

Spotlight on Bulgaria: Status Quo and the Region's Road to Resilience

Danube Water Forum, Sofia, Bulgaria
May 20-22, 2026



WORLD BANK GROUP
Water

Raimund Mair
Senior Water Resources Management Specialist
World Bank, Europe and Central Asia

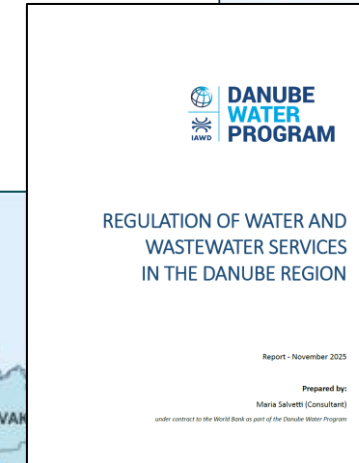
Camila Alejandra Cabez Rojas
World Bank Consultant

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2. Access to Services and EU Compliance
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State of the Sector Assessments

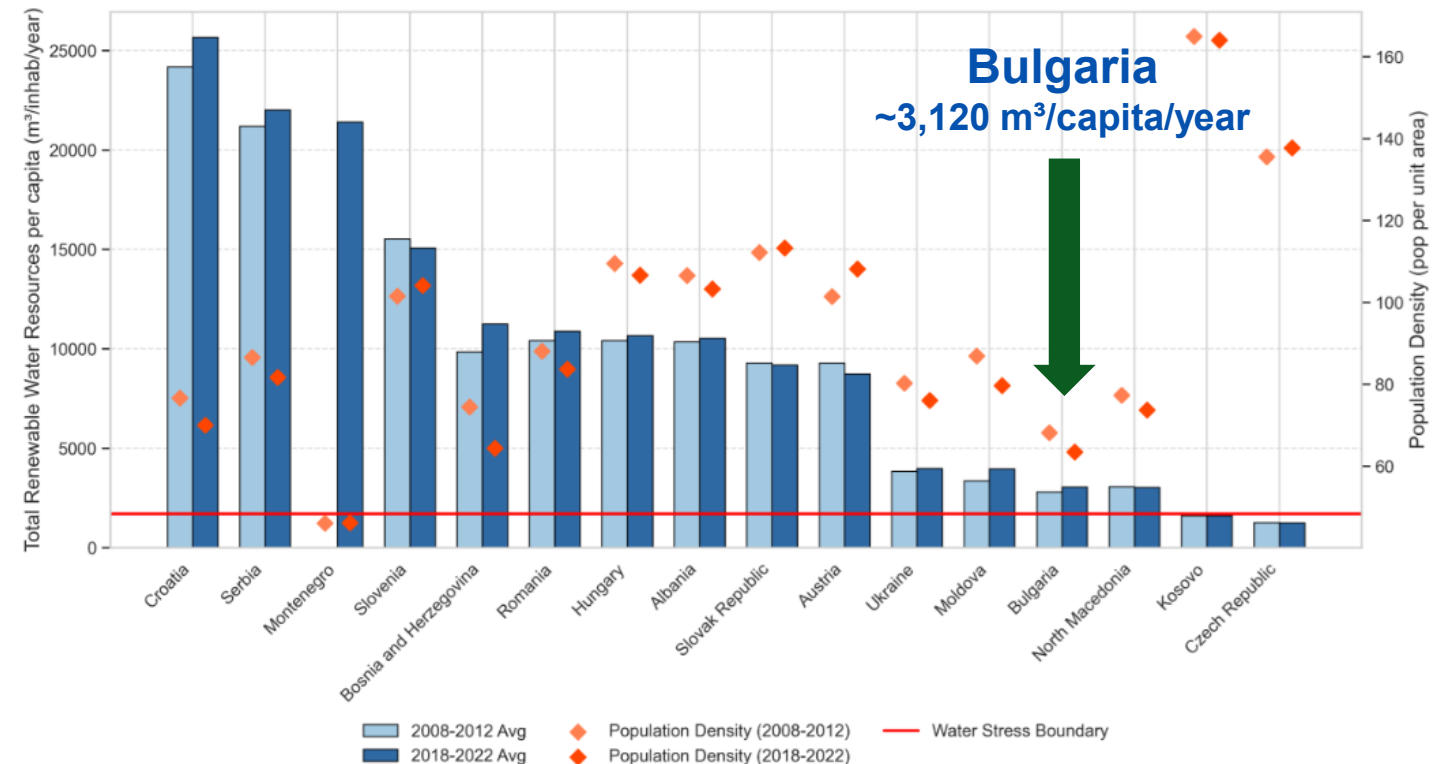
- Data in the presentation drawn from the *forthcoming State of the Sector Report*, to be published later this year, CoE assessments, and recent **Report on WSS Regulation**
- Analysis of Danube region's progress and challenges in providing **water and wastewater services** for all
- Overview on water services policies and their outcomes in **16 countries of the Danube region**
- Key **sectorial trends and progress** made since 2015 in providing sustainable services



Water Resources – Rich but Uneven

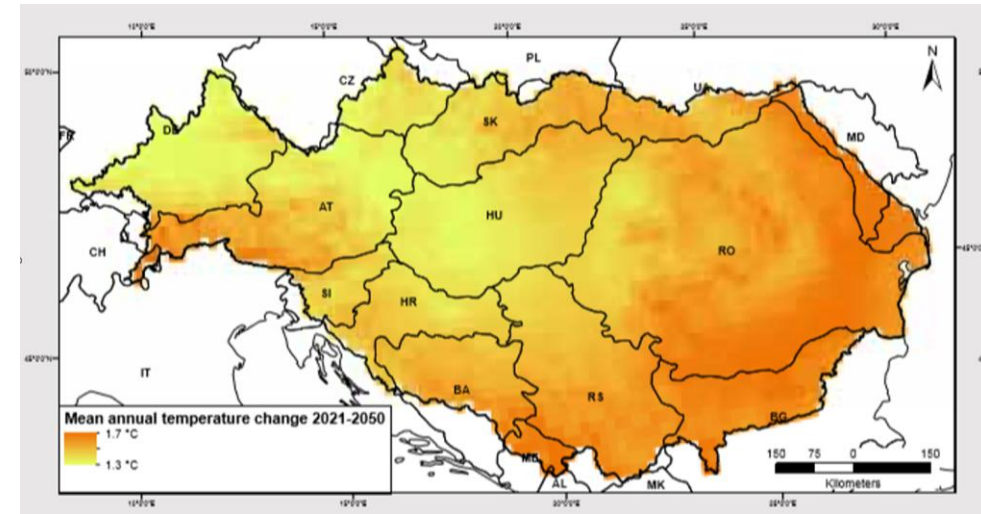
- The Danube region is **relatively rich in water resources**
- However, water resources are **unevenly distributed** with some countries at or below the **water stress boundary**
- The average availability of renewable freshwater resources has still remained **relatively stable** for the past 10 years, however, increasing observation of **extreme weather events** like floods and droughts

Renewable Freshwater Resources per Capita per Country
2008 – 2012, 2018 – 2022

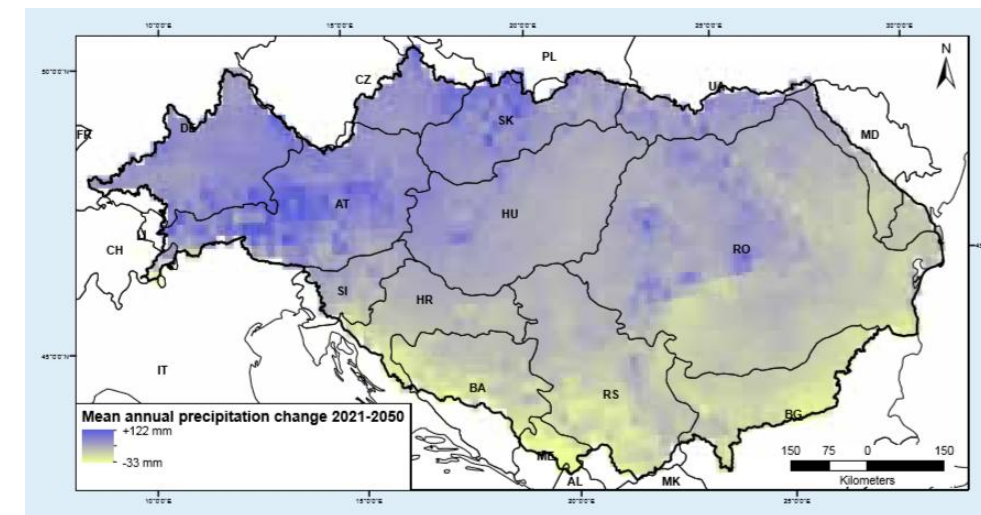


Climate change trends

- **Growing climate pressure.** The Danube region faces rising temperatures and increasingly divergent precipitation patterns over 2021–2050, putting water availability under growing strain.
- **Warming effect.** Temperature increases to intensify evapotranspiration and reduce runoff, amplifying water scarcity beyond what precipitation figures alone suggest.
- **A north-south precipitation divide.** Precipitation trends split across the region: northern parts to see modest increases, while southeastern areas face declines, driving more frequent and severe droughts and undermining water supply reliability.
- **Bulgaria among the most exposed.** Sitting at the warmer and drier end of regional projections, Bulgaria faces compounding pressures.



Annual
mean
temperature
trends
2021-2050
(RCP8.5)

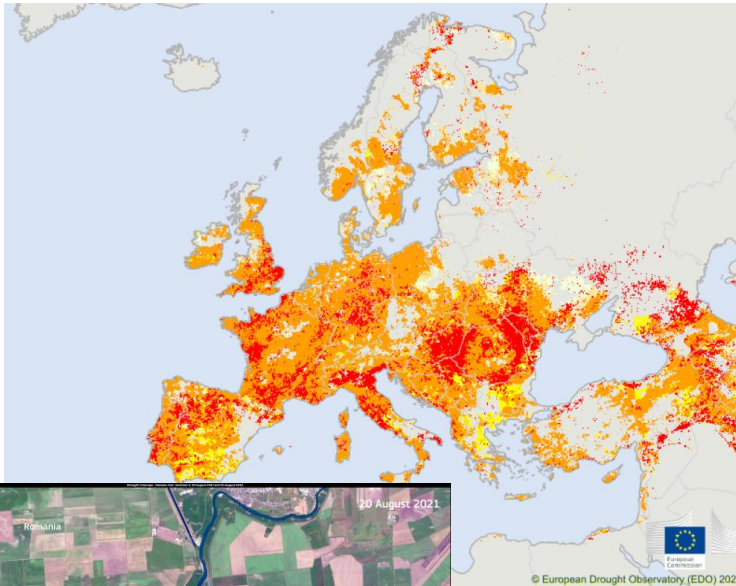


Annual
mean
precipitation
trends
2021-2050
(RCP8.5)

Source: ICPDR Climate Change Adaptation Strategy

Changes in hydrological variability and impacts

Drought alerts during July 2022 (European Drought Observatory)



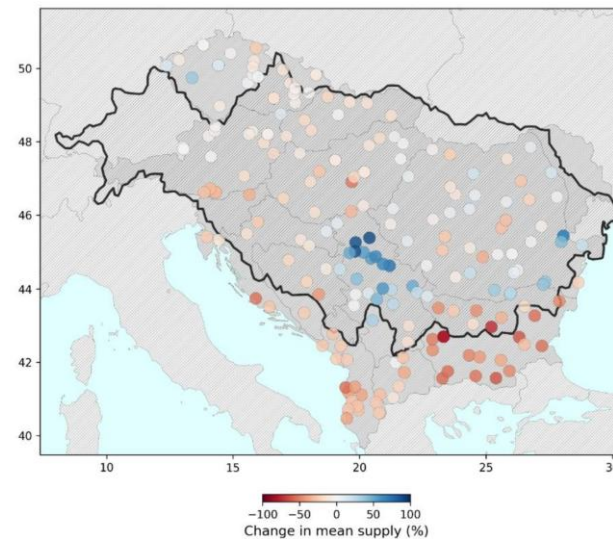
Declining water levels **affecting navigation** along the Bulgaria-Romania border

Source: European Union, Copernicus Sentinel-2 imagery.

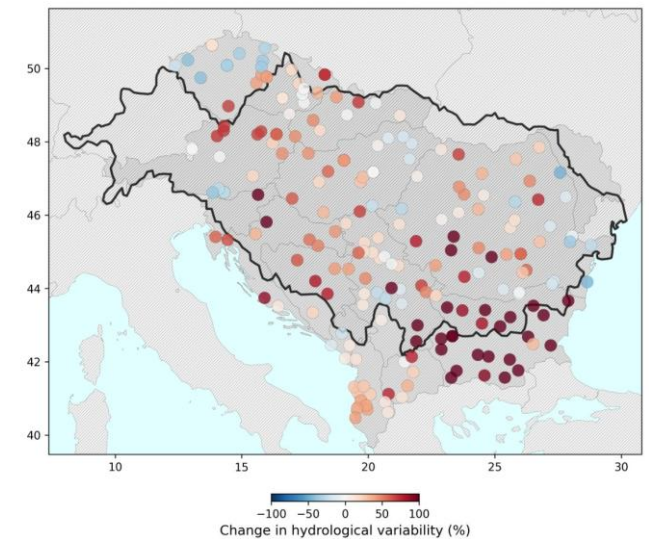
Water Supply

Changes in **mean water availability** and **hydrological variability** for water utilities in the Danube region

Projected **changes in mean water availability**



Projected **changes in hydrological variability**



Source: Becher et.al, Exploring leakage reduction potential to adapt to drought risk under climate change in the Danube region; Danube Water Program 2024

1st POLLEV question to audience (open ended)

What do you see as the most urgent challenge for water resilience in your country?

Followed by quick-take from Mr. Ljubo Georgiev

What do you see as the most urgent challenge for water resilience in your country?

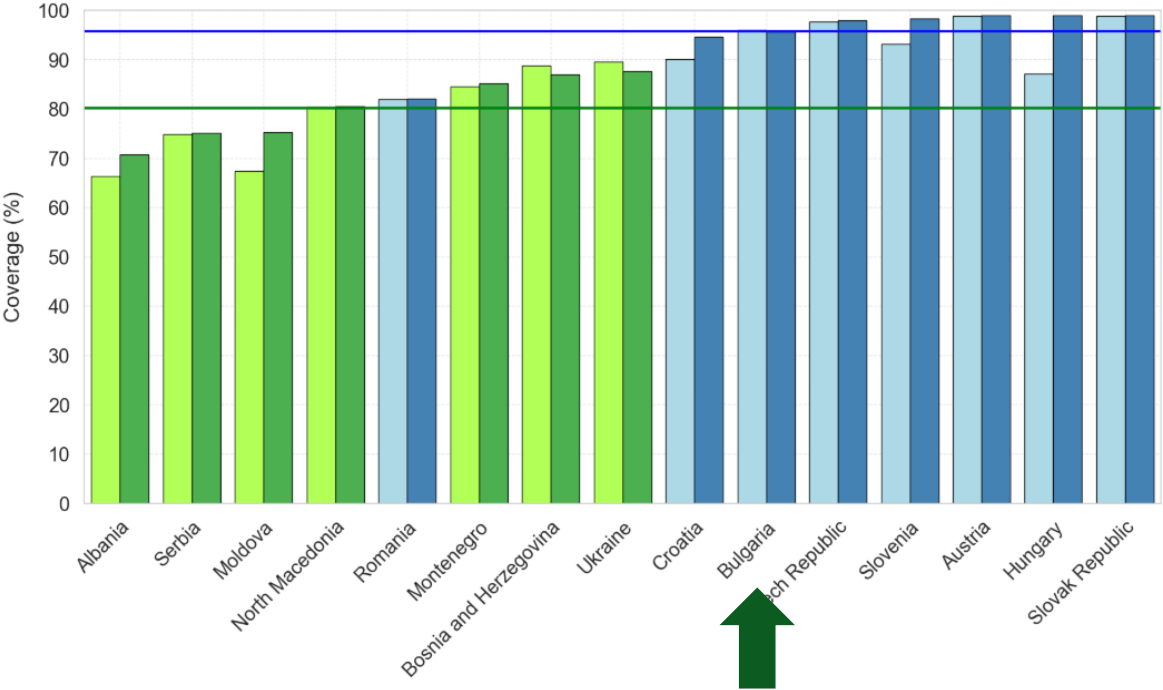
Nobody has responded yet.

Hang tight! Responses are coming in.

Access to Water Supply and Sanitation Services in the countries of the Danube region

Access to WSS services has improved regionally, with EU countries ahead of non-EU countries

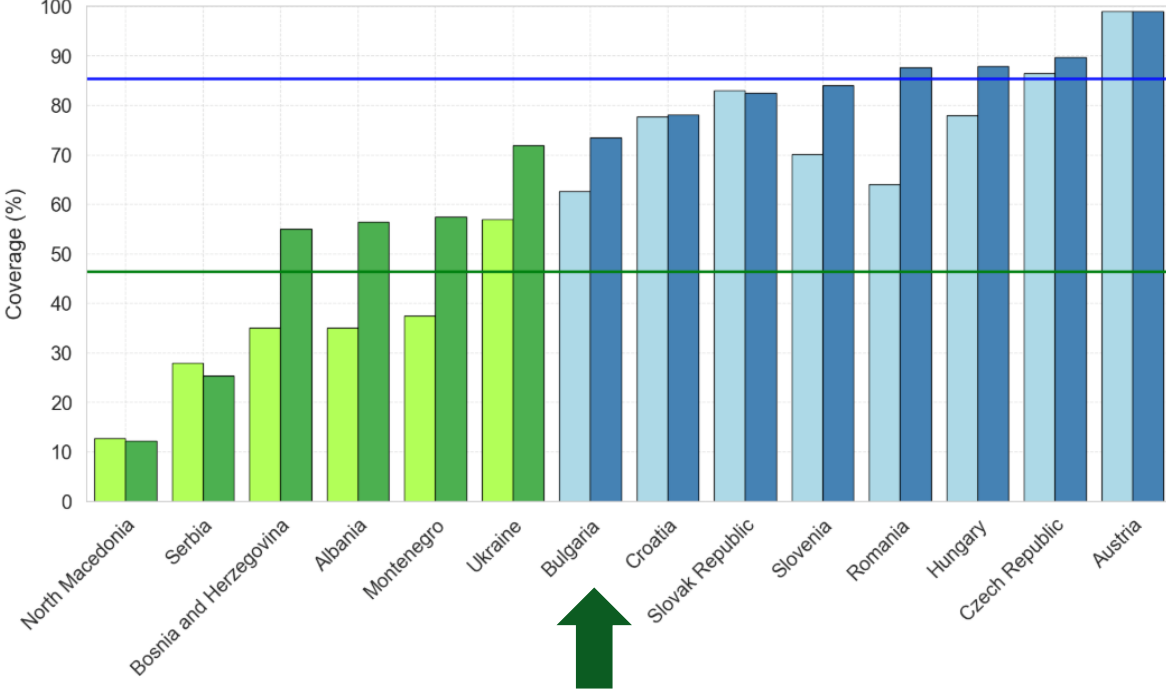
Share of Population Using Safely Managed
Drinking Water Services 2012 vs 2022



Categories and Years

- EU Candidate and Potential Candidate (2012)
- EU Candidate and Potential Candidate (2022)
- EU Member Countries (2012)
- EU Member Countries (2022)
- EU Members Avg (2022)
- EU Candidates Avg (2022)

Share of Population Using Safely Managed
Sanitation Services 2012 vs 2022

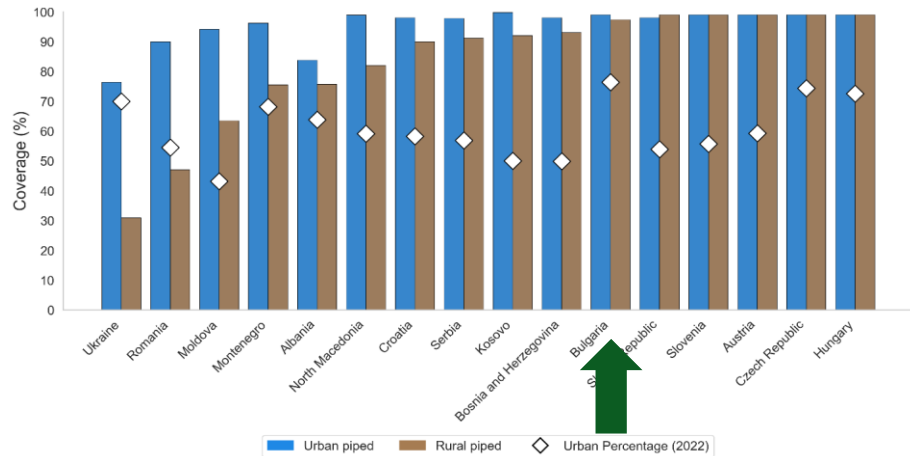


Categories and Years

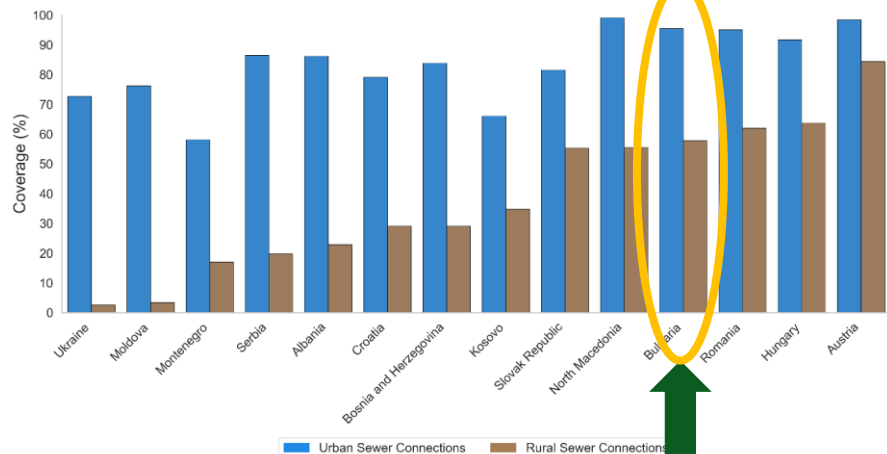
- EU Candidate and Potential Candidate (2012)
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- EU Member Countries (2012)
- EU Member Countries (2022)
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- EU Candidates Avg (2022)

Progress on Access to Services, but Gaps Remain - Especially on Wastewater and in Rural Areas

Share of population with piped water supply
[reference year 2023]



Share of population with sewer connections
[reference year 2024]



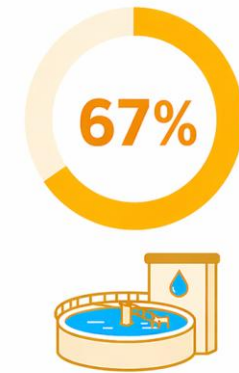
Bulgaria



Piped water supply – average



Sewer connection rate



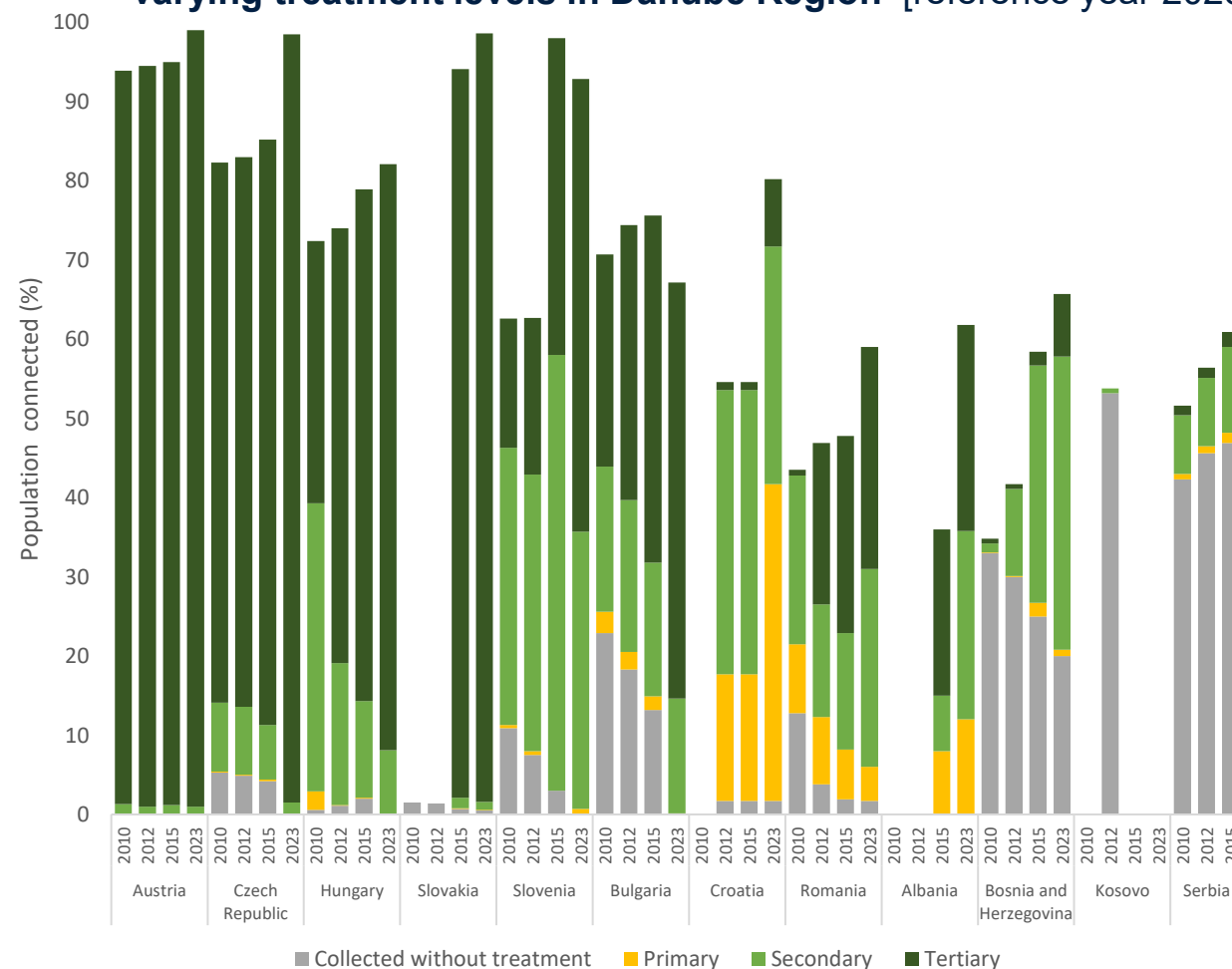
Connected to wastewater treatment plant

- Bulgaria has achieved **near-universal access to piped water supply**
- **Expanding wastewater treatment** and **addressing inclusion gap** (rural areas and vulnerable groups) remain sector priorities

Wastewater treatment

- **Wide regional divide.** Sewer connection rates range from near-universal to below 60%
- **Progress, but treatment gaps persists.** Connection rates are rising across the region, yet many countries still discharge collected wastewater with little or no treatment
- **EU countries shifting to higher treatment standards.** Member states are upgrading from secondary to tertiary treatment, driven by UWWTD compliance requirements - though progress remains uneven
- **Bulgaria:** Connection rates and treatment levels have grown since 2010, but challenges and significant investment needs remain

Share of population connected to sewage collection systems of varying treatment levels in Danube Region [reference year 2023]



Recast EU UWWTD

Directive (EU) 2024/3019 on urban wastewater collection and treatment



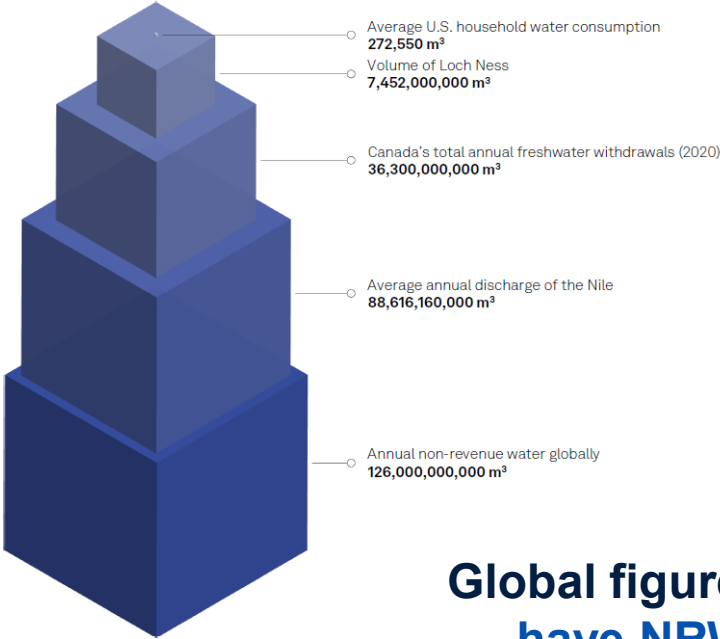
- **Wider coverage.** The new UWWTD lowers the treatment threshold from 2,000 to 1,000 population equivalents
- **Stricter treatment standards.** Phased requirements for nutrient removal and micropollutant treatment are introduced
- **Energy neutrality.** Directive sets phased pathway toward full energy neutrality, driving investment in renewable energy and energy efficiency
- **Bulgaria:** Compliance pressure on multiple fronts. Significantly raised bar requires plant upgrades, expanded coverage, and major additional investment

Modernization and advanced treatment upgrades will be required across the sector

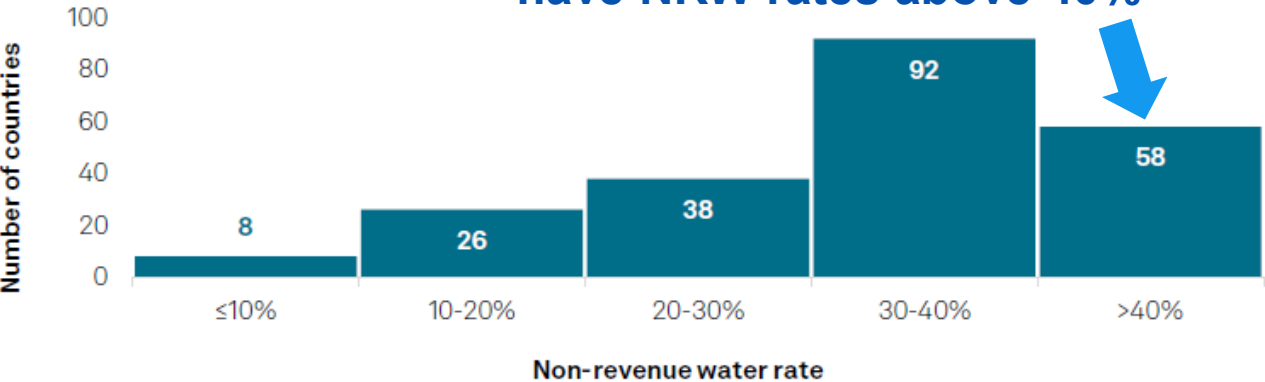


Water supply sector performance

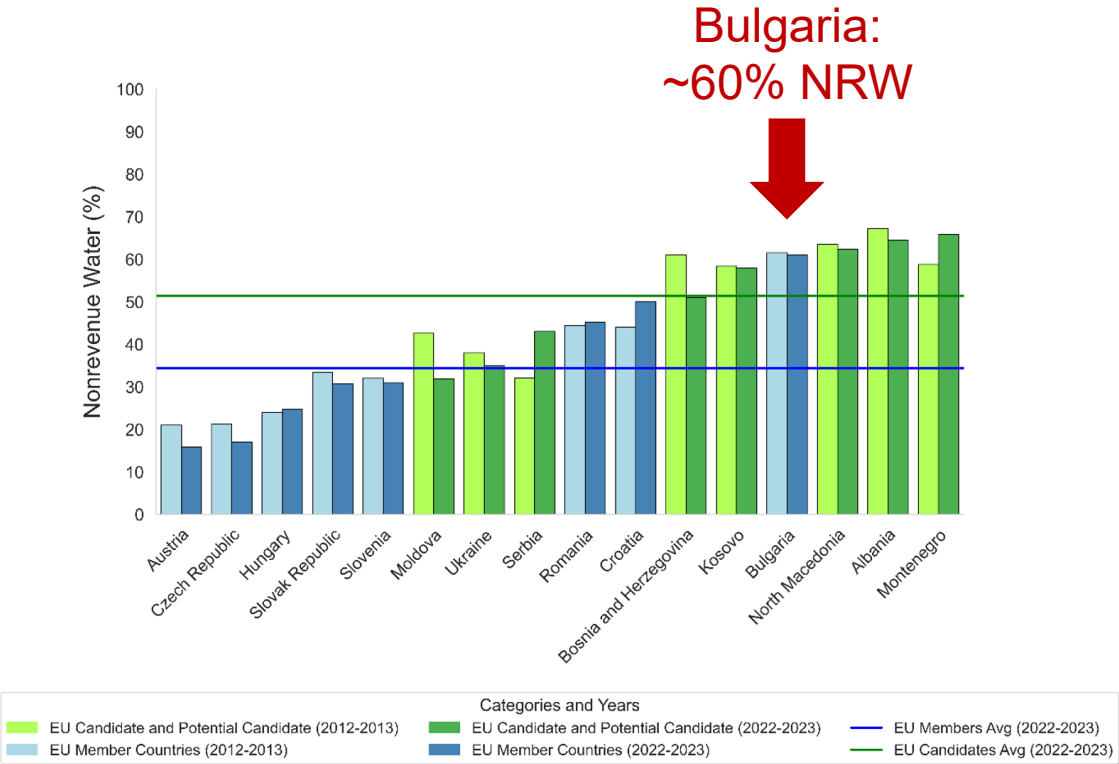
Non-Revenue Water (NRW)



Global figures: ~25% of countries have NRW rates above 40%



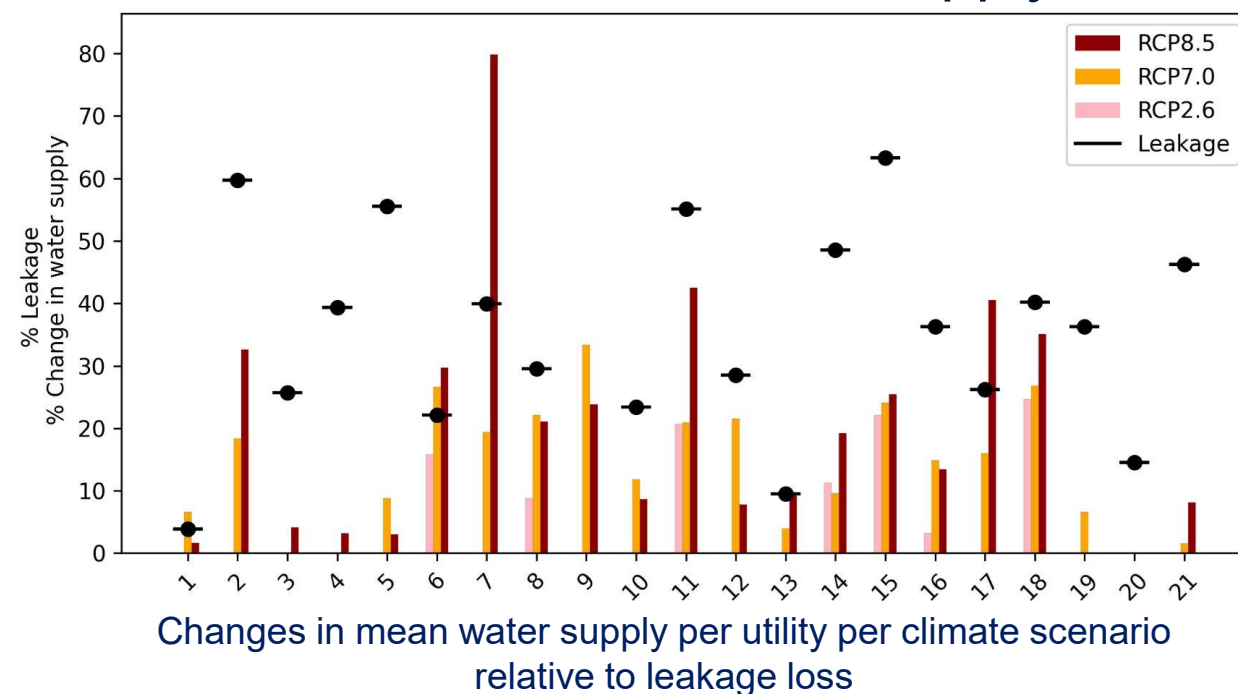
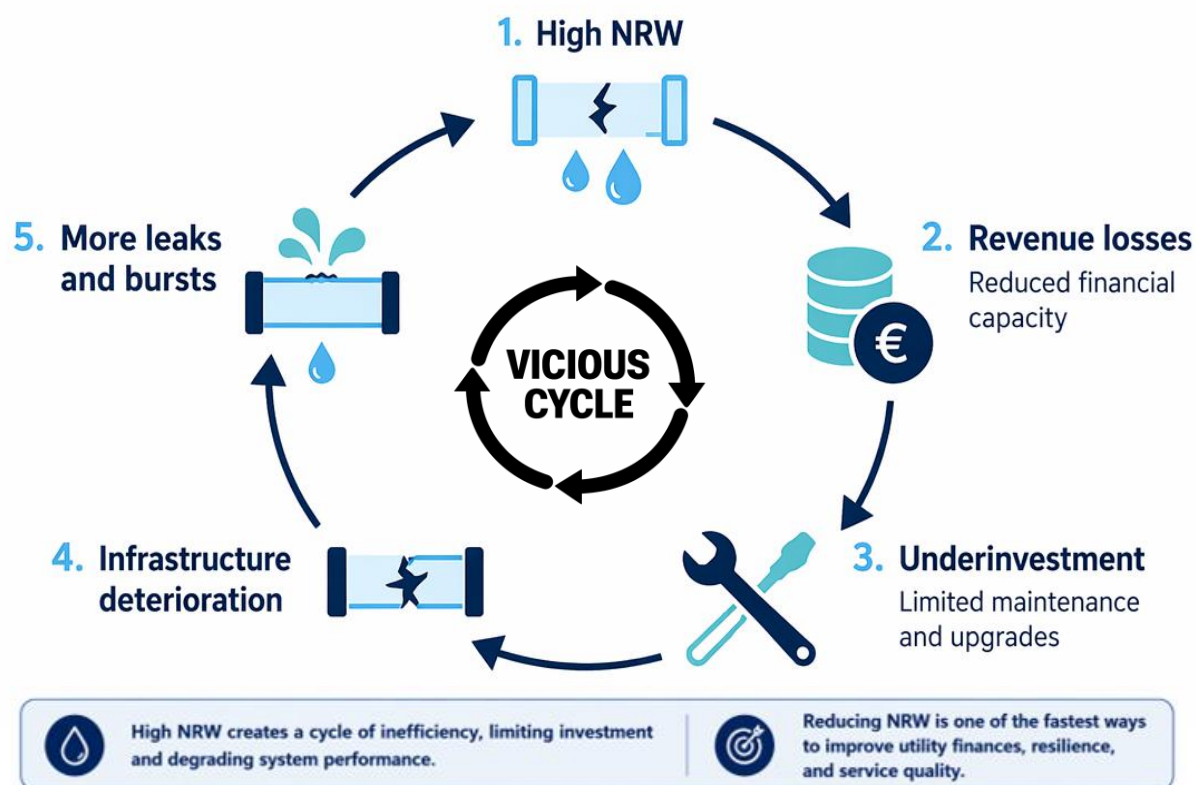
Share of Non-Revenue Water in Danube Region Countries 2013 – 2023



Vicious cycle of Non-Revenue Water

Loss reduction to improve climate resilience

Leakage reduction (and storage)
 offers significant potential for **climate
change adaptation** and **increased
resilience** of water supply



Source: Becher et.al, Exploring leakage reduction potential to adapt to drought risk under climate change in the Danube region; Danube Water Program 2024

Recast EU Drinking Water Directive

Directive (EU) 2020/2184 on drinking water quality



- **Risk-based water safety management.** Mandatory risk assessments across the supply chain - from catchment to consumer
- **Stricter quality standards.** New limits for PFAS, Bisphenol A, microplastics, lead, and other emerging pollutants, addressing risks beyond traditional parameters
- **Leakage assessments and binding targets.** Large suppliers must assess leakage; Commission sets binding thresholds, triggering mandatory action plans
- **Polluter-pays for micropollutants.** Producers of pharmaceuticals and cosmetics must fund share of advanced treatment costs - a shift in financing responsibility
- **Access and transparency.** Improved water access for vulnerable groups and easy public access to water quality data

BULGARIA IMPLICATIONS

Implications of the new Drinking Water Directive



1. Major investment needs across the sector
2. PFAS and micropollutant treatment gaps
3. High leakage, binding targets ahead
4. Risk-based planning capacity needs
5. New transparency obligations



Public water fountains in Sofia.

2nd POLLEV question to audience (open ended)

What is the biggest barrier to reducing water losses in your utility or country?

Followed by quick-take from Mr. Ilian Milev

What is the biggest barrier to reducing water losses in your utility or country?

Nobody has responded yet.

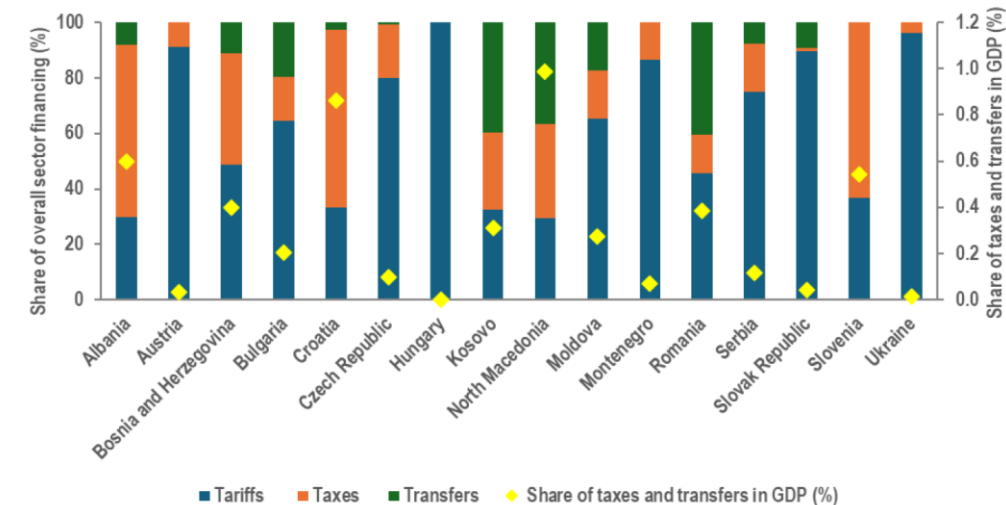
Hang tight! Responses are coming in.

Financing of Services

Progress on Cost Recovery, but a Significant Investment Gap Remains

- **A critical financing gap:** Current investment of around EUR 4 billion per year falls well short of the estimated EUR 5-7 billion needed annually - closing this gap requires mobilizing a strategic mix of public funding, EU transfers, and private investment – the latter remains largely untapped in the region
- **Tariffs dominate, but capital investment relies on public funding.** Tariffs cover around 63% of sector financing and primarily fund operations, while capital investments continue to depend heavily on taxes and external transfers
- **Cost recovery progress is fragile.** Despite tariffs rising by around 50% over the past decade, only two-thirds of countries generate sufficient revenue to cover basic operating costs
- **Room to raise tariffs, but targeted protection needed.** Water spending remains well below affordability thresholds, suggesting tariff resistance is largely political. Targeted social protection for low-income groups - particularly in non-EU countries - remains relevant

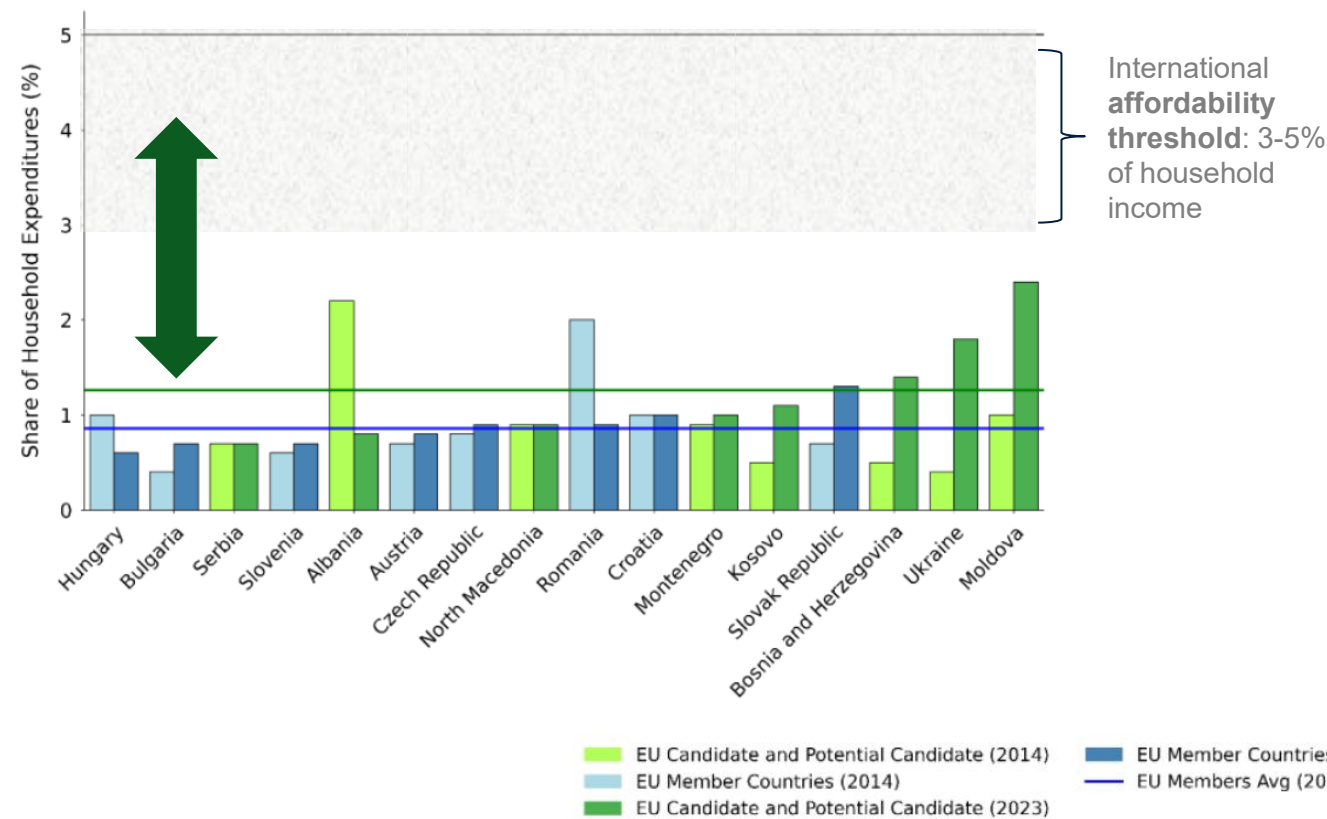
Proportion of Sector Financing from Tariffs, Taxes, and Transfers in the Countries of the Danube Region



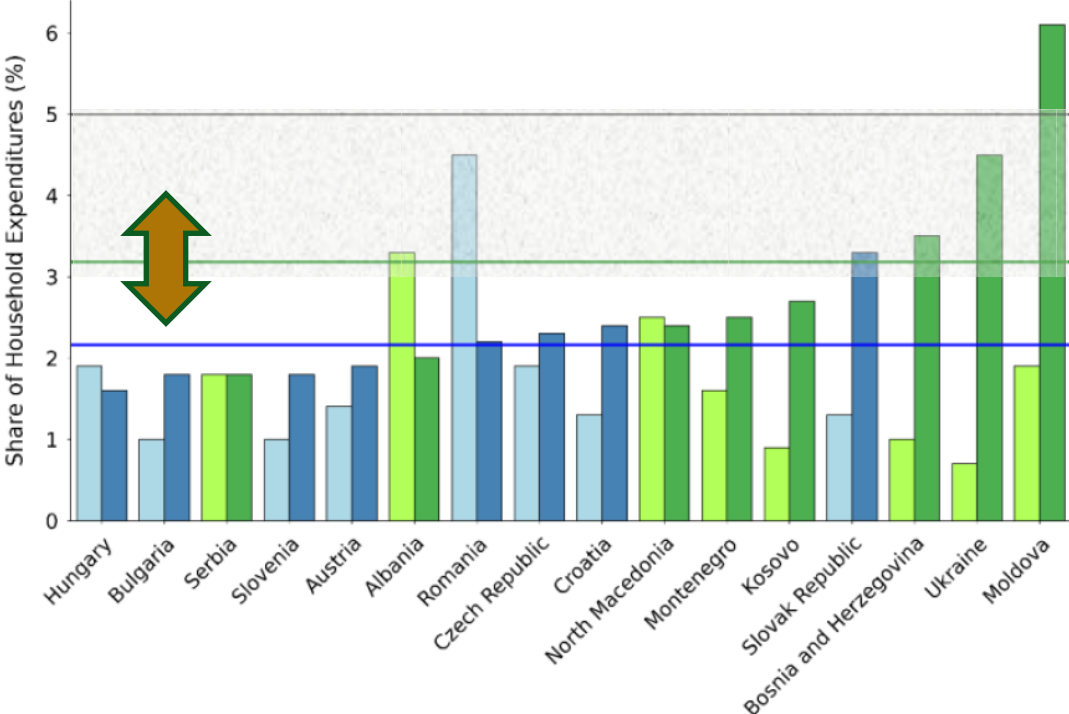
Financing of Services

Balancing cost recovery and affordability

Average household income: Tariffs remain affordable on average, but headroom varies across the region



Bottom 40%: For the poorest households, the affordability margin is narrowing, and in some countries exhausted

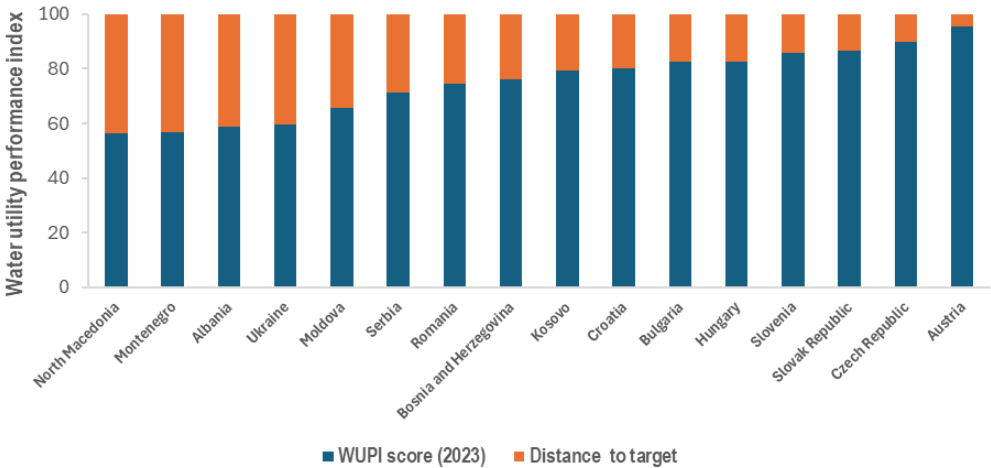


Financing of Services

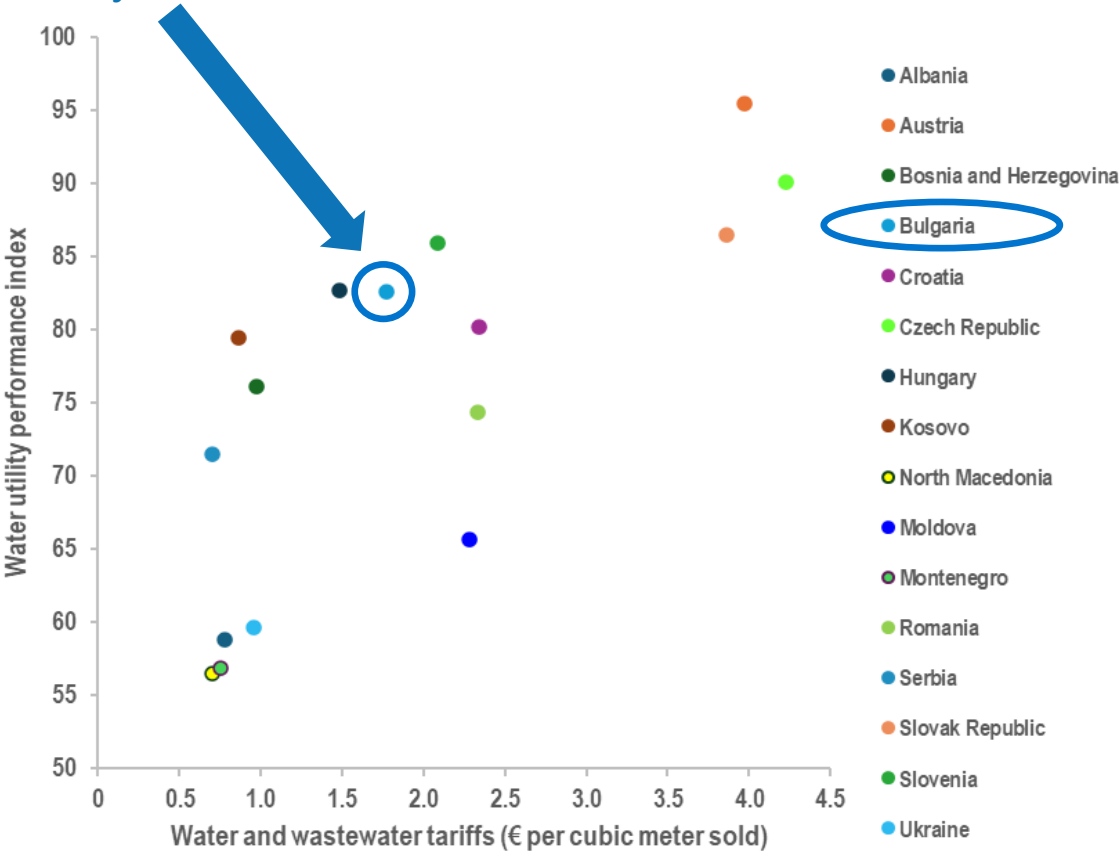
Tariffs and Water Utility Performance Index

Bulgaria's water tariffs are in the mid-range.
Gradual, performance-linked adjustment to
strengthen financial sustainability.

Bulgaria's water
utilities perform in the
regional mid-range



Water Utility Performance Index Versus Water and Wastewater Tariffs



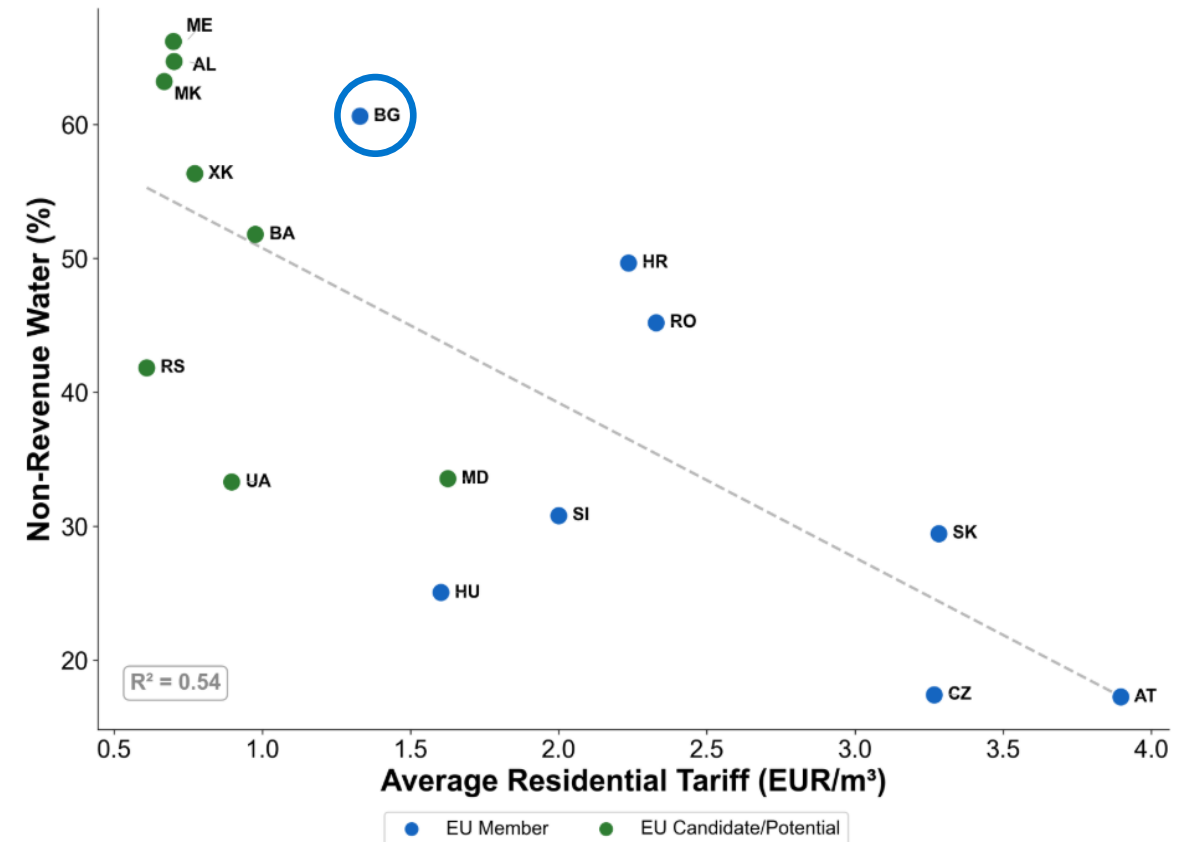
Water Utility Performance Index (WUPI)*

WUPI: A composite index to benchmark water utility performance across key dimensions of service quality, efficiency, and financial sustainability.

From Tariffs to Resilience

The NRW Efficiency Challenge

- **Higher tariffs** are generally associated with **lower water losses** - countries that invest more in their systems lose less water
- EU member states cluster toward higher tariffs and lower NRW, while candidate countries are largely trapped in a low-tariff, high-loss pattern
- **Bulgaria stands out as an outlier:** despite EU membership and a mid-range tariff, NRW remains at ~60% - comparable to least efficient countries
- **Tariffs alone are not enough:** Governance, management quality, and effective regulation are equally critical to drive performance and break the cycle.

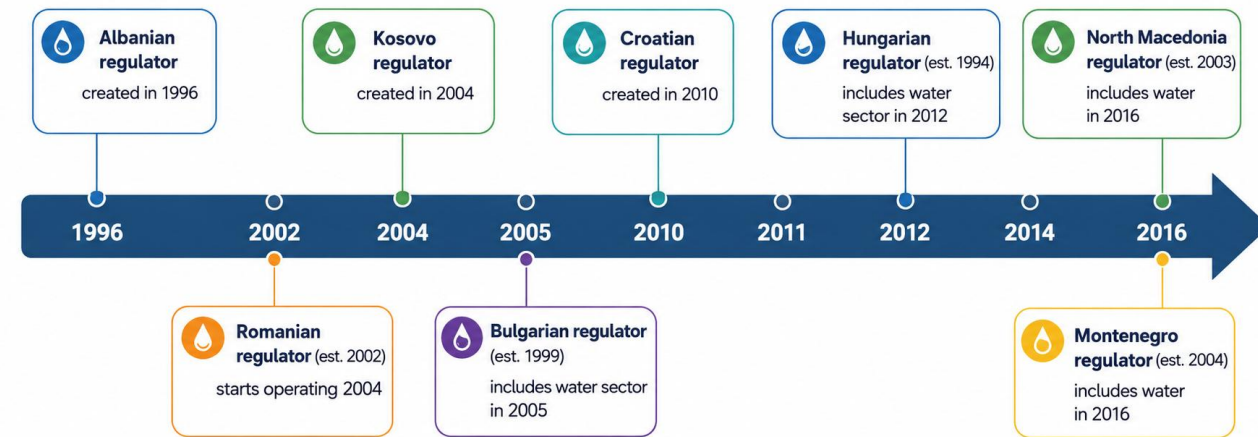


Average Residential Tariff (EUR/m³) vs NRW (%)

Latest available data, 2024

Water Regulation in the Danube Region - Trend Towards Centralization

- **Regulatory models vary widely in the region:** From dedicated independent agencies to multi-sector regulators and municipal self-regulation, reflecting different governance traditions and policy choices
- **A trend toward central, independent regulation is emerging:** Most countries in the region have established or expanded regulatory mandates over the past three decades, with water increasingly treated as a regulated utility sector
- **Regulatory strengthening is necessary - but not a silver bullet:** Effective regulation needs to be paired with utility governance reforms and investment to translate into real performance improvements



Trend toward central WSS regulation in the Danube region

3rd POLLEV question to audience (open ended)

What do you see as the biggest obstacle to setting tariffs that reflect the true cost of water services?

Followed by quick-take from Ms. Gerta Lubonja

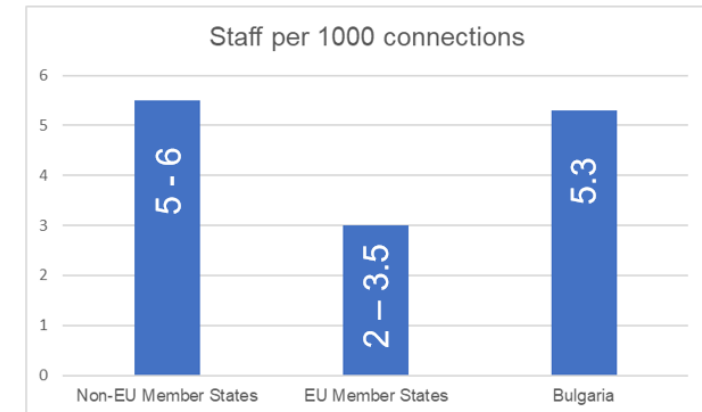
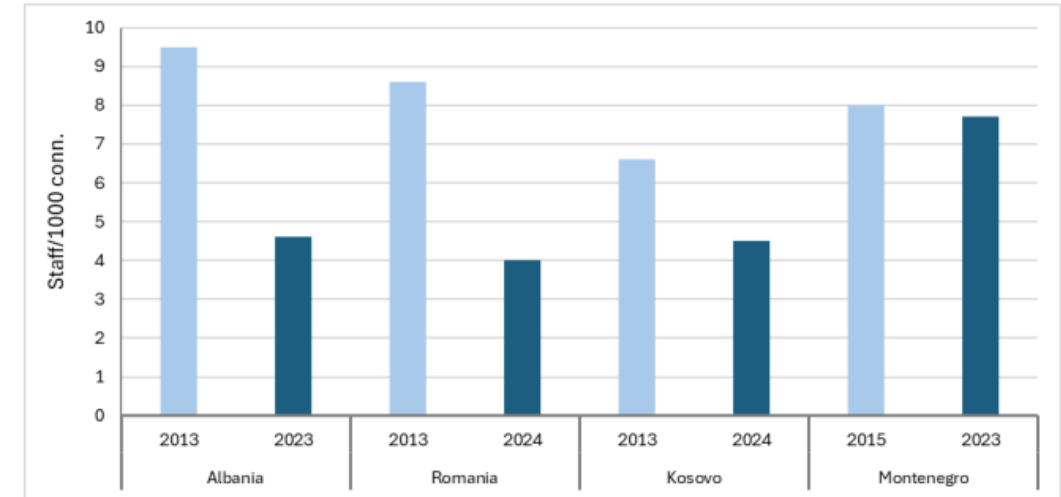
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Nobody has responded yet.

Hang tight! Responses are coming in.

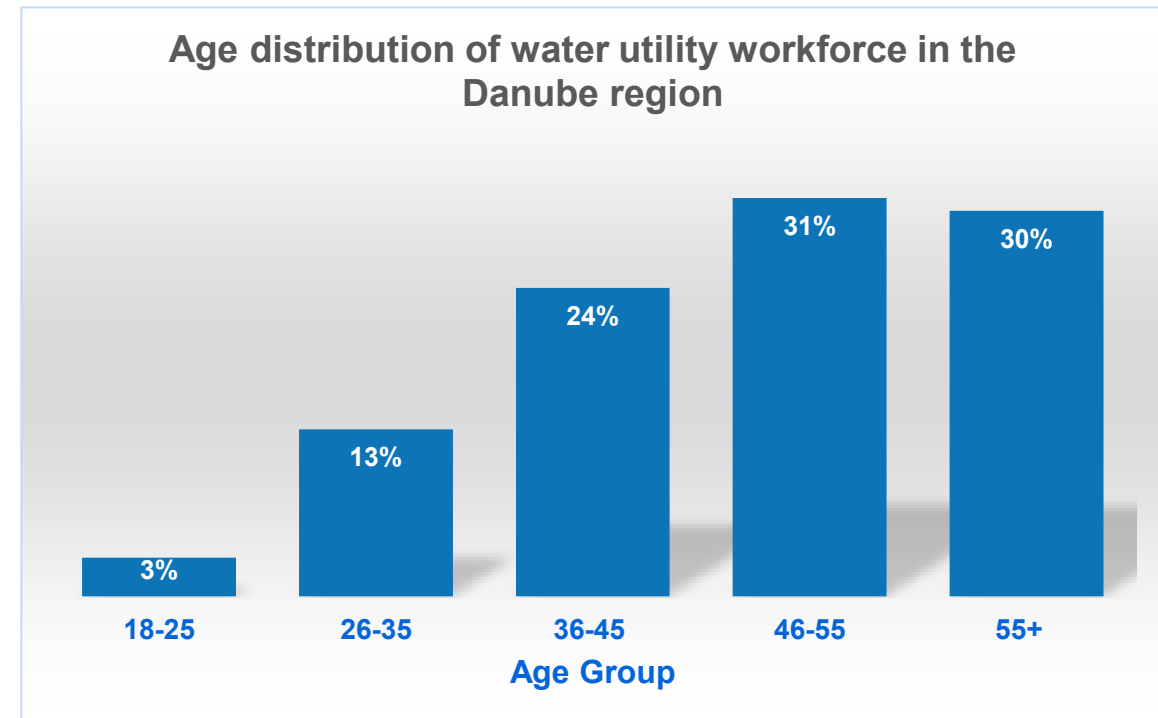
Staff productivity as an element of technical and commercial efficiency

- **Progress is real but uneven:** Albania halved its ratio from 9.5 to 4.6, Romania from 8.5 to 4.0, showing that significant reform is achievable
- **Some countries have seen limited progress:** Montenegro moved from 8.0 to 7.5, pointing to deeper governance and incentive challenges
- **The gap remains large:** Most countries still operate well above the international benchmark of 2.0-3.5 staff per 1,000 connections
- **Bulgaria** is on a positive trajectory, however, with 5.3 staff per 1,000 connections still **significant room for efficiency gains**



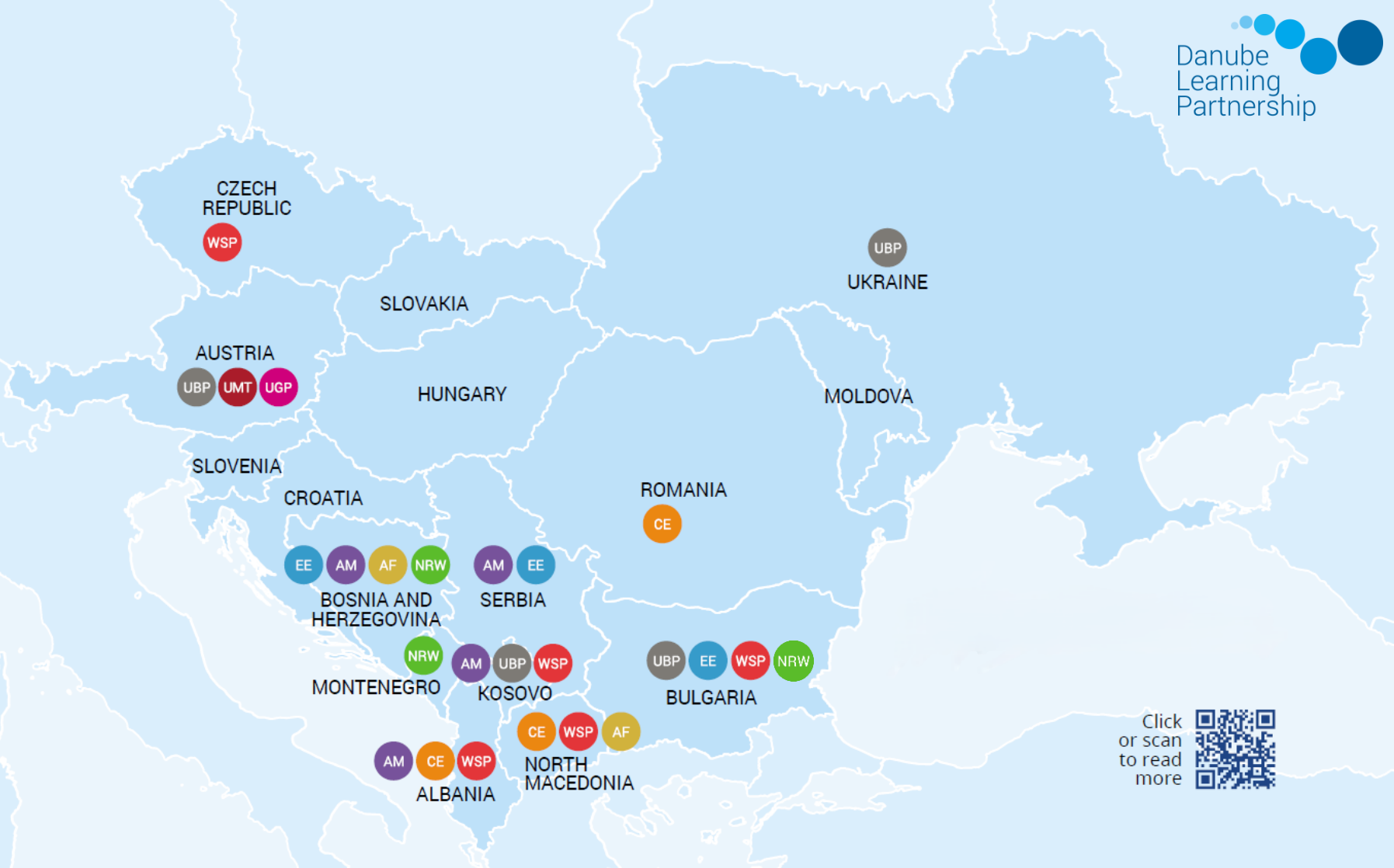
A Sector Facing a Demographic Crisis

- **The workforce is aging rapidly:** 61% of staff are aged 46 or older, only 16% under 35, and less than 3% between 18 and 25
- **Retirements are looming:** ~13% of the workforce is expected to retire within five years, taking decades of institutional knowledge with it
- **Attracting young talent is an uphill battle:** Low salaries, sector stigma, and private sector competition make recruitment of technical specialists increasingly difficult
- **The skills gap is widening:** Digitalization, advanced treatment, and NRW management require a skill set the sector is struggling to build fast enough



The good news...

Capacity building programs expanding



- UBP** Utility Benchmarking Program
- UMT** Utility Management Training
- UGP** Utility Governance Program
- EE** Energy Efficiency
- CE** Commercial Efficiency
- NRW** Non-Revenue Water
- AM** Asset Management
- WSP** Water Safety Planning and Crisis Management

4th POLLEV question to audience (open ended)

What would make the water sector more attractive to the next generation of professionals?

Followed by quick-take from Ms. Jelena Janevska

What would make the water sector more attractive to the next generation of professionals?

Nobody has responded yet.

Hang tight! Responses are coming in.

Key Challenges on the Road to a Water-Resilient Danube Region



More frequent droughts, floods, and rising temperatures stress infrastructure not built for tomorrow's climate



Aging assets, only partially covered investment needs, and **water losses** exceeding 50% undermine financial sustainability and supply resilience



Tariffs often fail to cover O&M costs, private investment remains largely untapped, leaving little buffer to adapt



Regulatory frameworks remain too weak to drive performance, cost recovery, or investment



The **recast UWWTD** demands major investment in nutrient removal and energy neutrality - at a time when financial capacity is already stretched



An **aging workforce** and a shrinking pipeline of young professionals pose a growing challenge for the sector

The Way Forward

Building a Water-Resilient Danube Region



Close the financing gap through a mix of tariffs, taxes, and transfers



Strengthen independent regulation linked to utility performance and cost recovery



Prioritize NRW reduction - a critical efficiency gain and climate adaptation measure



Advance digitalization, wastewater reuse, and energy neutrality



Invest in the workforce through training, capacity building, and sector attractiveness



Leverage EU accession and EU membership as drivers of reform and investment



Build on and expand partnerships - with the EU, IFIs, bilateral donors, and the private sector - to mobilize investment and sustain reform momentum



Water security for
1 billion people
by 2030



Water supports
jobs, productivity
and **growth**



Water Forward mobilizes
governments, private
sector, philanthropy and
development banks
to accelerate impact
at scale

worldbank.org/ext/en/water

Thank you!