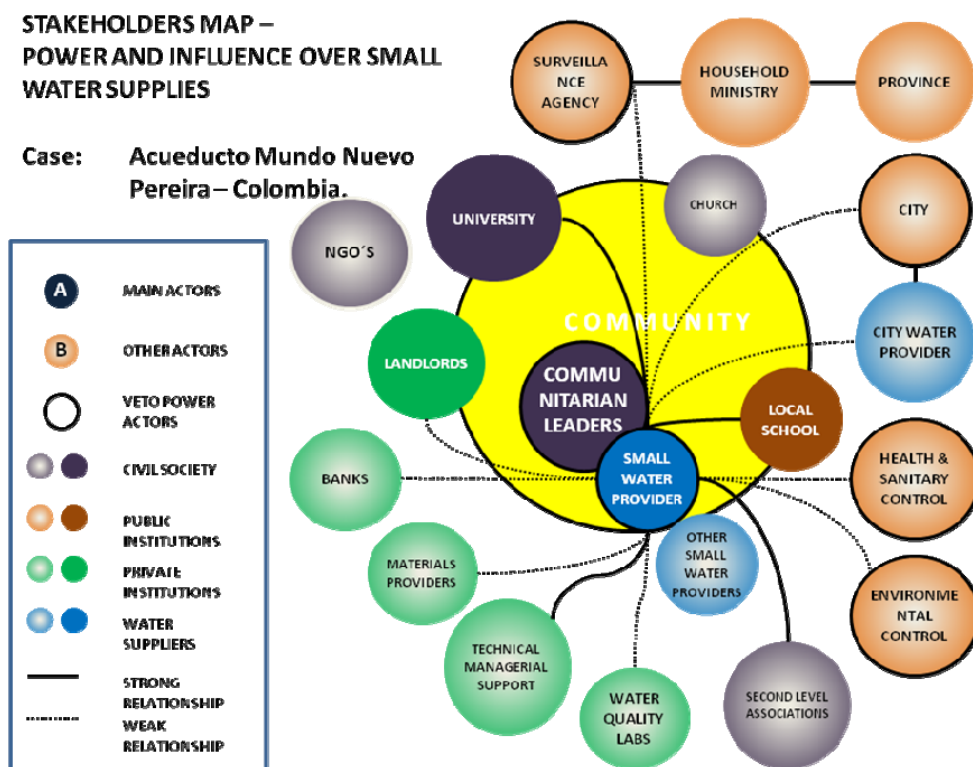
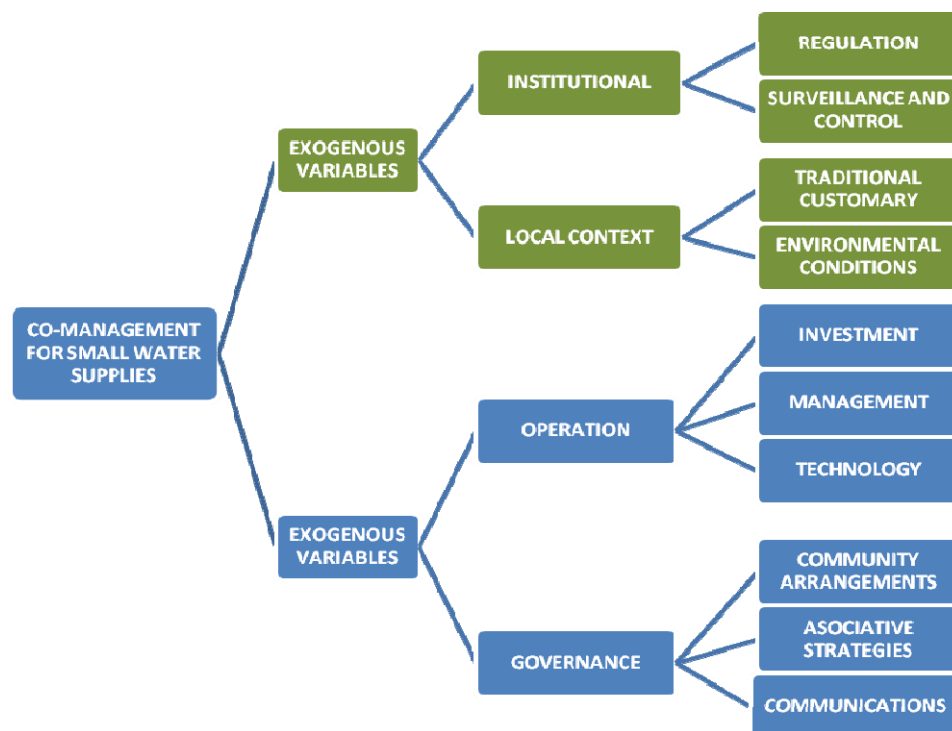


Fig 4. Communitarian management model for drinking water and sewage.



CONCLUSIONS

This is an excellent opportunity to research management focused on small water supplies in Colombia, because state agencies are considering national policies for supplying water in rural and peri-urban areas. This research could provide new elements of discussion on future policies, and contribute to reach a better local development based on access to drinking water and sewage for low-income people.

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