Case study

Guatemala, Central America. - Partnership for Integrated Water and Resources Management (IWRM) in the Naranjo river basin.

1. Summary

Considering that Integrated Water Resource Management should be approached in an integrated and collective manner by authorities, citizens and institutions, parallel efforts were made in order to strengthen local organization around the issue. On the part of organized society, partnerships were initiated and eleven associations in 8 municipalities were formed from 2001 to 2005. Together, these are grouped into CADISNA (Comunidades Asociadas por el Agua, Medio Ambiente, Desarrollo Integral e Infraestructura – of the Río Naranjo basin). On the part of municipal government, the Municipal Federation (Mancomunidad de Municipios - MANCUERNA) was formed in 2003 and represents the interests from the high areas of the Rio Naranjo Basin.

Politically and administratively, Guatemala is composed of 333 municipalities; according to the Law of Development and Decentralization Councils, each municipality must organize itself in order to plan its progress. To do this, they must each create at least ten commissions. The commission for the environment, economic development and tourism is highlighted in this case study.

Given the fact that Guatemala does not have a Water Law, the members of CADISNA organized themselves into the Municipal Water Roundtables, which work from the bottom up in order to develop Municipal Water Policies through dialogues focused on "rights and obligations". The Municipal Water Policies is a consensus document related to the valuation of water resources and their management, which is recognized by the municipal authorities that participate in its implementation. Citizens and authorities have become involved it its design and in the designation of resources for its implementation with the help of specialized institutions.

Some of the elements of Integrated Water Resource Management that have been put into practice with the policy are: a) Awareness-raising and training in IWRM b) The bottom up development of municipal water policies c) The establishment of the water roundtable system d) Information generation and management for water resources, e) social participation to guarantee sustainability and f) maintaining water inventories in order to measure the quantity and quality of the resource.

The conscious and organized participation of the associations that make up CADISNA takes place in the water roundtable dialogues so that each of the eight municipalities can consolidate and adopt the Municipal Water Policies. One of the dimensions of the water policies is to promote collectivism and the contribution of municipal government in multi-stakeholder investments in order to support the awareness-raising programs as well as the development of environmental infrastructure.

Key tools used
A1.2 Policies with relation to water resources, A3.1 Investment policies, B1.10 Local authorities, B.2.1 Participatory capacity and empowerment of the civil society.

Key words
Municipal Water Policies, Organization, participation and Building of Institutional Ability.

2. The problem

In the majority of the Guatemalan territory the contamination of rivers, the lack of laws and regulations for the efficient administration of water resources, weak municipality administration, the lack of awareness among civil society in water care and the lack of good resource management at all levels contributes to poor water governance. There is also no incentive for an integrated vision that sees beyond the present and focuses efforts and efficient actions for the human development of its users.

The contamination of water resources has a great impact on the health of women and children, which is especially reflected in the morbidity and mortality of children under the age of five. For example in the case of the San Antonio Sacatepéquez municipality in the department of San Marcos, which belongs to the high areas of the Rio Naranjo basin, 18% of reported illnesses, equivalent to 207 cases, correspond to skin illnesses as a result of child and adult contact with irrigation water [1].

The contamination of the rivers is a result of the lack of residual water treatment and the improper disposal of solid waste by populations that create clandestine dumps. (Figure 2).

Fig. 2 Clandestine dump in open air in the Rio Naranjo basin, San Antonio Sacatepéquez municipality.

In Guatemala, 29% of households do not have domestic water supply and 61% of households do not have connections to sewage systems, thus generating impacts on water quality. This also reflects the existence of an imbalance in access to basic services. Women are also not included in discussions in order to train them on water resource decision-making despite the traditionally assigned cultural role where they have direct contact with water and have accumulated important information and experience about its management and preservation.

"The water crisis and the inability to provide water resource governance are reflected in many ways, and among others, in the capacity for state institutions to universally, consistently and efficiently satisfy potable water supplies and the safe disposal of residual liquids. They are also unable to overcome the levels of morbidity and mortality generated by the improperly labeled "water illnesses"[2].

[1] _____ 2008, MANCUERNA, Informe del componente de Salud, Planificación Estratégica Territorial.
[2] E. Colom, Estado del Agua en Guatemala. 2001

Citizens in municipal roles (councils and employees) only partially know the laws, standards and regulations for the conservation of water resources and the efficient and sustainable provision of water-related municipal public services. The municipalities lack the necessary entities that can support water resource governance such as the Justice for Municipal Matters (*Juzgado de Asuntos Municipales* –JAM), the Integrated Financial Municipal Unit and the Municipal Planning Offices (*Unidad Financiera Integrada Municipal and Oficinas Municipales de Planificación -OMP*). The few municipalities that can count on the previously mentioned support demonstrate weaknesses in the formulation of their development plans at a short, medium and long term, and as a result, do not have regulations. This in turn generates operational and administrative barriers.

Since the governmental and non-governmental institutions work on water resource issues by sector depending on the use of the resource, legal standards are therefore dispersed and not applicable in practice due to a lack of enforcement. In addition, there is inequity in water consumption and uses, social and economic vulnerability in the majority of the population, deterioration of natural resources and the environment and still relatively little social participation. In terms of society's participation in the Urban and Rural Development Councils (Consejos de Desarrollo Urbano y Rural -COMUDEs and COCODEs) these have not yet reached their optimal functional level and still lack specific commissions in order to administer water resources.

Actions to resolve the problem

Collectivism for the implementation of IWRM

One of the first decisions that was promoted at the start of the decade was to promote the creation of rural and urban associations in each of the eight municipalities, as well as collectivism by respective government municipalities in order to promote policies and formulate programs and common projects promoting coordinated water management. The collective effort organized by an association and municipal coordinator to oversee water resources and serve as a central support hub has been supported in the implementation of participative diagnostics. These have provided inputs to establish guidelines for municipal water policies so they may serve as catalysts for various processes that are currently demonstrating initial results.

The objectives of collectivism in the high areas of the Rio Naranjo basin have been to promote actions that put water policies into action, while searching for agreements in waste management, water contamination, the recuperation of water recharge areas and the promotion of productive and special water uses. This is accomplished through dialogue among key actors, which include the authorities, society, associations, and public and cooperation agencies.

The road to collectivism has been challenging. In 2005, CADISNA was formed by 872 associates, which are distributed in the eight municipalities and in approximately fifty communities. Among the associations are two urban associations, and the nine remaining associations are from rural areas. The associations that make up CADISNA were formed in 2001 in the absence of the urban and rural community councils as spaces for dialogue and presentation of local environmental development proposals. After awareness-raising and training processes directed by institutions with goals related to integrated water management, the population, in coordination with the municipalities, were able to create associations in each Municipality which subsequently saw the need to constitute themselves legally as a network with their own objectives and management. This network has become what is now CADISNA.

The internal composition of the associations is heterogeneous in terms of age, academic background, creed, culture and organizational development. This is an important element for the

organization's dynamism but also complicates the establishment of agreements. In order to promote organizational development, legal steps were also taken in order to constitute the organization as a secondary-level organization led by a management team. This is its current legal status.

In the case of the municipalities, collectivism has been more complex since it is interpreted as the association of municipal governments and not as association of the municipalities. Within the framework of coordination efforts, several joint projects have been carried out. However, as with the associations, the municipalities are heterogeneous and markedly different in their development priorities.

For the purpose of sustainability, each associative model includes diverse strategies, and in the case of the Association of Municipalities (Mancomunidad), it counts on annual fees of approximately three thousand three hundred American dollars as support. As for the internal operations of each association, at least eight of the eleven associations count on symbolic monthly fees that do not exceed five dollars per month.

Both associations count on their own management, something which has facilitated performance improvements. However, when there is not adequate institutional strengthening and projects cannot be carried out while also generating financial support, they become considerable operational and administrative burdens. The management teams have led the funding of projects for the institutional strengthening and have also contributed to the development of community leadership capacities and of the authorities to led processes.

One association was initially formed with 50 people and has grown to 800, maintaining its growth in accordance with joint and shared interests. The associations have individual and collective interests, and the individual or family interests primarily include economic concerns. This has resulted in the association's growth because its directives have primarily been related to actions that benefit the local population, although beneficiaries subsequently reduce the quality of their participation in the Association. For example, an association determined that in order to have rights to rain harvest tanks, each person must first learn about the construction of pumps and the administration, operation and maintenance of the system in general. Once access to the ponds was received, some people reduced their participation since they had satisfied their personal interest, thus damaging the collective interest in strengthening the association.

Capacity building, training processes and putting knowledge into action

The organizations that make up CADISNA participate in several spaces and coordinate efforts with institutions working on integrated water resources management for the capacity building of the local population. In the trainings, the importance, complexity and actual state of water resources is explained to the basin's inhabitants. This has generated empowerment that has been demonstrated through their suggestions in the community development councils. These suggestions are related to coordinated water resources management in community project proposals presented to the municipalities, which consider cultural diversity, the participation of women and the economic value of water resources. The municipal authorities also become involved in awareness-raising, although due to the temporary nature of some positions, some trained personnel have finished their posts and are no longer participating in the process.

Once trained and aware, the population can replicate acquired knowledge with the objective of reaching more people in the communities and integrating them into water resource conservation work. Trained individuals collaborate on creating the Municipal Water Policy for Integrated Water

Resource Management and value the creation of the Association of Municipalities with a medium and long-term vision in the search for solutions that improve quality of life.

As a consequence being aware of the importance of IWRM, the people who make up the associations carry out actions in accordance with their abilities in order to improve the citizen's role in caring for the environment. For example, some people have assumed the roles of promoters and train primary education teachers so that they may incorporate the IWRM topic in educational programs.

This has allowed gradually the creation of a common vision, which facilitates the consolidation and intervention of the associations. Some associations are represented in the Community and Municipal Development Councils (*Consejos Comunitarios y Municipales de Desarrollo – COCODES y COMUDES*). This is one of the achieved strengths in the sense that it is the space where projects can be prioritized at a municipal level. This strength has facilitated the inclusion of projects related to conservation and sustainable use of water resources.

As part of the trainings, spaces have been created so that women and men can actively participate in decision-making. There still exists the need to continue working on gender-related issues in order to achieve equitable participation.

According to their possibilities the organizations contribute with resources for their sustainability and have carried out community development projects related to the improvement of homes and have contributed in the inventory of productive assets after the Stan storm. The organizations have also collaborated in the application of water resource inventories in strategic sub-basins. In addition, they have carried out experience exchanges with organizations of a similar nature and they have visited them so that they may become familiar with their experiences. Something that they have learned through these activities is that water is a finite resource and that it has an economic value. As a result, the water supply projects that have been managed collectively, establish their own operation, administration and maintenance systems. They also have experiences of the application of differentiated fees, in which those who consume more pay more, depending on the use of water. This has generated funds for the Association's strengthening.

Trained functionaries representing municipal governments have supported the creation and/or strengthening of municipal offices related to the administration of municipal public services such as municipal water and solid waste companies. On this point, it is important to point out that the creation of municipal public service offices and justices has being facilitated and the allocation of funds in the municipal budget required for their operation has being established.

With the recent municipal government change, six of the eight municipal leaders where also changed, as well as almost all of the eight municipal councils. This has required a re-evaluation of the training strategy since local government position rotations following elections require trainings every four years, thus increasing costs and diminishing the effectiveness of training processes.

The bottom-up development of water policies

Some individuals who make up the associations are active members of the Community and Municipal Development Councils (*Consejos Comunitarios y Municipales de Desarrollo*) and count on important support for their own performance. The Community and Municipal Development Councils, together with the community associations develop the Municipal Water Policy, which is proposed to and in most cases supported by municipal authorities. The Water Policy serves as a

basis for the elaboration of Strategic Development Plans for the municipalities and the Associations of Municipalities.

Of the eight municipalities, San Pedro Sacatepéquez and San Marcos have relied on the elaboration and implementation of the respective policies since 2004, and the other six municipalities have relied on them since 2007. In 2007, elections for public offices were carried out and awareness-raising was carried out in coordination with other organizations to raise awareness among candidates and proposed councils about the respect, adoption, promotion and allocation of funds to the respective municipal water policy. The acceptance of the proposed water policy by the municipal councils (*Consejos Municipales*) allows for the sustainability of Integrated Water Resource Management, since by virtue of being a policy, it is able to transcend the four-year administrative processes required by the authorities.

The social advocacy have been positive and have allowed for some members of the community associations to hold elected positions and be part of the Municipal Councils (*Consejos Municipales*). This has allowed them to make direct decisions in daily municipal functions. It is also necessary for them to strengthen the public knowledge of the water policy document so that the council in a municipal statement approves the period of implementation of the policies through a municipal agreement. It is also important so that subsequently, the educational and non-governmental organizations can, in periodic weekly meetings, organize forums and workshops among society, association and municipal authorities for adoption by the general population.

The Municipal Water Policy document is structured on general principles that highlight social equity, economic efficiency, and environmental sustainability and also contain the objectives and guidelines for water management at a municipal level. It is important to highlight that the document aims to increase knowledge for proper water resource management, guarantee the population's water supply and estimate and be prepared for future water needs in terms of quantity, quality and efficiency. The policy is based on the planning information contained in the municipal plans with its respective implementation timeline as well as possible financing sources.

It is recommended that the water policy should be linked with other management tools such as regulations and potable water and solid waste plans. In the case of the Palestina Sacatepéquez municipality, people were unaware of the existence of regulations. Diverse institutional sectors began to meet in order to formulate the water policy and when regulations had to be developed, it was concluded that these already existed but that the population was not aware of them. As a result, they found that the population was receiving a less quantity of potable water than was indicated with the respective fee which was charged. In the case of San Marcos, the water policy has represented an open door and provided the support to organize around a solid waste management project and the implementation of ecological trails that promote recreational uses of water resources. Organized society demands that a municipal agreement be established in which resources are allocated to the revision, enrichment and the expansion of the municipal water policies' implementation. However, in the past, this mandate has only been partially fulfilled.

A suggestion was made to a municipality to revise and modify existing potable water service charges for 2005. The objective was to provide an economic value to water resources and execute water policy principles, including the acknowledgement that water is a finite resource. The suggestion was to create a fee as a function of the consumption level according to consumption categories, charging one dollar and thirty-three cents for each thirty thousand liters of water consumed. However, in October of 2005, the water system collapsed as a result of Hurricane Stan and the population was without water for 10 days while at the same time petitioning to pay for

water services at whatever cost. The problem created by Stan was subsequently resolved, but the Municipality rejected the proposed fee adjustment due to political pressures.

By contrast, in neighboring countries, water is given great value followed second and third by electricity and cable television, respectively. It is known that for potable water services at an urban level there is a three dollar subsidy for the provision of the service, and at a rural level, the communities must pay for all costs incurred in the administration, operation and maintenance generated by the service. This represents a social injustice. There is also a weakness in terms of finalizing water policy proposals since not all municipalities have placed sufficient importance in developing and implementing water policies. Additionally, there is limited political will on the part of the authorities to give attention to key policy proposals. In some cases, despite having participated in its design, important measures such as the revision and adjustment to the valuation of water services, sanitation, and irrigation have been retracted. Finally, and on repeated occasions, investments for water resource inventories have been solicited and refused.

The establishment of the system: Water Roundtable Discussions

In 2004, the 10 associations promoting water issues as part of CADISNA along with the Association of Municipalities of the Rio Naranjo Basin (*Mancomunidad de Municipios de la Cuenca del Río Naranjo*) and Fundación Solar, together signed the Declaración de Miralvalle, in which the system of Municipal Roundtable for Water Dialogue was created to create a space for dialogue on this topic.

In the western part of Guatemala, there are two levels of agreements currently functioning. One of these is the Western Water Roundtable (*Mesa Occidental del Agua*) and the Municipal Water Dialogue Roundtables (*Mesas Municipales de Diálogo del Agua*). The first functions at a regional level including at least two departments, and the second functions at a municipal level. The mission of both is to build a space for dialogue, discussion, evaluation and debate about the problems related to water resources in order to develop and present consensus-based proposals with solutions related to integrated and sustainable water resource management and related resources. This should be accomplished through the population's active and organized participation in the western part of the country.

As an instance for dialogue among the sectors that are represented, the basis for the Roundtable is the Municipal Council for Urban and Rural Development –COMUDE- through the Economic, Tourism and Natural Resource Promotion Council (*Consejo de Fomento Económico, Turismo y Recursos Naturales*) or the Water Commission, depending if the COMUDE decides to specifically create it taking into consideration the importance and complexity that the water resource represents to the community. In whichever case there is a direct link to COMUDE, according to local institutional arrangements, which guarantees of the decisions taken at this instance.

The roundtable is made up of diverse institutions among which are: a) governmental: Ministry of Environmental an Natural Resources, Ministry of Agriculture, Livestock and Food, Ministry of Health, National Coordination for Disaster Reduction; b) Municipal governments represented by authorities, civil servants and/or delegates and c) organized society is represented as a function of the different uses of water at the microbasins located in the municipalities of the Rio Naranjo's upper basin and that are represented in their respective COMUDE (domestic, agricultural, industrial, hydroelectric, tourism, medicinal, for livestock, recreational and others).

The formalization or legalization of the Roundtables relies on two processes. These are: i) When the COMUDE commissions are organized, it could be that the Water Commission or the Municipal

Water Roundtable Dialogue is created and reflected in the respective minutes ii) When the Economic, Tourism and Natural Resource Promotion Commission is created and is included in the respective minutes, and will be subject to approval by the COMUDE. It is important that in its creation, the three indicated sectors participate (governmental, political, local and organized society) and that the group defines by consensus if it will be titled as a Commission or a Roundtable.

The roundtables should also accompany the process of defining water uses from civil society, through training and legal technical assistance to legally, economically and socially-vulnerable groups. Together, they can present water issues to the public including solution proposals for primary problems, acting as intermediaries between civil society, political parties and the state. These can provide support with studies and diverse proposals for solving chronic water management problems. In terms of organization and administration, some roundtables rely on board of directors and others take turns in rotations. In the case of the San Juan Ostuncalco municipality, the protected area department's technician is carrying out the secretary's functions.

Information management related to water resources

"In Guatemala, economic opportunities from water uses are wasted due to sub-utilization in irrigation, energy and tourism activities. Although there is no lack of hope for national economic development as the country participates in globalization through diversified agriculture and tourism, no one speaks of the necessary provisions neither in terms of productive water infrastructure nor about how to maintain or procure the scenic beauty that fundamentally includes water sources."(1).

Despite the fact that the municipal water policy guidelines include guaranteeing the supply for the population's water demand and also estimate and provide future requirements for water in terms of quantity, quality and efficiency, attention has not been given to this requirement. As a result, the community bears a high social cost due to scarcity and/or non-existence of secure water supply and residual waste water disposal systems. This goes beyond covering or not covering operational and service maintenance fees and expands into a cost that is subsidized by infant deaths, malnutrition and poor health, in addition to very poor quality of life.

Communities associated through water interests –CADISNA- participated in the measurement of water inventories in order to learn about the quality and quantity of Tacaná and Turbalá microbasin water resources from the high area of the Rio Naranjo basin. To this end, the organization coordinated activities with the Ministry of Environment and Natural Resources –MARN- who facilitated trainings for the CADISNA team, who was in turn responsible for taking the inventory. Interviewers and field guides also assisted along with a coordinator and laboratory technician who conducted the bacteria analysis. Aside from MARN, other organizations were included which assisted in training personnel in laboratory testing.

The results obtained from the inventories include the identification of 166 water sources of which 26% lack legal documents for possession. Another percentage which has yet to be quantified is not apt for human consumption. There is no reliable and easily accessible information related to water sources and their legal status. The municipalities do not have a registry of water sources that supply the water systems, and the lack of records promotes frequent conflicts over water uses. Within the framework of the Municipality Associations, diagnostics have been carried out in order to become familiar with the legal regulations related to the use and conservation of the resource; the results have make evident the weakness of the region and the country on this topic. There is no real consciousness of the problem represented by IWRM and there exists great confusion, understanding it just as domestic water supply.

Since no information is certain in terms of the quality and quantity of water resources there is also the risk to sub-estimate the potential use in the region and/or waste scarce water supplies. The "General Water Law" proposal has generated actions such as closing of roads, lack of order and social confrontations due to nonconformity. This is also a result of a lack of knowledge and information without ends or particular interests rather than a result of real knowledge of the law's necessity. Therefore, the question becomes if it is better to first create the "Dialogue Roundtables" related to the topic and build these based on agreements that can then be legislated.

Social participation as a guarantee of process sustainability

"The state and society reiterate a social practice that has become habit which is using water sources as waste dumps for all kinds of liquid and solid waste; nobody is surprised or protests when five children die in less than three days for having ingested contaminated water, nor are they surprised when a collector spills residual waters from the capital city at a rate of 2.5 m^3/second over a tributary of the Motagua river without identifying personal right or responsibility in the occurrence"(1).

To address this, one of the proposed administrative actions in the water policy is carrying out social audits. To this end, organized citizen groups have piloted audits in some municipalities. In the case of a pilot audit in San Marcos, it was determined that the municipal solid waste collection service was subcontracted to a private company through a monthly contract. This company does not have adequate conditions for the provision of the service and only offers one collection unit that provides deficient service.

The service is also inadequate due to limited economic investment, a lack of adequate machinery, and no qualified team and personnel for its proper functioning. Additionally, there is no appropriate location selected through technical expertise for the disposal and treatment of waste. The San Marcos municipality's population generates great quantities of solid waste which are collected through the service provided by the municipal sanitation truck. The truck takes the waste to the dump located in Aldea Pojopón in the Esquipulas Palo Gordo municipality. This results in environmental contamination and damage to the health of those who live in the dump's neighboring communities. These are currently in a state of abandonment and generate high levels of environmental contamination due to a lack of attention and a lack of municipal policies for the management of this waste.

The San Marcos municipality relies on a waste processing plant and an incinerator in good condition in order to carry out the selection and treatment process for such waste. These are not being utilized to provide proper waste management and therefore produce serious damage to the environment and population's health condition.

The population is also responsible for the service deficiency by virtue of: 1) not being municipal sanitation train users 2) delinquency in the payment of monthly fees 3) not classifying organic and non-organic waste 4) inadequate management of solid waste 5) not having education and environmental consciousness since they throw waste indiscriminately onto wastelands, municipal streets and practically anywhere 6) Not generating any citizen control practices over the management of the municipality's solid waste.

Lessons learned

- Through training and organized facilitation, the communities have a better vision of public action, their rights and particularly of their obligations. Without regard to literacy levels, they have understood that in order to see changes, it is important and necessary to participate since this also provides synergy for the momentum of water policies.
- Some of the trained individuals in organized society, are in publicly elected positions. Their internal actions within the associations has strengthened their ability to hold public service posts and undertake actions for the sustainable use of water resources since they have solid information about the problems and potential surrounding the resource.
- The development of guidelines for municipal water policies accompanied by municipal tools aim for compliance with the guidelines related to IWRM and support proper and coordinated planning towards the construction of water governance processes. This is why it is important to strengthen municipal and community associations and include awareness-raising and training activities with those that generate work and/or income. This dynamic will favor the implementation and institutionalization of the policies.
- It is necessary to bring together public institutions involved in water management so that they can form the Municipal Water Roundtable. The roundtable will promote the integrated management of water resources, their residuals and solid waste. The roundtable should also undertake actions in a coordinated fashion which aims for efficiency and efficacy in the administration of municipal services, and also provide support so that mass media can collaborate in raising the public consciousness.
- The initiation of the process to establish municipal water policies has permitted each municipal government to have an explicit orientation on IWRM and facilitate the collaboration and coordination of governmental and non-governmental institutions.

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Contacts

Jaime Alfredo Orozco Barrios/ CADISNA / orojaime@gmail.com, (502) 50383902
Mario Eduardo Orozco / Presidente CADISNA, mariorozco54@gmail.com
Juan Bernardino Velásquez y Velásquez, Tel. cel (502) 53766557, cadisna@gmail.com
CADISNA, 13 Avenida 1-58 zona 4. San Marcos, Guatemala. C.A. / (502) 7760 4294 / (cel)

Referentes and web sites

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