Water resources management to address chronic water scarcity- Israel solutions

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Israel Water Authority
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Israel has a Mediterranean climate;
- It is situated at the edge of a desert
- Within a length of 200 km, average annual rain drops from 700 to 150 mm
- Annual rain is highly variable
- Typically, periods of consequent drought years occur at least once in a decade.
Water management challenges

• Increasing potable water demand far more than natural replenishment - deficient in 2050 1.6 billion m3/annum

• Reduction in natural water yields due to climate change effects:
  – 10% -20% decrease in rainfall by 2100
  – Temp rise of 1.8 degrees by 2050, increases evaporation
  – Reduction in soil moisture
  – Longer period of dry days in winter
  – Increase in rain intensity
Closing the Gap Between Demand and Natural Supply

- Water conservation and efficient use of water
- Planning for the future
- Development of artificial water resources:
  - Seawater desalination
  - Wastewater treatment and reuse
  - Surface water harvesting
Efficient water use

- Water quotes is given to each supplier and supervised by IWA.
- Water Tariff is set to reflect true water cost recovery and not subsidized.
- Water metering has been required by law, since 1955: “Water cannot be supplied without metering”. Israel succeeded in reducing its countrywide water loss to less than 10%.
- Increased water use efficiency in agriculture from 40-50% in surface irrigation to 95% in pressurized/drip irrigation;
Domestic Water Demand Management

DOMESTIC CONSUMPTION

- Water tariffs adjustment
  ✔ Water tariffs raised by 40% in 2010
  ✔ Decrease in CPC: ~ 20%
- Public (TV) Campaigns
- Education programs

Campaign on efficient use of water

Israel is Drying

CPC in 2021: 90 m³
### The Importance of Water Balance Analysis

The national and regional long-term water supply planning is based on the projection of future water balance:

#### CONSUMPTION (MCM)

<table>
<thead>
<tr>
<th>Total</th>
<th>Nature</th>
<th>Kingdom of Jordan</th>
<th>PA and Gaza</th>
<th>System Losses</th>
<th>Agriculture</th>
<th>Industry</th>
<th>Domestic</th>
<th>Year</th>
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<tbody>
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<td>55</td>
<td>100</td>
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<td>1,185</td>
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<td>2,600</td>
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<td>90</td>
<td>120</td>
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<td>1,565</td>
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<td>3,775</td>
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<td>1,060</td>
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#### WATER SUPPLY (MCM)

<table>
<thead>
<tr>
<th>Total</th>
<th>Potable pumped and produced</th>
<th>Effluent including Shafdan (6)</th>
<th>Sea Water</th>
<th>Desalination</th>
<th>Natural Storage</th>
<th>Natural Replenish.</th>
<th>Year</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Avg. Prod. (5)</td>
<td>Installed Capacity</td>
<td>Red - Dead Project (4)</td>
<td>Brackish (3)</td>
<td>Brackish (2)</td>
<td>Storage Volume</td>
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<td>2,600</td>
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<td>1,498</td>
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</tr>
</tbody>
</table>

*Data from 2020; Average (1991-2020): 1250 MCM.

**Natural water yield 1.2 MCM**
Sea Water Desalination

Western Galilee (100 MCM, 2025)
E. Hefer (~2032)
Sorek II (200 MCM, 2023)

2005: 120 MCM
2021: 600 MCM
2025: 900 MCM
2032: 1100 MCM
With governmental support, sewage infrastructures have been developed and upgraded nationwide, Israel is reclaiming 85% of the sewage.


Regulation on industrial sewage

Developing water saving technology in agriculture.
Thank you for your attention