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# Working Together for a Sustainable Future

How Public-Private  
Partnerships Are Finding New  
Solutions to Water Needs



LYONNAISE  
DES EAUX

In partnership with



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*'With over half of humanity living in urban areas, there is an urgent need for a new urban vision'*

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CEO, Lyonnaise des Eaux
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# Working Together for a Sustainable Future

G rard Payen – CEO, Lyonnaise des Eaux



Urban population is increasing by 150,000 people every day and will represent over two-thirds of mankind by 2025

Cities are also experiencing a growing urban poverty. Over 600 million urban residents in developing countries currently live in dire conditions, suffering from inadequate provision of water and sanitation services. The trend is growing

Water supply and sanitation services to low-income areas represent a tremendous challenge. Traditional methods provided by publicly-run utilities have demonstrated their limitations. Designing new approaches and strategies, and proposing new institutional models is essential to improve the level of service and infrastructure performance.

New methods based on innovative partnerships are being implemented successfully in various cities around the

world. These partnerships involve stakeholders including the population, the public sector, private companies and non-governmental organizations all working closely together. Beyond the delivery of piped water or sewerage connections, the solutions provided include social and educational programmes which are key to a long-term success.

In Buenos Aires, Manila or Casablanca the achievements of these partnerships demonstrate that with appropriate strategies, it is possible to provide effective, affordable and sustainable service to the urban poor. At the same time it is important to provide it in the most efficient, cost-effective and sustainable way.

In this report we share some of the experiences we have earned working with cities to supply water services to the poorest districts in both advanced and developing countries around the world. Our determination, our mission and our vocation have been and continue to be to provide access to water and sanitation services for the entire population of our clients.

# The Urban Revolution

Klaus Töpfer  
Under-Secretary-General  
and Acting Executive Director  
United Nations Centre  
for Human Settlements (Habitat)

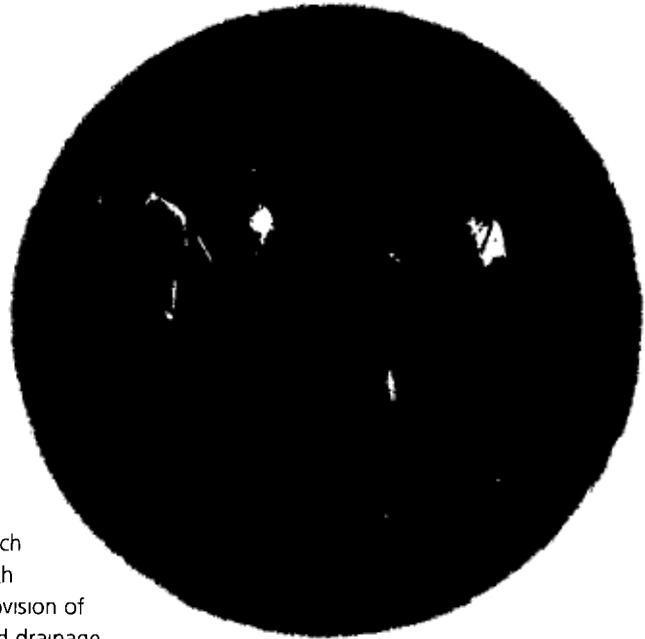
In less than a year, at the dawn of the new millennium, an urban revolution is set to take place for the first time in human history, one half of the world's population will be urban

This urban revolution will escalate over the next three decades when urban populations will grow to twice the size of rural populations. The bulk of this new urban population will be African and Asian, joining the vast pool of urban citizens in Europe, North America and Latin America, where three-quarters of the population is already urbanized. Africa, currently the least urbanized continent, will have two-thirds of its population living in cities by the year 2020. And the biggest, most densely populated megacities with populations of over 10 million will be located in the South, not the North.

Although cities are – and will remain – the centres of global finance, industry and communications, home to a wealth of cultural diversity and political dynamism, immensely productive, creative and innovative, they have also become breeding grounds for poverty, violence, pollution and congestion. Unsustainable patterns of consumption among dense city populations, concentration of industries, intense economic activities, increased motorization and inefficient waste management all suggest that the major environmental problems of the future will be city problems.

At least 600 million urban residents in developing countries – and the numbers are growing – already live in housing of such poor quality and with such inadequate provision of water, sanitation and drainage, that their lives and health are under continuous threat. For many millions of people around the world, urban living has become a nightmare, far removed from the dream of safety and prosperity held out by city visionaries, especially for the young, who will inherit the urban millennium.

Not only are we living in an urbanizing world, we are also experiencing an unprecedented urbanization of poverty. In most cities of the developing world, up to one half of the urban population lives in "informal" slum and squatter settlements, which are neither legally recognized nor serviced by city authorities. The informal parts of the city do not enjoy many of the benefits of urban life, including access to basic services, health care and clean running water. Residents live in constant fear of eviction and most do not have access to formal finance and loan schemes which could enable them to improve their living conditions. Yet, this invisible majority is indispensable to the economy of the city.



The biggest challenge lies in focusing on the social dimension of urban poverty – in proposing innovative methods to improve the physical environment and infrastructure.

The "formal city", in contrast, enjoys the advantages of city life, often at the expense of the informal city. This modern tale of two cities within one city is one of the greatest failures of the urban revolution, as it alienates and marginalizes one part of the urban population from the other.

Yet, despite all its problems and challenges, cities continue to grow, history has shown that all attempts to limit urbanization have failed. It is now widely accepted that urbanization is not only inevitable, but is a positive phenomenon. Cities exist because they offer opportunities and the promise of a better life. In cities it is possible to integrate human, economic and technological resources to maximum effect. Well-functioning cities are also a pre-condition for successful rural development.

But poor governance and bad policies have led to severe environmental degradation and deteriorating living conditions in many cities around the world. There is no doubt that cities have the potential to be safe and healthy for all their residents. The biggest challenge lies in focusing on the social dimension of urban poverty, in designing new strategies and approaches in the management of urban areas, as well as in proposing innovative methods to improve the physical environment and infrastructure.

It is apparent that many governments are under-prepared and under-resourced in anticipating, planning and preparing for an urbanizing world. The City Summit, held in Istanbul in 1996, grappled with this reality and concluded that the onus of addressing the urban challenge rests not only with governments, but with other urban actors, such as local authorities and civil society, including non-governmental organizations and the private sector. This inclusive approach ensures that no urban group is left out of the decision-making process and that all residents have equal rights to the city.

As the Istanbul Conference demonstrated, citizens of cities are demanding to be seen and heard and to be given the authority to make decisions about their living environment. The urban poor, who will constitute a majority of the urban population in the 21st century, should have a voice and a choice in where and how to live.

Although many countries lack the financial resources and the legal and the institutional framework to respond to rapid urbanization, many local authorities have already begun to take on this new approach by adopting more open, accountable and transparent systems of urban governance. Efficient urban managers are relying less on top-down processes based on blueprints and masterplans and more on interactive, dynamic processes built on partnerships.

These processes have been further strengthened by the growing trend towards decentralization, which has dramatically altered the role and working methods of local authorities. Democratic debate and participatory decision-making have already transformed the ways in which some city councils and municipalities plan and manage cities. By involving all residents, both rich and poor, men and women, in the city's agenda-setting processes, city authorities can create a sense of ownership and responsibility among all inhabitants of the city. Through such processes, cities of the future can truly become cities for all. *Humanity's future lies in cities.* If we take action now, cities of despair can become cities of hope and joy.

# City Services: Facing the Urbanization of Poverty

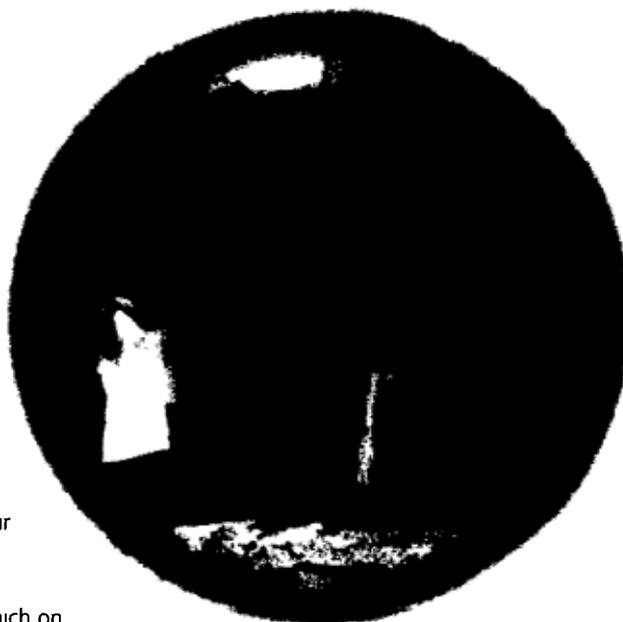
Alain Dubresson  
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The United Nations estimates that two out of every five people in developing nations live in cities. The ratio is well below the figure of three out of four (76%) for industrialized nations. But the number of human beings affected is huge. The 1.9 billion people now living in cities in developing nations (compared to 295 million in 1950) represent two-thirds of the global urban population. In 2030, this number is expected to reach 4.1 billion – 80% of city-dwellers worldwide.

Despite slower annual demographic growth rates (+4% in the '50s, +3.2% in the '90s, and +1.9% expected for the 2020s), changes are taking place faster and in more areas. Yet differences from one continent to another – and within a single continent – are considerable. Latin Americans are being drawn to cities faster (76.5% now live in urban areas) than North Africans and Middle Easterners (55%), whereas sub-Saharan Africans and Asians (32% and 31.2% city-dwellers, respectively) still mainly live in rural areas. Urban population growth is nonetheless real in Black Africa as well as in East and South Asia, rising respectively 5%, 4.2% and 3.5% a year. And the numbers in these regions are substantial: 387 million in Latin America, 310 million in Africa and 1.2 billion in Asia live in cities.

For a long time, cities grew through migration from the countryside. Now their population rise is increasingly due to "natural" growth, which on average accounts for 60% of the current increase in demographics. Still, because of differing farming policies, mobility strategies, complex city-rural relationships and unequal spread of urban demographic changes, each picture is unique. The effect of rural migration is secondary in population growth in Cairo or Mexico City. In Côte d'Ivoire, more people are returning to the countryside than moving to Abidjan. But the number of Beijing's and Canton's residents is rising.

Urbanization has generally come with fast growth of metropolises with many millions of residents. Their population on average doubled every 10 (or even seven) years. In 1995, 21 of the 30 largest mega-cities were in developing countries. Even if the dizzying predictions of the '70s haven't all come true, São Paulo, Mexico City, Shanghai and Mumbai are respectively the 2nd-, 4th-, 5th- and 6th-largest in population worldwide. By 2015, 25 of the 30 largest cities on the planet will be in developing nations, Mumbai, São Paulo and Lagos could each be home to 20 million people.



According to the United Nations, roughly 45% of city-dwellers in developing nations are said to live in precarious housing. Ways of illegally building one's own home have not, however, gone hand in hand with supply of basic services such as drinking water and sewage systems.

Small to mid-size cities, gathering most of the urban population should not be forgotten just because mega-cities' growth is so overwhelming. The population is increasing faster there than in large cities. The general trend is to minimize their importance. Urban issues are not limited just to mega-cities.

Though demographic growth has slowed, overpopulation remains a challenge. The dominant city-planning model – based on policies of colonial segregation – and the 1970s shift from program-driven to project-driven planning never successfully settled the issue of mass housing conditions. Linked to this exclusion is the growth of illegal and precarious land ownership. Encouraged by a variety of players (for example, land chiefs in Kinshasa, minor real estate developers in Bangkok or a handful of landlords in Lima), a number of parallel access routes to land – the most spectacular being invasion, in Latin America – have allowed access to those excluded, often to rental properties.

Precariousness in real estate does not always imply poor construction standards (illegal dwellings in Abidjan and Kinshasa in particular were built of cement blocks), which range widely. Transformation of existing structures into slums is another route: old buildings ("rooming houses" in Lagos, *vecindades* in Mexico City, *chows* in Bombay and slums in Calcutta) and city centers (*medinas* in North Africa) have been taken over.

Yet, according to the United Nations, roughly 45% of city-dwellers in developing nations are said to live in precarious housing. Ways of illegally building one's own home have not, however, gone hand in hand with supply of basic services such as drinking water and sewage systems. This explains why policies of legalization-restructuring in the 1970s and '80s especially emphasized higher service levels in a new context where sponsors and government authorities gave preference to city management. Recognized today as development priorities, widespread availability of basic services and use of appropriate management techniques are nonetheless running into two major

roadblocks: mass poverty and its growing heterogeneity on one hand, and the breakdown of urban socio-spatial systems and the process of fragmentation on the other.

Except for mining and petroleum areas (in China and newly industrialized countries where some conglomerations benefit from prosperous manufacturing activity), mass standardized industrialization and wage-earners have rarely been powerful engines of urbanization. The three routes to building production assets (import-substitution, transformation of local raw materials for export, and export-substitution) have now reached their limits. The shift from mass market production to flexible stockpiling and structural adjustment policies as well as the rise in power of new services (on which both globalization and the global urban economy are based) have transformed the urban labor market. Jobs availability has changed, and wage-paid jobs are more precarious and scarcer, helping to increase already strong class polarization.

Until the early 1980s, city-dwellers lacking access to public – or private – sector wages used the "informal economy", a term that refers to home-based manufacture and services plus small shops, an assorted mix that is neither government-registered or taxed. Made up of small units – some of which provided income available to wage-earners – the informal economy has long operated as a safety valve, or even as a buffer zone, for both new arrivals and urban veterans, satisfying a need for lower-cost goods and services. It has also played the role of a greenhouse where local small and mid-size businesses could get a start, in the process helping reduce unemployment.

But most micro-entrepreneurs survive with difficulty. Many craftspeople need to farm inside or near the city to provide food for their families. Small retailers rely in part on customers who are wage-earners, particularly from the middle ranks whose compression and downward mobility in a decreasingly egalitarian social pyramid have an unsteady impact on their fragile balance.

Taken together, exclusions from the wage-earning labor market and greater difficulty in joining the informal economy initially increase overall poverty. Ninety per cent of poor Latin American households live in cities, in Asia it is 45% and in Africa 40%, according to the UNDP. In 2015, a third of city-dwellers could live in poverty.

Exclusion is also a factor in breaking the category of "the poor" into many subgroups whose societal pathways and practices are increasingly disparate. In small and mid-size cities, residents fall back on vegetable farming, exchanges between city and countryside are reactivated or intensified in Africa and Asia, and family networks – ethnic and regional – are called upon to ensure a household's survival. In large cities, growing numbers of poor help tear apart communities and lead to higher crime rates in some urban economies. How can basic services grow when poverty and exclusion are increasing?

Yet another question arises: urban fragmentation. Former ways of segregation highlighted social inequalities, but the city was a way around: insertion through access – legal or illegal – to various urban resources won out over exclusion. Today we see growing poverty in the spatial continuum and in particular a rise in socio-spatial inequalities at different sub-city levels. Rich enclaves are one manifestation, as is gradual enclosure of land lived on by the poor.

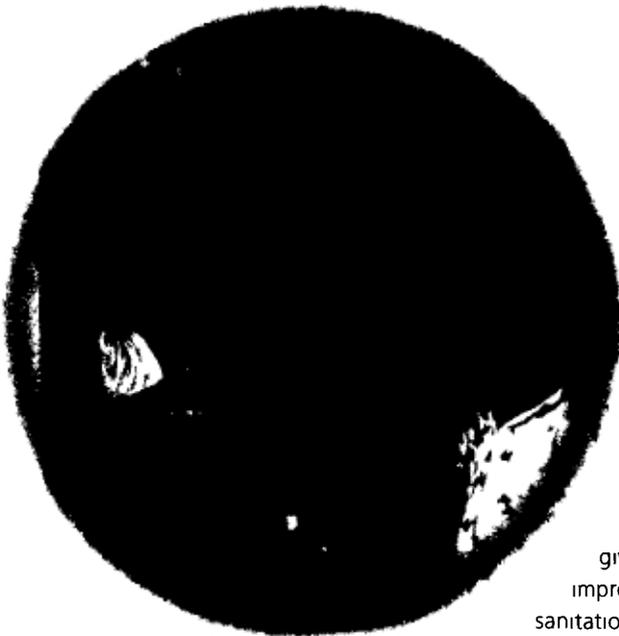
To this mix is added still finer fragmentation, brought about by the weakening of organic links among different urban segments due to players being spread so widely and the independence of management entities. This fragmentation, which contrasts with earlier patterns (whether transparent or not) of transfer and realignment, makes city governance still less feasible. Decentralization and privatization of services, consumer stakeholderism and sponsor-supported technology solutions deserve credit for supporting much-needed broader partnerships and management arrangements among public bodies, private enterprise, NGOs and various associations.

One answer to poverty and fragmentation is segmentation of services available to different sets of city-dwellers. The real question is knowing whether new partners will participate in the fragmentation process or, on the contrary, they will contribute to improved integration of the many disadvantaged city-dwellers. Greater availability of basic services in different forms to people who can't pay for them is a major challenge. Beyond just supplying basic services for city living, what's at stake is rights to the city and citizenship.

Greater availability of basic services in different forms to people who can't pay for them is a major challenge. Beyond just supplying basic services for city living, what's at stake is rights to the city and citizenship.

# Innovative Solutions to Provide Water Supply and Sanitation Services to Low-Income Urban Neighborhoods

Alain Mathys, Project Director  
Lyonnaise des Eaux



Since the Water and Sanitation International Decade 1980 - 1990, a great deal of attention was given to the need of improving water and sanitation services in rural and urban areas. Water-related investments made between 1980 and 1990 accounted for more than USD 130 billion. As a result more than one billion people got access to water supply and 750 million people to sanitation services. The goal that had been set – universal coverage in water supply and sanitation by 1990, was not achieved.

In 1990, the World Summit for Children held in New York, set the new goal of providing drinking water

and sanitary excreta disposal facilities to all by the year 2000. This target has not been reached either. The International Decade mentioned above succeeded in creating awareness of the magnitude of the problem, but despite huge investments made by national governments and the donor community, water and sanitation services continued to be limited. In most cases the management of utilities has remained too inadequate to cope with rapid urban growth and the expanding low-income urban neighborhoods or slums.

Populations without access to the network are constantly seeking to strike a balance for their own water consumption. They have to reconcile a vital need for water with the household budget. They seek complementary water supply including

- Use of "free resources" for non-drinking water (private wells, ponds and rivers)
- Daily purchase of drinking water which they use very sparingly (home delivery, tank-trucks, street fountains, neighborhood resale, etc )

The so-called "free resources" do not come free when the overall costs are taken into account (time, equipment, etc ) The vital need for water and lack of structured services leads to the emergence of various types of informal services Water of poor quality is sold at a high price reaching ten, thirty, or even a hundred times the price set by water companies

Surveys show that users – including low income families, are willing to pay for a good service that meets their need i.e regular supply, good bacteriological quality of the water etc

#### **The financial challenge**

In many large cities, services only reach a small portion of the population For example in Jakarta only 40% of the 15 million inhabitants have connections to the water network and none have access to sewerage High financial investment is needed to expand access to water and sanitation for all In developing countries the necessary financial investment capacity is out of the reach of local or national governments The challenge not only lies in the level of investment needed, but also in the sound management of the utilities, including setting appropriate tariffs to cover both capital cost and operational costs

This highlights inadequacy of the current form of water and sanitation services management, emphasizing the need to develop innovative solutions These solutions include new institutional models, cost-effective technologies, appropriate tariff structure and a social approach to the problem

#### **New approaches and new forms of partnerships**

In many countries, large cities are initiating new forms of management of water and sanitation services to provide low-income areas with

access to the services The examples of South Africa, Manila, Buenos Aires and La Paz – described later on in this report, demonstrate successful solutions in supplying low-income neighborhoods with water services using innovative approaches

Well-designed partnerships between the public sector, private companies and users, together with a clear definition of the roles of each actor will allow utilities to provide efficient services to the poorest part of the communities Four elements need to be taken into account

- ***Institutional framework:***

The private sector has showed, whenever it is involved in the management of public utilities, its capacity to provide efficient services to all customers However, private sector involvement in the public sector may require thorough institutional reforms Well-designed concession contracts and appropriate tariffs structures are essential to provide the private company with an adequate working environment It is very important to design a well-conceived partnership between public authorities (defining the conditions and level of the service) and the private companies (responsible to provide the service complying with contract norms and country regulations)

- ***Cost-effective technologies:***

The service provided through traditional technologies often turns out to be too expensive for low-income communities Innovative design of water and sanitation networks (as applied for instance in Bolivia) allows up to 50% savings in the construction costs These savings can in turn be applied to connection fees

- ***Support to community development:***

Service expansion cannot technically be planned the same way in peri-urban areas and slums The urban pattern is unusual, residents scarcely have property titles, illiteracy rate is

Water of poor quality is sold at a high price reaching ten, thirty, or even a hundred times the price set by water companies.



Well-designed partnerships, together with a clear definition of the roles of each actor will allow utilities to provide efficient services to the poorest part of the communities.

high and family income is based on *informal activities resulting in small daily income*. Any effort to expand services to these areas needs to consider all of these aspects. Future potential users need to be closely involved in the decision-making process related to the choice of technology to be used, level of service, and payment options. They should also be closely *involved through community participation* in the construction of the infrastructure and the management. This activity is usually conducted with the participation of non-governmental organizations or community associations.

- **Appropriate tariffs:**  
Based on the statement that water is a *social good*, water tariffs have been kept at an artificially low level in many countries. Consequently, many water utilities have been faced with insufficient financial resources to make the necessary investment in new areas of emerging urban growth, and also maintain existing infrastructure. This has resulted in a degradation of the service. It is *now accepted that water is an economic good* and the service should be paid for at its real cost in order to provide utilities with

enough financial resources to operate and maintain the infrastructure efficiently and to respond to new demands resulting from human growth.

These principles are currently being applied in various countries in the world and have had a positive impact on poor communities, improving the quality of their life.

New forms of partnerships are being developed around the world. The results they have shown to date are very encouraging. They suggest that the slogan 'water for all' can become a reality for the cities of the future.

# Argentina

## Catching up with runaway growth

In the 1930s, Buenos Aires had 2.4 million people, and an extensive city water system supplied every household with drinking water. But by the early 1990s, Buenos Aires had 9.1 million people – and only 6.5 million were connected to potable water mains. Rapid population growth, especially in sprawling, poorly planned suburbs, had simply overwhelmed the government's capacity to provide water and sanitation services. When the Buenos Aires water system was privatized in 1993, a key goal was to expand these services as quickly as possible. Lyonnaise des Eaux, leader of the private Aguas Argentinas consortium which now operates the city water system, is playing a major role in this effort.

In 1997, Aguas Argentinas signed an agreement with the non-profit International Institute for Environment and Development (IIED-AL) to develop new strategies for water and sanitation supply in low-income areas. Given its mandate to provide universal service, Aguas Argentinas has been willing to incorporate technological innovations as well as institutional approaches which imply the participation of local communities, neighborhood organizations, non-governmental organizations (NGOs), and local governments in water and sanitation system projects. IIED-AL seeks to develop and replicate approaches that work for the provision of sustainable services for the urban poor, focusing on

two main aspects: policy research on environmental and social urban management, and direct work at the project implementation level, assisting communities to gain access to water and sewerage infrastructure.

On the basis of the Buenos Aires concession's experience, different public-private partnerships have emerged, using innovative technological solutions as well as appropriate institutional approaches. Such approaches are based upon different models of participation of low-income communities, the concessionaires, NGOs, and local governments. The main approaches are:

- 1 **Participative Water Service Scheme** Residents provide their labor as a form of barter to pay for connections. This is a tripartite contract including the concessionaire, the municipality, and the community. It is generally used in neighborhoods with populations of 500 to 2,500.
- 2 **NGO Intervention Scheme** This is a quadripartite contract including the concessionaire, the township, the neighborhood, and an NGO. The NGO coordinates relations between



### Buenos Aires:

#### private sector participation impacts on low-income areas.

- Total population in the concession areas is about 10 million among which 2 million are living in low-income areas
- When Aguas Argentinas started to operate in 1993, only 6 million had access to water and sanitation services, and less than 400,000 in low-income areas
- After 5 years, the number of people served augmented by 1.6 million
- A specific effort was made to connect poor consumers
- Those having access to services doubled and now 800,000 have private connections

On the basis of the Buenos Aires concession's experience, different public-private partnerships have emerged, using innovative technological solutions as well as appropriate institutional approaches.

the participants. This approach is generally used in neighborhoods with populations between 2,500 and 15,000.

- 3 Employment Generating Unit Scheme. This is a tripartite agreement including the concession holder, the provincial government, and the municipality. The provincial government pays the cost of materials and advances the cost of labor. This approach can be used in communities with populations up to 50,000.

Participatory Water Service and NGO Intervention Schemes have involved around 15 projects and 30,000 inhabitants served mainly in the concession's northern and southern zones. The Employment Generation Unit Scheme has involved five projects with 115,000 inhabitants in the southern and western zones. The NGO is enabling coordination and can play an important role as a facilitator or catalyst in the process. The objective is to change the working relationship from top-down to a participatory and strategic approach. Such an approach takes advantage of each institution's different capacities. The company is responsible for project design and supervision during the implementation phase. Local institutions (municipalities) can provide logistic support and construction materials. Local communities can provide the work of their people and participation. In such a scheme, the NGO can provide social training to the company, coordination and technical assistance to the public institutions, and internal organization and capacity

strengthening to local communities and their leaders.

Public-private partnerships can provide added value by

- Anticipating the provision of services when neighborhoods are far from existing service areas – in particular, in areas where services are not to be provided for more than 15 years,
- Reducing investment costs to facilitate the provision of services for these cases,
- Promoting an attitude of ownership among the target communities to foster conditions of security during the execution of work and subsequent maintenance stages, as well as adequate conditions for services payment and effective integration of underprivileged households into the regular system,
- Promoting an environment of cooperation and effective relations between the service operator, the communities involved, and local governments, to ensure long-term sustainability of the systems implemented.

The public-private partnership approach is doing more than simply helping Buenos Aires to catch up with runaway growth. By promoting an attitude of ownership in the affected community it is ensuring that the improvements now being made will be sustained for future generations.

# Bolivia: Learning from experience

Sometimes, the best way to learn is by trying. That is the philosophy underlying a unique public-private project in the Bolivian cities of La Paz and El Alto, which is testing innovative ways to provide water and sanitation services to the poor. Like many cities in the Andes region, these two municipalities have suffered from rapid population growth in outlying areas where there is little or no municipal infrastructure. But until the mid-1990s, when Bolivia began privatizing formerly state-run sectors of the economy, few resources were available to remedy the problem.

That changed in 1997, when the private company Aguas del Illimani won a competitive tender for a license to operate the two cities' water and sewer systems. The company, which includes participation by Lyonnaise des Eaux as well as capital from Bolivia and Argentina, was awarded the license based on its commitment to expand water and sewer service in needy neighborhoods. But that was only the beginning. Since 1998, Aguas del Illimani has been part of a wide-ranging effort to develop technology options, social intervention methods, and cost recovery and financing mechanisms that can be

replicated in similar situations. The private company finances the infrastructure expansion and social intervention components, while the Swedish International Development Agency and the Water and Sanitation Program of the World Bank and the United Nations Development Program, provide funding for technical assistance, institutional strengthening, documentation, and dissemination of information. A host of officials from national, regional, and municipal governments are also participating.

The effort, known as the El Alto Pilot Project, is already well underway, with several sewer and water systems under construction. Each construction project is preceded and accompanied by neighborhood organizing, hygiene education, and microcredit loans that allow households to pay for internal plumbing improvements.

The project is based on seven key principles:

- **Institutional participation:** To ensure that lessons learned from



**El Alto: services to the poor:**

- The Official poverty indicator of the city of El Alto is 73%
- When Aguas del Illimani started to operate in mid-1997, there were about 72,000 water connections, or about 60% of the population with direct access to the water service
- After two and half years, Aguas del Illimani has installed 35,000 additional water connections

It is expected that by the end of 2000, almost 100% of the El Alto population will have access to water services, a record never set before in terms of coverage expansion in low-income areas

Early results are encouraging. The inclusion of many institutions in planning has helped minimize opposition within the government and has produced interest in expanding the project to other areas of Bolivia.

the project can be replicated and made part of governmental policies, a wide range of institutions have been involved in every stage of the project from planning through implementation

- **Cost reduction:** Because households in the area have an average annual income of about \$700, the project has used a "condominium" approach to reduce the cost of access to service. Under this approach, households in a neighborhood organize and agree to work together, providing their labor for excavation and filling work, as well as maintenance of the system once it is complete. To keep costs down, "condominium" systems use smaller pipe diameters, and pipes are buried in shallow trenches run through household lots or under sidewalks. The cost of a "condominium" water connection under the El Alto Project has averaged \$41 to \$47, compared with \$133 to \$159 for a conventional connection. For sewer service, a "condominium" connection costs \$58 to \$68, compared with a conventional cost of \$194 to \$290.
- **Recovery of investment costs.** The project is designed so that subsidies from sources outside the community are unnecessary. Initial investment is made by Aguas del Illimani, and ultimately paid for through fees and tariffs by the households that benefit.
- **Response to community demand.** To encourage public support and long-term sustainability, residents are given choices in the design and operation of systems. For example, they can choose from three basic designs for "condominium" systems, with pipes running along the back of lots, through lots, or under sidewalks. They can also choose one of three payment options: individual water meters, group meters, or an unmetered charge.
- **Easy payment arrangements.** Because most households cannot afford a large lump-sum payment for connection, they are allowed to pay in monthly installments over a five-year period, interest free. In addition, the project has a microcredit program offering small loans to households so they can pay for indoor plumbing fixtures.
- **Institutionalizing neighborhood participation.** Because success of the new systems depends on active involvement of households, local community members are included in the design and installation of the systems.
- **Monitoring and evaluating results.** Because the project serves as a learning experience, its impact on individual households and neighborhoods is being carefully tracked.



Early results are encouraging. The inclusion of many institutions in planning has helped minimize opposition within the government and has produced interest in expanding the project to other areas of Bolivia. Technical experts employed by the project have helped overcome scepticism by explaining details of the "condominium" approach which were unfamiliar in Bolivia. The project staff even negotiated with Bolivian factories to begin producing PVC pipes of the necessary dimensions, which were not previously manufactured locally. The project encountered local opposition in some neighborhoods, and as a result the project team has decided that in the future it will install systems only in areas where at least 60% of households support the project after receiving detailed information about it.

One surprising finding from the project is that demand for service has been higher than anticipated. It is commonly thought that demand for access to water is much higher than demand for access to sewerage lines. But most households in the El Alto Project are

interested in gaining access to sewerage, and are investing large sums of money to install the toilets and plumbing fixtures that will enable them to take full advantage of their new connections. In fact, some owners of vacant lots have begun building structures on their property so they can connect to the new lines.

The project also shows that the private sector can play a major role in improving water and sanitation in low-income neighborhoods. Besides Aguas del Illimani, another private-sector participant is Cajas Los Andes, a private commercial lending institution that is offering microcredit lending to households.

While the El Alto Project has not been problem-free, it has shown that public demand is high and that using an integrated approach can have a positive impact in gaining participation. Now, the project team can apply the lessons learned in the first stages, as well as encountering and solving new challenges as the effort continues.

# South Africa

## An integrated approach to provide sustainable water and sanitation services



In 1994, the newly elected government of South Africa faced the challenge of remedying vast inequalities caused by decades of Apartheid rule. Water and sanitation services were no exception. Most residents of predominantly white urban areas enjoyed high-quality water and sanitation services. But households in the former black homelands had seriously deteriorated services or none at all. To attack this disparity, the national government temporarily took control of water and sanitation in these areas and enlisted the private sector's help to rapidly improve and expand services.

This effort already shows encouraging results. Through an innovative public-private partnership, South Africa is not only rebuilding water and sanitation infrastructure, but also helping ensure that the improvements will be sustained in the future. The partnership, known as *BoTT – Build, Operate, Train, Transfer* – and launched in July 1997 is based on the premise that individuals, communities and local governments should have a sense of ownership and

the capacity to make decisions about their infrastructure systems in rural and peri-urban areas. Although the BoTT approach was developed specifically for South Africa, it could become a model for other countries.

BoTT, made up and managed by South Africa's Department of Water Affairs and Forestry (DWAF), is run by private consortiums in each of the country's four poorest provinces. DWAF is providing the funding of the infrastructure corresponding to a basic level of service (25 l/cap/day at 200 meters walking distance). Each consortium consists of private companies, and in most cases non-governmental organizations as well. Together, they function as a "one-stop shop," providing everything from design and construction of new projects to operations and maintenance of existing water systems. The integration of the various disciplines in one consortium constitutes the originality and the strength of the BoTT approach towards sustainability. *Water and Sanitation Services South Africa (WSSA)*, a subsidiary of Northumbrian Lyonnaise International, leads two of these consortiums, in the Eastern Cape Province and the Northern Province.

Cost recovery of the operation and maintenance costs are the biggest obstacles to improving services in these areas. As a form of protest against apartheid, for years many black households simply refused to pay their utility bills, and local governments stopped sending out bills. Water and sanitation improvement schemes were abandoned, and existing systems fell into disrepair. Now, these areas have democratically elected local governments, but they lack the capacity and in particular the resources to begin collecting revenues.

The BoTT consortiums led by WSSA are developing new approaches to address these problems. In Peddie (Eastern Cape), communities were given the opportunity to choose the electronic prepayment system installed on standpipes and each household uses an electronic card/token to withdraw the desired volume of water from the standpipes. In the communities supplied by the Vondo system in the Northern Province, the Metsico consortium is assisting the local government in setting up a billing system and recovering the revenue. Due to the tradition of not paying for water services, intense communication through public meetings, talks on local radios and interaction with traditional leaders has been undertaken by the Metsico consortium. On another Northern Province water system, Chuene Maja, the Metsico consortium has established village-level committees which collect fees from households and then purchase tokens for

prepayment of water from bulk storage reservoirs. The BOTT model has proved so effective that the South African government has enlisted the consortiums to help with additional projects. For example, the Amanz'abantu consortium in the Eastern Cape was asked at the end of 1997 to establish emergency bulk water projects in 100 villages in anticipation of drought conditions. Two years later the 300,000 people served operate and maintain successfully their water schemes with a limited support from Amanz'abantu.

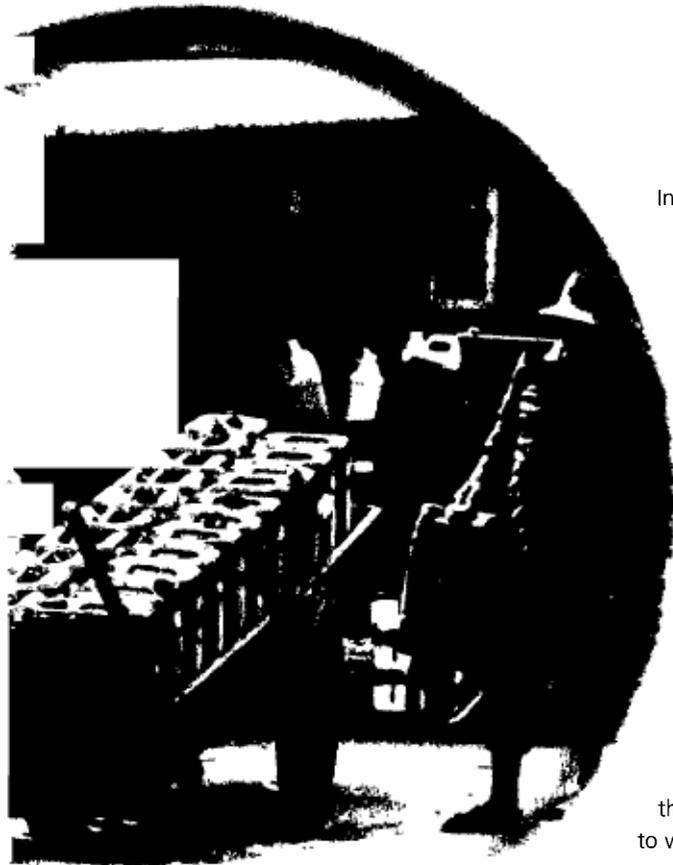
Grass-roots public involvement is key to the success of these projects. Designing and building infrastructure is not enough. The systems must be managed and maintained by a competent organization. At the beginning of each BoTT project, a steering committee is organized, including representatives from the affected communities and government agencies. The committee approves the business plan for the project before it goes forward, and transmits ideas and suggestions back and forth between the consortium and the community.

**El Niño emergency program in rural South Africa:**

- In anticipation of the El Niño-caused drought, the South Africa Department of Water Affairs and Forestry contracted the Amanz'abantu private consortium led by WSSA to develop water supply in rural areas of the Eastern Cape region
- Starting in late 1997, Amanz'abantu rehabilitated or drilled more than 100 boreholes in scattered communities, supplying water to around 300,000 people
- Half of these boreholes are fitted with windmills or hand pumps while the other half are mechanized (diesel, electric pumps)
- Construction of the El Niño projects was completed in June 1998

# Philippines

## Putting customers' needs first



In 1998, a group of residents from the Quezon City area came to the offices of Maynilad Water Services Inc., the private water concessionaire serving the western zone of metropolitan Manila. Like many low-income neighborhoods in the area, Quezon City was served by public water faucets. But often the faucets were controlled by individuals and groups who strictly limited access to the faucets and demanded large payments from people using them. Residents of these areas wanted individual connections that would give them easy access to water at a reasonable cost.

In response to their wishes, Maynilad Water Services has launched the Bayan-Tubig program, which takes an innovative approach to providing water service to depressed neighborhoods. Under this program, water lines are run through neighborhoods and connected at intervals to a battery of water meters, with each meter assigned to a nearby home. From the meter, each homeowner makes his own plastic connection, aboveground. In this fashion, the Bayan-Tubig program provided connections to some 20,000 homes by the end of 1999, with many thousands more in progress. Maynilad

Water Services says it is expanding the program at a rate of at least eight new communities per month.

"Residents of Tarhville have long wanted their own individual water connections," says Luciano Galvez, a neighborhood leader from the Tarhville district of Quezon City where the first individual connections were inaugurated in early 1999. "With the Bayan-Tubig program, communities such as ours can now enjoy clean, safe water direct to our homes," Galvez says. Galvez was one of a crowd of dignitaries – including Quezon City Mayor Ismae Mathay Jr. and Maynilad Water Services president Jose Gabriel Olives – who attended ceremonies at the time of the inauguration.

Neighborhood associations have played a major role in designing the program, to ensure that it is affordable and that residents can easily participate. Customers pay a minimum installation cost of about \$90 which can be made on installment over 6 months or 12 months. The program also offers easy terms, waiving the usual requirements for presentation of property rights and land titles. This is an important consideration, because many of the participating areas are shantytowns, populated by squatters who do not have legal title to their property. Applications are processed on site by a Maynilad Water Services representative.

Before the Bayan-Tubig program was launched, residents of low-income neighborhoods in the area got only about 40% of their water from public faucets, because middlemen controlling the faucets generally allowed each household to use the faucet for only 3 or 4 hours per week. To supplement their water needs, many households turned to private vendors who sold

contamination due to seepage when water pressure was low. Also, in the past many families used contaminated shallow wells or rainwater because they could not afford the fees charged by vendors and middlemen controlling the public faucets.

By working together, Maynilad Water Services and representatives of local

**Manila: Water for the low-income Community.**

Results to date

- Close to 200,000 additional poor people now have access to potable water
- Since the launching of a specific policy for water supply in depressed areas in September 1998, around 10,000 low-income households have been connected in Central Business Area of Manila, 8,000 in Northwest Business Area, 7,000 in South Business Areas and 8,000 in Northeast Business Area

water tapped illegally from water mains. "Bayan-Tubig weeds out illegal connections by making the users of Maynilad Water our legitimate customers," says Olives, the Maynilad Water Services president.

The project has also improved water quality because illegal taps caused

governments and neighborhood organizations have found a way to expand water services quickly and efficiently, while at the same time offering the kind of service that customers want. This approach could become a model for others in fast-growing metropolitan areas with acute water-supply needs.



# Public-private partnerships for water supply and sanitation in the Buenos Aires concession, Argentina

Sergio Mazzucchelli  
Director, Environment Office  
International Institute for Environment  
& Development, IIED-AL



As a result of a framework agreement between Aguas Argentinas S A (AA) and the International Institute for Environment & Development (IIED-AL) in 1997, efforts were made to incorporate specific strategies for water and sanitation supply in low income settlements. On the one hand, and given the mandate to provide an universal service, AA has been willing to incorporate technological innovations as well as institutional approaches which imply the participation of local communities, neighborhood organisations, NGOs and local governments into water and sanitation system projects. On the other hand, IIED-AL seeks to develop and replicate approaches that work for the provision of sustainable services for the urban poor, working on 2 main aspects: a) Policy research on environmental and social urban management and b) Direct work at project implementation level, assisting communities to access water and sewerage infrastructure.

Since the agreement implementation with AA, IIED-AL began to work on

policy and strategic design inputs to the concessionaire. Such work has included

- Low income settlements mapping and diagnosis of the Concessioned Area
- Priorities definition for an Action Plan for 1997-1998
- Operational-land support for specific neighborhoods included in the Action Plan
- Internal co-ordination: IIED-AL's project manager within Aguas Argentinas
- Corporate capacity building programme on poverty issues

On the basis of the Buenos Aires Concession's experience, different Public-Private Partnerships (PPPs) have emerged which imply the use of innovative technological solutions as well as appropriate institutional approaches. Such approaches are based upon different models of participation of low-income communities, the concessionaire, NGOs and local governments. A set of various experiences in the concession area can be characterised according to the technologies used, the participants,

type of agreement, size of the population involved, and type of internal working organisation

In these schemes, the role of the NGO was to enable co-ordination among the three parties and can play an important role as a facilitator or catalyst in the processes. The objective was to change the working relationship from top-down to a participatory and strategic approach. Such an approach is a way to take advantage of the institutions' different capacities and exploit complementarities. Each institution provides that part of the service for which it has a comparative advantage. The company is responsible for the project design and supervision during the implementation phase. Local institutions (municipalities) can provide logistic support and construction materials. Local communities can provide the work of their people and participation. In such a scheme, the NGO can provide social training to the company, co-ordination and technical assistance to the public institutions, and internal organisation and capacity strengthening to local communities and their leaders.

Participatory Water Service and NGO Intervention schemes involved around 15 projects and 30,000 inhabitants served mainly in the Concession's northern and southern zones. Tax Generation Agreement scheme involved 11 projects and 50,000 inhabitants in the southern zone. Employment Generation Unit scheme involved 5 projects with 115,000 inhabitants covered in the southern and western zones.

The added value of PPPs could be seen in terms of

- Anticipate the provision of services when critical neighborhoods are very far from the serviced area. In particular, in areas where services are not to be provided for more than 15 or 20 years,
- Reduce investment costs to facilitate the provision of services for these cases,
- Promote an attitude of ownership among the target communities to

foster conditions of security during the execution of the work and subsequent maintenance stages, as well as adequate conditions for services payment and effective integration of underprivileged households into the regular system,

- Promote an environment of co-operation and effective relations between the service operator, the communities involved, and local governments, to ensure long-term sustainability of the systems implemented.

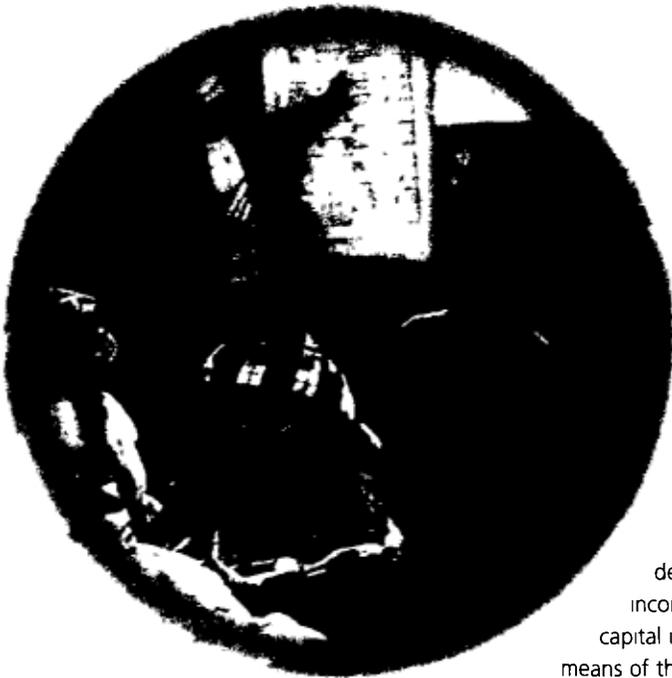
The four type of PPPs mentioned, have had varying degrees of success. The Participatory and NGO Intervention schemes has proven to be successful and, in general terms, has reached the proposed goals. Others, such as the Employment Generation scheme, have had a mixed experience. Even though they have allowed for a considerable increase in service coverage to be achieved in poorer areas, their success is contingent on political and institutional factors and do not offer a stable future. The different strategies can therefore evolve into other approaches, provided that acquired experience and lessons learned are used constructively, and technologies and management mechanisms are optimised to ensure the long-term sustainability of the systems to be implemented.

The implementation of solutions adapted to the specific local conditions and the characteristics and social organisation of the communities demonstrate that even the poorest populations can participate in programmes to provide infrastructure and services, as long as the financial implications are within their means. Accordingly, it is possible to design a system differentiated by technical, economic, and institutional factors such that the arrival of services is expedited relative to the contractual time frame implied by more conventional types of expansion. This involves partnership amongst the various groups, with each fulfilling tasks consistent with its skills and experience while fostering the dialogue between and among the three main sectors involved: public, private and civil society.

This involves partnership fostering the dialogue between and among the three main sectors involved: public, private and civil society.

# Water for the poor in Bolivia

Luis Uzin,  
Regulator,  
Water and Sanitation Superintendency  
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## 1. The modernization of state

In 1994 the Bolivian State decided to

incorporate private capital in public services by means of the Law of

Capitalization no 1554 of May 21st, 1994. Capitalization is a particular, Bolivian model of privatization in which private investors offer to make capital contributions, the highest bid is accepted and the investor becomes owner of 50% of the shares, the other 50% belonging to the Bolivian people. This form of privatization was used to privatize public services such as telecommunications, electricity, hydrocarbons and transport.

To avoid any abuse by the monopolies created in this way, a Sector Regulatory System, SIRESE (Sistema de Regulación Sectorial), was created by Law no 1600 of October 28th 1994, constituting a General Supervision Authority, coordinating, supervising and controlling the hierarchy of resources in relation to the administrative resolutions of the sector supervisory authority. Apart

from the four public services mentioned above, the water sector was instituted by Law no 2029 of October 30th 1999, the Drinking Water and Sewerage Services law.

The legislative and executive authorities of the State fulfilled their normative role by emanating laws, supreme decrees and resolutions establishing the rules that the public service providers were to comply with and that the regulators were to ensure were complied with, thereby protecting the interests of the users, the providers and the State.

## 2. The granting of licenses in the water sector

In the water sector, the form of capitalization envisaged above was not possible because the assets of the municipal companies providing drinking water and sewerage services belonged to the municipalities and could not be transferred to private companies without a law to this effect. It was therefore decided to incorporate private capital by means of the service licensing model, in which the existing assets are leased to the licensee, though the new investments belong to the latter until the end of the license agreement, due

not to exceed a period of 40 years and the licensee provides the service in its entirety

The first concession bidding process was the one for the water and sewerage services in cities of El Alto and La Paz, the most densely populated areas of the country with some 1.5 million inhabitants. The tender was put out in 1996 and the license was granted in 1997. The tender defined the prices as based on a study carried out in 1996, a degree of coverage for drinking water of 100% in La Paz, and the increase in the number of sewerage connections in both cities. The criteria for the award of the concession was the best offer in terms of the number of drinking water connections in the city of El Alto, on the basis of a minimum of 31,000 connections.

Two companies satisfied item «A» of the tender, but only Lyonnaise des Eaux also satisfied item «B» by offering 72,000 drinking water connections in the city of El Alto, practically equivalent to a 100% coverage. The company was incorporated as Grupo Aguas del Illimani S.A. with French, Argentine and Bolivian capital.

The Water Supervisory authority dedicated over two years to establishing a workable regulation procedure for the company Aguas del Illimani and to supervising their objects and goals. It took several months for the population to fully accept the prices. Surveys at the end of 1997 and 1998 and in the third quarter of 1999 showed that the company is well on the way to achieving its objects and goals.

### 3. Water for the poor

In actual fact, the city of El Alto is the third most populated city but at the same time one of the poorest. In addition, the population living on the hillside of La Paz is also very poor. The mere fact of offering a 100% coverage not only for La Paz but also for El Alto, with about 1 million poor people, is a challenge without parallel in this sector anywhere in the world.

The World Bank's Water and Sanitation Program took an innovative idea from

Brazil for the laying of secondary networks and residential connections at substantially lower prices, i.e. the «condominium» system. The system derives its name from the fact that it considers the group of houses in a block as a condominium and is based on a concept of social development. The drinking water and sewage lines are laid at the rear or at the front of the lots, or in the pavement, and accordingly savings are made due to less length of piping, less depth of installation and less resistance.

The users perform the excavation and filling-in work for the installation of the pipes and maintenance of the installations. Costs are greatly reduced, especially when the connection lines are at the rear with a single line supplying two rows of houses. Though the idea is valid for both systems, greater savings are realized in the sewerage system than in the drinking water system.

The condominium system is an alternative solution which offers a much better utilization of financial resources, without detriment to the quality of service.

The pilot program was financed by the Swedish International Development Agency with USD 1 million on the social front, by the Water and Sanitation Program with USD 200,000 in pre-investment and design, and by Aguas del Illimani with USD 4,000,000. To date, around 2,000 water and sewerage connections have been provided to seven neighborhoods and an additional 4,000 connections are under construction.

The following indications emerged from the first pilot scheme:

The high degree of social involvement in the sector implies a responsible, community-based participation and developing a clear awareness of the people. The service is expected to be universal.

The project also sees the building of sanitation modules as a form of integration of poor people in the urban community.

The condominium system is an alternative solution which offers a much better utilization of financial resources, without detriment to the quality of service.

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