REPUBLIQUE DU SENEGAL
Un Peuple – Un But – Une Foi

WORLD WATER COUNCIL

9TH WORLD WATER FORUM | DAKAR 2022

Water resources management to address chronic water scarcity- Israel solutions

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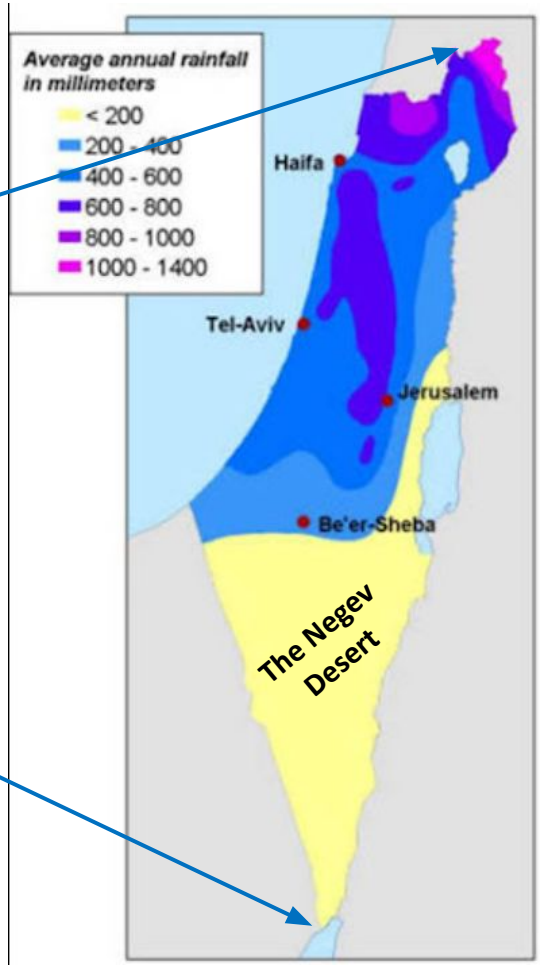
The Region and the Climate

- 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.



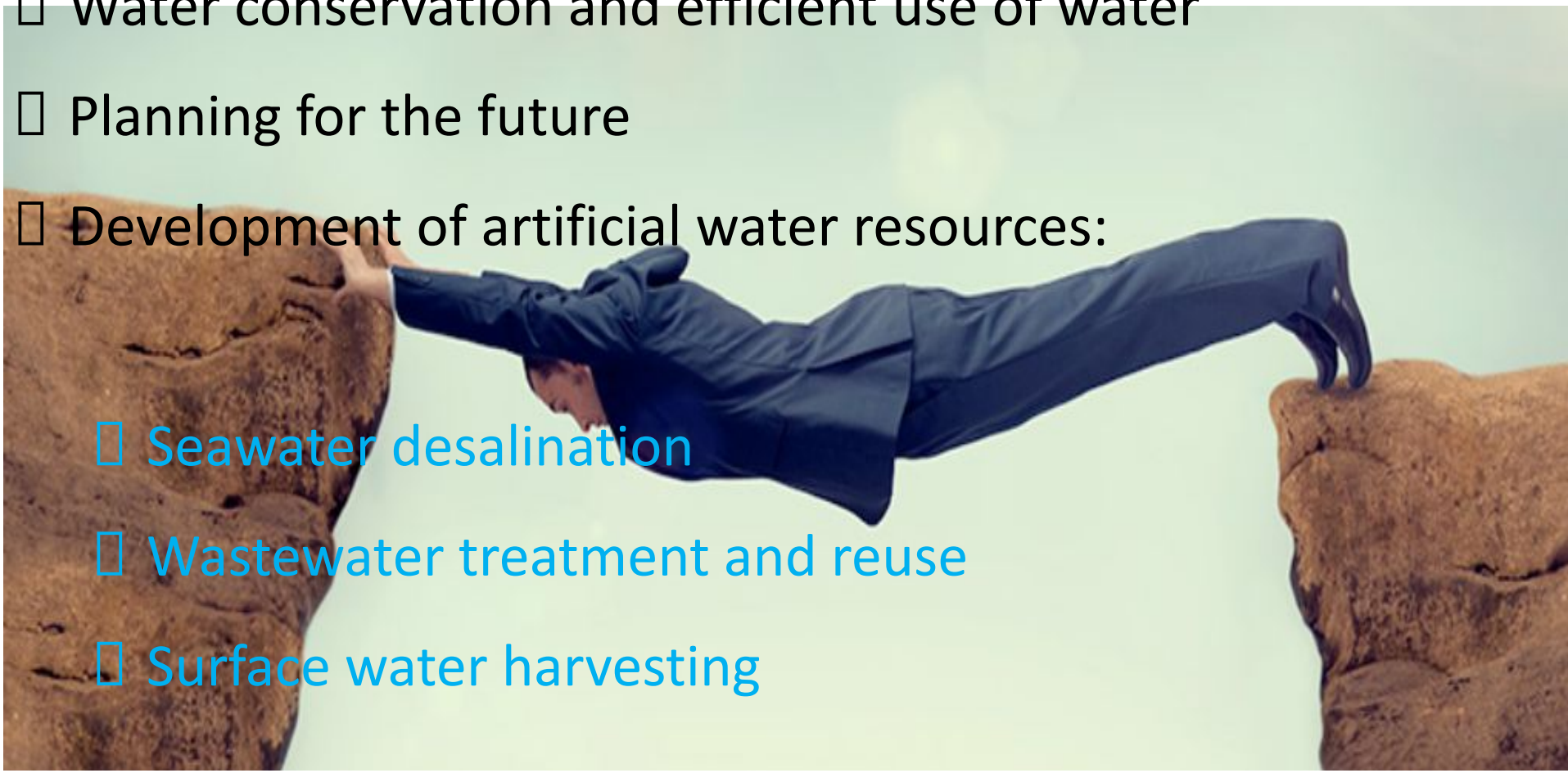
Water management challenges

- 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

Water yield reduction

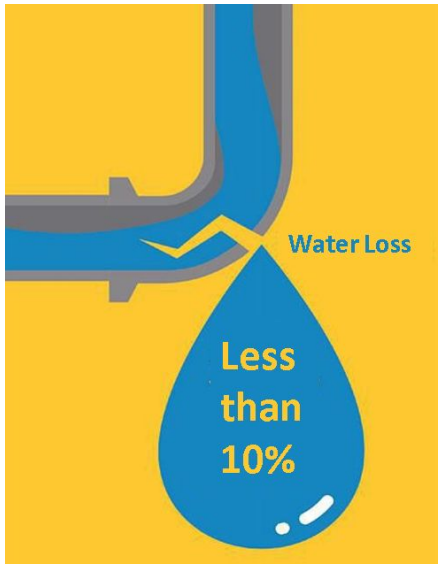
Closing the Gap Between Demand and Natural Supply

- 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

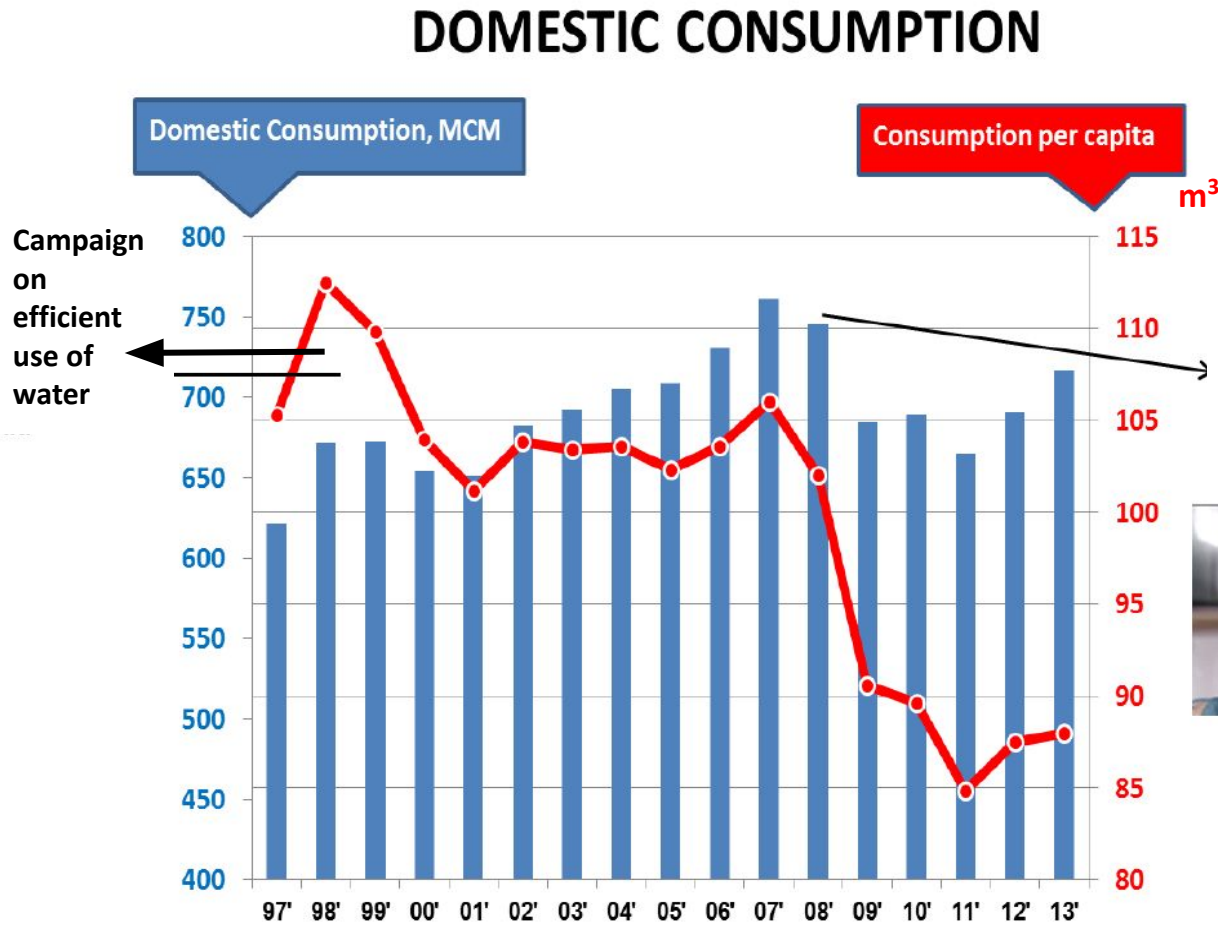


Efficient water use

- 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



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

Israel is Drying

CPC in 2021: 90 m^3

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)

Total		Nature (12)	Kingdom of Jordan (11)	PA and Gaza (10)	System Losses (9)	Agriculture				Industry			Domestic			Year
All qualities (1,4,8,9,10,11,12)	Potable (1,2,5,9,10,11,12)					Tot. Agr. (8)	Effluent including Shafdan (7)	Brackish (6)	Potable (5)	Tot. Ind. (4)	Brackish (3)	Potable (2)	Tot. Dom. (1)	*Per capita*, annual, cub. m	Population, mil.	
2,365	1,650	35	55	100	40	1,185	500	185	500	110	30	80	840	90	9	2020
2,600	1,790	35	90	120	40	1,285	592	185	505	110	30	80	920	90	10	2025
2,800	1,900	35	90	145	45	1,370	680	185	500	110	30	80	1,005	90	11	2030
3,260	2,170	35	90	205	50	1,565	875	185	505	115	30	85	1,200	90	13	2040
3,775	2,500	35	90	300	55	1,745	1,060	185	500	120	30	90	1,430	90	16	2050

WATER SUPPLY (MCM)

Total		Effluent including Shafdan (6)	Desalination				Natural Storage					Year
			Sea Water		*Red - Dead Project* (4)	Brackish (3)	Brackish (2)	Storage Volume	Potable Pump (1)	Storage Increase	Natural Replanish.	
All water qualities (1,2,3,4,5,6)	Potable pumped and produced (1,3,4,5)		Avr. Prod. (5)	Installed Capacity								
2,355	1,640	500	595	595	0	75	215	1,625	970	640	*1,615	2020
2,600	1,790	595	685	895	0	100	215	1,375	1,005	48	1,052	2025
2,800	1,900	685	750	895	0	105	215	1,340	1,045	-33	1,012	2030
3,260	2,170	875	1,005	1,095	35	105	215	1,160	1,025	-61	959	2040
3,775	2,500	1,060	1,415	1,496	35	110	215	1,060	940	-38	903	2050

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

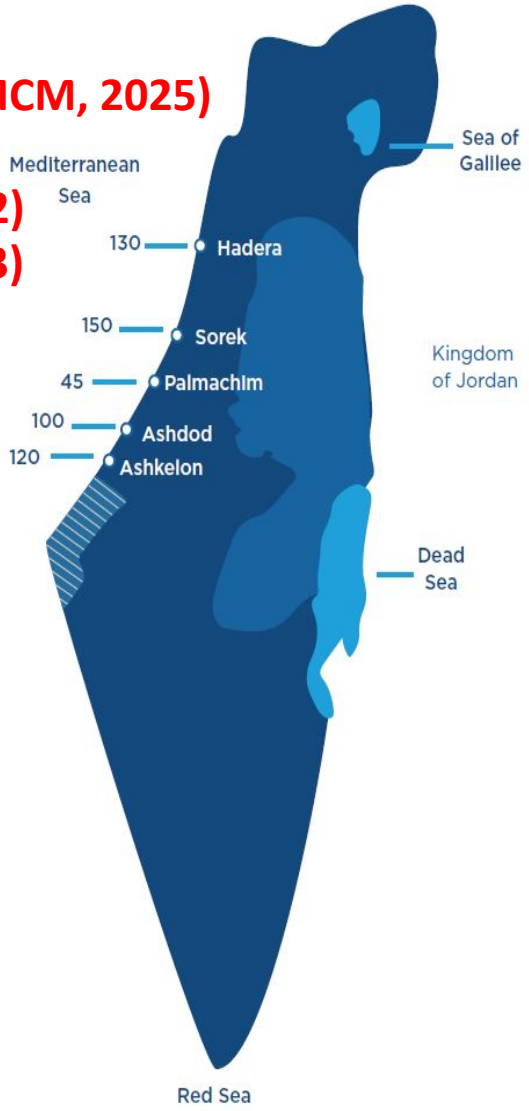
Natural water yield 1.2 MCM

Sea Water Desalination

Western Galilee (100 MCM, 2025)

E. Hefer (~2032)

Sorek II (200 MCM, 2023)



2005: 120 MCM

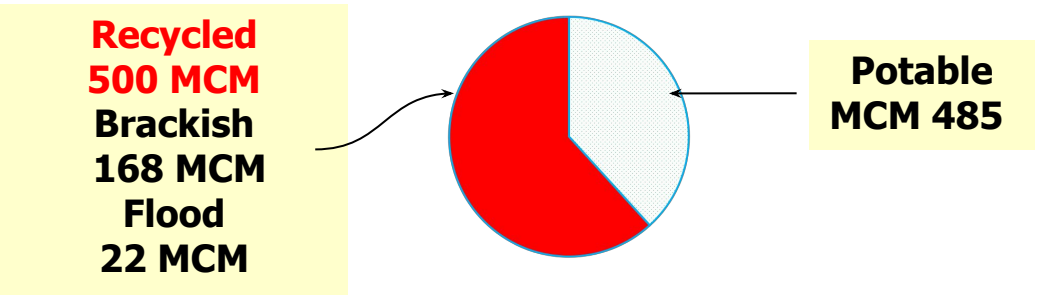
2021: 600 MCM

2025: 900 MCM

2032: 1100 MCM

Completing the circle of waste water collection- treatment- Reuse

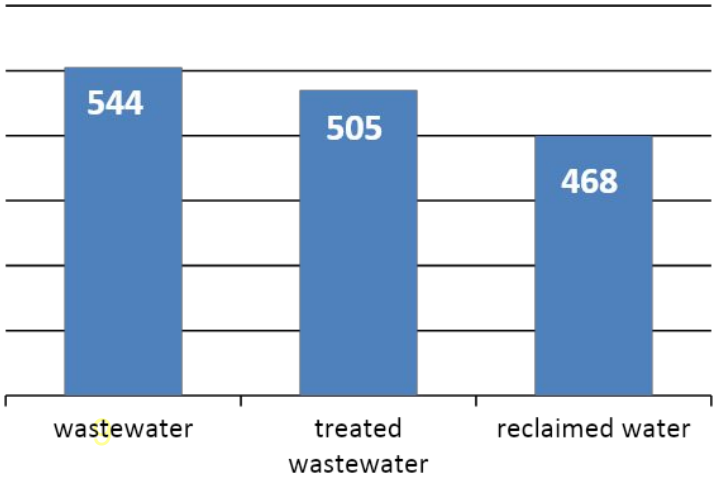
With governmental support, sewage infrastructures have been developed and upgraded nationwide, Israel is reclaiming 85% of the sewage



Tertiary treatment – unrestricted irrigation. New stringent standards for effluents quality (37 parameters).

Regulation on industrial sewage

Developing water saving technology in agriculture.



WATER AUTHORITY
ISRAEL

Thank you for your attention

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