

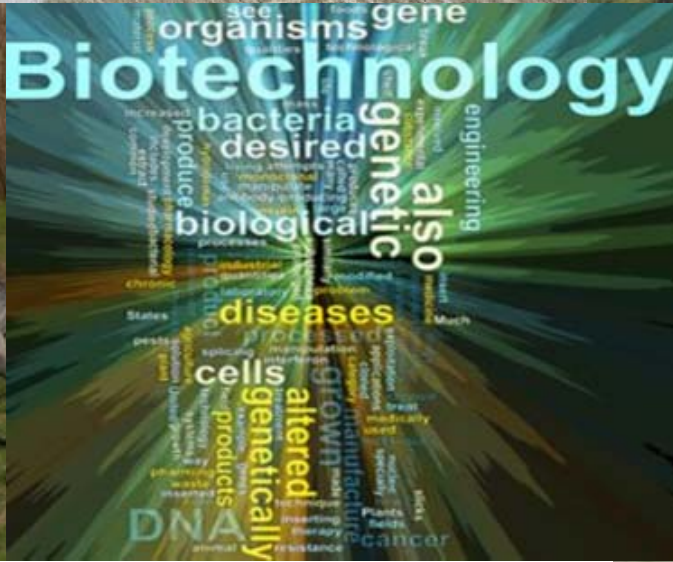


Challenges and Solutions for the Water Sector in Israel

Prof. Uri Marchaim

MIGAL - Galilee Research Institute

The Galilee region in pictures



Israel Water natural resources and demand

(in billion m³/annum)



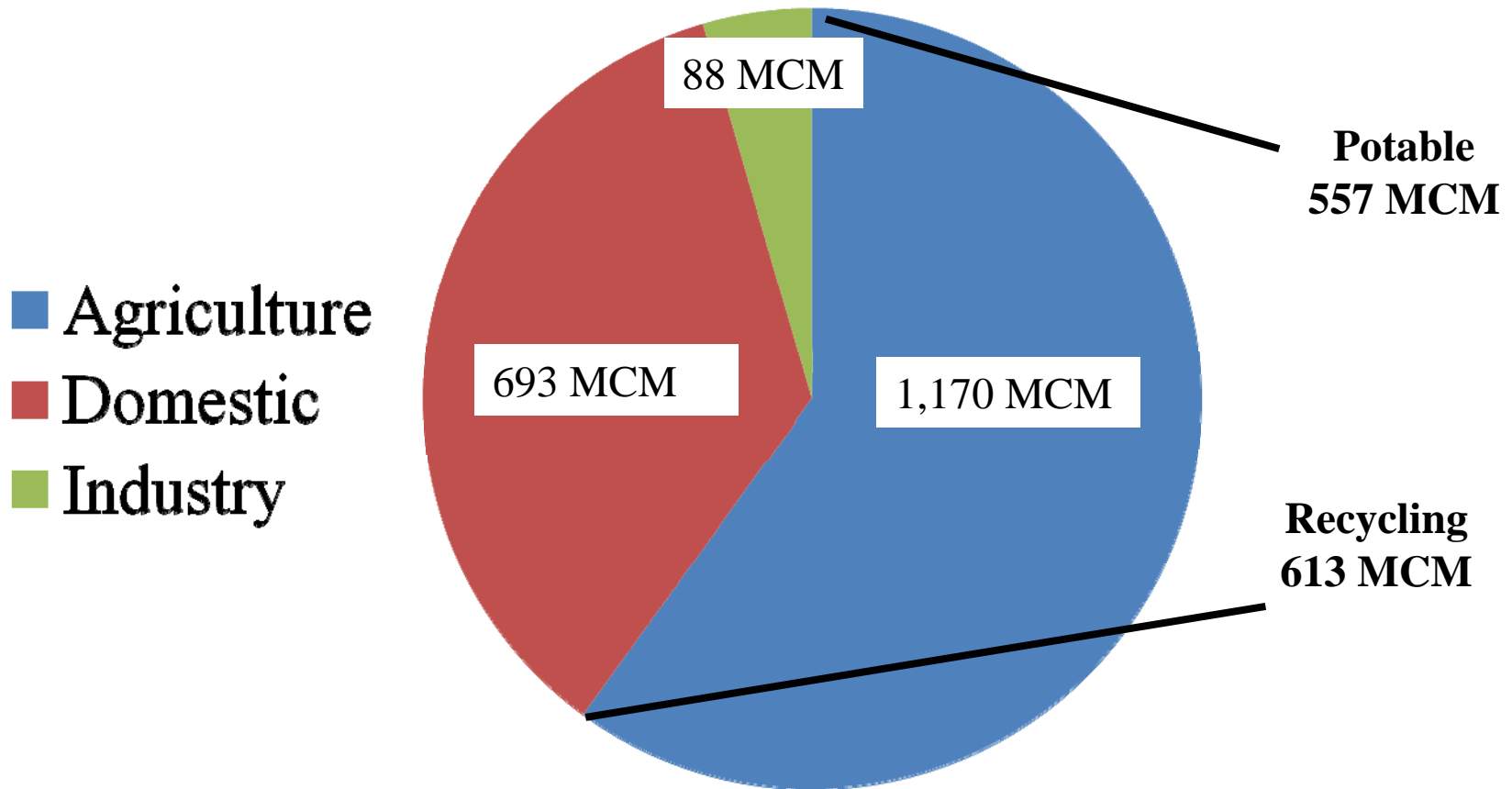
- Average total natural enrichment 1.17
- Water demand > 2.00
- Current potable water demand < 1.20
- Forecast for water demand 2020 ~ 1.70

Water balance (MCM)

	2014
<i>Effective hamster opening balance</i>	95
Natural replenishment	931
Seawater desalination	541
Seawater desalination - permanent enlargement	59
Brackish water desalination	62
Emergency actions	60
Total supply	1,653

Water Consumption in Israel

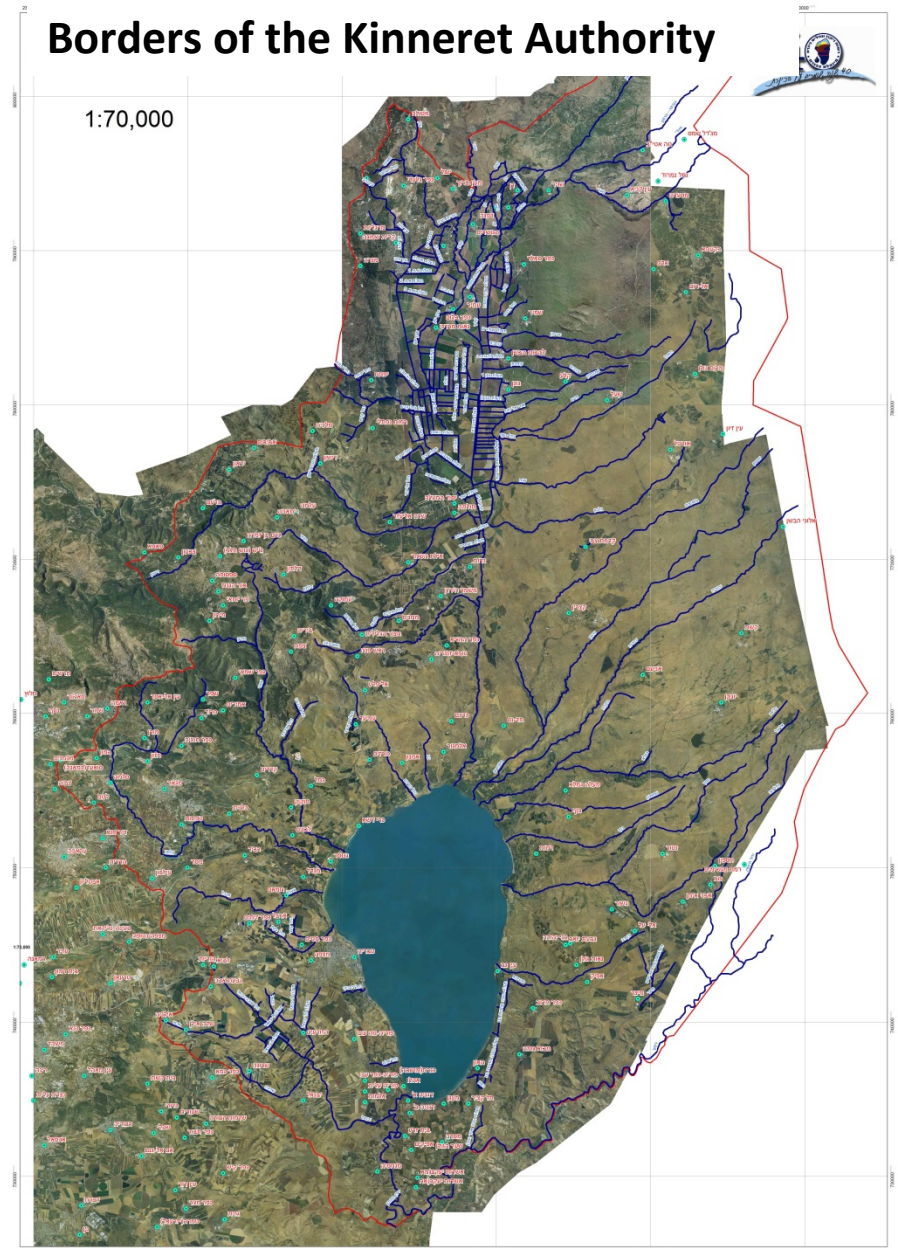
According to sectors
(Estimated data for 2011)
Total: 1,966 MCM



Supply to PA – 52 MCM; Supply to Jordan – 48 MCM

The main water reservoir - Kinneret Lake

The Kinneret authority, established in 1960, is a statutory corporation that draws its powers and authority from the Drainage & Protection from Flooding Law, as well as additional legal



Comprehensive Solutions to add water resources

Governance & Regulation

Integrated Water Resources Management

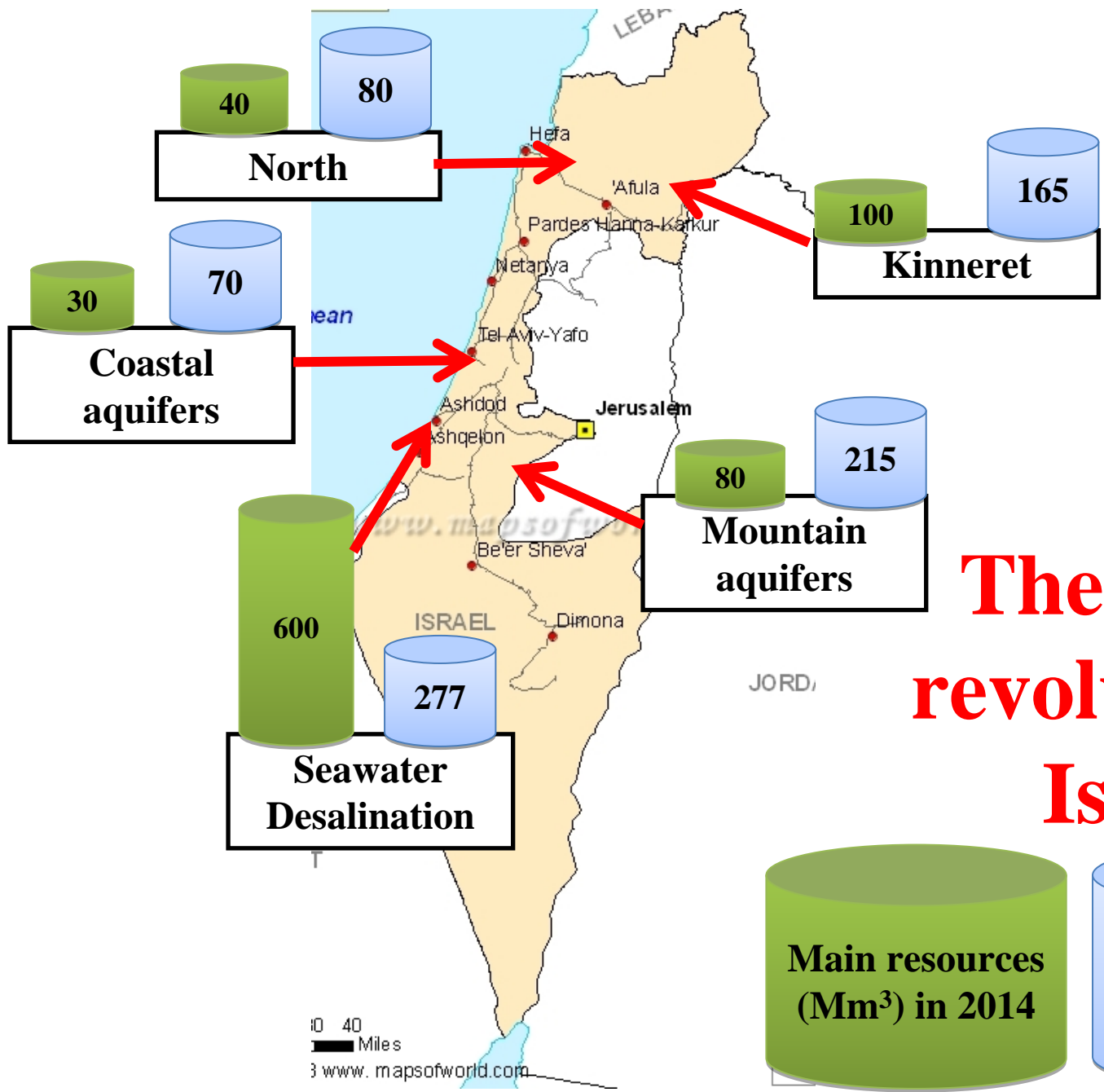
Reuse of treated effluents

Brackish water for agriculture & industry

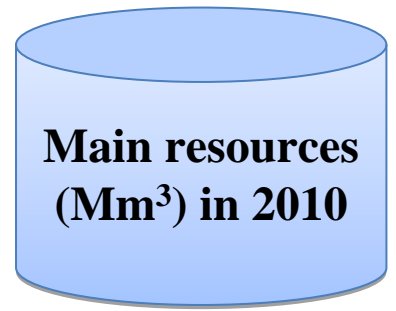
Seawater and brackish water desalination

Development of the national & regional infrastructure



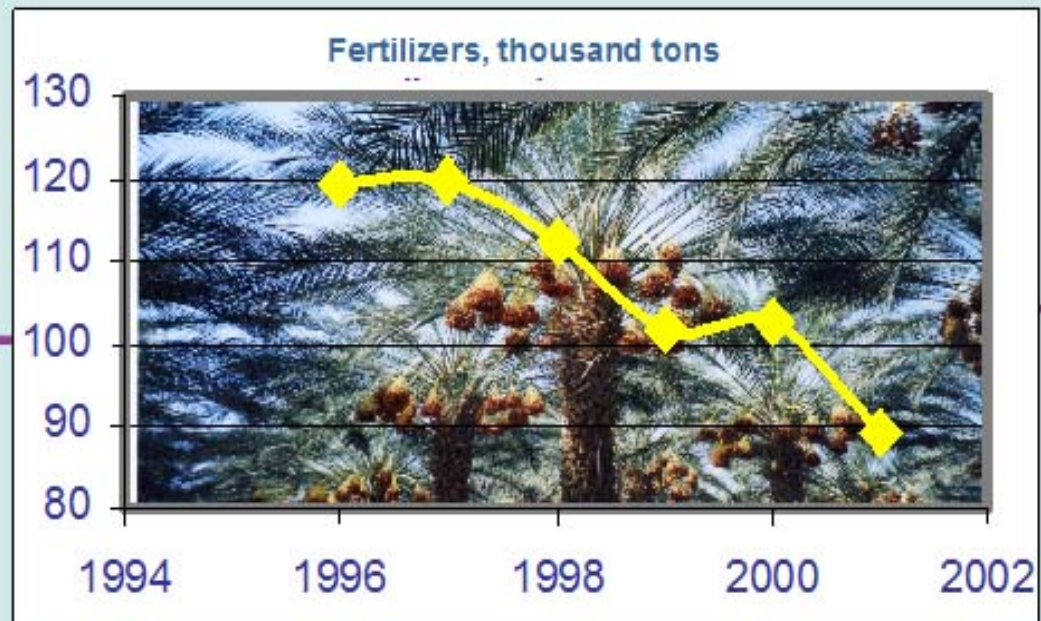
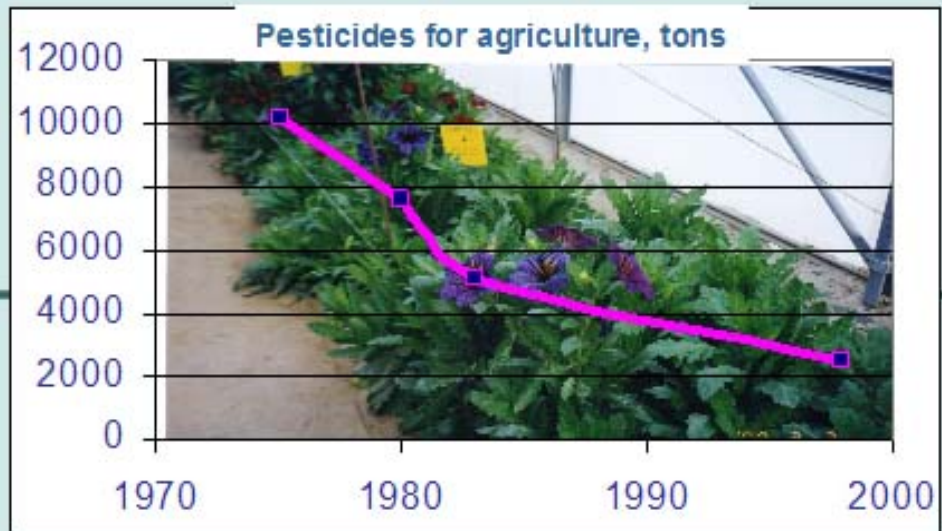


The water revolution in Israel



Reducing water contaminations and sustainable agriculture

Israel Ministry of Environmental Protection published several laws and dozens of regulations that relate to water and wastewater. The regulations set much higher treatment levels in existing and future wastewater treatment plants. They include maximum levels for dissolved and suspended elements and compounds and for 36 different parameters in effluents for unrestricted irrigation and discharge to rivers. The regulations aim at reducing the salinity of sewage in Israel, which constitutes a major problem due to the country's use of reclaimed effluents for irrigation purposes. Therefore a lower use of pesticides and fertilisers is noted.



Israel pioneering in innovative irrigation (drip etc.)

Water and Irrigation



- **World's most advanced user of agricultural irrigation** – half of all agricultural land under irrigation.
- **Pioneer in developing innovative technologies and accessories:** drip irrigation, automatic valves and controllers, media and automatic filtration, low discharge sprayers and mini- sprinklers, compensated drippers and sprinklers.
- **Computer-controlled drip irrigation** = huge water savings and enables fertigation.
- **Global Reputation** – more than 80% of production exported.



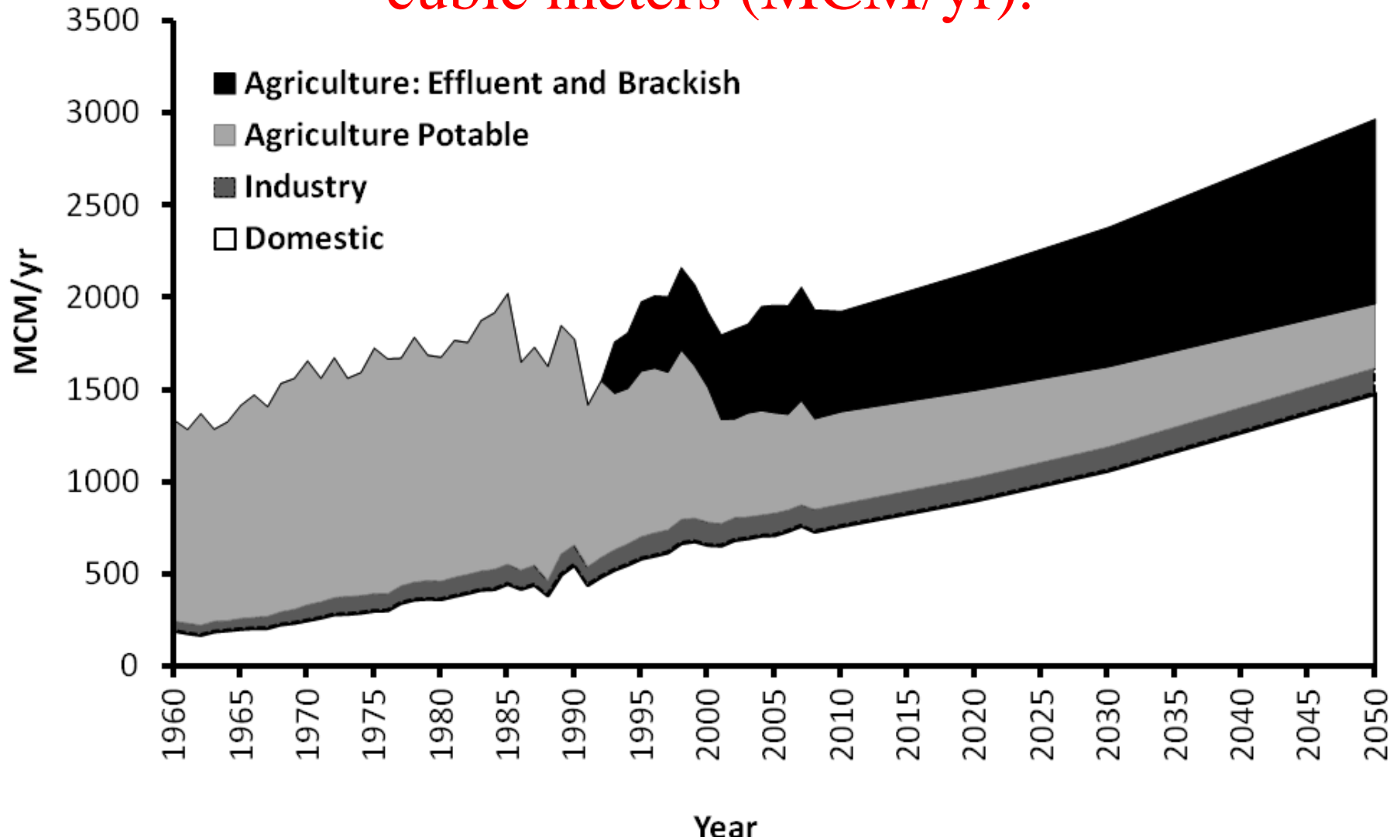
Israel is a world leader in recycling treated wastewater for agricultural use

Since Israel's early days, the country's agriculture sector has been forced to provide its citizenry with advanced and innovative solutions. Situated in one of the world's most arid regions, it was Israel that pioneered and led the concepts of drip irrigation, recycling, purifying and reuse of wastewater for agriculture purposes.

Based on its accumulated experience, Israel is poised to play a major role in supplying the world with cutting-edge agriculture solutions.

92 percent of the wastewater in Israel is treated and around 75 percent is used for agricultural irrigation. This is the highest percentage of such utilization in the world.

Historical and projected annual water consumption per sector from 1960-2050, in millions of cubic meters (MCM/yr).



The cluster developed as an outcome from the SWAM [EU project], continue now in the WE@EU water cluster [EU project], and is active in several directions of implementation. One is Olive Oil Mills' wastewater treatment (MISSTOW [CIP project]).



We developed the technology for wineries and are implementing it now in Dalton winery, and are planning a full scale at an olive mill.

Several projects regarding water management, water leakage, smart uses of water for irrigation and wastewater uses for irrigation are in progress. MIGAL is involved in several spin-offs in these directions.



WE@EU EU Project

WE@EU is based on the ambition to create an open European platform for EU excellence in water efficiency in urban water management.

This European platform will enable the participating clusters and regions to bring together knowledge and innovation potential by collaborating and mutually learning in a trans-national basis. This will enable to generate an innovation friendly ecosystem where academia and business will work together, in coordination with regional authorities and other stakeholders, transforming knowledge into innovative products, services and skills in the water efficiency sector.



Thank you !!!
Prof. Uri Marchaim

uri@migal.org.il

www.migal.org.il