

INSTITUTIONAL ARRANGEMENTS FOR RURAL COMMUNITIES The SANAA Technician in Operation and Maintenance Program in Honduras

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Abstract

This case study documents a model for providing backup support to community-based rural water supply and sanitation systems in Honduras. The program was launched by SANAA, the National Water Supply and Sewerage Company, from 1993 to 1995 as a pilot in the department of Atlantida and, based on the success of the program, was extended to the national level in 1995. Honduras has a rural population of 3,188,000, which represents 53% of the total population. The program is truly national in scale, covering 4,023 rural water systems and serving over 2 million people.

The model is based on the “circuit rider” concept used in the United States by the National Rural Water Association. It was adapted in Honduras and renamed the Technician in Operation and Maintenance (TOM). A TOM is a mobile technician who provides support to a fixed number of communities, visiting them regularly. TOMs are employees of SANAA and work from regional offices that have substantial authority to make decisions. There are currently 86 TOMS in six regional offices. The TOM program does not have any formal relationship with other government agencies including municipalities. Despite the devastation and disruption caused by Hurricane Mitch in 1998, the program has continued to make good progress in its assistance to communities.

The case study demonstrates that a focused effort to provide backup support to rural communities can make a significant difference in the sustainability of the systems. To date only 10% of the systems under SANAA’s jurisdiction are not functioning at all and require assistance well beyond what the TOM can do. The case study explains in detail the elements of the program and the factors that contributed to its success.

1. Background and Context

Until the early 1990s, institutions involved in the development of rural water supply in Honduras concentrated their efforts on constructing facilities. Training in such areas as operation, maintenance, and sanitation was provided only during system construction. Many systems were going out of commission far sooner than their anticipated design life. In 1992, the National Water Supply and Sewerage Company (SANAA) carried out a study on the operation and maintenance (O&M) of rural water systems. A number of common problems were identified, for example:

- Community water boards were not meeting on a regular basis.
- The monthly tariff, if collected, was inadequate to cover routine maintenance.
- The community had not designated an operator to be responsible for upkeep.
- Water systems were not being chlorinated.

As a result of this study a pilot project, designed with significant USAID input, was tested in the department of Atlantida from 1993 to 1995. The “circuit rider” concept of the U.S. National Rural Water Association (NRWA) was adapted for Honduran conditions and named the Technician in Operation and Maintenance (TOM). The circuit rider is a mobile technician who is responsible for providing maintenance to a set number of member water systems in a state. The term “circuit” refers to a set of communities that are visited by an individual on at least a quarterly basis or more often if necessary. Similarly, the TOM program provides technical assistance and advice to rural community water boards about managing and maintaining their water systems. A community water board is a representative body that is responsible for management of the water supply and sanitation services. The TOMs make regular visits to communities offering both technical and administrative advice through informal and hands-on training. The pilot project was judged a success, and in September 1995 SANAA launched the TOM program at a national level. The program operates out of SANAA’s six regional offices and two sub-regional offices, with funding and management support provided by USAID.

Honduras forms part of the Central American isthmus, sharing borders with Guatemala, El Salvador, and Nicaragua. It is a mountainous country—three-quarters of the land has a gradient of 30 degrees or more—with an abundance of water resources and 19 major catchments. The national territory extends to some 112,492 km² divided into 18 departments containing 297 municipalities, 3,730 villages, and 27,764 hamlets. The total population is currently estimated at six million¹, of which approximately 53% live in rural areas.

Table 1: Key Socioeconomic Indicators

Indicator	Data (year of data)
GNP per capita	US\$ 722 (1995)
External debt	US\$ 4,343.5 million (1995)
Rate of inflation	29.5% (1995)
Literacy: National	77.2% (1994)
Rural	71% (1994)
Infant mortality	42 per 1000 live births (1996)
No. 1 cause of infant mortality	Acute respiratory infection 23% (1996)
No. 2 cause	Diarrhea 21% (1996)
Life expectancy: Urban	Men 68 years, Women 71.2 years (1997)
Rural	Men 64.4 year, Women 67.7 years (1997)
Human Development Index	116 out of 175 Countries (1997)

Sources: Various, including PAHO, UNDP Development Index, and Ministry of Health.

¹ The most recent population census was carried out in 1988.

Before the devastation caused by Hurricane Mitch in October 1998, approximately 63.2% of households in rural communities had piped water connections (see Table 2), and 49.5% had access to sanitation facilities (latrines). Upwards of 1,600 piped water systems, of the total 4,166 systems, were damaged as a result of the hurricane. In addition, an unknown but substantial number of community wells and household latrines were also damaged.

Table 2: Rural Water and Sanitation Coverage in Honduras

Type of Service	Population Served*	% of rural pop.
Water Supply		
Piped service with household connection	2,014,816	63.2
Piped service with public tap stand	207,220	6.5
Public well with handpump	127,520	4
Public well without handpump	140,272	4.4
Purchased from tanker truck or similar	19,128	0.6
Use unprotected sources	679,044	21.3
Sanitation System		
Pour-flush latrine	615,284	19.3
Simple pit latrine	962,776	30.2
Without sanitation	1,609,940	50.5

* Total rural population is 3,188,000.

During the early 1990s Honduras entered a phase of structural adjustment, similar to that of other countries in the region. The decision to modernize the state structures included SANAA, which began to put more emphasis on service operation and administration rather than extending coverage. The Municipal Law passed in 1992 transferred certain powers and authority to local governments, and the municipalities began to request that SANAA transfer the administration of sanitary services. SANAA resisted this shift for a number of reasons:

- SANAA would have reduced responsibility and importance,
- Transfer of the administrative power required a government decree, and
- More than 200 municipalities, described as semi-urban, were not viewed as having the technical capacity to administer the services.

In 1994 a major change occurred in SANAA's administrative staff, with the incorporation of economists and administrators in place of engineers. The new administration introduced a commercial outlook to the institution, partly because SANAA was no longer permitted to negotiate funding that would increase the external debt. SANAA was limited to its own resources or donated funds. Between 1994 and 1998, USAID provided virtually all of the external funding. This period coincided with a significant transfer of authority to the regional offices and the beginning of a more commercial approach to service delivery. Regional managers received training in business administration with the aim of making the urban water and sanitation systems financially viable. In 1997, the results of the restructuring were evident as SANAA was no longer in deficit. Since 1998, SANAA has

renewed its emphasis on technical administration but has retained the commercial changes in service operation.

SANAA's current rural water and sanitation strategy is based on a permanent relationship with the communities and, specifically, with the water boards. During the construction phase of new or rehabilitated systems, SANAA's Environmental Health Technician (*Técnico de Salud Ambiental* or TSA in Spanish) provides initial training to the community and water board. This training covers system operation, administration, maintenance, protection of the micro-watershed, and basic hygiene and sanitation. Towards the end of the construction process, the TSA introduces the community to the TOM responsible for O&M in that district.

The water and sanitation sector in Honduras includes diverse state institutions, international organizations, and NGOs. It is currently organized in the following manner:

The *sector leader* is the Ministry of Health (MOH), charged with responsibility for sector planning, establishing policy (including water quality), standardizing construction and operation practices, and financial planning. However, some observers point out that in reality SANAA has been responsible for many of these functions.

Regulation is the responsibility of CNSP (National Commission of Public Services), but it appears to be ineffective because it lacks adequate legal authority and clear definition. CNSP has a board of directors and is not part of the MOH.

Implementation of both urban and rural projects is carried out at the state level by SANAA and the MOH. It is expected, however, that pending legislation will soon end this aspect of MOH responsibility. A substantial number of new projects are being built by NGOs, the vast majority of which are destined for rural communities, though some peri-urban development is also under way. The most active NGOs in the water and sanitation sector are CARE, Catholic Relief Service (CRS), Save the Children Honduras (ASCH), and Agua para el Pueblo. The private commercial sector also develops urban and rural systems with financing provided by FHIS (Honduran Social Investment Fund). The municipalities implement a few projects as well but are mainly concerned with developing sewerage systems for the municipality itself. Despite all these specially funded projects, the majority of new systems being built (urban and rural) are constructed by the state, principally through SANAA.

Coordination of the sector has been the role of the *Grupo Colaborativo*, a national steering committee. The organization was formed unofficially in the late 1980s and was recognized by presidential decree in 1994. It consists of a 12-member executive committee chaired by the MOH, and has equal representation by the public sector, international organizations, and private development organizations. A further 135 institutions are associated with the *Grupo Colaborativo*, whose main objectives are to:

- Support the MOH in the coordination of inter-institutional activities in the water and sanitation sector;
- Contribute to the elaboration of a national plan for water and sanitation; and
- Work towards the achievement of the aims established for water and sanitation, thus improving the sanitary conditions in Honduras.

Operation and maintenance of water and sanitation systems, whether urban or rural, is essentially the responsibility of the system operators. Currently, there are three main organization types that administer these services:

- The urban division of SANAA administers the water systems of the 39 principal cities, including Tegucigalpa but excluding San Pedro Sula and Puerto Cortes (respectively the second city in importance and the main port). Total population served is approximately 1,800,000.
- Municipalities administer 169 water systems, the majority of which consist of the municipal water systems themselves. Total population served is around 1,481,821.
- Community water boards in rural areas manage 4,023 water systems, serving a total population of over 2 million. SANAA provides operation and maintenance support to communities with piped water systems through the TOM program. For communities dependent on wells fitted with handpumps, the MOH is nominally responsible for their sanitary condition.

Sector financing is provided from a wide variety of national and international sources, the most important being:

- The central government national budget allocated to MOH and SANAA;
- International credit such as the World Bank, Inter-American Development Bank (IDB), and KfW (German development bank), channelled through FHIS;
- International development organizations, such as UNICEF, USAID, European Union, and Swiss Agency for Development and Cooperation (SDC) among others. This funding is channelled either through state institutions or NGOs.

The law governing the water and sanitation sector is currently undergoing review, and the new “Law for the Institutional Framework for the Water and Sanitation Sector” is expected to be passed by Congress later this year. The main objectives of the law are to:

- Improve service efficiency,
- Increase service coverage,
- Ensure that current service levels are sustainable,
- Generate financial sufficiency for operation and maintenance, and
- Redefine sector planning and organization.

Although the main structures in the sector will remain, responsibilities will be reorganized and better defined. The most significant of these changes will include the following:

- MOH will continue to be the lead agency. Its principal responsibility will continue to be the formulation of national water and sanitation policy. It will also establish appropriate strategies, objectives, regulations, and standards that will guide the operation of water and sanitation services according to the Health Code.
- A new regulatory commission (yet to be named) will have legal authority to enforce regulations and technical standards. It will oversee and advise on the granting of concessions for system operation. The commission will continue to be a decentralized entity within the MOH.
- SANAA will cease to be a service operator; ownership and management of systems it currently operates will be transferred to municipal governments. SANAA will be responsible for developing rural water supply, including the training of water boards for operation, administration, and maintenance of their systems. SANAA will establish norms for the technical design, construction, and operation of water and sewerage systems, non-piped sewerage systems, and domestic and industrial wastewater treatment.
- Municipalities may choose to operate water and sanitation systems directly or offer a concession to a private or public organization. On request from municipalities or user organizations SANAA can provide technical assistance for the design, construction, or operation of water utilities.

The Framework Law will be followed by a complementary “Law of Water Resources,” which is currently being drafted. It is intended to provide clear guidelines on responsibilities for protection of watersheds, groundwater extraction, and surface water management.

2. Scope of Services Provided

Honduras has a wealth of spring and stream water sources which are ideal for gravity-fed systems. Implementing agencies and communities clearly prefer to build gravity-fed piped systems with household connections. Such systems have definite advantages over other systems: lower capital cost, technically simple to operate and maintain, low cost of operation and maintenance, and, frequently, 24-hour service. It is not always possible to build gravity-fed systems, however; other systems commonly used in rural areas include:

- Combined pumped/gravity-fed systems (electric, gasoline, or diesel) with piped distribution to households and/or standpipe connections, and
- Handpumps on boreholes or hand-excavated wells.

The choice of sanitation technology in rural communities is limited to either the pour-flush or simple pit latrine, depending on water availability. Although implementing agencies usually provide training in the use and upkeep of latrines, maintenance is left entirely up to the householder because of individual ownership.

The TOM program offers backup O&M support to all rural communities that have piped water systems with household connections. The program is not limited to systems built by SANAA, and consequently a substantial proportion of the rural population receives support. Specifically, the TOM program covers approximately 4,023 rural water systems (gravity-fed and combined pumped-gravity systems), serving over 2 million people (see Table 2). Other water system types, such as handpumps or standpipes, are excluded partly because the program concept was designed for systems which provided individual household service and attendant responsibility for payment. SANAA believes that a significantly different approach for backup support is needed for systems that depend more on collective responsibility. A further reason is that with very few exceptions, SANAA has only built water systems with household connections. Thus, it is argued that its institutional competence does not extend to other types of water system. Responsibility for these other types of water systems is nominally that of the MOH.

In Honduras there are relatively few technical issues that affect water system design and construction. Probably the most challenging problem is that of deforestation which is occurring at the rate of 108,000 hectares per year. It has been estimated that the country could become completely deforested in 25 years. The loss of tree cover has led to a deterioration of surface and groundwater sources in terms of flow rates and quality.

The most significant single event affecting water and sanitation services in recent years was the destruction caused by Hurricane Mitch in October/November 1998. Substantial damage was done in both rural and urban areas to virtually all categories of infrastructure: water and sanitation systems, schools, health centers, housing, roads, electricity, and telephone services. The cost of reconstruction was estimated by the World Bank to be in the region of US\$ 2 billion. Water and sanitation coverage in rural areas is still estimated to be several percentage points below pre-Mitch levels; by the end of 2002, it is expected that this ground will be regained.

3. TOM Program Management and Organization

The vast majority of rural water systems are managed by community water boards, which are usually the product of institutional involvement during system construction. Typically they have between five and seven members elected by the community in a general meeting for two-year terms. Although most institutions encourage communities to aim for an equal number of men and women, this rarely happens; water boards are usually dominated by men. The water board either handles system operation itself, or it may contract a community member to work as system operator. The decision to contract an operator depends on the size of the community, the level of community organization and wealth, the type or complexity of the system, and which institution partnered with the community to develop the system. SANAA policy is to encourage all communities to contract a system operator.

Community water boards usually collect a monthly tariff, the amount having first been agreed to in a general community meeting. The income covers some or all of the following costs:

- Repairs or servicing of pipes, valves, pumps, motors, etc.
- Stationery
- Chlorine
- Electricity or other fuel
- System operator salary
- Per diem for water board members when travelling on water system business
- Savings for large-scale repairs or system extension/improvement.

The way the water boards function can vary greatly between communities. For example, some meet on a regular monthly basis to review the accounts and decide on an action plan for the following month's tasks, whereas others meet only when there is a problem. In some water boards, all members participate actively, and in others, only one or two people assume any responsibility. To a large extent, water board activity is determined by the size and complexity of the water system. Again, to highlight SANAA policy, the aim is to encourage full and regular participation of all water board members and regular reporting to the community.

The TOM program is viewed as a working partner to the community water boards and aims to support and sustain rural water systems through appropriate operation and maintenance. The basic job description of the TOM is:

To promote, organize, and manage the processes of education and community participation for the operation, administration, and maintenance of water and sanitation systems.

Applicants to the TOM program must be males, 20-30 years of age with a pre-university qualification in social work or primary education. New recruits receive an intensive 12-week training program which they must successfully complete before being accepted onto the program. The training program consists of theory and practical work in the following themes:

- Community motivation and participation
- Educational communication
- Water and sanitation concepts
- Basic technical concepts
- Water system construction and components
- Topography
- Engineering plans
- Water system operation and maintenance.

The TOMs' role is to support the community water boards in every aspect of system operation, administration, and maintenance by providing informal training and encouragement. An action plan for every community is drawn up based on its performance classification. (See Table 3 for a description of the four categories.)

The launch of the TOM program in 1995 at a national level coincided with the internal changes in SANAA's structure. Decentralization of authority to the regional offices has facilitated coordination of the TOM program with both the municipalities and NGOs. The latter are now able to request support from the TOM program at the regional offices of SANAA instead of having to go to the central office, thus reducing bureaucratic delays and developing working relationships between regional offices and the local level. As an example of improved flexibility, municipalities and NGOs can request assistance for the training of rural water boards for new or rehabilitated systems. A few rural municipalities have directly benefited from the TOM program through training of the municipal system operators. Although there are no formal agreements, SANAA and the municipalities have a mutual interest in cooperation. Municipalities are legally responsible for local development, so there could be some political gain to facilitating the activities of the TOM program. Municipalities could supplement SANAA's limited resources by providing support for fuel or training facilities.

The initial strategy of the new TOM program was to produce an inventory of all the piped rural water systems and then carry out an in-depth evaluation of each system to determine its operational status and classification. (After Hurricane Mitch, the program decided to repeat this exercise to determine the impact on rural water systems.) The number of systems in the inventory was 4,023, as of March 2000; of these, some 3,961 or 93.1% have been classified. Data collected during initial classification and follow-up visits is entered into a specifically designed database: SIAR (Rural Water Information System). SIAR contains detailed information about every water system in the inventory and has proven to be a very useful planning tool. The central office of SANAA maintains SIAR, and the regional offices can access their particular data via computer.

Table 3: Water System Classification and Respective Remedial Action

Category	Description	Action
A	All the physical components of the system are working well. The water board meets regularly. Tariffs are fixed, are adequate, and are collected. The water supply is being chlorinated, and water quality standards are met. There is continuous or regular service.	Motivate the water board to continue the good work.
B	The system may or may not be functioning. There are operational problems that can be resolved without major investment. With minimal effort on the part of the TOM, the system can be moved up to "A" category.	Work together with the water board to resolve the minor problems in administration, operation, and maintenance.
C	The system may or may not be functioning. There are operational problems, and there may be technical problems with the water supply. Moving the system up to "A" category could require certain investments which are within the economic capacity of the community.	Work together with the water board to resolve the minor operational problems. Advise the board on the necessary system improvements, and their cost, in order for the community to raise the required capital.
D	The system is not functioning. There are many problems. Moving the system up to "A" category requires substantial investment, probably greater than the economic capacity of the community.	Report the situation to the regional SANAA office. There is little that can be done by the TOM.

It should be noted that the four categories are not considered progressive stages through which a system must move. The objective is to move a system directly to the "A" category without passing through any other intermediate categories.

The initial classification of a water system usually takes one or two days depending on the size of the system and distance from the regional office. The classification process involves gathering data on the following areas:

- General information concerning the community, water system specifications, and water board organization;
- Administrative and financial information, including tariff level, summary of income and expenditure, balance or deficit;
- Technical information regarding water source, pipeline length and diameter, flow rates, micro-watershed condition, maintenance schedule, and sanitation system.

If the system is in "B" or "C" category, the TOM plans activities to move the system up to "A" category. The TOM and the water board agree on a date for a follow-up visit to begin the training or supervision of improvements needed. It should be noted that the TOMs do not carry out the repairs themselves but rather offer advice on how to go about the task. In some communities a minimum of effort on the part of the TOM is needed to move the system up to the "A" category. For example, the water board may need reorganizing or training in bookkeeping. In such cases perhaps just one follow-up visit is all that is needed. In other communities the TOM may identify several problems that require a series of visits in order to reach the "A" category. Once a system has been assigned to the "A" category, the water board is presented with a SANAA diploma recognizing its achievement. The

TOM organizes a community meeting to provide motivation to the water board members in the presence of their fellow community members. The diploma is renewed if the water system is classified in the “A” category in the following year.

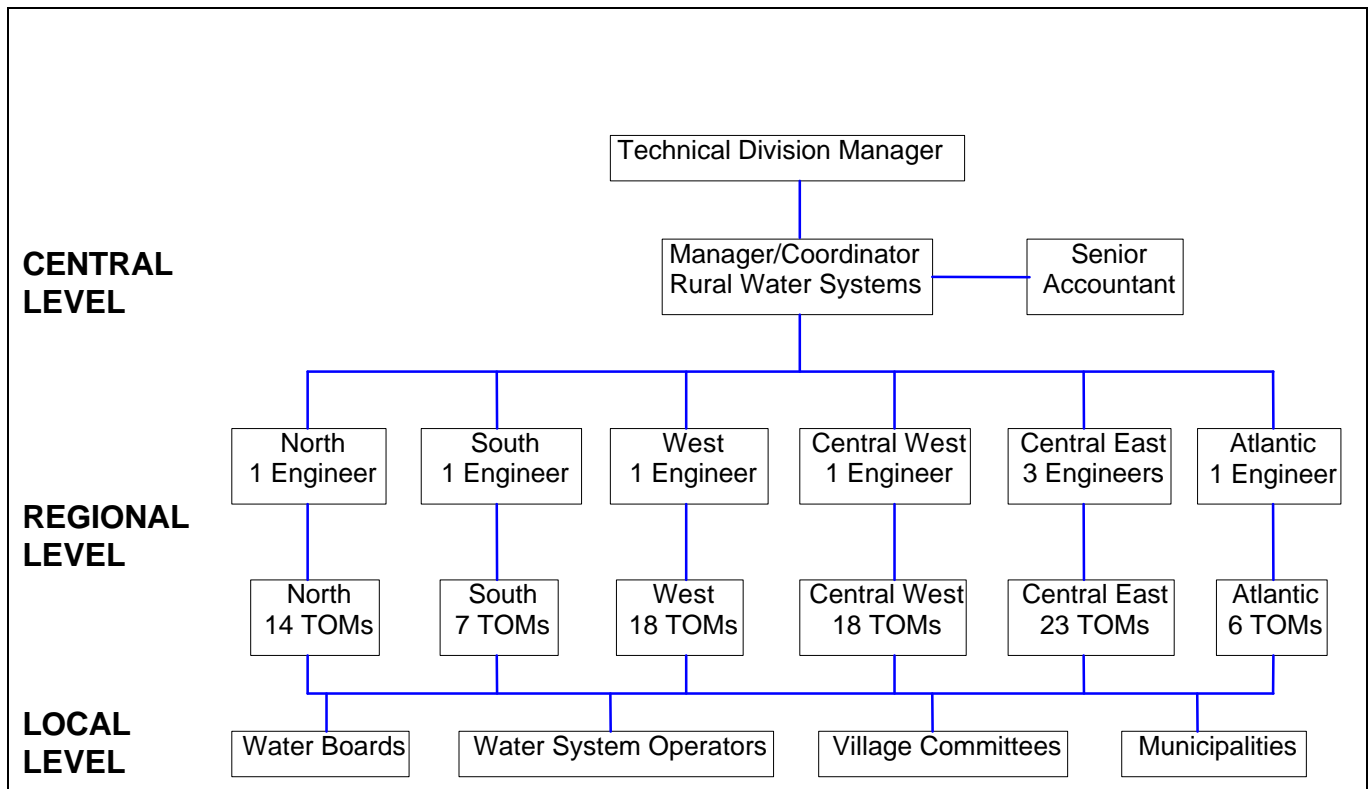
Each TOM is responsible for an average of 50 water systems and is expected to visit each system at least twice a year. However, they are encouraged to allocate their time according to need, so the TOM may plan to spend several days in a particular community or visit weekly in order to develop a series of activities.

As mentioned above, the TOMs provide informal training to the water boards in all aspects of managing the water system. Training takes on a more formal approach only for specific technical topics, such as chlorination of the water system or protecting and delimiting the micro-watershed.

Another aspect of the TOM’s work is conflict resolution. Conflict in communities can take many forms; the advantage for the individual technician is that he is seen as the representative of an institution with certain authority in water-related matters. The TOM may meet up with conflicts that are internal to the community, such as challenges to the water board’s authority, or external, such as disputes over ownership of water resources or micro-watershed use.

The head office or central level of the TOM program has just two full-time staff, though there are several other support staff with responsibilities for the program as well as for other divisions or sections. The latter include, for example, accountancy, education/training, and managerial personnel. The majority of personnel are based in the regional offices as illustrated in Figure 1.

Figure 1: Organigram of the TOM Program



The TOM program does not have any formal relation with other government agencies—a situation open to criticism. Some argue that there should be close coordination between the SANAA TOM program and the MOH promoters, SANAA and MOH being the two most important institutions with responsibility for water and sanitation and public health. The MOH has over 1,000 promoters, many of whom are equally well trained in water quality, chlorination, and environmental health promotional activities.

Private sector involvement in O&M of rural water systems is limited to supplying necessary materials or technical services. For example, when a community needs to carry out system repairs or improvements, the necessary materials are purchased from commercial suppliers. As a state institution, SANAA is not allowed to sell materials that have been purchased through public finance.

4. Financing and Cost Recovery

In the majority of communities a monthly tariff is levied on the users to cover recurrent costs. The tariff level depends on several factors:

- System type and condition,
- Number of users,
- The extent to which the community is organized,

- Economic circumstances within the community, and
- Influence of external institutions.

Clearly, the tariff issue is pivotal for sustainability of rural water systems. In the TOM program, for a water system to be classified in the “A” category the tariff level must be considered “adequate.” Tariffs are defined as “adequate” if *all* recurrent costs are covered. SANAA interprets recurrent costs to include the purchase of chlorine. However, in rural areas there is considerable resistance to using chlorine. Thus, there are many “B” category water systems that are covering recurrent costs of maintenance, administration, and even have a savings component but are not chlorinating. Although these systems are financially viable and technically sustainable, they are not considered in the “A” category because consumption of non-chlorinated water is a public health risk.

In the case of a community not charging an adequate tariff to carry out preventive maintenance, the system deteriorates until service is interrupted. At that point, the usual response is for the community to look for external assistance (technical and financial). If the repair does not require major expenditure, the community will usually agree to a one-time payment to put the system back into service.

Establishing an adequate tariff level is undoubtedly one of the most difficult issues to tackle in rural communities. The TOMs advise the water boards on how to calculate the tariff level and will support the board in a community meeting if it is agreed that an increase is needed. The TOMs recommend that the tariff include a savings component to enable the community to cope with major repairs or system extension.

The tariff problem is best described as cultural; for generations communities were accustomed to water being supplied from an unprotected source such as a stream or spring, for which they were never asked to pay. The development of a water system is a major event in most rural communities, but the concept of paying for water is not readily understood. Some development programs still require only minimum financial participation of the community or even pay community laborers to build their own water systems. These practices encourage the expectation that water service comes free. A major challenge for the TOM program is to bring about a change of attitude in the communities about the value and costs of operating a water system.

To date, the TOM program itself has been funded jointly by SANAA and USAID. The total budget for the year 2000 is Lps.18.4 million² (US\$ 1.25 million), provided in the following proportions:

- SANAA--Lps.12 million, assigned to salaries and program administration costs.
- USAID--Lps.6.4 million, for operational costs including fuel, per diems, equipment maintenance, and technical studies. In addition to the USAID financial contribution, several new vehicles and motorcycles have been donated in this financial year.

² Lps. = Lempiras. US\$1 = Lps.14.7 (May 2000)

The current reliance on external funding for the TOM program is not a sustainable policy. SANAA has begun considering ways to finance the program. Three main options have been proposed:

- Transferring the program to the municipalities. This is seen as a long-term option as the municipalities do not yet have sufficient experience in water and sanitation management.
- Charging communities a proportion of the costs, with the central government paying the main share of the budget. There is little enthusiasm for this approach because of the difficulties of enforcing payment by communities. In addition, SANAA has had limited success in the past when rural communities were charged for maintenance in the joint SANAA/IDB program.
- Exclusive financing by the central government. This option is considered to be the most feasible in the medium term. However, it will require clear political commitment to the program on the part of SANAA and the government.

Currently, all capital investment is provided by central government or through national and international aid programs. From 1990 to 1995, the combined annual spending (national and external resources) for rural water supply in Honduras was US\$ 89.3 million, and US\$ 15 million in rural sanitation. Respectively, this represents 46% and 20% of the total sector spending in water and sanitation.

5. Legal and Regulatory Framework

The current legal and regulatory framework that applies to SANAA and other institutions involved in the water and sanitation sector is rather vague. For example, the boundaries of responsibility between SANAA and the MOH are not adequately defined. Although this lack of legal clarity does not appear to affect the ability of the program to function effectively, there are no legal requirements that it should meet certain standards or provide certain coverage. The Framework Law before Congress includes an article that SANAA will be responsible for "...developing rural water supply, including the training of water boards for the operation, administration, and maintenance of the water systems."

This clause can be broadly interpreted to mean that SANAA must continue to offer backup support to communities through the TOM program or something similar. It would also appear to suggest that SANAA will become responsible for communities with water systems other than those that offer household connections. Thus, SANAA would be obliged to provide backup support to all rural communities with whatever type of water system.

However, other legal issues remain unresolved and continue to limit the effectiveness of the program. For example, the vast majority of water boards do not have legal status (*personalidad juridica*), i.e., there is no legal recognition of the water board as the system operator. The actual ownership of the water systems has to date been a non-issue. Water

systems built by state funding are legally state property, whereas in the case of systems built by private development organizations, the system is donated to the community. In both situations, however, the community is viewed as the system administrator. The main impact of legal status is the introduction of accountability and ability to be regulated by the state. The water board could then theoretically be prosecuted if it did not fulfill the legal standards related to water system operation.

Another problem area is the ownership of micro-watersheds. The program encourages communities to reforest, delimit, and purchase the micro-watershed wherever possible. However, the program has little recourse in law to enforce micro-watershed protection.

6. Environment and Health

The TOM program does address certain environmental and health concerns, but its promotional efforts concentrate on issues that relate directly to moving the systems into the “A” category. For example, water system chlorination and cleaning are emphasized as they are essential for the system to be classified in the “A” category. Micro-watershed protection is also given considerable importance, and its condition is reviewed on routine visits. In some regional offices, program funds have been allocated to carry out educational campaigns on micro-watershed protection and management.

It appears that limited resources restrict the program’s capacity to pursue environmental and health education activities more vigorously. The TOMs are expected to advise water boards on such issues as latrine coverage and household wastewater drainage; it is assumed by the TOMs that the key health messages will be passed on to other community members.

Health education activities are a relatively minor component of the TOM program. Although there is no formal coordination between the MOH promoters and the TOMs, the MOH has primary responsibility for health education and monitoring of public health indicators in rural communities.

7. Performance

Overall performance can be evaluated by the number of communities that moved into “A” category. The target for 2000 was to have 30% of communities in “A” category, and by the end of 2001, 50% in that category.

Table 4 indicates progress to date. Although there is too little data on which to perform any kind of statistical analysis, an overall trend shows a progressive increase in the proportion of systems in “A” category. However, the information in the table doesn’t specifically show the effects of Hurricane Mitch; September 1999 is the first quarterly report available following the hurricane—about 10 months later. Nevertheless, it is clear that the number of systems in categories “A” and “B” are still significantly lower than the figures immediately

prior to the hurricane. In June 1998, 2,426 systems fell into “A” or “B” categories, whereas the comparable number in September 1999 was 1,591.

Table 4: Water System Classification between December 1997 and March 2000

Quarterly Report Date ¹	No. of systems in inventory ² (% classified to date)	Category No. (%)			
		A	B	C	D
December 1997	3,942 (78%)	268 (8.7)	1863 (60.7)	752 (24.5)	186 (6.1)
June 1998	3,994 (93%)	293 (7.9)	2133 (57.5)	893 (24.1)	391 (10.5)
September 1999	3,983 (72%)	251 (8.7)	1340 (46.7)	843 (29.3)	439 (15.3)
December 1999	3,961 (84%)	392 (11.7)	1575 (47.2)	1033 (30.9)	340 (10.2)
March 2000	4,023 (93%)	567 (15.1)	1635 (43.6)	1146 (30.6)	399 (10.7)

¹ Last and first reports available around Hurricane Mitch were June 1998 and September 1999.

² Number of systems in the inventory increases because new systems are added. It decreases occasionally because duplications or classification errors are found.

A comparison of the June 1998 and March 2000 figures is particularly useful as the same proportion of systems had been classified. It can be seen that the number of systems in “B” category fell considerably, while both “A” and “C” categories increased. This can probably be attributed to the emphasis placed on moving “B” systems up to “A” and the damage to water systems as a result of the hurricane. The proportion of systems in “D” category barely changed, further supporting the finding that the program is performing well.

It is worth reiterating the significance of the “A” category, namely that the water system is functioning correctly on the basis of technical, financial, commercial, and environmental health criteria. On the basis of these criteria only 15.1%³ or 567 rural water systems are considered to be working satisfactorily.

A further 43.6% of systems, those in the “B” category, are functioning well technically, and a proportion⁴ of these systems are also fulfilling the financial criteria. Table 5 illustrates the regional differences in the proportion of water systems that are classified in the “A” category. These variations reflect different socioeconomic conditions, ease or difficulty of access, and performance of the individual regional offices.

³ 15.1% of those systems classified by March 2000, i.e. 3,747 systems classified

⁴ Obtaining the exact proportion would require that the file for each community be examined. The SIAR database does not currently allow such detailed search criteria to be selected.

Table 5: Regional Analysis of Water Systems in “A” Category, by report date

Region	Dec 97	June 98	Sept 99	Dec 99	March 2000
	Number of Systems in “A” Category (% of classified systems)				
North	9 (2%)	31 (6%)	5 (5%)	14 (5%)	14 (4%)
South	13 (6)	2 (1)	49 (18)	57 (20)	67 (23)
West	56 (9)	80 (10)	113 (12)	135 (14)	183 (18)
Central West	27 (4)	93 (10)	15 (3)	74 (8)	121 (13)
Central East	82 (10)	69 (8)	43 (6)	75 (12)	144 (17)
Atlantic¹	81 (36)	18 (7)	26 (9)	37 (13)	38 (13)
Totals	268 (8.7%)	293 (7.9%)	251 (8.7%)	392 (11.7%)	567 (15.1%)

¹ The TOM pilot project was implemented in the Atlantic region.

8. Factors That Contributed to Success

The success of the TOM program is based on several factors, the most important of which are described below:

- *The model concept*, based on providing advice, training, and motivation of the water boards in situ, is an effective strategy for developing management capacity. With few exceptions, the water system is the only public service managed by the community, hence there is little or no experience in administering such services.
- *The classification system* from “A” to “D” is simple and easy to manage, enabling the TOMs and regional engineers to plan training activities according to individual community needs.
- *The SIAR system* provides SANAA with detailed information on the status of all the rural piped water systems. It facilitates the development of medium- to long-term operation and maintenance strategy, and helps identify common problems and regional performance.
- *Regular visits* by the TOMs help the water boards to keep on top of preventive maintenance and preclude minor problems from developing into major ones. An important aspect of the TOMs’ routine visit is motivation of the water boards. The latter can count on an institutional ally to back them on potentially unpopular decisions, such as increasing the monthly tariff.
- The TOM program has *relative autonomy* in the sense that there is little political gain to be made from interference in the program management. Even at the local government level, political interest in tinkering with the program is likely to be minimal as no material resources are at stake. Although a few municipalities have provided some resources to facilitate TOM program activities, the political benefit is limited to adding credibility to their local development responsibility.

- *Decentralization* to regional offices improves the efficiency of the program by making it more accessible to the communities and municipalities. This devolution has also introduced an element of competition between the municipalities or communities as quarterly results are made available to all the regional offices.
- *Operational flexibility* is provided for program management. The regional engineers are at liberty to manage the TOM program according to how they think they can best achieve the aims. Similarly, the TOMs can plan their visits and allocate time to each community on the basis of need.
- *The personal and educational qualities of the TOMs* themselves is another major factor for the success of the program. The educational criterion for recruitment is a pre-university qualification in social work or primary education. In addition, the candidates must successfully complete a 12-week training course before being accepted onto the program.
- *The provision of resources* (such as vehicles, motorcycles, and educational materials) and availability of water quality laboratories and equipment (such as altimeters, chlorimeters, and GPS) also contribute to the efficiency and success of the program.
- *Salaries* of the TOMs are generally better than those of other state promoters or technicians; the use of a motorcycle during work hours also carries a certain amount of status.
- *USAID support* has been fundamental to the program. The original concept was *developed* by USAID; but since its inception, USAID has played an advisory role rather than a managerial one. This approach has facilitated the perception of the TOM program as a national program.
- *USAID funding* initiated the program and has contributed to its success and stability. SANAA has had considerable leverage in requesting program funding for the program from the Ministry of Finance as a direct result of the steady USAID support. The counter argument *remains*, however, that as the program is in its fifth year, national funding should by now fully cover the total budget.

9. Prospects for Long-term Sustainability and Replicability

The long-term sustainability of the TOM program will be determined by three interlinking factors:

A. *National Political and Financial Commitments*

A clear political commitment to the program is fundamental for its long-term prospects. The question of commitment is relevant to both the executive management of SANAA and

the central government. As a precondition, SANAA must fully embrace the program in order to present a strong case for allocation of resources from central government. A significant issue within SANAA is the distribution of resources between rural and urban divisions, as well as between new construction and O&M. At the central government level there is political pressure to increase access to water and sanitation. Thus, a rural maintenance program is not seen as a vote winner.

An important question to be asked in the political context is this: Is the program affordable? In the short term, it is difficult to produce figures that clearly demonstrate that it is cost-effective. To perform such an analysis, an estimation would need to be made of the number of water systems that would have gone out of service had they not received program support. It is possible, however, to calculate the annual cost of the program per user (Lps.9.20 or US\$0.62) as it serves some 2 million users. Aside from the investment value of water system infrastructure, a valid analysis should also consider the public health cost in terms of mortality and morbidity exacerbated by defective water supply. When considering how such a program should be financed, it is worth pointing out that the NRWA program receives 90% of its annual budget from the U.S. government; the balance comes from membership fees and/or other local income.

Prior to Hurricane Mitch, the number of TOMs had been dwindling because sufficient resources were not committed by the SANAA management. Although the staffing situation is now much improved, there have been bureaucratic delays in allocating resources to the regional offices, indicating that there is still less than full commitment to the program. The support received from USAID, the most important aid donor to the water and sanitation sector, has undoubtedly added weight to the argument in favour of the TOM program. The issue of O&M support is a frequently discussed topic in meetings of the *Grupo Colaborativo*, and its members' opinions are also likely to influence SANAA's position.

B. Program Performance

Program performance will clearly influence the level of political commitment, and good results are essential if the SANAA management is to be convinced that the program is cost effective. Unfortunately, there is a vicious circle as the apparent lack of commitment to the program results in demoralization of the field staff. Several of the TOMs interviewed stated that they are sometimes unable to agree on activities with the community water boards because of uncertainty about the availability of resources such as fuel and per diems. Compared to several decades of national and international investment emphasizing the development of rural water supply infrastructure, the TOM program is still very much in its infancy. Nevertheless, the program's track record to date is encouraging, especially if the effects of Hurricane Mitch are taken into account. As current efforts to rehabilitate hurricane-damaged water systems give way to the more usual development projects, the true capacity of the TOM program to support communities in O&M will become clear. Ironically it sometimes takes an event such as Hurricane Mitch to demonstrate the real value of this type of support mechanism.

The program certainly appears to be producing good results, and ambitious targets have been set for the proportion of rural water systems in the “A” category. However, some observers have suggested that 65% of systems in the “A” category may be a realistic maximum.

When considering the relatively small proportion of water systems currently in “A” category, several factors should be taken into account. The country suffered its worst natural disaster in November 1998, with widespread damage to upwards of 60% of the national stock of water systems. And although water systems in “B” category are unlikely to be chlorinated, they are providing service. It can be argued that household water supply, even if it does not meet WHO quality standards, contributes significantly to the mitigation of water-related illness.

A clear limitation of the TOM program is that it covers only piped water systems. In addition to the 4,000 or so piped water systems, there are more than a quarter of a million rural inhabitants who depend on community wells for their drinking water; the question remains about how to provide support to those communities. As with piped water systems, community wells require regular maintenance, and water boards need training and motivation. The public health risk from an unsanitary well can be even greater than that of a piped water system because of the potential contamination focus.

C. Reform of the Water and Sanitation Sector

Currently, MOH and SANAA do not coordinate their programs or planning efforts. The forthcoming “Law for the Institutional Framework for the Water and Sanitation Sector” will be a positive development by more clearly defining SANAA’s role in supervising rural water systems O&M. As a result, long-term development, planning, and commitment to the TOM program should become a high priority for SANAA and the state.

The annual cost of the TOM program is around \$1.2 million or some \$0.60 per user served. This is viewed by USAID and SANAA as a very reasonable cost, and they argue that a comparison should be made with the cost of replacing infrastructure that fails before reaching the end of its design life and in terms of lower health-care costs due to reduction in water-related illness. USAID is still funding nearly a third of the annual budget which raises a question about the long-term sustainability of the program. In the short term there appear to be few options available for financing the program when USAID support comes to an end. Although SANAA has considered several financing alternatives, it is likely that the only guarantee of continuity is for the central government to accept full budget responsibility. Again, the new Framework Law will help support that level of commitment as it makes SANAA responsible for providing administration and maintenance assistance to the rural water boards.

One of the important results of the TOM program has been the detailed information gathered regarding the condition of rural water systems at a national level. Based on data indicating that around 90% of the water systems are in the “A”, “B”, or “C” category,

SANAA points out that the maintenance, or infrastructure repair in the case of “C” systems, is within the capacity of the communities. This data facilitates the planning and development of a strategy to provide appropriate maintenance support to the communities.

The overall impression formed through discussions with the community water boards is that they have benefited considerably from the training provided by the TOMs, the most common observation by the water boards being that they would like further training and more frequent visits from the TOMs assigned to their district. A frequently asked question is whether a twice-yearly visit is sufficient to ensure the adequate upkeep of rural water systems.

Convincing the rural population of the health value of chlorinated water is a major challenge to all institutions working in the water and sanitation sector. The other great challenge relates to the historical and cultural problem of having to pay for water service. Changing attitudes about chlorination and payment for service will inevitably take several years. It is essential that all institutions working in the sector reach policy consensus on these two critical areas.

There is considerable potential for further development of the TOM program. The ultimate goal shared by such programs is to ensure the sustainability of rural water and sanitation systems, with the end result being improved public health.

Acronyms

AHJASA	<i>Asociación Hondureña de Juntas Administrativas de Agua y Saneamiento</i> (Honduran Water Board Association)
APP	<i>Agua para el Pueblo</i> , a Honduran NGO
APTOS	<i>Agua para Todos</i> (a private firm which provides water and sanitation backup support to communities in the department of Yoro)
CNSP	<i>Comisión Nacional de Servicios Públicos</i> (National Commission of Public Services)
CODEM	<i>Comité de Desarrollo Municipal</i> (Municipal Development Committee)
FHIS	<i>Fondo Hondureño de Inversión Social</i> (Honduran Social Investment Fund)
IRWA	International Rural Water Association, a committee of NRWA
MOH	Ministry of Health
NRWA	U.S. National Rural Water Association
O&M	operations and maintenance
PROSAR	<i>Programa de Saneamiento Rural</i> (Rural Water and Sanitation Project)
PROPAR	<i>Proyecto de Pozos y Acueductos Rurales</i> (a rural water and sanitation project, 1986-1997, supported by MOH and SDC)
SANAA	National Water Supply and Sewerage Company
SDC	Swiss Agency for Development and Cooperation
SIAR	<i>Sistema de Información de Acueductos Rurales</i> (Rural Water Information System)
TSA	<i>Técnico de Salud Ambiental</i> (Environmental Health Technician)
TOM	Technical Operation and Maintenance project; Technician in Operation and Maintenance
WS&S	water supply and sanitation