Freshwater Action Network Central America (FANCA)

# Water Boards of Central America

Assessment of Local Management of Water Resources

A Comparative Study

*"If the vital system is yours, you'll take care of it. And when it breaks down, you'll look for the best, the quickest, and the cheapest way to repair it."*
Director of Panimaquip Community, Guatemala

"*We knew we needed water, that our present system was faulty and unreliable. So we sat down with community leaders to define the problem. Then we set up a committee, and that was the beginning of the water administration board."*
Amelia Ramos, JAA San Francisco, Honduras

*"…some thought we were crazy, but in spite of that, we kept on, talking to anyone who would listen, making them aware of the problem. At first, we had less than eight people with us, but day by day, more and more of them came to help, so that, on some days, we had as many as ninety people digging ditches to protect that most precious of all liquids: water."*
Josefa Vaca, Las Uvas, Panama

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# Introduction

The Freshwater Action Network of Central America (FANCA) is a network of social, local, and national organizations, promoting water management strategies at all levels. Also involved in training and publication, FANCA is affiliated with the global Freshwater Action Network (FAN), headquartered in London.

During FANCA's 3rd Regional Convention, held in El Salvador in September of 2004, the need for a regional emphasis became evident. Local water boards, drinking water committees, and rural aqueducts provide drinking water to nearly a quarter of the total population of Central America.

This pattern is common throughout the region, but has been neglected by central government water authorities. Recognizing the effectiveness of these ubiquitous, independent local groups, FANCA has projected this preliminary regional study.

These independent water boards may well be a feasible solution to drinking water supply, storage and hygiene, and an example for sustainable development.

In view of the inability of third world governments to meet millennium goals and commitments[1] by traditional methods, other options, such as privatization, or public-private concessions, have been widely considered, promoted frequently by international financing.

However, these alternatives have failed, especially in South America, and attention has turned to local solutions to the water supply problem. How have they achieved such results? With whom do they relate? What are their strengths and weaknesses? What valuable lessons have they learned? What is their legal status? What are their limitations?

In the six countries where the study was made by local FANCA personnel, a common guideline showed similarities as well as differences among and within the different groups, and their national particularities. This is a preliminary study, and others will follow. Case studies of successful groups are herein included.

From this start, it is hoped that communal management may be strengthened, its deficiencies corrected and new policies and regulations generated, by public institutions, by NGOs and by cooperatives.

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[1] As defined in the Johannesburg Convention

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Research was done by various primary and secondary methodologies: site visits, interviews with the people involved, and workshops in the various countries of the region.

Some outstanding discussions occurred during the Conference on Habitat-UN on water and human settlement held in Mexico in the final months of 2005, as well as “Hacia Una Nueva Cultura del Agua” (Towards a New Culture of Water), which was held in December of that year in Fortaleza, Brazil.

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## I. Background

In all the Central American countries, communal cooperatives have been organized to provide drinking water to their communities in rural areas not served by government entities. Although they differ in each country, their origins, structures and incumbencies are very similar. Throughout this study, we shall refer to them as Water Boards.

Water boards rank first on the scale of community participation. Some of them operate under shared management of the cooperative and the state, while others are managed entirely by the community cooperative, independently responsible for the funds they receive.

**a. Origins**

Central governments or municipalities have generally constructed and administered aqueducts in the main cities. Smaller towns or villages, however, have frequently been left without access of these systems.

In most of the Central American countries, these water cooperatives arose from governmental efforts to augment coverage of potable water supplies in rural and suburban areas, and in some cases, to administer and improve the infrastructure of institutional or international programs, which, without local support, would have collapsed or proven insufficient to meet demands.

When the Salvadorian Ministry of Public Health and Social Assistance (MSPAS) promoted the National Plan of Basic Rural Hygiene (PLANSABAR) in 1972, for drinking water storage, the first water boards came into existence. Their purpose was to aid in the construction, repair, extension, operation, administration and maintenance of the aqueducts, as well as in the execution of the sewage and wastewater disposal management project.

In Costa Rica, the Ministry of Health promoted the creation of mini communal aqueducts, administered jointly with a committee of elected users. These committees were at first attached to the Community Development Associations. With the creation of the Costa Rican Institute of Aqueducts and Drainage (A&A), the rural aqueducts were integrated under the A&A, developing rapidly throughout the decade of the seventies with the Fund for Social Development and Family Allowances (FODESAF), which included drinking water for the rural population, as part of the strategy from the war on poverty. As such, the A&A contributed design, technical support, equipment and materials to the project, while the community reciprocated by providing labor and grounds for the installations. Finally, the A&A sought a direct relationship with the committees and the Community Aqueduct & Sewage Systems Administration Association (ASADAS) was created.

As part of the Health Committee in Panama during the fifties, these committees were assigned, among other tasks, the construction of aqueducts in rural areas, and up to 1994, approximately 1500 were constructed. That year, international health finance agencies recommended an exclusive dedication to new and existing aqueduct operation, and the Rural Aqueducts Administrative Boards (JAAR) were born. But the health committees objected to the Boards' dedication to water, to the exclusion of any other communal tasks. Today, both types of association co-exist, as the needs of each community vary, so that, in practice, certain communities foster a hybrid type.

In the Nicaragua of the seventies, the Ministry of Health's National Plan of Rural Environmental Hygiene (PLANSAR), projects were executed with little or no preparation nor organization of the population, nor any follow-up guarantees of

aqueduct sustainability. In an attempt to institutionalize aid to the communities, the Nicaraguan Institute of Aqueducts and Drainage (INAA) established the Direction of Rural Aqueducts (DAR) in 1982. Afterwards, the Nicaraguan Aqueduct and Drainage Enterprise (ENACAL) was established and the DAR was designated the central executive unit to implement adequate technology and obtain community participation, reaching a coverage of 17% of the rural population. Operational responsibility was transferred to the municipalities in 1990. Committees on Drinking Water and Sanitation (CAPS), organized on a community basis, were trained and strengthened during this process.

Honduras and Guatemala are countries where communal initiative prevailed over government management. The Honduran experience is most recent. First appearing in the seventies, water board administrations increased throughout the eighties to meet the demand for accessibility, sustainability and quality. The government's Autonomous National Service of Aqueducts and Drainage could not cover the needs of the region's 298 municipalities, so the communities took the initiative of constructing and maintaining their own systems, sometimes with international assistance, but frequently on their own. Several existing systems were operating below capacity while others had broken down a few years after inauguration. The community organizations, in open opposition to governmental paternalism, received scant support from existing NGOs or from government, both hostile to private initiative. Recently, however, community organizations have been consolidated and strengthened through teamwork, as we shall see later.

Rural aqueduct committees came into being in the seventies in Guatemala, when the government provided only massive distribution and public wells. *Water for the People* afforded new alternatives in construction and management of drinking and wastewater systems, as well as sanitary education in the Mayan tradition. This was holistic, and involved infrastructure, reforestation, sewage disposal and drainage as well as training for plumbers, forest guides, local health counselors, committee members and beneficiaries in general, thus strengthening the organization. Printed guides and rules were circulated among project beneficiaries, further enhancing effectiveness. A number of these committees have been in operation for over thirty years, and in some communities, a ceremonial wand or baton is wielded by the chairman as a status symbol.

**b. Range and Extent of Coverage**

We have mentioned that water boards generally operate in rural and suburban zones throughout the region, ranges and coverages varying by country. Although official data are scant, estimates of >24,000 such rural aqueduct committees cover a very significant segment of the rural Central American population, the poorest in each of the countries.

Statistics from the Central American Commission of Central Environment and Development (CCAD), reveal that 50% of the populations in the region lives in rural areas and close to two-thirds survive on less than $2 a day. (CCAD: 2002). However, as in the rest of Latin America, there has been a marked population concentration in urban and suburban areas in recent decades. From 1972-2000, this rose to 67.3% (GEO 3 /UNEP:2002)

This Central American transformation, from a massively rural to a growing urban society, has conditioned political development, in growth as in environmental aspects, particularly regarding sustainable water resources.

Whereas formerly, Costa Rican water boards were called Rural Aqueducts Administrators Associations, they are now referred to as *Community* Aqueducts and Drainage Administration Associations.

According to A&A data, approximately 1,820 ASADAS provide water to the homes of 1½ million users, fully a third of the national population. Additionally, informal neighborhood committees also administer aqueducts, raising the total to over 2,400.

Rural community water boards are distributed throughout the entire territory of El Salvador, and although no official data support these numbers, 219 such communal associations were identified, serving 77,282 families. For an average family of six, we may estimate coverage at approximately a half-million persons.

Water boards in Honduras, constituted over the past 20 years, are highly dispersed, estimated at nearly five thousand in less populated rural communities.

Over the past thirty years, the Nicaraguan government constructed 5,100 rural water works, distributed throughout 151 municipalities and currently attended by members of the communities benefited, organized in CAPS. Although they serve about a million people, an estimated 52% of the rural population (more than another million) lives in want of drinking water, most severely in the North Atlantic Region, where only 10% of the population has access to drinking water systems.

Panamanian records (MINSA**,** October 2005) show nearly fifteen hundred JAAR operating mainly in the provinces, serving farmers and indigenous peoples; in urban areas, like San Miguelito, Las Cumbres and Chilibre, 3% of these organizations are registered. They are augmented by private and religious non-registered groups.

No official data are available on the number of communal water committees on a communal level in Guatemala. The closest approximation is based on a 52% access to drinking water in the twenty thousand rural communities, so about ten thousand rural aqueducts are operated by committees throughout the country.

# II Legal Framework

## a. Legislation

Despite their thirty-odd year longevity in these countries, all water boards are not supported by regulatory legislation, nor protected insofar as their legal rights and duties are concerned. Only in El Salvador, Costa Rica, Panama and, to a lesser extent in Honduras, do they operate within legal frameworks, whereas in the other countries they are generally unregulated.

As mentioned, Salvadorian Water Boards were constituted by the 1972 Executive Decree, but sanitary regulatory decree Nº 29, of May 21st 1986, was omitted. This enabled the government to cease operations of PLANSABAR, removing it from the jurisdiction of the Ministry of Health and placing water boards under the National Administration of Aqueducts and Drainage's (ANDA) Management of Rural Systems in 1996. This has resulted in uncertainties regarding property rights over equipment and grounds, as well as administration gaps, since ANDA's Management of Rural Systems was eliminated, and no other entity has been appointed to co-administer the boards.

The A&A's constituent law empowers it to convene with local entities to administer such services directly or through a mixed board, to render optimum service within the respective regulations. The ASADAS, arising from this ruling, are unaffected by the Law of Association Nº 218 of 1939, but are directly regulated by Executive Decree No. 32529-S-MINAE of February 2nd 2005, which establishes a series of prerogatives favoring the A&A, and in our opinion infringes upon Costa Rica's constitutional right to freedom of association.

The Panamanian Code of Hygiene, in its Law Nº 66 of November 10th 1947, establishes sanitary authorities' competence to dictate installation and operation norms for drinking water services. JAAR was established by Executive Decree Nº 49 of April 18th 1994. MINSA was later designated[2] the regulator of drinking water and drainage services for rural communities of less than a half-million dispersed inhabitants lacking sanitary services.

In Honduras legal framework benefits the water boards, affording them municipal preference for grants as well as a judicial character under Article 18 of the water laws, this latter to be ratified by the secretary of state following evaluation by the respective municipal corporation. The year 2008 has been targeted for all drinking water systems to be assigned and operated by municipal corporations or water boards.

[2] by Laws Nº2 to Nº7 of January 1997

On August 24th 1979, the Nicaraguan Institute of Aqueducts and Drainage (INAA) came into being under Decree Nº 20 to oversee the country's drinking water system. Unfortunately, under the general water laws, no specifics were included to cover rural aqueducts, only indicating that municipal and regional authorities may authorize water storage for five hundred or less connections. No special regulation covers the Committee of Drinking Water and Sewage (CAPS), although INAA published a guide for organizing and managing rural aqueducts and orient the CAPS, following through on organization, management, operation, and project maintenance.

In Guatemala, no general water law has been enacted, the subject being covered as an accessory under public health laws, so that water boards are generally unregulated. Although each community is obliged by law to elect a communal development council (COCODE) to regulate local projects, including aqueducts, the native (Mayan) view tends to adapt general laws to traditional needs, seeing that the law does not intrude upon their own culture. In practice, they form their own committees, designating a representative for liaison with the municipality.

**b. Government Relations**

Governmental institutionalism curtails water board autonomy, but also implies access to financial support and technical assistance. Relations in this aspect range from total autonomy, which implies an absence of governmental influence, as in the case of Guatemala and El Salvador. At the other extreme, Costa Rican institutional control implies near total dependence and loss of autonomy, in return for access to financial and technical assistance.

In Costa Rica, A&A's *Direction of Rural Projects* is in charge of inspecting and strengthening the ASADAS, and can legally take over their operations and properties, should the communal boards be considered derelict in service. No distinction is made between public- and community-funded aqueducts, for A&A is defined by law as the sole proprietor of all aqueducts in the territory, and merely "delegates" operations and maintenance to the ASADA by means of a covenant, not alterable by the ASADA. A number of committees are reluctant to subscribe to the covenant, recognizing that it represents their loss of autonomy and control of community aqueducts, so only about a third of the ASADAS have subscribed. Nevertheless, A&A has established legal mechanisms to force the ASADAS to conform to their regulations. For example, water concessions may not be solicited directly to MINAE; application must be presented through the A&A. Even for their inscription in the public Registry of Associations, A&A's approval is required, and this in our opinion is unconstitutional.

Panama follows Costa Rica in its institutional control of the boards; the Ministry of Health is the sole legal provider of water to rural communities. The boards are

therefore constrained to support MINSA and its agencies, which have imposed a series of legal instruments such as the JAAR, establishing technical and administrative norms regarding quality of the drinking water. Health authorities then assume the supervision of the JAAR, especially insofar as management of funds, but additionally exerting pressure by, for example, menaces from MINSA technicians to the committee to convert to the JAAR regime or be denied training and provision of materials.

In El Salvador, rural water boards and similar communal associations operate under their own responsibility, with their own resources and personnel, each community solving its own problems, whether technical, financial or administrative. The only government representatives who periodically supervise these systems are health inspectors and promoters from the Ministry of Public Health and Social Assistance. Their objective is to guarantee drinking water quality in these communities, villages and cantons. The situation is similar in Guatemala, where the water boards operate with total autonomy, and little or no control or support from the central government.

Officially, the government is mainly responsible for rural aqueducts in Nicaragua. Once a project is completed, it is delivered to the community, to be managed by their CAPS, who, lacking legal capacity to accept the project in the name of their community, must leave it in possession of the state, which latter entity is obligated to provide maintenance. CAPS have practical and moral responsibilities for maintaining their water systems, with institutional and technical support from municipalities and central government. Within their limited possibilities, they have addressed themselves to their tasks most willingly.

In Honduras, water boards are regulated by their own statutes, contents of which are approved by the Ministry of Governance and Justice and also by the recently enacted Water and Hygiene legal framework. Minimum regulatory requisites, for example, oblige the board to be constituted by community residents and users, on a non-profit basis with political neutrality.

**c. Competence**

As may be supposed, water board competencies primarily entail construction, extension, administration, operation and maintenance of the communal aqueducts. They vary by country and depend largely upon their legal mandates. We shall herein analyze the differences, to appreciate the varied perceptions held by those whose occupations lie in the water sector of each country.

In Honduras, board competency includes all those functions pertaining to water administration, systems maintenance, and program and project execution to satisfy the needs of the communities involved, with an active involvement of neighbors, a generic focus and equity among members. Likewise, all measures assuring systems sustainability and recuperation, protection and management of

the river basin and aquifers providing water to the communities, as well as the environmental protection of zones of direct influence of the water board. Transparency in the control of funds is defined by the organization plan as a common denominator.

In Costa Rica, ASADAS regulations establish “duties and attributions,” to “guide and participate actively with the community in construction, administration, operation, maintenance and development of systems, including the preservation and conservation of water resources.” The associations are further limited from participation in any other activities not expressly included therein; they are obliged to provide public services “efficiently, opportunely, and equitably to all users.” The ASADA may not dispose of any furniture, real estate, nor other property –even that which was acquired privately— without A&A board authorization. The Costa Rican system is very peculiar in that whereas limitations are established for the ASADAS, they are entitled to technical, financial, and organizational assistance from A&A for proper management of the system. This, however, is subject to institutional disposition and depends upon availability, so that it is not always forthcoming when needed by the ASADAS.

The JAAR in Panama emerged as an institutional mechanism for guaranteeing sustainability through the transference of authority to the communities in their administration, operation and maintenance of the aqueducts. However, as mentioned earlier, many health committees have avoided converting to JAAR, primarily for lack of credible information. In practice, therefore, the communities have tended to hybrid entities for managing the aqueduct and promoting MINSA.

In Nicaragua, the CAPS are elected by the communities and are responsible for providing water and basic hygiene to the community. The CAPS are comprised of men and women in charge of organizing and coordinating with other organizations present in the community, and are the guaranty for sustainability of drinking water supplies and health services. CAPS’ additional competencies include application to municipal authorities for approval of drinking water and hygiene projects and their subsequent orientation, direction organization, care and maintenance within the communities, as well as their support of health campaign initiatives.

In El Salvador, water board competency is defined by statutes and interpreted by each administrative board. These include family lifestyle improvement through example, regarding health and care of the environment, improvement in drinking water systems through planning, programming, and executing projects. Internal regulations for each association define its user obligations.

Committees in Guatemala have the additional function of avoiding misuse of water resources, detecting damages and maintaining springs, imposing rationing when necessary and convening the community for discussion of any problems that may have arisen in water management.

**d. Structure**

Water board structure is fairly uniform in the countries studied. Generally, a legal model of associative type is utilized, wherein associates are at the same time the users of the aqueducts. Vertical structure composed of a general assembly and a board of directors is the common pattern, including cases where committees may predominate, the basic structure and form of operation is the same.

In principle, decisions should emanate from the base, although practical evidence reveals that they are made by the directorship and those few members who usually attend meetings, a similar situation in the majority of associative structures: a small group executes and coordinates all administrative functions and maintenance of the system, acting at times through work committees.

Each household is generally considered a user, masculine in character, in line with the patriarchal system and limiting active participation by women who are closer and more appreciative of water, and by younger people, who are better educated than their parents. The one exception is Panama, where any resident may serve on the health committees.

The CAPS in Nicaragua have a simpler structure, depending upon project type; for more complex systems entailing mini-aqueducts with electric pumping, five-member organizations function in coordination, secretarial and finance, operation and maintenance, hygiene and propaganda, and natural resources. In systems of minor capacity entails diverting springs or sinking wells, CAPS may be integrated by three members covering the first three functions cited.

An important aspect, common to all countries in the region, is that the board members assume their tasks without payment. In Mayan terminology, this has been defined as KUCHUJ, meaning, “I offer my work for my own welfare and for that of my fellow man.” Even in Costa Rica, where regulations authorize their members a “diet”, that prerogative is not usually exercised. In Honduras, the treasurer may charge a salary and an accountant may be contracted.

**e. Water Board Federations**

In recent years, unions or federations of water boards have been formed in several Central American countries, as a means of survival or to accomplish more extensive goals. Their objectives are varied, ranging from political influence, through cost reduction for purchases of goods and services, to arrogation of such state functions as training, technical assessment and finance. Recently these federations have become active in environmental protection and integrated management of water resources in river basins where their affiliates operate. Considering the meager support they receive, the phrase “United we stand” has never rung truer.

In Honduras, there exists a larger organization of this type: the Honduran Association of Administrative Boards of Water (AHJASA), founded by 17 rural villages, currently counts with more than 700 associate communities representing more than 650 thousand users. AHJASA provides technical and administrative assistance to water boards, which otherwise would have no access to training, information sharing, chlorine banks and in some cases implementation of payments for environmental services. This example has been promoted in El Salvador and in the Dominican Republic. Their legal constitution encourages a higher degree of participation by its members, who are structured in groups: sectorial, municipal, departmental and national. The Central American and Caribbean Federation (FANCCASA) is currently under the leadership and example of AHJASA. The Water Platforms in Honduras and National Network of Water and Sanitation (RAS-HON) have been involved in training and technical support, integral management of resources and interchange of information.

In El Salvador, all the Water Boards funded by PLANSABAR are organized in the National Association for the Defense, Development and Distribution of Water on a Rural Level (ANDAR), with the objective of managing resources to improve all water supply systems under their administration, which are in poor condition and many at risk of becoming inoperative. On the other hand, several of the water boards have been recognized by NGOs. They are organized in two networks of Boards and Water Associations: one in the Western Region of El Salvador, specifically in the southern zone of the Department of Ahuachapán, the Association for the Development of Water (ADEAGUA), integrated by nineteen water boards and another operating in the eastern part of the country, in the Department of Usulután, the Eastern Association for the Strengthening of Rural Drinking Water Boards (AFAPRO), which integrates seven water boards.

In Costa Rica, there are several unions or federations of ASADAS of regional character (North Zone and South Zone) and at cantonal level (in the cantons of Grecia and Naranjo). These have focused on support to their membership and have considerable political influence, as well as expertise in resource management, large-scale purchasing, and training. Additionally, they promote an integral management of all water resources, taking into consideration river basins and not only local aqueducts. These secondary organizations are not recognized by A&A, which latter may by law “order” that distinct ASADAS unite in federations or unions, to assure conservation of their natural resources and for improvement of services.

No such organizations exist in Guatemala or in Panama on neither national nor regional levels. This evinces the necessity for establishing lines of communication in these countries to foster information exchange with those boards that have united or federated.

## III Management

### a. Rates

This is one of the most complex issues for the boards, since it deals with the rates charged to the communities as opposed to the cost of providing the service. The subject of delinquent subscribers, and the procedures followed to increase rates is also important. In most countries, these decisions are made by the boards. In Costa Rica these matters must be submitted to a specialized entity.

Another aspect which is common in all of the countries studied is that the directors of the boards take their roles quite seriously, always trying to save subscribers' money. They therefore tend to overly delay their investment decisions which cause greater loss of opportunity.

As mentioned, in Costa Rica, the ASADAS' water service rates to subscribers are defined by the A&A, following authorization by the Regulating Authority of Public Services (ARESEP), whose regulations provide for the inclusion of an environmental factor, but none of the boards has yet to implement this increase. ASADAS currently have no specific methodology to define true value for the water resource. Only large scale operators incorporate environmental variables into their cost structures. More recently, several banks have created trusteeships to finance construction or improvement of communal aqueducts; some of these accept the portfolio of subscribers and their invoicing as a guaranty. This is the case of the state Banco Popular y de Desarrollo Comunal, but interests charged for such credits do not differ from other types, so they are seldom used by the ASADAS.

In El Salvador none of the boards or communal associations operating a water service currently incorporates any value factor for the resource. Consumer rates are defined on a basis of their social benefits versus system sustainability. In several of the former PLANSABAR, rates have remained constant, regardless of the system's finances. To propose a rate increase, board directors must consider rising costs of electric energy, chlorine, salaries and contingencies or otherwise, when a current statement of balance indicates impending system insustainability, submit their proposal to their general assembly. The directors must then apply for assistance to one of the governing institutions to assure the integrity of the system. All water boards have, by Legislative Decree, the right to a government subsidy on electrical energy, on the order of 40%-60%, depending

upon location and service distributorship. ANDAR reports that were this subsidiary not forthcoming from the government, approximately 60% of their systems would fail, since their members don't have the capacity to pay.

The Panamanian procedure for implementing a rate increase is followed at a regular or special assembly. Varying by case, rate proposals are based upon needs to cover expenses and upon the economic conditions of the families benefiting from the aqueduct; the rate accorded is not intended to generate a surplus. By this method of calculation, monthly rates may range from $0.25 in Coclesito, for example, up to $4.00 in Las Uvas. In those communities where lowest rates are applied, no adequate resources are available for maintenance nor for system repair. When we further consider the high rate of overdue payment (despite threats of suspended service for payment delinquencies of over two months, many subscribers remain in arrears), it becomes more than obvious that the aqueducts are at high risk of insustainability. Excepting payment for services, there are practically no other local mechanisms for generating income. When the system breaks down, a call is made for volunteers and donations are requested from local authorities and from MINSA .

For the sustainability of the systems in Honduras, rates are generally based upon a social-economic diagnosis of the community, seeking a balance whereby each system is self-sustaining. Among the factors taken into consideration for this calculation are: salaries of plumbers, cost of chlorine, electric energy and materials for the sustainability and/or extension of the systems. Rate increases must be approved by the general assembly of each water board.

In the beginning, in Nicaragua, the INAA approved and applied the rates. Presently, rates are defined by the CAPS, taking into account the economic possibilities of the persons benefited. In some cases, ENACAL also participates.

In Guatemala, payment quotas are adjusted to the costs incurred for materials and electricity. If there is a surplus of cash, it is placed in a contingency fund. Rates are defined by community consensus, and are occasionally adjusted to monthly or to annual payments. Uleu Che Ja is a congregation of 30 organized indigenous communities, whose combined communal funds amounted to $40,000 in 2003. All decisions on how much to spend, how it is to be spent or the use of the contingency fund are discussed and approved by the communal assembly and the water committee follows these decisions to the letter. When improvements are made, the beneficiaries provide their own manual labor. Quotas are generally not charged to the elderly, to widows nor to invalids.

**b. Environmental Protection**

Little by little there has been an awareness that the rural aqueduct systems are not only an infrastructure extending from the reservoir to the household taps, but rather also include recharge zones, micro river basins, outcroppings and their necessary zones of protection. Therefore, current versions of water board regulations, policies and statutes now incorporate resolutions related to the protection of water resources and their ecosystems, directing economic resources to these elements, whose importance may surpass that of traditional civil works. Such is the case of community contributions for environmental services.

Again, this is the case with El Salvador, where water board internal regulations, organized since 2001 by NGO's, cite protection and conservation of the micro river basins located in the zone of influence, in each of the water systems. Forestation, soil and water conservation and environmental education projects are activities already undertaken, but of which the public is unaware. Among their objectives is coordination with government, NGO's and international organizations towards the realization of projects and programs contributing to sustainability of the drinking water supply, support sanitation and hygiene programs, contain domestic liquid spills and protect micro river basins in the zone of influence of the water system. So far, two of the water boards, ACEPROS and Los Conacaste, located in San Francisco Menéndez, State of Ahuachapán, include environmental service charges in their receipts. These payments, made to SalvaNATURA, are destined to reinforce protection of *El Imposible* National Park from which watershed emanate the aquifers supplying their respective systems. Other water boards already charging for environmental services have yet to invest this income, as they are generating a base for systems sustainability. This not the case of the ExPLANSABAR group, who have yet to incorporate this environmental payment in their receipts to their subscribers to the drinking water service.

In Nicaragua, CAPS' duties include vigilance and protection of the water sources, prevent their contamination and assist in protection of the hydrographic basin. Such protection projects, developed by several institutions, have enabled continued usage of the systems during the dry season, with decreased flow rates, thus affording minimum supplies to all the community, occasionally resorting to rationing.

In Honduras, several communities have locally financed purchases of land where water sources are located. The community of Ceibilla, Nacaome, Valle, of only 33 homes, located in a desertifying zone, has regenerated nearly 200 acres of forest within the recharge area, working over a decade. Similar protection is practiced within communities over eight national departments. Water boards in Jesus de Otoro, La Paz, incorporate a percentage for payment of environmental services in their rates charged, which funds are dedicated to protecting the river bed, the source of their communal water.

In Costa Rica, ASADAS regulations include several environmental and water protection clauses. Among the new obligations cited are vigilance and control of activities potentially degenerative to the zones of influence and recharge, forest fire prevention and the delimitation of protected areas established by A&A. Likewise, in many rural communities, the ASADAS are in the vanguard of water management, protecting its sources and exercising control of the aqueduct.

Another important process being carried out in this country, is the purchase of land where the springs arise, maintaining that area under protection. The Public Service Enterprise of Heredia (ESPH) includes an ecology charge in its monthly water bills to subscribers, and the National Forest Finance Fund (FONAFIFO) has established agreements for the payment of environmental services to owners of forests lands, where the ASADAS, as well as other entities, draw water for their systems. A portion of the funds collected by the ESPH through water bills is invested in strengthening the ASADAS located within its area of influence.

In the Mayan cosmovision prevalent in the majority of Guatemalan rural communities, water is very closely related to environmental protection and is considered sacred, belonging to nature and giver of life, referred to as a mother, to be cared for and respected. The Mayan belief that “the health of Mother Earth is revealed in the greenness of her vestments”, is evinced in the care given to maintenance of the springs.

The Panamanian case deserves separate mention, for its total absence of protection of the aqueducts. This is associated with inadequate demarcation, and has brought about conflicts between directors of water-related organizations and neighboring landowners, particularly of those parcels located upstream of the aqueducts, because of the latter’s incompatible land use, sharing (and contaminating) the common sources of water. Many directors now recognize that this has been a weakness of their organizations, insofar as major interest has revolved about construction and maintenance of the infrastructure and definition of rules, neglecting protection of source areas through more effective and inclusive environmental management.

### c. Social Effects

The benefits of rural aqueducts are not limited to the health of the population served nor even to the environmental aspect, despite its legal precedence. The social impact of the communal organization permeates the society far beyond any casual realization. By the same token, a country lacking access to drinking water for its rural and suburban population is severely disadvantaged socially and economically, as we shall appreciate from the following analyses by country.

In El Salvador, for example, the lack of drinking water services to households affects men, women, boys, and girls differently. Where no such service exists,

the women, girls and boys must assume responsibility for supply. This obliges them to sacrifice up to fours hours daily to carry back small quantities of water, usually walking long distances, and longer during the dry season. In some rural communities, water is available for only a few hours during the day, generating sanitation problems.

Panama and Guatemala present similar conditions, where the economic benefits of the aqueduct have enhanced other activities and projects of the community, by further consolidating the communal scheme and justifying itself to users and beneficiaries. Similarly in Panama, water and hygiene committees like the JAAR compete informally within the communal environment. For example, in the administration and maintenance of public areas (cemeteries, health clinics) and contribute to school cafeterias, churches, assist family members of deceased aqueduct associates, all financed from users' contributions.

In Guatemala, water management committees have transcended their activities related to water services; the Pampojilá and Panimaquip committees, in conjunction with other organizations, have managed housing, land endowment, school construction, school construction, energy generation and street pavement projects. The Association of Agriculturists for the Development of Rachoquel (APADER) owns two buildings and manages education and health programs in conjunction with the Guatemalan government. Additionally, the association promotes natural medicine, grants micro credits and technical assistance to agriculture, and supports other local programs, with an overall population of about ten thousand and an annual budget of $260 thousand. The Association for Integral Development of Agucateco (ASDIA) owns a building, operates programs on education, agriculture, health and micro credit. The Association Ulew-Che Ja is a coordinator of committees, and is affiliated with other regional and national organizations, is a non-partisan political party, conserving its Mayan identity. All these coordinators of organizations are independent and autonomous, uniting their members, and have the potential to play an important role in public water policies.

In Nicaragua, the water boards have steadily increased their benefits to the communities, by training community members in sustainability of aqueduct projects, as well as in aqueduct, soil and forest management. This has been done through team construction of simple mechanisms for runoff and retention walls to protect areas of direct influence from water damage. Flood prevention and disaster mitigation strategies for counteracting potential hazards to communities and properties within the micro river basins and valleys are also addressed.

In Honduras, educational programs developed for the training of water board members generated a collective awareness, leading to increased participation, strengthening of democratic organizations and development of local leadership skills, thus enhancing administration of resources, sustainability, and quality of

service in water distribution. AHJASA provides technical assistance, training, and an automatically replenishable storage system of water treatment materials operating through a centralized chlorine bank, which supplies a network of twenty municipal and departmental banks, as well as rural systems. This bank was established in response to a need for water treatment materials within the traditional market, and has not only achieved its objectives, but has also contributed to change methodologies of governmental and NGO projects, even to the incorporation of their operational procedures in public policies and national law.

Many ASADAS in Costa Rica compete in A&A trials for water management. These contests are a challenge not only for the water boards, but for the community as well, competing against other communities for public recognition of their management quality. This contributes to improve the system integrally and has a positive effect on other activities such as tourism. Among these programs, the ecological *Blue Banner*, and the *Sanitary Quality Seal* are coveted prizes granted by the A&A.

**d. Limitations and Challenges**

It becomes necessary take into consideration the limitations and challenges confronting the water boards in the different countries, given the social-economic, bio-physical, cultural, political and structural conditions encountered. We perceive these limitations as opportunities for regional improvement, whether as incorporation into legal and political framework or as training incentives; they constitute an information exchange and mutually strengthen the boards.

In El Salvador, many of the rural drinking water supply systems have technically reached the end of their useful lives, thus posing a series of financial problems, especially for the ExPLANSABAR systems, currently managed by ANDAR. Despite this, lending is not regulated for consumer protection, but rather each community must solve its own problems, whether they be technical, financial or administrative.The water boards and other communal associations face operative limitations ranging from lack of property titles on their sources, high energy costs for pumping, rates that do not cover the real value of water, delinquent payments, infrequent water quality analyses and a pressing need for operator training, to name just a few.

It is estimated that, in the case of Nicaragua, the principal challenge is to offer access to drinking water and hygiene to communities that have none, or about 1.4 million inhabitants dispersed throughout the country's rural communities. A more significant contribution from the beneficiaries towards the investment is also sought. The challenge for systems already constructed is to maintain them in accordance with the physical characteristics, community size, and social-economic conditions of the population. The CAPS' great disadvantage is not having judicial status, without which the committees may not open bank accounts

under the names of the associations, but rather are forced to seek management through banks or other financial institutions under their personal names. This limits their access to credit, financing, capital gains on interest, as well as other benefits that should have been obtained.

In Panama, one of the most important limitations is the unclear judicial nature of the JAAR. The Attorney General's Office in diverse mandates establishes them as private organisms, since they have legal capacity and manage their own funds. However, the Works Ministry considers them public entities, on the grounds that their funds are managed through an official account in the National Bank and their transactions are subject to revision by the Comptroller General of the Republic. The lack of systematic follow-up processes, monitoring, technical assistance and training of communal organizations in the phases of construction, treatment and water distribution on behalf of the population are additional limits. Further, community participation has diminished considerably in comparison with previous years. This is particularly critical among young people, who do not feel the need nor recognize the importance of organizing themselves in relation to these aqueducts, especially those who live in surrounding areas or have access to urban centers.

Although Honduras counts with an ample index of coverage, water quality is grossly inadequate, showing high indices of contamination and low percentages of treatment in many of the communities. Many rural systems have surpassed their life expectancies and refinancing their replacement is unlikely. The institutional limitations of the state entities do not permit adequate follow-up and monitoring of the quality of services in the 298 municipalities of the country. In view of the foregoing, each community is left to solve its own financial, technical and administrative problems, press for an integrated management of its water resources, and vote for the approval of a new general water law and improved institutionalism. Boards have difficulty reaching consensus among their own members regarding rate increases, and on the other hand, many of the boards do not have legal capacity, thus hindering organizational and management processes, in their efforts to obtain government or international support. A further limitation is that many communities draw their water from private properties, whose owners frequently charge exorbitant sums for land use.

In Guatemala, a major limitation lies in the differences in perception between the government entities, on one hand, and the indigenous cosmogony on the other, regarding water, nature, communal service, and other matters. Likewise, the increase in population served is one of the greatest challenges for the committees.

In Costa Rica, the major limitation of the ASADAS lies their relation to the A&A. Due to the delicate nature of this activity, governmental inspections and a clear legal status are vital. However, current regulations have proven excessively restrictive and encroach upon constitutional freedom of association. In exchange

for this loss of autonomy the ASADAS are ostensibly granted a major institutional support in their labors; however, many times the ASADAS and other committees in fact suffer the same problems as their counterparts in other countries of the region, but which latter have greater autonomy. An example is the lack of technical, legal and administrative training; limitations to protect and purchase lands where springs are found; rates that do not reflect the true value of water; poor investment capacity and planning, to name a few.



# IV Conclusions and Recommendations

## a. Conclusions

The following reflections have been expressed with the intention of contributing to the discussion of the model of water boards, but not exhaustively, for this is merely an introduction to the subject.

Water boards have been constituted as a fundamental instrument for rural and suburban communities, permitting them to satisfy their needs for access to drinking water. They represent a viable form of shared management between the State and communities.

It is evident that the boards have evolved, from only public service administrators to promoters of integrated community water management. At the same time local development, public health and environmental protection have been enhanced. Some have even developed ingenious mechanisms for self-regulation, control, rate definition, and recourse and services appraisal.

The inhabitants of these communities, being both providers and recipients of the benefits of the service, they strive to keep it in optimum conditions. This includes environmental protection, for these organized communities have become aware that any deterioration of their natural habitat will reflect in deterioration of their water resource and consequently their lifestyle.

In some cases, an excessive institutional control has preempted many communal aqueducts, curtailing their successful development. This has been due to fear of losing their constructed aqueducts to the institution, or of being excessively regulated, and unable to address other aspects resulting in a more integrated management of the resource.

In other instances, local governments have perceived in the water boards an effective and functional instrument for surmounting limitations and difficulties in fulfilling their own obligations to guarantee their rural and suburban communities access to drinking water of acceptable quantity and quality. In these cases, a total lack of institutional support to these communities is evident; they are virtually abandoned to their own devices. In order to survive, they have had recourse to diverse strategies.

The defense of the organizational autonomy of the water boards and their sources of water, as well as the reduction of operational costs and maintenance through the purchase of materials and equipment in bulk, has been an incentive for the water boards to form cantonal, regional and even national networks, under the aegis of unions or federations.

Water boards have best contributed to improvement in health conditions among the population, especially in their reduction of contagious diseases derived from scarcity of safe drinking water, making this vital commodity accessible to nearly a quarter of the total population of Central America.

Domestic work has tended to diminish with the advent of household drinking water, and this has favored the women and children, since they were the ones responsible for the availability of water in their homes. For this reason, many women have actively joined the boards. Unfortunately, several limitations to board membership still exist in certain countries, such as the requirement for ownership of the land or house, for in the majority of cases, this is a male.

The water boards have demonstrated local capacity for managing their own aqueduct system, offering a quality service at low cost when allowed to develop, to confidently depend upon institutional support, cooperation, and adequate training. Experience has further demonstrated that community participation has minimized failures in system sustainability.

While governments are under public pressure to improve their water and hygiene coverage, to fulfill the Millennium Goals, especially in rural and suburban zones, the boards have contributed effectively to meet this global challenge.

Concurrently, they pose a valid alternative to promoters seeking to privatize these services, proposing schemes of concessions and public-private alliances. Although on occasions, it has been argued that the boards are private entities

and concessionaries themselves, their non-profit nature in providing service evinces their differences and their legitimacy.

We must realize that the new social-political scenario in Central America has enabled organized civil society to seek, and to some degree, attain, recognition and participation. The subject of this study clearly reflects this; however, it remains evident that this tendency has not been recognized in government policies. Throughout Central America, new water laws are being enacted, but they are not conducive to strengthening the communal model. Public investments for the development of rural and suburban sectors have diminished, and the subject of water has not been a priority.

One of the key factors missing from the water board scheme is hygiene, which topic has not been assigned adequate priority. Unfortunately therefore, it matters little that the aqueducts are well-managed by the boards if sewage and other contaminants are permitted to corrode the quality of life in these communities.

**b. Recommendations**

It is our civic duty to support the formation of organizations of second and third degree, and this is an appropriate instrument for orienting public policy regarding water management by social participation.

Water boards must be encouraged to seek relationships with environmental organizations and technical cooperation agencies for national and international financing.

The water boards require technical and advisory support and direction towards an integral management perspective on the water resource. There have been a number of programs and projects orientated in this direction, and their parent organizations are very aware of its importance, but they lack specific knowledge and information on how to develop it.

Water boards should be recognized as key regional entities and afforded their just prerogatives in decision making, in the creation of new laws and public policies, to assure their share of public budgets and international cooperation. The persons most affected have the highest claim to be heard; their voices must guide our policies if these are to be truly representative.

Regional governments need to include recognition of the water boards in their policies, plans, and programs; they must adapt their legislation to gain allies to attain the Goals of the Millennium, and at the same time contribute to communal organization. We hope that this document will have been of some assistance towards that end.