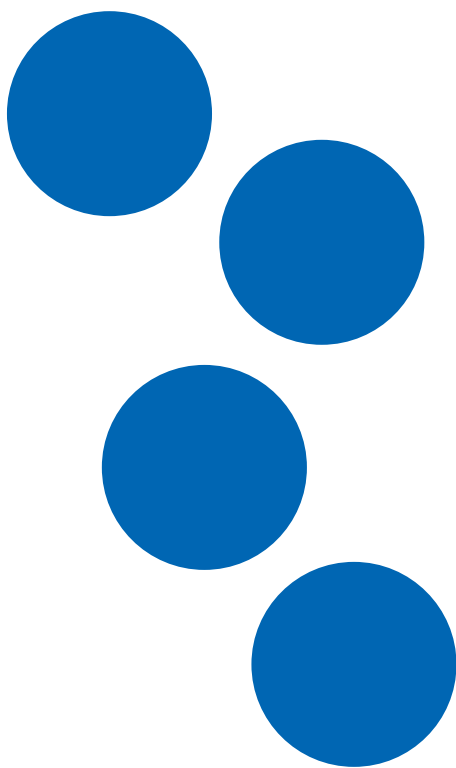


# Montevideo

A Case Study





Thanks to the clean up program, the coastal region to the east of Montevideo is once again a center of recreational activity.



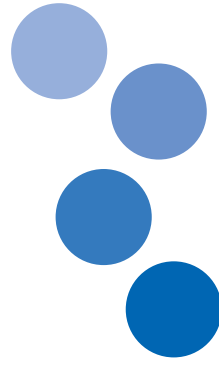
# Montevideo, Regional Sanitation Champion

Montevideo's record in sanitation is unparalleled. It was the first city in South America to have an extensive sewer system. It expects to accelerate its goal of sanitation coverage with respect to the Montevideo Sanitation Master Plan (PDSM) by 10 years; and it is the first coastal capital to obtain ISO 14001 certification for environmental management of four of its most popular beaches.

## Diagnosis

With a population of more than 1.3 million, Montevideo, the capital of Uruguay, is home to almost 43 percent of the country's population. In 1975, 74 percent of the city's residents had water service, and 69 percent had sewer connections. In those days, household wastewater and run off traveled along 1,600 kilometers of sewer lines and emptied into a combined system, and in turn were deposited at more than 20 points along a coastal strip of 30 kilometers. In the bay, the combined wastewater discharge converged with the discharge from several streams. This caused a serious environmental and public health problem in the coastal strip, which was used as a recreational area by the capital's residents.

In addition to insufficient coverage, the sewer system was also substandard. Untreated wastewater discharge, along with poor location of hydraulic relief structures, which were incapable of draining run off, increased pollution of the coastal area after any rainfall. Pollution levels rose because of the industrial discharges into the Miguelete and Carrasco Arroyos.



## Intervention

In 1972, in order to resolve environmental problems caused by the lack of coverage and the deficiencies of the sewer system, the Intendencia Municipal de Montevideo (IMM), with support from the Inter-American Development Bank (IDB), prepared its Urban Sanitation Plan (PSU). The list of identified projects was so extensive that the plan was subdivided and executed in several stages:

- PSU I (1983–1991) concentrated on reducing pollution in the beach areas east of Punta Carretas by constructing an interceptor, four pumping stations and a submarine outlet;
- PSU II (1992–1996) focused on cleaning up the beach areas west of Punta Carretas (Ramírez Beach) by intercepting the area's wastewater, constructing pumping stations for subsequent discharge at the point of the outfall, and eliminating unspecified pollution east of Punta Carretas;
- PSU III (completed in November 2006) concentrated on restoring the health of Montevideo Bay and its major tributaries, the Pantanoso and Miguelete Arroyos. PSU III also represents phase one of a new Montevideo Sanitation Master Plan (PDSM), which has defined the city's priorities to the year 2035. However, its goals have been accelerated to 2022.

In addition to improving quality of life in the Montevideo metropolitan area through the expansion of the sewer system and the reduction of household and industrial pollution, the sanitation plan also had other goals. PSU I aimed to reduce the amount of sewage in the coastal area and the levels of bacterial pollution, which were below the national water quality standard for bathing and recreation. PSU II focused on capturing all outflows from the Paraguay Basin, which empties onto the coast between Punta Carretas and Escolleras de Sarandí, and on cleaning up the three basins, which contribute to pollution of the area east of Punta Carretas. PSU III concentrated on improving service in areas with sewer system and expanding coverage to areas without service. At the same time, the plan sought to restore and protect water resources in Montevideo by reducing industrial and household discharges into rivers, strengthening the institutional capacity of IMM and preparing a solid waste master plan for the Montevideo metropolitan area.

# Results

**At total cost of US\$574 million (of which US\$244.4 million came from the Inter-American Development Bank and US\$329.7 million from local counterpart funds), the PSU has clearly produced positive results.**

- **Expansion of the sewer system:** Coverage was extended to 80 percent of the population under PSU I and II. The Punta Carretas system processes an average flow of 190,900 m<sup>3</sup>/day, representing approximately 70 percent of total discharges. By 2005, during the implementation of PSU III, coverage surpassed 84 percent (approximately 275,000 connections), except in a few areas and irregular settlements where it still does not go beyond 60 percent. By the end of PSU III, 13,800 hectares had been cleaned up; over 2,400 kilometers of collectors were installed, and approximately 140 kilometers of the storm drain network were rehabilitated.

- **Restoration of coastal areas and bodies of water:** Today, the coastal strip east of Montevideo—spanning 27 kilometers from Montevideo Bay to Carrasco Arroyo—has been restored to its original use as a recreation area. Household and industrial waste has been reduced by 50 percent, while improper disposal of heavy metals has been reduced by 96 percent. In Montevideo Bay, sewer discharge has been reduced by 23 percent, while organic waste has dropped 8 percent and fecal coliform 56 percent. Discharges of untreated sewage fell by about 35 percent. Industrial effluents have dropped significantly, particularly fats and oils (82 percent), total suspended solids (90 percent), chrome (74 percent) and lead (85 percent). Finally, IMM obtained ISO 14001 certification for the rehabilitation of Ramírez, Pocitos, Buceo and Malvín beaches in 2005.

- **Improvement of service:** Service has improved as IMM's Sanitation Division strengthened. With institutional capacity training, the administrative and financial management for IMM is now more solid. Implementation of an accounting system in 2004 allowed IMM to generate its first set of financial statements. The operations division was also reorganized, allocating clear responsibilities for network operations and maintenance and final sewage disposal. Creation of a Technical Systems Management Team has led to improvements in effective network maintenance, strategic analysis and customer service. Response time and complaint follow-up have gone from 60 minutes to 15 minutes. In addition, sanitation service complaints dropped by 80 percent.



# Lessons Learned

**Compliance and efficiency** · Montevideo's PSU has demonstrated that a well designed plan should take into account: (i) understanding the political process to avoid unnecessary delays; (ii) strengthening the capacity of the executing agency in processing bids, managing information systems and monitoring project development; (iii) verification of design integrity and details upfront in order to reduce the risk of delays in execution and/or increase costs; (iv) allowing time to complete land acquisition and resettlement procedures in order to avoid unnecessary delays or noncompliance; and (v) decreasing the number of contractual conditions, so that performance time focuses on work with the most value added in terms of management, impact and follow-up, which lightens the burden on the executing agency.

**Sustainability** · The administrative structure for service delivery in Montevideo, where sewer service (municipal) is separate from water service (national), makes it difficult to push for more efficient, sustainable management and financing policies. As a result, financing for PSU was conditional upon the creation of a specific tariff for sanitation service, along with an Administrative Unit to guarantee its sustainability. Currently, IMM's Sanitation Division generates the funds to cover operation, administration and maintenance. However, future programs must provide enough financial support to promote household connections for low-income homes that are outside the network. The funds can be obtained by applying a multi-tiered tariff structure according to social-economic classifications.

**Communication and education for participation** · Resistance to connect to the sewer network and to cooperate in solid waste collection has demonstrated the need to design suitable communication and empowerment mechanisms.