

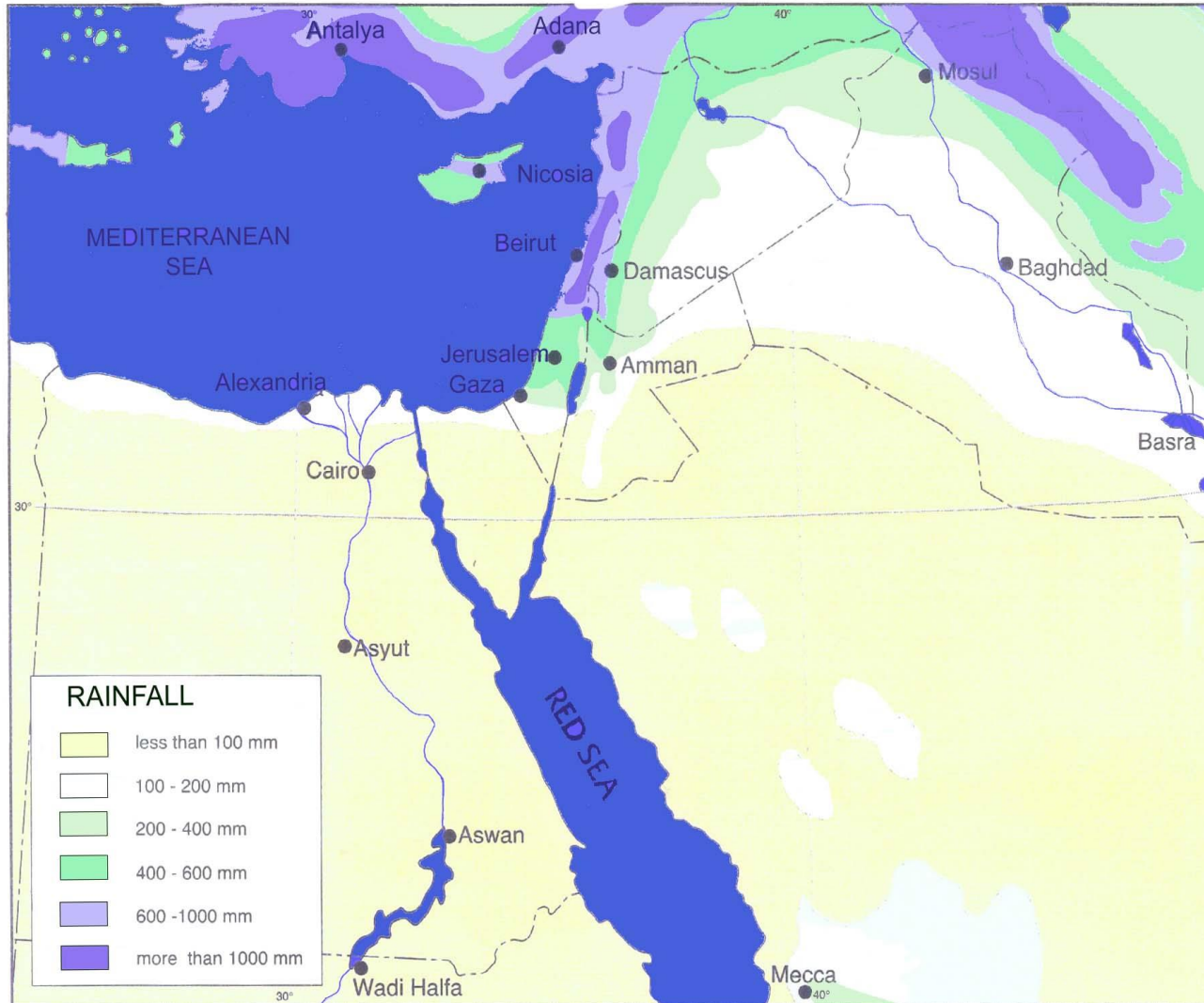
# Efficient Management of Water - the Israeli Experience

International Serbia – Israel Expert Forum

19<sup>th</sup> June 2019

# Severe Scarcity

## The Desert Strip in the Middle-East



### Edge of the desert

- Extreme changes in the yields of natural water resources
- Low average annual rainfall

### Shortage of Natural Water resources

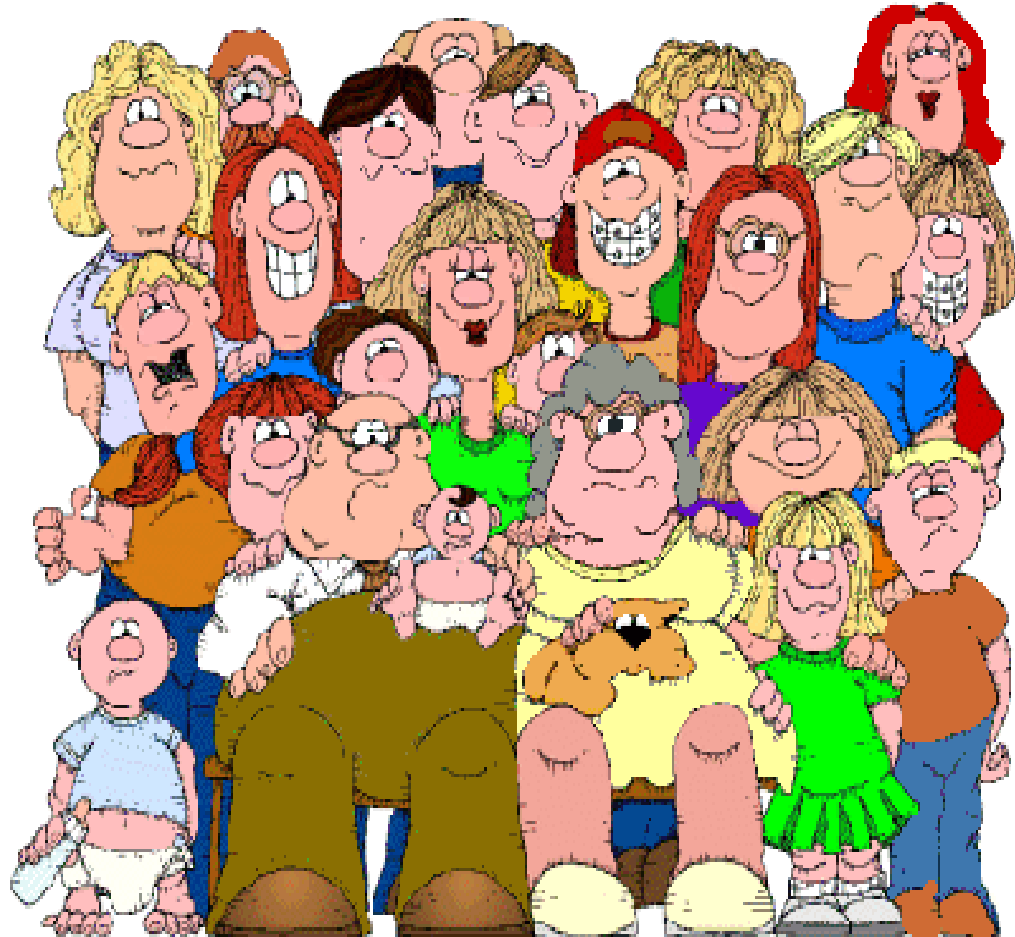
- Regional average 150 m<sup>3</sup>/cap/year (30% of severe scarcity limit of the UN)
- Within 15-20 years inability to sustain advanced society

### Need for efficiency

- Efficient use and management
- Priorities in water supply

# The effect on water resources

## Population growth



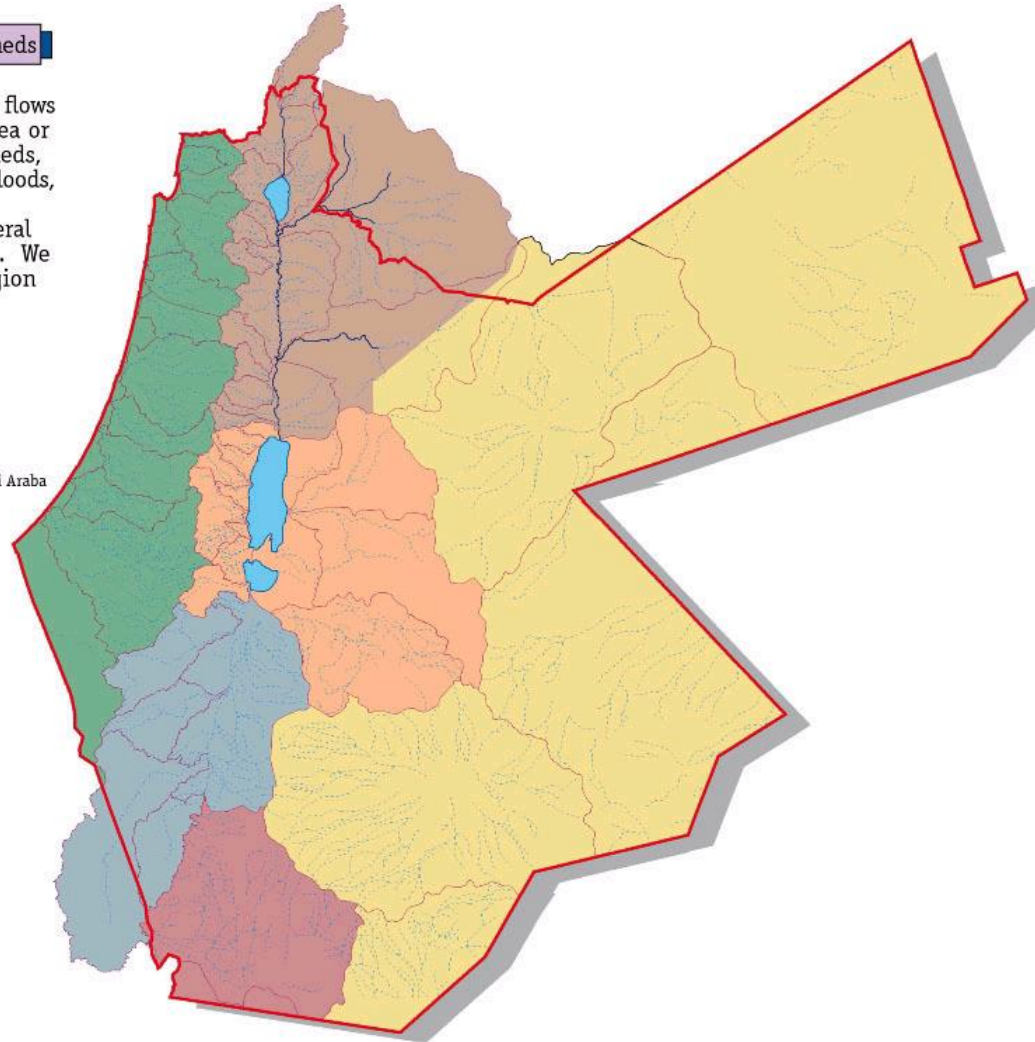
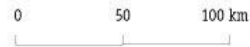
## Global warming



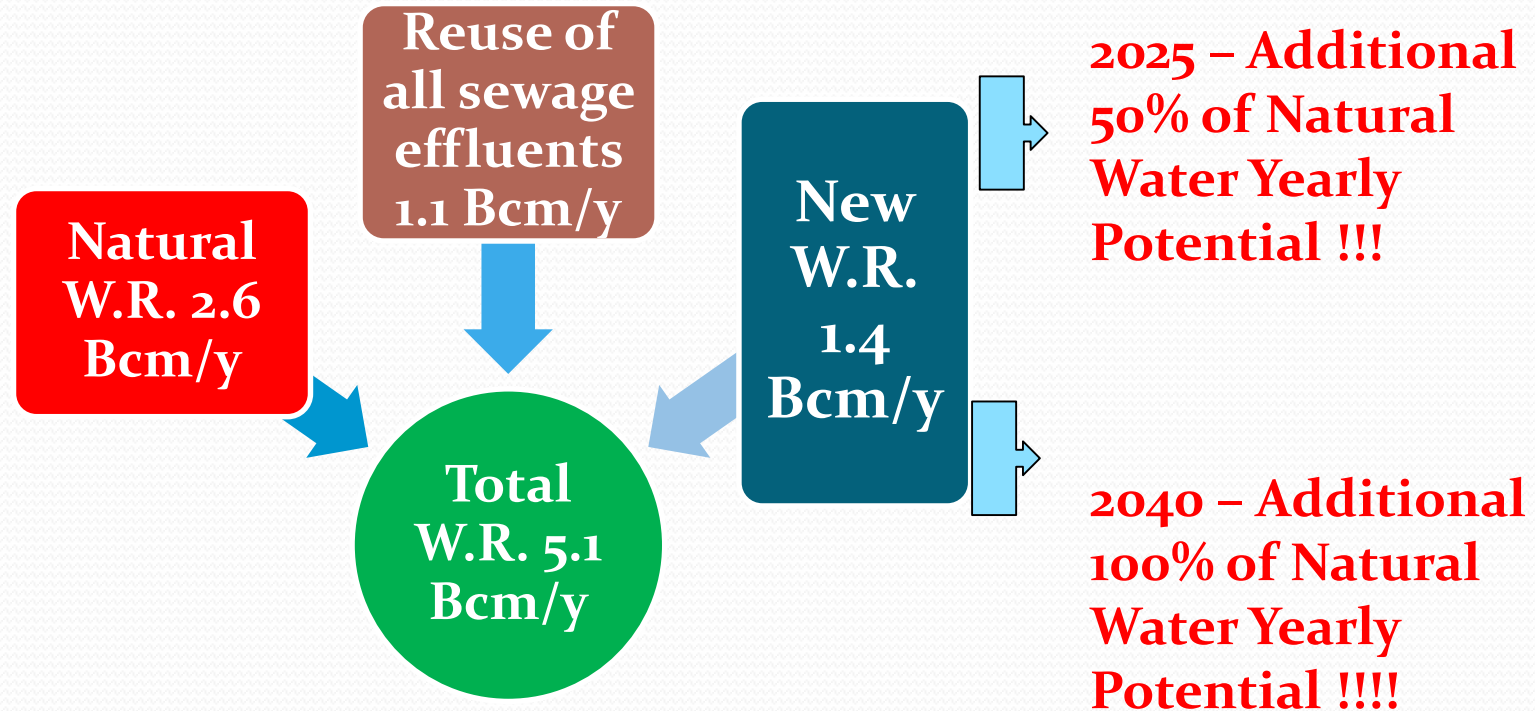
# Maps of drainage basins and watersheds

## Map of Drainage Basins and Watersheds

Surface water in the region ultimately flows to the Mediterranean Sea, the Red Sea or the Dead Sea. In the desert watersheds, water flows on rare occasions during floods, and most of the water evaporates or penetrates into the ground. Ephemeral streams are marked by a broken line. We can see that most streams in the region are ephemeral.



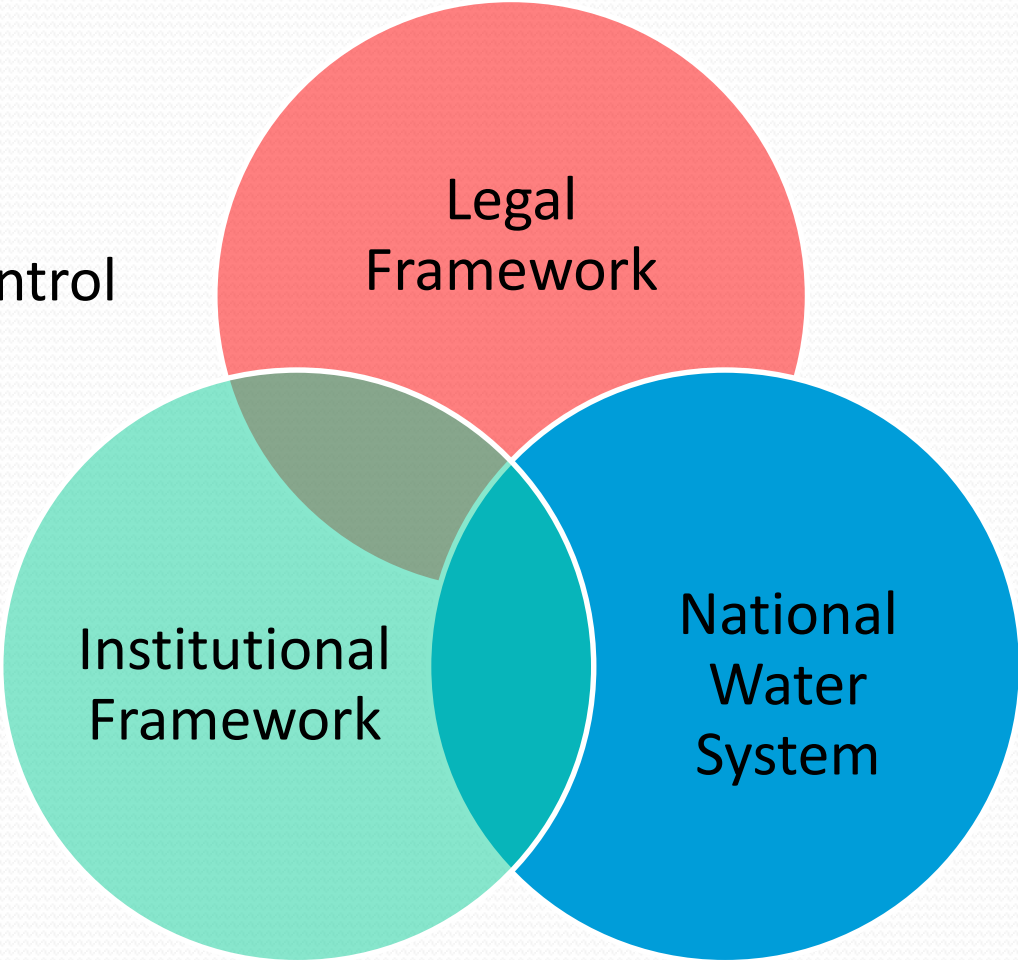
# Regional Water balance 2025



# Principles of Integrated Water Management in Israel

Strong Centralized  
Management

Full administrative control

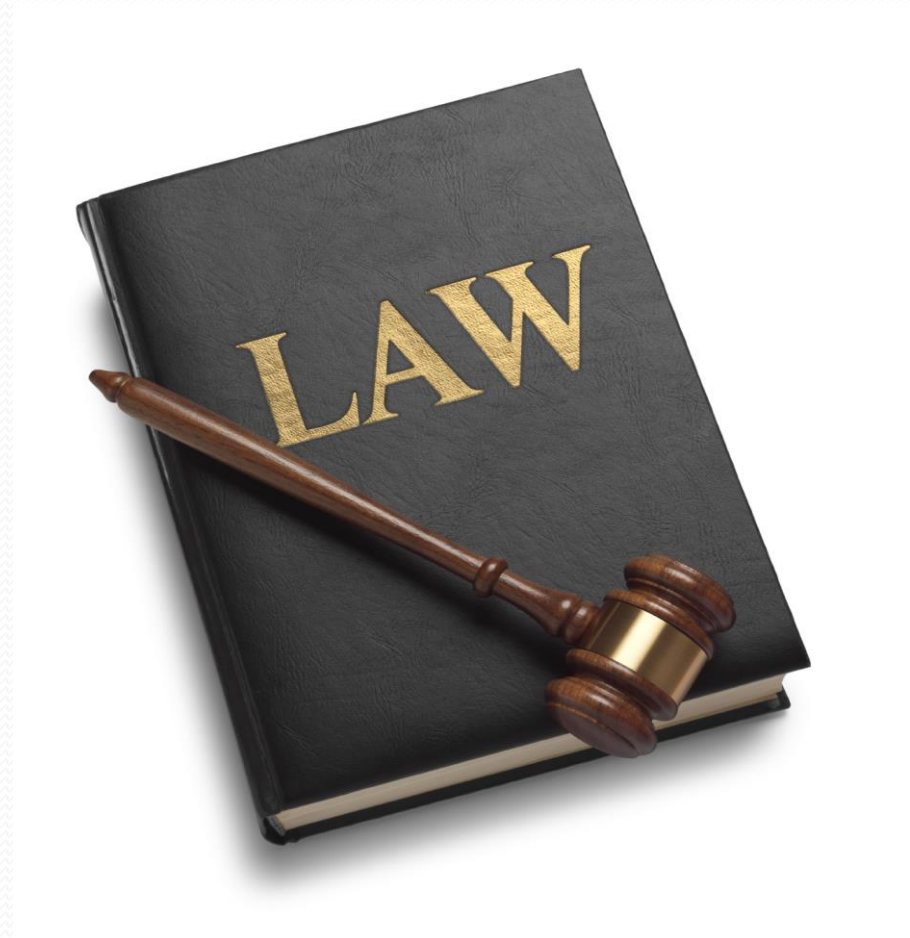




# Principles of Integrated Water Management in Israel

## Legal Framework

- Codex of water Laws – principles of IWRM
- Water is owned by the public – Government manages water as a trustee
- Water must be measured
- Need for yearly license – allocations + purpose + resource + quality
- Water – very wide determination include sewage effluents – difference in source and quality
- Preservation of water resources – top priority. Operation considerations - quantities and qualities.



## Principles of Integrated Water Management in Israel National Water System

- 95% of natural fresh Water resources
- 95% of regional water supply system
- “Mekorot” – the National Water Company ( Governmental Company )
- Efficient use of water resources according with hydrological conditions





# Principles of Integrated Water Management in Israel

## Institutional Framework

- IWA – Israeli Water Authority – Planning & Regulation
- 2006 Institutional Reform
- Water Commission Office-→ IWA
- 1. Gathering all the regulatory bodies under the IWA – management of the whole “Chain of Water”
- 2. Clear border between policy makers and professional management of the IWA (Water tariffs, National Interests).
- 3. Engagement of all the important stakeholders in the professional management ( IWA Council – Infrastructure, Environment, Agriculture, Interior affairs, Finance, Health, Public Representatives)



# Principles of Integrated Water Management in Israel

## Main Reforms

- 2008 – Tariffs of Fresh Water cover all expenses. Financial Sustainability.
- Subsidies for developing sewage effluents reuse systems or to cover national interests (Social, Water agreements with Neighbours, water for Nature)
- Incorporation of Municipal Water and Sewage services into commercial companies.



# Water reliability



- Municipal use 115 → 90 m<sup>3</sup>/cap/year – educational activities + tariffs
- Agricultural productivity per m<sup>3</sup> → doubled in 12 years
- **Creating a Supporting Environment for Water Innovation**

- Reuse of 85% of treated sewage for agricultural irrigation
- Transfer of Agriculture from using fresh water to marginal water resources

- Desalination capacity 650 m<sup>3</sup>/year → more than 80% of municipal use
- PPP - BOOT

Reliability = Manufacturing new resources (+85% of natural average yield) + storage management; 95% reliability

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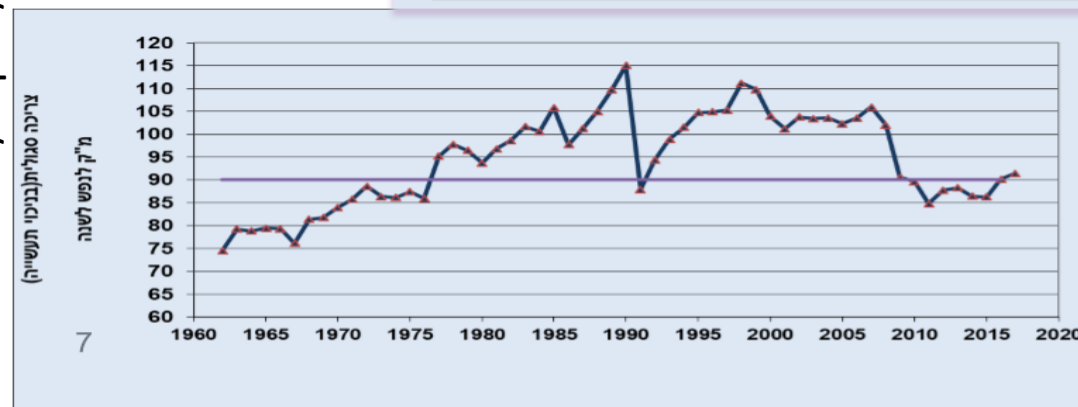
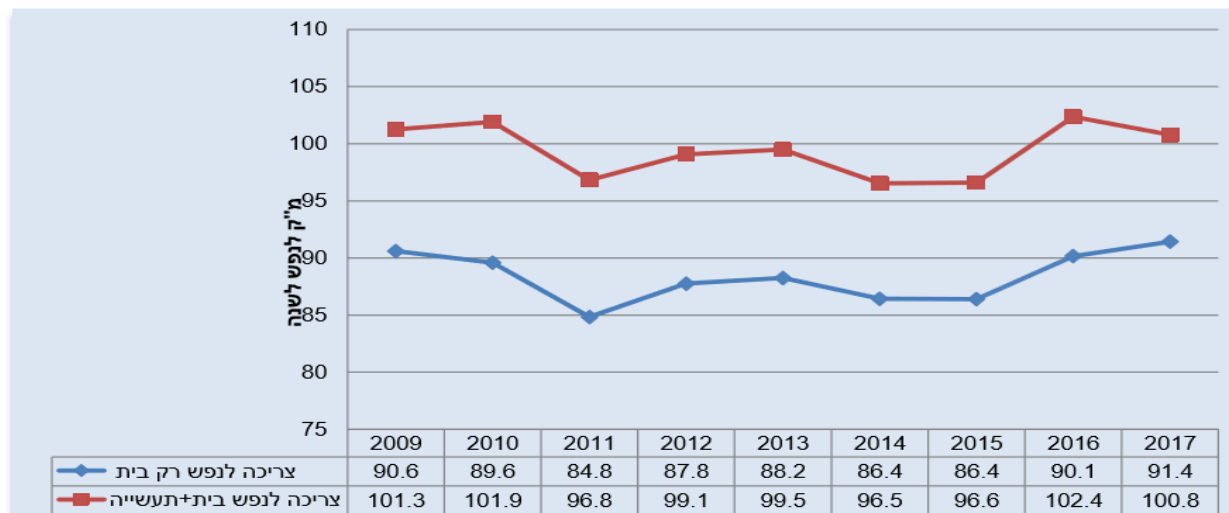
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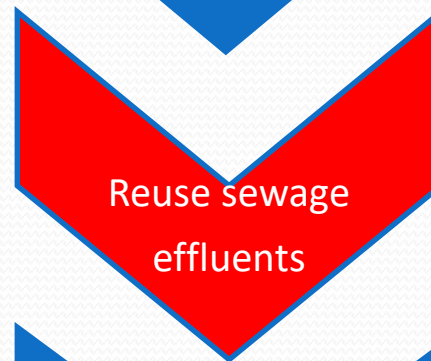
Activities	%	Specific Domestic Use cm/c/y	Years
Awareness of public	-8%	112.5-103.5	1998-2008
Tariffs, Saving Water Devices	-16%	103.5-85.6	2008-2011

Consumption  
c.m./capita/year





# Water reliability



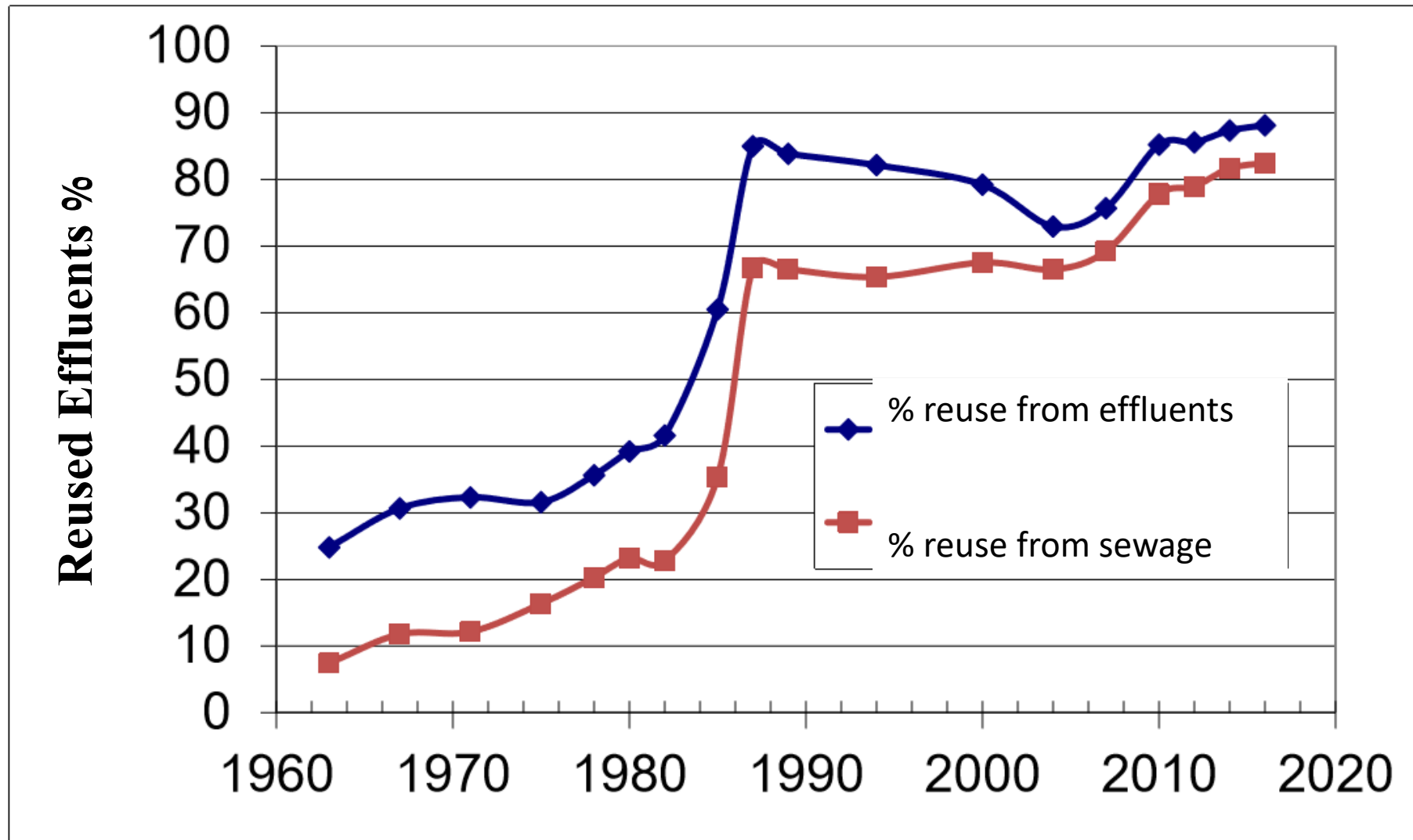
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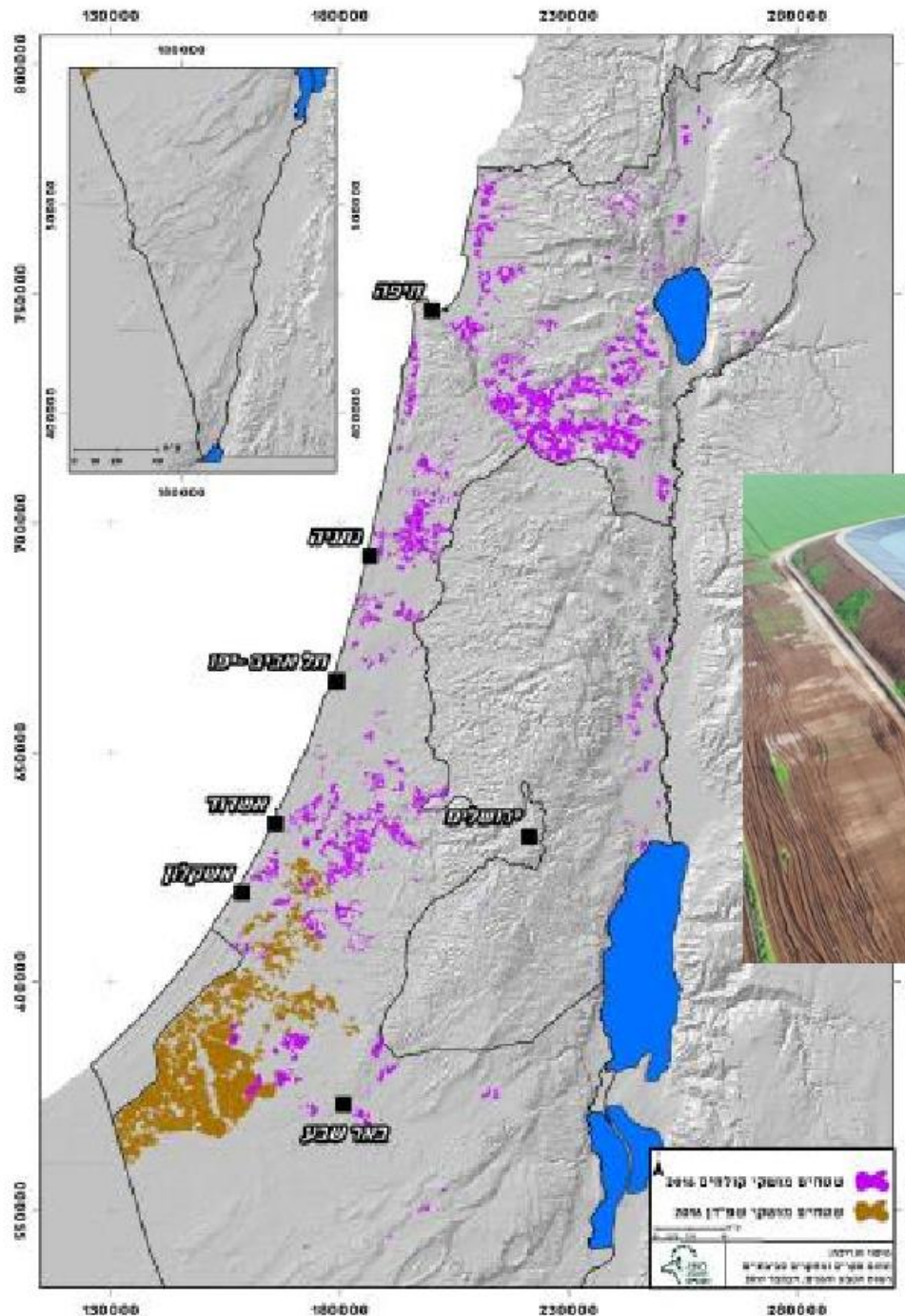
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# Reused Effluents



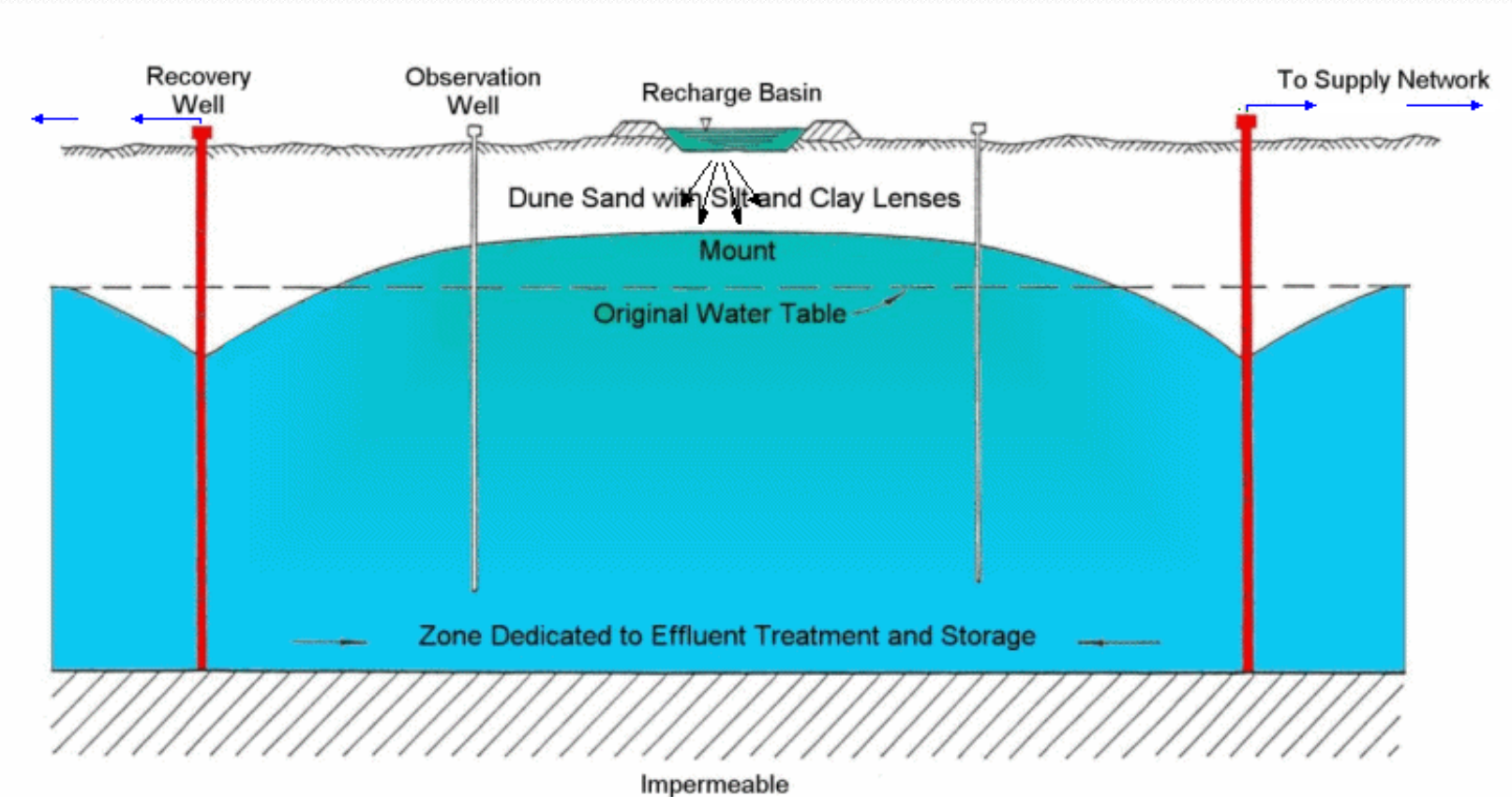
# Expansion of effluent utilization



## Moledet 2 reservoir

מקור נתונים – ועדת היגוי סקר קולחים 2016, רט"ג עבור רשות המים. צילום – אגודת המים חרוד

# Soil Aquifer Treatment - S.A.T.



Recharge - Recovery Scheme

# Water reliability



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- Reuse of 85% of treated sewage for agricultural irrigation
- Transfer of Agriculture from using fresh water to marginal water resources

- Desalination capacity 650 m<sup>3</sup>/year → more than 80% of municipal use. **In 2023 950 m<sup>3</sup>/year.**
- PPP - BOOT

Reliability = Manufacturing new resources (+85% of natural average yield) + storage management; 95% reliability









2015 – 650 mcm/yr ~ 40% of  
natural water capacity

2023 – 950 mcm/y ; 7 Plants



# Efficient Management of Water - the Israeli Experience

Thank you

Shimon Tal

[talshimon@stal-consulting.com](mailto:talshimon@stal-consulting.com)