NRW Reduction in Urban Water Utilities
Experiences and Challenges in the Mediterranean Region
CMI, Marseille (France), 22 – 23 January 2013

NRW Performance of Moroccan Utilities
A brief overview

by

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Reduction of Non-Revenue Water (NRW) is a priority theme for urban water supply services in Morocco (part of its National Strategy enacted in 2009).

The Strategy, motivated by increasing concerns of water scarcity, sets a target for NRW at 20% in 2020, with an intermediary target of 24% in 2015, compared to today’s (2011) national average of 30%.

It shows that it is possible to implement a well-conceived action program for NRW reduction, that deals at the same time with physical (real) and commercial (apparent) losses.

NRW reduction translates into:
- a cost reduction effort and improved efficiency of operations,
- in conservation of scarce water resources (all operators provide a 24/7 service)
Three types of operators ensure the service of urban water distribution service in Morocco:

• ONEP (Office National de l’Eau Potable), serving medium-size and small towns (30% of total population served, 28% of total volume water distributed).
• 12 public autonomous Municipal Utilities (Régies autonomes urbaines) (33% of total population served, 34% of total volume water distributed)
• 3 private Concessionaires (delegated management contracts) (37% of total population served, 38% of total volume water distributed).

Operators that were visited:

• ONEP
• 4 Municipal Utilities: Fès (RADEEF), Meknès (RADEEM), Marrakech (RADEEMA) (water, electricity and sanitation), and Agadir (RAMSA) (water and sanitation)
• 2 Concessionaires: Casablanca (LYDEC) and Tanger & Tétouan (AMENDIS).
Trend of distribution network efficiency of urban centers served by ONEP
Evolution of NRW - 2

Trend of distribution network efficiency of selected municipal utilities
Evolution of NRW - 2

Trend of distribution network efficiency of concessionnaires
Trend of network efficiency with key NRW reduction actions
(source LYDEC, 2011)
Main Findings - 1

◆ The main problems that operators encounter relate to:

✓ Quality of pipe materials utilized in the distribution network;
✓ Network topography and zoning in view of network pressure management;
✓ Age of domestic meters, often more than 15 years;
✓ Illegal tapping and consumption from the network;
✓ Lack of skilled domestic small enterprise specialized in leakage detection and repair.
Main Findings - 2

- Top management of all operators, public or private, is fully committed to NRW reduction and management, and:
  
  - Aware of the importance and the need of an integrated, cross-departmental approach with direct reporting to top management.
  
  - Sectorization (or zoning) of the network whereby hydraulic and commercial zones are aligned and superimposed.
  
  - A long-term approach for reducing NRW, combining elements of network maintenance, commercial practices, asset management, financial management and demand management.
NRW operational management includes:

- Bulk metering (managing bulk water invoice from ONEP)
- Pressure control and management
- Target age of average 10 years for domestic meter replacement
  
  ✓ AMENDIS, RADEEF, RADEEM, RADEEMA and RAMSA, all apply the same target age of 10 years for meter replacement, whereas LYDEC has an average meter age of 7 to 8 years with a current replacement target at 5 to 6 years.

  ✓ ONEP (2011): 57% of meters had an age less than 6 years, 31% between 6 and 10 years, and 12% more than 10 years.
The development of **domestic small-scale private enterprise** (SMEs)

- It is important to note the efforts done by Morocco (ONEP, RADEEMA and RAMSA) to develop the domestic SMEs in the domain of leakage detection and repair, allowing outsourcing of this activity in view of improved rapid and efficient responsive action.

- Main focus lies herewith in improving workmanship skills to carry out works of network maintenance, leakage and domestic connections repair and supervision of works.
◆ The key to a successful and sustainable NRW reduction program is an **incentive framework** for staff:

- ONEP is in the process of introducing **internal performance-based contracts** between general and regional managements, with target technical performances (including NRW) together with means to achieve these.
The ELL (Economic Level of Leakage) is a useful indicator for optimization of (physical) leakage reduction. However, it is noteworthy that none of the operators knows their ELL. It is anticipated that overall, the actual ELL value situates itself beyond the 2020 target of 80% network efficiency.

- Fès (RADEEF) and Meknès (RADEEM) are still clearly in the process of catching up through network rehabilitation investments.
- Agadir (RAMSA), ONEP and the concessionaires are on the verge of coming close to the ELL point.

The challenge remains to determine the network renewal rate investments needed to maintain the targeted NRW performance.
Challenges - 2

◆ All operators give particular attention to the establishment of a certified test-bank for the calibration of domestic meters.

  ✓ The obvious driver is to avoid disputes with suppliers as well as with metered customers; all operators that were visited, have their own test-bank for domestic meters.

  ✓ ONEP has planned for 2013 the construction of a fully automatized laboratory for the calibration of small domestic meters and which an international institution COFRAC will certify.

◆ However there is at present no national institution in Morocco that is mandated to certify test-banks for meter calibration. As such, operators remain vulnerable vis-à-vis de their customers.
Challenges – 3

- Finally it is important to note that there is **no benchmarking program** and there is limited exchange of experiences and lessons learned among municipal operators.

- ONEP organizes annual internal seminars at the national and regional level among its regional directorates for performance and NRW comparisons.
Thank you