



CARTAGENA, COLOMBIA

Case Study (Water)

Project Summary:

Cartagena is a city of almost 900,000 people on the northern coast of Colombia, and serves as the capital of one of the country's departments (states), an economic hub and a popular tourist destination. However, prior to 1995, water/wastewater service and its provider were extremely unreliable – less than 70 percent of the city's households had water connections and less than 55 percent had sewage service. Major portions of the population, particularly those with lower incomes, were provided water by private vendors, and those with connections to the water system frequently experienced water pressure so low that their service was practically nonexistent. The pre-existing system operated with substantial financial losses and had insufficient funding for maintenance or improvement of the system.

Substantial political pressure from the citizens of Cartagena led to the creation of a Public-Private Partnership (PPP) to repair and operate the system. Under the leadership of the Mayor, in 1994 the municipal council of the city approved the creation of an “empresa mixta” (mixed enterprise) which combined the resources of the public works department and a Spanish water firm. Together, they operate under the name Aguas de Cartagena or AGUACAR.

Despite some initial opposition and suspicion of AGUACAR, significant changes in service were quickly apparent. The high percentage of Non-Revenue Water (NRW) caused by leaks in the system was significantly reduced, increasing the water pressure to existing customers. AGUACAR began immediate service to those not connected to the system by establishing a system of water truck deliveries to serve these communities. The financing for these came in part from a restructuring of the tariff system, to incorporate cross-subsidies, under which more affluent customers helped subsidize the water rates to lower income families.

AGUACAR made marked improvements in water supply and sewage services. By 2005, water supply coverage increased to 99 percent of the population and sewage coverage rose to 75 percent. Support for AGUACAR remains high, as community members enjoy the benefits of an improved, more reliable water supply and sewage service.



Project Objectives:

The primary objective of the public-private partnership AGUACAR was to provide water/wastewater services to the entire community, especially to the lower income households. The government considered the pre-PPP availability of water supply service to less than 70 percent of households and sewage service to less than 55 percent to be unacceptable, but it lacked the financial capability to expand the system.

The lower income portions of the city were not connected to the municipal water system and were served by vendors that carried cans of water by donkey into these communities. The charge for this labor-intensive service was several times higher than the tariff charged by the municipal water company. Customers that were connected to the system experienced poor service – water pressure was generally low and often interrupted. The municipal provider was operating at a substantial loss, largely because of inefficient management and a low rate of collection of the water bills. This level of service generated a flood of complaints to the Mayor's office and ultimately the municipal council's action that created AGUACAR in 1994.

A related objective of the city was to decrease the amount of NRW caused by leaks in the existing pipes. The city believed that 40 percent of the water was being lost in this way (a later evaluation showed the actual loss to be closer to 60 percent) and wished to reduce the loss to no more than a 25 percent NRW. This would increase the quantity of the overall water supply, improve water pressure, and increase the amount of time each day that water was available. In addition it would improve the long-term financial situation, since the cost of treating and distributing water which was lost before reaching a consumer contributed to the city's ongoing losses.

A third objective of AGUACAR was to improve the economics of the system, and make it a financially self-sustaining operation. This was to be achieved through increased efficiency in the management of water supply and sewage services, paired with an increase in the tariff collection ratio. The municipal provider had over one thousand employees, but water service was intermittent and tariff collection was less than 50 percent. Prior to the creation of AGUACAR, the financial working ratio (the cash operating costs/cash collections) for the municipal-owned provider was about 152 percent. The company was losing money and providing inadequate service to customers. AGUACAR aimed to improve management, to improve all-around service, and to eliminate the operating losses.



Project Description:

1. Partners

AGUACAR was created as a public-private partnership between the municipality of Cartagena and a Spanish water firm on December 30, 1994. This private firm had substantial experience in the development and operation of municipal water systems, a capability that was definitely needed in Cartagena's situation.

AGUACAR ownership and management leadership was allocated between the municipality (50 percent), the Spanish water firm (46 percent), and other private investors (4 percent). Accordingly, the 600,000 shares of AGUACAR are proportioned as 300,000 to the municipality, 275,478 shares to the Spanish water firm, and 24,522 shares for the private investors. Resources of both sectors (public and private) are also shared under this agreement, both in personnel and finances.

2. Implementation Environment - Legislative and Administrative

Under the former National Constitution of 1886, the president appointed governors for each of the 32 departments (similar to states in the US), who in turn appointed municipal Mayors (municipalities are the smaller local political entities within the departments). A Mayor's role was three-fold: to serve as the representative of the governor, as the chief of police, and as head of municipal administration. Like department governors, Mayors were appointed on the basis of favoritism and their ability to support the national government. This system resulted in the majority of national government expenditures being spent in the three largest municipalities and little being spent in other areas that made up the majority of the country. This process also significantly limited citizen participation in the government.

In 1986, in response to growing civil unrest, national legislation was enacted to restructure the office of mayors. With this legislation, mayors are elected, along with the members of the municipal council, for terms of four years and therefore have an incentive to be responsive to the citizens they represent. Following this change in the municipalities, a new national Constitution was adopted in 1991 that made efficiency in public services (water, sanitation, electricity, gas, and telecommunications) a top priority. Control of these services was put in the hands of local governments instead of the national government. The separation of service provision and national policy making allowed the opportunity for more private sector participation in these



sectors, including the possibility of PPPs, as each municipality was able to choose the best means of providing service to its constituents.

Colombia has demonstrated dedication to fulfilling the mission set forth in the new Constitution. As a step toward this goal, Law No. 142 was passed in 1994, creating separate regulatory bodies to oversee each area of public services. The Comisión de Regulación de Agua Potable y Saneamiento Básico (the Regulatory Commission for drinking water and basic sanitation or the CRA) was created through the Ministry of Economic Development to promote competition, encourage investment, and prevent abuses by monopolies in the area of water supply and sewage service. This national entity was established to make the governance in this sector more transparent and more responsive to citizens' needs. The CRA also is in place to make sure that the decisions made by the local governments about service are aligned to the overall national goals.

This change in law expanded the influence of ordinary citizens on the political system. Without this change, the mayor of Cartagena might have been less likely to become an advocate of finding innovative ways to improve the water and sewage services in his city. It was as a direct result of significant public complaints that the Mayor of Cartagena responded to the problems of poor water service, low collection rates, and inefficient management. With negative cash flows in the municipal-owned supplier and limited funds available, the idea of a PPP was broached. A feasibility study was conducted to allow the creation of an “empresa mixta” to be jointly owned by the municipality and a private operator. In March of 1994, the Municipal Council approved the venture and began closure of the then-current water agency. Bidding documents were generated and several companies showed interest in the project. In the end only one company, a Spanish water utility, submitted a proposal, and after evaluation it was awarded the contract.

Colombia has been a leader in policies for improved conditions in water supply and sewerage. The World Bank has provided a series of loans for water and sewage improvements, totaling more than \$700 million (US), to Colombia since 1988. The project in Cartagena was the first of these projects that included a public-private partnership.

3. Financial Agreement

AGUACAR was created through an agreement of the municipal government and a Spanish water firm in 1994. The shares of the company were split, with the municipality owning 50 percent. The initial cash invested in the new company was US \$4.6 million, 50 percent of which was contributed by the private sector. AGUACAR then entered into a project to improve the



infrastructure and enable service improvements. AGUACAR began a planning and development process to address the long-term improvement of the entire water/wastewater system. This program was called the Cartagena Water Supply, Sewage, and Environmental Management Project.

This project was financed by a variety of sources. The project expenses (including the initial investments to organize AGUACAR) totaled US \$117.2 million. Following the initial investment, additional funding for the project was obtained from both the Colombian national government (\$20 million) and the Municipality of Cartagena (\$7.6 million). In 1999, AGUACAR received an \$85 million International Bank for Reconstruction and Development (IBRD) loan through the World Bank to help finance sewerage, wastewater treatment facilities, and water supply infrastructure. The grants and loans, when combined with the original organizing investment, brought the total investment to \$117.2 million.

4. Contract Provisions

The Municipality of Cartagena granted AGUACAR a 26-year concession contract to operate and maintain water supply and sanitation services, collect tariffs for water, and enforce payment. The company is the sole supplier commissioned by the municipality. Under this initial agreement creating AGUACAR, a Board of Directors was created with five members; two nominated by the municipality, two by the Spanish water firm, and one by private shareholders. The Board then appointed the General Manager of the company.

In turn, AGUACAR signed a management contract with the Spanish water firm to help provide necessary management practices and skills to make the company more efficient. As compensation under this contract, the Spanish water firm received a percentage of gross revenues, which increased yearly starting at 2.94 percent in 1995, and going to 4.25 percent in 1998. As a shareholder, the Spanish water firm also received dividends for its shares in AGUACAR.

Although water supply and sanitation services were managed by the Spanish firm, the municipality still retains regulatory control over AGUACAR. The Public Services Control Board, which monitors the quality of service, and the Drinking Water Regulation Commission, which approves tariff increases proposed by the water supply operator, are both part of the municipality and make major decisions that affect AGUACAR. Through this process and the composition of the AGUACAR Board of Directors, there is substantial public oversight of the water supply and sanitation services.



5. Implementation Metrics

Current customers saw an increase in the reliability of water and water pressure. Existing pipelines and water meters were evaluated and repairs were made. A large percentage of the loss of water (NRW) was corrected, which increased water pressure to customers. Service was extended into poor areas of the city and management improvements were identified and implemented. Even before new pipelines were constructed, water trucks were sent into poor areas to supply those areas with less expensive water.

Another aspect of Colombia's Law No. 142 was that it required a survey of all residential buildings, including location, form, state, and quality of housing. This information was used by local governments to classify all residences on a six-level scale. Residences assigned a classification of 1-3 were considered poor, residences categorized as 4 were middle-class, and residences assigned a 5 or 6 were deemed upper class. Using this information, AGUACAR created a new tariff system that included a cross-subsidy to benefit poor customers. Residences were evaluated and classified per the six-category scale. For customers with high incomes, tariff rates were set higher than the actual cost of service. This extra revenue then went to subsidize service to poor residents, whose rates were set below the cost of service.

The new tariffs were intended to generate enough funds to cover operational and investment costs. AGUACAR proposed the tariff rates and the Drinking Water Regulation Commission reviewed and approved them before rates were assigned to customers. Residents living in level 4 houses (middle-class) were assigned a tariff equivalent to the actual cost of service. Lower rates were given to people in levels 1-3 (lower income households), while higher rates were given to people living in levels 5-6 (the upper income households). This practice of cross subsidization was used to cover the deficit in tariff revenues that would have resulted from a general subsidy to poor households.

Efficiency within the company and in provision of services was another objective of AGUACAR. To increase efficiency within the organization, AGUACAR only hired back about 400 of the former 1,500 unionized municipal employees (those let go received severance pay based on years of service). This move improved productivity from about 5.5 employees per one thousand accounts in 1995 to 3.4 employees per one thousand accounts in 2005.

To extend service, about 35,000 new connections were made, almost exclusively in poor neighborhoods. Many poor citizens were skeptical and suspicious of AGUACAR because they



were not used to dealing with a water company. In response, the company hired social workers and community relations specialists to explain to residents how water and sewage service works. Local unskilled laborers were also hired to complete the construction of the new pipelines for the new connections. These actions, coupled with visible service expansion, improved AGUACAR's relationship with the community.

Another achievement was the decrease in the level of NRW. Originally it was estimated that the loss was about 40 percent of system volume, leading to an objective of lowering it to 25 percent (a 15 percent net reduction) over a period of ten years. However, it was quickly determined that the NRW was actually closer to 60 percent. Nonetheless, with the improvements initiated by AGUACAR, the NRW was reduced to about 40 percent by 1999, a net reduction of 20 percent in only four years. In addition, water coverage went from less than 70 percent in the early 1990s to close to 99 percent in 2005. The hours of water service increased from about 17 hours a day to 24. Sewage service availability increased from 55 percent of households in the early 1990s to over 75 percent in 2005. AGUACAR has added an additional 260 km of pipeline, bringing the water and sewage network up to 700 km in total, an increase of 48 percent.

Equally important was the objective of increasing the collection of fees ratio from less than 50 percent to 95 percent. Many households lacked a water meter, and in households with meters they were frequently broken. This made it very difficult for the municipal-owned provider to collect tariffs, and contributed to the negative cash flows. To fix this problem, in the first few months of service, AGUACAR replaced or added water meters to existing connections and added water meters to all new connections. By 2005 over 99 percent of connected households had water meters. The improved billing and tariff collection has improved the ratio to over 90 percent in 2005. As a result, the financial working ratio dropped to less than 70 percent, from the 152 percent historical figure. AGUACAR also saw an increase in the ratio of operating revenue / operating costs to about 120 percent in 2005. Increases in efficiency coupled with a better collection record gave AGUACAR positive cash flows.



Commentary:

1. Methods for Overcoming Impediments

Prior to the decision in 1994 to create this Public-Private Partnership, there was strong opposition from the unionized water service workers against the project because of potential job loss. Many of these workers had been hired based on their relationship to the mayor and managers of the municipal owned-provider and not on job-related qualifications. Under AGUACAR's management, many of these employees were not retained, but those not hired were provided severance pay based on their years of service.

AGUACAR also faced the immediate challenge of many complaints based on the experience of the previous provider. Citizens voicing their opinions about poor service helped bring about the creation of AGUACAR, but once the company took over the operations and management, some of the vocal criticism continued. Only through continuous efforts at improving services and public outreach was AGUACAR ultimately able to turn around public opinion about Cartagena's water and sewage services.

One of the problems faced by AGUACAR was that providing services to poor areas would take time, because of the need to construct new pipelines. Many poor people had been purchasing their water from independent vendors at a higher price than that paid by households with municipal connections. Once AGUACAR was operational, the PPP began trucking water to customers in these poorer neighborhoods. Even though these customers would have to wait for a connection, they saw an immediate increase in service and were willing to support AGUACAR during construction.

AGUACAR worked hard to earn and keep the support of the community, which is a necessary step in the success of a PPP. The majority of the new connections were created in poor areas, where the people were not used to dealing with a water company. Many were confused about the construction process and suspicious of, even hostile towards, the workers. Community relations specialists and social workers were hired by AGUACAR to overcome this obstacle. Public meetings were held explaining how water and sewage service worked and discussing AGUACAR's methods. The social workers also helped set up payment schedules for customers with irregular incomes. To further show dedication to the project and the poor areas, AGUACAR hired local unskilled laborers to construct the pipelines and other necessary parts of the network.



2. Key Points for Success or Failure

Overall, the Cartagena Water Supply, Sewage, and Environmental Management Project was successful. Service was extended into poorer neighborhoods and the existing service was greatly improved. There is continuous water pressure in the system and leakage has been reduced. Residents are happy with the service and vocal in supporting AGUACAR, especially each time that a new mayor is elected; they want to make sure the new mayor does not do anything to change the service.

Several of the keys to success for a PPP are very evident in the case of AGUACAR. The initial investment by the private sector to organize AGUACAR required an income stream for repayment of this investment. Not only did the Spanish water firm receive dividends for being a shareholder in AGUACAR, but it also received a percentage of the profits. This arrangement gave the Spanish firm two reasons to ensure that the company operated in the most efficient way, including its operations and maintenance, infrastructure investments, management of the long-term debt and collected tariffs.

AGUACAR also sought out and obtained the support of the community, which made success possible. Hiring social workers, community relations specialists, and local unskilled laborers for the construction of pipelines, helped to show customers that the company was different from the previous municipal provider. Today, AGUACAR has nearly universal support from the population of Cartagena.