SWITCH Project

Learning Alliance is one of the three major pillars together with research and the Demonstration activities in the SWITCH project which all closely associate with each other

The SWITCH Project in Tel-Aviv

Learning Alliance :

- TA Water Club - Vision and Indicators of water for TA City,
- Yarkon River rehabilitation project - promotion of the institutional approvals of the Yarkon River Project (was also presented by the authority director in a workshop on Study of Sustainable Urban Water Management in the "City of the Future" , Delft, June 2010)

Research :

- Hybrid Short SAT - NF,
- Electrofloculation as pretreatment for Constructed Wetlands

Demonstration :

- More than 500 visits of delegations per year from all over the world where the SAT-NF and other SAT related projects are presented
- Specifically some delegations have shown interest in the process to implement it in their country

Other projects:

- The promotion of a "Green house" concept and mediating together with the SWITCH management in obtaining the necessary approval from the TA University management
- Flood water collection and treatment by a biofilter system conceived by Monash University (Australia) and KKL (Israel)
- Support of SWITCH to the opening of "Water Cluster" in "Jerusalem Science Museum"

Tel-Aviv Learning Alliance (LA)

- Israel needs to solve the water shortage constraints in the semi arid region
- The water authority sector was already communicating with each other before the LA concept was brought to their attention
- Tel Aviv City have a few multi-stakeholders platforms related to water problems and dealing with the most important existing and arising water issues, and working together for a long time.
- The platforms include key organizations involved in water sector in Tel Aviv, managing the issues of :
  - Drinking water supply and distribution
  - Storm-water
  - Wastewater collection and treatment
  - Effluent supply and water reuse.
- The meetings took place frequently, from once a month to once a year, depending on the committee, and daily communication involves the key stakeholders in the city.

The member organizations of TA Water Club

The Learning Alliance was established in the scoping meetings held on 30 July – 3 August 2006.
The Learning Alliance in Tel Aviv is locally called the "SWITCH Water Club"

- The Central District Regional Council for Urban Planning of the Ministry of Interior,
- The Water, Wastewater and Drainage Department of the City of Tel Aviv,
- The Dan Region Association of Towns,
- The Water Authority of the Ministry of Infrastructure,
- The Ministry of the Environment,
- The Ministry of Agriculture,
- The Environmental Health Department of the Ministry of Health,
- "Man, Nature, Law" – an NGO,
- The South of Israel Farmers' Association,
- The Water Workers' Association,
- MEKOROT – the National Water Company,
- Soil and Water Department at the Hebrew University of Jerusalem,
- The Israel Water Association.
- Technion

Major activities and impact of SWITCH by the Tel-Aviv – LA (2006-2008)

- Scoping studies (30/7/06 -3/8/06 scoping study meeting – Peter and Kala)
- Establishment of LA group and workshop on indicators (10-11/12/06)
- Establishment of a "Water Club" with the membership of the stakeholders from the LA group for discussions of relevant SWITCH issues.

RELEVANT ISSUES:

- **To influence city strategic planning through inclusion of water related indicators**
- **To look at how the SAT treatment and recovery system can be monitored and improved in order to be able to infiltrate growing available treated effluents to be reused in the agriculture**.
- To improve the removal capacity of the SAT system for micro-pollutants in the effluents.
- To disseminate among the Club members the knowledge that is being acquired in the TA Wastewater Reclamation Project (Shafdan) pilot.

For that purpose:

- Workshop on Indicators in Tel-Aviv (TA) and water club meetings were organized (April 2007, November 2007).
- The absence of the water vision section that should be included in Tel-Aviv city vision was recognized.
- Program for finalizing the city vision including water aspects was set based on series of meeting with the city strategic planning division and the water club group.
- Visits and workshops were entertained to the Shafdan demonstration site and the SAT-NF pilot plant to inform the Water Club members on the ongoing research

Learning Alliance Meeting

Tel Aviv , Dan Panorama Hotel - November 2007

Presentation of the first draft for TA Indicators

Water Club Meeting in Health Ministry - September 2008

Major activities and impact of SWITCH by the Tel-Aviv LA (2009-2010)

- A series of meetings have been held to decide on the line of action for the inclusion of water indicators in the TA city Strategic Planning.
- January 2010 in Tel-Aviv : a 2 days SWITCH International Symposium and Workshop on **CITY WATER INDICATORS FOR THE STRATEGIC PLANNING OF TEL- AVIV – YAFO** was held to decide on the final schedule to complete the inclusion of the indicators in the plan.
- July and September 2010 : in two more meetings of the TA Water Club the Vision for the Water resource management in the city of Tel-Aviv and the indicators that will help monitor the actions to be taken were presented and discussed.

The member organizations of TA Water Club January 2010 – Crown Plaza Hotel

LA meeting for the determination of the water indicator for the TA municipality strategic planning - July 2010

Meeting of the " Tel Aviv Water Club" to approve

The final version of the Vision and Water Indicators for the Urban Water Management in TA - September 2010

WATER RESOURCES MANAGEMENT VISION FOR TA CITY AND WATER INDICATORS (2008-2010)

The municipality, together with the TA SWITCH partners and TA LA, prepared a three phase program to finalize the preparation of the vision and indicators that will help the implementation of the vision:

1. Preparation of the profile of the Urban Water Sector (UWS) in TA
2. Determination of the vision of the UWS in TA and policies for its implementation
3. Preparation of the indicators that will help monitor the implementation of this vision

Urban Water Sector (UWS) Vision for TA City and Water Indicators

The Vision

Tel Aviv water, sewage and drainage systems are reliable, efficient, sustainable and promoting advanced values of service, fairness and equality, and keep aspects of public and environmental health

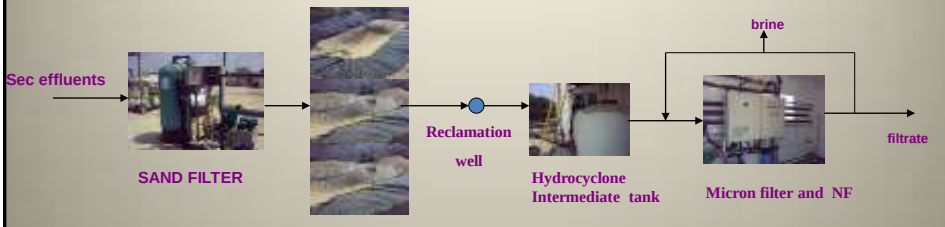
- ***13 Goals***
- ***37 Actions and Means***
- ***49 Indicators (desirable and existent situation and target for 5 years)***

The Tel-Aviv DEMO Project

- Exploitation of complementary solutions to the water shortage and land limits in Israel and Tel-Aviv area, by improving the conventional safe water reuse of Shafdan (**Activated Sludge + Conventional long SAT**) which is relatively cheap, but highly treated, and used for irrigation in the south of the country already more than 30 years by developing an alternative **short SAT+NF hybrid system**

The Tel-Aviv DEMO Project

Conventional Activated Sludge effluents treated by a hybrid SAT system (Short term, 30 days retention time, followed by Nano-filtration polishing)



Short SAT (35 days retention time)

Parameter	Unit	Sec. Effl.	A.Sh.SAT*	Rem. Eff. % (A.Sh. SAT-Sec. Effl.)	A. Nano Filter	Rem. Eff. % (A.NF-A. Sh.SAT)	CAS +LONG SAT**
COD	mg/L	29 - 40	5.0 - 9.0	78-83	2.0 - 3.0	60-67	2-4
DOC	mg/L	9.5 - 10.3	1.8 - 2.3	78-81	0.2 - 0.3	87-89	0.6-0.9
UVabs.	1/cm* 1000	209 - 224	46 - 68	70-78	6.0 - 7.0	87-90	9-13
Ammonia	mg/L	3.17-4.2	0.4-1.0	76-87	0.03-0.1	90-93	0.02-0.05
Phosphorous	mg/L	0.66-1.4	0.03-0.08	94-96	<0.03	>63	<0.03
TDS	mg/L	864 -900	786 - 897	-	687 - 718	13-20	796-852

* After 1 year infiltration. The analyses results relate to 30 days retention time in the aquifer
** After 30 years of infiltration. The analyses results relate to 300 days retention time in the aquifer

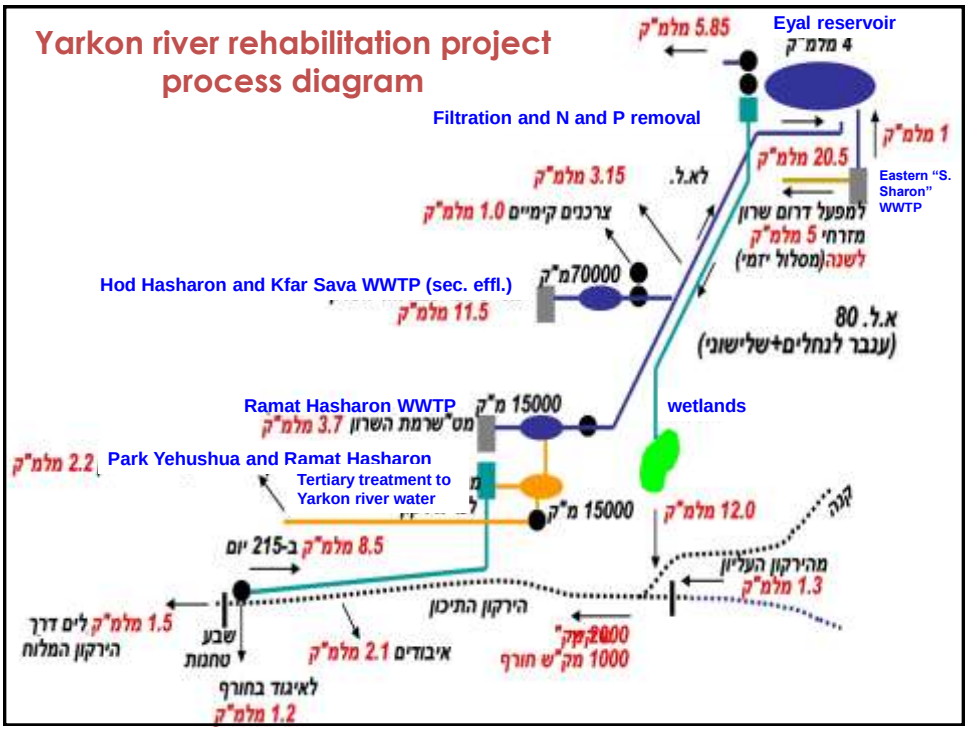
The Tel-Aviv DEMO Project –The current situation

- The R&D and Demo project has been completed and the hybrid short SAT-NF process has been found attractive for water reuse applications in other places in the world.
- Short SAT-NF was shown to remove majority of organic micropollutants, to reduce fouling potential of membranes and to increase recharge capacity by increasing infiltration rates
- In parallel, in different scientific meetings during 2008-2010 the subject of micropollutants in the ground water and the measures to be taken were having large interest among the authorities (the Water Authority, the chief scientist of the Environmental Protection Ministry, the Ministry of Health..)
- Two specific SAT training sessions were conducted in Israel and Ghana
- Lodz LA in Lodz on July 2010 : The Tel-Aviv Research and Demo and TA municipality Strategic Planning was presented

The Yarkon river rehabilitation project - "Geulat Hayarkon“

Tertiary effluents further polished by a wetland system are mixed with the river fresh waters for recreation uses , later on filtered and disinfected and used for irrigation of parks and for agriculture.





The Yarkon river rehabilitation project - "Geulat Hayarkon"

From the biggest daily newspaper in Israel (2/9/2010) :

"The Geulat Hayarkon Project will rehabilitate the river (which was contaminated during the last decades) and millions of m^3 of water will be reused in park irrigation and agriculture"

Mekorot will build a pumping station that will send for the first phase the cleaned water to Yarkon Park irrigation (2 MCMY) and agricultural irrigation (5 MCMY)


ידיעות אחרונות

התוכנית: להפוך את מי הנחל העכורים לצלולים

עושים פוליש לירקון

New players join the water club (1)

Green house project – Tel Aviv University

The concepts : Rain water harvesting, gray water treatment by wetlands, filtration, disinfection and reuse in garden irrigation.

This project was introduced to the TA LA, and it enhanced the controversy discussions between water authorities and wetland designers on use of wetlands as wastewater treatment in decentralized systems in the city.

This project is being supported by UNESCO-IHE in their effort to obtain the land for the building from the Tel-Aviv University

"GREEN HOUSE" PROJECT ENDORSEMENT LETTER BY UNESCO-IHE

(Letter to the President of Tel-Aviv University)

SWITCH

New players join the water club (2)

Yaron Zinger, Ana Deletic & Tim Fletcher and Tony Wong

STORMWATER HARVESTING by BIOFILTRATION SYSTEMS FOR AQUIFER RECHARGE IN ISRAEL

KFAR– SAVA PILOT PROJECT -2009

First system for storm water collection, biofilter treatment and recharge in Israel

New players join the water club (3)

Support of SWITCH to the opening of "Water Cluster" in "Jerusalem Science Museum"

CONCLUSION

Water Indicators in the City Master Plan
The greatest potential for having a visible and sustainable impact on Urban Water Management in Tel Aviv. This will also provide support to the Water Authority, other LA member, for not just monitoring water issues in the city level but also to introduce these indicators at the national level as well.

The results from the DEMO project
There is an increasing interest in micropollutants in water and how to cope with them and this work will be very useful for this purpose.

From the short account on the development of the Learning Alliance in Tel-Aviv it can be seen that the relations between the different authorities and the water suppliers and water users were already in a mature state before the start of the Learning Alliance. But the methodological thinking methods supply by the SWITCH project helped to consolidate the relations and to concentrated efforts on one or two major items to produce results in a short time.