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# Management Models of Water and Sanitation: Approaches to Decentralization in Honduras

**Eric Dickson**
**Urban Poverty & Environment Program**
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## Acronyms

| | |
|---|---|
| Aguas de Puerto Cortes | APC |
| Aguas de San Pedro | ASP |
| Association of Communication Media | AMC |
| Association of Regulatory Bodies for Water and Sanitation of Latin America | ADERASA |
| Chamber of Commerce and Industry of Tegucigalpa | CCIT |
| Concession Monitoring Unit | CMU |
| Executive Unit for Settlements in Development | UEBD |
| Honduran Council for Private Enterprise | COHEP |
| Inter-American Development Bank | IADB |
| International Development Research Centre | IDRC |
| Junta Administradora de Agua | JAA |
| Local Regulatory Body | ERL |
| Millennium Development Goals | MDG |
| Municipal Division of Water | DIMA |
| Municipality of San Pedro Sula | MSPS |
| National Autonomous Water and Sewer Service | SANAA |
| National Council on Water and Sanitation | CONASA |
| Public-Private Infrastructure Advisory Facility | PPIAF |
| Regulatory Body of Water and Sanitation | ERSAPS |
| Strategic Plan for Modernization of the Water and Sanitation Sector | PEMAPS |
| Unaccounted For Water | UFW |
| United Nation Children`s Fund | UNICEF |
| United States Agency for International Development | USAID |

*This paper is the result of extensive literature review and related field research undertaken in Honduras on two separate occasions between April and May, and August and September 2006. With the assistance of local partners in Tegucigalpa, San Pedro Sula, La Ceiba, Mezapa, El Guapinol, Puerto Cortes, and Tela, personal interviews were conducted, focus group discussions held and visits to multiple communities in urban and peri-urban areas arranged. I am particularly indebted to the individuals of the Executive Unit for Settlements in Development of SANAA, ESA Consultants, Care International Honduras, the Community Development & Interinstitutional Relations Unit of Aguas de San Pedro, Roche Consulting Engineers, Aguas de Puerto Cortes, the Puerto Cortes Regulatory Body, the Water and Sanitation Program, multiple local water board representatives, and the staff of IDRC in Honduras who generously offered their time, assistance and insight to make this investigation possible. No claim is made that the information obtained in this report is exhaustive and to this degree, its conclusions and recommendations may also be subject to revision in light of additional information obtained through future investigation.*

# Management Models of Water and Sanitation: Approaches to Decentralization in Honduras

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*Given the increasing tendency towards decentralization of political powers and public services in developing countries, the objective of this paper is to use Honduras as a case study to highlight viable alternatives to centralized models of water and sanitation services, and to identify those models of decentralization that are proving effective at the community level in urban areas. It is based on field investigation undertaken across eight urban and peri-urban areas of Honduras, and seeks to provide practical insights that may assist in the formation of new management systems not only in Honduras but also other developing nations. The paper begins with an overview of the water and sanitation sector in Honduras and situates it against its neighbours. Attention is turned to how the operations of urban water and sanitation systems have been evolving in Honduras with reference to the newly legislated Marco Law. It then focuses on the analysis of a management model in the municipality of Puerto Cortes, where a mixed capital corporation has proven to be one of the most notable success stories in Honduras. Turning to community managed initiatives, emphasis is placed on the role of local water boards and synthesizes the most successful characteristics into a single platform to provide a best-practice panorama. The successes and challenges experienced under a model of private sector participation in San Pedro Sula is assessed, before presenting a unique model in Tegucigalpa which incorporates local water boards, the central government and the private sector. Lastly, conclusions, lessons and recommendations are presented, with a final look at the innovative mechanisms being used in poor urban areas that are currently playing an important role in Honduras.*

## Water and Sanitation in Honduras

As one of the poorest nations in the Americas, Honduras' water and sanitation sector has undergone limited modernization and has generally lacked sufficient sector planning necessary for adequate development. Efforts over the past several decades to expand and improve water and sanitation infrastructure in both rural and urban areas have met limited success. The development of the sector has been further complicated by the existence of both centralized and decentralized operators, and an unclear division of roles and responsibilities for operations of services, sector planning and regulation (Walker & Velasquez, 1999). The National Autonomous Water and Sewer Service (SANAA), for example, is responsible for service delivery in select urban areas while individual municipal operators simultaneously provide service to others.

With a view to improving the technical, planning and regulatory performance of the water and sanitation sector, the 2003 Water and Sanitation Sector Law (Marco Law) will see a transition towards a near nation-wide decentralization of services by 2008 in which a transfer of responsibility to municipal operators will occur for the operation, maintenance, disinfection, and expansion of systems operated by SANAA. Given that SANAA is characterized by an extremely poor track record, decentralizing the water and sanitation sector represents an opportunity for Honduras to improve services through 'municipalization'. This encompasses deconcentrating authority and sectoral decision-making processes to a local level where appropriate models for service delivery can be more adequately addressed given that municipalities will assume responsibility for both rural and urban areas. In what has become a politically charged issue where advocates and proponents of decentralization maneuver for visibility, specific 'Actions for Transformation' are defined in the Strategic Plan for Modernization of the Water and *Sanitation Sector (PEMAPS)*, one of which is to devise management models for water and sanitation service delivery across the country. It states that these models, following an analysis of their respective strengths and weaknesses, should be applicable to urban communities of diverse population sizes, in addition to taking into account lessons learned within Honduras itself and in the Latin American region. The major challenge that Honduras now faces, however, will be to ensure that municipal capacity is significantly enhanced in preparation for this transitional period.

There is a significant lack of consistent and reliable data for the water and sanitation sector in Honduras, and as such data presented in this paper generally represents low-end estimates. Taking this into consideration, statistically Honduras compares favourably with some its Central American neighbours insofar as coverage and access rates of water and sanitation are concerned (See Table 2). These figures, however, belie conditions where quality, quantity and coverage of services are substandard for hundreds of thousands of people. Between the early 1970s and 1990s, *rural* areas were marked by improved water coverage increasing from 21-40%, which can be largely attributed to being municipally operated. During the same period, coverage within *urban* areas of the country stagnated between 80% and current estimates of 87% (Walker, 1997; Republica de Honduras, 2003).

**Table 1. Water and Sanitation in Honduras**
**(Source: JMP. 2006).**

| | Population | Water Coverage | Sanitation Coverage |
|---|---|---|---|
| Urban | 46% | 95% | 87% |
| Rural | 54% | 81% | 54% |
| *Total* | *7,048,000* | *87%* | *69%* |

**Table 2. Water and Sanitation Coverage in Central America**
**(Source: JMP,2006)**

| Potable Water | Costa Rica | El Salvador | Guatemala | Honduras | Nicaragua |
|---|---|---|---|---|---|
| 1990 | -- | 67 | 79 | 84 | 70 |
| 2004 | 97 | 84 | 95 | 87 | 79 |
| Change in Coverage | -- | 17 | 16 | 3 | 9 |
| **Sanitation** | | | | | |
| 1990 | -- | 51 | 58 | 50 | 45 |
| 2004 | 92 | 62 | 86 | 69 | 47 |
| Change in Coverage | -- | 11 | 28 | 19 | 3 |

With annual urban growth rates in Honduras standing at 3.6% (UNICEF, 2006), and nearly 50% of its current population already living in cities and peri-urban areas, increasing attention must be paid to the manner in which the Marco Law will influence the urban environment. The United Nations Population Division, for example, estimates that by 2010 over 60% of Honduras' population will reside in urban areas (World Bank, 2002). Given the lack of formalized plans for urbanization in Honduras, the haphazard development of the nation's cities is now causing excessive strain on the government's ability to provide essential basic services. A focus on cities such as Tegucigalpa, San Pedro Sula, Puerto Cortes and smaller towns which now comprise approximately 28% of the urban population is therefore of critical importance (Republica de Honduras, 2003). As Pearce-Oroz (2003, 2) writes, 'because of the changes in the sector and challenges that await decentralized service providers, greater focus in this area is needed.' Fortunately Honduras is not starting from scratch as there are various experiences and lessons learned that must be taken into consideration in the coming years.

The objective of this paper is to use Honduras as a case study to highlight viable alternatives to centralized models of water and sanitation services, and to identify those models of decentralization that are proving effective at the community level in urban areas. It is based on field investigation undertaken across 8 urban and peri-urban areas of Honduras, and seeks to provide practical insights that may assist in the formation of new management systems not only in Honduras but also other developing nations. The paper begins with an overview of the water and sanitation sector in Honduras and situates it against its neighbours. Attention is turned to how the operations of urban water and sanitation systems have been evolving in Honduras with reference to the newly legislated Marco Law. It then focuses on the analysis of a management model in the municipality of Puerto Cortes, where a mixed capital corporation has proven to be one of the most notable success stories in Honduras. Turning to community managed initiatives, emphasis is placed on the role of local water boards and synthesizes the most successful characteristics into a single platform to provide a best-practice panorama. The successes and challenges experienced under a model of private sector participation in San Pedro Sula is assessed, before presenting a unique model in Tegucigalpa which incorporates local water boards, the central government and the private sector. Lastly, conclusions, lessons and recommendations are presented, with a final look at the innovative mechanisms being used in poor urban areas that are currently playing an important role in Honduras.

## Overview of Urban Systems

SANAA has been operating the majority of large urban water and sanitation systems across Honduras (Tegucigalpa, La Ceiba, El Progreso, Comayagua, Siguatepeque, Danli, Juticalpa and Catacamas) and accounts for 35% of urban connections. Conversely, management responsibilities of towns with populations over 2,000 people, already rests largely with municipal operators who provide an estimated 65% of existing urban connections (World Bank, 2003). Sanitation services on the other hand are directly provided by the municipalities, with the notable exceptions of Tegucigalpa, Puerto Cortes and San Pedro Sula where SANAA, Aguas de Puerto Cortes, and Aguas San Pedro are respectively responsible.

The reality of water collection in low-income communities.

*Photo:UEBD*

However, the fact that SANAA has traditionally been responsible for urban water and sanitation services for the entire country, while also being the recipient of government funding from the Ministry of Health for sector planning has resulted in an unbalanced allocation of funding towards SANAA operated systems. Between 1989 and 1993, for example, while SANAA operated 23% of connections in Honduras, it allocated 63% of funding assigned for the entire sector to its own systems (Diaz, 2003). This unbalanced investment has particularly been the case in Tegucigalpa, where SANAA has half of its domestic connections (Walker, 1997). Furthermore, water tariffs set by SANAA have generally been far below the associated costs of service, have not been raised in years, and many households do not have meters or they are non-functioning, implying that quantities of water consumption are not accurately reflected in the revenues collected. The consequence of such mutually reinforcing problems has been the deterioration of SANNA in terms of its financial sustainability, its physical infrastructure and its ability to expand or repair existing systems (World Bank, 2002).

El Alto de la Laguna: Tegucigalpa's highest community.
*Photo: Eric Dickson*

### *Planning & Regulation*

The new legislation has come in response to the inefficiencies of the current system. There exists an inherent conflict of interest in SANAA's designation as the principal service provider for urban areas, while simultaneously being the recipient of government funding for system administration and operations in a sectoral framework which lacks accountability mechanisms. Moreover, the long-standing lack of a regulating body with the principal function of monitoring operations, efficiency levels, tariffs and quality of services permitted a haphazard development of the water sector. The Marco Law therefore focuses on the restructuring, reorganization and modernization of the current sectoral framework, and emphasizes the separation of planning, regulation and operations of services. The objective of these measures is to create clear interinsitutional coordination that is a prerequisite of successful service delivery.

With the establishment of the National Council on Water and Sanitation (CONASA) which should increasingly take on a policy-making role, and the Regulatory Body of Water and Sanitation (ERSAPS) which should also assume regulation of utility performance, a much needed platform for the regularization of the sector will be provided. In its new form, SANAA will fulfill a dual role in the future of providing technical assistance to operators, and local water boards, while also serving as the technical secretariat of CONASA. To this extent, CONASA should have the capacity to be a driving force in the creation of suitable sector strategies and sector investments in Honduras, while given the differences in scale and regulatory requirements between rural and urban areas, ERSAPS should feasibly have a prominent role in providing needed leadership and monitoring municipally operated urban systems. It is therefore of critical importance that ERSAPS implement its nation wide regulatory system, ideally with localized representation. This decentralized approach will be necessary to ensuring adequate monitoring and regulation given the size and diversity of Honduran cities which would make centralized regulation equally as challenging as centralized operation has been under SANAA. To achieve the necessary local representation, one possibility being discussed is that each municipality selects a Regulatory Supervisor that reports to ERSAPS. Unless enforced, however, there is a risk that a municipality may select a supervisor with political affiliations. This would compromise the impartiality required for effective local regulation. If this is not adequately managed in the formation of ERSAPS new legal policy, it is highly likely that the politicized nature of water will influence the sector's regulation at the local level.

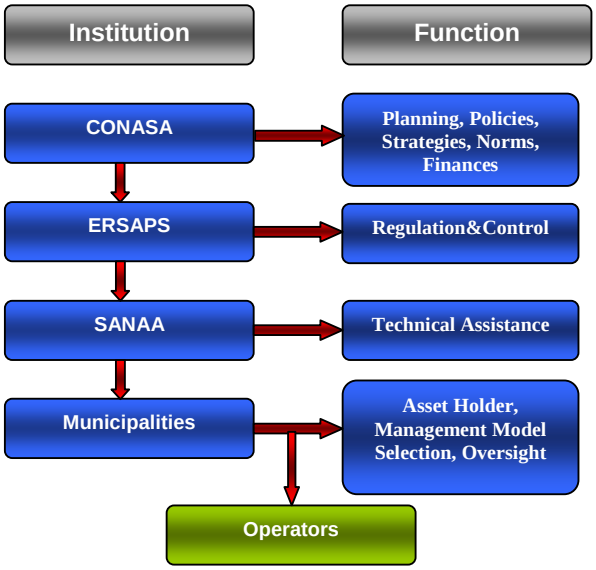



Figure 1. Model of decentralization. Source: Republica de Honduras, 2003

## Puerto Cortes: A Case of Municipal Corporatization

The coastal city of Puerto Cortes is characterized as being the most important port city of Central America. It is estimated that the city's population of 52,000 will double by 2020, and already 60% reside in urban areas. Current estimates indicate that potable water connections are likely to grow from 10,491 in 2005 to 16,141 in 2010, and continue to 21,230 by 2015. Similarly, with recently begun improvements to the sanitation network and treatment plant, the 1,700 connections existing in 2006 should be expected to increase to 13,484 by 2010 and reach 17,159 by 2015 (Serrano, 2006). Given this rate of growth in Puerto Cortes, it serves as a suitable model from which to analyze how other medium sized Honduran cities may structure their management models for water and sanitation service delivery.

Initially operated by the municipality, the city's water system was transferred to SANAA in 1974 under a centralized approach that saw all administrative decisions made from Tegucigalpa. In 1994, as a result of poor on-going system management, negotiations between SANAA and the municipality began under which re-assignment of responsibilities would take place. Having been approved in Congress three years later, the municipality of Puerto Cortes officially resumed the task of operational and financial management in late 1998.

During the transition period, the municipality of Puerto Cortes obtained funding from USAID support this process through reconstruction of the piped network, water pumps, and installation of improved purification systems. The result was a highly improved service that reached 80% of the city's population in 1997, doubling the coverage rates that had prevailed in 1993 (Constance, 2004). To ensure continued service improvement and system expansion, Puerto Cortes employed a strategy of corporatization whereby a commercial company, Aguas de Puerto Cortes (APC), was established under a mixed capital venture. Under a leasing contract that was recently extended to 2019, APC undertook the responsibilities of administration, maintenance and operations on behalf of the municipality which remains the proprietor of the physical infrastructure and responsible for system investments. Based on service expansion and the notably improved service, APC accordingly raised tariffs previously set by SANAA by between 30-40%, and also hedged future increases against annual inflation rates. In 1998, the development of the water and sanitation sector was further bolstered through a loan agreement with the Inter-American Development Bank (IADB) to the amount of US$18.33 million to co-finance the construction of a new sanitation system and water treatment plant.

### *Local Solutions to a Global Problem*

Under the mixed-capital model, the municipality initially owned 95% of APC, while five local cooperatives[1] were each symbolically given one percent of shares with a value of 1,000 Lempiras (US$53). This was intended as a preliminary step in the social outreach and awareness building of the service delivery transition and was also hoped to serve as incentive for additional future investments by the cooperatives and other local bodies (see Table 3).

**Table 3. Aguas de Puerto Cortes Stakeholders (2006)**

| Stakeholder/ Cooperative | Members | Capital Invested (Lps.) | Shares | % APC |
|---|---|---|---|---|
| Municipality | | 95,000 | 950 | 20 |
| Caceenp | 6,600 | 50,000 | 500 | 16 |
| Coompol | 2,500 | 50,000 | 500 | 16 |
| Comixvem | 2,00 | 50,000 | 500 | 16 |
| Comixprol | 1,700 | 50,000 | 500 | 16 |
| CCIPC | 240 | 50,000 | 500 | 16 |
| *TOTAL* | *11,040* | *245,000* | *3,450* | *100%* |

In 2006, APC reported that the municipality had decreased its share holdings to approximately 20%, and intends to reduce this to only 5% by 2008 as it continues to increase participation from local stakeholders through the continued sale of the remaining 50% of shares (Aguilera, 2006). In addition to these measures several other steps have been taken intended to continue the depoliticization of water and sanitation service delivery in Puerto Cortes. These include selling its shares at prices which allow for low-income stakeholders to economically participate (US$5 per share), only selling shares to APC clients which ensures local investment and prohibits external or international involvement, and having a maximum investment by a single individual or group set at 50,000 Lempiras (5% of total shares) to avoid possible shareholding monopolies. Despite these intentions to incorporate local citizens as individual investors through these measures, to date this has not been sufficiently publicized, evident in the virtual absence of private shareholders in the company.

With a view to addressing illegal connections and Unaccounted For Water (UFW), meters were also installed in all residences, businesses and public institutions (Constance, 2004) – 'the metering of industrial

[1] Port Employees (Caceenp); Central Market Vendors (Comixvem); two Women's Cooperatives (Coompol, Comixprol); Chamber of Commerce & Industries (CCIPC)

consumption rose, from 102 functioning meters to 385 and in 1997 the municipality began a program to establish 100% metering of domestic consumption within two years. Illegal connections were halved, monthly billing rose from Lps.132,000 to Lps.520,000, and revenues as percentage of billing increased from 61% to 103%, reflecting a successful effort to recoup accounts receivable' (Walker, 1997, 29). In contrast to the experience of San Pedro Sula, where the installation of meters has been met with violence in some communities, in Puerto Cortes meter installation was subsidized by the municipality and now is reported to have reached 85% coverage of the urban area. As Table 4 demonstrates, there is a clear correlation in Puerto Cortes between meter installation and decreased average monthly consumption. This evidence strongly supports the notion that setting tariffs at levels which reflect the true cost of service delivery, in conjunction with effective social outreach and awareness building of monitoring actual consumption, can result in more economically and environmentally responsible use of water in Honduran cities.

The experiences of other cities undergoing decentralization where private sector interests had been met with resistance and suspicion influenced APC to structure itself in a manner that would avoid the creation of ties with international companies. It was noted during interviews that the need for transnational companies to recoup their investments often resulted in the consideration of social components being overlooked or neglected. Only in 2006 have the investments made by the municipality in the water and sanitation system become marginally profitable, reported to be approximately 5%.

**Table 5.**
**Puerto Cortes Water Management: SANAA vs. APC**

| Indicator | SANAA | APC (2006) |
|---|---|---|
| Employees/1000 connections | 7.6 | 5.5 |
| WS Coverage | 82% | 98% |
| Daily Production ($m^3$) | 14,500 | 35,000 |
| Hours of Service | 14 | 24 |
| UFW | 40% | 25% |
| Monthly Billing (Lps) | 90,000 | 2,500,000 |
| Meters Installed | 85 | 9,800 |

While some argue that the presence of the port and fees collected by the municipality for its use is crucial to the financing of the city's water and sanitation system, providing it with a comparative advantage over other Honduran cities, this is in fact misguided. While the municipality does generate income from docking fees, only 4% of which it retains, these funds are not put towards the development of the city's water and sanitation system but rather used for other necessary investments. While there is a possibility that in 2007, a proportion of the 4% will be put towards rural water and sanitation development, it is important to clarify that it is the management model adopted by Puerto Cortes that has permitted such notable advancement in the urban WSS sector rather than the city's port status.

**Table 4. Meter installation and average consumption per year: Puerto Cortes**

| Year | Meters | Average Monthly Consumption ($m^3$) |
|---|---|---|
| 1995 | 188 | |
| 1996 | 521 | 53 |
| 1997 | 839 | 43 |
| 1998 | 2870 | 45 |
| 1999 | 4534 | 38 |
| 2000 | 5767 | 39 |
| 2002 | 6395 | 35 |
| 2003 | 7453 | 35 |
| 2004 | 8081 | 34 |

In order to ensure that lease payments from Aguas de Puerto Cortes to the municipality are not susceptible to political influence, accounts payable to APC are placed into a capital development trust fund (the Municipal Water and Sanitation Fund) which is used to finance APC operations, pay the monthly lease fee to the municipality and service loan debt (Walker, 1999). The lease payments received by the municipality from APC, in addition to counterpart municipal financing, are then used for reinvestment in the system, and have been a driving force behind the city's expanding sanitation network. The fund is used to ensure proper management of finances intended for the development of the water and sanitation sector, while also inherently creating transparency and accountability for clients.

In 1999, a local regulatory body (ERL) was created to monitor health, legal and technical aspects of APC operations while also ensuring compliance with targets and outputs. As an oversight body the ERL is politically independent, and to ensure its impartiality it is stipulated that membership comprise of community members who are not politically active, have no tie to APC or the municipality and possess expertise in the defined areas. Currently comprised of three individuals from the private sector who are selected by the municipal corporation, representatives are meant to be re-elected every two years. It is also possible to 'opt' to be replaced, however, in reality, to date there has been no turn over of

representatives nor impetus to do so. Although under the Marco Law a national regulatory body has now been formed (ERSAPS), at the time the Puerto Cortes ERL had no organization from which to learn or collaborate.

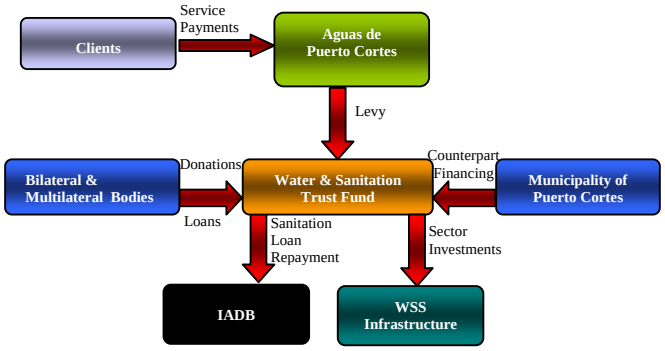



Figure 2. Puerto Cortes financial flows. Not to scale.

In response, the ERL joined the Association of Regulatory Bodies for Water and Sanitation of Latin America (ADERASA) in which it has become active in regional committees of benchmarking, tariffs and subsidies and community participation. To improve the ERL of Puerto Cortes further, however, it still requires additional expertise in the areas of accountancy and economics of water and sanitation. Furthermore, the lack of institutional safeguards that protect the ERL from political influence is a concern and for its continued effectiveness it will be of importance to link the ERL to ERSAPS in order to promote a localized approach to monitoring and regulation under the Marco Law.

### *Characteristics of Success*

The precedent setting achievements of the municipality to provide an independently managed public service of water and sanitation delivery to a medium sized city, points to a strong alternative option for Honduras to consider as it decentralizes the sector. At its foundation, the Puerto Cortes model has the clear principle outlined in the Marco Law which stipulates that tariffs *reflect the actual costs of services*. To this extent, Puerto Cortes has established a tariff schedule that takes into account *all operational, maintenance, regulatory, and investment costs in addition to capital depreciation and debt servicing.* APC therefore charges distinct tariffs for varying levels of metered monthly consumption[2] (US$0.12-0.35 per cubic meter) and non-metered consumption (US$4.66-$18.63).

The strength of this models lies not only in the inclusion of social outreach and awareness building as a primary step, but also in its measured approach through the use of a mixed capital corporation which adopts a private sector management style that is accountable, transparent and financially efficient. Importantly, the Puerto Cortes model has harnessed strong national and international attention for its participatory approach and ability to implement an effective development process. Moreover, it appears that the model has been successfully institutionalized at the city level, having spanned a mayoral election in which a new political party came to power. While opponents of the decentralization process continue to cite the city's unique port fees as the impetus behind financing such change, and point to the scores of other small cities that lack such financial generation, the above discussion indicates that under a well structured management model with strong political commitment, any Honduran city could learn from the various components that have made Puerto Cortes one of Honduras' success stories.

**Table 6. Average Monthly Service Expenditure: Puerto Cortes (2005)**

| Service | $US | % |
|---|---|---|
| Celluar Telephone | 21.17 | 26.49 |
| Electricity | 23.82 | 29.80 |
| Landline Telephone | 18.52 | 23.18 |
| Cable Television | 11.11 | 13.90 |
| Potable Water | 3.33 | 4.17 |
| Sanitation | 1.96 | 2.45 |
| Total | 79.91 | 100% |

## San Pedro Sula: A Case of Private Sector Participation

Located in the northwest of Honduras, the city of San Pedro Sula is the country's second largest after Tegucigalpa with an estimated population of 700,000. Perhaps more importantly, however, the Sula Valley is the economic and industrial hub of the country. With population expanding annually by an estimated 5% in San Pedro Sula, and as a result of an export boom in the city's surrounding industrial parks in the late 1990s, the Municipal Division of Water (DIMA) was faced with an unsustainable financial future. Political interests resulted in a severe stagnation of water tariffs that failed to keep pace with inflation and the ensuing financial debt prevented its ability to continue operating as the water and sanitation service provider (Constance, 2004). Much like SANAA today, DIMA's financial insecurity prompted a marked change in the service delivery of San Pedro Sula. With an IADB loan agreement for the Municipal Development Program, San Pedro Sula began undertaking a series of large-scale development initiatives targeting the development of its services.

The use of a concession contract was chosen as the most suitable arrangement to attract much needed capital for water sector development and was awarded to the potential

[2] Categories include: 0-20$m^3$, 21-30$m^3$, 31-40$m^3$, >40$m^3$

operator which proposed the lowest tariff in a two stage bidding process. With an initial tariff set below that charged by the municipality at the time, the Italian-Honduran consortium Aguas de San Pedro (ASP) was awarded a 30-year concession to operate the water and sanitation system in 2000, marking the first case of private sector participation in the delivery of public services in Honduras. Of particular note was the departure from DIMA's practice of maintaining static tariff rates, as ASP holds the right to adjust the tariff semi-annually to reflect inflation rates and also to apply a single adjustment of up to 20% (Constance, 2004).

***Concessions, Investments & Development***

The Municipality of San Pedro Sula (MSPS) established a Concession Monitoring Unit (CMU) to oversee all locally outsourced services and promote additional private sector participation in areas including public parking, solid waste management, markets, and urban roadways (IADB, 2002). A consideration of the CMU is its political tie to the municipality. Whereas the ERL of Puerto Cortes is politically independent and consists exclusively of civil society, the CMU of San Pedro Sula is funded directly by the municipality, has a membership consisting of local politicians and civil society, and is effectively a part of the local government. To allow for greater autonomy in the regulation of the concession contract and improve its regulatory authority, the CMU should be funded directly from the levy that ASP pays the municipality and its members, as in Puerto Cortes, should not be politically active. Equally, as is the case in Puerto Cortes, the CMU should be formally linked to ERSAPS in order to ensure that the orientation of ERSAPS itself remains decentralized.

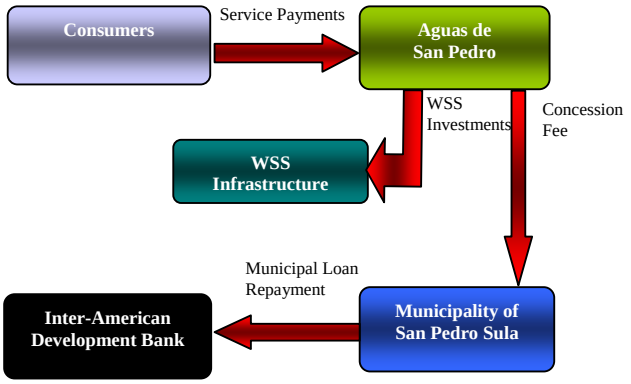



Figure 3. San Pedro Sula financial flows. Not to scale.

Throughout the initial five years of the contract it was reported that ASP invested approximately US$20 million, while DIMA had only managed US$1.5 million over a similar timeframe (Lopez, 2006). To this extent, by 2003 ASP had increased the number of connections in the city by 13,600, improved the proportion of households receiving residential water services from 84% to 93%, and raised the percentage of treated tap water from 22% to 80% (Constance, 2004). Currently, ASP reports 98% coverage of potable water in the city, approximately 70,000 households are now equipped with meters, and some 30,000 are billed at a fixed tariff, the lowest of which is about US$2 for 100 cubic meters per month.

Over the thirty-year period of the concession, ASP will make capital investments in the area of US$207.9 million, 'of which US$115.2 million will consist in investments in water services and US$92.7 million in sewerage services' (IADB, 2006). Tied to these investments, and therefore central to the financial feasibility of ASP's operations, are expanded water and sanitation coverage which is to coincide with improved meter reading and bill collection. This is of particular importance in low-income communities, where high expectations of improved service and distrust of ASP are reported to abound (Constance, 2004; Gresta, 2006). With 64% UFW in reported in April 2006, (Gresta, 2006) the importance of meters, which is stipulated as a necessary condition under the concession, is crucial. ASP's efforts of installing meters in low-income neighbourhoods which currently lack them, however, has been met with resistance as some communities demand improved service prior to permitting their installation (Constance, 2004).

***Resistance to Private Sector Participation***

The cause of such resistance has arisen due to a lack of adequate social outreach and awareness raising within the communities, despite the fact that ASP reportedly did undertake a series of awareness raising initiatives. What is evident is that the MSPS should have initially placed greater emphasis on explaining clearly to city residents the change in operations and service delivery from DIMA to ASP. A general distrust of 'privatization' in Honduran society was not taken into account in the early days of the concession, and the need to explicitly clarify the institutional relationship between the MSPS and ASP was not recognized. Similarly, the issue of meter installation, education of their function, and the manner in which they measure consumption was not suitably provided.

Interviews revealed an inaccurate belief that consumption from a meter is measured by its number of rotations which are based on water and/or air intake. This was reported as being the catalyst to ASP's current problems. Residents of low-income neighbourhoods, such as Cofradia and Chamelecon, which receive rationed water service would reportedly leave their taps open in order to maximize the quantity of water for storage once it began flowing. Such neighbourhoods have also historically been characterized by poor infrastructure maintenance, where 90% of households visited by the CMU were found to have piping leaks (Valencia, 2006). The result of these factors was the perception of inaccurate consumption measurement by community members given the unexpectedly expensive monthly bills, which ASP insisted be paid, rather than an

understanding of the financial costs related to high levels of consumption.

A threefold solution to the described situation could have arguably benefited ASP despite the response being after the fact. First, a follow-up study on the effect of the social outreach and awareness building initiatives should have been undertaken across the city in conjunction with the MSPS. This would clearly identify areas where additional dissemination of information for behaviour change was needed. Secondly, ASP and the MSPS could have considered financing the repairs to household leaks in conjunction with educational programs regarding water conservation and use. Thirdly, an agreement could plausibly have been made whereby residents of low-income communities with newly installed meters would continue paying a fixed amount over a period of several months, while consumption was measured. During this time, ASP would engage with the communities to demonstrate the difference in cost incurred at the household level.

***Characteristics of Success***

Currently ASP is working towards improved social relations through its Community Development & Interinstitutional Relations Unit. A recently formed partnership is now seeing UNICEF, the Ministry of Education, the MSPS and APS collaborating on the 'Friendly School & Healthy Home' initiative.
The program, which was initiated in July of 2006, seeks to improve the sanitary infrastructure in eight urban and three rural schools across San Pedro Sula. ASP has invested approximately US$43,000 for the design and construction of new toilets and washstands in these schools which will benefit some 6,700 students. To provide sustainability to the program, 126 local teachers are simultaneously being provided with capacity building in hygienic practices from UNICEF that is then incorporated into the academic curriculum.

*Friendly School & Healthy Home*: New toilets and washstands under construction in Chamelecon, San Pedro Sula.

*Photo: Eric Dickson*

Through student activities that include the participation of family members, the program's strategy is to create a dialogue in which children play a central role in engaging community members in an interactive process of learning and behaviour change. Although optimistic is its expectations, ASP hopes that this will improve communication between the company, the various low-income communities and the municipality. Importantly, a baseline study will also be created in which the program's impact will be measured. Looking to the future, it is hoped that this initiative may serve as an entry point through participating community members to creating new partnerships with private businesses and industries in San Pedro Sula in an effort to continue sector improvements.

There exists a clear opportunity for ASP to engage with the low-income urban communities and assist in the institutional development of local JAA which currently only exist in the surrounding rural areas of San Pedro Sula. Given the national experience of the JAA, this could be a key to improve service delivery in low-income settlements where the existing infrastructure must be replaced and where meter installation has been resisted or rejected. According to the Public-Private Infrastructure Advisory Facility (PPIAF) (2006, 239), 'the contract allows the Juntas Administradoras de Agua…and private water systems to operate in parallel. Aguas de San Pedro Sula is required to establish a team to provide technical assistance to the Juntas'. The team referred to here is the Community Development & Interinstitutional Relations Unit which is responsible for forming a link between the communities and ASP. Although full collaboration between the members of low-income areas of San Pedro Sula and ASP remains unlikely, the potential for such a partnership to develop through the promotion of the JAA cannot be underestimated in view of its collective capacity to influence positive change in the city.

A major difference between the management model adopted in San Pedro Sula concession, and that of the lease contract in Puerto Cortes, is the existence of a water and sanitation development trust fund. A possible explanation for this is the inherent characteristics of the two models. Under a concession, ASP pays the municipality a percentage of its incoming revenues, but must also make reinvestments in the sector (US$207.9 million) and allow for profit margins. This not only allows the MSPS to allocate funds from ASP to other areas, but also ensures on-going development of the city's water and sanitation infrastructure, evident in the success that ASP has had in extending the city's network. Conversely, in Puerto Cortes, APC pays 'rent' to operate the system which through the development trust fund, can only be reinvested in new sector development. As previously discussed, this provides a strong degree of transparency and accountability of the Municipality in its investments and ensures proper use of funds. To this extent, the creation of a trust fund in San Pedro Sula could serve to improve the current sectoral development process should its conditions stipulate that a

portion of revenues generated from the concession be reinvested in related sectors, such as solid waste management or drainage for example.

## Community Based Water Boards

Since the 1970s, local water boards or a *Junta Administradora de Agua* (JAA) have assumed responsibility for the operation and maintenance of water and sanitation systems in many rural and peri-urban areas of Honduras. Over the years the JAA have become nationally recognized community based leaders in the sector and have gradually harnessed strong cultural support and belief in their effectiveness and value. Emphasizing this fact, the Marco Law stipulates (Chapter IV, Article 17) that the JAA should receive preference from a municipality over other service delivery providers for total or partial operation of a system. Whether this clause translates into widespread deconcentration to the JAA at the local level is questionable, however, its inclusion in the Marco Law speaks to the potential capacity that the JAA are perceived to have.

It should be noted in this discussion that there is often a conflict that exists in many communities between the water boards and the local '*patronato'* for the right to operate water systems. A patronato is a Local Development Committee that legally must exist in every municipality in Honduras. The governing board is directly selected by community members and should represent community interests within their respective municipalities. Given their legal status, patronatos are also the official means by which a community can obtain financial, technical, and other support from municipal, private and national authorities to implement local development projects (World Bank (2006), Segnestam (2006), Mery Corps (2001)). To this extent, many patronatos perceive that the JAA infringe upon their legal status within a community and their ability to assume operational responsibilities within the water sector. Conversely, the JAA argue the key difference between the two organizations is the unilateral focus that the JAA have on water issues, the fact that all funds are singularly invested in sector related initiatives and that this combination increases transparency, accountability and trust within a community.

Undeniably, not every JAA would possess the capacity to operate and maintain a water supply or sanitation system. Nonetheless, the following discussion attempts to synthesize best practice (rather than common practice) characteristics emerging from the research that point to what urban and peri-urban JAA are capable of achieving.

### *The Role of Community Based Water Boards*

Consisting of voluntary members, the local JAA mobilizes community residents and works in collaboration with SANAA in the construction of networked systems that rely on local watersheds or delivery by water trucks. SANAA not only provides the financial and technical resources to the community, but also facilitates institutional capacity building of the JAA in order to ensure sustainability of the system once it is devolved. In areas where SANAA does not operate, NGOs are particularly well placed to assist in a dialogue between the community and SANAA with the objective of initiating collaboration[3].

Although varying in size and capacity based on community engagement levels, the JAA assumes responsibility for the planning, implementation, and management of water and sanitation systems while also promoting appropriate patterns of use and providing technical support within and beyond their communities on issues of plumbing and water treatment (World Bank, 2004). In addition, an important role played by the JAA is to assist in the social outreach and awareness building of water service delivery – in other words to develop a 'culture of water'. It was commonly reported that there is significant lack of understanding of the physical logistics, financial costs and environmental impact involved in the successful delivery of water and sanitation services. Water conservation was cited frequently as being 'non-existent', and it was reported that many do not comprehend why water, which is viewed as a natural gift to which everyone is entitled, should carry a cost. In response, some households which are connected to a network may therefore choose not to prioritize payment for their services, or given the low costs of service may allow monthly billing to accumulate over time to a sizeable amount. The JAA are therefore strongly placed to act as important agents of social change within low-income communities and propagate new approaches to water management to engage their local communities in the development of service delivery.

Office of the local water board. Mezapa, Atlantida.

*Photo: Eric Dickson*

[3] This was the case in El Guapinol, for example, where CARE Honduras collaborated with the JAA and SANAA and provided a community liaison officer.

***Forming a JAA***

Each JAA exhibits unique strengths, weaknesses and approaches to management methods based largely on its composition. In order to establish a high level of capacity, community members select a group of individuals to form a new JAA consisting of both men and women. This peer selected group are then provided with a formalized training program facilitated by SANAA, which encompasses key aspects of tariff setting, considerations for system operation and maintenance, disinfection practices, network expansion and general administration of the JAA.

Much can be learned from analyzing best practice cases and synthesizing their characteristics into a formalized platform on which decentralization processes for low-income urban settlements could rest that simultaneously provide proven methodologies for training newly formed JAA. Those JAA exhibiting sound management practices have succeeded in providing twenty-four hour chlorinated service at reasonable tariffs which allow for the system's sustainability and expansion. In the Tegucigalpa neighbourhood of Villa Cristina, for example, the JAA charges approximately US$5 per month to each household which covers water consumption, and all related costs including operations, energy consumed at pumping stations, monthly salaries of seven support staff, and the financing of system expansion to vacant land with capacity for 350 households.

Private small-scale water vendors in a low-income neighbourhood of Tegucigalpa.

*Photo: Eric Dickson*

To achieve such results, collaboration between SANAA, the municipality and the JAA must have a strong component of community participation in which each household not only makes a financial contribution, but also provides a predetermined amount of their own labour towards the construction of a new system (this stood at $US42 and 26 days of labour per household in one community). The seed funds collected from within the community may then be used to purchase necessary materials for network construction, or in the case of small towns, to leverage additional financial support from the municipality to purchase the watershed. In such instances, the watershed becomes a protected area from any future development, may have formal security, is reforested as necessary and appropriate steps taken to prevent future contamination resulting from common polluting practices.

**"Each community based water board is dependent on its own creativity."**

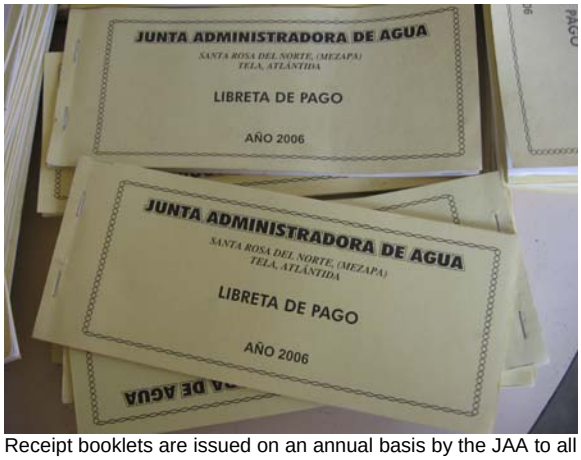
***JAA President, Colonia Villa Cristina Tegucigalpa***

***Operations***

To ensure water quality from JAA operated systems, samples from distribution tanks should be sent to SANAA twice a year, while regional Health Centres should be provided with monthly samples. Equally, however, results of those samples should be clearly and routinely communicated back to the JAA in order that a high level of transparency and accountability of system management be institutionalized at the community level. To this extent, chlorination systems are integral to a JAA for effective management and while manual chlorination is commonly used in smaller urban centres, more advanced automated systems in larger towns allow for greater economies of scale on chlorine purchases. In attempt to pass on such benefits, residual chlorine can then be sold to smaller JAA of surrounding towns and villages at a subsidized rate, thereby reinjecting needed capital into the JAA and facilitating improved water quality in more economically challenged communities.

Financial management is crucial to the transparent operation of the JAA, who must build and retain the trust of the communities whom they represent. In this regard, the JAA commonly employs a treasurer or administrator to oversee the financial aspects of their work, with particular attention to tariff collection and overdue accounts. Arguably the most transparent (and secure given high rates of delinquency in urban areas) system utilized by a JAA is one in which no money is directly exchanged, but where tariff payments are made as deposits into the JAA bank account to which only the treasurer or administrator has access. Bank officials record these deposits, a receipt is provided which is then used as proof of payment and submitted to the JAA. The JAA, in turn, documents all use of funds and allows its accounts to be viewed by community residents. In addition, the JAA retain a fixed percentage of each payment, for example between 5% and 7% for savings and use towards payments for environmental aspects of services, system expansion or leveraging of bank loans. The financial savings that the JAA accrues over time may also be used to fund various social components of water and sanitation service delivery that are approved by the community. It was reported that in recognition of the proportionally high costs incurred by particularly poor households, a JAA would allow a gradual

repayment plan while making up the financial difference from existing JAA savings.




Receipt booklets are issued on an annual basis by the JAA to all residents connected to the water network in the town of Santa Rosa del Norte, Atlantida.

*Photo: Eric Dickson*

Demonstrating an even greater philanthropic aspect, certain groups of the community may not be charged for the services they receive at all, including the elderly, schools or churches. In such cases the costs of services are borne by the general community through their payments to the JAA. Based on these observations, those JAA that operate in the manner of socially minded legitimate businesses, where 'investors' are the community members themselves to whom the JAA are accountable, receive the social acceptance and financial backing necessary to provide service delivery at affordable costs.

System expansion as urbanization rates continue to rise may prove to be the most challenging aspect for the JAA given the capital investment required. To this extent, a practice commonly employed is to categorize a household requiring a new connection and levy associated charges for its inclusion on the network. In one peri-urban community, US$212 is levied on a household belonging to an existing family of the community who participated in the construction of the network and provided the aforementioned financial contribution, US$318 to newly arrived households; US$477 is charged to households that opted not to participate in the initial construction phase or contribute financially. The latter charge is intentionally very high in order to promote widespread community engagement in system development form the outset and prevent the creation of free riders.

To ensure that the JAA remains integrated within the community, its membership composition is required by law to change every two years. As previously mentioned, the community selects the JAA representatives by popular vote, however, an individual who already sits on the JAA may be re-elected for an additional term. Should the JAA have paid employees, such as an administrator or other support staff, the individual retains his or her role which is seen to provide a degree of consistency in the management of JAA operations, while also allowing for critical analysis and constructive change as new representatives take on the system management. In urban areas, an interesting approach being adopted is the formation of an 'inter-community JAA'. In attempts to achieve consistent and gradual change across a large series of communities in Tegucigalpa, for example, nine JAA with a rotating presidency meet every 2-3 months to discuss recent developments and collectively plan new approaches to improving each JAA's operations. The effectiveness of such inter-community JAA, however, has yet to be formally determined.

### *Characteristics of Success*

There are of course limitations to the JAA and while some succeed in providing excellent service to their communities, others fail. Central to this dichotomy is the notion of community leadership which is fundamental to the sustainability of any JAA. As the previous discussion describes, there is no profit motivation or other tangible reward for participating and volunteering with the JAA, making them reliant on the commitment and personal drive of participating individuals. While there are numerous success stories emerging from efficient and well-organized JAA, a lack of institutionalization and dependence on personality driven leadership is a limitation that must be take into account. To this extent Urquiza (2006, 7) suitably summarizes that 'it is not enough to construct autonomous water systems; it is indispensable to ensure the existence of units that will manage them with efficiency. The search for proper system management implies that investments in promotional activities, capacity building, and monitoring of administrative organizations must be increased.'

Given the movement toward decentralization in Honduras, it is in the best interest of the Honduran government and the community itself to actively engage with the JAA, and to ensure its operational effectiveness required under the Marco Law. In the event that a JAA fails to deliver the services for which it is responsible, the municipality has the legal right to take over system management. A lack of experience and capacity of many municipalities to operate such systems, however, may result in a further deterioration of services or a move towards private sector involvement, which is generally regarded by members of the JAA, and many Hondurans, as an unfavourable and undesirable outcome. To this extent, the future sustainability of the JAA in Honduras rests largely on those who comprise its membership or support their activities.

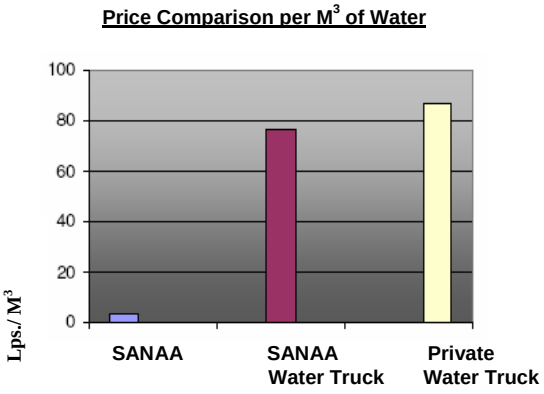
## Tegucigalpa: A Case of Tripartite Partnership

Current population estimates place 1.1 million inhabitants living in Tegucigalpa (UN-Habitat, 2003) and future projections predict the city's population to double over the coming twenty-five years (Angel, 2004). The city is characterized by very poor water and sanitation service delivery. Approximately 40% of Tegucigalpa's residents live in peri-urban settlements that have developed informally over the past several decades that often lie on steep hillsides surrounding the city and are above the official height limit (1,100 meters) for incorporation into the formal water network (World Bank, 2003; BDP, 2006). The expansion of water and sanitation infrastructure and delivery of services in these settlements has proved problematic or non-existent due to their location and history of informal development, higher associated costs of installing necessary infrastructure such as multiple pumping stations and issues of legal land tenure. It is estimated that approximately 38% of the city's households are not connected to SANAA's piped system (World Bank, 2002), however these settlements are not included in expansion planning. In response to these conditions, alternative solutions to water service delivery are important to the sector's development. Two of the most notable alternatives that are addressing this service gap for the city include the 'Water for All' (Agua Para Todos) program run by a special unit of SANAA, and the recently launched 'Water for Life' (Agua Para Vivir) municipal initiative.


The Municipality of Tegucigalpa advertises its newly launched 'Water for Life' program on a city billboard.

*Photo: Eric Dickson*

The paradox of low-income peri-urban communities that lack connection to piped networks in Tegucigalpa, and indeed across the developing world, is that residents are obligated to pay up to 100 times more for unreliable service delivery of water of questionable quality than those communities that are connected to a conventional system. In 2005, SANAA registered 113 communities serviced by water trucks that were either privately operated or owned by SANAA itself. These water trucks pay approximately Lps. 0.025 per gallon which is then sold at Lps. 0.40 per gallon. Based on these figures and the number of water trucks in operation, it is estimated that the residents of Tegucigalpa's peri-urban communities spend between $US6.9-9 million dollars annually, which amounts to up to 9 times the average annual revenue generated by SANAA (BDP, 2006). Based on these observations, the following discussion examines in closer detail the methodology and results of the Water for All program and describes how the initiative can work when functioning in a conducive environment.




*Source: BDP, 2006*

Private vendors enter a low-income community in Tegucigalpa while residents wash clothes in a natural well.

*Photo: Eric Dickson*

### *The UEBD and Water for All*

To address the gap in service delivery to marginalized neighbourhoods, in 1987 collaboration between SANAA, UNICEF and the private sector saw the establishment of a distinct sub-division of SANAA entitled the Executive Unit for Settlements in Development (UEBD). The private sector in this partnership is represented by the Chamber of Commerce and Industry of Tegucigalpa (CCIT), the Honduran Council for Private Enterprise (COHEP), the Association of Communication Media (AMC), and the

Televicentro Corporation. Having secured seed funding for the program to the amount of approximately US$400,000, these funds were then transferred to CCIT for management and used to leverage additional bilateral financing from the governments of Taiwan, Canada, Holland and Japan (UNICEF, 2005). The result was the establishment of a legal foundation, entitled 'Agua Para Todos' or 'Water for All'. Each collaborating partner involved contributes distinct components to the model; the Foundation finances the necessary physical infrastructure and uses its knowledge of the private sector to source required materials at affordable prices, SANAA provides the technical assistance, UEBD facilitates community organization, and UNICEF funds the technical assistance and promotes a hygiene education program.

Community members prepare for piping installation in Tegucigalpa.

*Photo: UEBD*

The Water for All initiative integrates community participation through the JAA, cost sharing, and a rotating fund which allows for cost recovery. Communities eligible for the program must have an established JAA responsible for decisions of appropriate technology, operation and maintenance of the new systems, tariff collection and overall administration. According to the United Nations (1998), the JAA are often 'the first type of organizations to achieve improvements for the community.' Importantly, they are also responsible for securing necessary land for placement of holding tanks, mobilizing the community for the construction of the systems, and organizing community financial support to the amount of 40% of costs, while SANAA will make up the remainder with support from UNICEF (United Nations, 1998; Chavarria, 2006).

These investment costs are then repaid by participating communities, without interest over a period of three to seven years (UNICEF, 2005). The JAA are therefore also responsible for paying monthly installments to the revolving fund administered by UEBD, which ensures the program's sustainable influence in low-income settlements. Tariffs are calculated 'according to both the amortization of investments and operating costs, including the water bill from SANAA or from private providers' (World Bank, 2002, 47). The JAA are not, however, under any obligation to purchase their water from SANAA, and may opt to buy from localized small-scale vendors. Nonetheless, SANAA does take a proactive role in the participating communities and is responsible for aspects of project programming, implementation, supervision of construction, overseeing capacity building of the JAA, and developing the hygiene education programs with UNICEF.

El Alto de la Laguna, Tegucigalpa: UEBD storage tanks.

*Photo: Eric Dickson*

***Characteristics of Success***

To date, UEBD has benefited an estimated 80,000 residents of Tegucigalpa through engagement with over 116 JAA, representing some 30% of the city's peri-urban communities, and has a total investment of approximately US$8.7 million (UNICEF 2005; BDP, 2006; SANAA, 2006). Given the current climate of uncertainty as the decentralization process continues, and the question of how low-income urban settlements will be incorporated, the Water for All model serves as a strong example of how low-income urban communities can take ownership of development processes and be a valuable partner to successful decentralized service delivery. The scale of collaboration utilized in this model points to how municipalities might approach the expansion of system networks that will be necessary with continuing urban growth. Through the effective use of public-private partnerships, municipalities could feasibly harness the necessary technical and financial support to successfully expand services to marginalized areas where operations are locally managed. Furthermore, the ability to recoup capital investments through cost recovery mechanisms should provide an incentive to municipal operators to consider adopting such models as they assume control of water and sanitation systems in urban areas.

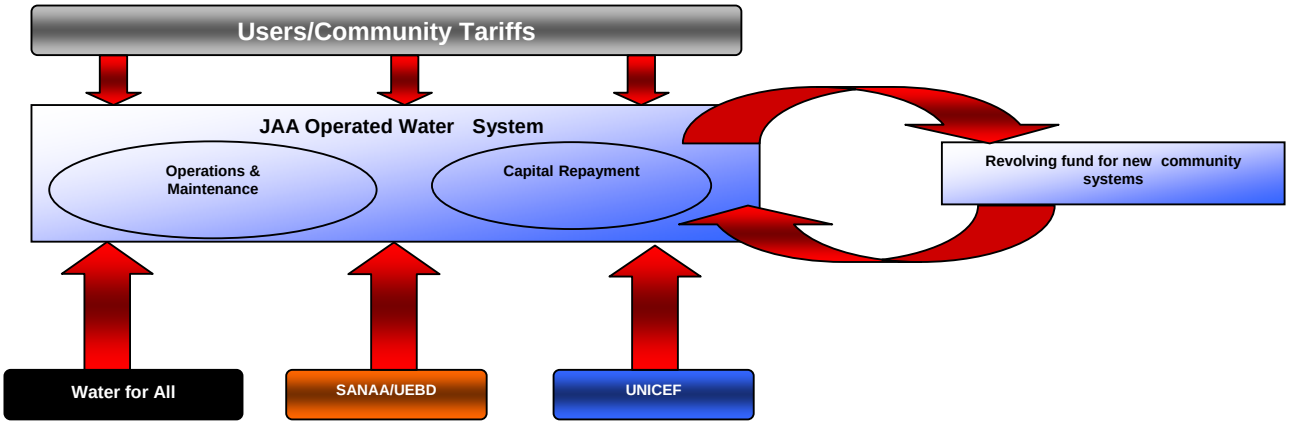



Figure 4: Financial flows and use of a rotating fund in the Water for All program. Not to scale.

## Lessons, Considerations, Recommendations

There is an urgent need to strengthen the national framework of the Honduran water and sanitation sector in order for decentralization to succeed. The short amount of time remaining prior to the 2008 transition period, however, is likely to inhibit the reality of timely decentralization of service delivery. Despite this, a key component with respect to successful management of water and sanitation service delivery is the existence of targeted legislation and suitable regulation. In light of this, Honduras currently stands at an important phase of its development where the water and sanitation sector is taking the lead on the discourse of decentralization and different approaches to strengthening municipal capacity. Of particular note, however, is the fact that Honduras is only one of two countries in Central America that now has a suitable institutional framework necessary to successfully undertake decentralization (see Table 7).

Each of the models presented in this paper are characterized by dynamic factors that contribute to their effective management and highlight the mix of approaches being adopted at the municipal across Honduras. In Puerto Cortes, financial independence from central government transfers and strong political leadership focused on service sustainability and improvements has fostered a management system which allows its citizens to retain control over the municipal company. Importantly, this model represents an equilibrium between public and private management, retains generated revenues in the city itself for further system development, and therefore promotes an understanding and acceptance of tariff adjustments for improved service. Based on these observations and given its experience in understanding depoliticization processes of water service delivery, the ERL of Puerto Cortes should be linked to ERSAPS to assist in developing the institutional capacity of the new national regulatory body. Furthermore, ERSAPS should also engage with ADERASA to take advantage of the institutional knowledge that the organization possesses and to support its growing body of evidence of various approaches to decentralization.

In contrast to Puerto Cortes, operations in San Pedro Sula are based on bottom-line economic principles. Despite increasing coverage of services and tariff rates that are lower than all others in Central America (see Table 8), this model of private sector participation has been met with public resistance in part due to inadequate communication between stakeholders in addition to strong distrust towards the company by the clients. Should other municipalities opt for long-term concessions such as that in San Pedro Sula, one approach that may overcome the difficulties experienced under the current concession would be for the municipality to provide performance-based subsidies to the operator financed in-part by the collected levies. These subsidies could be offered for a predetermined number of years following demonstration of achieved milestones in the initial 2-3 years, and would assist in continued infrastructural development and in garnering public understanding and acceptance of increased tariffs coinciding with service improvements. Equally, the use of a development trust fund for investments in related public services may serve to collectively improve understanding of how private sector participation can be beneficial to the city.

In those communities where the JAA are responsible for operations, the strong sense of ownership and commitment to community development are integral to system management. Of particular importance to such models is building local capacity to respond to required system maintenance and expansion through sustainable financial planning and transparency.

This is true for Tegucigalpa where the rotating fund coupled with effective partnerships with the JAA are the pillars to successful management. Importantly, this final model points to a cost effective and low risk approach in which water and sanitation services can be extended to low-income areas where residents are willing to pay. It is important to note, however, that while the Water for All

program has had notable success it is imperative that the municipality of Tegucigalpa be adequately prepared to take on system management. At present there is a lack of necessary coordination and cooperation between the municipality and SANAA to achieve this.

**Table 7. Institutional and Regulatory Frameworks in Central America**

| Country | Role Separation | Water Law | National Water Plan | Clear Tariff Regime |
|---|---|---|---|---|
| Belize | No | No | No | **Yes** |
| Costa Rica | No | No | No | No |
| El Salvador | No | No | No | No |
| Guatemala | No | No | No | No |
| Honduras | **Yes** | **Yes** | **Yes** | No |
| Mexico | No | No | No | No |
| Nicaragua | **Yes** | **Yes** | **Yes** | No |
| Panama | **Yes** | **Yes** | No | No |

**Table 8. Water Tariff Schedules in Central America (August 2005)**

| Country | US$/ 20m$^3$ | US$/ 30m$^3$ | US$/ 45m$^3$ |
|---|---|---|---|
| Guatemala | 5.11 | 6.71 | 8.11 |
| Honduras | | | |
| ***Tegucigalpa*** | ***1.26*** | ***4.26*** | ***15.75*** |
| ***San Pedro Sula*** | ***2.53*** | ***4.23*** | ***6.34*** |
| ***Puerto Cortes*** | ***1.90*** | ***2.85*** | ***5.69*** |
| El Salvador | 3.24 | 7.63 | 11.44 |
| Nicaragua | 4.66 | 11.36 | 16.91 |
| Costa Rica | 7.25 | 12.15 | 19.50 |

Taking a broader perspective of the decentralization process, it will be crucial to continue the institutional development of the JAA in urban areas through the design and implementation of pilot projects that provide the capacity building and technical assistance required to operate water and sanitation systems. Given the improbable possibility that many low-income communities will be formally incorporated into the network in the foreseeable future, such pilot projects may consider targeting improved understanding of the manner in which the approaches and methodologies adopted by the JAA in *rural* areas could be adapted to suit various *urban* environments. This will be an important consideration as Honduras moves towards 2008, in particular given that the *Strategic Plan for Modernization of Water and Sanitation Sector* places emphasis on the JAA in rural areas, yet is silent on their prospective role in cities and small towns.

**"This panorama makes it fundamental to develop more sustainable local models that adapt to the real necessities of the sector and of the community".**
***Gaston Urquiza***

Finally, in order for the decentralization process to succeed in Honduras clarification remains needed of how the decentralization process will be financed, whether pilot initiatives will in fact be introduced during the transition period that will strengthen the cooperation between SANAA and local municipalities, what milestones will be established, and how progress will be measured across distinct municipalities with unique realities. It will also be paramount that municipalities be strengthened through concerted efforts to improve their technical, economic and social understanding of operating water and sanitation systems. With technical support from SANAA, policy advice from CONASA and regulatory oversight from ERSAPS, the municipalities could feasibly have the institutional support necessary to be successful. Central to this success, however, will be widespread social outreach and awareness-raising of the new institutional responsibilities. This is directly tied to promoting community participation, but equally as important, to ensuring that residents of Honduras become increasingly aware of the physical logistics, financial costs and environmental impact that are associated with water and sanitation service delivery. Given that new tariff regimes are required by law to cover all aspects of operational costs and reflect actual cost of service, it is to be expected that rates will accordingly rise. However, based on the collective experiences of Puerto Cortes, San Pedro Sula, and Tegucigalpa it is evident that the urban poor are able and willing to pay for improved services that have been communicated adequately.

While much remains to be done prior to 2008, Honduras is well placed to serve as an example of the various options available to governments under-going decentralization. While recognizing that no two municipalities will be characterized by the same reality, lessons from each of the models presented in this investigation may serve as building blocks from which distinct combinations of decentralization approaches arise.

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