Fighting through water and sanitation problems

Public managers and the private sector join forces to overcome Brazil's longstanding difficulties in providing clean water and sanitation services.



Solange Monteiro

ONE OF BRAZIL'S MOST SERIOUS DEFICITS is its inability to supply basic water and sanitation services. This is dramatically illustrated by the unpredictability of the water supply for São Paulo city and the degradation of Guanabara Bay, which is far from looking as attractive as it does on postcards from Rio de Janeiro.

The recent report from the National Secretariat of Environmental Sanitation of the Ministry of Cities covering 5,070 Brazilian municipalities for 2012 states that Brazil's water network covers 83% of those municipalities. Experts point out, however, that this "coverage" does not reflect reality. "In the case of water, even if there is the network, it is often dry, supply is infrequent, or insufficient," says Marilene Ramos, professor at the Brazilian School of Public Administration (EBAPE), Getulio Vargas Foundation, and former president of the State Environmental Institute (INEA

Rio de Janeiro. She adds that sewer coverage is only 48% and sewage treatment a mere 39%. These services basic to public health do not reach about 100 million out of a total population of 199 million.

The obstacles that have caused the backlog are familiar from infrastructure problems in other sectors: red tape that slows or prevents access to resources and a lack of technical capacity and planning that means projects actually completed are of low quality. A study by the Trata Brasil Institute released last May found that of 149 Growth Acceleration Program (PAC) sewer projects, more than half have either been delayed or stopped or were never even started. "Today, the timeline for finishing a project is five to seven years. This means that PAC projects started in 2007 have yet to bring about much improvement in the performance of the sanitation sector," says Ernani Ciríaco de Miranda, director, Department of Institutional Coordination, Ministry of Cities.

Currently, only 30% of cities have responded to the Sanitation Law of 2007, which requires a municipal master plan, even though failure to comply can be punished by cutting federal funding. "We analyzed the 100 largest Brazilian cities and found out that 34 had no plan at all yet, and only 12 had completed all the items required," says Édison Carlos, President of the Trata Brasil Institute. "Planning in this area is very complex, because it must take into account activities in four services—water supply, sewage collection and treatment, solid waste management, and drainage and storm water management. This requires studies and many small towns do not even have an engineer

Progress report on sanitation projects under the Growth Acceleration Program Plan (PAC)

149 sanitation works

Concluded **19%**

On schedule **19%**

Suspended **23%**

Late **22%**

Not started **22%**

Started without assessment **3%**

Source: Instituto Trata Brasil.

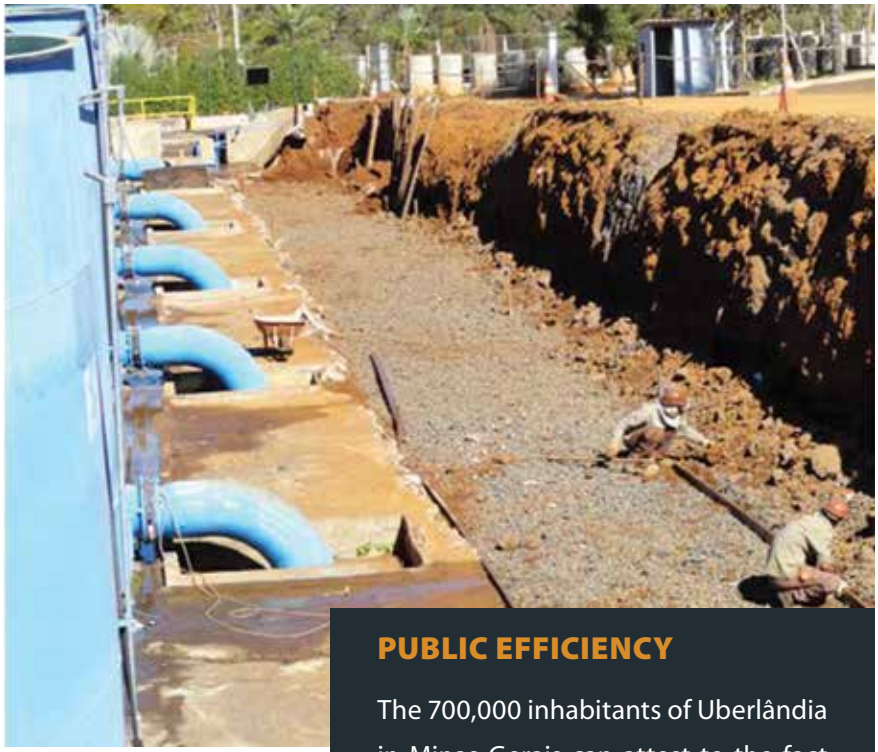
Sewerage services basic to public health do not reach about 100 million out of a total population of 199 million.



Manaus city/Amazonia state

who could do them," Carlos explains.

With the deadline for enforcing the law extended to the end of 2015, each region has now created arrangements to get municipal plans on paper. The Ceará state government, for example, decided to fund planning in cities with less than 20,000 inhabitants through an agreement between the Ministry of Cities, the Water and Sewage Company of Ceará, the regulatory agency, and the association of mayors. "We have 20 counties that now have plans ready thanks to this program and another 37 are in process," says Mário Fracalossi, Deputy Secretary of Cities. The average cost of each project, run by specialist consultants, is about US$130,000. "At least half of the 184 cities in Ceará cities will have water and sanitation plans by the end of 2015," he estimates.



AMBITIOUS TARGETS

Sanitation planning is tied to the need to accelerate expansion of these services. The goal stated in the federal Basic Sanitation Plan (PLANSAB) launched in late 2013 is to achieve universal access to water

The goal stated in the federal Basic Sanitation Plan launched in late 2013 is to achieve universal access to water and sewerage services by 2033. Operators consider the target highly ambitious.

PUBLIC EFFICIENCY

The 700,000 inhabitants of Uberlândia in Minas Gerais can attest to the fact that 100% public management can be 100% successful. The city has had a Department of Water and Sewage (DMAE) since 1967 and a regulatory agency since 2009. Alexandre Silva, DMAE civil engineer and deputy general director, says that the department's good performance is due to streamlined management—spending on payroll cannot exceed 25% of revenues—and the fact that it manufactures its own pipelines. "Another important factor is the proximity of water resources, since our two water sources are at 5 and 10 kilometers from the city." But with the city growing, the concern now is how to meet future demand. DMAE has already begun the bidding process for a third system to expand capacity to supply 1.5 million inhabitants in four years.



Rio de Janeiro city

Projected investment in water and sewage
(by region, in US$ billion)

2014-2033

North **13**

Northeast **32**

Midwest **12**

Southeast **52**

South **22**

TOTAL
US$132 billion

Source: Basic Sanitation Plan (PLANSAB).

and sewerage services by 2033. This will require, the government estimates, a total investment of US$132 billion in 2014-2033. Operators in the sector consider the target highly ambitious.

To accelerate the program, it is critical to attract the private sector, either in full control, mixed concession models, or public private partnerships (PPPs). By looking at how to provide sanitation more productively, Trata Brasil's Carlos says the private sector "reduces losses, whether of water or energy, and reimburses shareholders." He adds that "many public companies do not have these concerns and end up in deficit for decades."

So far, the private sector response has been positive. According to Paulo Roberto de Oliveira, CEO of the Brazilian Association of Private Concessionaires of Water and Wastewater (Abcon), private companies are already operating in 297 municipalities, almost 10% of the total; he estimates that they have committed about US$12 billion in investment over 25 years." Louzival Mascarenhas, managing director, OAS Environmental Solutions, says his company intends to multiply its market share tenfold, to US$30 million, share by 2017. Aegea Sanitation, which has 16% of the private Brazilian sanitation market, expects to increase its customer base by 15% this year alone. "The commitment we have with shareholders is

Besides financing, the expectation is that increased participation of the private sector will improve the technical level and the management of operators.



Photo: Paulo Munhoz.

JOINT OPERATION

In 2012, the government of 367,289-inhabitant Piracicaba city in São Paulo state signed a public-private partnership agreement with Aegea Sanitation to accelerate expansion of its sewage system, which covered only 36% of the city. Since then, US$56 million has been invested in construction and improvements. With the opening in April of the Bela Vista treatment plant, the city has added capacity to treat about 20 million liters of sewage from 110,000 inhabitants before releasing it into the Piracicaba River. With the new plant, the city now treats 98% of its sewage. "Piracicaba city needed this investment and had no capacity to do so," says Aegea president Hamilton Amadeo. "That's how the private sector can help achieve universal access to safe water and sanitation."

to expand our operations by keeping debt at less than three times earnings before interest, taxes, depreciation and amortization," says its CEO, Hamilton Amadeo. To finance this rapid growth, Aegea has very supportive shareholders, such as the sovereign wealth fund of the Government of Singapore and the International Financial Corporation (IFC), an arm of the World Bank. "Institutional investors are interested in sanitation; they have a long-term vision and a lot of capital available," he says.

"To achieve the required expansion in basic sanitation will not be possible with public operators alone," says Rogério de Paula Tavares, executive director for infrastructure and sanitation of the Federal Savings Bank (CEF). Tavares says that "For public projects … it may take more than a year to get an operation launched; in the private sector, it takes six to eight months." CEF estimates that it will lend nearly US$5 billion in 2014, of which about half will go to private companies.

Besides financing, the expectation is that increased participation of the private sector will improve the technical level and the management of operators. The problems encountered by public companies are not limited to obstacles to expanded service but also relate to the efficiency of the service itself. Abcon's Oliveira notes that not only are managers not always well qualified, but "in many cases revenues are lost from lack of current information about consumers," so that commercial and industrial companies pay residential rates.

WATER ISSUES

It is estimated that on average 37% of the water supply is lost in transit. One of the main challenges is to reduce these losses. A recent GO Consultants study points out that cutting the losses by half could save Brazil about US$16 billion. For instance, when Odebrecht Environmental took over water operations in Limeira in São Paulo state in 1994, the city was supplying an average of 870 liters per second to about 55,000 connections. Today, says company CEO, Renato Medeiros, it is serving 96,000 connections with an average of only 814 liters per second.

Experts say a major obstacle to the private sector adopting new technologies to reduce losses is Bidding Law No. 8.666/1993, which



Water losses in 2012

(% of total treated water)

North 49%

Amapá state 72%

Northeast 45%

Sergipe state 60%

Midwest 32%

Mato Grosso state 46%

Southeast 34%

Espírito Santo state 35%

South 36%

Rio Grande do Sul state 40%

Brazil 37%

50% reduction in water losses by 2025 would save US$16 billion

Sources: National System of Information on Sanitation (SNIS), and GO Consultores Associados estimates

FULL CONCESSION

Two years ago, 188,000-inhabitant Araçatuba city in São Paulo state opened bids for a concession for its entire water and sewage system after its municipal reorganization plan pointed up the need for large investments to promote universal access to water and sanitation. "Since the city already had an appropriate water supply, investments in this case were predominantly needed in the collection and treatment of sewage and reduction of water losses—a major issue that should be addressed in these concessions," says Louzival Mascarenhas, president of OAS Environmental Solutions. The city granted OAS a 30-year concession for US$150 million. The OAS subsidiary SAMAR (Araçatuba Environmental Solutions) now treats 78,000 cubic meters per day—25% of all the city's sewage.

requires contracting for the lowest price. Valdir Folgosi, president, National Union of Manufacturers of Equipment for Sanitation and Environment, points out that "As long as the priority is to purchase at the lowest price, it will be difficult to sell [more efficient] technology."

To ensure water security in Brazil, experts agree unanimously, it is necessary to encourage reuse. "São Paulo city distributes about 870 cubic meters of water per second and generates cubic meters of waste water. However, it only has capacity to treat 14 cubic meters, so the other 49 cubic meters are thrown into the rivers. If we do not begin encouraging practices such as reuse, initially for nondrinking purposes, we will not find an adequate solution," Folgosi says. Carlos adds that although rivers could be a source of water supply, because so much sewage has been dumped into them, "they are in such an advanced degree of degradation, the rivers are dead for water supply."

The lack of adequate investment generates losses in sanitation operations that have consequences for other

Source: samar.





Sanitation operational costs

(by region, US$ per 1,000 cubic meters)

	Average rate	Average cost
North	920	1,130
Northeast	1,010	1,130
Midwest	1,300	1,280
Southeast	1,010	880
South	1,280	1,100
Brazil	1,070	970

Source: SNIS, 2012.

sectors, especially health. Contact with polluted water can trigger a range of diseases; in 2013 gastrointestinal infections alone cost the federal government US$53 million. Experts estimate that every dollar invested in sanitation would save US$4 in health costs. Carlos laments that "We're talking about the infrastructure of a country that is no longer poor, but still lives with diseases of the Middle Ages."

"Today, it is no longer possible to think about water without considering its impact in sectors as diverse as energy generation, food security, health, and urban planning," says Newton Azevedo, Brazil's representative on the World Water Council. Fernando Malta, coordinator of the Board of Water Resources of the Brazilian Business Council for Sustainable Development, says that in their business plans more and more companies evaluate water security and the impact on it of variables such as urban growth, deficiencies in management, and even climate change. In the past, Malta says, "except for some regions in the Northeast, companies in Brazil had no concern about the water supply; today, however, a number of companies consider water supply to be a factor that can generate operational risk."

Although businesses no longer take water resources for granted, many individual Brazilians still do. Brazil's per capita consumption of water is higher than the world average, and the predominant idea among its citizens is that water should be free. To achieve the goal of universal access to water and sanitation, experts agree, the cooperation of the population is crucial. "The fact is that many of the decisions are political, not technical, so the citizen has a fundamental role in this process," says Carlos. "We are in an election year, and it is time to show candidates that we want Brazil out of this untenable situation.""