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Israel Water Sector

Reclaimed Wastewater reuse

Iris Bafi Wexler – Reclaimed water Department, Water Authority

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Water - A National Priority

Israel Water Sector - Visit Card

Annual Water Supply

> 2.1 billion m^3

Population: 8.7 million

Area: ~22.000 km^2

Density: 392/km^2

200.000 Ha irrigated fields

14,000 farms

Over 1.000 Industrial plants

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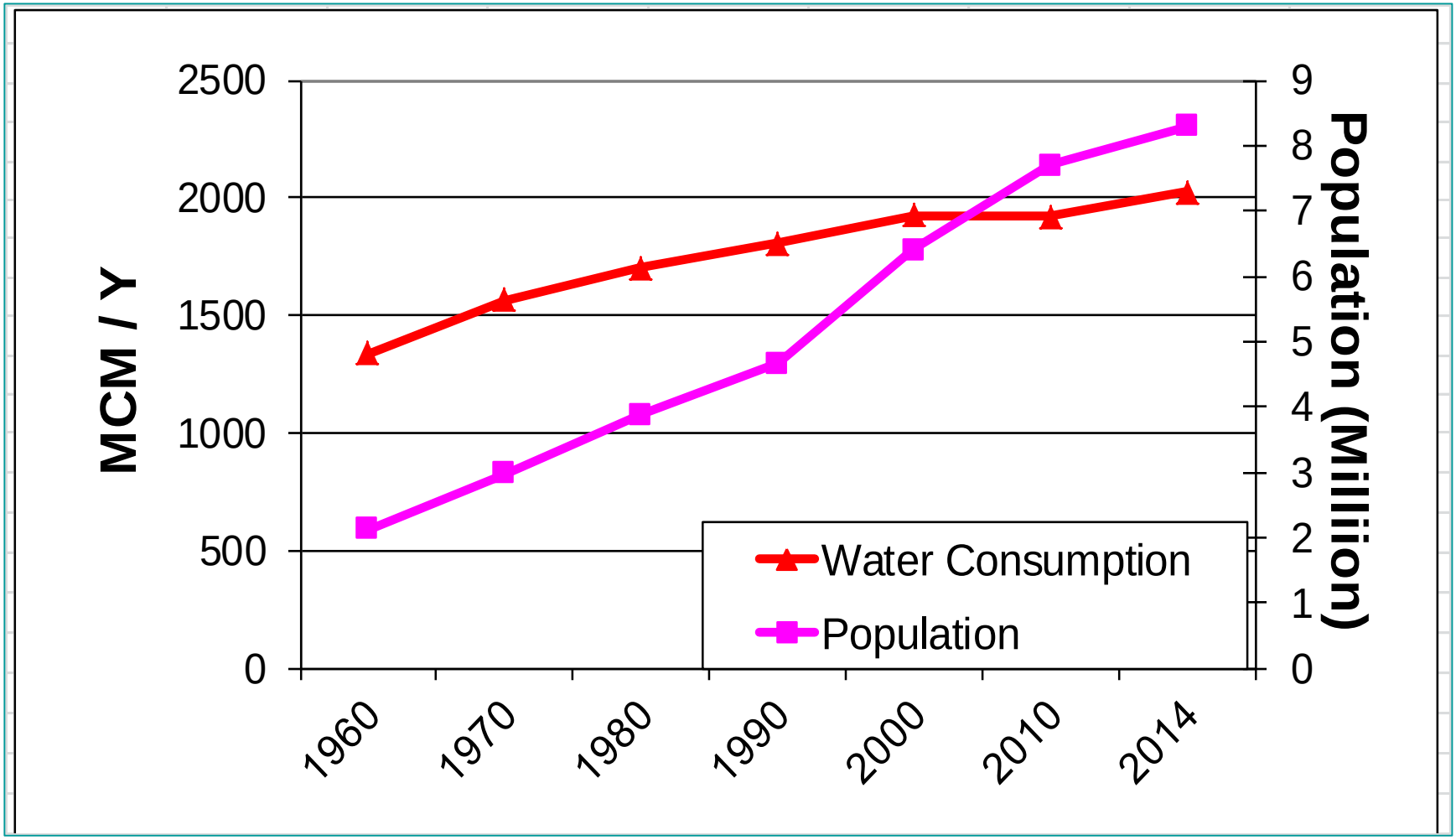
Population & Water Consumption



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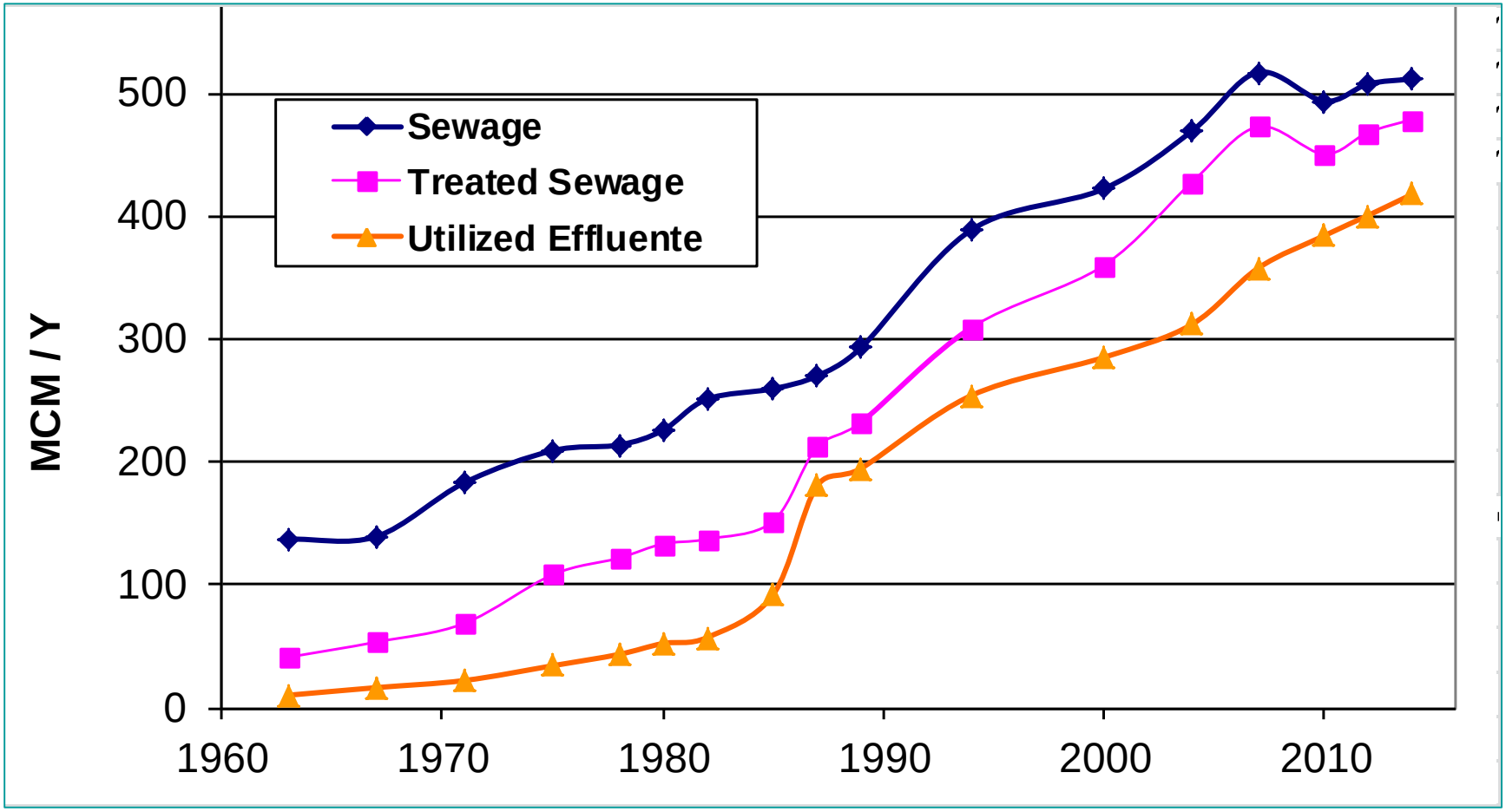
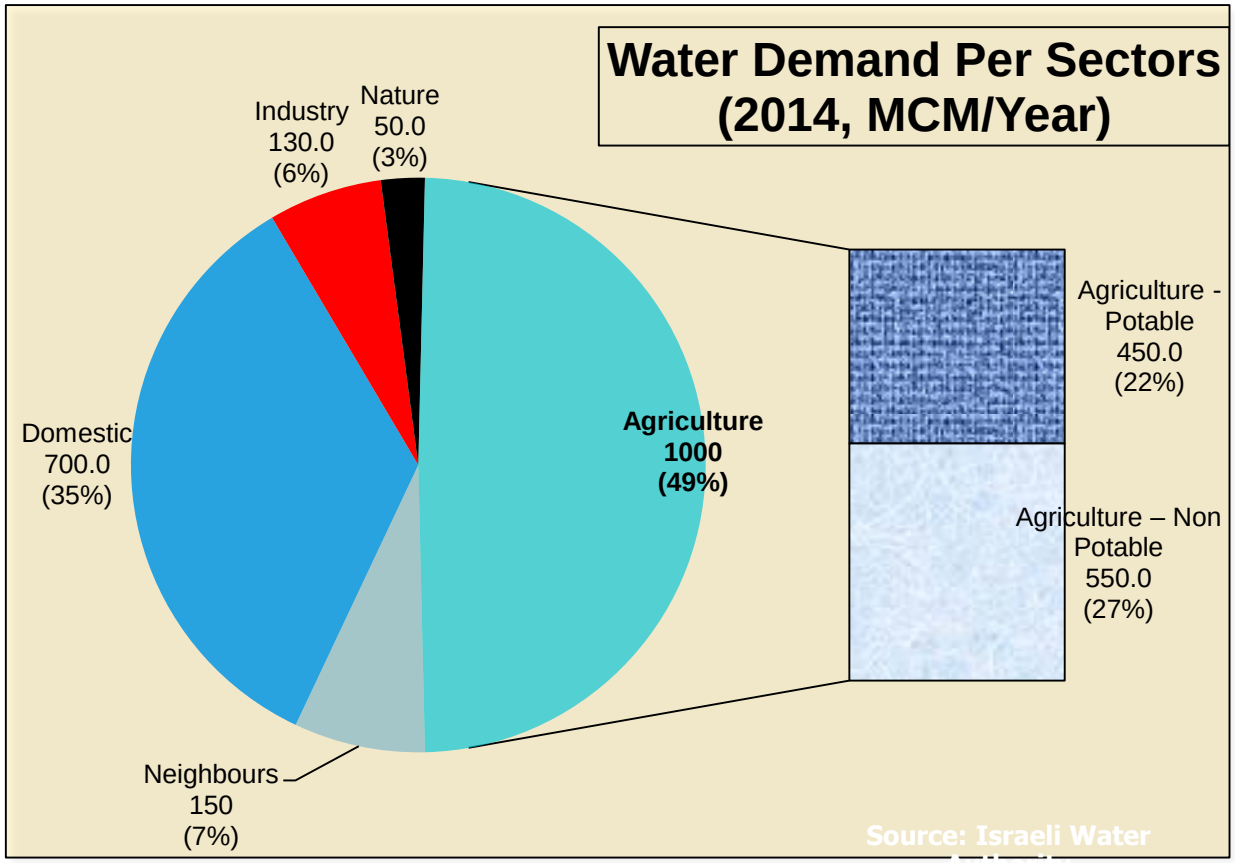
Wastewater & Reclaimed Wastewater in Israel



Water in Israel – Fast Facts

- Natural water refill: 1170 MCM (per year)
- Water consumption: 2030 MCM (per year)

- Annual Shortage of over ~45%
- Forecast for potable water demand: 2050 ~ 2.45 billion m3/annum



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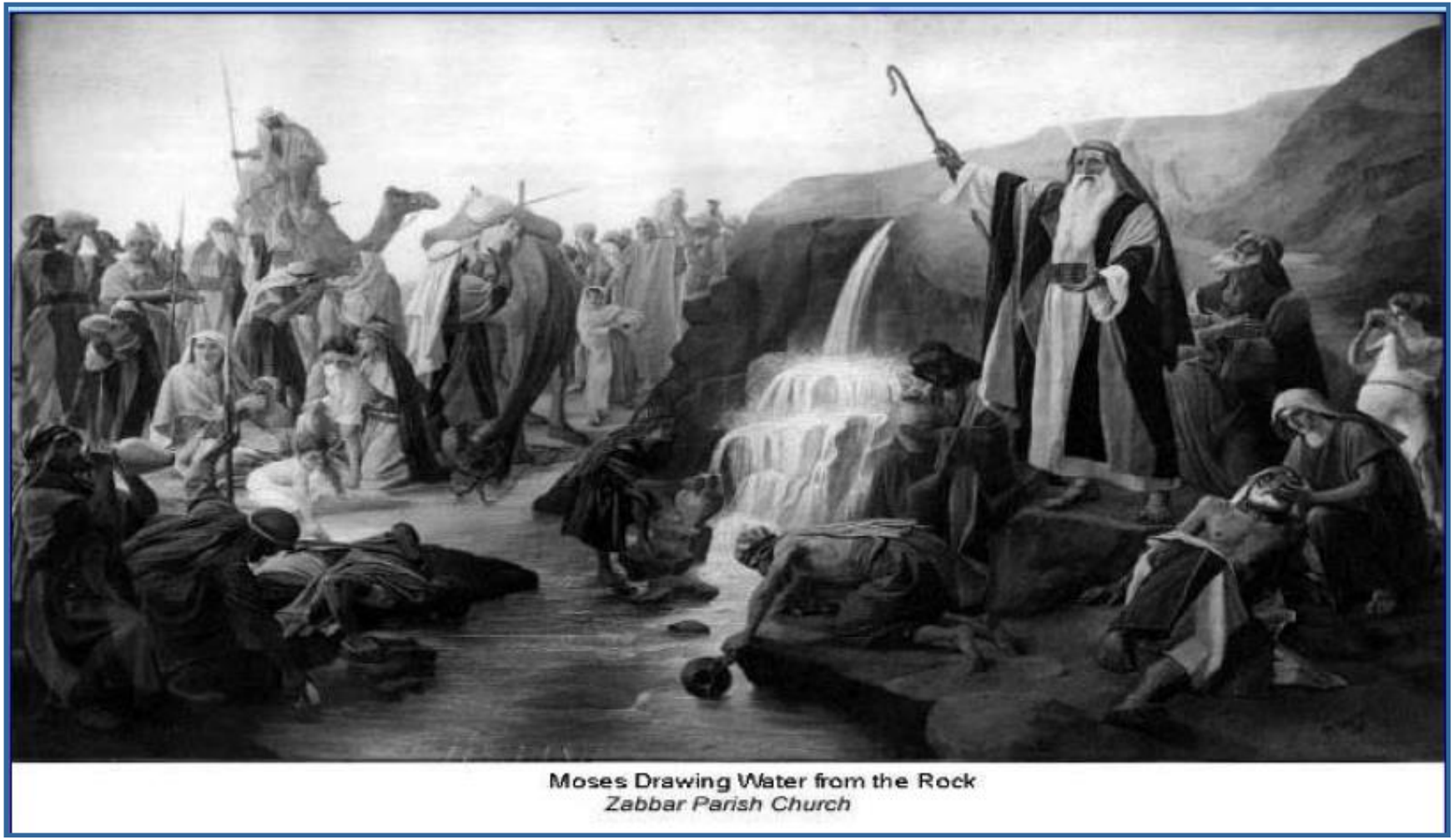
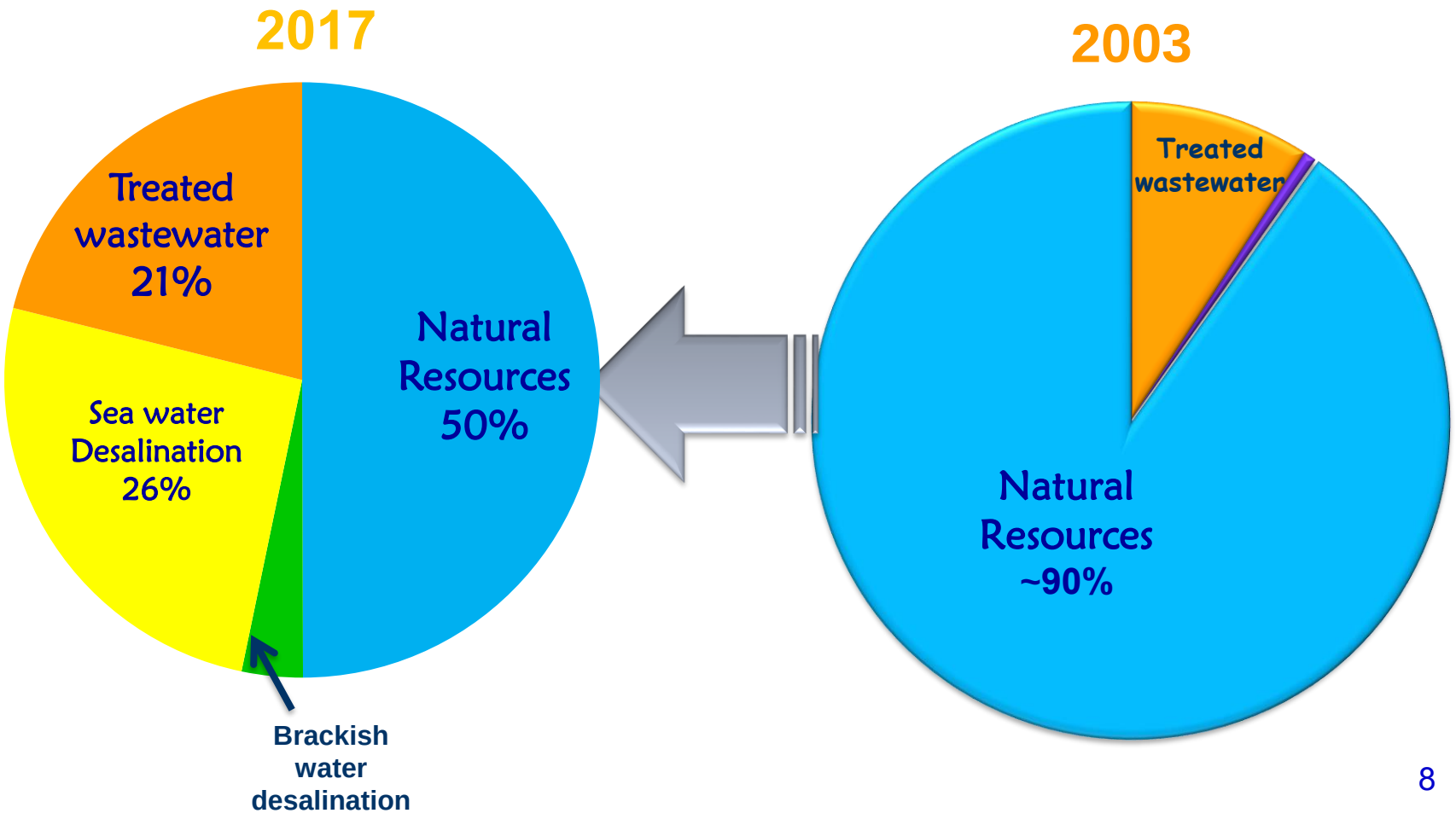
Because We don't share mose's abilities…



Moses Drawing Water from the Rock
Zabbar Parish Church

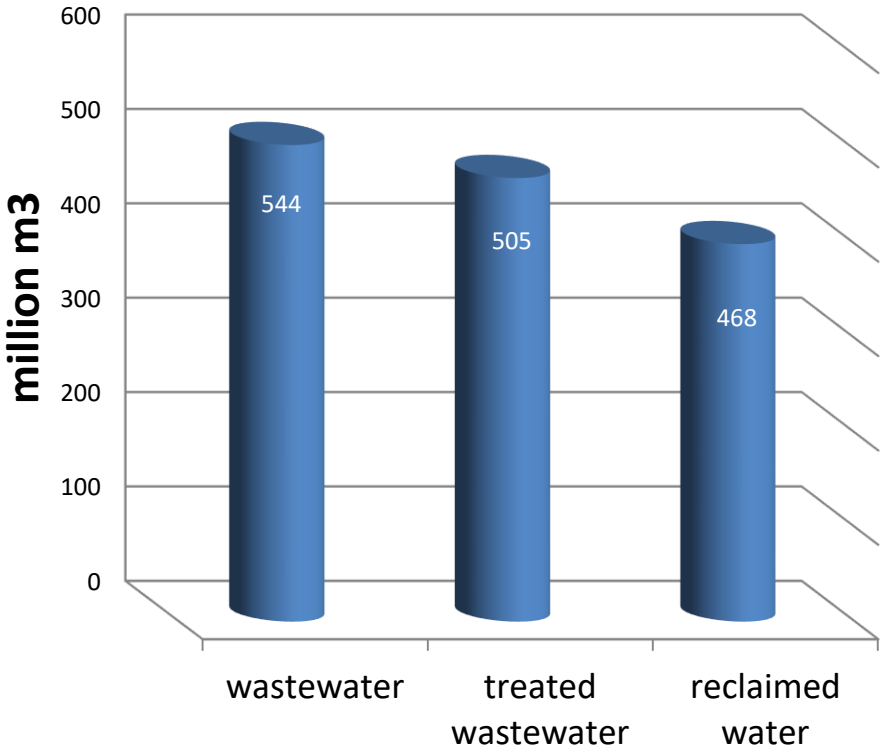
The water revolution

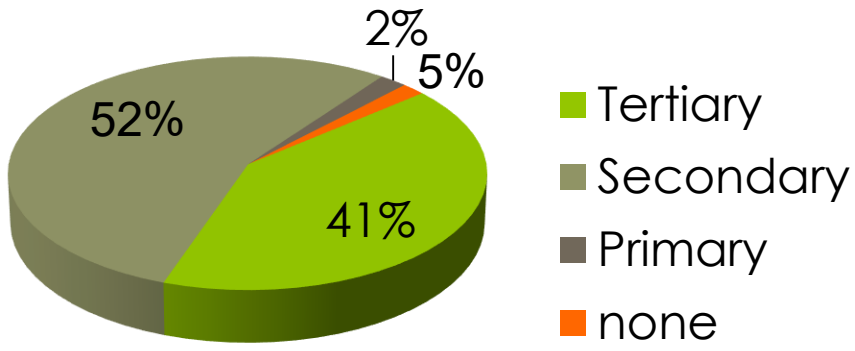
50% of the total consumption are manufactured water



Wastewater and Effluent Sector

Qualities and Quantities

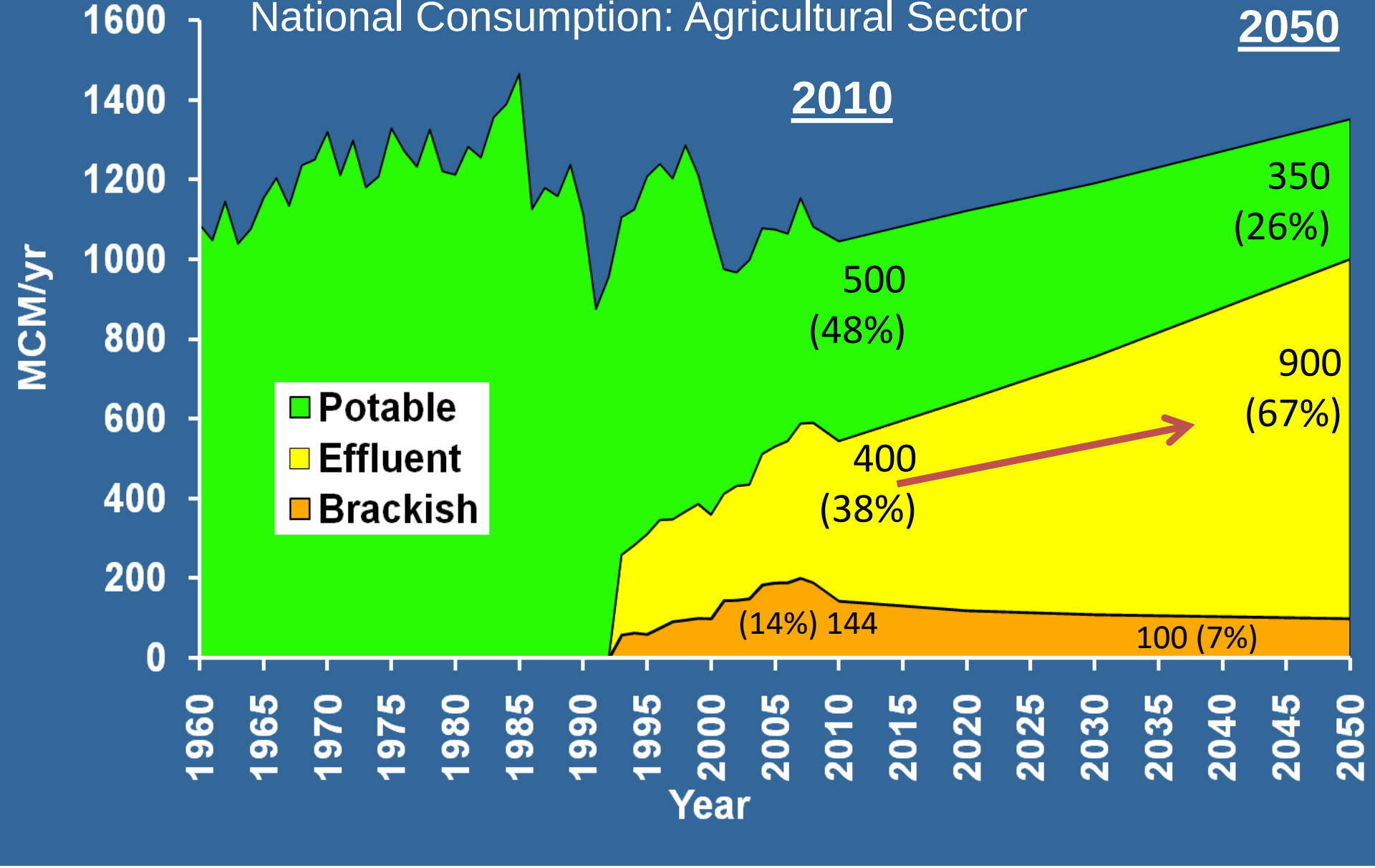




2010 → all STP's will treat sewage to a tertiary level

544 million m3 → 93% is treated → 86% reused

World's leader in treating and reusing effluent



If effluent were not used in agriculture, desalinated water production would be required (a more costly alternative) to supply the agricultural sector's needs.

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Greater Tel Aviv area

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Agricultural fields in the Negev Desert

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Steps to increase the use of reclaimed water – Support and Development

- Regulation and a support system towards building sewage collection and treatment infrastructure.
- in the 1980's development by the national water company Mekorot; including a 120 MCM per year aquifer recharge system, and a 30 MCM system based on uncovered reservoirs.

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Steps to increase the use of reclaimed water – Support and Development

- in the 2000's, grants for private market development, primarily by agricultural cooperatives and regional council economic corporations. subsidized at 60% to 70% of the infrastructure cost. They provide about 150 MCM and are expected to provide 220 MCM by the end of the decade.

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Steps to increase the use of reclaimed water – Regulation and management

- Regulation of sewage treatment and treated wastewater quality, to sanitary and agronomical standards that enable agricultural use.
- Regulating disposal of substances into sewage that would limit the potential for using the treated water.

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Steps to increase the use of reclaimed water – Regulation and management

- Regulating sanitary aspects of treated wastewater use in agriculture. Specific Ministry of Health inspections of every irrigated plot.
- Integrated management of water systems to supply cities with water at a quality that will enable the agricultural use of treated wastewater.
- By setting a relatively low tariff for irrigation with reclaimed water.

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Steps to increase the use of reclaimed water – Research and innovation

- Applied research on treated wastewater based agricultural development. Cultivation practices, matching cultivars and rootstocks, recalibrating irrigation schedules, and examining effects on the soil, plants and crops.
- Applied research to improve reclaimed for use in a wide range of applications.

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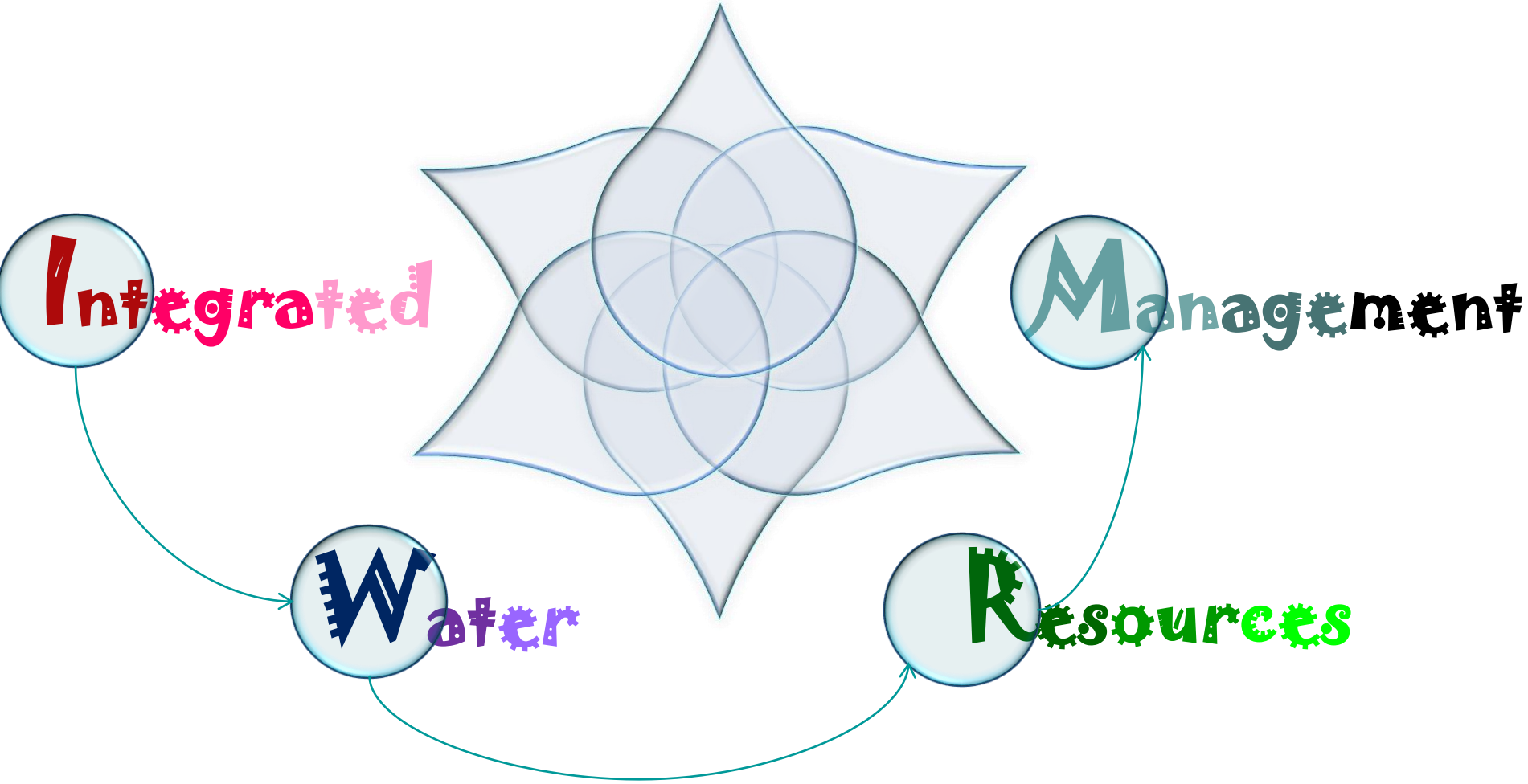
Israeli Model



Israeli Wastewater Policy

Achievements

- Transforming an obstacle into a resource.
- Maintaining fresh water resources.
- Ensuring maximum removal of wastewater and optimum utilization of reclaimed water.
- Maintaining public health and the environment
- Economic growth engine
- Cost-effective water supply
- Ensuring sustainable supply of water for agriculture.

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Investments and Achievements

The Water Authority's investments	Achievements of the Israel's water sector
Sewage Infrastructure Development 2.3 billion $ since 1993	Over 4000 projects of sewage transfer and treatment systems, including most STP's in Israel (almost 400)
Reclaimed water Plants 750 million $ since 2000	62 mega-projects of reclaimed water facilities, added transferring about 230 million cubic meters per year (51% of all reclaimed water, and 11% of all water in Israel)

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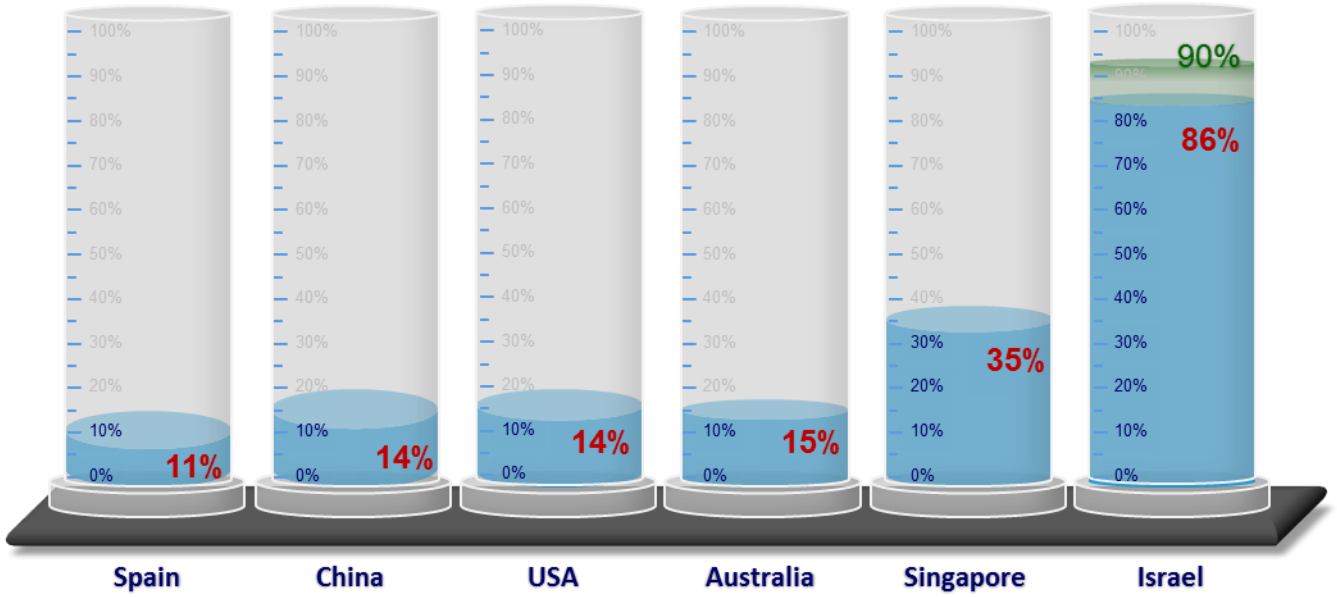
Percent of National Effluent Used

This great achievement succeeded not only to turn the environmental hazard into a valuable resource, but saved the natural water resources from overexploitation and irreversible damage.



Next Steps (Improvements Within 5-7 Years):
Israel will increase use of the total national effluent produced each year from 86% to 90%

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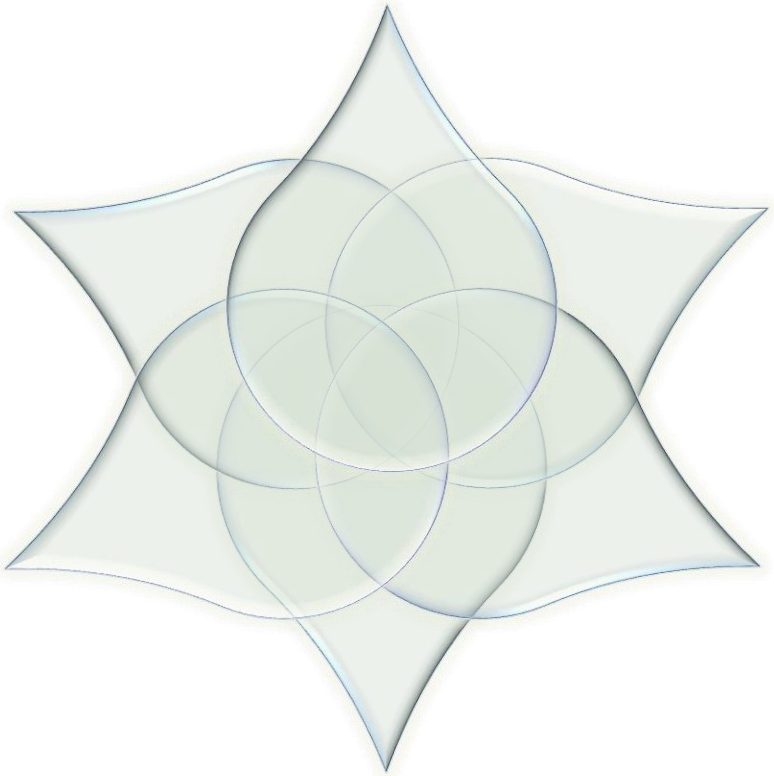

Always a drop ahead