



Wastewater and Energy: What synergies? Experiences of Water Regulators

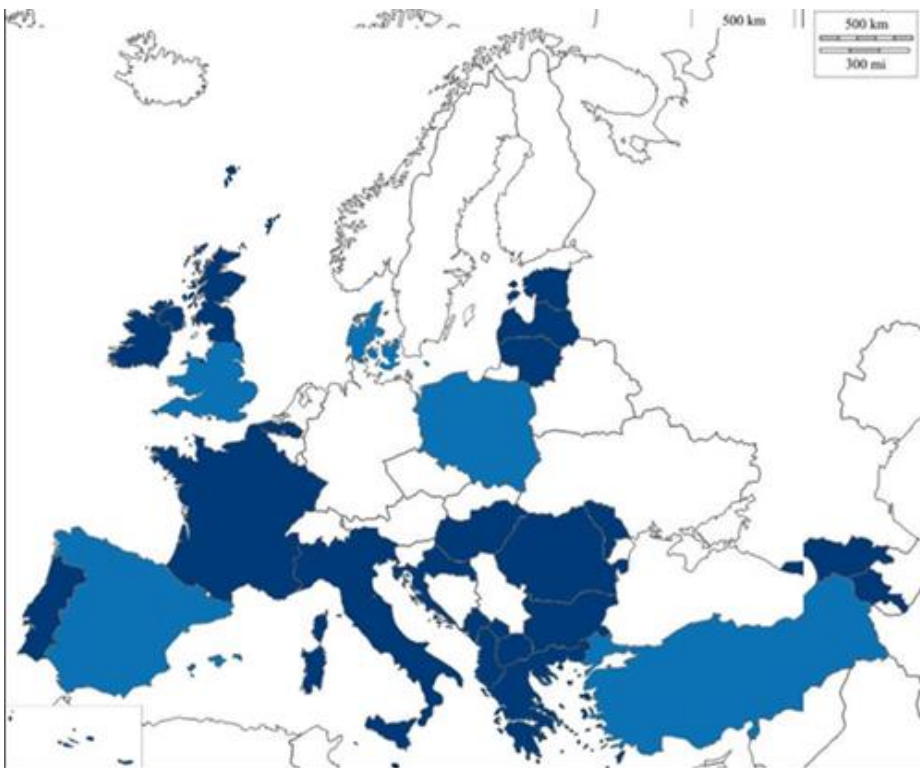
Aqua Publica Europea Seminar

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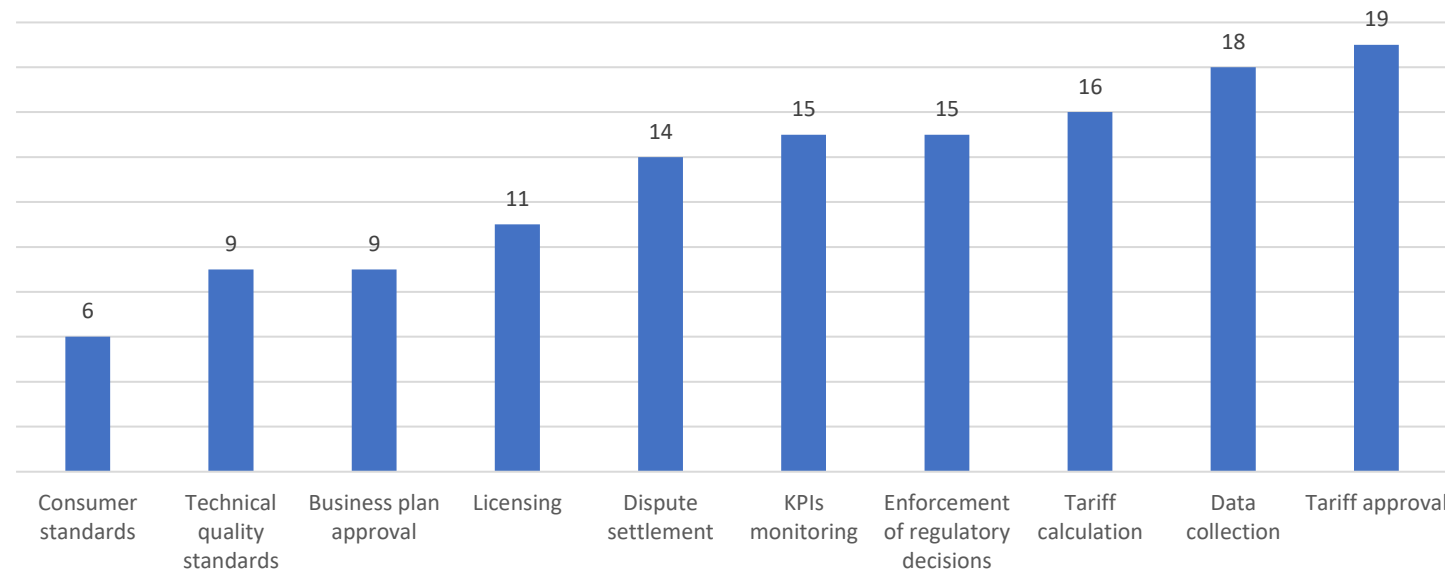


1- WAREG at a glance



Members oversee **+300 million** consumers in EU.
(**+400 million** including non-EU members & observers).

- **Established in 2014 (Milan, Brussels)**
- **No-profit association of national & regional Public Authorities** with supervising and/or regulatory responsibilities in the dw & ww sectors.
- **25 Members + 6 Observers:**
 - 17 EU Member States + UK
 - 4 EU Candidate Countries
 - 4 EU Neighbouring Policy Partners



What we do? – Our Activities

Monitor and report on regulatory activities in Europe

- Surveys & reports
- Workshops and Seminars
- Collaboration with research Institutions

Promote Compliance with EU rules

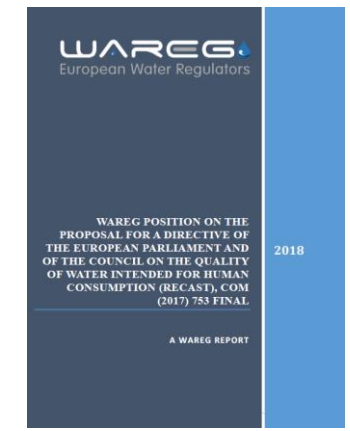
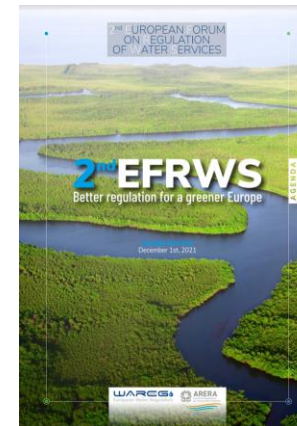
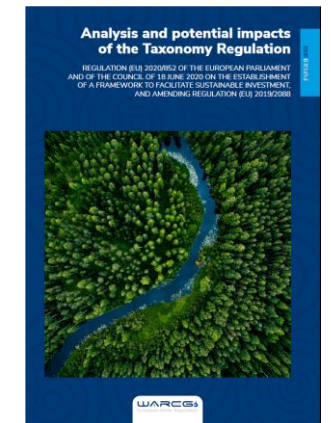
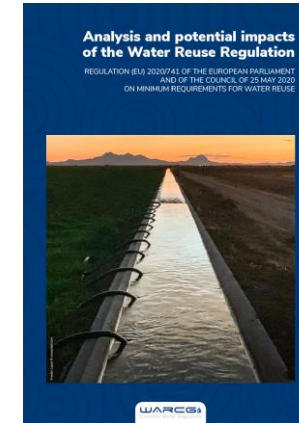
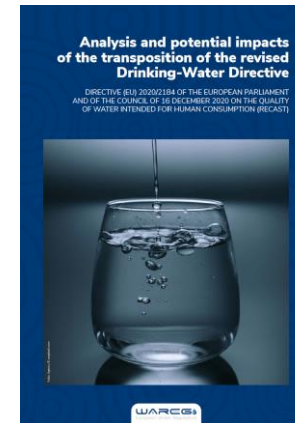
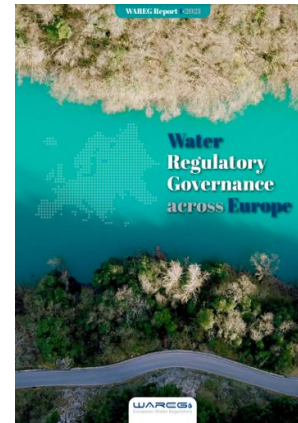
- Explain EU water legislation
- Bi-weekly Bulletin for members on EU water topics
- Position papers
- Participation in Horizon Europe Research Projects

Sharing Best Practices – Capacity Building

- Organise specialised training
- Offer technical assistance (Collaboration with the EC)
- Exchange know-how

Dissemination & Institutional Advocacy

- Multistakeholder dialogue - EFRWS 2019 and 2021
- Open dialogue with EU Institutions and European stakeholders associations
- Cooperation with International Organisations





2- General view on the Commission's UWWTD proposal

Key Energy-related Points – Obligations for Member States:

- **Energy neutrality** of Urban Wastewater facilities (**Article 11**)
- **Monitoring the greenhouse gases** produced and the **energy used and produced** by UWWTP of above 10 000 p.e. (**Article 21**)
- **Set up a data set** containing information on **green house gas emissions** and on **the total energy used** and **renewable energy produced** by each UWWTP of >10000 p.e. (**Article 22**):
- Ensure the availability of **Information to the Public (Article 24/Annex 6)**:
 - Total **annual investment and operational costs** of the operators;
 - **Energy-related information** for each UWWTP in the agglomeration.

	2025	2030	2035	2040
Energy	Energy audits for facilities above 100k p.e.	Audits for all facilities above 10k p.e. Interim target	Interim target for energy neutrality	Energy neutrality met and related GHG reduction met

The Proposal bases its cost recovery forecast in the following figures:

- The costs of the initiative would represent an **increase of 3,79% to the current expenditures** for water supply and sanitation.
- Additional expenses covered by :
 - The **new producer responsibility system** (around € 1,2 billion/year needed to treat micro-pollutants).
 - **Public budgets** (around € 0,774 billion/year); and
 - **Water Tariffs** (around € 1,806 billion/year).
- This is expected to represent a **2,26% increase of the average EU water tariffs**.

Art. 1. Subject matter	Appreciation for the extension of the aims of the directive, beside environmental protection (human health protection, GHG emission reduction, transparency)
Art. 3. Collecting system for agglomeration beyond 1,000 p.e.	Economic regulators could contribute to support the achievement of these multiple and strictly target with a stick and carrots incentive based approach, beside the command and control method designed by the directive
Art. 6 Secondary treatment beyond 1,000 p.e.	
Art. 7 Tertiary treatment beyond 10,000 p.e.	
Art. 8 Quaternary treatment beyond 100,000 p.e.	Appreciation for EPR, which is in line with polluter's pays principle. There is the need to identify who will define the amount of cost to charge to producers. Possible role of regulators, as occurred in the waste sector
Art. 9 Extended producer responsibility	
Art. 11 Energy neutrality target at national level	Appreciation. Need to identify who will have the tasks to decline a national target at local and utility level. Recognition of the role already exerted by regulators for improving energy efficiency.

Art. 15 (former) Promotion of water reuse	Appreciation of this measure. The issue of who will cover costs of wastewater treatment for reuse still remain. This is a significant barrier for the promotion of this practice.
Art. 18 Risk assessment and management	Appreciation for the extension of risk management approach also to UWWT. Since regulators are already engaged at country level for the approval of WSPs, and considering that they are, in some cases, already included in their incentive schemes measure of risks, also this article and its target could be deployed with the contribute of them.
Art. 19. Access to wastewater services	Appreciation. Need to define who will pay the costs of this measures. If they will be covered by tariff, regulators should define the technical rule, as occurred for water services.
Art. 20 Sludge (former article)	Appreciation of this measure. Some regulators have contributed to the reduction of the amount of sludge disposal in landfill, by linking sludge volumes to a stick and carrot approach.

Art. 23 National implementation program	This article could give the faculty to MS to recognize the role of regulators in the implementation plan of the directive, matching their performance based incentives scheme to the command and control approach of the law.
Art. 24 Transparency	Appreciation for the improvement of disclosure for customers. It is relevant to check the consistency among the information request by art. 17 of DWD with those required by art. 24 of this proposal, to avoid any misalignment between both requests. Regulators could define rules for data collection and KPI measurement. This could be recognized by the proposal, considering the work already made by regulators in this field.

WAREG's take away

- **Tariffs** are efficient tools to recover cost:
 - Authorities must prevent the risks of excessive increases.
 - Make efforts to explain any potential increases and monitor their efficiency.
- **Information available** to the Public should be consistent and in line with the one required by the DWD.
- Balance potentially **conflicting objectives**:
 - Stringent energy use targets on UWWTP size vs more stringent targets on pollutants removal that require more energy consumption.
 - The use statistical models by Regulatory Authorities can contribute to increase efficiency.
- EU Directives could **recognise the roles of Regulatory Toolkits** as a way to assure the implementation of their requirements.



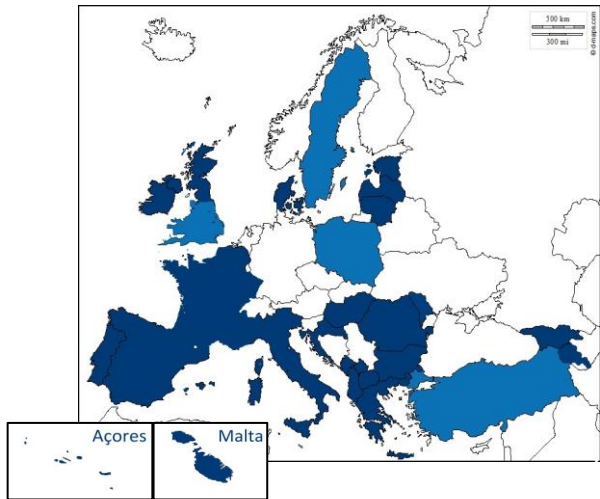
Regulatory authorities are the most suitable to carry out:

- **Data collection & validation** (who monitors homogeneity & quality of data?):
 - Ensure adequate and up-to-date information is available to the public.
- **Promote national compliance** with the Directive's requirements.
 - Take part in the National implementation programme for the implementation of the UWWTD.
- **Ensure the transparency** of information:
 - set homogeneous targets (ex. KPIs, name & shame, public reports, etc.); and
 - set compliance instruments (ex. tariff penalties/incentives, monetary fines, etc.).

**3- How regulation can contribute
to seizing the 'energy potential' of
water operations**

WAREG regulators - Improving quality standards

As a consequence of the poor quality of water services, national and regional water agencies have been established in many EU countries. The EEA data shows that compliance with EU targets is faster in countries with a national or regional regulatory authority.



62%
of sewage is treated
in line with EU
legislation

WAREG

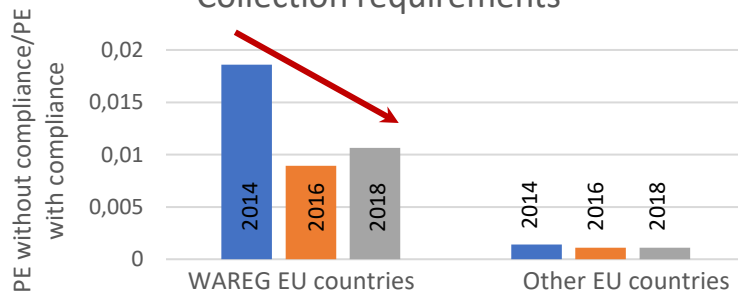
76%
of sewage is treated
in line with EU
legislation

Europe

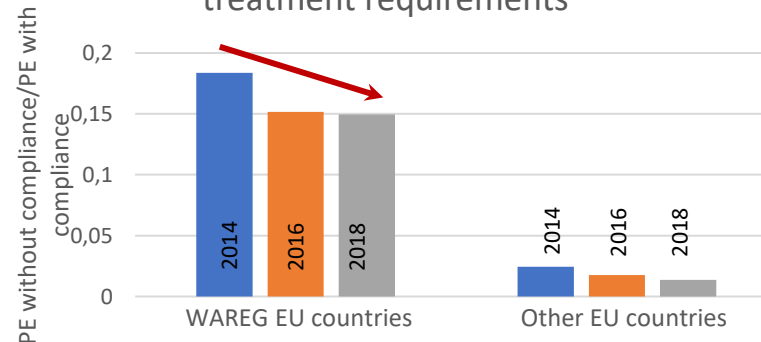
91%
of sewage is treated
in line with EU
legislation

Non WAREG EU countries

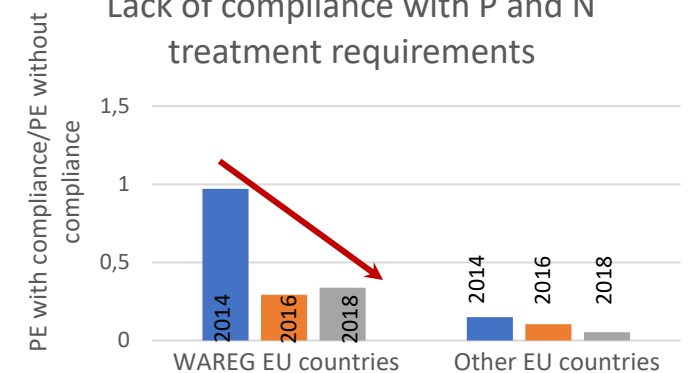
Lack of compliance with Wastewater Collection requirements



Lack of compliance with biological treatment requirements



Lack of compliance with P and N treatment requirements



In January 2018 ARERA adopted technical quality regulation **RQTI** (resolution no. 917/2017/R/idr) in order to achieve better compliance with European standards for the water and wastewater segments

Prerequisites

Identifying broad issues to overcome

- Includes minimum conditions required by existing legislation:

• **drinking water quality** (Dir. 98/83/EC)

• **environmental impact** (Dir. 91/271/EEC)

Focus on solving cases resulting from **UWWTD infringements procedures**

An **award/penalty** incentive mechanism is put in place for these targets, based on both the **state of efficiency** – for which the ranking refers to the status of the technical quality supplied – and on **efficiency variation** – comparison and ranking on the basis of the change in performance from initial levels.

General standards

- **Macro-indicators** with targets differentiated according to the operator's state of efficiency (indicator class)
- Other indicators linked to the macro-indicators in order to better describe the technical condition of the integrated water service

ID	Target
Water supply and distribution	Water losses
	Water interruptions
	Water quality
Sewerage	Sewerage system adequacy
Wastewater	Sludge disposal
	Wastewater quality

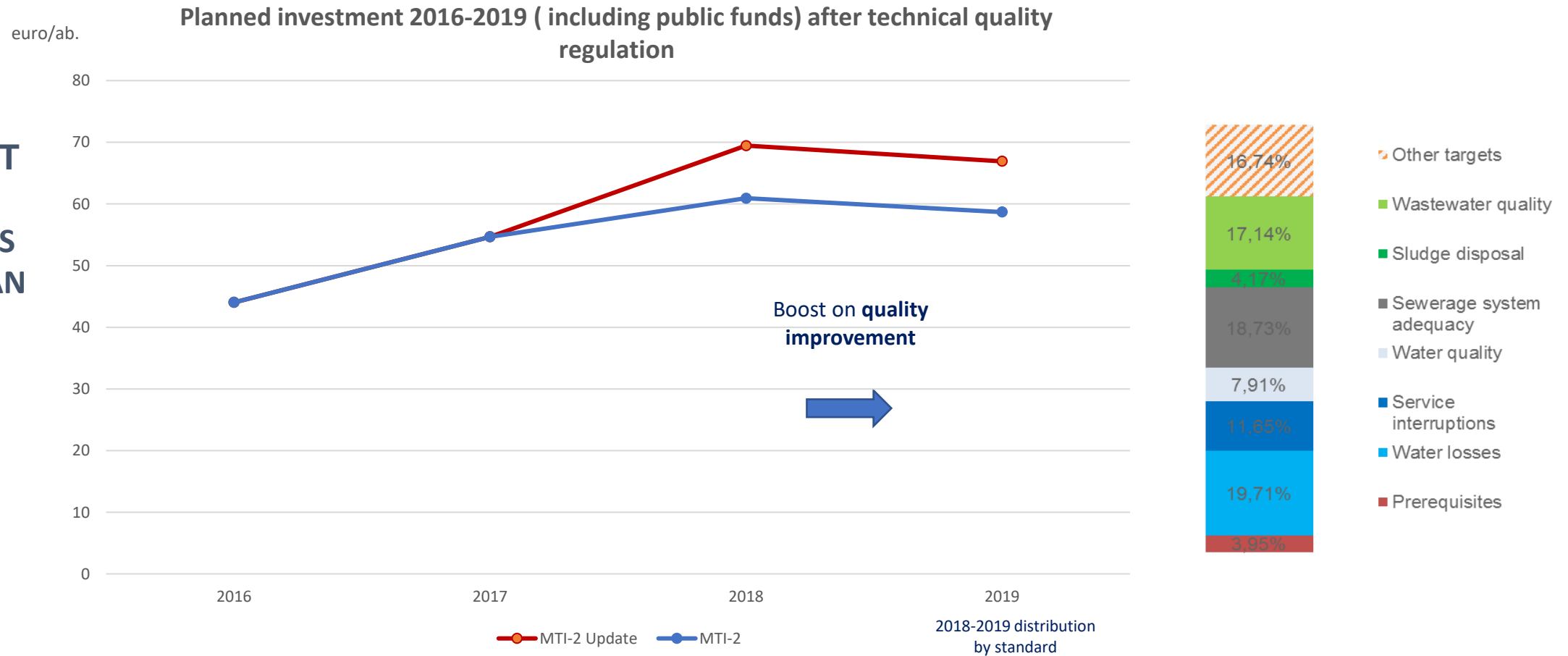
Including the adoption of **Water Safety Plans**

Incentive for **sludge recovery and reuse**

Focusing on other quality aspects of the **UWWTD**

Ensuring rapid deployment of EU legislation - Italy

WATER INVESTMENT TRENDS (FIRST FIGURES ON THE ITALIAN EXPERIENCE)



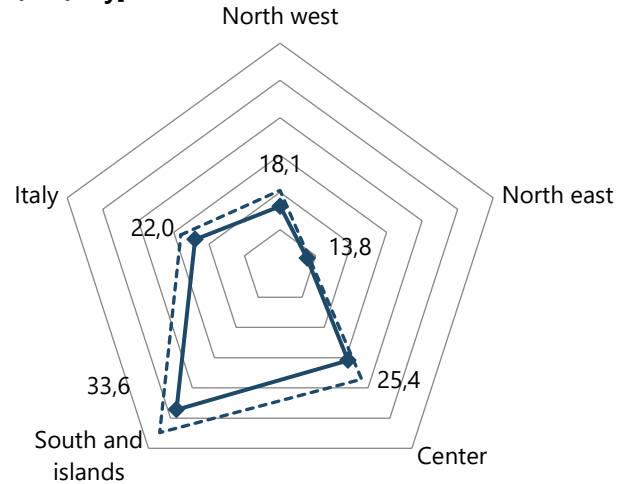
Source: ARERA calculations on the Infrastructure and Management Programme transmitted by **23 water service operators** serving more than **10 million inhabitants**, approved by the Authority according to resolution no. 918/2017/R/IDR

Ensuring rapid deployment of EU legislation - Italy

The impact of investments growth (*dashed line: 2016/continuous line: 2019*)

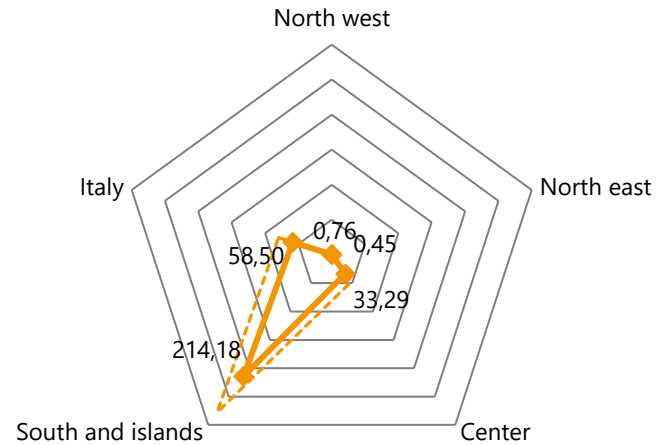
M1 - WATER LOSSES

M1a [mc/km/day]



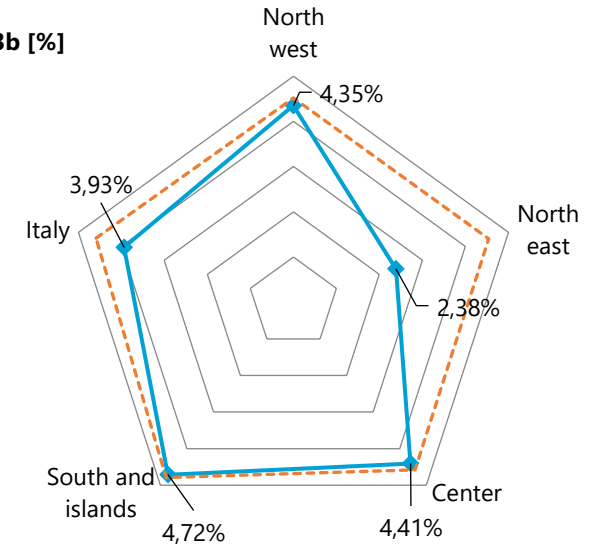
M2 - SERVICE INTERRUPTIONS

M2 [hours]



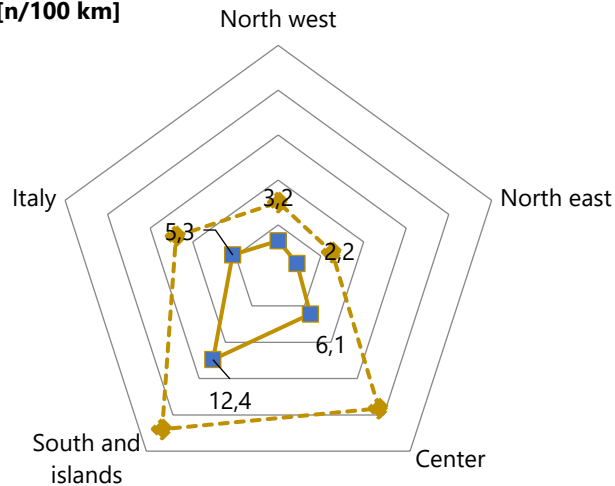
M3 - QUALITY OF DRINKING WATER (RATE OF NON-COMPLIANT SAMPLES)

M3b [%]

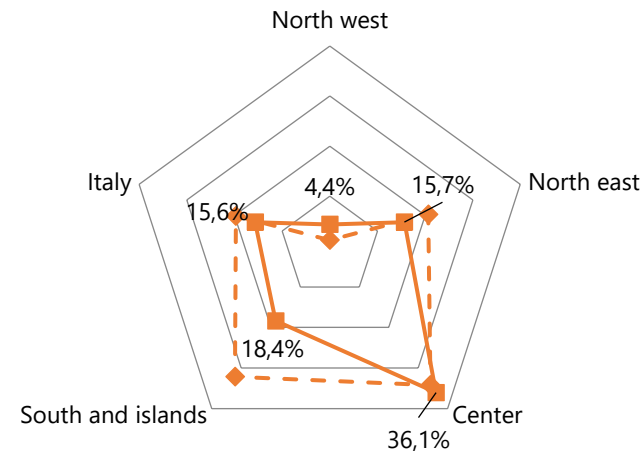


M4 - ADEQUACY OF SEWAGE SYSTEM (FLOODING)

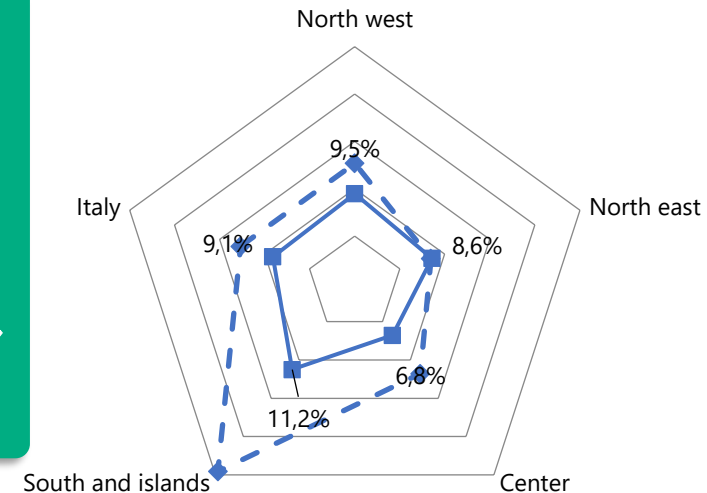
M4a [n/100 km]



M5 - SLUDGE DISPOSAL



M6 - QUALITY OF WASTE WATER



The Italian case

The regulation aims to assign to the regulated entities the **first-level targets** defined by law, leaving the utilities with the prerogative of choosing the **second-level targets**, deemed more strictly functional to achieving the first-level targets.

**First level targets
attributed to regulation
by Law 481/1995**

- Efficiency
- Quality
- Consumer protection
- Competition
- Affordability

**First-level targets
attributed to the tariff
method by Law
481/1995**

- Environmental sustainability
- Social sustainability
- Efficient use of resources

**Second level targets,
associated with the
strategic decisions by
utilities to achieve the
regulatory targets**

- Digitalization
- Innovation
- Risk mitigation
- Decarbonization
- Stakeholder engagement

The EU directives and/or national laws might extend the scope of regulators, including further aims referred to environmental sustainability and decarbonization of the water sector.



Regulatory incentives

Technical quality targets

↓ Water losses reduction

↓ Water interruptions

↑ Water quality

↑ Sewerage system adequacy

↓ Sludge disposal

↑ Wastewater quality

To the extent that a project of energy efficiency on SII infrastructures is **interdependent to reach a technical quality standard**, it can be included into water regulation:

⇒ Operating and capital costs covered by tariff ↑

⇒ Possibility to attending award/penalty mechanism of RQTI ↑

⇒ but ... energy cost reductions deriving from efficiency are transferred in a 75% amount to users, according to tariff rules ↓

Non Regulatory incentives



White certificates (TEE)

- Quantity certificates which measure energy savings gained by specific efficiency measures;
- Price of certificate derives from market negotiation (a cap of 250 euro for each certificate is set);
- National legislation (MISE decree of 11 January 2017) has extended the category of projects eligible to get TEEs to water sector (efficiency of water network and wastewater plants).



Actually, costs and revenues deriving from acquisition and selling of white certificates are included within the water regulatory perimeter bounds, and the operator could keep the 75% of gross margin from TEE negotiation.

Renewable energy production and valorisation by SII plant

ELECTRICITY

- Legislator has provided for incentives to operators who produce electric energy by using renewables, quantified respect to the amount of **electricity fed into the grid, type of renewable source** and **characteristics of plant**
- Plants which have access to incentives (almost 1MW power) can be also **hydroelectric plants** – with no additional abstraction by water body – and **residual gases from wastewater treatment plants**



BIOMETHANE

- Operator feeding biomethane into the grid is incentivized by legislator by means of specific certificates (CIC) - whose quantity depends on **biomethane fed in consumption** while price derives from market negotiation - and measures of withdrawal from market at a fixed price
- Some experimentations are being implemented concerning the use of biomethane deriving by conversion of biogas produced into wastewater treatment to **feed the operators car parks** necessities to carry out SII



According to the tariff method, operators can cover the total costs of energy production through tariff, and gross margin can be kept by the operator up to a 75% threshold.

Regulation in the EU water governance

Regulators are part of the institutional water governance framework at EU level, assuring:

- Uniform tariff methods at national level.
- Progressive adoption of common standards of service among EU MS.
- Fast compliance with EU legislative framework.

Regulation for the EU Green Deal

The WAREG network is ready for the deployment of the EU Green Deal:

- Updating the regulatory toolkit with:
 - A net zero base regulation;
 - An innovation stimulus package; and
 - A risk-based approach.
- Assuring a fast compliance with net zero and climate change goals.
- Solving trade-offs between sector targets and the new net-zero targets (sustainability vs efficiency and quality).

The revised UWWTD could **recognise Regulatory Toolkits** as a way to assure fast compliance with its requirements



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