EUROPE-INBO 2010

8th International Conference
For the implementation of the European Water Framework Directive

Water Resource Management Under Scarcity – The Case of Israel

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MEGEVE (FRANCE)
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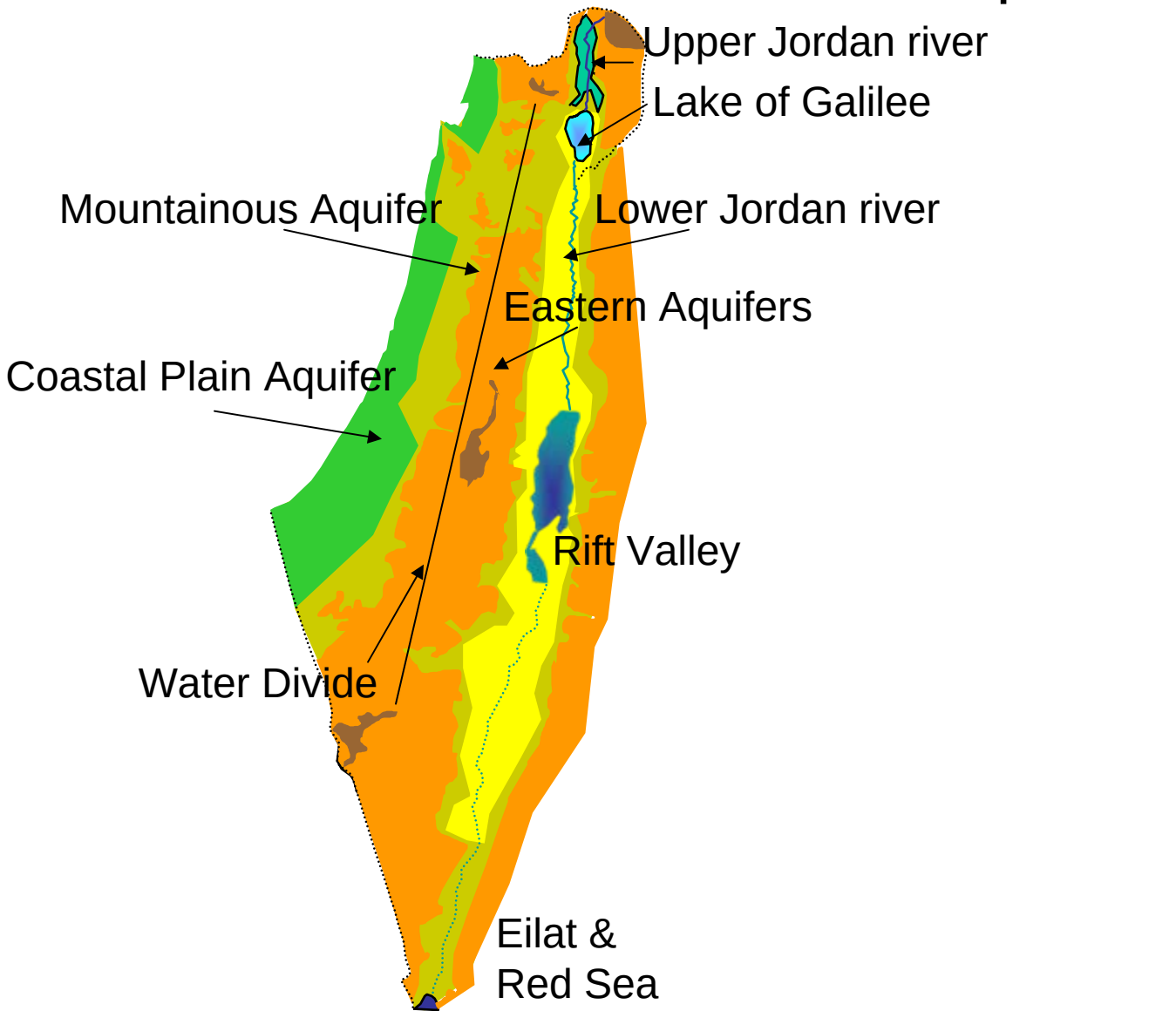
Major Water Resources

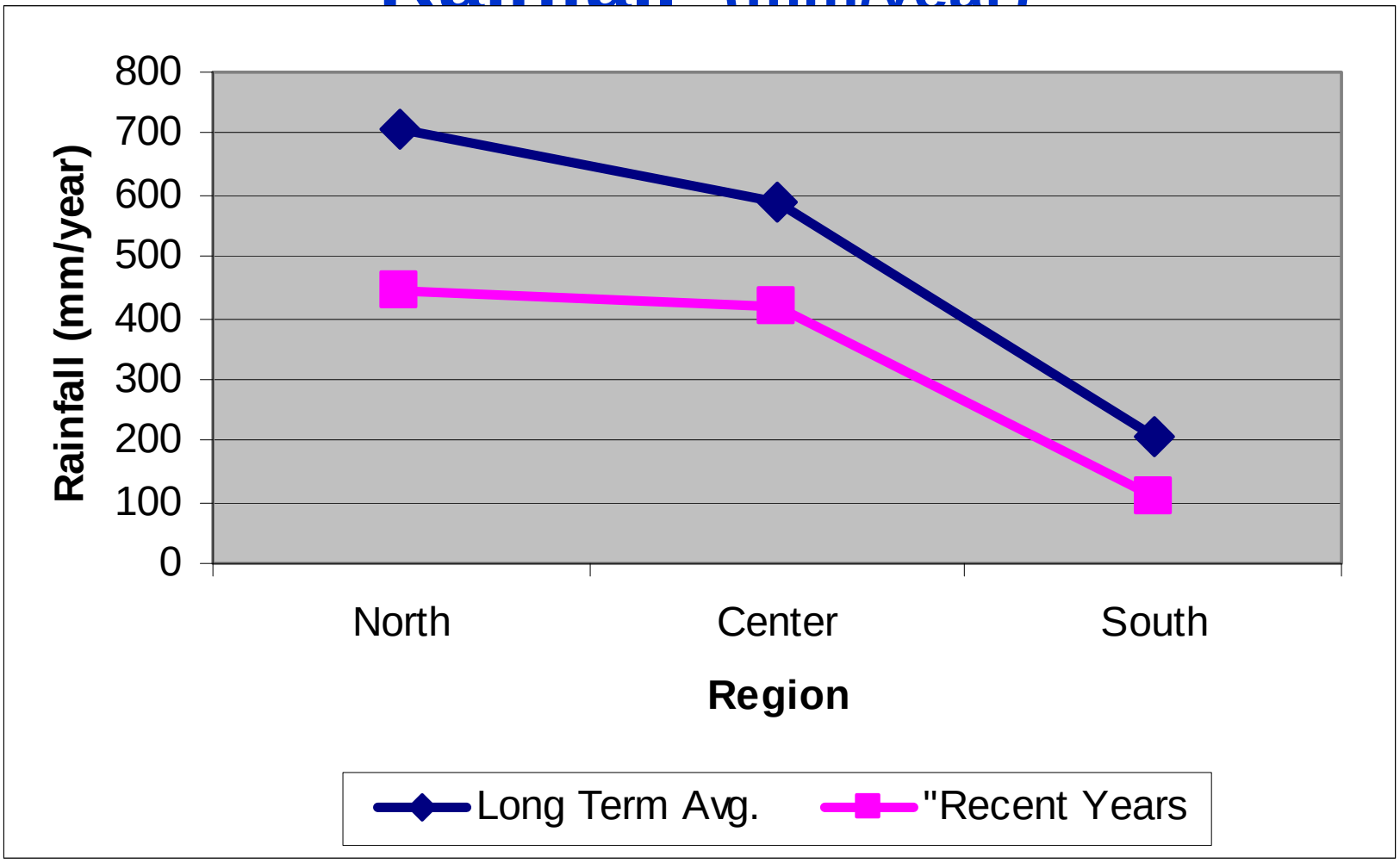
Lake of Galilee and Groundwater Aquifers



National Water Supply System

Major water Resources
Conjunctive Use of resources
Israel National Carrier
Tsalmon Canal and Reservoir

Global Warming Effect
Long Term and Recent years
Rainfall (mm/year)



Global Warming and Impact on Water Availability

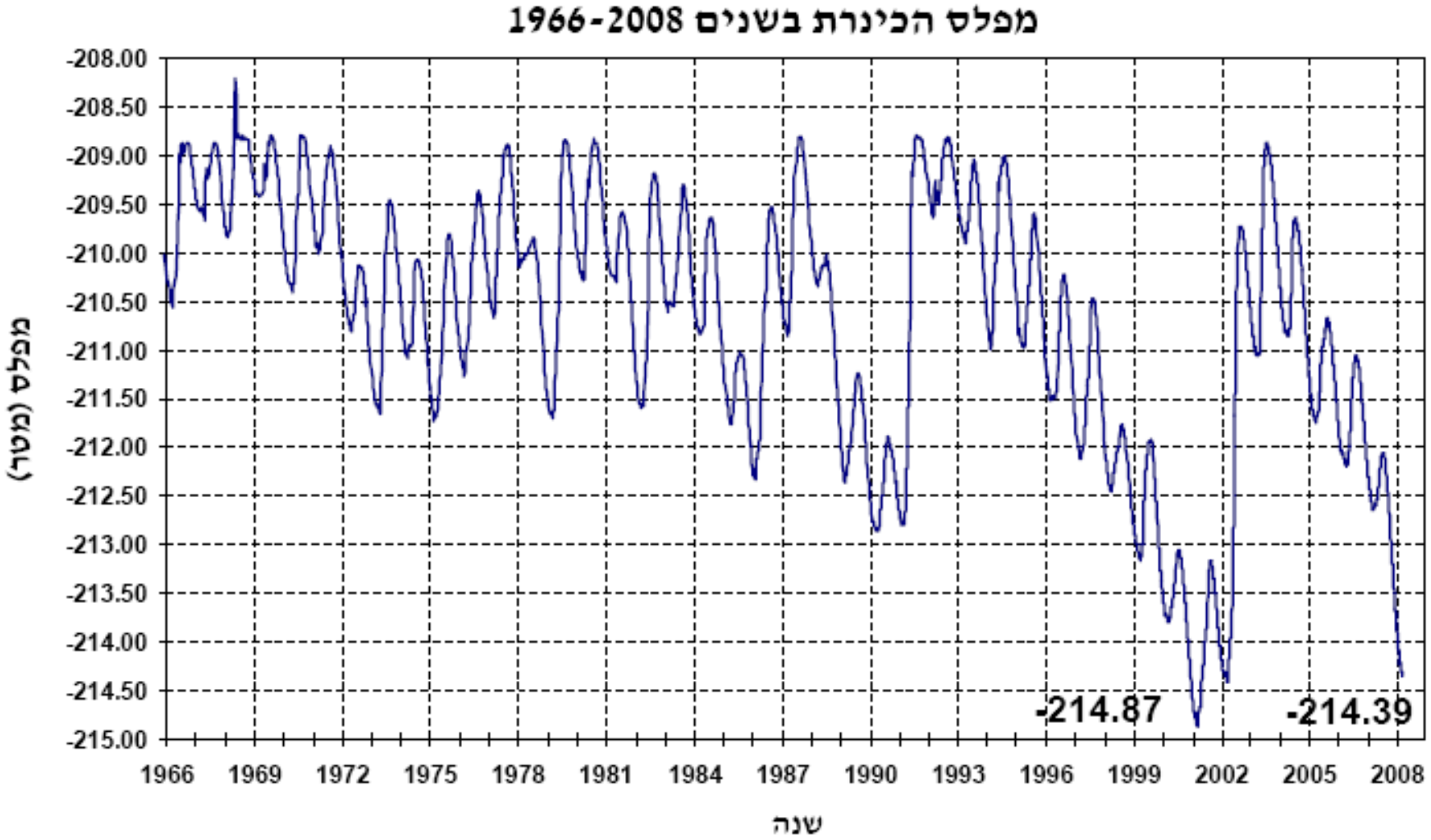
Water Quality & Ecology

The drastic drop in rainfall in the recent years caused:

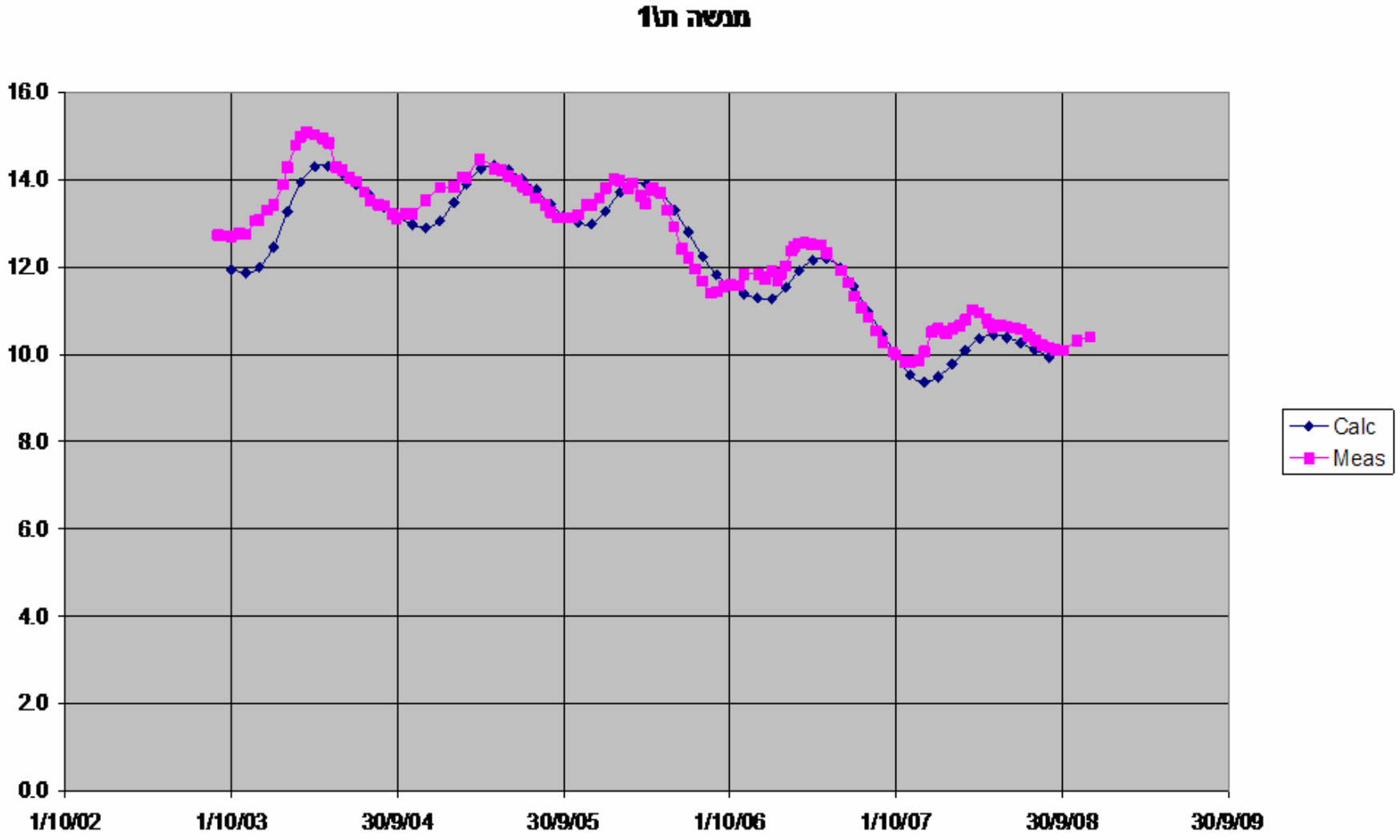
- over exploitation of resources
- diminished water quality
- salt water intrusion into groundwater in coastal regions drying of rivers and lake ecosystems
- Drinking water quality and public health are severely affected.
- harming or killing plants and animals.

Global Warming Impact on Water Resources

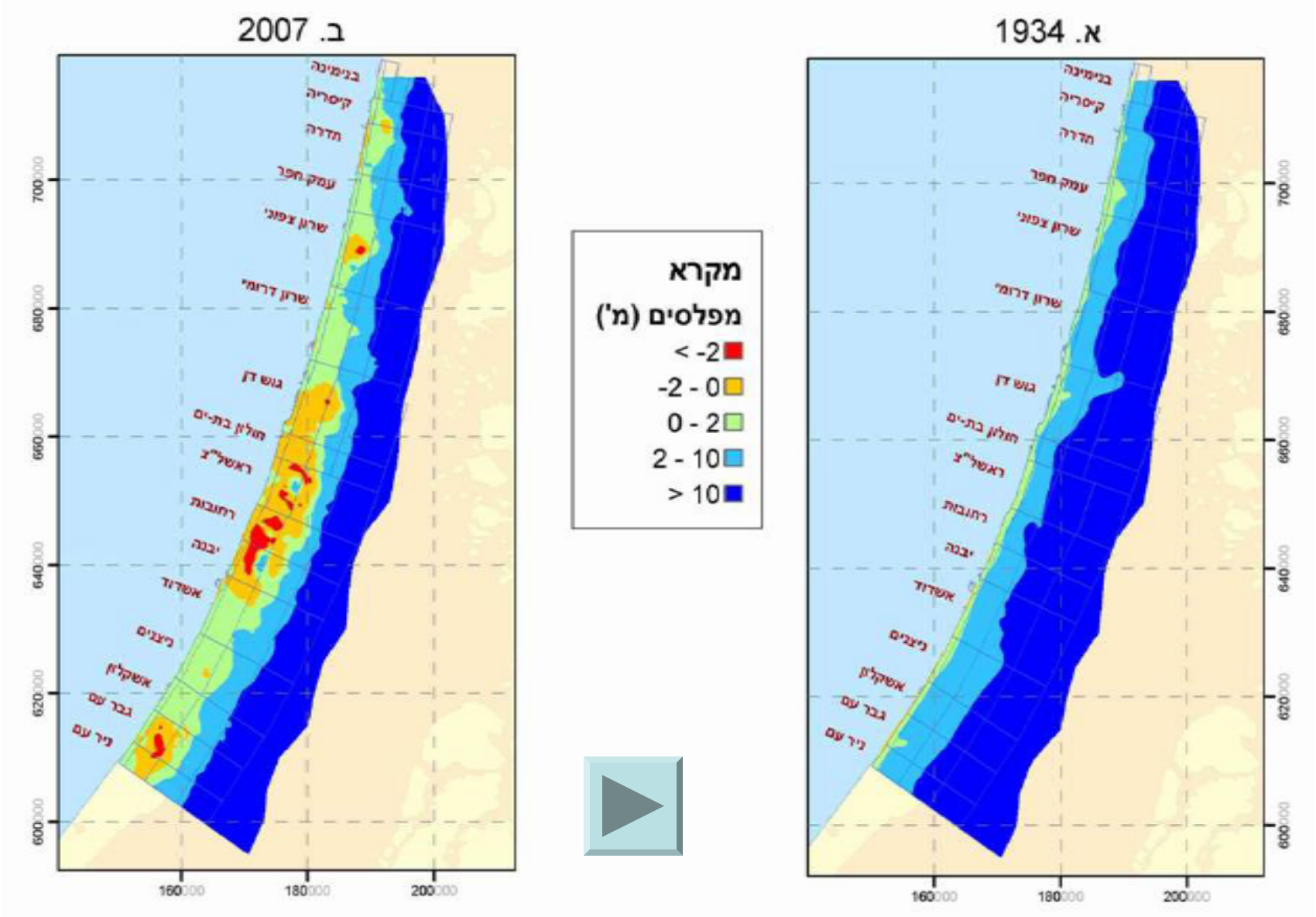
Galilee Sea Water Level: 1966 - 2008



Global Warming Impact on Water Resources
Mountainous Aquifer Water Level



Coastal Aquifer Water level: 1934 - 2007



Water Quality Data
Main Resources

S/N	Parameter	UNIT	Galilee Lake Eshkol Reservoir	Moutain Aquifer	Coastal Aquifer
1	PH	UNIT	7.53		7.43
2	DISSOLVED OXYGEN AS O2	ppm	6.2		
3	CHLORIDE AS Cl	ppm	234	122	64
4	ELECTRICAL CONDUCTIVITY	Mmohs	1100		691
5	TOTAL ORGANICS	PPB	44		0.71
6	DISSOLVED MATTER AT 180 C	TDS	588		426
7	TURBIDITY NTU	UNIT	1.1	0.1	0.06
8	NITRATE AS NO3	PPM	1	3	31
9	LEAD AS PB	PPB	2		2
10	ATRAZINE	PPB	0.1		0.1
11	DDT	PPB	0.1		0.1
12	FECAL COLIFORM	MPN	4	0	0
13	DETERGENTS	PPB	100		100

Water Scarcity Alleviation
Water Resources Development Options

- **Cloud Seeding**
- **Flood Management**
- **Wastewater Reuse Desalination of Brackish and Sea Water**
- **Improvement of Irrigation Efficiency**
- **Water Conservation & Saving Campaigns**

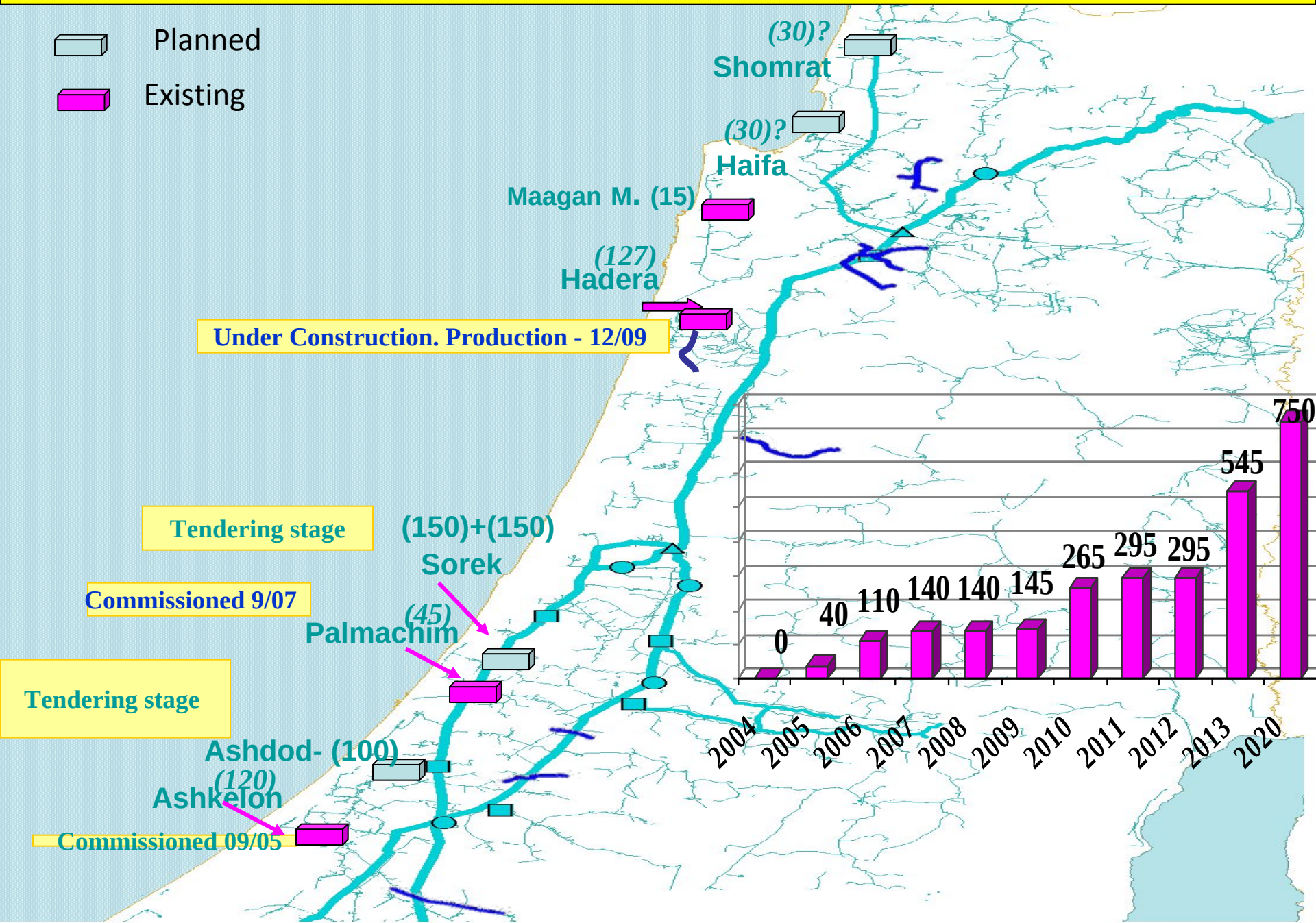
Advanced Wastewater Treatment and Reuse Systems

Activated Sludge Treatment

Wastewater Recharge of Groundwater
Dan Region WWTP

WW Reuse
Typical Impounding reservoir

Seawater Desalination Plan & Plant Capacity 2005 - 2020



Ashkelon Desalination Plant (120 MCM/year)

Sea Water Desalination

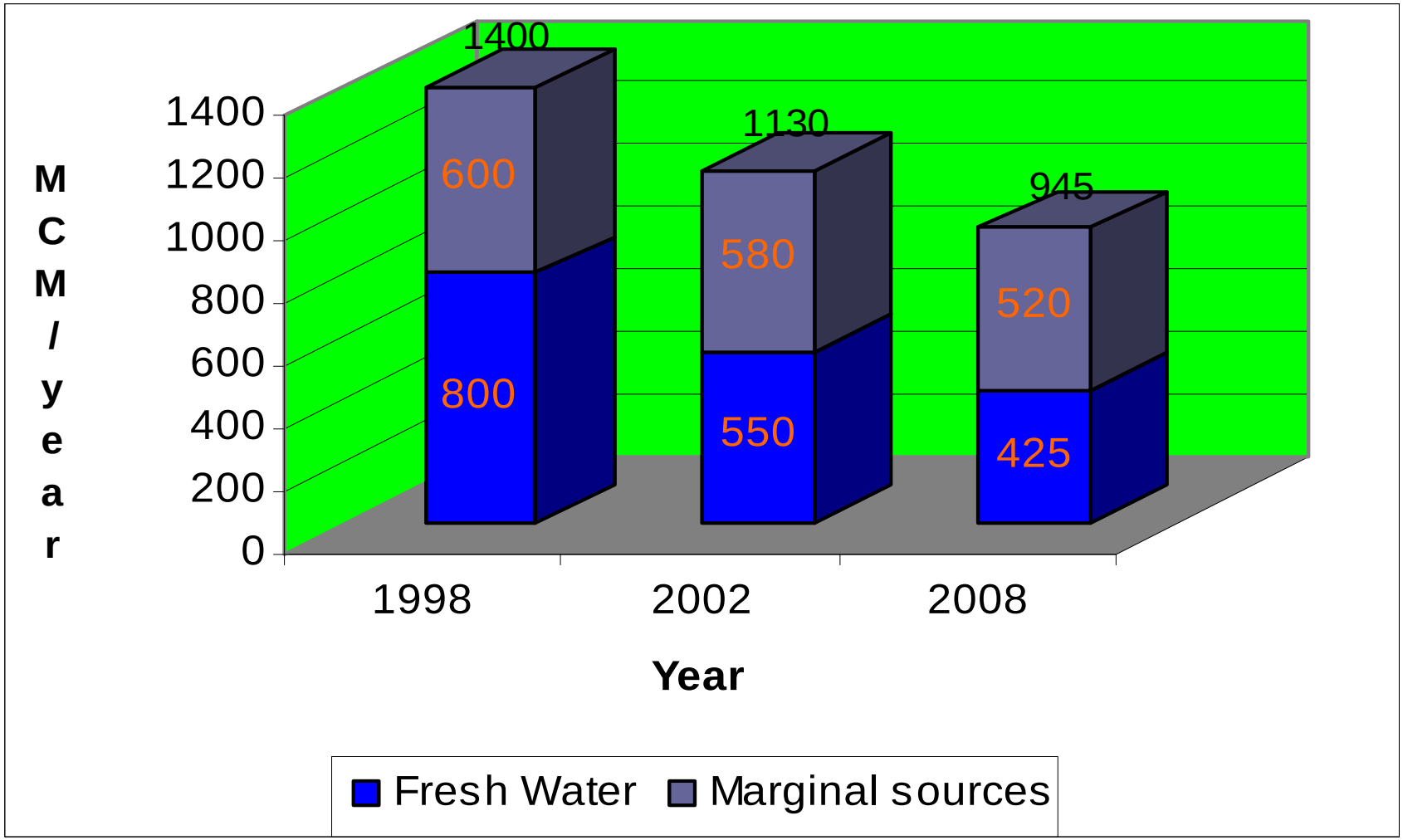
Pressure Vessels Containing RO Membranes

Improved and Efficient Agricultural Irrigation Systems

Improved Irrigation Efficiency

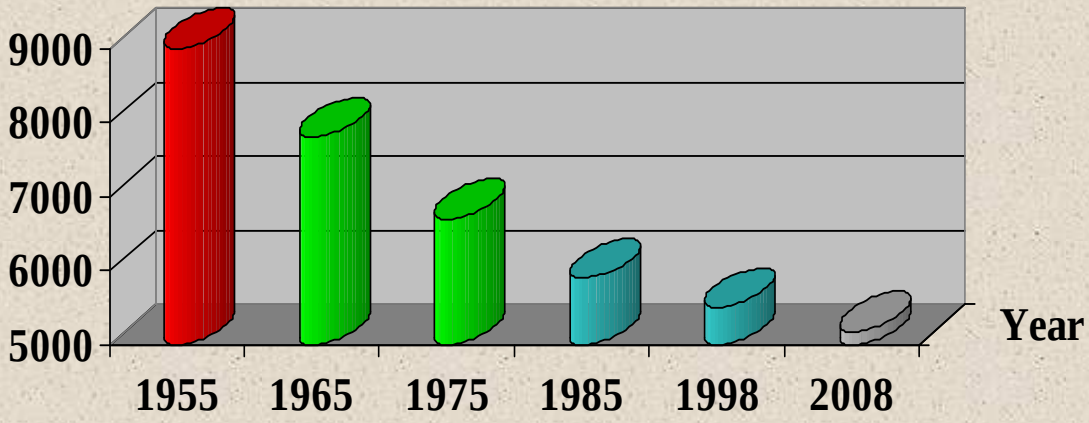
- Production of highly productive crops, less demanding in water
- Use of Improved ultra low volume irrigation techniques,
- Development of salinity tolerant varieties, adjusted to irrigation with brackish and secondary effluents.

Water Supply for Agricultural Irrigation and Sources of Supply:1998 - 2008



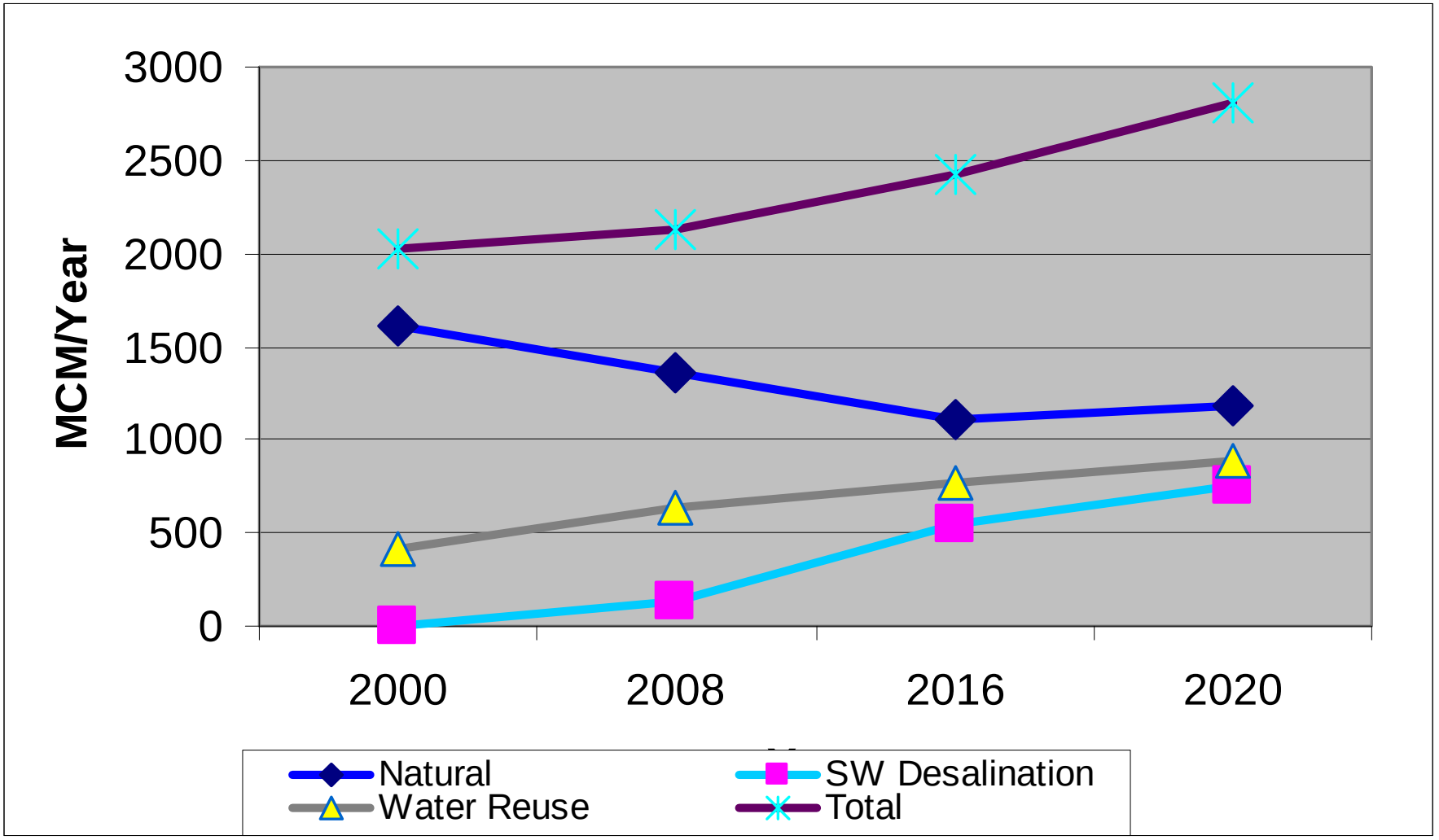
TRENDS IN IRRIGATION EFFICIENCY 1950 - 2008

M^3/Ha

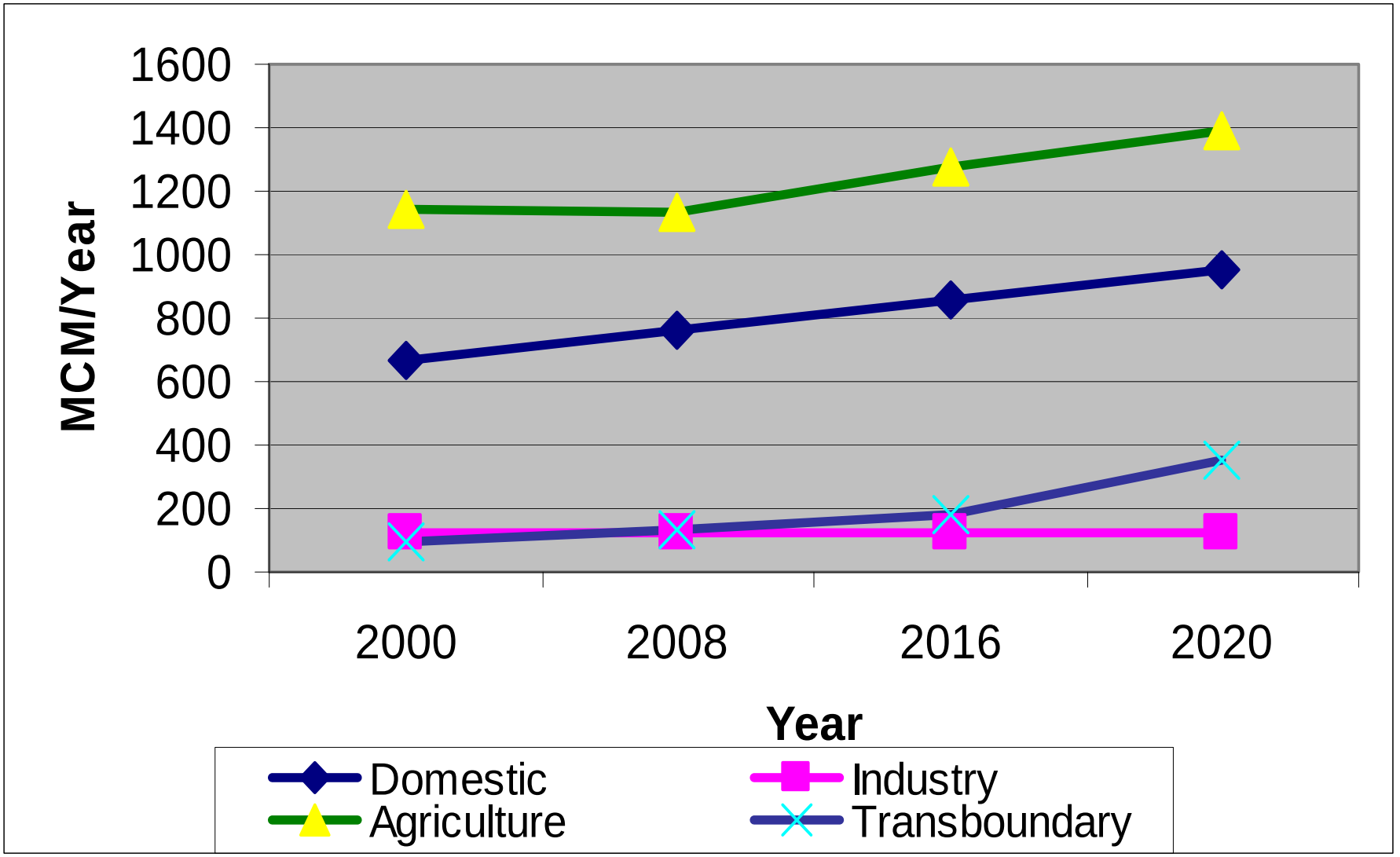


Gravity **Sprinkler** **Drip/Automation**

Water Resources Inventory
Israel: 2000 - 2020



Sectorial Water Supply
Israel 2000 - 2020



THANK YOU