Towards a Greener Future:
European Innovation for Sustainable Cyprus
27 November 2025

Dealing with Water Scarcity in Cyprus

Transitioning from crisis management to long-term resilience

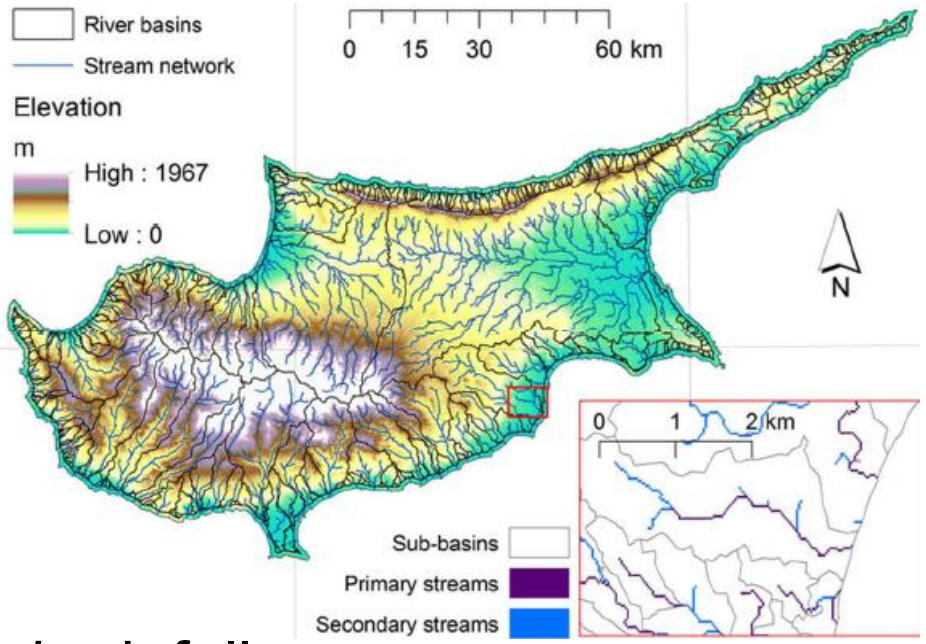
Yianna Economidou
Senior Executive Engineer

Water Development Department
Ministry of Agriculture, Rural Development and Environment

The Problem of Water Scarcity in Cyprus

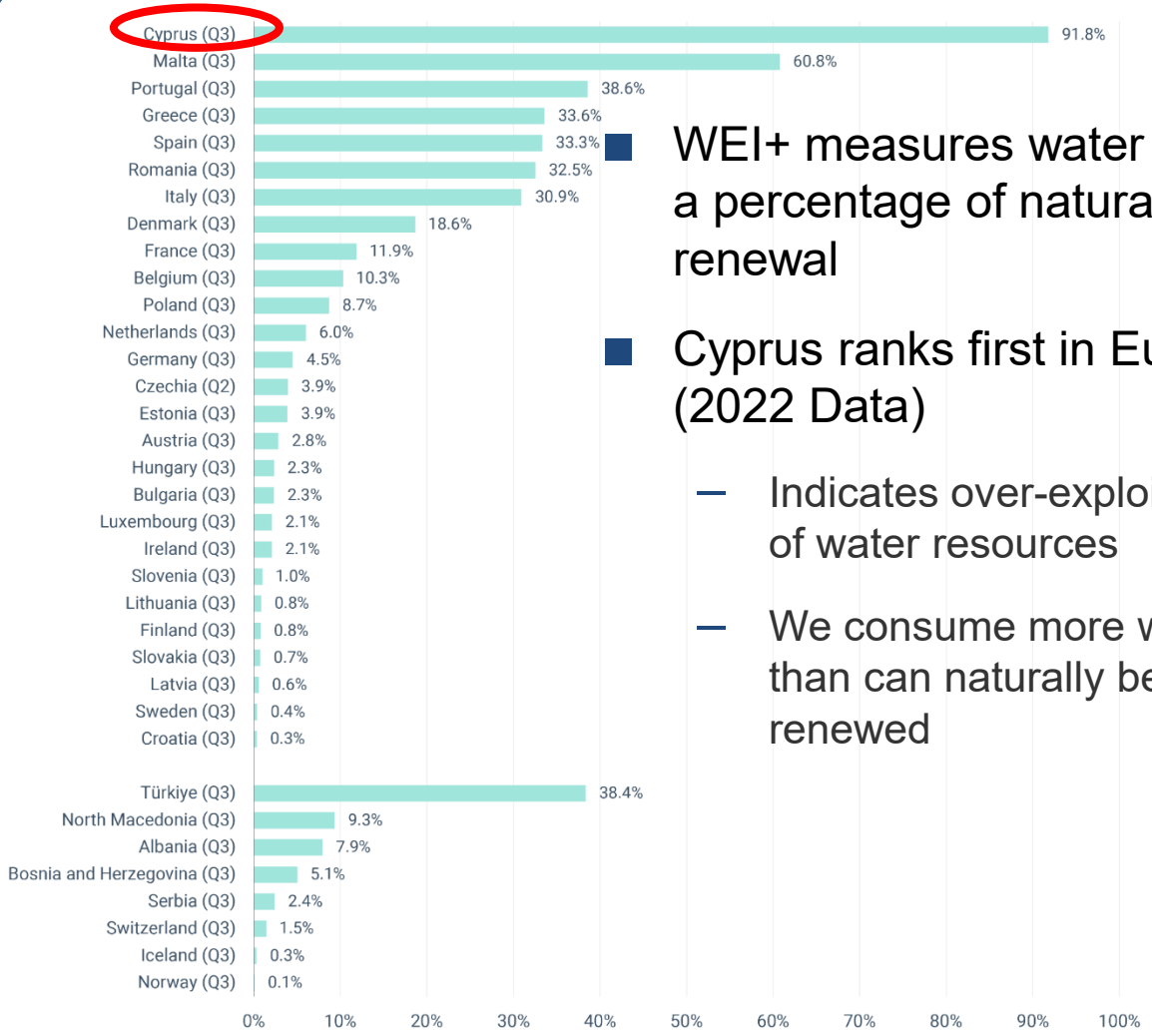
Key Facts about Cyprus

- Area: 9.521 km^2
- Population: 923.000 (2021)
- Visited by 3 – 5 million tourists, every year – mainly in the summer
- Semi-arid climate, frequent drought events



- Low and unevenly distributed rainfall
- Limited number of natural water resources (no natural lakes, no rivers with year-round flow)
- Cyprus is classified as a climate change "**hotspot**" (IPCC)

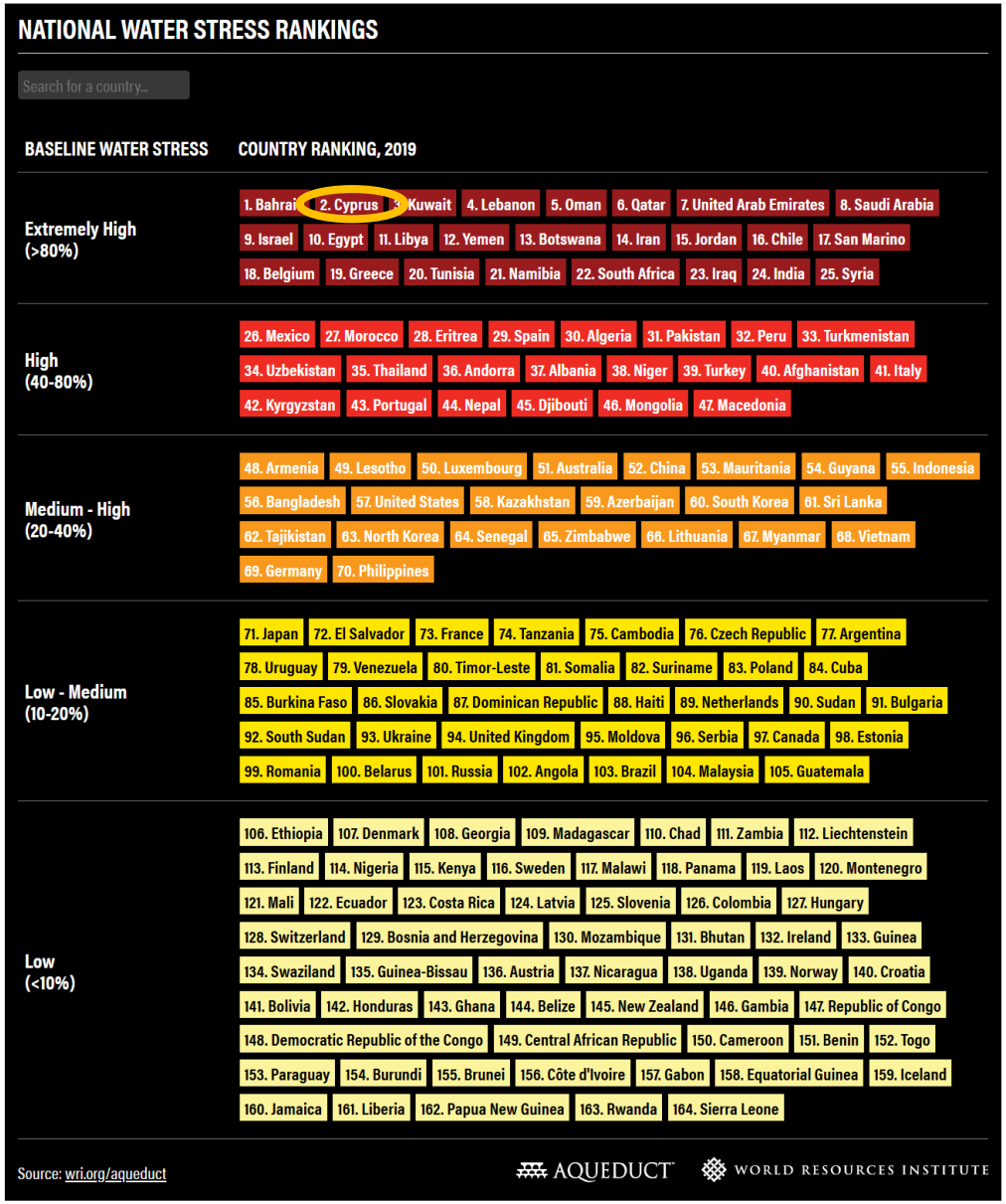
High Water Stress
Water Exploitation Index (WEI+)



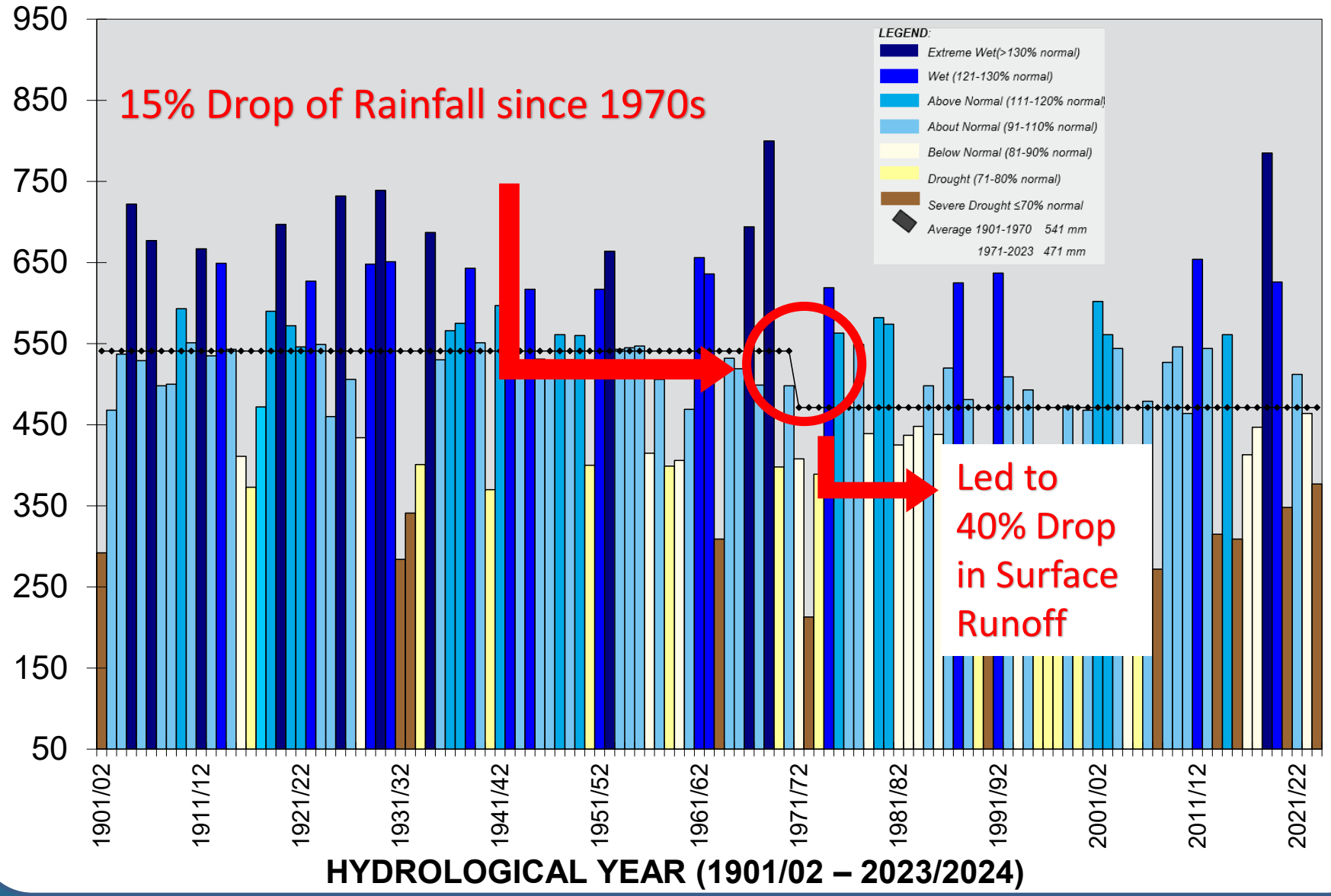
- WEI+ measures water use as a percentage of natural water renewal
- Cyprus ranks first in Europe (2022 Data)
  - Indicates over-exploitation of water resources
  - We consume more water than can naturally be renewed

Water Stress Global Rankings

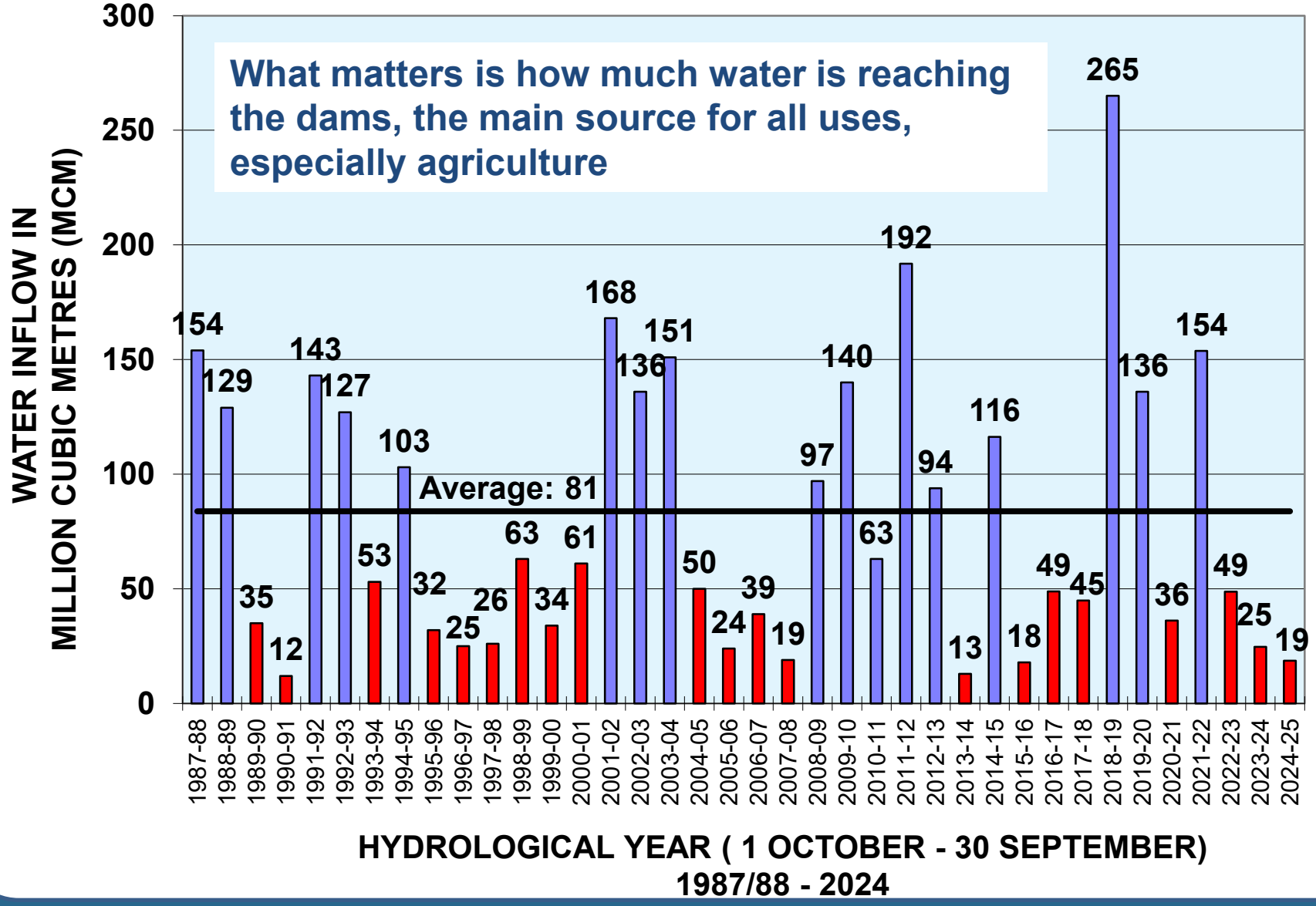
- Cyprus ranks 2nd globally - Water Stress Index **> 80%**
- Water Stress Index **> 40%** means high water stress according to OECD



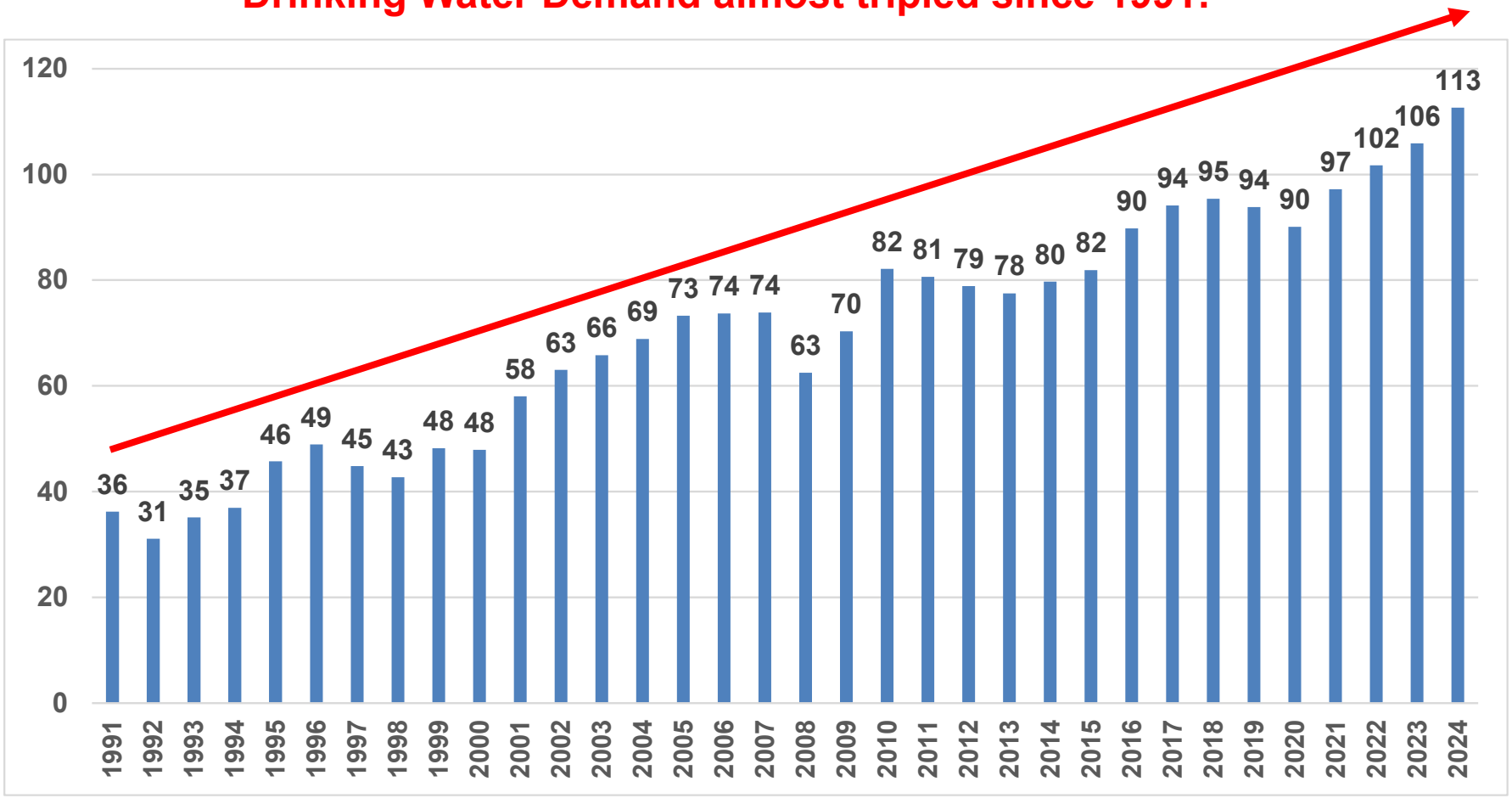
Annual Rainfall in Cyprus in mm



Water Inflow in Dams in MCM



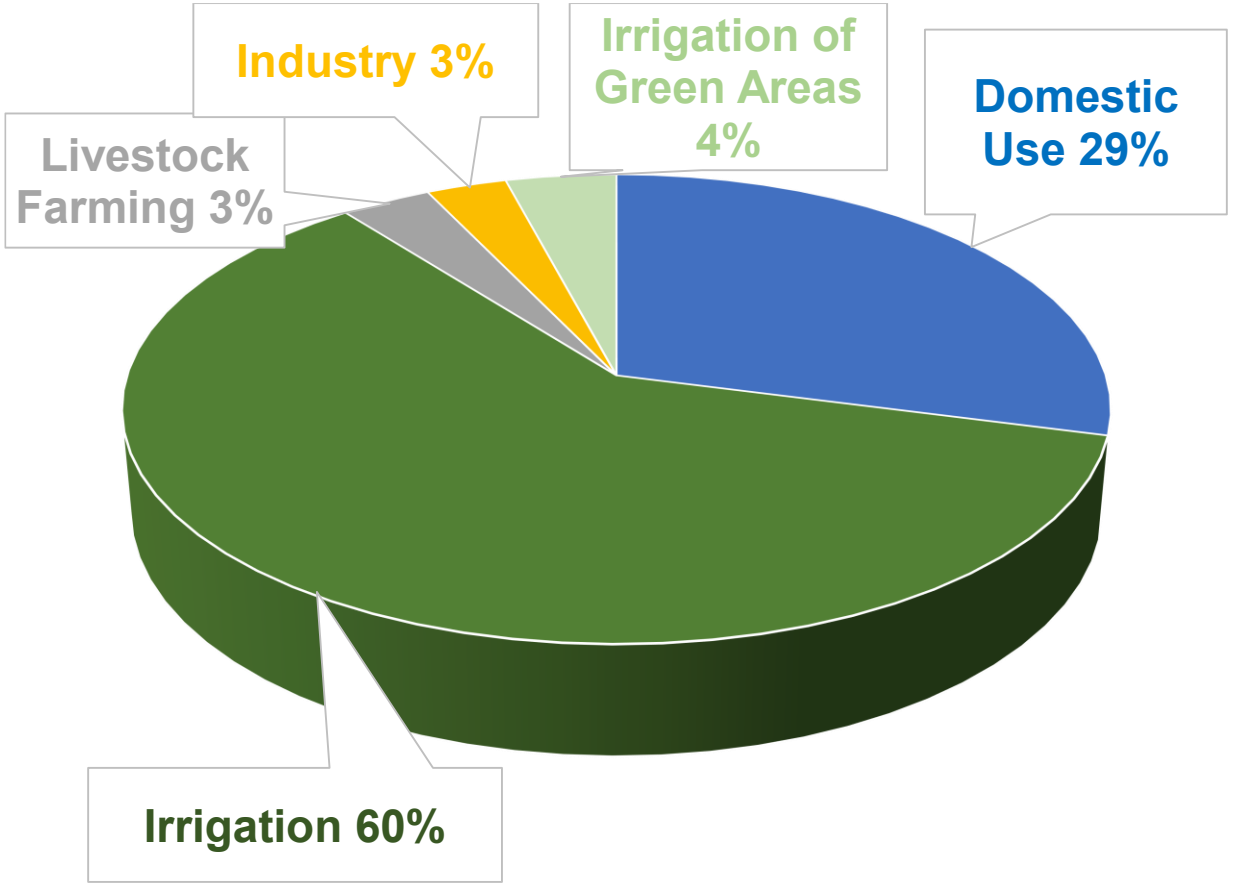
Drinking Water Consumption 1991 – 2024



Causes of Increased Water Consumption

- Increase in population – rise in living standards
- Increase in tourism – extension of the tourist season
- Old water networks – increased water losses
- Communities shifting from boreholes to public supply
  - Some boreholes have dried up
  - Government Water Works is a cheaper and easier supply
- High temperatures and drought – greater demand
- Use of drinking water for irrigation of gardens and fields

Water Use in Cyprus based on actual consumption

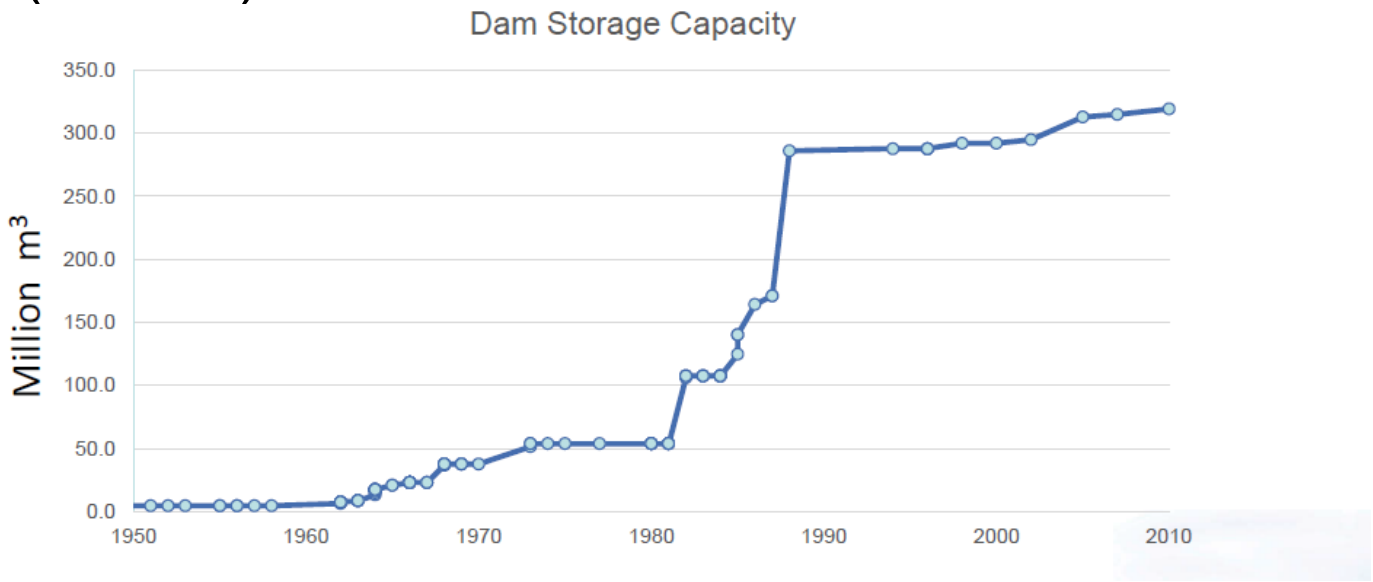


- Demand for water exceeds availability
- Irrigation needs are rarely fully met

Solving the Problem

Dam Construction

- Cyprus has **110 Dams** (56 Large Dams) with total storage capacity of **335 MCM**
- Most major rivers have dams, mainly in the Troodos catchment area
- Cyprus ranks first in Europe in the number of dams per km^2 (ICOLD)



Dams of Cyprus

Τμήμα Αναπτύξεως Υδάτων
2013

Kouris Dam
(Storage Capacity: 115 MCM)

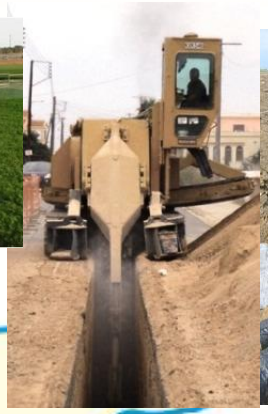
Asprokemmos Dam (Storage Capacity: 52 MCM)

Kannaviou Dam
(Storage Capacity: 17 MCM)

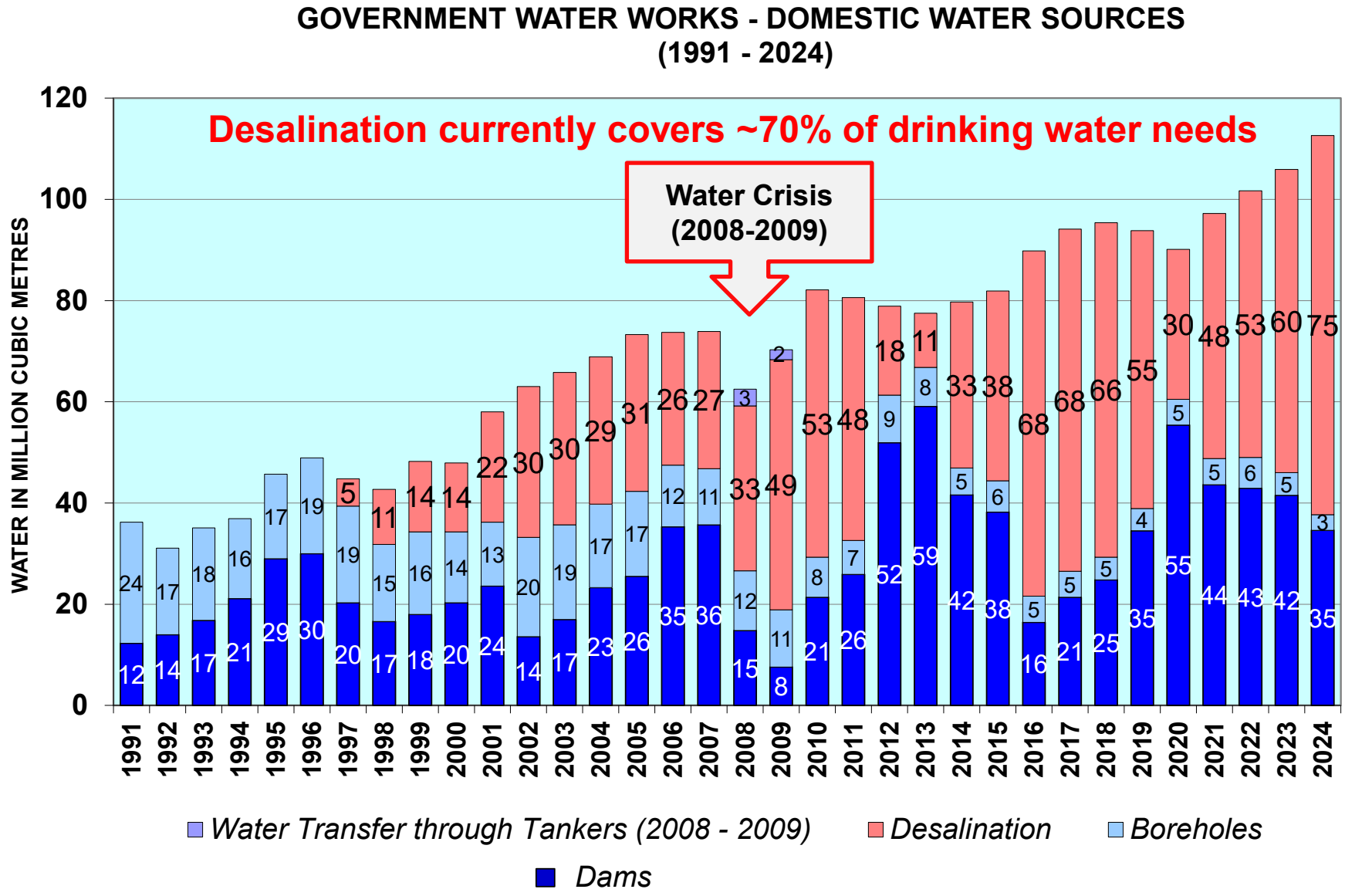
Water Infrastructure: A National Priority

Took up 20% of the Development Budget for Many Years

- 110 Dams (335 MCM)
- 4 Large Water Treatment Plants + 3 Mobile Plants
- 5 Large Irrigation Projects (25.000 Ha)
- Water Distribution Infrastructure (Tanks, Pumping Stations)



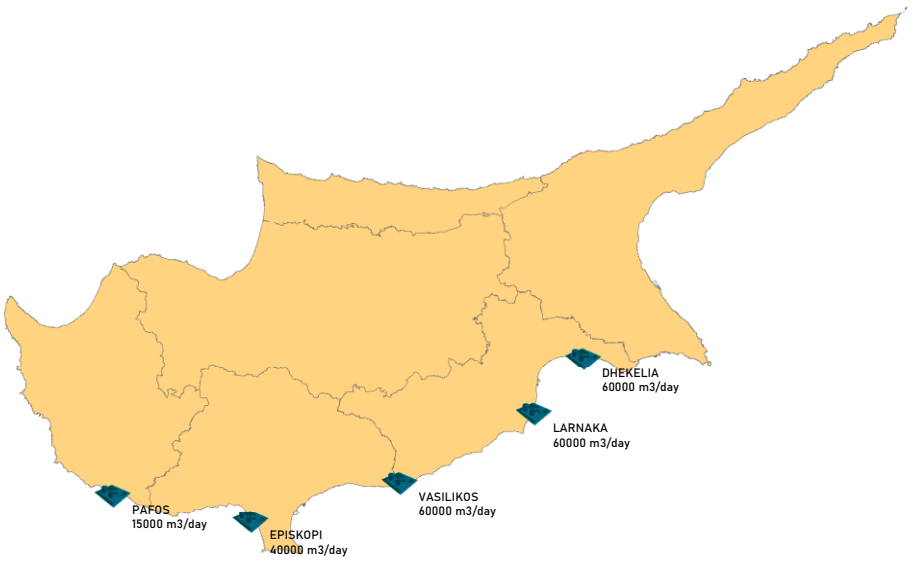
How to solve the problem – Desalination



Desalination Plants in Cyprus

- 5 permanent plants: 235,000 m³/day (~77 MCM/year)
- Mobile units: 1 already operating + 3 under construction + 3 planned for 2026 → +77,000 m³/day (+32%)
- Future expansion: Upgrades + 2 new permanent plants → 412,000 m³/day by 2031
- Small-scale units Subsidies: For hotels & local authorities (≤1,500 m³/day, fast-track permitting)

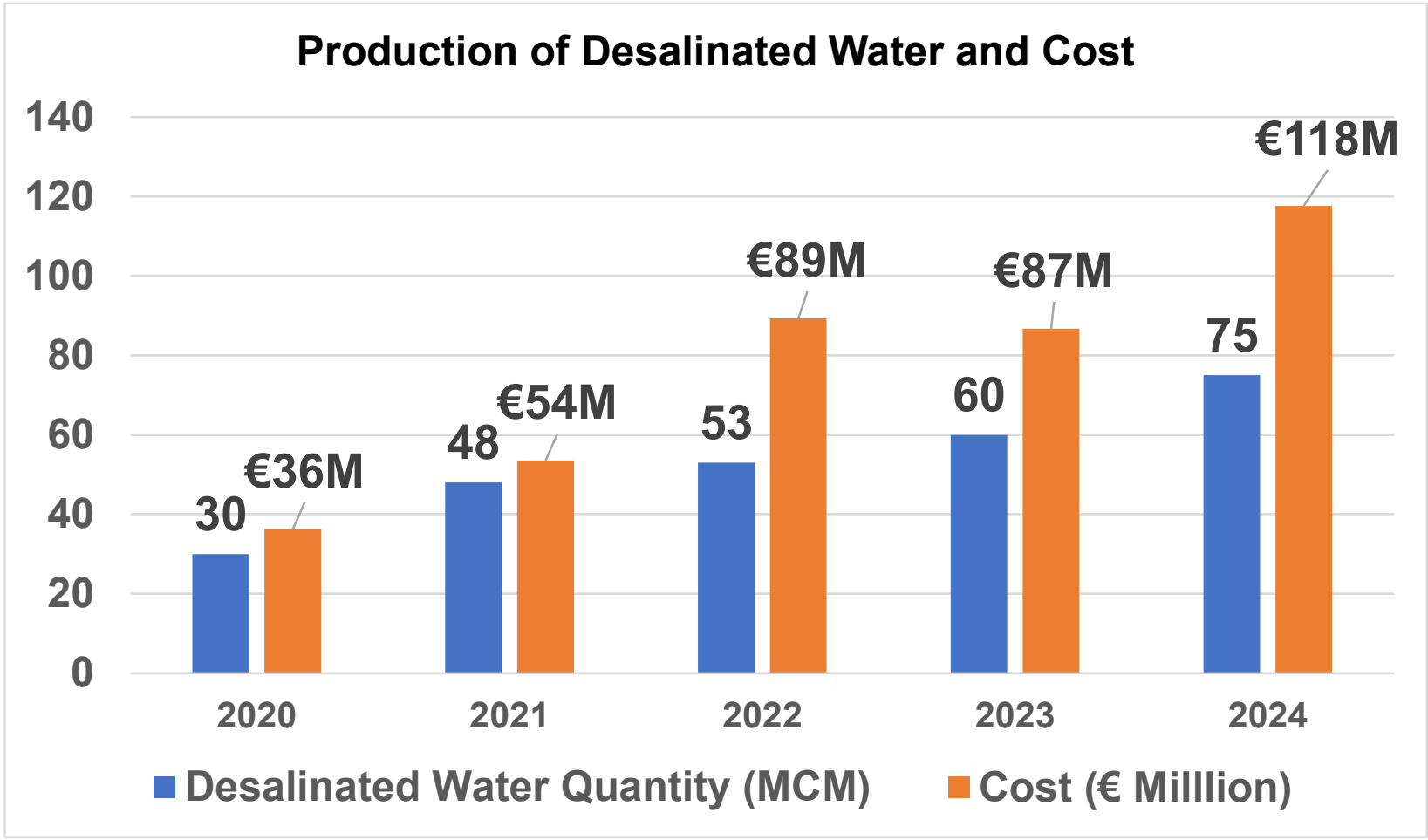
Desalination Plants in Cyprus



Contracts of 5 Permanent Desalination Plants

	DHEKELIA	LARNAKA	VASILIKOS	LIMASSOL	PAPHOS
CONTRACT TYPE	BOOT	BOOT	Purchase Contract	BOOT	BOOT
START OF OPERATION	20/05/2007	1/7/2015	26/7/2013	1/7/2012	24/5/2021
PERIOD	20 Years	25 Years	20 Years	20 Years	25 Years
CAPACITY	60,000 m^3/day	60,000 m^3/day	60,000 m^3/day	40,000 m^3/day	15,000 m^3/day
CAPACITY MINIMUM DAILY PRODUCTION	54,000 m^3/day	54,000 m^3/day	54,000 m^3/day	36,000 m^3/day	13,500 m^3/day
MINIMUM YEARLY PRODUCTION	19.71 MCM	19.71 MCM	19.71 MCM	13.14 MCM	4.93 MCM
CONTRACT UNIT PRICE	€0.82/m^3	€0.59/m^3	€0.81/m^3	€0.87/m^3	€0.80/m^3
ADJUSTED UNIT PRICE (ELECTRICITY TARIFF AND LABOUR INDEX)	**€1.58/m^3**	**€0.92/m^3**	**€1.39/m^3**	**€1,54/m^3**	**€1.21/m^3**

Desalination is a very expensive process

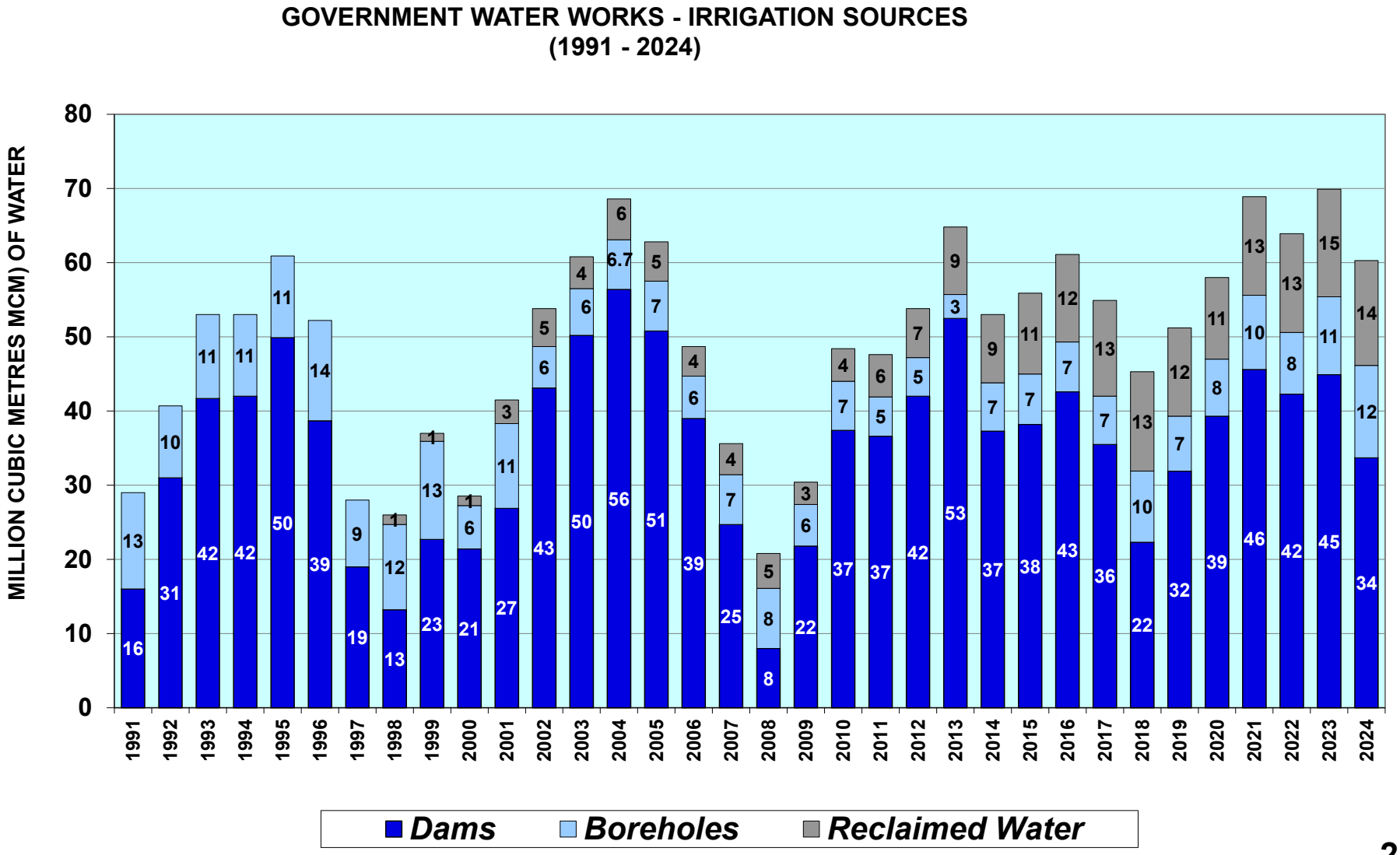


Desalination: Benefits, Challenges and Impacts

Benefits for Cyprus	Challenges / Impacts
Ensures a stable supply of drinking water throughout the year	High energy consumption → ~4,2% of total electricity production
Reduces dependence on rainfall and reservoir storage	Dependence on fossil fuels → exposure to oil price increases
Meets growing demand under climate change conditions	High water production cost → more expensive than dam or groundwater
Essential for Cyprus – Strategic choice for water security	Environmental impacts (CO_2 emissions from electricity use / Brine disposal must be managed carefully)

- Goal: Integrate Renewable Energy Sources & Energy-efficiency technologies
- **Challenge for the future: To make Desalination sustainable, efficient, and environmentally compatible so that it can operate even during periods of significant rainfall**

Irrigation Sources – Reclaimed Water since 1998



Benefits of Reclaimed Water for Cyprus – A Strategic Resource

- In Cyprus ~90% of treated wastewater is reused
  - For irrigation, according to the Code of Good Agricultural Practice
  - For aquifer recharge
- Provides reliable source based on urban consumption
- Utilises water that would otherwise be lost (circular economy)
- Increases agricultural production due to nutrient content
- Reduces groundwater over-extraction
- Improves the quality of coastal aquifers

Demand Management – A Core Principle of Sustainable Water Policy

- EU Water Resilience Strategy (June 2025) – Key Points
  - Prioritizes reducing demand *before* increasing supply
  - Targets a 10% increase in water-use efficiency by 2030
- Ongoing Measures implemented in Cyprus:
  - Strengthening water awareness
  - Encouraging water-saving practices in agriculture and households
  - Imposing controls on water abstraction through monitoring
  - Efficiently managing distribution networks to minimize losses (meters, improved irrigation, pipeline replacement, etc.)
    - Provision of grants to DLGOs (€10.5M) and Local Communities (€1M) to detect and replace leaking pipelines
  - Implementing water pricing policies (rising block tariffs in domestic sector and over-consumption tariffs in agriculture)

Next Steps for Water Security and Long-term Resilience in Cyprus

- **Enhance Demand Management**
  - Reduce losses, optimise network, revise/update pricing policy
  - Cultivate water-saving habits: Target– 10% reduction in demand
- **Secure Supply Resilience**
  - Increase production, storage and distribution of reclaimed water
  - Boost desalination output in a sustainable way
- **Reduce Energy Consumption**
  - Lower Energy Use, Integrate Renewable Energy Sources in desalination plants and other infrastructure
  - Explore pumped-storage systems and floating photovoltaic

Aim: To build a resilient, sustainable water system that secures supply, boosts efficiency, and embraces innovation

Thank You