Regulation on water and sewer utilities in Israel – what can we do?

This presentation

1. Background - Israeli water sector
2. The shift from municipalities to utilities
3. Water utilities structure
4. Objectives and key activities of the regulation board
5. 8 years of regulation – what we can ...
6. Way forward to increase performance
1. Israeli water sector - background

- The country population as 2015, 8.08*10^6 inha.
- The average per capita urban water demand 85 m^3/cap/Y.
- Current potable water demand ~ 1.2 billion m^3/annum
- Agriculture needs for water shifts to treated WW (2nd and 3rd)
- Total all Water types demand – more than 2 billion m^3/annum
- Average Natural Resources yield – 1.17 billion m^3/annum.
- Since 2004 the country run long term desalination program, where current total production is 480 MCM/y
The Change in the natural water resources yield along 75 Years

Natural Replenishment 1932-2008 (76y) 1,555 MCM/y

Natural Replenishment 1970-2008 (38y) 1,365 MCM/y

Natural Replenishment 1990-2008 (18y) 1,175 MCM/y

2007-2008 726 MCM/y

Figures are for the Israel’s natural replenishment
Water Consumption in Israel
According to sectors - Estimated data for 2012

- Agriculture: 1,170 MCM (59.25%)
- Industry: 88 MCM (4.5%)
- Domestic: 693 MCM (35.5%)
- Nature: 15 MCM (0.75%)
- Potable: 557 MCM
- Recycling: 613 MCM

Total: 1,966 MCM

Supply to P.A. – 52 MCM ; Supply to Jordan – 48 MCM
Trends in the demand consumption from 2002-2010

The Governmental Authority for Water and Sewage

STATE OF ISRAEL

Year

MCM

2002 2003 2004 2005 2006 2007 2008 2009 2010

Agriculture
City
Industry
Nature
Israel – potable, brackish and desalinated
Israel – potable, brackish and waste
Israel – potable + neighbors
Main Water Supply System north to south

- Eshkol reservoir
- See of Galilee and Saphir P.S.
- National carrier 108"
- Sea of Galilee (Kinneret)
- National carrier - length section
- 108"
- Sea of Galilee
The increasing gap between available water and demand has accelerated the need to add water: Desalinated water.

The desalination plant distribution along the shore for the short term
2020, 750 mcm/y
Total desalination production as to 2015 – 480 MCM/y. By the end of 2017 – with new “Sorek” plant – 650 MCM/y

According to the Government decision, the total amount of desalinated water will be 750 MCM/y in 2020
Production cost of the desalinated water:

- Ashkelon, $0.81/cum
- Hcadera, $0.75/cum
- Soreq, $0.545/cum

**DESALINATED SEA WATER COST RANGE**

- SMALL SWRO DESALINATION PLANTS
  - Malta
  - Eilat
  - Larnaca
  - Trinidad

- LARGE SWRO DESALINATION PLANTS

Year ranges:
- 1985
- 1990
- 1995
- 2000
- 2005
Ashkelon SWRO 120 mcm/y
Hadera SWRO 120 mcm/y
Palmachim SWRO 50 mcm/y
Mekorots “Sabcha” (Eilat) SWRO + BWRO
2. The shift to water utilities

- 2002 - house of parliament has approved the legislation regarding the shift of water and sewer services to utilities.
- Poor management, low maintenance of the local water and sewer networks - reasons for the new legislation.
- High fees charged by the municipalities to maintain infrastructures - shifted to other objectives.
- Political influences cause major delay in execution. It was finalized and happens only since 2008.
- Comparing water loss figures before and after the shift: that Municipalities annual reports were distorted.
T.W.L as reported by municipalities at 2009 and the “real” numbers found at time switch to utilities, 2010
3. Water utilities structure

- From 2008 to 2012, 54 water and sewer utilities (Ta’agid) were formed, serve today some 6.8 million Inhabitants.
- Utilities of single or multiple municipalities urban/peripheral
- The biggest – “Hagichon” – for Jerusalem city serves more than 850,000 inha. Small utilities serves 50,000 inha.
The utilities are regulated by the “office in charge for regulation”, a unit under the national water authority.

The regulation activities are focus on 3 main areas:
- Engineering, development and rehabilitation programs
- Financial, accounting and water bill charging
- Customer service, society relationships, admin & HR

Utilities size: Discussion is still under go (8 years...) the optimal size for a utilities.

Number of customers, geographical distribution, demographic and annual water demand, condition of the asset and financial stability, should all be considered for decision.
4. Objectives and activities of the Regulation board

Key objectives of the regulation unit:

A. Setting Engineering Standards

- Various engineering standards were found. They origin from the old municipalities departments. Part of them were OK, Part were poor and in some they were not exist.
- The creation of nationwide engineering Manuel for renewal and development of public infrastructures was deeply needed.
- It took nearly 3 years to create it, as the big utilities insist to continue work under their design criteria.
- The new Manuel was published as a rules for the utilities. It also serve as a measure for planning.
B. Create Indicator Measuring System

- Before utilities periods, indicators were barley in use.
- Dealing with 54 utilities, forcing the regulator office to adopt an *indicator system* to measure utilities performance.
- The indicators will be use to:
  - Compare similar activities in different utilities,
  - Create benchmark for activities within the utility,
- Variety between utilities (urban/peripheral), force the office of regulation to prepare a preliminary study in order to set adequate *indicators* for different utilities.
- In some cases, it was found that indicator will be equal to different utilities, although time grace will be given so some.
The most important indicator—the traffic light indicator

The Zones of Regulation

Blue Zone
sad
sick
tired

Tired
moving slowly

Green Zone
happy
calm
feeling ok
focused
ready to learn

Yellow Zone
frustrated
worried
silly/wiggly
excited
loss of some control

Red Zone
mad/angry
terrified
yelling/hitting
elated
out of control
C. Define “Guided” or “Manage” Regulation

- At the beginning of the period, all utilities were act under tight regulation. Quarterly reports were needed.
- Some utilities performed well after short time, (2-4 years), general as a result of professional and experienced staff.
- It was concluded that the regulation activity must be divided into two categories:
  - “Manage Regulation” - Utilities will perform under the rules, indicators and standards. They will evaluate annually.
  - “Guided Regulation” - frequent intervention is required. Some utilities were granted budgets. Investments comes out of those budgets were controlled by the regulator.
D. Master planning the urban infrastructures

- Master planning water and sewer programs were always there.
- For country with limited resources - coordination between the national and urban level, is essential. Both for water + sewer.
- Sewer master plans focuses also on WWTP needs as well as the reclamation of the TWW. The country is a world lead in reuse.

- Nevertheless ab normalizes were found:
  - Water MP that were not coordinated with the sewer MP’s,
  - New developments that excluded in recent MP’s,
  - Investments Prioritizing was set un wisely,
  - Lack of coordination between adjacent utilities,

- A framework for the preparation of MP’s was needed:
  - Create s guidelines for preparation of MP’s,
  - Comprehensive approach to adjacent utilities,
  - Water supply resilience for group of utilities,
5. Lesson from 8 years of running regulation – Or what we can share?

Mange or guided regulation – The basic assumption is that utilities want to perform well. Utilities that achieved targets – should be refer with “Manage” approach. The Less inputs will be required from the regulation office, the more resources will be available to new challenges and missions.

Sewers are important as Waters – Utilities tend to accelerate the improve of their water infrastructures as it is a “source of money”. Sewer pipe rehabilitation should not fall apart. They are as important as water. (sewer/water age ratio 1.25/1)
Data acquisition – development the data base of the utility is a ‘must’ doing. Mapping all network with GIS, merging dynamical data to the system, AMR, Simulation emergency conditions, etc. Develop an emergency response doctrine, base on data analyses.

Every drop count – those utilities reached target level – in the case of Israel 8% WL – should be active to maintain figures as water loss is a dynamical parameter.

Assimilation of new technology – more effort should be required in order to encourage utilities to use new technologies. Adoption of the later has positive effect on performance.
Relationships with the municipalities – many authorities claims the utilities should fulfill its duties ASAP, regardless lack of infrastructures and inefficiency for many years.

Intervention from the regulator is required in order to avoid unnecessary expanses or investments.

Long term M.P – the rule of MP’s has a significant importance. Not all new developments requires the MP update:

- Regulator should exam the changes in condition and to decide where update is needed:
- It also refer to water loss reduction programs
6. Way forward to increase performance

✓ The utilities average water cost is around 1+Eu. The level of water price force every one to keep improving at all levels. Capex, Opex, project execution and customer satisfaction.

✓ WS’P in no longer Supply provider: it is a Service provider.

✓ More attention should be given to comprehensive overview of the network’s: Asset management, Energy optimization, Openness for technology, Assimilation of new approaches.
✓ Less peripheral utilities will survive: a regulator act to merge small operators is essential.
✓ More use of uniform formats and indicator – will improve regulation response, accuracy and less bureaucracy.
Thanks for your attention . . .

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## SWRO Costs

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<tr>
<th></th>
<th>Ashkelon</th>
<th>Palmachim</th>
<th>Hadera</th>
<th>Sorek</th>
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<tbody>
<tr>
<td>MCM/Year</td>
<td>120</td>
<td>45</td>
<td>127</td>
<td>150</td>
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<tr>
<td>Salinity – PPM</td>
<td>20</td>
<td>30-40</td>
<td>20</td>
<td>20</td>
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<tr>
<td>Total cost – $ (1 $ = 3.7 Shekel)</td>
<td>0.81</td>
<td>0.878</td>
<td>0.735</td>
<td>0.54</td>
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