

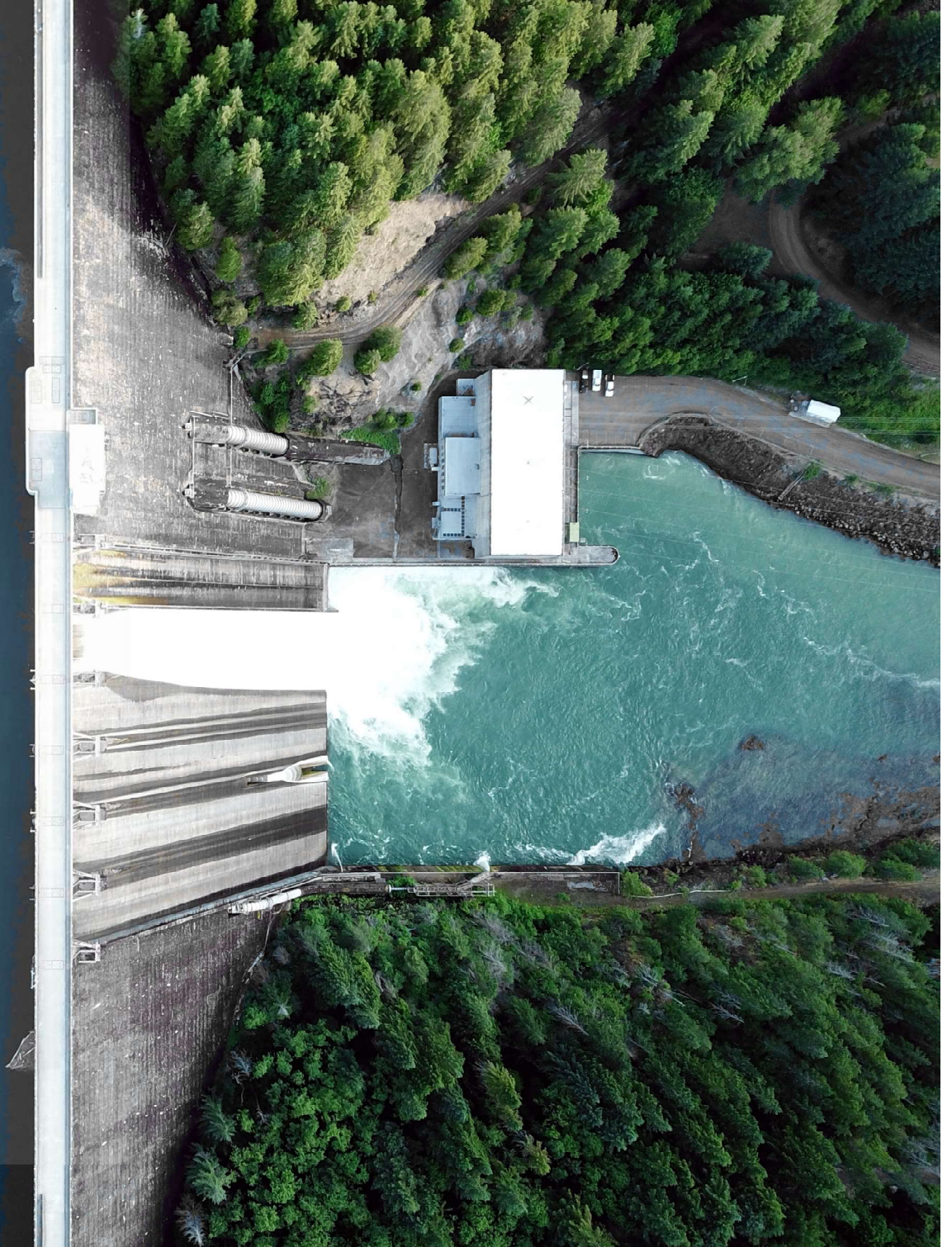


ARERA
Autorità di Regolazione per Energia Reti e Ambiente

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DELIVERING THE GREEN TRANSITION IN WATER & WASTEWATER SECTORS: THE ITALIAN REGULATOR'S APPROACH

Elena Gallo
Deputy Director Investments and
Environmental Sustainability (DISA)
ARERA



Interrelation among regulatory and non-regulatory instruments

Economic regulation final goal:
to protect users, also in the long period

*main incentives to green transition

quality is not for free => take care
of the affordability issue ("who is
paying for what")

AFFORDABILITY

a natural monopoly essential service
requires tariff regulation to protect users

TARIFFS*

easy to react to a pushing regulatory
activity on tariffs by reducing the
quality of provided services

QUALITY*

NEXT GENERATION
EU/PUBLIC FUNDS

- planning update is required
- public funds can reduce tariffs if investments remain the same or (better) can accelerate investments with stable tariffs

PLANNING

- include all necessary measures to reach quality targets
- separate evidence of public funds

OTHER FINANCIAL
SOURCES

- to guarantee operations

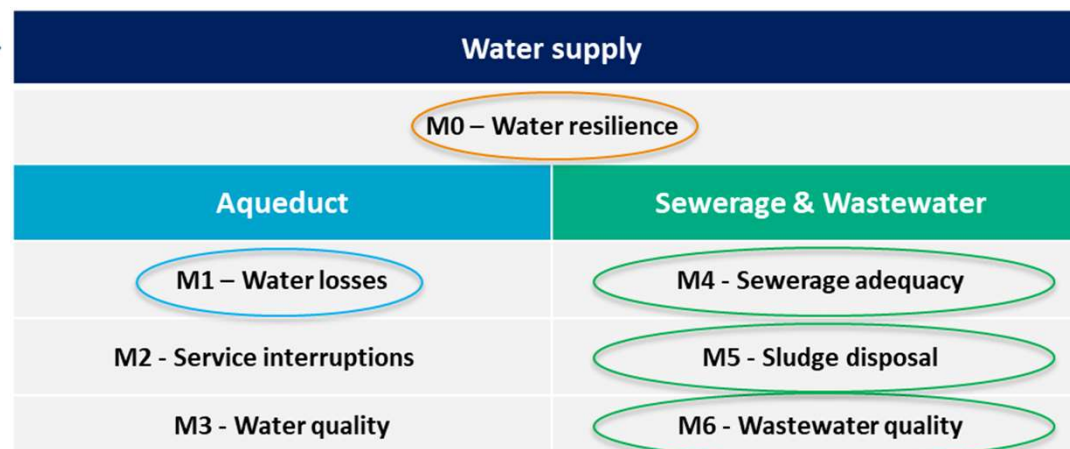
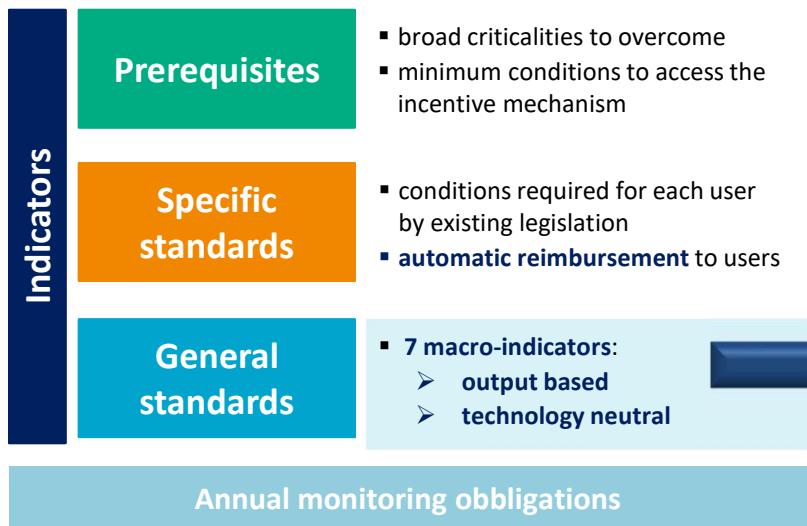
Economic regulation

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TECHNICAL QUALITY

Technical quality regulation (RQTI)

ARERA decisions 917/2017/R/idr, as updated by 637/2023/R/idr



Incentive mechanism

- **award/penalty** mechanism
- **multistage** performance evaluation

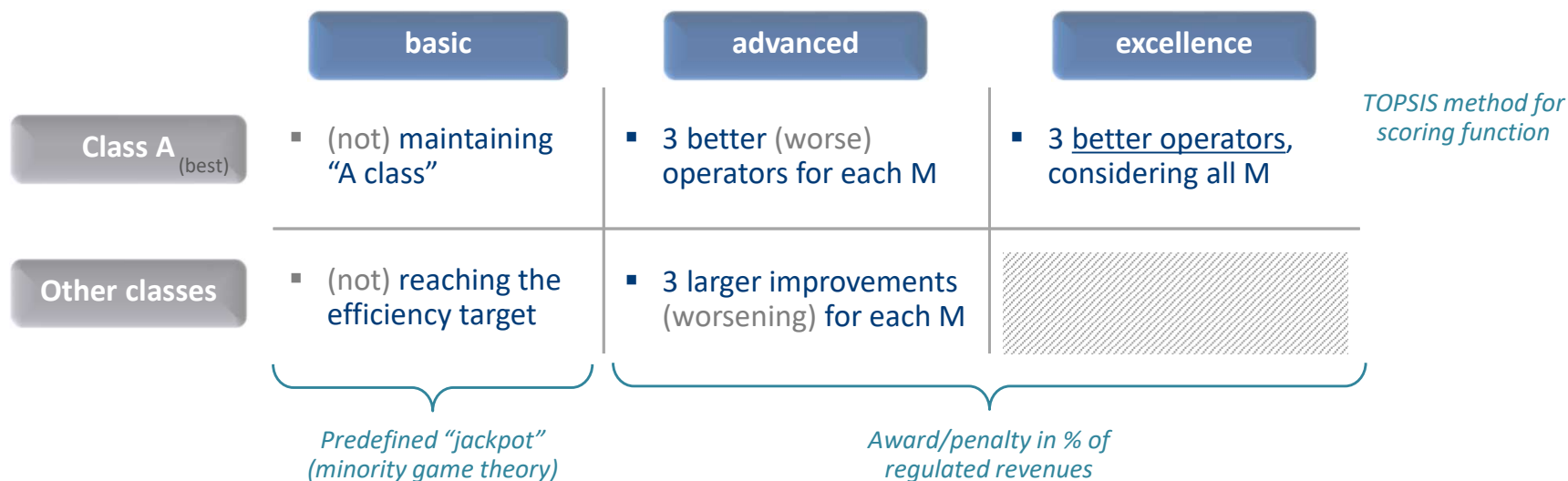
How it works? (example)

ID	Indicator	ID Class	Class	Target
M6	Treated wastewater quality [%]	A	$M6 < 1\%$	Conservation
		B	$1\% \leq M6 < 5\%$	-6% M6 per year
		C	$5\% \leq M6 < 10\%$	-10% di M6 per year
		D	$10\% \leq M6 < 15\%$	-15% di M6 per year
		E	$M6 \geq 15\%$	-20% di M6 per year

Incentive mechanism

Incentive mechanism

- **award/penalty** mechanism
- **multistage** performance evaluation



Award/penalty mechanism application:

2018-2019

- **awards** for about **135 Mil. Euro**
- **penalties** under **10 Mil. Euro**

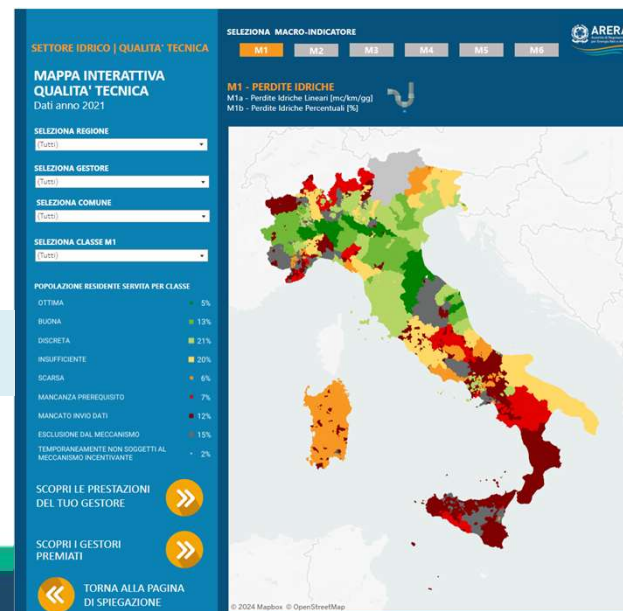
2020-2021

- **awards** for about **130 Mil. Euro**
- **penalties** amounts to **14 Mil. Euro**

2022-2023

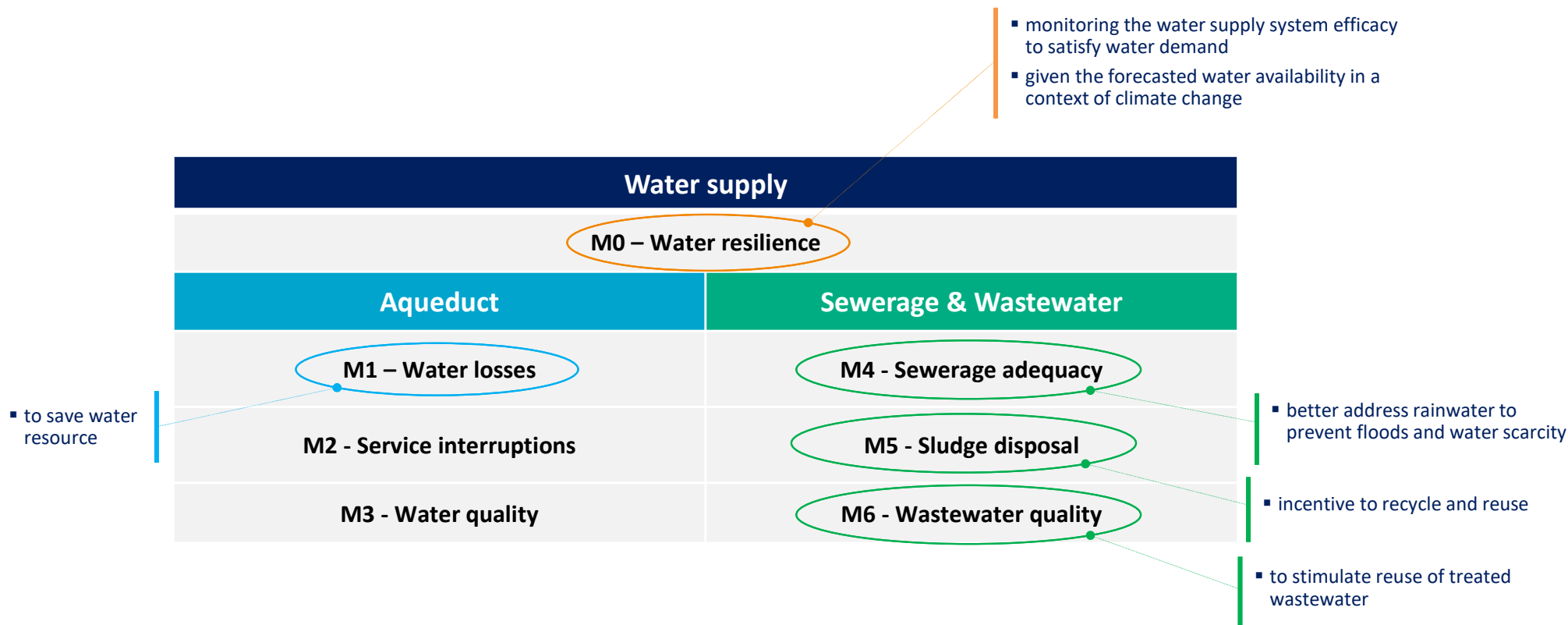
- **performance evaluation on going**

<https://www.arera.it/dati-e-statistiche/dettaglio/qtsii>



More and more focus on Sustainability and Climate Change mitigation

Decision 637/2023/R/idr



In addition:

$$G5.4^a = \min \left\{ 100; \frac{(2,42 * EE_{prel}^a + 0,292 * Gas_{prel}^a)}{(2,42 * EE_{prod}^a + 1,5 * ET_{prod}^a + 0,292 * Gas_{prod}^a)} \right\}$$

Energy neutrality indicator for wastewater plants: to incentivise circular economy through the production of electric energy

$$G5.5^a = \frac{M_{rec}^a}{W_{DEP}^a}$$

Raw material recovery from wastewater plants: to incentivise circular economy

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TARIFFS METHODOLOGY

Incentives to energy and environment sustainability

Four main pillars of sustainability

ENERGY EFFICIENCY

Operating cost component

self-produced energy

$$CO_{EE}^a = \left[CO_{EE}^{effettivi,a-2} + \left(\frac{CO_{EE}^{effettivi,a-2}}{kWh^{a-2}} * kWh_{Aut}^{a-2} \right) + \gamma_{EE}^{new} * \Delta_{Risparmio}^{new,a} \right] * \prod_{t=a-1}^a (1 + I^t)$$

$$\Delta_{Risparmio}^{new,a} = \left[\frac{\sum_{n=3}^6 (kWh + kWh_{Aut})^{a-n}}{4} - (kWh^{a-2} + kWh_{Aut}^{a-2}) \right] * \frac{CO_{EE}^{effettivi,a-2}}{kWh^{a-2}}$$

$$\gamma_{EE}^{new} = 0,25, \text{ if } \Delta_{Risparmio}^{new,a} > 0$$

more favourable sharing for operators in case of energy savings, including self-produced energy

RECOVERY OF ENERGY AND RAW MATERIALS FROM WASTEWATER TREATMENT

TREATED WASTEWATER REUSE

PLASTIC USE REDUCTION

Balancing component

$$R_{c \text{ Attivit\`a } b}^{a-2} = \%b * \underbrace{(R_{b1}^{a-2} - C_{b1}^{a-2})}_{\text{margin}} + \underbrace{\%[b * (1 + \gamma_b)]}_{75\%} * \underbrace{(R_{b2}^{a-2} - C_{b2}^{a-2})}_{4 \text{ pillars activities}}$$

50%

75%

4 pillars activities

more favourable sharing for operators on the achieved margin



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Incentives to reuse

- volumes that can be potentially reused
- reused volumes (delivered by wastewater treatment operator to the next party in the chain to be used by the end-user)

$$RIU = \frac{W_{DEP,r1} - W_{DEP,r2}}{W_{DEP,r1}}$$

ID	Indicator	Class ID	Class	Objective
RIU	RIU - Share of wastewater treated volumes that can be reused [%] (but are not)	A	$RIU^{2023} < 5\%$	$RIU^{2025} = RIU^{2023}$
		B	$5\% \leq RIU^{2023} \leq 45\%$	$RIU^{2025} = RIU^{2023} - 0,02$
		C	$45\% < RIU^{2023} \leq 70\%$	$RIU^{2025} = RIU^{2023} - 0,05$
		D	$RIU^{2023} > 70\%$	$RIU^{2025} = RIU^{2023} - 0,10$

Award in case of achievement of the target



$$Pr e m i o_{RIU,i} = \min \left\{ \frac{Incentivo_{RIU}}{N_{RIU}}; (0,5 * Capex_i^{2025}) \right\}$$

stable growth of reused volumes among the conditions for awarding the prize

$$W_{DEP,r2}^{2025} > W_{DEP,r2}^{2023}$$

Incentives to reduce purchased energy

ID	Indicator	Objective
ENE	ENE- Amount of purchased electricity [kWh]	$\left(\frac{kWh^{2025}}{\frac{\sum_{n=2020}^{2023} kWh^n}{4}} \right) - 1 \leq -0,05$

$$Pr e m i o_{ENE,i} = \min \left\{ \frac{Incentivo_{ENE}}{N_{ENE}}; (0,5 * Capex_i^{2025}) \right\}$$

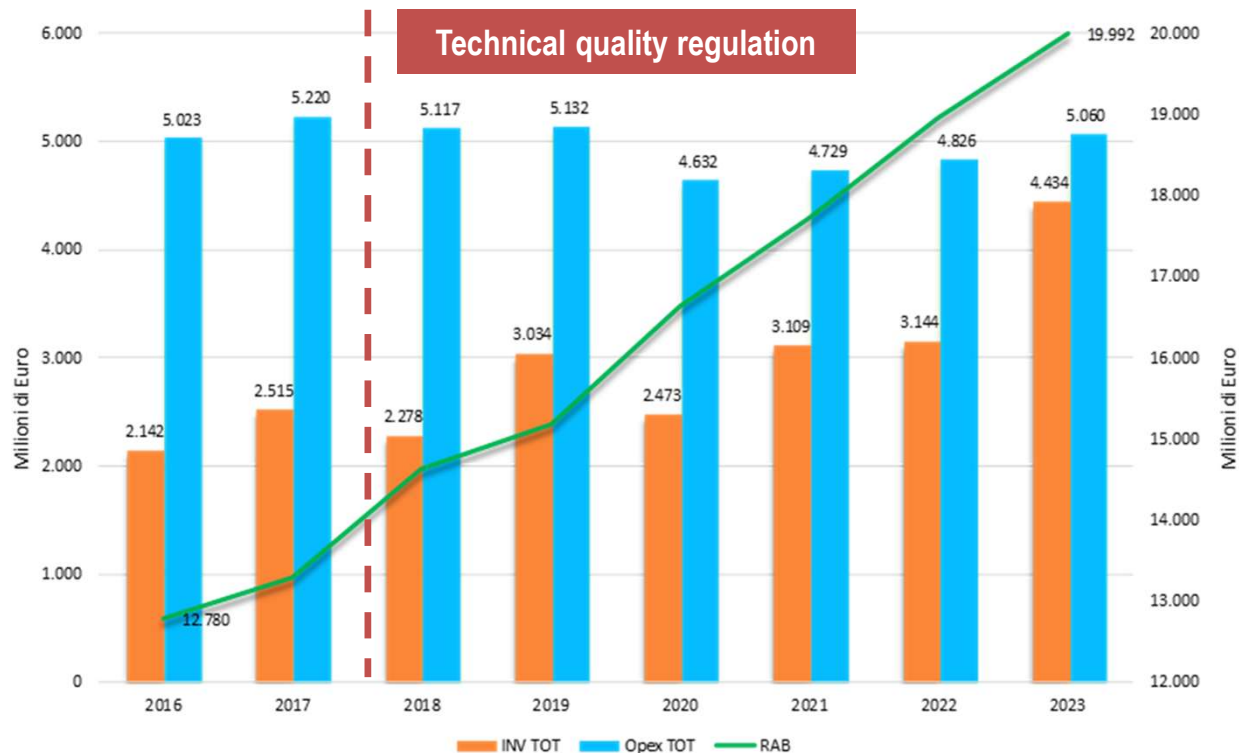
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SOME EVIDENCES

Some evidences from tariff and quality regulation

- Increased investment in infrastructure modernization and quality improvement
- Improvement in the capacity to implement planned investments, with a realization rate rising from 82.9% in 2016 to almost 100% in 2021
- Stable increase in the sector RAB
- Stability of operating costs of service valorisation
- Growth in the incidence of investment expenditure on total expenditure, from 30% in 2016 to 47% in 2023

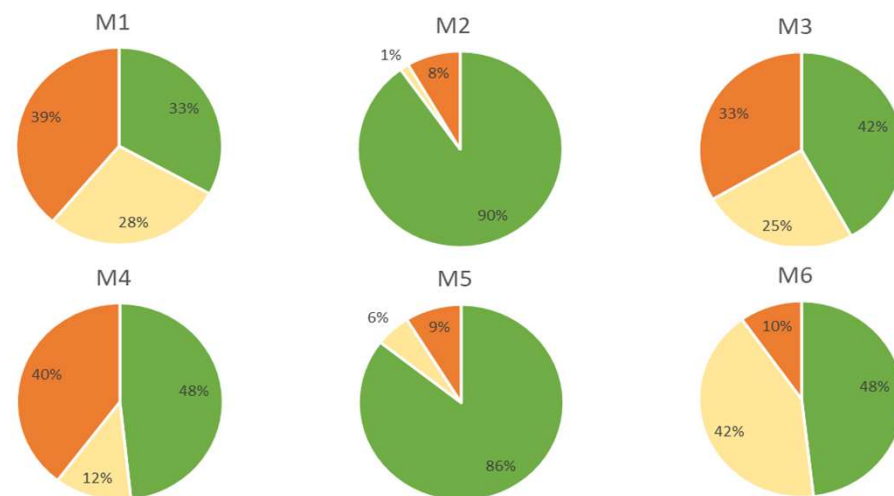
[Operators serving 47 Million inhabitants]



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



% of served population



Goal achieved

Improvement but goal not achieved

Worsening