

# Ho Chi Minh City, Vietnam

A city of 6 million people increased water supply to customers through an NRW-PBC



In 2005, Vietnam's largest city, Ho Chi Minh City (HCMC), did not have enough water supply to meet demand. More than 40 percent of the water produced was lost as leakage. Supply was intermittent. To increase supply to customers, the state-owned water utility, Saigon Water Corporation (SAWACO), competitively procured a contractor to enter a performance-based contract (PBC) for non-revenue water (NRW) reduction, with a focus on leakage reduction in one of its six hydraulic zones. In a different zone, SAWACO implemented a traditional approach for leakage reduction, with remuneration based on inputs instead of outputs. SAWACO chose to implement both approaches at the same time to learn the strengths and weaknesses of each approach.

## The NRW-PBC:



Saved 122MLD (million liters per day) of water after 6 years, improving reliability of supply and allowing new customers to be connected



Established 119 District Metered Areas (DMAs)



Saved about US\$100 million of capital expenditure on alternative water supply sources (using typical benchmark costs, a new supply of 122MLD could have cost around US\$120 million, compared to the NRW-PBC cost of US\$15 million)



Repaired more than 15,000 leaks

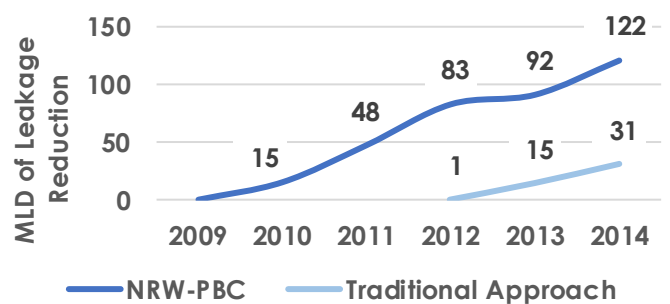


Reduced operating costs (energy and chemical costs) per unit of water sold because a higher percentage of water produced was sold



Reduced leakage faster than the traditional project, which was developed at the same time as the PBC (see figure below)

### The NRW-PBC reduced leakage faster than the traditional approach



## Structure of the PBC

In 2008, SAWACO and the contractor, Manila Water, signed an NRW-PBC with clear objectives: to establish 119 District Metered Areas (DMAs) and to reduce leakage by at least 38MLD. The contract included financial incentives to meet these targets and financial penalties if these targets were not met.

The table below summarizes the contractor's activities under the PBC, and how the contractor was remunerated for each activity. More than seventy percent of remuneration for leakage reduction and management services was performance-based, with the contractor earning US\$75 per m<sup>3</sup>/day of leakage reduction achieved and US\$38 per illegal connection detected. The remainder was paid through a fixed fee. The contractor was paid US\$18,500 per DMA established, and reimbursed for system expansion works (new connections) and emergency or unforeseen works.

Activity	Description of Activity	Performance-Based	Fixed Fee or Reimbursable
DMA Establishment	Establishing 119 DMAs based on a pre-agreed plan	X	✓
Leakage Reduction and Management Services	Leak detection surveys, pressure management, leak repairs on mains, replacement of leaking service connections, detecting illegal connections, overheads, profits, training	Min 70%	Max 30%
System Expansion Works and Emergency or Unforeseen Works	Connecting new customers to the water supply system and other emergency works	X	✓

## Lessons Learned

### Effectiveness of NRW-PBCs

- NRW-PBCs can work effectively. The NRW-PBC in HCMC saved 122MLD of water after 6 years.
- NRW-PBCs can be implemented faster than traditional projects, leading to more water savings sooner. In HCMC, development of the NRW-PBC and the traditional project started at the same time. The NRW-PBC started establishing DMAs in 2009, whereas the traditional project started establishing DMAs in 2012. By 2014, the NRW-PBC had saved 91MLD more water than the traditional project.

### Contract Flexibility

- Contracts that are too prescriptive may limit the contractor's achievements. In this case, the contract included a unit price per DMA established, and a target number of DMAs to establish. This approach may have not encouraged the most effective or efficient outcomes. The contractor could not optimize the network configuration based on new or learned conditions without requiring changes to the contract.

### Incentives

- NRW-PBCs can provide good incentives to contractors to reduce leakage. In HCMC, payment was linked to water saved (US\$/m<sup>3</sup>/day). The same price applied to savings in excess of the minimum contractual amount. This incentivized the contractor to exceed that minimum amount (38MLD) by three times (122MLD achieved).
- Through incentives and penalties, NRW-PBCs can encourage contractors to maintain the amount of leakage reduction achieved. In HCMC, the final performance-based payment was calculated based on the final amount of leakage reduction achieved. Financial penalties applied if leakage exceeded the target set for each DMA.

## Takeaways

An NRW-PBC brought in a private firm to help HCMC save 122MLD of water. Reliability of supply improved, and new customers were connected to the network.

Performance-based incentives are effective, particularly when they are linked to water saved.

NRW-PBCs can achieve better and faster results than traditional contracts for leakage reduction.