SWITCH PROJECT: TEL AVIV

TEL AVIV
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TEL AVIV
LEARNING ALLIANCE

The Tel Aviv LA (Water Club) was established in 2006, with a workshop on Indicators attended by all LA members.

- The LA has defined which research (SAT improvement by SAT-NF(Nano-Filtration) process, Electro-Flocculation (EF)-Constructed Wetland (CW) demonstration project operation) is relevant for Tel Aviv. Working relations between stakeholders and work package 3.2 and 3.3 coordinators are established. Implementation of research results has been planned.
- LA discussions have evolved into 3 future scenarios for urban water management.
- An exchange of research results system between LA members, as well as with the wider consortium is in place.

There are good working relations with the two institutions developing sustainability indicators (Water Commission and the Strategic and Long-Term Planning unit in the City Engineer's Office). SWITCH is to be involved in the development of indicators in decision making. The Israeli Foreign Ministry will participate in future LA events.

LA Members

1. Tel-Aviv Water, Wastewater and Drainage Department
2. City Engineer's office, Strategic & Long-Term Planning
3. Dan Region Association of Towns
4. Mekorot, National Water Company
5. Soil and Water Department, the Hebrew University
6. Ministry of Interior, Central District Regional Council for Urban Planning
7. Ministry of National Infra-structures, Water Commission
8. Ministry of Health, Environmental Health Dept., Central District and Tel-Aviv Region
9. Ministry of Environmental Protection
10. Farmers Association in the South of Israel
11. Water Workers Association
12. Israel Water Association

VISION & GOALS FOR URBAN WATER MANAGEMENT

Future integrated water management will ensure safe drinking water and safe water for other applications.

MEASURING SUSTAINABILITY

- 60 indicators are used in the implementation phase of the strategic plan.
- There is a pipe rehabilitation program which replaces those between 50-60 years old.
- A calibrated EPA-Net model for the distribution network is under development.
- 97% of the customers are metered.
- Pressure management is applied to reduce losses.
- The system is not yet optimized for saving energy in pumping stations.

TEL AVIV'S WATER SYSTEMS & PRESSURES

1. Regular water supply during dry seasons in semi-arid conditions.
2. A growing population and depleted water sources including industrial pollution and growing salinisation of local wells and aquifers.
3. Change in wastewater and effluent treatment due to rapid urbanisation that requires decentralized and compact systems.
4. Effective storm water management.
5. Water reuse including gray water and resulting dual systems operations.
6. Expanding water and future effluent desalination projects.
7. Effective pipe leakage control methods.
8. Managing water sources using sustainability indicators.

Basic description

90% of the city's drinking water is supplied by Mekorot and another 10% by local wells. Water is supplied to customers by the municipality which also maintains 1000 kms of pipe-lines and water reservoirs and ensures water pressures and disinfection. Water quality is monitored by the municipality and the Ministry of Health.

The municipality collects wastewater by a 501 kms pipe-line system and pumps it to the WWTP through the central pipe-line (Reading-Rishon), both owned by the Dan Region Association of Towns.

Drainage of rainwater, monitoring water consumption and wastewater production, collection of taxes for drinking water consumption and wastewater collection are also the responsibility of the municipality.

The Dan Region Association supervises industrial wastes, establishing an oil-and-grease collection and treatment system and a salt separation and sea disposal system. All these activities help improve the quality of the wastewater conveyed to the treatment plant.

After the secondary treatment in a mechanical biological WWTP, effluents are treated by Mekorot Water Company in six SAT fields and recovered as near drinking water quality effluents for agricultural irrigation in the south.

Issues and challenges

- Safe and uninterrupted water supply to the city
- Better flood control
- Safe and improved reuse of reclaimed effluents

FACTS & FIGURES

- 371,400 inhabitants in 51.76 km2 area
- High population density (7200 persons/ km2)
- >150000 households, average size 2.2 persons
- Annual population growth rate 2.2%
- The central WWTP treats wastewater from 24 municipalities with a 2 million p.e. and treats around 140 MCMY.

DEMONSTRATIONS

Short SAT as pre-filter for NF of secondary effluents:
This research looks for alternative technologies to produce water comparable to the accidental drinking water quality of the Dan Region wastewater treatment plant (WWTP) effluents after SAT.
Pilot work involves testing the SAT in a field site, for the removal of microbes and chemicals, that constrain potable reuse.

Electro-Flocculation (EF)-Constructed Wetland (CW) demonstration project operation:
The goal is to develop an innovative integrated system of CW and EF for upgrading secondary effluent to the level that permits its use for stream rehabilitation, park irrigation and other municipal uses requiring high quality reclaimed wastewater.

POTENTIAL FUTURE SCENARIOS

In 30 years time:
Drinking water: Improved tertiary filtered Mekorot supplied water, desalination, more aquifer storage of flood waters and desalinated water, renewal of old wells, storm water separation and treatment, improved O&M, leakage control, improved metering, renewed distribution systems, cross connection control, ground water rehabilitation.

Wastewater treatment: Cleaner industrial wastewater, widening and renewal of the wastewater collection system and improvement of the Shafdan WWTP. Effluent desalination. More improved secondary effluents. Sludge treatment.
Local municipal and public reuse of treated wastewater. Less wastewater treated at the central WWTP and easier distribution of reclaim water.

RESEARCH FOCUS AREAS

1. Alternatives for conventional SAT (UF-short SAT or short SAT and NF).
2. Electro-Flocculation (EF)-Constructed Wetland (CW) demonstration project operation.
3. Effluent desalination.

SWITCH

SIXTH FRAMEWORK PROGRAMME