




Results of Strategic Planning process in Tel-Aviv-Yafo

Vision, Goals, Actions, Means and Indicators



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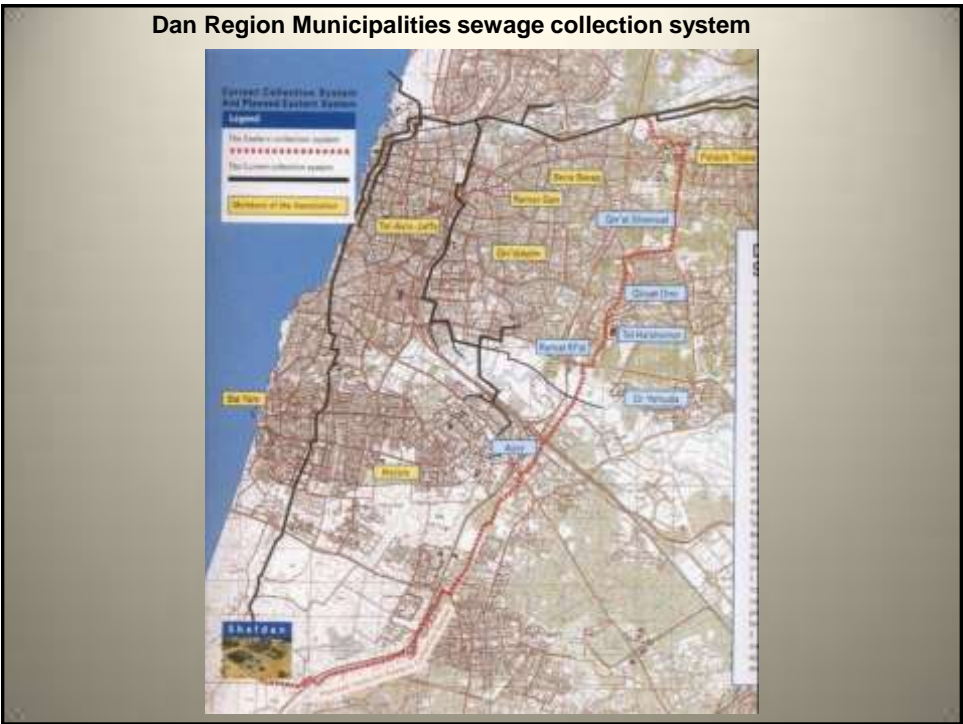
Tel-Aviv - City Background



- Area 5,000 ha,
- Population - 386,000 (1 million during the week days)
- Financial capital of Israel

Major Water Issues in the City:

- Water sources : Surface water, Groundwater , Desalinated sea water
- 90% of drinking water (46 MCMY) is supplied by Mekorot
- The wastewater (380,000 M³/Day) is treated in a central WWTP (Shafdan)
- The effluents reused after a long-term Soil –Aquifer-Treatment (SAT) for agriculture in south of Israel



Steps to formulate Vision and Indicators for Tel Aviv City (2008-2010)

1. Preparation of the profile of the Urban Water Sector (UWS) in TA
2. Determination of the vision of the UWS in TA and goals
3. Defining the municipal water system' boundaries
4. Defining the actions and means for achieving the municipal water system's vision and goals
5. Preparation of the indicators that will help monitor the implementation of this vision

Adopted methodology

1. Definition of the overall vision for the UWS and the goals that can be derived from that vision.
2. Defining:
 - a) the systems' boundaries (upstream and downstream),
 - b) the planning horizon
3. Defining the framework for the actions and/or means proposed to make the vision and its associated broken-down goals a reality
4. Selecting a limited number of indicators that will enable giving quantitative "dimensions" to the current, initial state and performance of the systems

Approach

1. The city's water systems' vision conforms to the city's overall vision (aspects of sustainability, as required by the SWITCH initiative, and health, environmental and social aspects, as demanded by many Water Club members)
2. Performing the point of departure, systems boundaries and sustainability issues and requirements
3. To prepare comprehensive lists of actions and means that are suited, specifically, to each of Tel-Aviv-Yafo's municipal water systems and reducing these lists through tests, comparisons and prioritization
4. The criteria established by the Steering Committee for selecting the Indicators were: Simplicity, Relevance, Transparency, Cost-benefit ratio

Tel-Aviv-Yafo's Urban Water Systems' Vision

**"The water, sewage and drainage systems of
Tel-Aviv-Yafo are reliable, efficient and
sustainable, and advance values of service,
fairness and equality and aspects of public
health and the environment"**

Tel-Aviv-Yafo's Urban Water Systems' Goals

Goals common to all the systems

- Development, operation and maintenance of the system at optimal costs
- Optimal service quality to all consumers
- Fairness and affirmative action to the southern and eastern sectors of the city

Goals of the Water Supply System

- A reliable supply of water to all municipal consumers
- A water supply quality, at the consumers' taps, that meets the requirements of the national Public Health Regulations
- Preventing the contamination of the water supply and the environment and advancing the removal of existing contaminations
- Preventing waste of water and energy in the system

Goals of the Sewage System

- Connecting, collecting and transporting the sewage efficiently from all its producers
- Avoiding sewage related sanitary and environmental hazards
- Preventing contamination of the municipal sewage by hazardous industrial and commercial effluents

Goals of the Drainage System

- Managing the run-offs within the city limits in a manner that maximizes its benefits and minimizes its damages
- Reducing flood damages, including environmental damages, as a result of abnormal rain events
- Advancing the integration of municipal storm water runoff within the management of drainage basin runoff.

Tel-Aviv-Yafo's Urban Water Systems Boundaries

The City's Water Supply System

From the municipal pipeline connection points to the national water system and to each of the operating municipal wells until the connection points to the water pipes of each of the municipality's domestic, industrial, commercial, public institution and other water consumers

The City's Sewage System

From the sewage discharge points of each of the municipality's domestic, industrial, commercial, public institution and other clients until the sewer lines' connections to Igudan's regional sewage collection headers which relay the sewage to the Shafdan.

The City's Drainage System

From all points of collecting the rain runoff throughout the city until their discharge points to the Ayalon canal, the Yarkon River and the Mediterranean Sea (11 sea outlets). The system includes also the means for evacuating storm water from the drainage basins feeding the Ayalon canal and the Yarkon River.

Actions, Means and Indicators for Strategic Planning of Tel-Aviv-Yafo's Urban Water Systems

Due to lack of time, the list for actions and means were shortened only through the assessment of a team that included the Steering Committee members and the top technical and administrative personnel of the municipal water corporation "Mei Avivim"

This team pared down the list by deciding, according to their experience, which actions are feasible and practical, and, more importantly, the results of which actions can be monitored and measured by the criteria set

The approach to choose the indicators was to prepare an initial comprehensive list, which included also some useful suggestions from the Water Club, and to pare this list through tests, comparisons and prioritization

There are 13 goals, 37 actions and means and 49 indicators

Goals, actions, means and indicators common to all municipal water systems

Goals	Actions and Means	Indicators	Desired values	Current values	5 year target
Improving consumer service	Formulating and adopting a Service Charter	Consumers' satisfaction	5*	No information currently	4*
	Improving the efficiencies of the organizations and procedures dealing with consumer needs and complaints				
	Rapid and efficient responses to failure events in any system	Failure events' notifiers' satisfaction	5*	3.4*	4*
Information transparency	Making all information relating to any system easily accessible to the public	Consumers satisfaction with the information's quality and transparency	5*	No information currently	4.5*
Fairness and affirmative action to the city's southern and eastern sections	Under equal conditions, giving priority to the improvement of infrastructure and services to these less affluent and developed city sections	The specific city sections' residents' satisfaction	5*	No information currently	5*

* On a scale of 0 to 5

The municipal water supply system's goals, actions, means and indicators

Goals	Actions and Means	Indicators	Desired values	Current values	5 year target
A reliable water supply to all the municipal consumers	Adding new water supply sources by desalinating groundwater impaired by seawater intrusion near the shore for local gardening	Extent of municipal desalination	2 million m ³ /year	0	0.5 million m ³ /year
	Increasing the system's storage capacity	Municipal water storage capacity	60,000 m ³	45,000 m ³	55,000 m ³
	Augmenting and renewing the system's infrastructure and equipment	Average age of pipelines	25 years	30 years	28 years
		Annual pace of replacing old and/or leaking pipes - as % of total pipelines length - as km per year	4% 40 km	0.8% 8 km	2.5% 25 km
		Annual number of local water supply cutoffs due to equipment failures	4,000	9,000	8,000
	Rapid and efficient responses to failure events in the system	Average time for starting repair of equipment failure events	2 hours	3 hours	2.5 hours
	Putting in place means for providing water during emergencies and repairing rapidly infrastructure damaged as a result of war and/or sabotage	The extent of emergency means in place – as percent of means required by government regulations	100%	40%	70%

The municipal water supply system's goals, actions, means and indicators (continued)

Goals	Actions and Means	Indicators	Desired values	Current values	5 year target
Water quality, at the consumers' taps, meets all requirements of the national Public Health Regulations	Maintaining the system intact and clean to avoid water contamination and dealing rapidly with excursions in water quality events	Annual number of exceeding water quality events	0	8	1
		Number of streets that could Not drink tap water during the Year due to excursions in Water quality	0	10	0
		The number of annually Reported water borne disease cases	0	Unknown	0
		Average time for starting to deal with exceeding water quality events	2 hours	4 hours	3 hours
		Average time for overcoming exceeding in water quality events	2 days	4 days	3days
	Ensuring proper disinfection of the water supply	Chlorine residual concentration levels at the connections to the consumers	0.1-0.5 mg/l	0.1-0.5 mg/l	0.1-0.5 mg/l
	Ensuring proper monitoring of physical-chemical and bacteriological water quality within the system	Samples in which excursions in water quality were detected as percent of all the tested samples	0	0.8%	0.6%

The municipal water supply system's goals, actions, means and indicators (continued)

Goals	Actions and Means	Indicators	Desired values	Current values	5 year target
Avoiding water supply and environmental contamination and advancing the removal of existing pollutants	Better inspection of potential groundwater pollution sources threatening municipal wells and stronger enforcement of the law against polluters	Number of municipal wells that are still usable, water-quality-wise	20	11	15
	Pressing for the removal of existing groundwater pollutants by and at the expense of the polluters and/or the government	Annual quantities of groundwater that may be derived through the municipal wells - million m ³ /year	5	2.5	3
	Substituting treated effluents for fresh water, where possible	Quantity of effluent utilized for municipal garden	5	0	2
Avoiding waste of water and energy in the system	Informing and educating the public to conserve water Promoting the use of water saving devices by homes and businesses Accelerating the introduction of water meters at the individual consumer's level	Per capita water consumption - Municipal - m ³ /c/year	100	122	105
		- Domestic - m ³ /c/year	60	70	65
		Average per business water consumption - m ³ /year/ business	400	530	450
		Public gardening specific water consumption - m ³ /year/ hectare of garden	4,000	5,300	4,500
		Public institutes water consumption - million m ³ /year	1.5	1.85	1.7

The municipal water supply system's goals, actions, means and indicators (continued)

Goals	Actions and Means	Indicators	Desired values	Current values	5 year target
Avoiding waste of water and energy in the system (continued)	Reducing unaccounted water losses	Unaccounted water losses	3.5%	4.4%	4%
	Reducing system energy consumption by improving equipment efficiencies, optimizing delivery pressures, etc.	System energy consumption - Absolute – million kWh - Specific – kWh/m ³	2.5 0.055	3 0.070	2.7 0.065
Development, operation and maintenance of the system at optimal costs	Reducing costs through strict bidding processes	Specific cost of water supply	1.7 NIS/m ³	2 NIS/m ³	1.9 NIS/m ³
	Close control of investment and O&M budgets	Costs of laying new steel water pipes, with internal concrete lining and external winding of trio, including accessories, in the 3 main system pipe diameters - 6" - 8" - 10"	Current costs – indexed escalation factors to be applied: 1,700 NIS/m 1,900 NIS/m 2,400 NIS/m	Current costs – indexed escalation factors to be applied: 1,800 NIS/m 2,000 NIS/m 2,500 NIS/m	Current costs – indexed escalation factors to be applied: 1,750 NIS/m 1,950 NIS/m 2,450 NIS/m

The municipal water supply system's goals, actions, means and indicators (continued)

Goals	Actions and Means	Indicators	Desired values	Current values	5 year target
Fairness and affirmative action to the Southern and eastern sectors of the city	Under equal conditions, giving priority to the improvement of infrastructure and services to these less affluent and developed city sections	Annual pace of replacing old and/or leaking pipes in these sectors vis-à-vis the other city sectors: <u>South (Yafo) sector</u> - as % of total pipelines length - as km per year <u>Eastern sector</u> - as % of total pipelines length - as km per year	Will be established in the future	Unknown	Will be established in the future

The municipal sewage system's goals, actions, means and indicators					
Goals	Actions and Means	Indicators	Desired values	Current values	5 year target
Connecting, collecting and transporting the sewage efficiently from all its producers	Expanding and augmenting the system to new developed sectors	Number of cesspools in the city	0	About 700	About 350
	Increasing collection in old lesser developed sectors				
Avoiding sewage related sanitary & environmental hazards (including sea and river pollution)	Renewing and reinforcing the system's existing infrastructure and equipment	Annual pace of replacing old lines (with a priority to lines near protective radii of the municipal water wells) - as % of total pipelines length - as km per year	2.5% 15 km	1.6% 10 km	4% 25 km
		Annual number of equipment failures in the system	4,000	9,800	8,000
		Number of annual sea and river pollution events due to system failures	0	5	0
	Rapid and efficient responses to failure events in the system	Average time for starting repair of equipment failure events	3 hours	6 hours	4.5 hours

The municipal sewage system's goals, actions, means and indicators (continued)					
Goals	Actions and Means	Indicators	Desired values	Current values	5 year target
Avoiding sewage related sanitary & environmental hazards (continued)	Separating storm water runoff from the sewage system	Length of lines receiving both sewage and storm water runoff	0	6 km	4 km
		Number of annual sea and river pollution events due to excess loading by storm water runoff	0	2-3	1-2
Avoiding contamination of the municipal sewage by hazardous industrial and commercial effluents	Better inspection of potential industrial and commercial pollution sources and stronger enforcement of the law against such polluters	Extent of inspection coverage of potential industrial and commercial pollution sources	Coverage of all potential pollution sources	Partial coverage of about 100 potential pollution sources	Expanded coverage of potential pollution sources
Development, operation and maintenance of the system at optimal costs	Reducing costs through strict bidding processes	Costs of laying new steel water pipes, with internal concrete lining and external winding of trio, including accessories, in the 3 main system pipe diameters: - 25 cm - 30 cm - 50 cm	Current costs – indexed escalation factors to be applied: 3,200 NIS/m 3,500 NIS/m 3,700 NIS/m	Current costs – indexed escalation factors to be applied: 3,500 NIS/m 3,800 NIS/m 4,000 NIS/m	Current costs – indexed escalation factors to be applied: 3,400 NIS/m 3,700 NIS/m 3,900 NIS/m
	Close control of investment and O&M budgets				

The municipal sewage system's goals, actions, means and indicators (continued)

Goals	Actions and Means	Indicators	Desired values	Current values	5 year target
Fairness and affirmative action to the southern and eastern sectors of the city	Under equal conditions, giving priority to the improvement of infrastructure and services to these less affluent and developed city sections	Annual pace of replacing old and/or leaking pipes in these sectors vis-à-vis the other city sectors: <u>South (Yafa) sector</u> - as % of total pipelines length - as km per year <u>Eastern sector</u> - as % of total pipelines length - as km per year	Will be established in the future	Unknown	Will be established in the future

The municipal drainage system's goals, actions, means and indicators

Goals	Actions and Means	Indicators	Desired values	Current values	5 year target
Managing the runoff within the city limits in a manner that maximizes its benefits and minimizes its damages	Utilizing the runoff within the city limits in a manner that maximizes its benefits	Percent of total runoff within city limits that is utilized beneficially	20%	Unknown	10%
	Increasing the ability of the surfaces of public and private areas to percolate runoff into the groundwater	Percent of paved surfaces in new developed sectors that are capable of percolating rain water	15%	Unknown	15%
Advancing the integration of municipal runoff within the management of the drainage basin runoff	Promote the diversion and utilization of Ayalon and Yarkon Rivers flood waters upstream, within the drainage basin	Annual number of flooding events as a result of extreme rain events and Ayalon River and Yarkon River flows – one flood events per number of years	1 per 10 years	1 per 5 years	1 per 7 years
Reducing flood damages, including environmental damages, as a result of abnormal rain events	Renewing and reinforcing the system's existing infrastructure	Annual number of flooding events as a result of infrastructure failures	700	900	800
		Annual flooding damage costs	250,000 NIS	500,000 NIS	350,000 NIS
	Rapid and efficient responses to failure events in the system	Average time for starting repair of equipment failure events	2 hours	6 hours	4 hours

The municipal drainage system's goals, actions, means and indicators (continued)

Goals	Actions and Means	Indicators	Desired values	Current values	5 year target
Development, operation and maintenance of the system at optimal costs	Reducing costs through strict bidding processes	Costs of laying new pipes in the 5 main system pipe diameters: - 60 cm - 80 cm - 100 cm - 125 cm - 150 cm	Current costs – indexed Escalation factors to be applied: 4,000 NIS/m 4,600 NIS/m 5,000 NIS/m 5,300 NIS/m 5,700 NIS/m	Current costs – indexed escalation factors to be applied: 4,200 NIS/m 4,800 NIS/m 5,200 NIS/m 5,500 NIS/m 6,000 NIS/m	Current costs – indexed escalation factors to be applied: 4,100 NIS/m 4,700 NIS/m 5,100 NIS/m 5,400 NIS/m 5,860 NIS/m
	Close control of investment and O&M budgets				
Fairness and affirmative action to the southern and eastern sectors of the city	Under equal conditions, giving priority to the improvement of infrastructure and services to these less affluent and developed city sections	Annual pace of replacing old pipes in these sectors vis-à-vis the other city sectors: <u>South (Yafo) sector</u> - as % of total pipelines length - as km per year <u>Eastern sector</u> - as % of total pipelines length - as km per year	Will be established in the future	Unknown	Will be established in the future

Future expectations

It is the hope and the wish of all those who participated in generating this report that their efforts will prove fruitful, and the vision, goals, actions, means and indicators developed and formulated by them will be:

1. Adopted by the Municipality of Tel-Aviv-Yafo
2. Incorporated into its water sector's strategic master planning
3. Employed by the management of each of the three municipal systems.

A letter to the high TA administration

To: Dr Benjamin Maor
Director of Infrastructure and Construction Administration
Tel Aviv – Yafo Municipality

Dear Dr. Maor,

Re: Strategic Planning for the Urban Water Systems of Tel-Aviv-Yafo City
After long and fruitful discussions with your staff and yourself and with the encouragement of Tel Aviv-Yafo Mayor Mr. Ron Huldai, we are very pleased to submit to you the Tel-Aviv-Yafo water profile and the final report of the Strategic Planning for the Urban Water Systems of Tel-Aviv-Yafo.

Kind Regards	
Prof. Avner Adin	Avi Aharoni
The Hebrew University of Jerusalem	Mekorot
Faculty of Agriculture, Food and Environment	National Water Company

Cc:
Mr. Ron Huldai, Mayor of Tel Aviv - Yafo
Prof. Kala Vairavamoorthy, SWITCH Scientific Manager
Ms. Carol Howe, SWITCH Project Manager
Dr. Peter van der Steen, Department of Environmental Resources, UNESCO-IHE