4th DECEMBER 2025

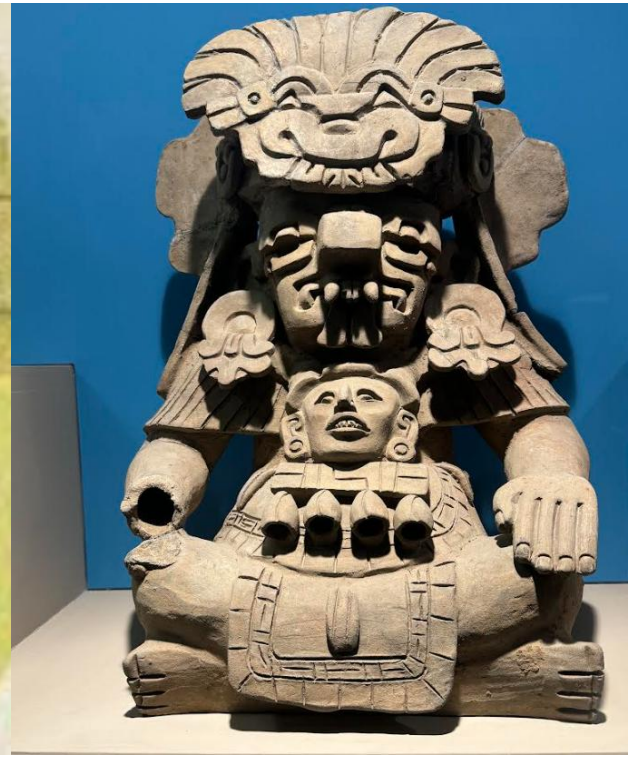
Brussels

WAREG
European Water Regulators

EFRWS 2025

REGULATING FOR RESILIENCE:
SECURING EUROPE'S WATER FUTURE

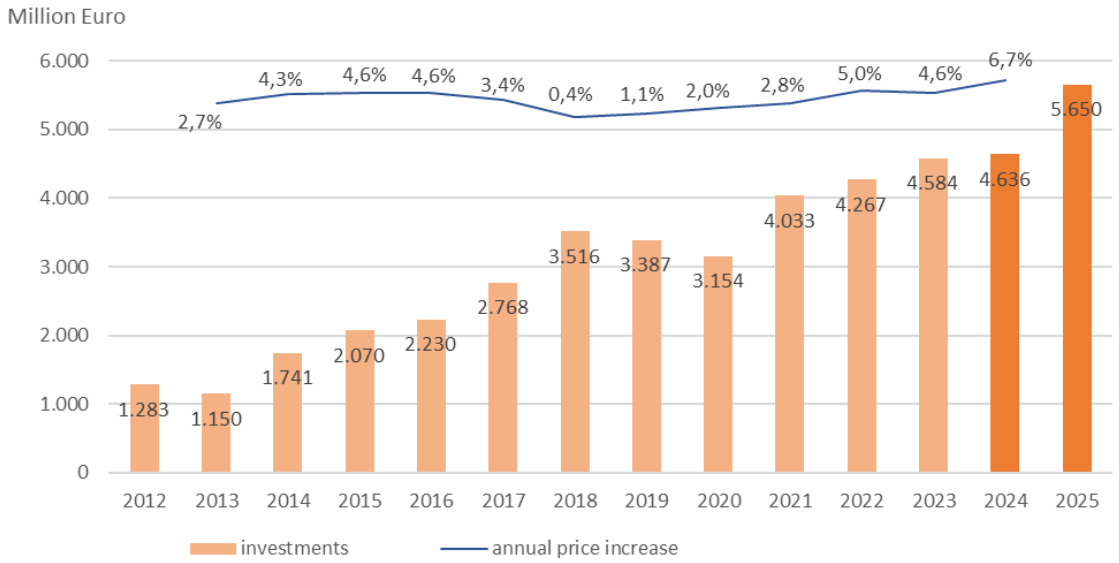
Funding a Resilient Water Future
Introductory Remarks



Lorenzo Bardelli
Head of Environment Division,
ARERA

Trends after ARERA regulation in the water sector

Investments trend vs annual price increase



- **2012-2023: projection of the operators' sample to the entire national territory**
- **since 2024: only sample data (operators serving 47 Million inhabitants)**
- **2024 price increase mainly affected by the retail price index adjustment**

- **Residential users' average expenditure in 2024, for 150 m³ consumption**
- **Water supply + sewerage + wastewater treatment**

- **Increased investment in infrastructure modernization and quality improvement (4 times the 2012 level)**
- Improvement in the capacity to implement planned investments, with a realization rate rising from 82.9% in 2016 to almost 100% in 2021
- **Moderate annual price increase**, despite the low initial price

How to finance resilience (input from the Italian water tariff method)

More activities →

More investments ↓

	$\frac{VRG^{2022}}{pop + 0,25\ pop_{flut}} \leq VRG_{PM}$	$\frac{VRG^{2022}}{pop + 0,25\ pop_{flut}} > VRG_{PM}$	Aggregations or significant change in technical processes
$\frac{\sum_{2024}^{2029}(IP_a^{exp} + CFP_a^{exp})}{RAB_{MTI-3}} \leq \omega$	**Scheme I** Ordinary rules Price limit: 6,7%	**Scheme II** Ordinary rules Price limit: 5,95%	**Scheme III** Additional Opex component Op^{new} Price limit: 7,45%
$\frac{\sum_{2024}^{2029}(IP_a^{exp} + CFP_a^{exp})}{RAB_{MTI-3}} > \omega$	**Scheme IV** Additional Capex component *FNI* and accelerated depreciation Price limit: 9,2%	**Scheme V** Additional Capex component *FNI* and accelerated depreciation Price limit: 8,45%	**Scheme VI** Additional Capex component *FNI* and accelerated depreciation + Additional Opex component Op^{new} Price limit: 9,95%

The regulatory schemes matrix identifies the operator position in terms of:

COST REIMBURSEMENT RULES

Regulated Revenues

$$VRG^a = Capex^a + FoNI^a + Opex^a + ERC^a + RC_{TOT}^a$$

INFRASTRUCTURES COSTS
- Only already realized investments (2 years lag)
- standardised financial and fiscal costs

COMPONENT IN SUPPORT OF SPECIFIC INVESTMENT OBJECTIVES
- to be invested in 2 years for infrastructures

PRICE LIMIT

PLANNING

All planned interventions, regardless of their funding source (public or tariff) must be included in the Infrastructure and Management Plan (IMP), which constitutes one of the acts of the **specific regulatory scheme** based on which tariff proposal is defined.

- INFRASTRUCTURE AND MANAGEMENT PLAN
- STRATEGIC INVESTMENT PLAN
- FINANCIAL AND ECONOMIC PLAN
- ENTRUSTMENT CONTRACT

EU & National funds

PNRR & REACT 1,9 bn for water losses

PNRR 1 bn for water infrastructures

PNIISSI 0,4 bn for water sector security

How to measure and incentivize resilience (input from the Italian water quality regulation)

Macro-indicators

Water supply

M0 – Water resilience

Aqueduct	Sewerage & Wastewater
M1 – Water losses	M4 - Sewerage adequacy
M2 - Service interruptions	M5 - Sludge disposal
M3 - Water quality	M6 - Wastewater quality

- 7 macro-indicators whose targets are differentiated according to the operator's state of efficiency (class of indicator):
  - output based
  - technology neutral
- other indicators added to better describe technical condition of integrated water service

Reward/Penalty mechanism

Evaluation levels

Objectives	Basic level	Advanced level	Excellence
Obligation to maintain the state of efficiency (class A)	**Stage I** (not) maintaining "A class" for each macro-indicator	**Stage III** the best (worst) 3 operators for each macro-indicator	**Stage V** the best 3 operators, considering all macro-indicators (almost one in class A)
Obligation to improve efficiency (other classes)	**Stage II** overcoming (not reaching) the improving efficiency target for each macro-indicator	**Stage IV** the best 3 improvements (the worst 3 failures) for each macro-indicator	

New measures for regulating technical quality

Introduction in 2024 of a new macro-indicator, "M0-Water resilience", aimed at monitoring the expected effectiveness of the complex supply system based on the satisfaction of water demand forecasts in each area, also including non civil uses in the assessments.

M0

Water resilience in integrated water service operator perimeter

Operator

$$M0a = \frac{\sum_{mc}(SII\ consumptions, including\ water\ losses) - \sum_{mc}(exported\ water)}{\sum_{mc}(aquifers + reservoirs + surface\ water\ bodies + desalination + reuse) + \sum_{mc}(imported\ water)}$$

W_{IN}

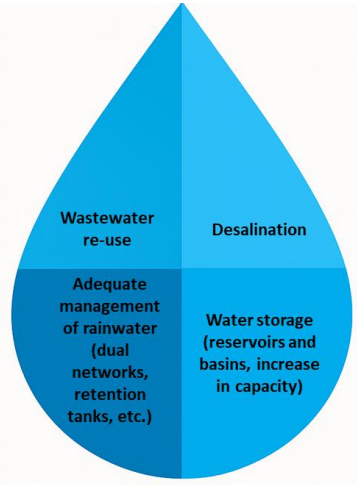
$$\sum_{mc}(authorized\ water\ catchment)$$

Water resilience considering also uses other than civil

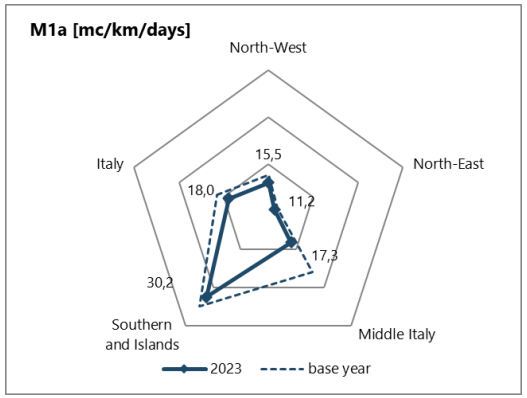
All uses

$$M0b = \frac{\sum_{mc}(civil\ consumptions + consumi\ irrigui + industrial\ consumptions + others) - \sum_{mc}(exported\ water)}{\sum_{mc}(aquifers + reservoirs + surface\ water\ bodies + desalination + reuse) + \sum_{mc}(imported\ water)}$$

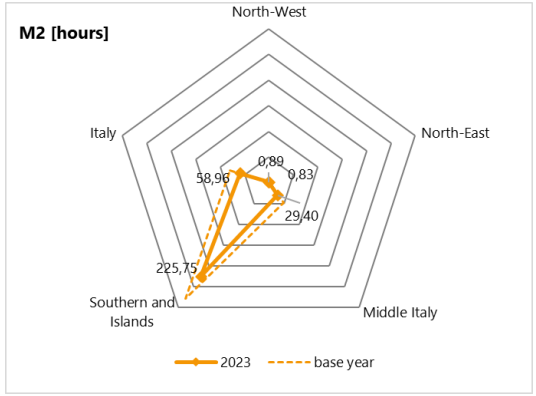
Implementation of measures to achieve the M0 objectives in the operator's IMP, with the provision of works functional to the supply



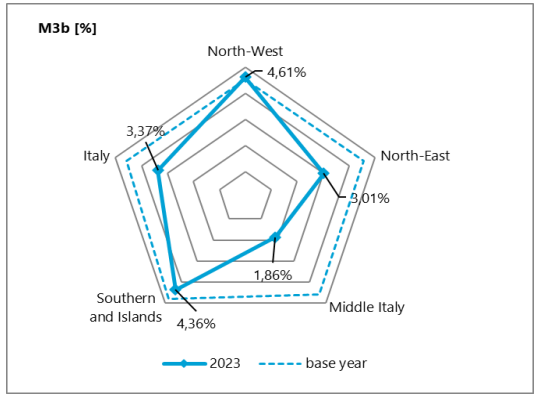
Evidences from quality regulation



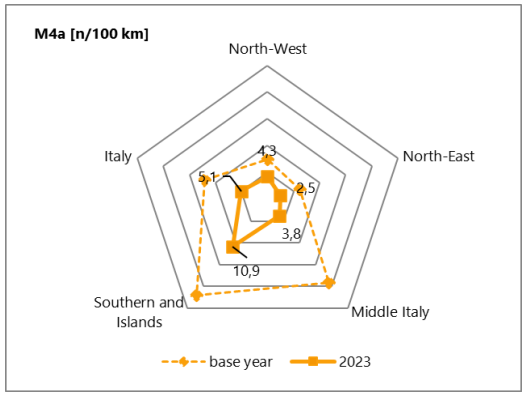
M1 – WATER LOSSES



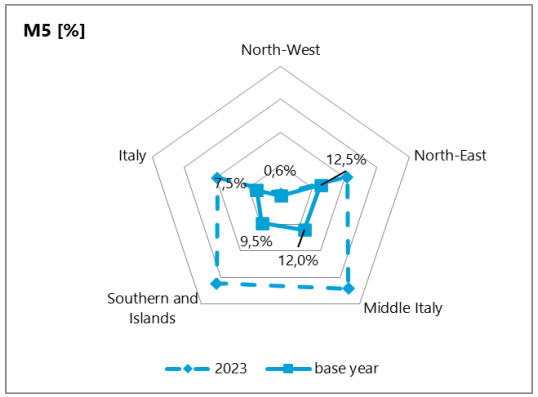
M2 – SERVICE INTERRUPTIONS



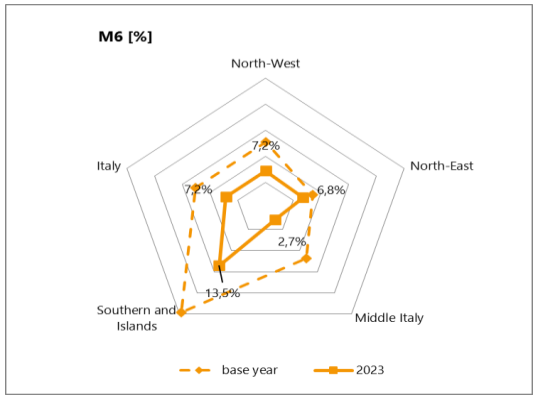
M3 – WATER QUALITY



M4 – SEWERAGE ADEQUACY (FLOODING)



M5 – SLUDGE DISPOSAL



M6 – WASTEWATER QUALITY

Constant improvement of the set of indicators - in different terms depending on the geographical area and the individual macro-indicator considered - and a **slight but stable increase in the number of operators for whom the validation of infrastructural and quality data is periodically carried out by EGA**

Greater attention to compliance with the *criteria* for measuring indicators (by operators) and to data monitoring and validation activities (by EGAs), **as highlighted by the increase, in every two-year evaluation periods, of the overall rate of operators admitted to participate in the reward-penalty mechanisms**

Positive effects of the technical quality regulation on the constant **improvement of the main performance indicators** of the sector.

European path towards *salubritas* and *securitas*… next 10 years

Deadline	Obligation	Regulatory Reference
12 January 2026	Compliance with new parameters for drinking water (e.g. PFAS, Bisphenol A)	Directive (EU) 2020/2184 – Annex I, part B
12 July 2027	National dataset on the risks of water basins for drinking water First risk assessment and risk management of the catchment areas for abstraction	Directive (EU) 2020/2184 – Art. 18(1)(b) Directive (EU) 2020/2184 – Art. 7
31 July 2027	National transposition of the Urban Wastewater Directive	Directive (EU) 2024/3019 – Art. 26
1 August 2027	Full application of the Urban Wastewater Directive; repeal of 91/271/EEC	Directive (EU) 2024/3019 – Art. 32
31 December 2027	"Good status" objective for all water bodies	Directive 2000/60/EC – Art. 4
12 January 2028	Action plan to be presented by each MS based on the average leakage rate determined by Union	Directive (EU) 2020/2184 – Art. 4
31 dicembre 2028	Adoption of EPR schemes for quaternary treatment cost coverage	Directive (EU) 2024/3019 – Art. 9
12 January 2029	Dataset on access to water and risks in internal networks First risk assessment and risk management of the supply system and of the domestic distribution systems	Directive (EU) 2020/2184 – Art. 18(1)(a)(b) Directive (EU) 2020/2184 – Art. 7
31 December 2030	20% renewable energy in wastewater treatment plants ≥10,000 p.e.	Directive (EU) 2024/3019 – Art. 11
31 December 2033	Definition of integrated urban wastewater management plan for drainage areas of agglomerations >= 100.000 p.e. First deadline for tertiary and quaternary treatment provision obligation for wastewater treatment plants with a load ≥150,000 PE and agglomerations ≥10,000 PE	Directive (EU) 2024/3019 – Art. 5 Directive (EU) 2024/3019 – Art. 7 & Art. 8
31 December 2035	Obligation to provide for sewerage network and secondary treatment agglomerations >=1.000 but < 2.000 p.e. 40% renewable energy in wastewater treatment plants ≥10,000 p.e.	Directive (EU) 2024/3019 – Art. 3 & Art. 4 Directive (EU) 2024/3019 – Art. 11

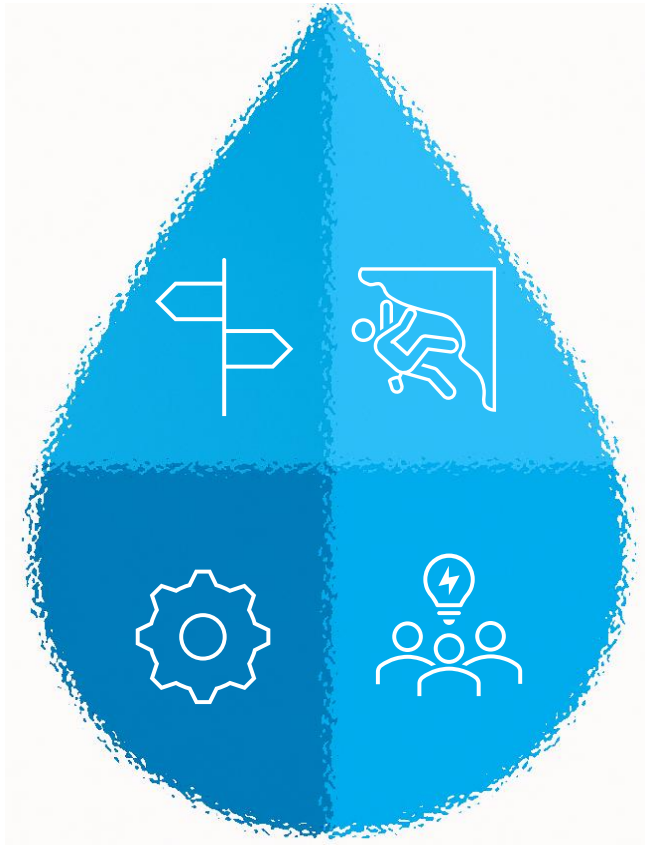
Planning and financing (themes of discussion)

REGULATORY VS NON REGULATORY PERIMETER

To be effective Water resilience initiatives need to involve sectors which usually are excluded from economic regulation (e.g. agricutural irrigation, large dams, urban planning, public green); water tariff can play a role within the comprehensive framework of sustainable financing policies

NEW TASKS FROM EU DIRECTIVES

It is necessary to find resources for interventions to mitigate climate change effects even tough other EU objectives to be reached are increasingly challenging (drinking water quality, improved purification, energy neutrality, development of reuse).



GOVERNANCE

The current governance models of water services are suitable to attract financing in infrastructures for resilient water services? How can be harmonized industrial/financial capabilities and large-scale public planning?

INNOVATION AND RESEARCH

How to promote research initiatives for the development of innovative projects to improve resiliency? Funding, research, widespread use of new technologies, new social awareness and more sustainable behavior are all factors that can be relevant in addressing climate change effects: how can be supported effective strategies?

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