Linkages Between Municipalities and Utilities: An Experience in Overcoming Urban Poverty

by Raquel Alfaro

These Urban Environmental Sanitation Working Papers have not been formally published and this is an opportunity to share this information more widely to:

• stimulate discussion and to broaden thinking within the sector, and in particular, to encourage dialogue within and among our clients in developing countries; and

• build more awareness of the Program among UES clients.

Bringing Optimal Water and Sanitation Services to the Poor
Three Essays on the Experiences of EMOS
(The Municipal Works Company of Santiago, Chile)

In these three essays Raquel Alfaro, Civil Engineer and Master in Production Management of the University of Strathclyde, Scotland, recounts the successful policies and practices which led EMOS, Municipal Sanitation Company of Santiago, Chile to its position as a model among Latin American utilities. At the same time, Alfaro shares her personal vision of what a public utility should be - at once an enterprise guided by commercial principles of efficiency and a spirit of social obligation. Given her professional history with EMOS, of which she was General Manager from 1990 until her retirement in 1996, Alfaro knows very well the limits and possibilities of the utility companies. Her confidence in the capacity of other companies to match the achievements of EMOS should be encouraging to all readers interested in the water and sanitation sector.

The first essay: Linkages between Municipalities and Utilities: An Experience in Overcoming Urban Poverty explores the responsibilities of the utility companies and those of the local governments in extending services to the poor. Alfaro cites the reasons frequently given to explain why the poor are unserved that poor countries lack capital to invest in needed water and sanitation infrastructure, the poor themselves live in circumstances which increase costs beyond their already limited capacity to pay tariffs. For a utility company, however, the right to use resources which are public goods also brings with it an obligation to meet the needs of all citizens. It should also seek to maximize its clientele as a matter of good business. When families cannot meet the costs of service, it is the responsibility of local government, not the utility, to make up the difference.

The second essay, Institutional Development of the Water and Sanitation Sector in Chile, traces the history of legal reforms which led to the present institutional environment. It emphasizes the importance of regulation, but also of liberating tariffs and links key reforms to increased service coverage and improved utility performance. In 1989 the General Law on Sanitation Services put public utilities on a footing similar to private ones, obliging them to organize as equity corporations and to bid for concessions from local governments. The Law and Regulations of Tariffs, passed in 1988 and 89 respectively establishes a five year period for applying and reviewing tariffs which must cover costs. The Superintendency of Sanitation Services, created in 1989 establishes an overall regulatory system.

The third essay, Reaching the Poor with Water and Sanitation Infrastructure - Key Factors Not to Forget, challenges the belief that the total cost of services is too high for the poor to pay arguing that good management, in particular reduction of losses, increasing the number of connections and maximizing efficiencies through use of a single operating system, can reduce costs and make full service effective.

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Introduction

Apart from being unfair, the exclusion of any group of people in a country from an acceptable quality of life prevents the economy as a whole from receiving its contribution from this group. Yet growth in the cities of many countries runs parallel to the unavailability of basic services for large groups of poor people. This only contributes to increasing and consolidating their poverty. The lack of water and sanitation alone can be a good indicator of the worst poverty, since it is associated closely with morbidity and mortality in urban settlements where on-site solutions are not always safely feasible.

Improving the quality of life for urban residents is the great challenge faced by mayors and urban managers. Municipalities are more and more aware that they must change their old ways to be prepared to enter the twenty-first century. They have difficulty thinking about solving the wide diversity of residents' problems with their too-often scarce financial resources and qualified technical personnel, let alone attending to the delivery of basic services in crowded cities, particularly because of the increasing complexity of service delivery and the expertise required for it.

Successful municipalities in a decentralized environment are managed as corporate organizations. These organizations contract out with other entities, such as utilities, that have the financial strength and the technological know-how to carry out specific activities to address community needs, such as the delivery of basic services. Municipalities need to listen to community demands for basic services and then must channel these demands to the responsible utilities and discuss with them the technical and financial solutions. Utilities must be open to a discussion of the needs of the people with the municipalities. If the communities or community organizations are involved in the discussions, solutions to the problems will come about sooner.

To contribute to better services, municipalities and communities must be well aware of the responsibilities of the different agencies that deliver urban services, as they must also be aware of their own responsibilities toward these agencies. In turn, utilities must be business- and consumer-oriented and must be committed to complying with their obligations to the communities, looking at them as their clients and community organizations and municipalities as their client representatives.

Utilities must contribute their share in overcoming poverty by helping poor communities receive the services due them. By contributing to the social and economic development of the country, they in turn make good clients into better clients as they are able to increase their consumption.

EMOS, S.A., is a corporatized and commercialized public company that is adopting practices and methods used by the private sector. EMOS treats and delivers drinking water to about 5 million people in the Metropolitan Region of Chile (Santiago and environs). The company also collects wastewater from some 5.5 million people, as well as from other companies that discharge into EMOS sewers. EMOS has put all its strength and capability toward helping the Chilean government achieve its primary goal of overcoming poverty.

In this endeavor, EMOS has worked closely with the forty or so local authorities or municipalities in the greater Santiago area. EMOS now uses the word client instead of customer to indicate their belief that, despite the monopolistic nature of its business, service users should be treated as though they had the option to abandon the company for a better one. Referring to the urban poor as clients signifies that they have the same rights to be well served. In this way, they will have access to a quality of life that will give them the possibility of overcoming poverty and becoming more valuable citizens.

Why the Urban Poor Do Not Have Access to Water

Good water and sanitation services delivered by public networks are basic services in urban settlements, yet the poor in many large cities often have no access to them for several reasons:

- The utility networks do not reach their homes.
- If the network is there, the poor cannot pay the connection costs.
- The poor cannot afford the price of the services.
The main reasons the utility networks do not reach the home of the urban poor include the following:

- The bulk infrastructure development of the utility is insufficient to cover the city’s regular development for lack of investment or for lack of coordination with central or local government city planners in the investment plan.
- The housing scheme of the poor did not follow the rules of urbanization because of informal settlements.

Dealing with the Lack of Investment Available to the Poor

The current law in Chile for water and sanitation companies (1989) grants them “concessions” or the right to deliver sanitary services within a geographical zone with the condition of “obligatory service”—that is, to serve all public networks built by housing scheme developers (urbanizadores) within this zone with the only allowance of a timetable in accordance with the technical feasibility. The law also obliges the companies to present a development plan in agreement with the infrastructure required to serve the population inside the concession zone. Companies may apply for an extension of their current concessions, at which time they must present an extension of the development plan to the regulator body.

In order to allow the companies to comply with their obligations, tariffs are set every five years to cover the capital and current costs of an “ideal enterprise,” which operates in an efficient way and which has an investment plan to provide good service to its clients for at least another fifteen years. For water provision, good service can be defined as 24-hour-a-day service throughout the whole year, pressure to reach at least 15 meters high, and physical, chemical, and bacteriological compliance with Chilean standards. For sewerage, good service can also be defined as 24 hours a day during the entire year.

According to Chilean law, the sites for urban settlements must have an approved “feasibility” for water and sanitation before starting construction of housing. Thus, the first linkage between EMOS and local governments was to know and discuss the municipal urban plan (Plan Regulador Comunal). Strict coordination was also carried out with the Ministry for Housing and Urban Development (Ministerio de la Vivienda y Urbanismo) and the Metropolitan Region Administrative Government. The aim was to reach an agreement on the concession zone so as to apply for an extension of the current zone, and to prepare the development plan and consequently the investment plan to cope with the present and future demand inside the zone.

Sometimes there were technical problems that made the cost of the bulk infrastructure extension very expensive or even in some cases—steep slopes, riverbanks, or swamps—physically impossible. In another case, the technical solution was not feasible until a new water treatment plant could be built. However, a solution had to be found that would change the location of future dwellings, or that would modify the EMOS investment plan in terms of time and money.

Although industrial and other developments were also studied as if they could be included in the concession zone, extension of infrastructure to poor neighborhoods was at the core of the discussions between EMOS and the municipalities. In the end, EMOS was able to clarify its concession zone and accordingly prepare its development plan for the time being.

Because of having established the appropriate links with municipalities and regional and central government housing officials, EMOS was able to apply for a concession that covered the zone it served before the new law, along with other zones included in the planning of the different municipalities or in the planning of other government bodies dedicated to improve the living conditions of the people. The first development plan of EMOS was finalized in 1990 and covered the next thirty years (until the year 2020).

The demand for water is always in a state of change, whether minor or major, because new needs arise or new housing solutions are conceived of. Thus, both the concession zone and the development plan are revised regularly by the Planning Division of EMOS after new applications from, and discussions with, municipalities and the Ministry for Housing and Urban Planning.
It is important to point out that presently there is no enforced obligation for EMOS or any other company to enlarge its concession zone or to work in a coordinated way with municipalities, other government bodies, or with community groups. Because of this, a revision of the current law is under study. The proposed revision would allow the regulatory body (Superintendencia de Servicios Sanitarios) to extend the concession zone of any company without being applied for, in cases of public interest. A revision of the tariffs to include the incremental cost of this extensions is also being considered in the new law proposal.

Dealing with the Lack of Networks: Informal Settlements

Under Chilean law, a new house must be built in compliance with the Urban Law. In other words, water and sanitation are provided by public networks that must be built by the housing developers. When the network is built, it must be approved and received by the utilities who are then responsible for its operation, maintenance, and replacement. The cost of the network is not included in the utility investment plan for tariff-setting purposes. However, the operation and maintenance costs are included in the tariffs, as well as a proportion for depreciation because of the replacement obligation. The utility is interested in a well-designed and a correctly built network because of its future obligation for operation, maintenance, and replacement.

In the case of informal settlements resulting from land seizure and/or informal construction of housing by the residents themselves, the bulk or primary infrastructure could exist, although there is as yet no water and/or sewerage network. In this case, local governments have to take on the responsibility of the absent formal housing developers.

Building water and sanitation networks is a responsibility that many municipalities may not be able to take on alone. Another important linkage between utilities and local governments comes about when networks need to be built in poor neighborhoods. If municipalities have funds, an agreement is signed between EMOS and the mayor for the company to act by municipal mandate to contract and oversee the network construction. In this way, the municipality can have the guarantee that the works are being constructed according to EMOS standards, and EMOS will have the guarantee of a well-built network to operate and maintain, not to mention new clients.

Many municipalities, however, lack funding, or they cannot apply for social funds because they do not have a complete project, that is, a design and an estimate of the value of the networks. With the realization that this was a crucial issue for overcoming poverty, a special unit was established in the Project and Infrastructure Design and Building Division of EMOS. Its responsibility was to design the networks required in poor neighborhoods. These designs were handed over to the municipalities that would facilitate their obtaining fiscal social funds.

In some cases, when the municipality had some funds, EMOS contributed one-third of the cost of the project, the municipality another third, and the neighborhood or the community group the remaining third. This last portion could be paid in installments that were included in consumers’ monthly bills. A cost-benefit analysis showed that even when EMOS contributed money, it did not lose this money because it gained new clients they would not otherwise have; although the primary infrastructure was there, it was unused in all its capacity.

If EMOS were to wait for a no-cost solution, that is, for municipal funding, which of course is a company’s preferred solution, there could be a delay of years in solving a social problem, or perhaps no solution would arise.

There are some technical problems associated with the location of dwellings in informal settlements that cannot be solved easily. A typical example would be sites where houses are situated in a low-lying area in relation to the sewerage system, and the construction of a sewage pumping plant is required. In some such cases, the water network can still be built, and an on-site solution can be found for sanitation. However, this solution requires that the site be at least 300 square meters in size according to Chilean Ministry of Health regulations. EMOS is now operating six sewage pumping stations that had to be built because the settlements did not follow the general requisites for housing developments, or because EMOS infrastructure
Dealing with the Problem that Arises When the Network Exists, but the Poor Cannot Afford the Cost of the Connection

Connection to a water or sanitation network must be made carefully, for example, by taking into account deep trenches, slopes, appropriate materials, and good filling of the trenches. This work is done by EMOS and its contractors and is charged to its new clients. The price could reach more than US$1,000 per connection. In the case of new houses, the price of the connection is included in the price of the house, which is not the case in informal settlements. Thus, the poor are in a worse situation than people of better income who can pay the connection on a long-term basis through the mortgage of their house.

Again, a cost-benefit analysis can demonstrate the benefits of helping the urban poor that have poor latrines to solve their sewerage problems, which would promote good public hygiene and health. Middle-income families with well-built on-site solutions could also be shown the benefit of being connected to the public sewerage system instead of having their septic tanks cleaned every five years and rebuilt every fifteen years.

In 1991 an overall survey of houses not connected to the EMOS sewerage system was carried out. The company made special offers to middle-income families that had an intermediate sanitation solution to pay the connections in twelve or twenty installments included in their bills. Sixty installments were allowed to low-income families, and the very poor who had municipal certification were connected when they paid a symbolic price of US$5 or US$10 on a ten-installment basis, in order to create payment habit. As a result, some 30,000 houses, which already had an on-site solution, were connected to the already existing sewerage system.

Dealing with the Affordability Problem: Helping the Poor to Pay the Monthly Bill

Tariffs must be fair; that is, the tariffs must reflect the utility’s efficiency. Companies should not transfer their inefficiencies to their clients.

EMOS tariffs are low, although they increased 70 percent between 1990 and 1994 according to the economic value of the services. In 1994, the charge per cubic meter of water consumption was about US$0.23, and US$0.15 for sewerage use per cubic meter of water consumption. Yet in 1994 EMOS had a profit of US$0.16 per cubic meter of water which allowed the company to comply with its investment program. The rate of return on fixed assets was 13 percent and on sales 38 percent. In 1995 when a new period of five years for “cap tariffs” was set, EMOS water tariffs were reduced on average to US$0.225 per cubic meter while the sewerage charge was maintained. Profit decreased to US$0.155, with a rate of return on fixed assets of 11 percent and on sales 37 percent.

EMOS charges an average bill of about US$8 per family per month, which represents less than 3 percent of the average family monthly income in the region for low-income families (Pan American Health Organization recommends that the water bill not exceed 5 percent of the family income.) As a reference point, the annual bill for EMOS per capita is about US$20, that is to say, about 0.5 percent of the country’s per capita GNP.

The efficiency of EMOS comes mainly from fair tariffs, a comprehensive, cooperative, and multidisciplinary approach to management, outcontracting with the private sector (to introduce competition in a monopolistic activity and to benefit from technological developments), and an orientation toward business and client friendliness among other managerial policies.

On the other hand, the amount of the bill can be managed by the client. Water is a unique
product that is discarded without being used at all, through running toilets, leaks in deteriorated pipes, and dripping taps. A toilet running in a house for only two days (which is not uncommon in developing countries and everywhere) means 28 cubic meters of water wasted, which is more than the normal consumption of a family of five. An undetected leak in a house means water running for days, months, or years, and this water is included in the bill if the water is metered as it must be so.

Water is a resource of growing scarcity. All the water that a family is wasting can be used by another family. The community must learn how to conserve water; this does not mean precisely “saving water” because saving water may lead to non hygienic practices. The community must also learn how to make a proper use of the sewerage system, which is often used as a trash receptacle with the resulting blockages or breakdowns, in a high repair costs system.

Water conservation, demand management, and in general client education are the task of the EMOS Consumer Orientation Unit of the Commercial Division. Educational material, such as videos, posters, leaflets, and booklets, is produced and distributed every year in schools, community organizations, media campaigns (TV, radio, press), and public transportation (posters in buses), or is just sent with the bill. Clients are also invited to tour EMOS production facilities.

Plumbing workshops are organized on a regular basis, which are addressed mainly to women in poor neighborhoods. A mobile theater for children visits poor neighborhoods and public places. Special “one-day field works” are organized in low-income communities to attend to inquiries, to collect bills, and to distribute educational material. This is called “preferential attention” and is directed at the poor.

In the client education tasks oriented to water conservation and demand management, there is another link between utilities and municipalities. EMOS normally uses municipal facilities for its plumbing workshops, videos projections, and presentations to community groups. Municipal social workers who deal with community groups help EMOS to organize tours and other events.

The Targeted Subsidy

In spite of a fair price and demand management, many families still cannot afford the water bill. A targeted subsidy, paid by the government through municipalities, is offered to poor families if they cannot afford the monthly water and sanitation bill. The subsidy means that the central government pays a portion of the monthly bill of an eligible customer. Water companies must give a discount that ranges between 50 percent and 85 percent for the first 20 cubic meters of monthly consumption—a normal consumption for a family—to the clients who are enrolled by the municipalities. The companies send to municipalities an invoice with the amount of the total monthly discount they have given to customers. Municipalities in turn, reimburse the companies with funds transferred from the central government.

To be eligible for the subsidy, a family is required to apply to the municipality, which then issues them a “social card.” This social card is the normal one used by low-income families to obtain other social benefits, such as the housing subsidy, poor family subsidy, and elderly poor family subsidy.

The first law for the water subsidy (1989) had some limitations: the maximum amount to be subsidized was 50 percent of 15 cubic meters, and the monthly consumption could not be more than 20 cubic meters. A revision of the law was made in 1992, which eliminated the limit of monthly consumption and took into account the differences in water and sanitation prices and monthly family income in the regions, so as to relate the subsidy discount with these two variables.

There were two other important issues in order to have a successful subsidy system implemented:

- The community should be informed and oriented toward the subsidy.
- Municipalities had to organize themselves for its implementation (for example, by preparing application forms and an enrollment and accounting system).
Subsidy implementation was another linkage between utilities and municipalities. The EMOS Client Orientation Unit took the responsibility of preparing the information material for the clients (posters and leaflets explaining how, when, and where to apply for the subsidy). The unit held meetings with the municipality’s social workers to clarify situations, and special desks in EMOS commercial offices were set up for subsidy enrollment. Other regional utilities did the same, and the subsidy coverage, which started rather slowly, came to a whole coverage of the subsidy shares given by the government within five years.

In 1995 EMOS had 120,000 shares of subsidies, which amounted to approximately 10 percent of the total number of clients. The amount of the subsidy received by EMOS clients was about US$4 million, which represents about 2.5 percent of the total of US$150 million billed by the company. It is important to point out that the rate of slow payments for EMOS (more than two months of unpaid bills) decreased from 7 percent of the total number of bills before the subsidy law to 4 percent after its implementation.

The total money transferred by the central government to local governments throughout the country for water and sanitation subsidy purposes amounted in 1995 to US$23 million, that is to say, to 0.04 percent of the country’s GNP of US$56 billion. This is very low compared with the annual increase of about US$3.9 billion per year (7 percent) in the Chilean economy. This amount alone would have been spent in solving the health problems caused by the lack of proper water and sanitation.

**General Results of the Policies Applied**

In 1989 (before the new policies) EMOS had 805,000 water clients and 743,000 sewerage clients. Although the water coverage was already high—99 percent—the remaining 1 percent represented some 10,000 poor urban families living inside the EMOS concession zone (a population of about 50,000 persons) without potable water because of lack of networks or connections. The sewerage coverage lagged behind with 91 percent connections, that is, some 90,000 urban families (about 450,000 persons) were without public sanitation. On the other hand, the high coverage did not take into account peri-urban people, that is, the population unserved outside the concession zone.

By the year 1995, EMOS had reached 1.02 million water clients and 990,000 sewerage clients by extending its concession zone and investing enough to cope with this extension and with the regular increase in the population. That is, between 1989 and 1995, EMOS gained some 215,000 new water clients and some 247,000 new sewerage clients. This means that an additional population of about 1.1 million people were receiving water service, and 1.25 million additional people were connected to the public sewerage system. These population figures include the new urban population (about 500,000), the peri-urban population now considered urban (about 250,000), and some urban population who already had water and sanitation services, but who were crowded in poor dwellings (about 250,000. A typical example of the last situation being the *allegados* (a family living in the houses of another). In the sewerage figures is also included the urban population with water, but who are not connected to the sewerage system (about 150,000).

Thus, at the end of 1995, water coverage was 100 percent and sewerage coverage 97 percent, and nearly all the people living previously under peri-urban conditions had experienced an improvement in the quality of life. Some twenty *campamentos* still remain, that is, poor settlements without basic services. This amounts to some 10,000 people (about 0.2 percent of Santiago’s urban population) who lack proper water and sanitation. A solution must come about for these families, yet it will have to be worked out case by case. Most of the *campamentos* have no other solution than resettlement because their location (bank of river, mainly) and the solution must be worked out between community, municipality, and EMOS.

Between 1990 and 1995, new EMOS investments amounted to US$245 million. This means a reasonable cost per capita of US$245, considering a new population of 1 million. The investments includes basic works for wastewater treatment and disposal (about US$30 million), but do not include networks and connections paid by clients or housing developers (about US$50 million). By helping the poor, EMOS did not lose money; on the contrary, its financial situation improved with new “good clients.” Most
important was the improvement in the health conditions of the Chilean population to which EMOS and the other water and sanitation utilities throughout the country contributed a fair amount.

Between 1987 and 1994, the Chilean population grew by 14 percent, while the urban population grew by 16.5 percent. In the same period, the urban population with access to water from public networks grew by 18 percent, which resulted in a national coverage of 98.5 percent. In its turn, the urban population connected to sewerage networks grew 31 percent, resulting in a national coverage of 88 percent. An increase in the coverage and availability of urban water and sanitation that is greater than the growth of the urban population means a reduction in poverty.

In the period mentioned, the per capita GNP grew by 38.5 percent, while infant mortality—an indicator closely related to access to safe and reliable water and sanitation—decreased in the same period by 47 percent to a rate of 12 per 1,000 live births, which is not too far from the rates of high-income economies.

The cholera epidemic that spread through Latin America between 1991 and 1994 is well known. The total number of cases for the period amounted to more than 1 million. The number of cases in Chile amounted to 150 and came mainly through the borders. The extension of water and sewerage coverage was an important advantage to cope with the epidemic, as it was also the initiation of the basic works for wastewater treatment and safe disposal in the metropolitan region and in other regions of the country.

Conclusions

Municipalities or local governments are the best recipients and channelers of a community’s needs. A close linkage between utilities and municipalities is required for utilities to plan and invest efficiently. The poor, like everybody else, require safe, reliable, and affordable service delivery. To provide safe and reliable service to all their clients, including the poor, utilities must be efficient in the planning of facilities and investment programs. To provide affordable service to all its clients at a fair price, the poor included, utilities must also be efficient in the operation and maintenance of their facilities.

Price setting should give the utilities the right incentives to be efficient while providing them with financial stability and a fair rate of return on capital invested. Apart from a fair price, affordability comes through demand management, that is, through education in water conservation and in the proper use of a utility’s facilities and in-house systems.

A close linkage between utilities and municipalities is required for consumer education and orientation, particularly for the most important clients: the poor. A subsidy targeted toward the poor, which comes from an external body, such as the Chilean water and sanitation subsidy from the central government, can improve the ability of low-income families to pay the water and sanitation bill without adversely affecting the utility’s financial situation and without causing price distortions. A close linkage between utilities and municipalities is required for implementing targeted subsidies on the poor. Thus, close collaboration among utilities, local governments, communities, and their organizations is a key factor in overcoming poverty.

National indicators and EMOS indicators are shown in Annexes 1 and 2.
Annex 1: National Indicators for Chile, 1987–94

Growth (+) and Decrease (-)

Population + 14%
Urban Population + 16.5%

Urban Population with Access to Water + 18%
Urban Population with Access to Sewerage + 31%
Water and Sanitation Annual Investments + 161%

GNP / per Capita + 38.5

Infant Mortality - 47%


Growth (+) and Decrease (-)

Water Clients + 26.7%
Sewerage Clients + 33.2%

Operational Indicators:

Labor Productivity +14.2%
Unaccounted for Water - 27%
Pipe Breaks Frequency - 40%

Commercial Indicators:

Slow Payment - 43%
Annual Money Collection/Billing + 10%

Financial Indicators:

Average Tariffs per Cubic Meter + 123%
Operational Cost per Cubic Meter + 47%
Annual Profit + (from - US$5.4 million to + US$53.1 million)
Rate of Return on Sales + (from -16 to +38%
Rate of Return on Assets + (from -2.3 to 13.1%)
Annual Investments + 368% (from US$9.8 million to US$45.9 million)
Annual Share’s Dividends + (from US$0 to US$26.2 million)

Source: EMOS S.A. Annual Reports.