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Veolia Water Initiatives: water and wastewater services provision in Morocco

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Summary

Morocco is rapidly developing its wastewater collection and treatment assets. In the early 2000', almost all wastewater in coastal areas was discharged into the sea, directly or via the *wadi* (intermittent rivers), resulting in an ecological disaster in the marine water environment of coastal cities. Since 2002, important investments are underway to provide the Kingdom with suitable wastewater infrastructures, including 70 wastewater treatment plants. Veolia is in charge of water, wastewater and electricity infrastructures and operations for the cities of Rabat-Salé (including Témara and Skhirate), Tanger and Tetouan (30 and 25 years concessions), representing altogether 850,000 connection for water and wastewater services.

This case-study focuses on the wastewater management: In a decade, Veolia invested 640 Million Euros to bring the collection of liquid effluents close to 100%, and provide appropriate treatment -safe for Salé. Outside the concession, the Tamuday bay resort now also benefits from a comprehensive wastewater management system. As a result, the majority of the population benefits of sanitation and the coastal waters meet the bathing water parametric standards, enhancing the economic potential of the cities as touristic destinations.

Keywords

Wastewater systems collection and treatment.

Issues addressed

WASH (inequalities, schools, health centers, refugee camps, women and girls)

Toilets remodeled in all schools in Tanger.

Water resources management (water-use efficiency, integrated water resources management, trans boundary cooperation, sustainable extraction and supply of freshwater)

Major works addressed non-revenue water and social connection (not described in this case-study).

Water quality (pollution, dumping of toxic materials, wastewater management, recycling, reuse, restore ecosystems and aquifers)

- Collecting and treating the wastewaters from the Wilaya of Rabat-Saleh Temara, with sanitary & well-being implications for the 2.2 Million Inhabitants;
- Collecting & treating the wastewaters from the 555,000 inhabitants in Tetouan, with a view of meeting the bathing water standards;
- Same for the 920,000 inhabitants in the Tanger región

Risks (mortality, economic losses caused by natural and human-induced disasters)

- Health impacts of insufficient sanitation
- absence of wastewater treatment impacting the bathing water quality

Tools for implementation

Financing/economic instruments

30 and 25 years concessions were selected as effective set-ups for wastewater (and water) infrastructures delivery in the urban environment.

Who is involved?

- Municipalities
- Veolia
- National policy makers

What were the objectives?

- Developing state of the art wastewater collection and treatment for the Moroccan cities
- Meeting the needs of the poorest with reduced capacity to pay in both water supply and sanitation
- Restoring the marine environment along the touristic áreas

Implementation challenges:

- The development of wastewater infrastructures in brown fields
- Lack of local capacity

Main task/activities undertaken /Tools used:

- All traditional engineering steps, from project initial studies, including impact studies, detailed design, all the way through project delivery and works completion/reception.
- Household connection to sewers, mains construction, pumping stations, wastewater treatment plant construction, and marine outfall design and construction; more specifically:
 - In Redal, 2,2 Million Inhabitants, 4,1 Billion DH were invested, including the clean-up the left bank of the Bouregreg Wadi and the coastal area, with pretreatment works for 120,000 m³/Day, and a 1,350 m long outfall; 8,600 social connection were constructed, increasing from 81.34% to 98.16% the population connected to the wastewater system; the storm water and flood prevention infrastructures were also constructed.
 - In Tétouan, 555,000 Inhabitants served with WW services, 32 Million m³/year are now collected and treated through remodeled wastewater collection and treatment works (near 500 Km of new pipes). Thanks to 26,000 new connections, the proportion of population whose effluents are collected increased from 67.9% to 96.3%
 - In Tanger, 920,000 Population Equivalent, 550 Km of network, 17 pumping stations were constructed or upgraded, including a tertiary treatment, and a 2,3 Km outfall. This includes the increase of connections from 75% to 95.4% of inhabitants over 10 years. Tanger Wastewater service is now operated according to the ISO 14,001 standard
- Construction of the water quality laboratory in Rabat, to do the drinking water, wastewater and bathing water analysis;
- Social engineering to ensure population would buy in the works, especially consultation with local populations
- Outside of the Concession, the Tamuda bay Mediterranean resort was also subject to a major wastewater management program, including effluent collection and tertiary treatment enabling safe reuse.

Main outcomes / impacts (what has changed?):

- The concession delivered what it is designed for: Close to 100% of the liquid effluents of the three areas are now collected; The health concerns associated with the insufficient sanitation are now addressed, with an overall increase by 20 % of the population connected to the wastewater systems.
- The environment pollution is now controlled, and the bathing water quality dramatically improved, the samples now complying with national & WHO standards. As a consequence, the beaches of Tanger and Skhirat (Application of the Coliphage method for fast analytical results) now meet the 'Blue Flag' criteria for beach & bathing water quality.
- The touristic potential of Tanger, and the other seafront cities including Tamuda bay, is restored, with improved land value.

Lessons Learned:

Triggers:

- Need to ramp-up municipal water management in the Kingdom of Morocco;
- Odor nuisance along the Rabat shoreline
- Tanger *Club Med* vacation resorts closure in the early 90'

Drivers:

- Awareness of the touristic potential of the Moroccan coastal cities, and need to comply with international bathing water standards
- Growing expectations of local populations

Barriers:

- Need to construct ex nihilo all categories of wastewater professionals. To overcome the barrier, Veolia constructed a campus in Rabat to train the 4,100 staff through 600,000 Hrs of training (legal, technical, safety, finance, safety etc.)
- Some projects (e.g. Rabat sea outfall) were delayed because of lengthy consultations.

What has worked well?

- Capacity building: wastewater management was barely existent in Morocco, and now benefits of well trained professionals at all levels of the organization.
- Works planning and delivery in good safety conditions (OHSAS 18001 certificate)
- “Aïd-Eco Beaches” for awareness raising about beach cleanliness

The way forward: A number of improvement remain to be brought to finalize the asset construction in the 3 cities, to clean-up all liquid effluents, and also the storm water management in Tanger.