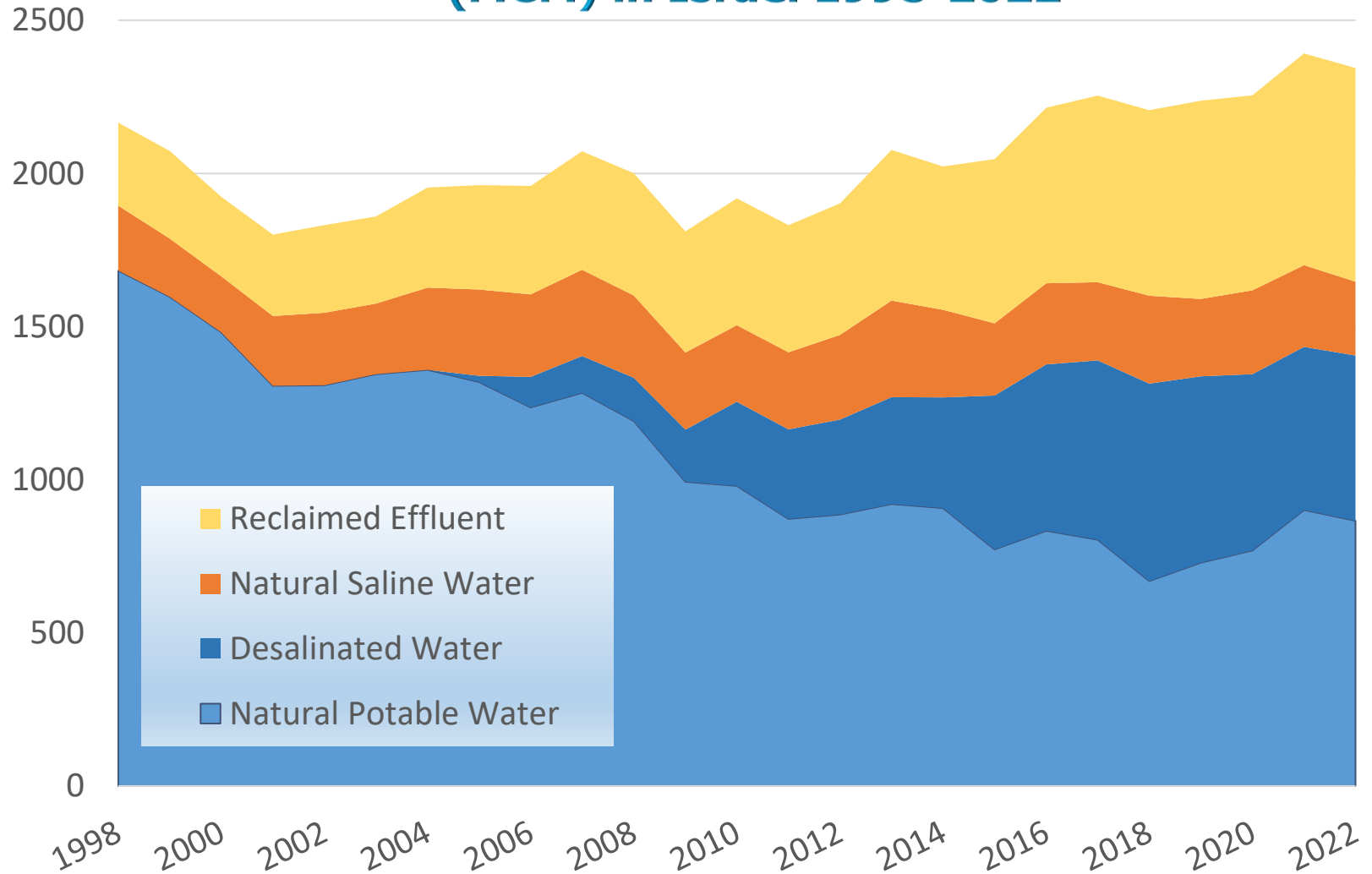


An Israeli Experience:

Israel's Model for Water Management

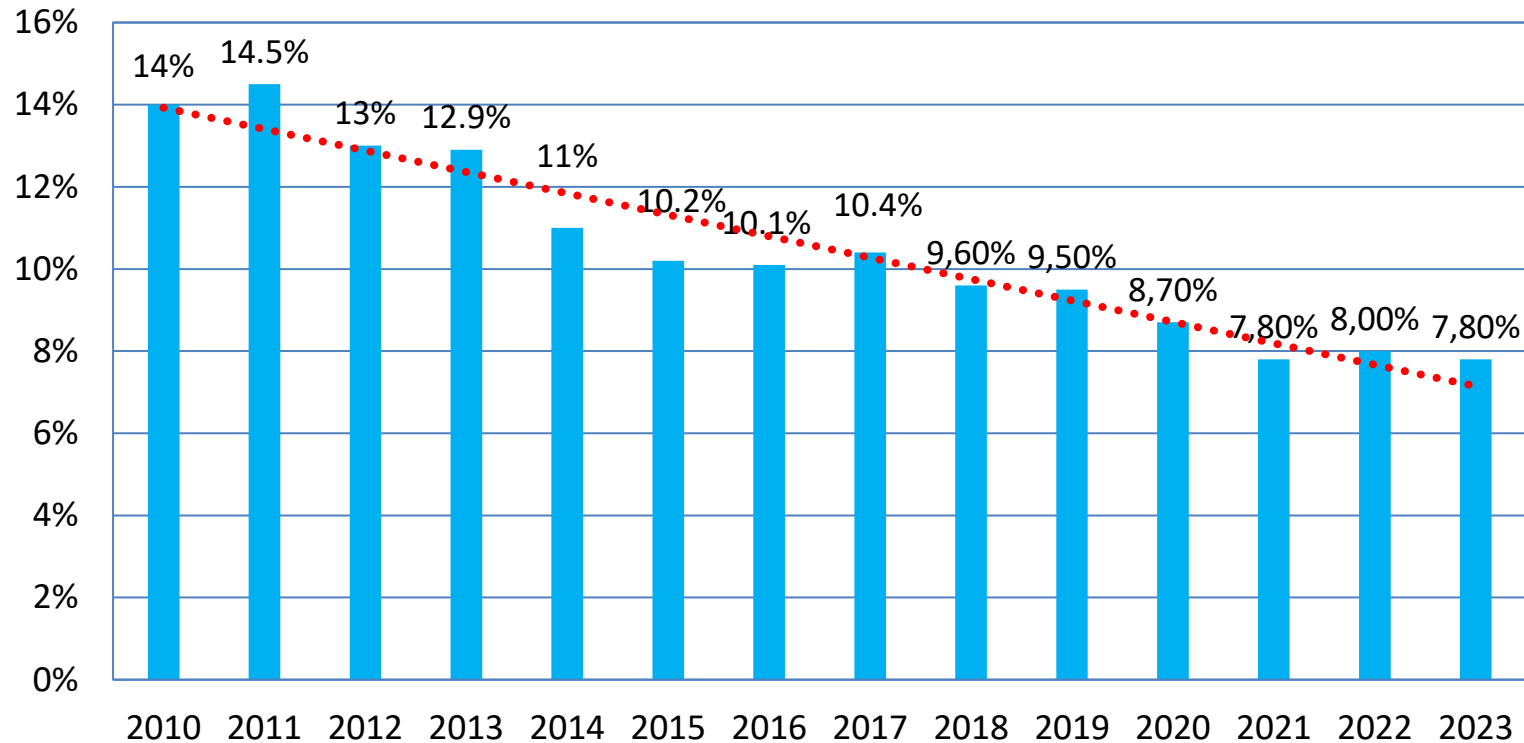
Danny Greenwald
Senior deputy director general – Regulation
Israeli Water Authority
dannyg@water.gov.il

Water Supply by Resources (MCM) in Israel 1998-2022

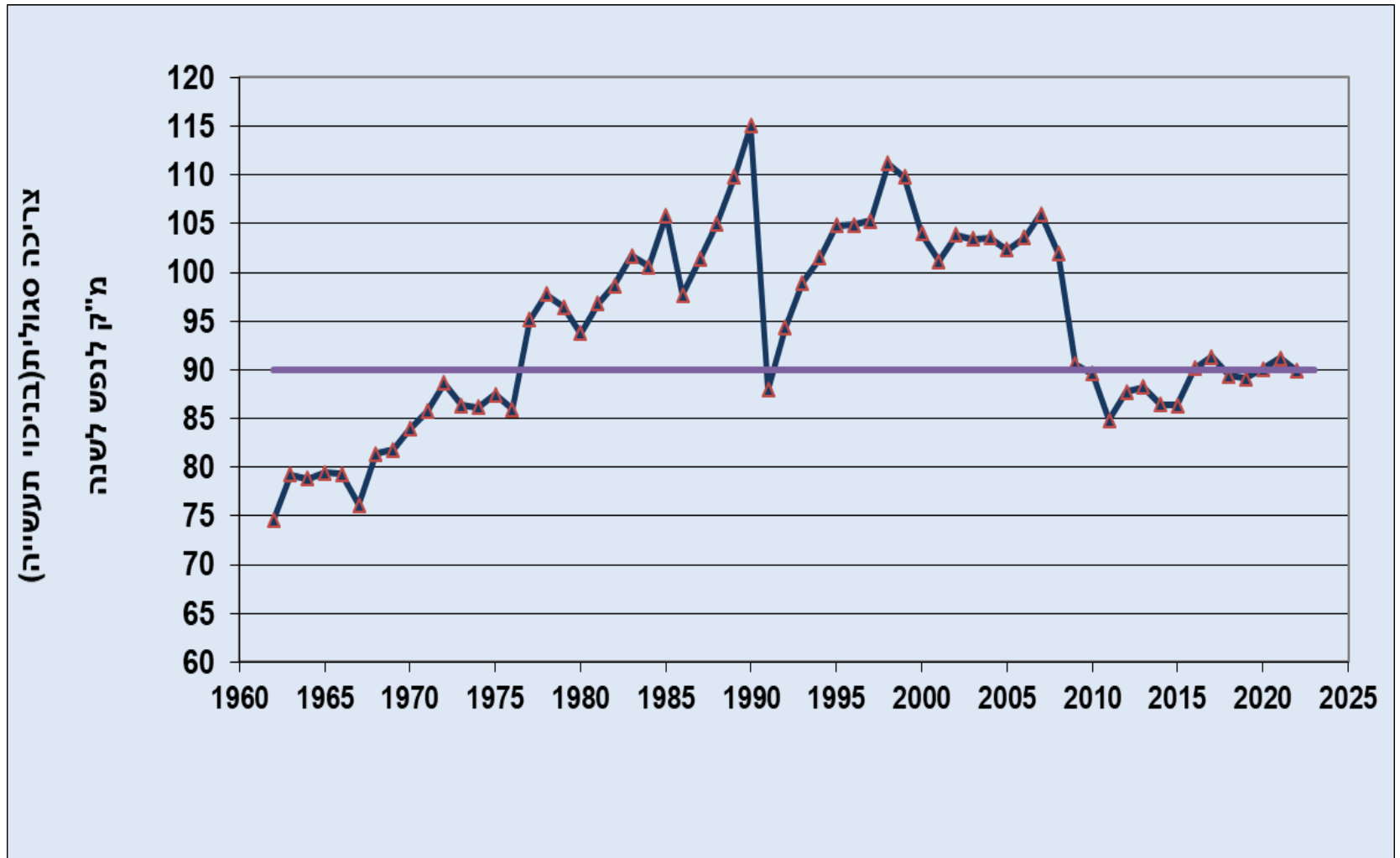


NRW and water loss Improvement

Total NRW [%]



Water consumption for household (CM) capita per year 1962-2023



Location & Geography



Climate

Tel Aviv

Climate chart (explanation)

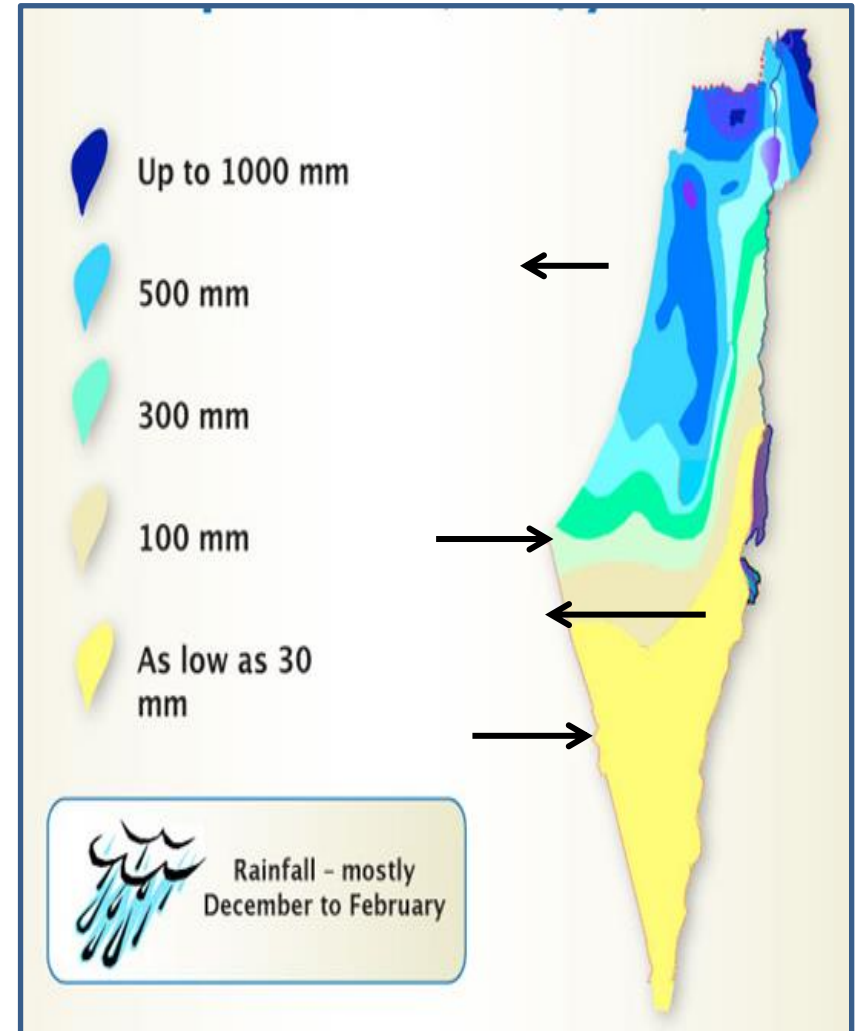
J F M A M J J A S O N D



Average max. and min. temperatures in °C

Precipitation totals in mm

Source: Israel Meteorological Service



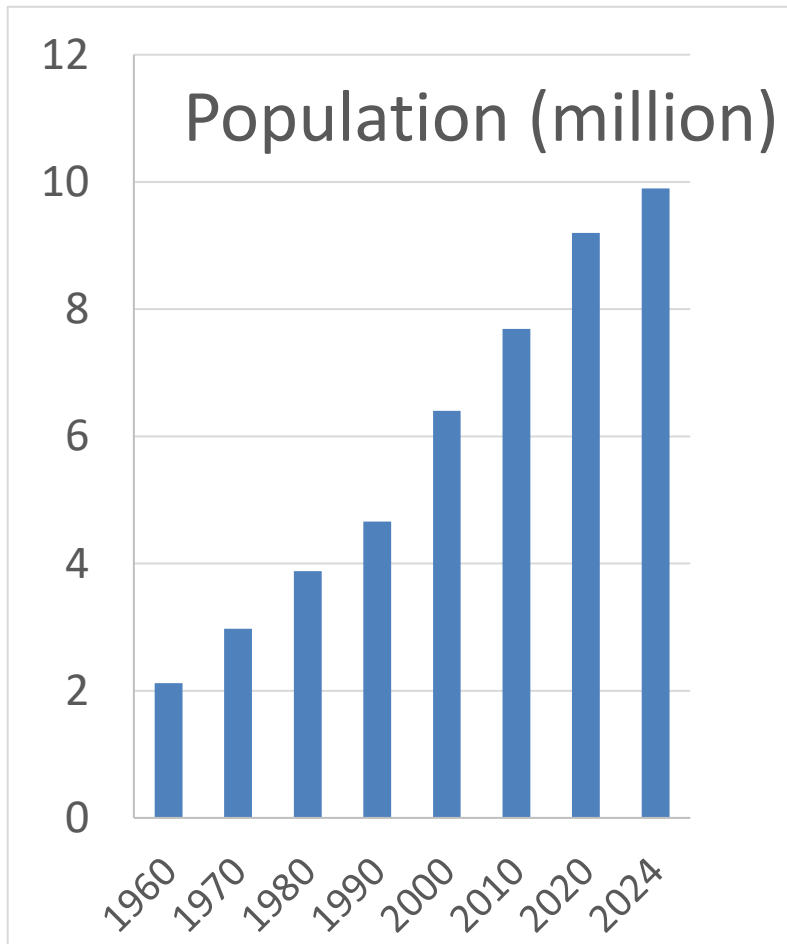
Average annual rainfall in

Source - Israeli Ministry of Agriculture

**Water
Resources**



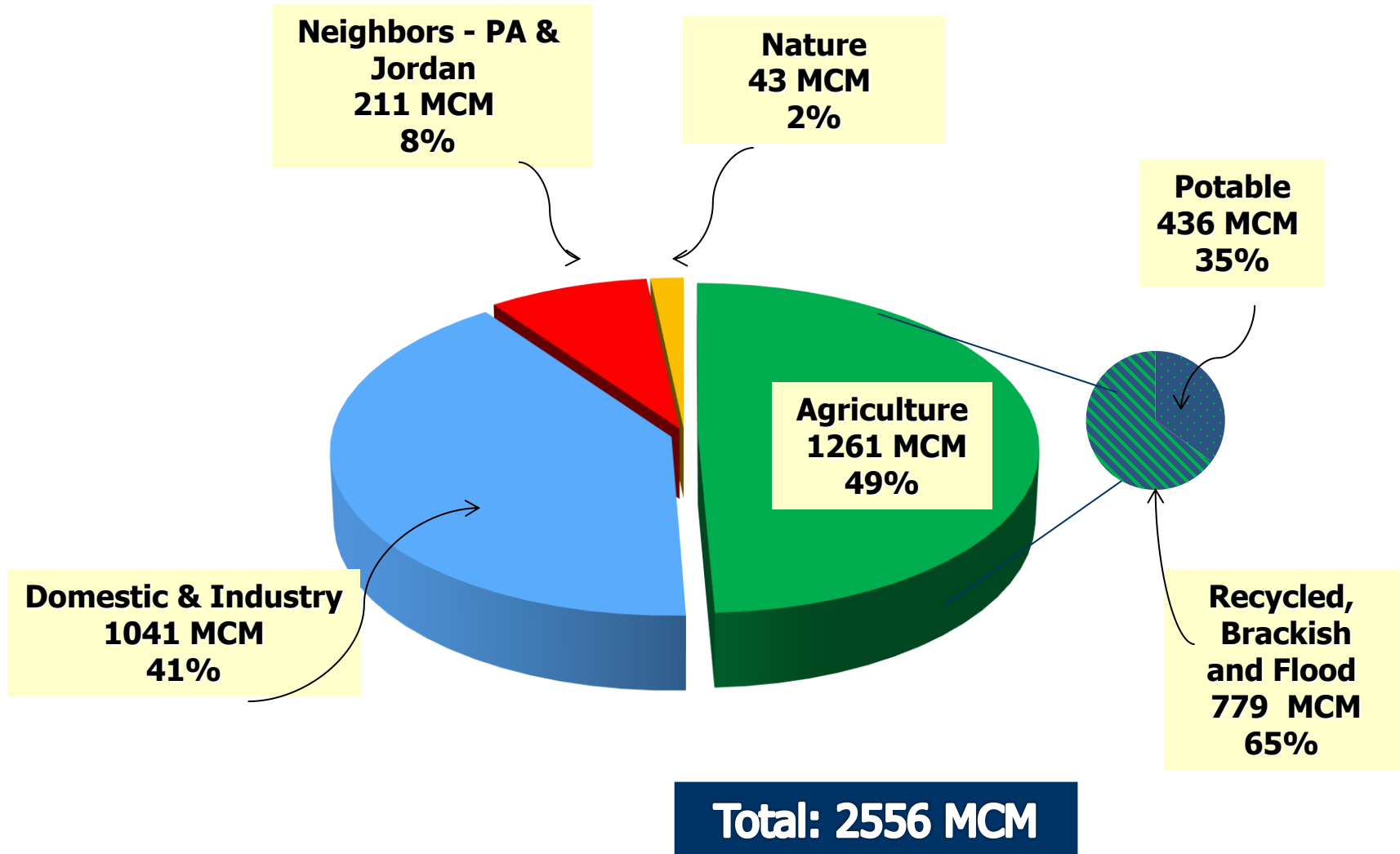
**Water
Demand**



- **Avg. total natural enrichment ~ 1.17 billion m³/annum**
- **Water consumption ~ 2.35 billion m³/annum**
- **Annual shortage of ~50%**

Water Supply - Israel

According to sectors - 2023



Water Playground Regulator



Consumers

Nature

Agriculture

Industry

Households

Future
Generations

Diplomatic
Agreements

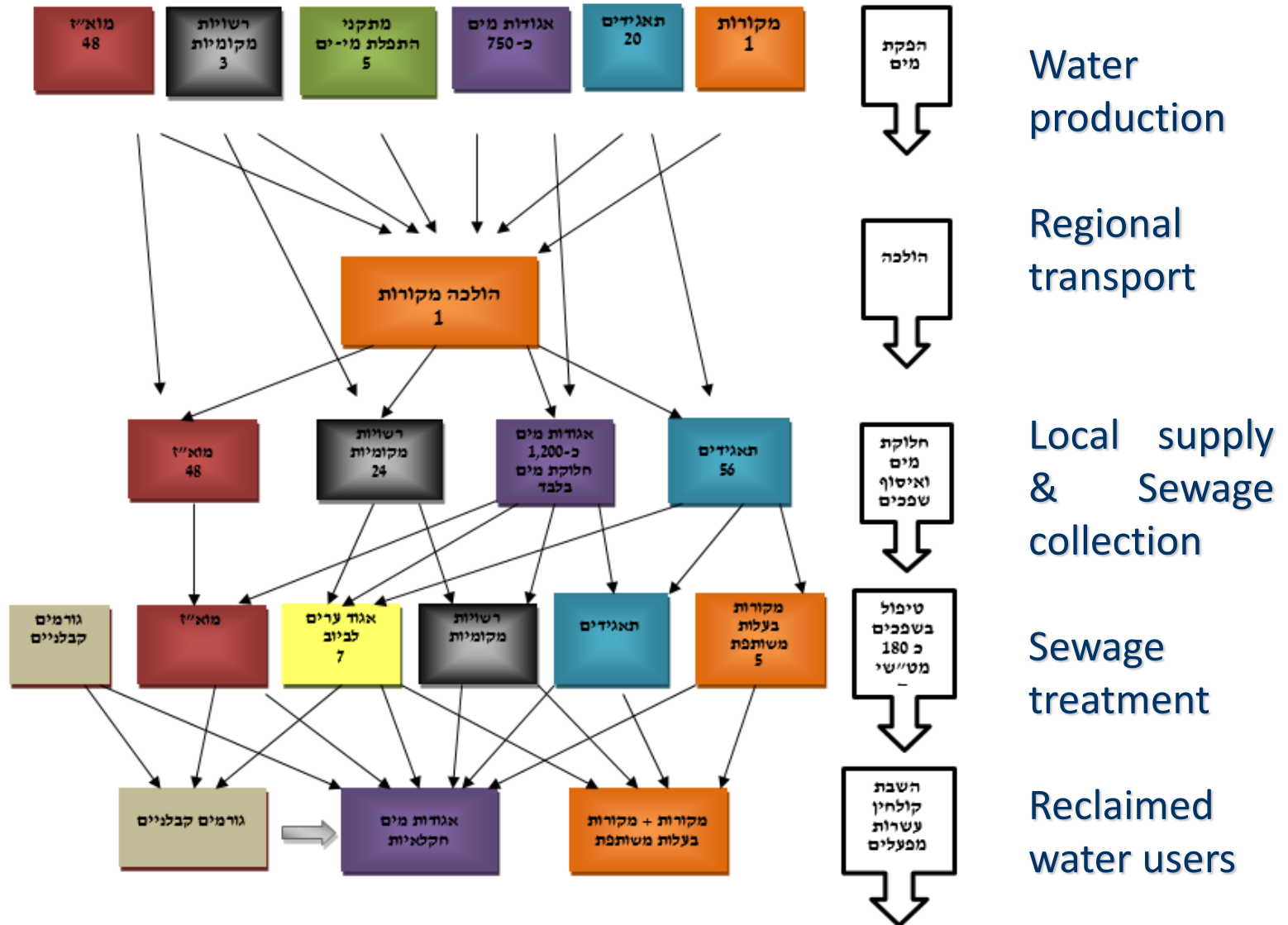
Suppliers



56 Municipal Water
Companies

More than 1000 local
suppliers in the rural sector

Stakeholders in the water sector



IWRM
Integrated Water
Resources
Management

Governance
and Regulation

A Sustainable Approach to Managing Our Water

Efficient Use

Development
of Existing and
New Resources

IWRM
Integrated Water
Resources
Management

Main Water Supply System



Sea of Galilee

The Shore Aquifer

The Mountain Aquifer

Tel Aviv

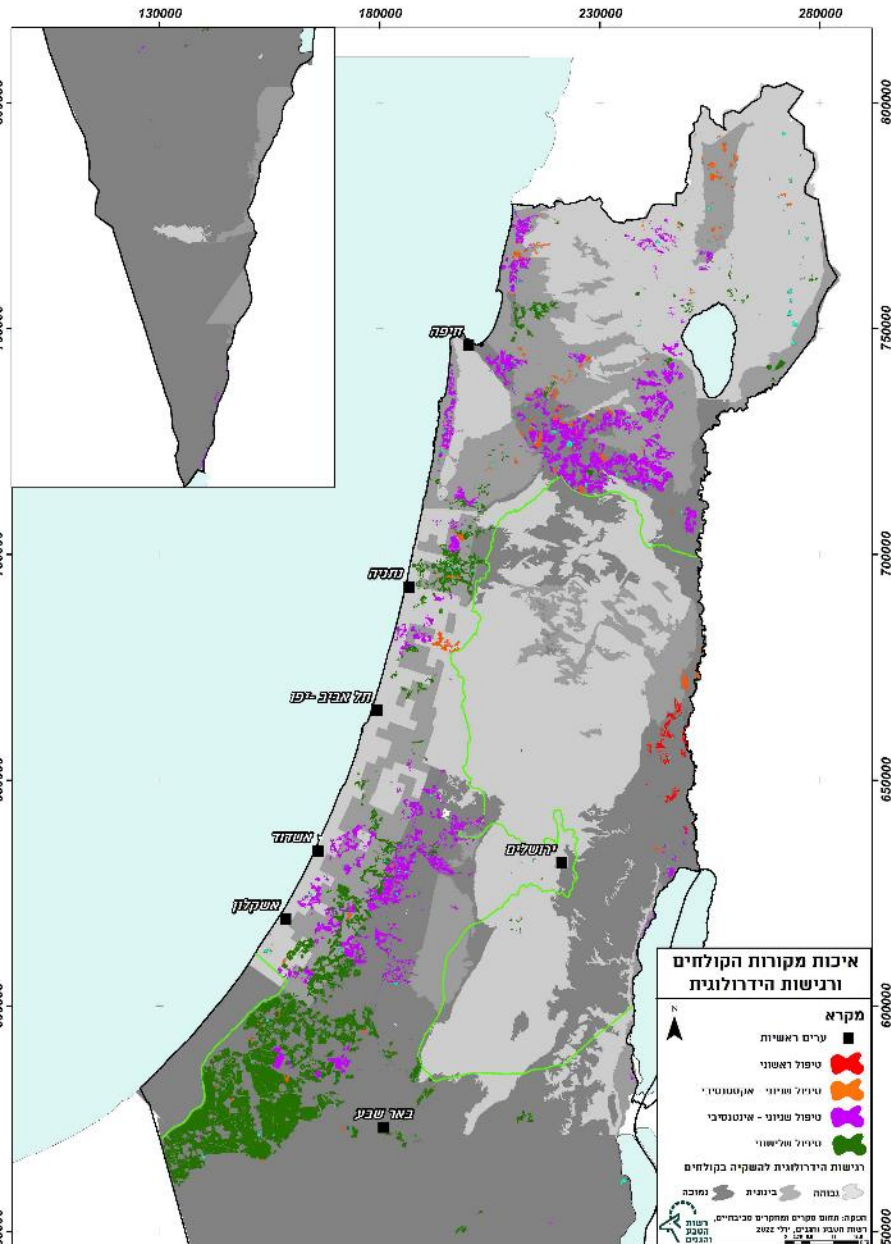
Jerusalem



The National Carrier
Established in the 1950s & 1960s



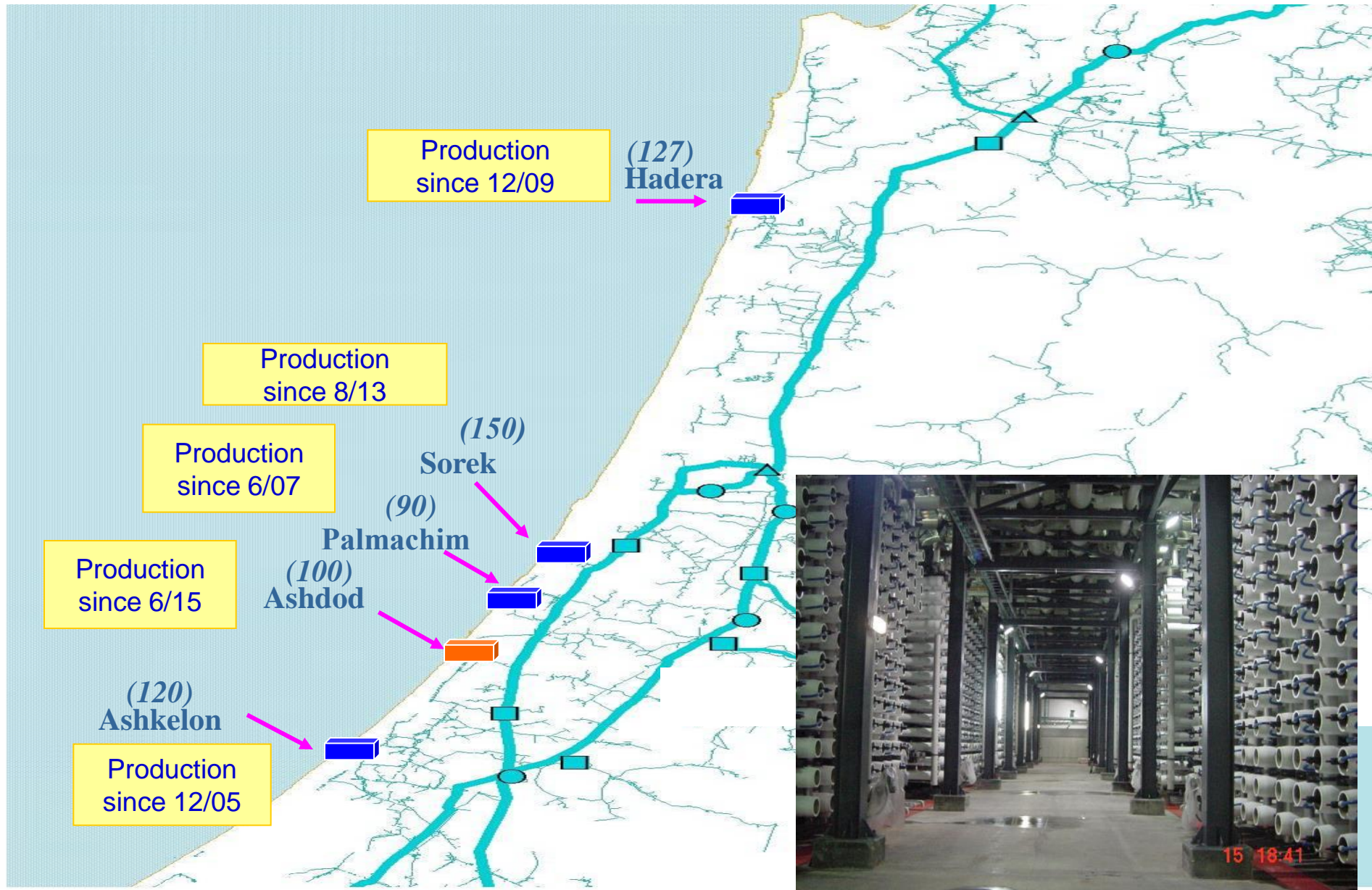
Use of Reclaimed Wastewater



Nitzanim Reservoir

- 1960's – Local initiatives for agriculture
- 1980's – Government development by "Mekorot"
- 2000's – Private sector with governmental support

Sea Water Desalination



Governance and Regulation

From The Israeli Water Law - chapter 1

“The country's water resources are public property, controlled by the state and are designated for the needs of its residents and the development of the country..”



“ONE STOP SHOP”

Plan

Develop

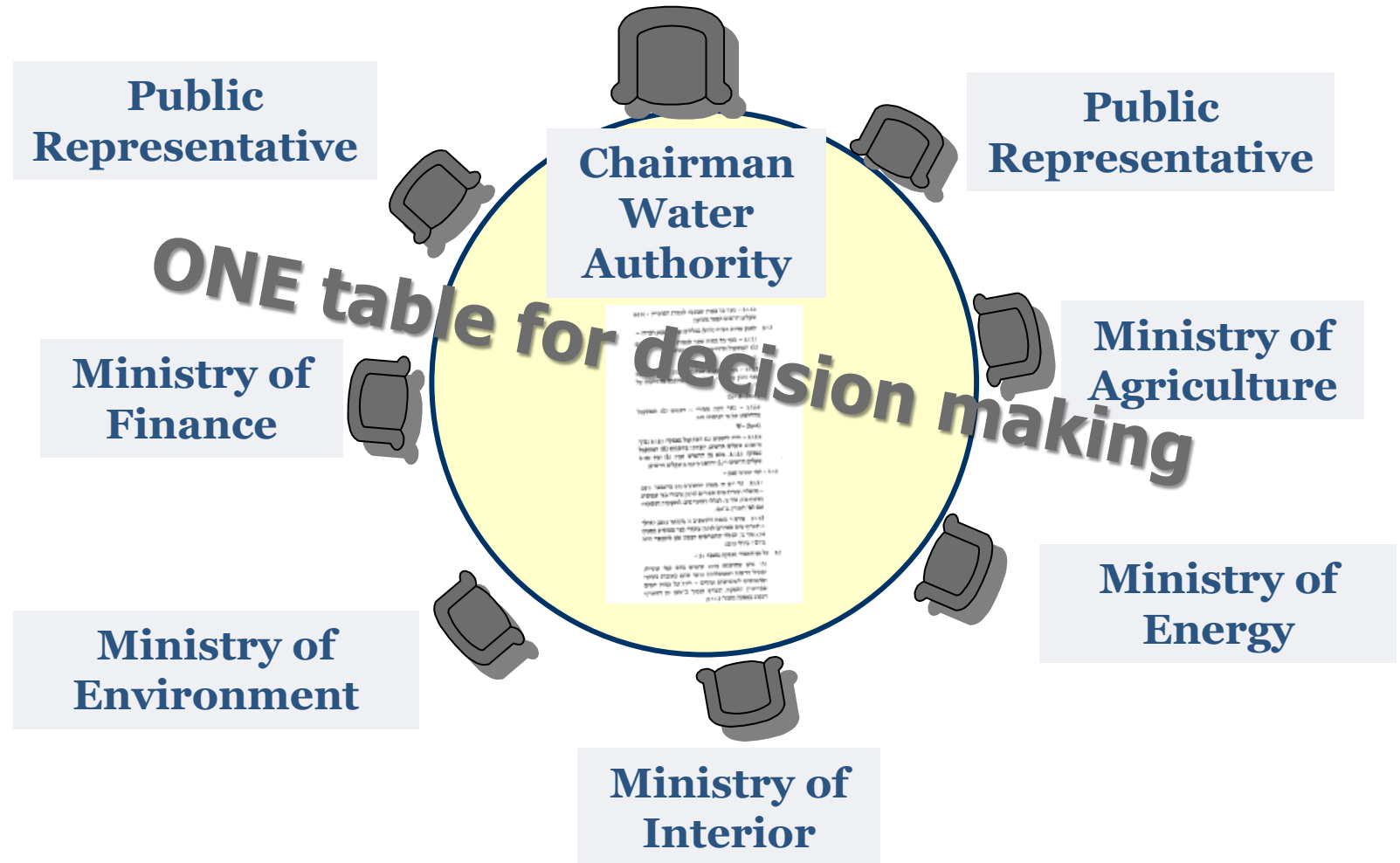
Preserve

Manage

Regulate

Supply

The Water Authority Board



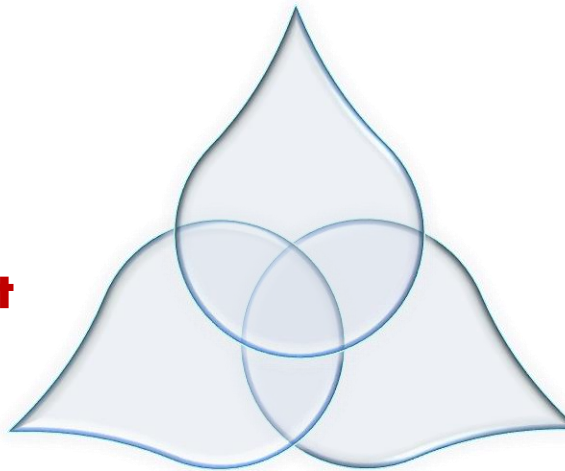
The Water Authority – Governance Principals

Regulation:

- One decision making regulatory body
- Professional (not political) level
- Integrative approach

Finance:

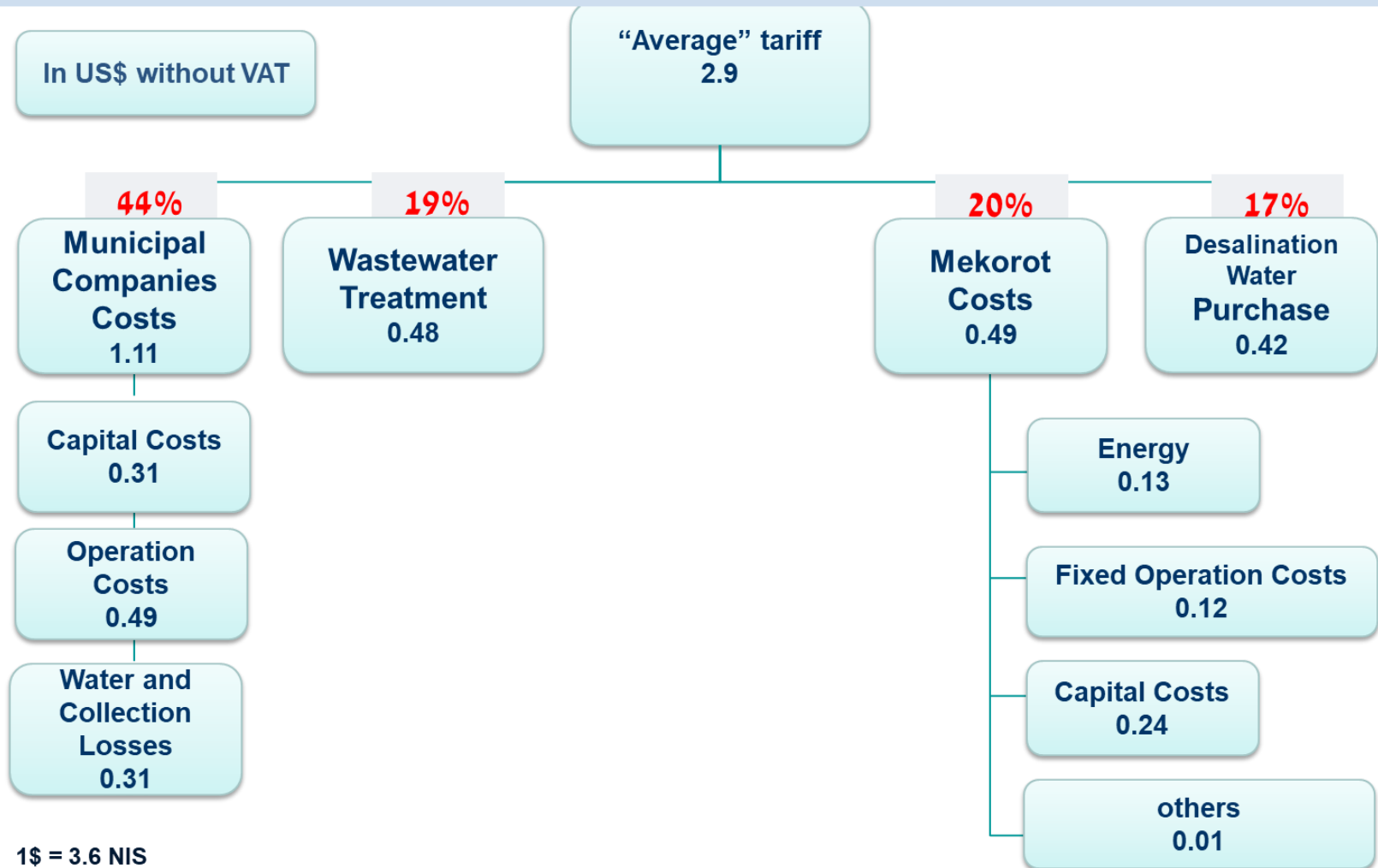
- Full cost recovery - all cost covered through tariff
- Fairness and uniformity for consumers



Service Standards:

- Investments in infrastructure
- High quality standards for end users

Water Tariffs Components



Water & Sewage Tariffs for the Domestic Sector

Two-block tariff system:

- Below 3.5 m³/person/month - the rate is ~ 2 \$/m³
- Above 3.5 m³/person/month - the rate is ~ 3.6 \$/m³

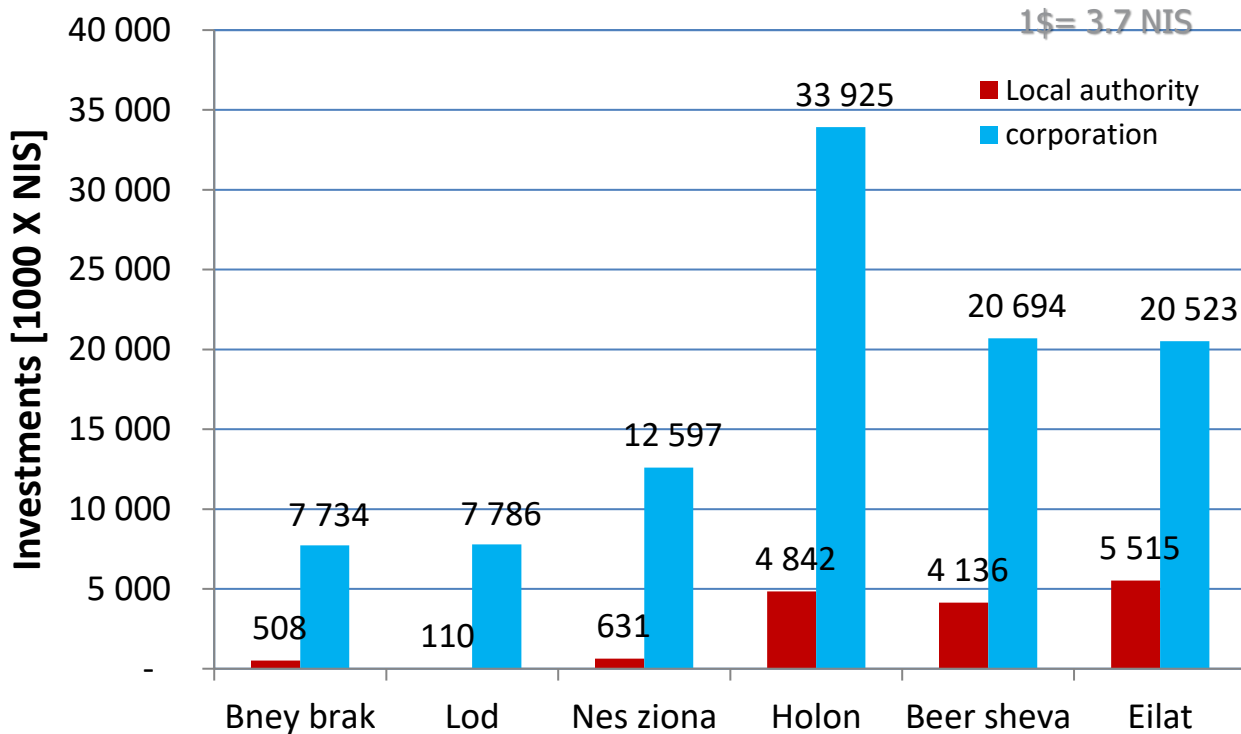
- ❖ Progressive pricing
- ❖ Encouraging conservation
- ❖ Cost recovery

1\$= 3.6 NIS

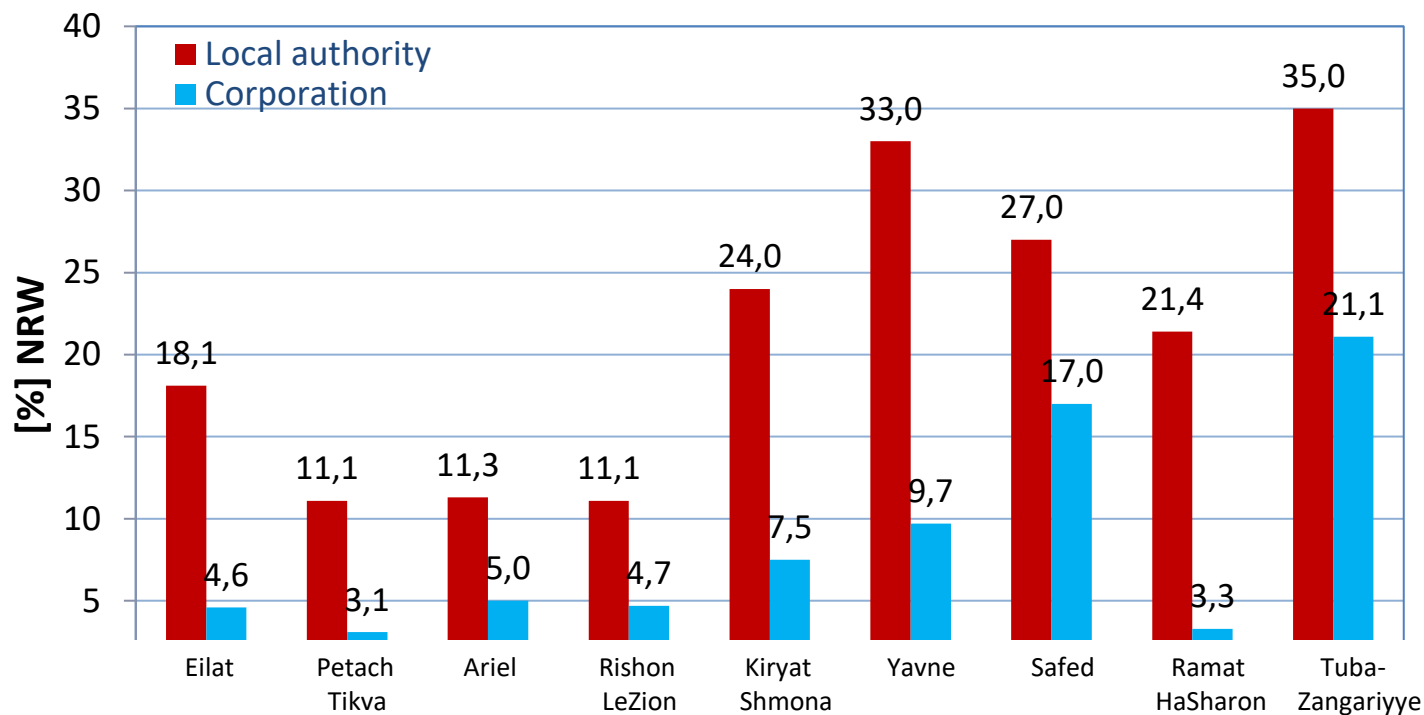


investments - renewal and upgrading

Annual Investment ~ 1.2 [BNIS]
Infrastructures renewal and upgrading



NRW @ WATER LOSS IMPROVEMENT



INVESTMENTS



Average annual investment (approx.)

Type of investment	COST [Million Shekel/Year]
Mekorot – the National Water Supply Company (The National Water Carrier & more)	1,500
Desalination Capacity	400
Municipal and Regional Water Utilities	1,200
Sewage Collection, Treatment and Reuse	1,000
Other projects	400
Total	4,500

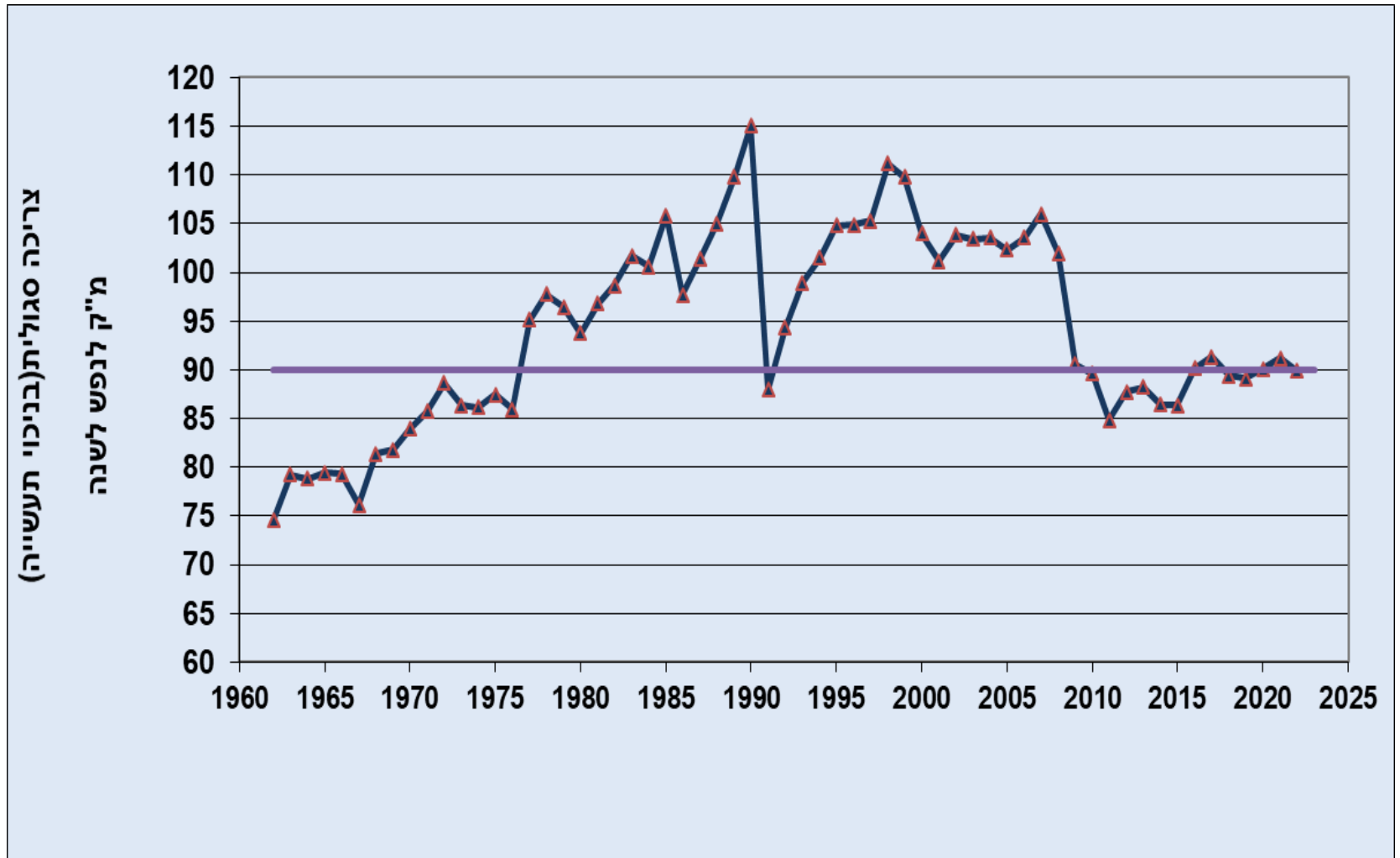
\$1,200 Million

Efficient Use

- **Water Measurement**
- **Water Tariffs**
- **Water Quotas**
- **Engineering standards**
- **R&D**
- **Education**

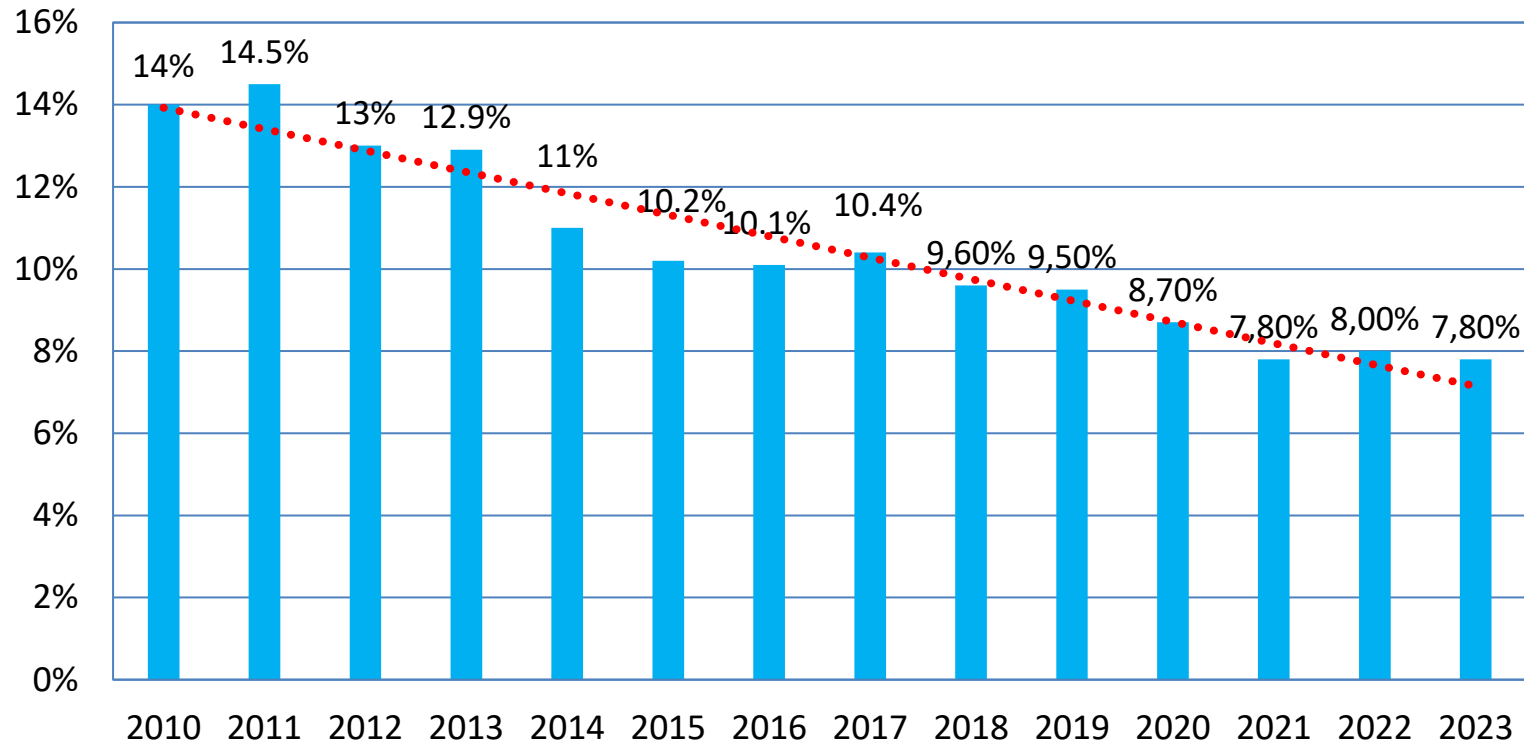


Water consumption for household (CM) capita per year 1962-2023



NRW and water loss Improvement

Total NRW [%]

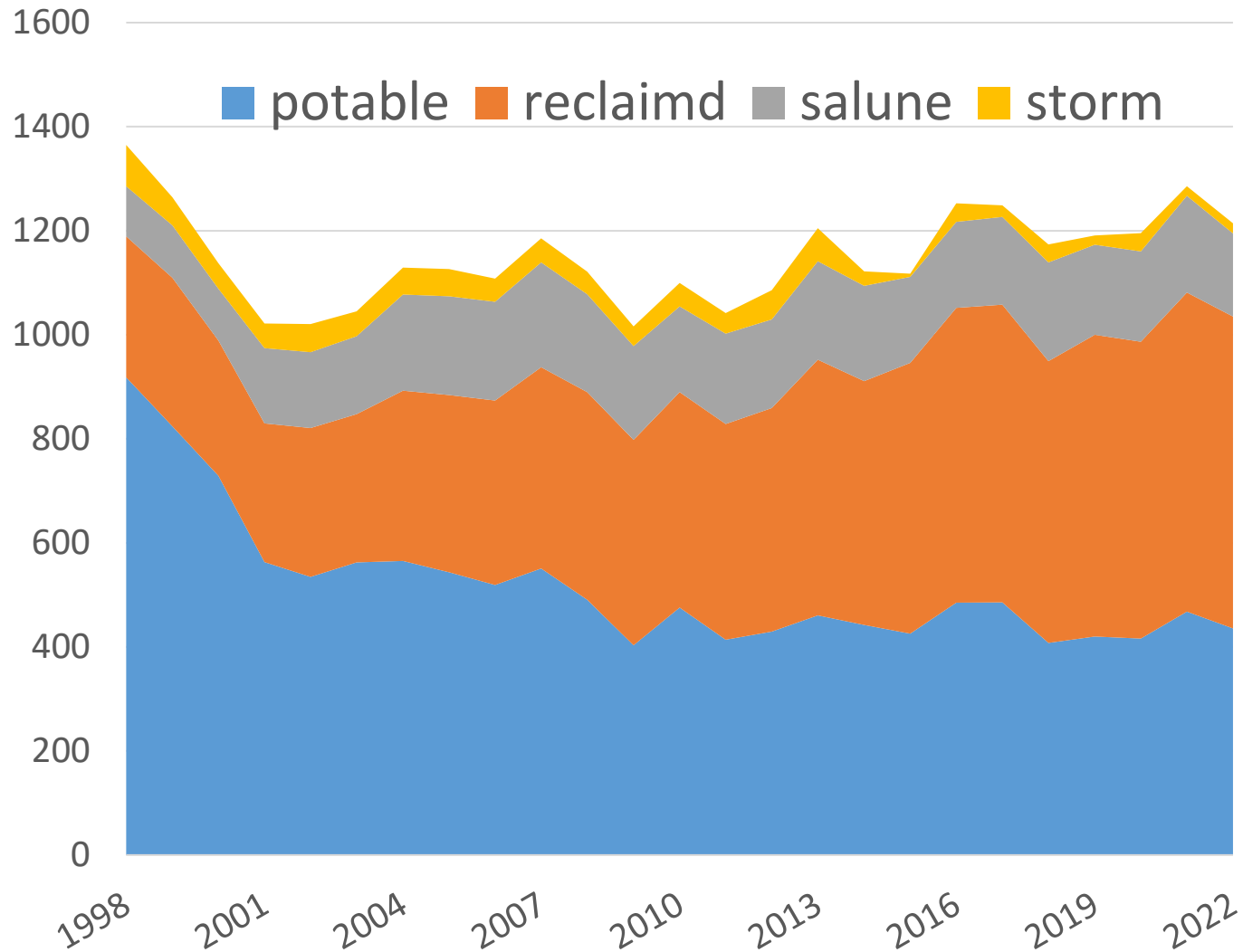


Pressurized irrigation systems



Water Supply For Agriculture

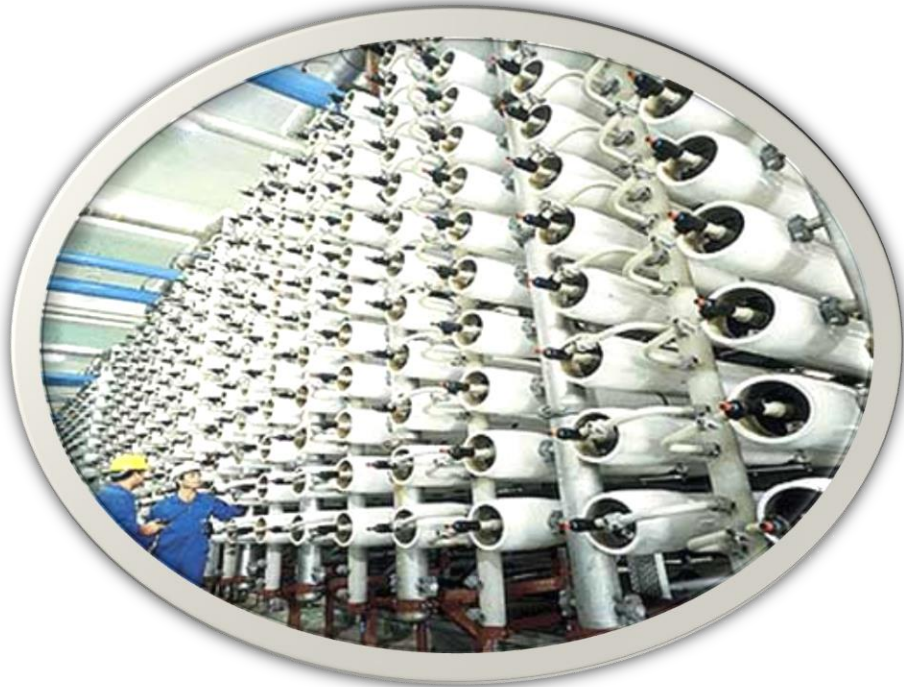
According to quality (MCM)



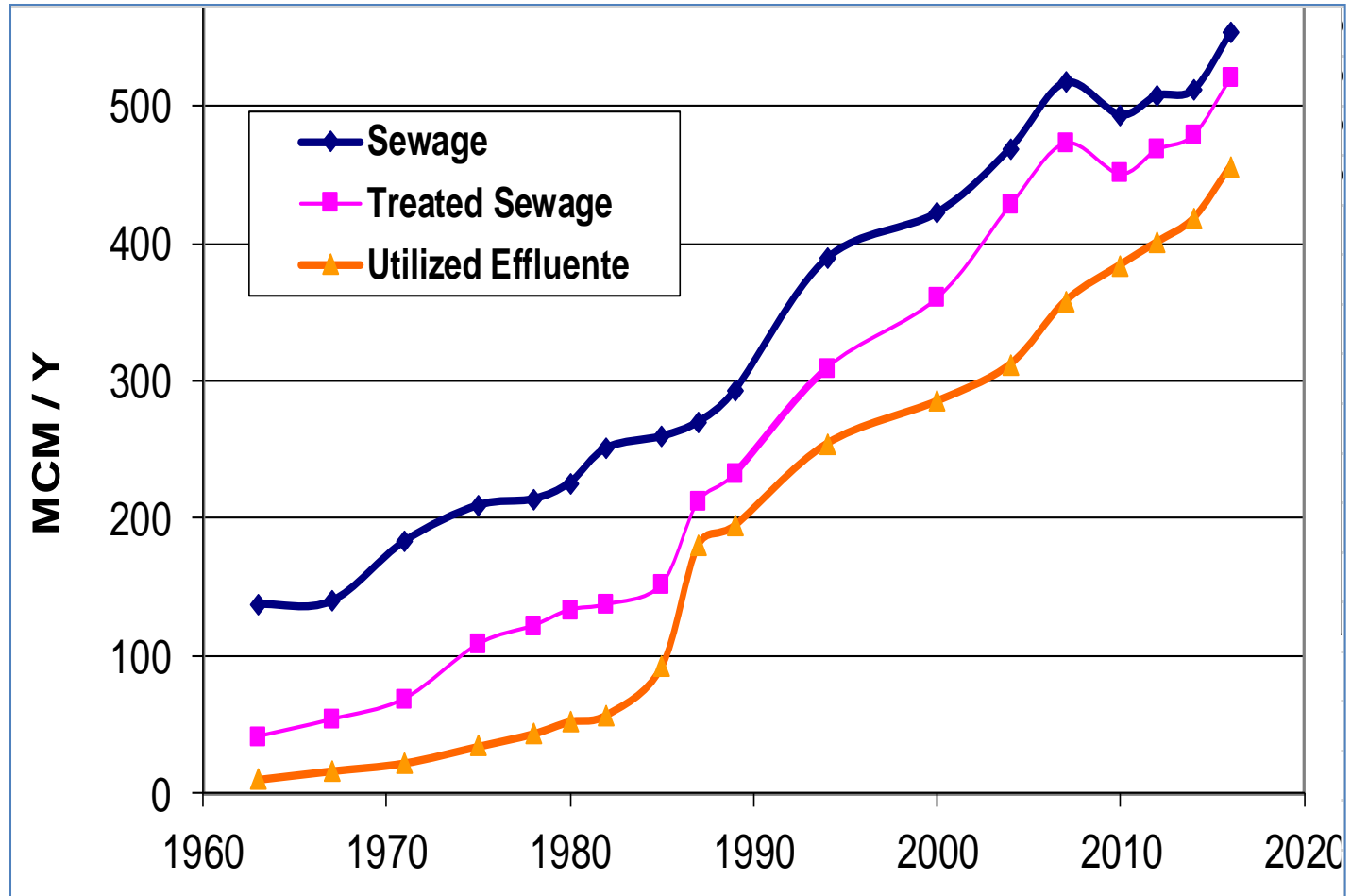
Development of Existing and New Resources

Manufactured Water

- Reclaimed waste water
- Desalination

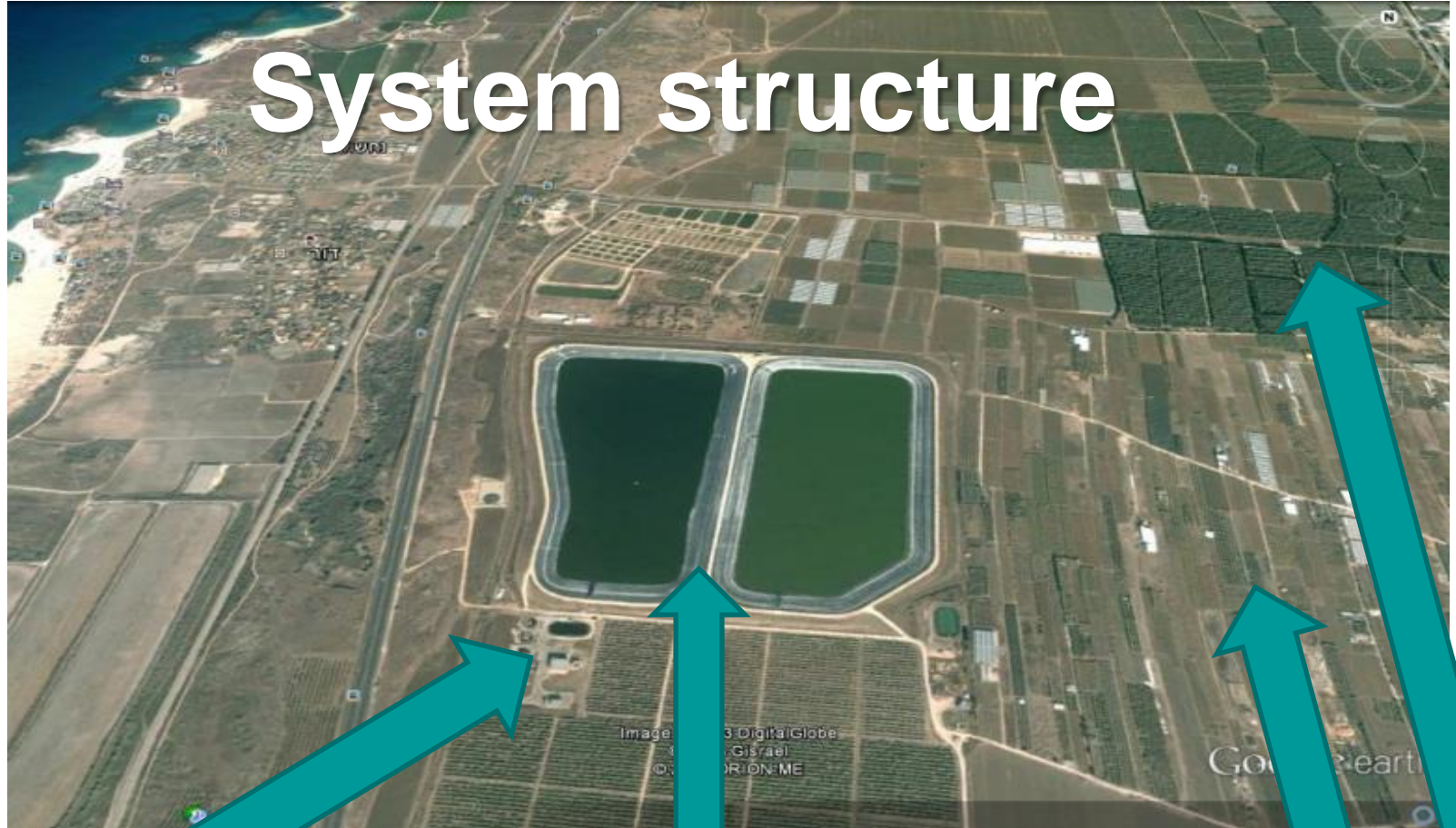


Sewage collection and reuse (MCM) in Israel 1963 - 2020



Reclaimed Wastewater

System structure



Treatment plant

Seasonal
reservoir

Pumping &
transmission
pipes

Consumers

Wastewater Treatment Plant (Shafdan) and the Pipeline to Negev

Sewage from the Greater Tel Aviv area – 140 MCM/Y

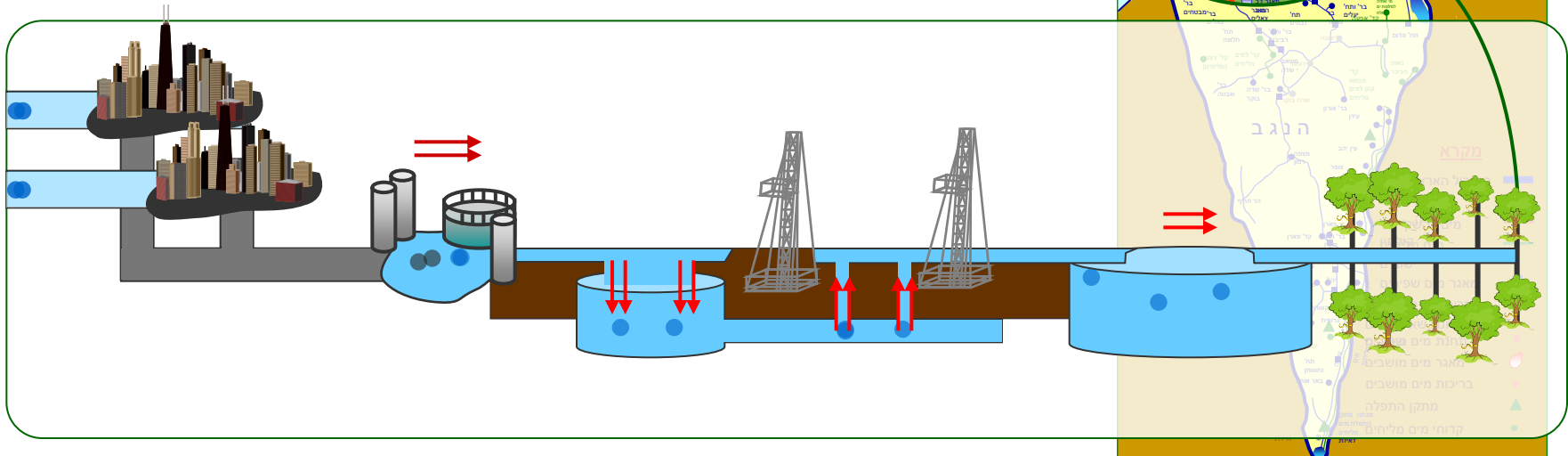
Large-scale WWTP – secondary treatment quality

Six infiltration fields

Over 150 production and monitoring wells (quality permitted for "occasional drinking")

90km pipeline to Negev

32 pumping stations, operational storages (0.51MCM) and seasonal storages (17.2 MCM)



Limited use for gardening, landscaping & Industry

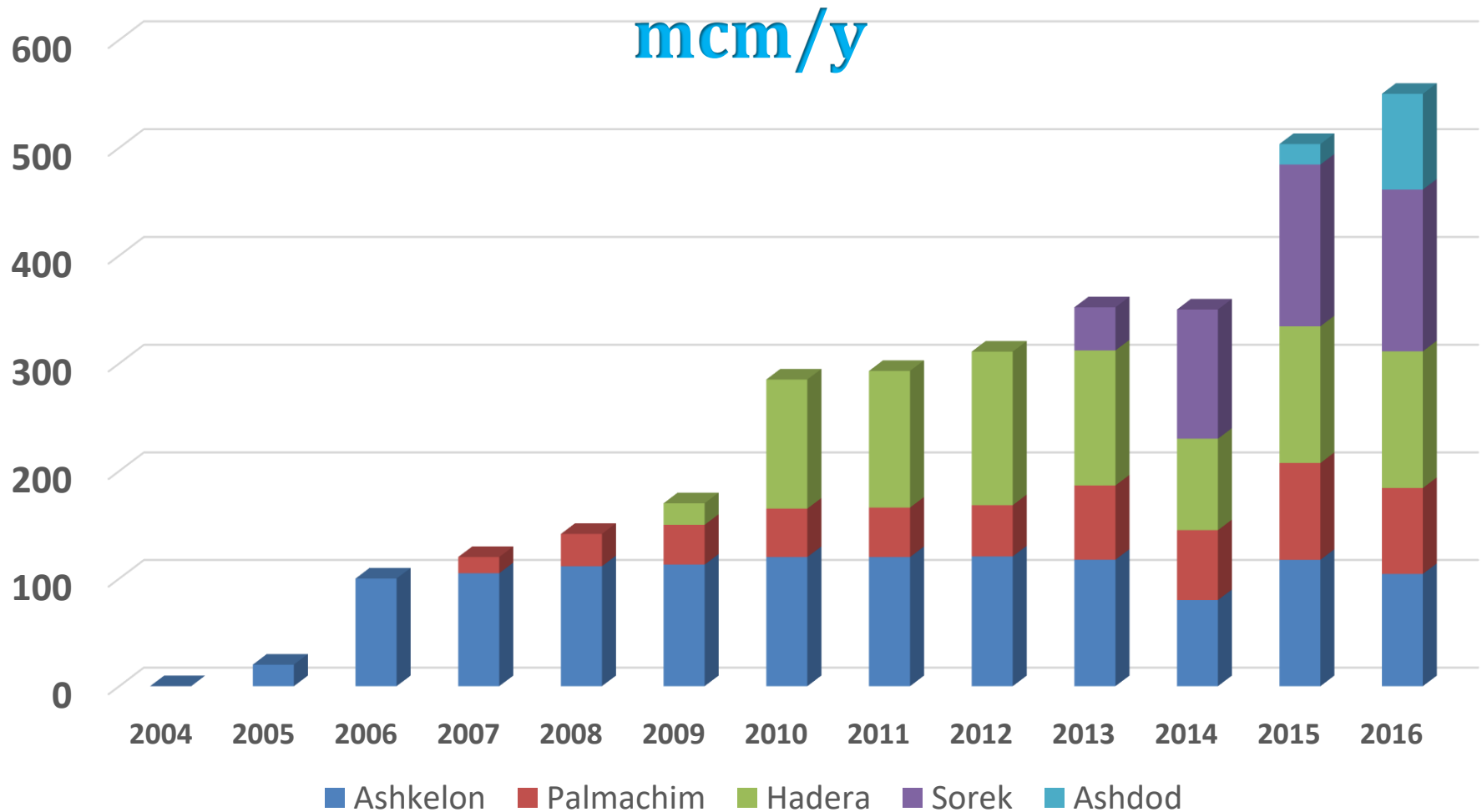


Hod Hasharon Ecological Park

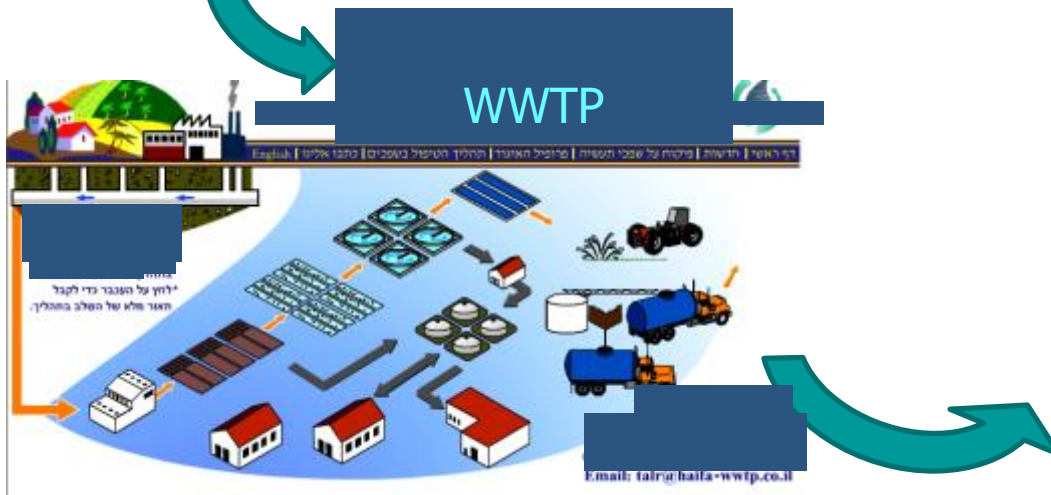


5 Large Scale Desalination Facilities in less than 15 years

SWRO Facilities - Annual Production

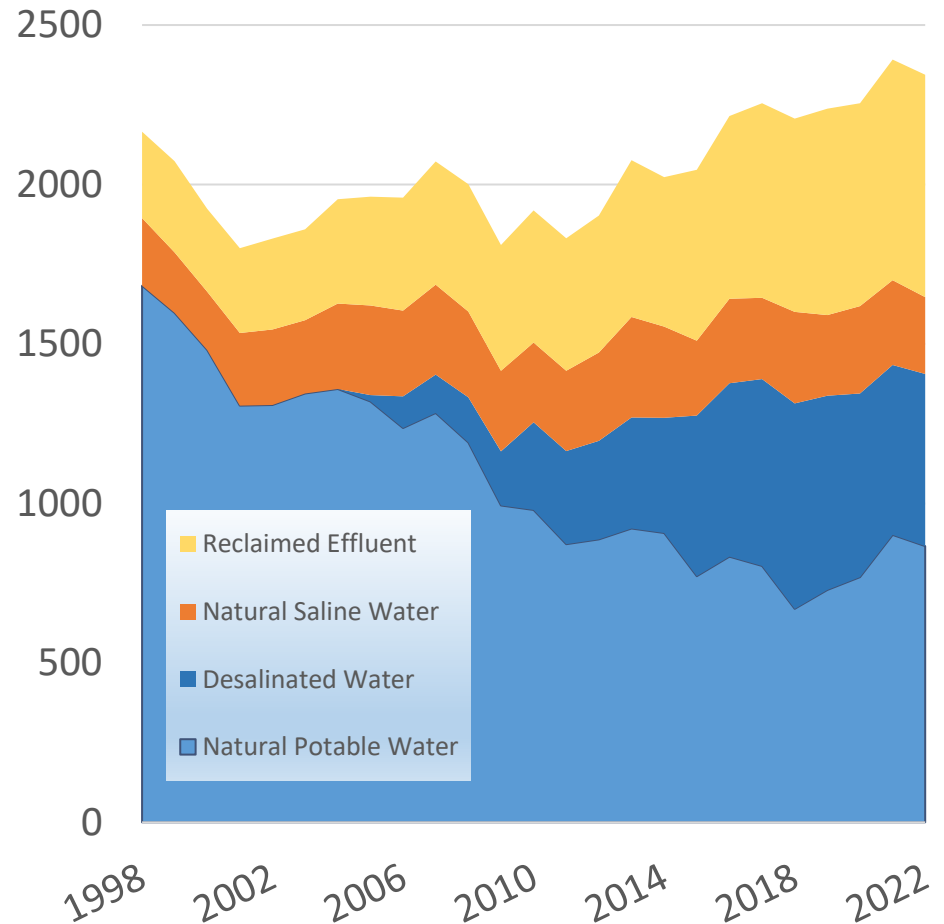


Reuse - Integrated Water Resources Management

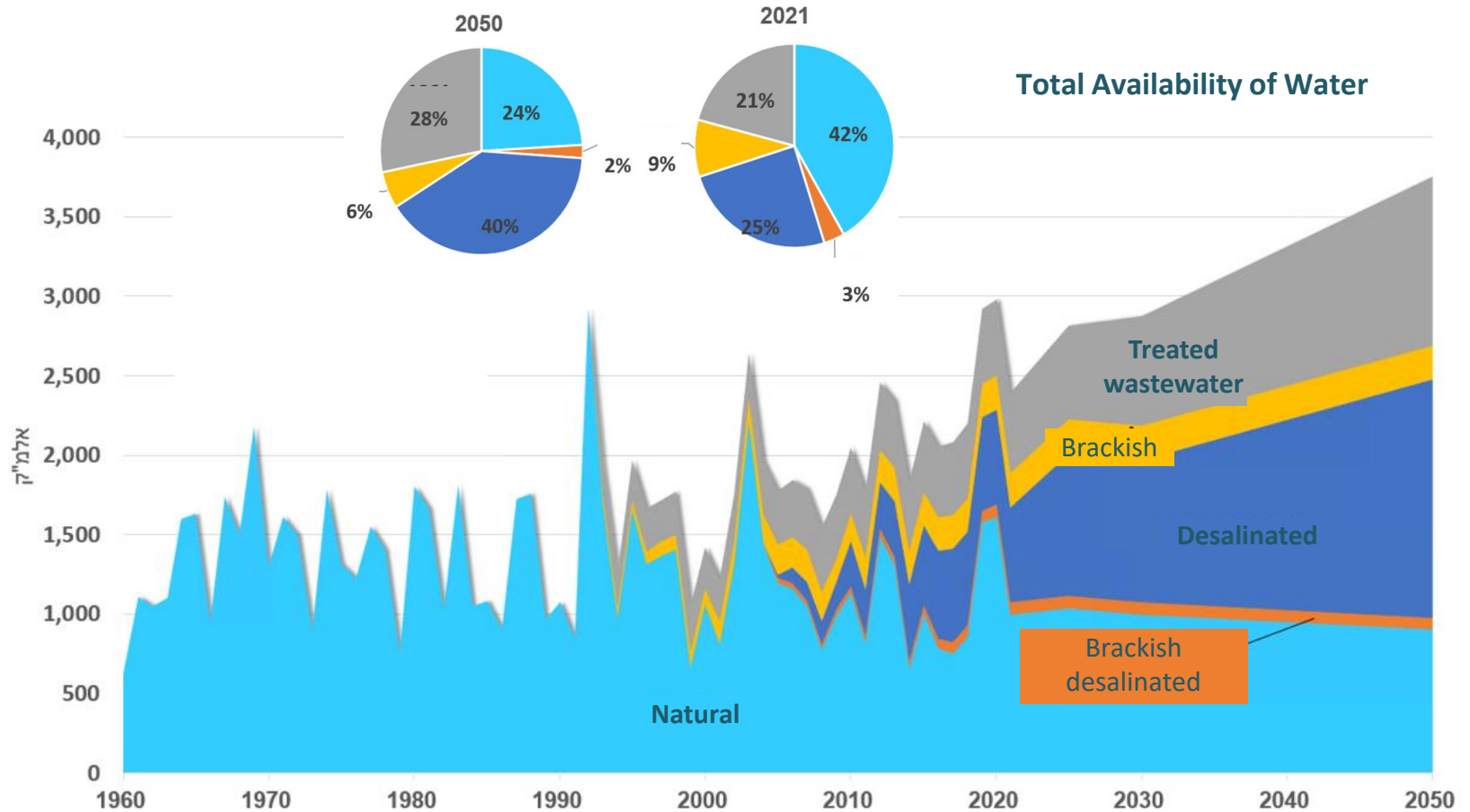


Preparing for the future

Flexibility to allow adjustments according to future requirements



Water Resources: Past and Future Trends



An Israeli Experience:

Thank You

Danny Greenwald
Senior deputy director general – Regulation
Israeli Water Authority
dannyg@water.gov.il