



The future of regulation for water and sanitation services

Jaime Baptista, Portugal



lis-water.org



THE GLOBAL
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Lisbon International
Centre for Water

**International centre dedicated to public policy,
regulation and management of water services**



Part I: Why regulation?



Why regulation is necessary



Urban water services are not an ordinary market. Regulation must balance public value, service provider viability and user protection.

Natural monopoly

- Assets involve high **sunk costs**.
- There is limited scope for **parallel infrastructure**.
- **Lack of competition** can undermine efficient pricing and service quality.

Essential and critical to public health

- Safe water and sanitation are basic **human needs**.
- Quality and accessibility **are essential for** health, dignity and social inclusion.

Externalities & long horizons

- Abstraction, pollution, climate risks and asset renewal **create costs and benefits** that extend beyond the individual transaction.

The regulatory bargain

Users need affordable, reliable and safe services.

Service providers need predictable rules, adequate revenues and incentives to invest and operate efficiently.

Governments need social and environmental objectives to be translated into enforceable service obligations.

Weak regulation can lead to under-investment, poor service quality, opaque tariffs and environmental damage.

Complex regulation can increase costs, interfere with management and overemphasise metrics.

How regulation has evolved

Regulation has evolved from basic administrative control to adaptive oversight.

Public administration

- **Direct** political and administrative **control**
- **Technical** rules and **public budget** management

Corporatisation & decentralisation

- Utilities gain greater **managerial autonomy**.
- **Contracts** and **performance** targets become increasingly important.

Independent regulation

- **Independent regulators** separate policy-making, service provision and regulatory oversight.
- **Tariffs, quality** and **consumer protection** are regulatory responsibilities.

Performance & benchmarking

- **Benchmarking, incentives** and **public reporting** complement traditional regulation.

Adaptive regulation

- **Risk, climate, data** and outcomes increasingly shape regulation.

Institutional reform often follows sector reform, but not automatically.

Privatisation, corporatisation and decentralisation can increase the need for regulation

The global regulatory toolbox



No single instrument is sufficient. Effective regulation combines instruments according to the sector's structure, risks and maturity.

Economic regulation

- **Sets price and revenue rules** and determines **investment allowances**.
- **Strength:** financial discipline.
- **Risk:** politicisation and resource-intensive reviews.

Quality & consumer protection

- **Standards** for continuity, safety, complaints, access and consumer rights.
- **Strength:** visible outcomes.
- **Risk:** fragmented requirements.

Performance & benchmarking

- **KPIs, peer comparison, incentives and disclosure.**
- **Strength:** learning and reputational pressure.
- **Risk:** gaming and excessive focus on indicators.

Contract & licensing

- **Obligations** embedded in concessions, licences or performance contracts.
- **Strength:** useful where regulatory capacity is limited.
- **Risk:** rigidity and limited flexibility.

Risk and environmental regulation

- **Risk-based** oversight, pollution control, resilience and water reuse.
- **Strength:** focuses regulatory capacity.
- **Risk:** data-intensive.

The key question is which combination of instruments in each institutional context.

Combining top-down and bottom-up regulation



The future is unlikely to rely solely on external regulation or self-regulation. It is more likely to be a balanced combination of both.

Top-down regulation

- The regulator sets obligations, monitors compliance and enforces sanctions.
- **Strength:** Strong where risks are high or providers have limited capacity.
- **Risk:** procedural compliance can replace ownership and innovation.

Bottom-up self-regulation

- Utilities apply professional standards and manage risk and performance.
- **Strength:** Strong where providers are capable and transparent.
- **Risk:** conflicts of interest or weak verification.

Co-regulation

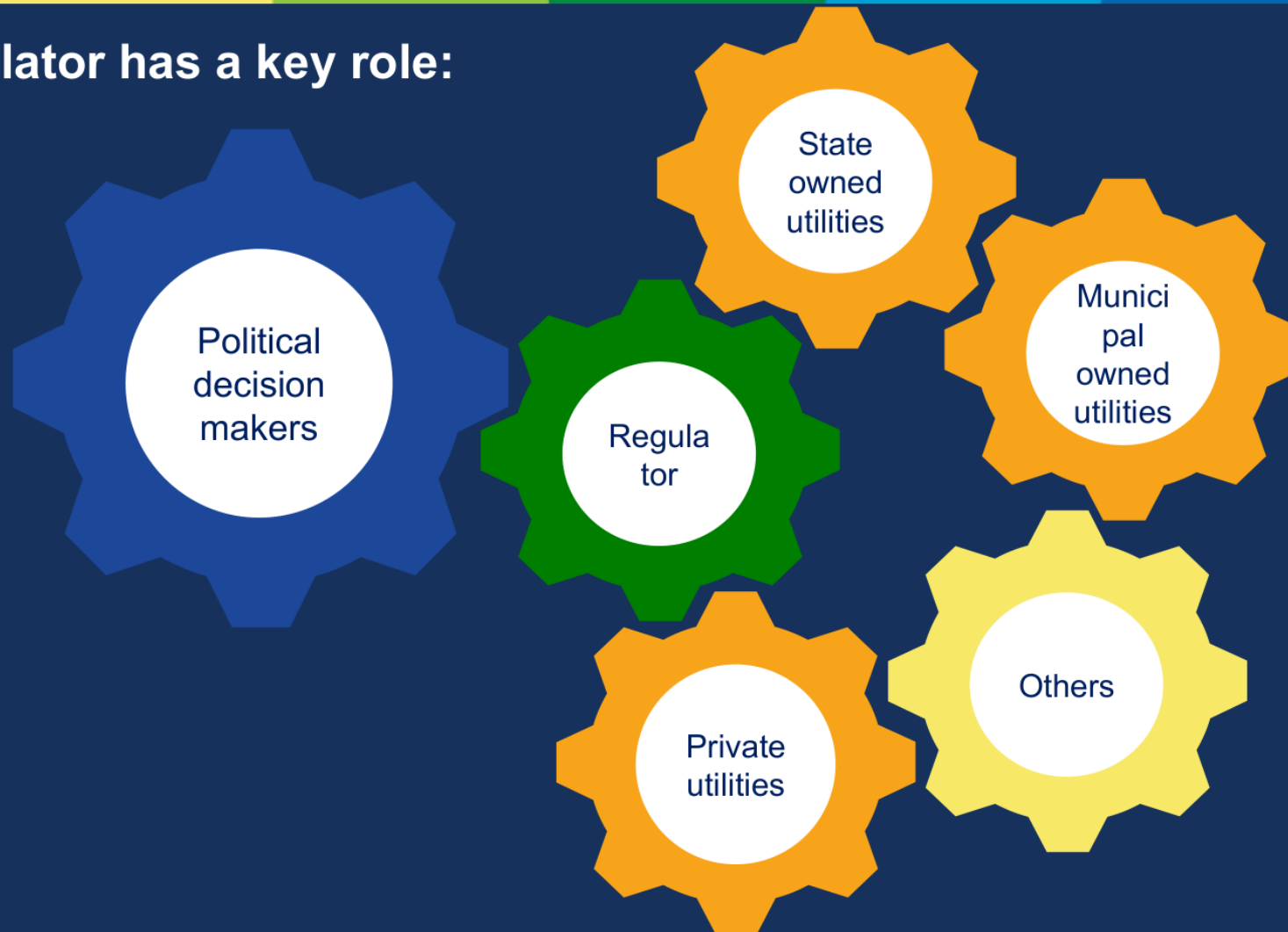
- **External regulation** sets the minimum requirements.
- **Providers and professional bodies** help shape standards and improvement practices.
- **Independent verification** and **public reporting** ensure credibility.

Trust should not be assumed.

It must be built through transparency, evidence and independent verification.

The regulatory environment

The regulator has a key role:





Part II: How mature is regulation?

Regulators around the world

The number of regulators with legal personality is growing, but their capacity and effectiveness still need significant improvement



More than **210** regulators

38% of countries have a **regulator with legal personality**

Stages of regulatory maturity

Regulatory models should evolve with institutional capacity, sector structure, economic conditions and social objectives.

1. Limited / absent

- Political or administrative control.
- Weak monitoring and limited separation of roles.

3. Emerging regulation

- Tariffs, service standards, data collection and consumer protection become formalised.

5. Performance & evidence

- Benchmarking, incentives, impact assessment, public reporting and evidence-based decisions.

2. Basic control

- Technical standards, licensing and administrative supervision.
- Compliance is the main objective.

4. Independent regulation

- Clear mandate, professional regulator, transparent procedures and enforceable decisions.

6. Adaptive & risk-based

- Outcomes, risk, real-time data, climate resilience, innovation and continuous learning.

Maturity is not about reaching the final stage.

It is about choosing the right level of regulation for the risks and realities of each sector and context.

Assessing regulatory performance



Regulation succeeds when it improves service performance — not when it simply produces more rules or reports.

Where regulation can add value

- **Better coverage, continuity and drinking-water quality**, through clear standards and accountability.
- **Greater efficiency** (ex. water losses), releasing resources for service improvement and investment.
- **More credible investment**, when tariffs, service obligations and financing expectations are clear.
- **Stronger consumer protection**, when complaints, affordability and service quality are measurable.
- **Better environmental performance**, when wastewater, leakage, resource efficiency and reuse become explicit outcomes.

Where regulation can fail

- **Formal compliance without** service improvement, when incentives reward paper rather than results.
- **Excessive reporting requirements** that consume utility capacity without improving decisions.
- **Political interference**, regulatory capture or unstable rules that undermine investment and credibility.
- **Indicators** that are easy to measure but poorly linked to public value.
- **Gaps** between economic, quality, environmental and social regulation.

Some regulators have stronger performance monitoring, but data availability and quality remain major constraints.

Effective regulation



**Creating a regulator does not automatically create effective regulation.
“Finally, we created a regulator” is only the beginning.**

Mandate & powers

- Clear scope, enforceable decisions, sanctions and access to information.

Independence

- Institutional, financial and technical autonomy, balanced by democratic accountability.

Professional capacity

- Economists, engineers, lawyers, data scientists and others, able to challenge service providers.

Data & evidence

- Reliable and comparable information
- Impact assessment
- Transparent methodologies

Transparency & participation

- Consultation, publication of decisions, performance reporting and meaningful user engagement.

Institutional coordination

- Clear roles and coordination with ministries, authorities, municipalities and other relevant stakeholders.

**Measure before incentivizing.
Compare before penalizing.
Build transparency before adding complexity.**

How regulation can improve



The regulatory reform agenda is to reduce unnecessary burdens while improving regulatory intelligence.

From rules to outcomes

- Define public outcomes first.
- Use rules as a means, not as the end.

From periodic reporting to continuous intelligence

- Automate data flows, detect anomalies and use dashboards to focus regulatory attention.

From uniform obligations to proportionate regulation

- Differentiate regulation according to risk, size, service model, geography and institutional capacity.

From isolated decisions to holistic thinking

- Connect tariffs, investment, asset condition, climate resilience and affordability.

From inspection to anticipation

- Use risk models, scenarios and early-warning indicators to act before problems occur.

From national silos to peer learning

- Benchmark across jurisdictions.
- Build communities of regulatory practice.

Regulation is a living system, and regulators must continuously adapt and reinvent themselves, from isolated decisions to holistic thinking.



Part III: How to move from assessment to improvement?

From assessment to improvement



Effective regulation depends on the institutions, capabilities and mechanisms that support improvement.

External context	Internal organisation	Procedure	Tools
Sector institutional framework • Roles, responsibilities, service structure, planning, financing, accountability and sector data.	Governance of the regulator • Mandate, powers, independence, accountability, organisation, resources and coordination.	Regulatory model • Economic, quality, environmental, customer, contract, competition, social and differentiated regulation.	Mechanisms and instruments • Impact assessment, decisions, supervision, reporting, incentives and sanctions.

WaterGov procedure: Local commitment → Capacity building → Assessment → Validation → Reporting → Benchmarking → Action Plan → Implementation → Monitoring → Next cycle



WaterGov reference model



Reference model of
good regulatory
policies and practices

INSTITUTIONALITY OF
THE SECTOR

GOVERNANCE OF THE
REGULATOR

REGULATORY MODEL

MECHANISMS AND
INSTRUMENTS



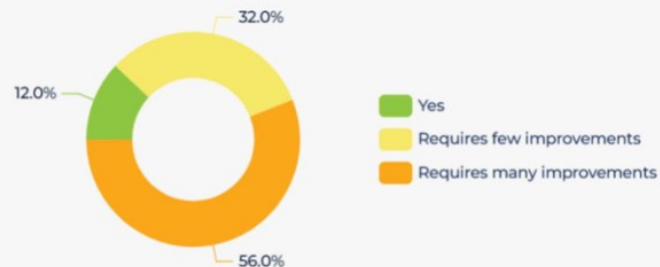
01 Architecture of the sector	02 Organization of the service provision	03 Governance of the service provision	04 Strategic planning	05 Legal framework	06 Financing	07 Taxation policy
08 Market and competition	09 Customers and society	10 Infrastructure	11 Human capital	12 Information, knowledge and innovation	13 Mission and mandate	14 Functions and powers
15 Independence	16 Accountability	17 Structure and organization	18 Resources	19 Institutional articulation	20 Structural regulation of the sector	21 Economic regulation
22 Regulation of service quality	23 Regulation of water quality	24 Regulation of environmental interface	25 Regulation of customer interface	26 Regulation of contracts	27 Regulation of competition	28 Social regulation
29 Differential regulation	30 Defining regulations and impact assessment	31 Decision-making	32 Supervision and performance reporting	33 Incentives and sanctions		GOOD POLICIES AND REGULATION

WaterGov results



Examples from participating countries:

01.10 Is the current institutional framework of the sector adequate?

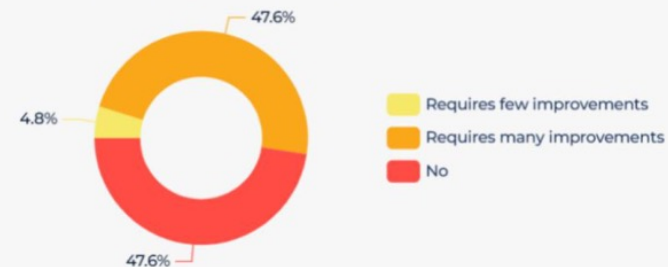


Total no. of countries/regions: 25



88% of countries need institutional reforms

03.13 Is there a public policy on corporate governance?

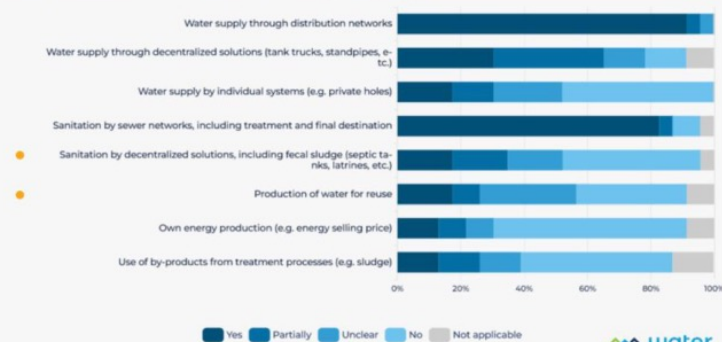


Total no. of countries/regions: 21



95% of countries lack a robust policy for utility corporate governance

13.03 What activities associated with services are covered by the regulatory mandate?

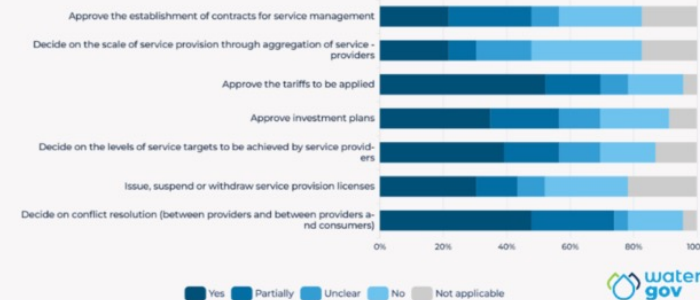


Total no. of countries/regions: 23



Regulatory mandates are focused on urban services, leaving rural behind

14.03 What decision powers does the regulator have?



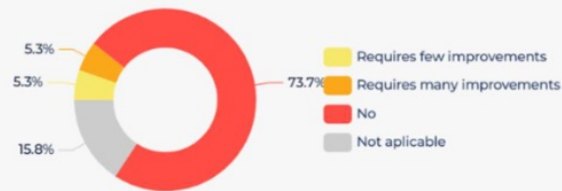
Formal mandates exist, but decision-making powers are frequently limited

WaterGov results



Examples from participating countries:

33.02 Are there financial incentives to reward the good performance of service providers?

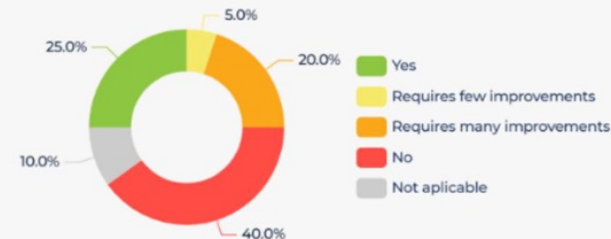


Total no. of countries/regions: 19



Financial incentives remain a missing link in utility performance

33.04 Are there reputational incentives for good performance by service providers?

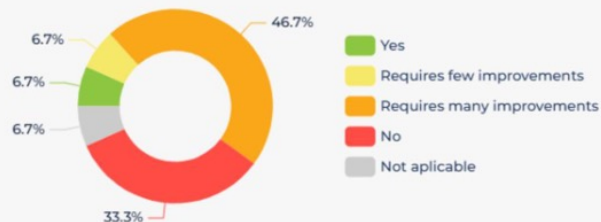


Total no. of countries/regions: 20



Reputational incentives remain a missing link in utility performance

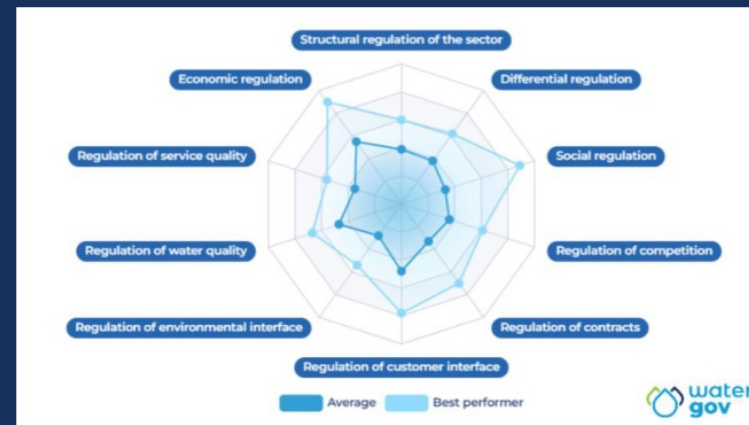
33.10 Are the sanctions envisaged dissuasive for service providers?



Total no. of countries/regions: 15



Regulatory sanctions are not sufficiently preventive



Implementation capacity varies significantly across regulatory functions

WaterGov around the world



Developed by LIS-Water with IDB support, WaterGov was first implemented in Latin America and the Caribbean and is now expanding to other regions.



Why this matters

- **Assessment** identifies gaps.
- **Benchmarking** provides context.
- **Action plans** translate evidence into reforms.
- **Monitoring** makes improvement continuous.
- The goal is **regulatory maturity** and **institutional learning**, not a league table of countries.
- The deeper ambition is a **global community of regulators** learning from each other.





Part IV: What are the challenges?



Challenges that will redefine regulation



The regulatory frontier is expanding from utility performance to wider systemic risks and challenges.

Climate resilience & scarcity

- Regulation must address water scarcity, resilience and drought and flood risks, not just service delivery.

Investment & asset ageing

- Connect financing, asset condition, long-term planning and affordability.

Affordability & inequality

- Tariffs should address social objectives, but social policy should be explicit, targeted and sustainable.

Circularity and new water sources

- Reuse, desalination, resource recovery and decentralised systems need fit-for-purpose regulation.

Emerging contaminants

- Regulation must keep pace with science as risks emerge across the water cycle.

Digitalisation & artificial intelligence

- Data quality, algorithmic accountability, cybersecurity and real-time monitoring are becoming regulatory issues.

The regulator of the future will manage uncertainty as much as it manages rules.



Part V: What should the future look like?



How regulatory institutions must evolve



Future regulators need fewer administrative burdens and stronger capabilities.

Stop doing

- Collecting data that nobody uses.
- Duplicating inspections.
- Prescribing operational details better left to service providers.
- Maintaining obsolete reporting requirements.

Do more

- Outcome design.
- Risk intelligence.
- Comparative performance analysis.
- Consumer insight.
- Investment and resilience oversight.
- Regulatory impact assessment.

Build new capabilities

- Data engineering.
- AI literacy.
- Cyber risk management.
- Climate economics.
- Behavioural insight.
- Rapid policy experimentation.

Work differently

- More cross-regulator coordination, international peer learning and professional networks.
- Clearer separation between policy choices and regulatory execution.

In regulation, less bureaucracy and stronger capability are the future.

Next-generation regulators



Regulators are moving from reactive compliance towards anticipatory, evidence-driven and adaptive regulation.

Traditional regulatory logic

Rules → Compliance → Inputs → Periodic reporting → Reactive intervention

- **Strengths:** legal certainty, consistency and minimum standards.
- **Weaknesses:** slow feedback, reporting burden and limited focus on outcomes.

Next-generation logic

Outcomes → Performance → Risk → Data → Anticipation → Continuous improvement

- **Enablers:** adaptive regulation, real-time data, AI-supported analysis, sandboxes, benchmarking and differentiated oversight.
- **Guardrails:** transparency, explainability, due process, human accountability and independent verification.

Artificial intelligence should support regulatory judgement, not replace human accountability for regulatory decisions.



Part V: What are the key takeaways?



Key takeaways

Six key messages emerge from the discussion.

1. Regulation is necessary

- **Water and sanitation are** natural monopolies with essential-service, public health and environmental responsibilities.

3. Compliance is not success

- **The real test** is whether regulation delivers better access, quality, efficiency, resilience, affordability and environmental performance.

5. The regulator must evolve

- Future regulators need **less focus** on procedures and **greater expertise** in outcomes, risk, data and innovation.

2. There is no universal model

- **Regulation depends** on sector structure, institutional capacity, economic conditions and social goals.

4. Data changes regulation

- **Benchmarking, digital data and risk analytics** enable proactive oversight.

6. The future is a compact

- It **combines** accountability, good governance, professional standards, transparency and continuous improvement.

The future of regulation is not about more regulation. It is about better regulation: more evidence-based, risk-based, adaptive and outcome-oriented regulation, supported by stronger institutions and professional capabilities.



**Strengthening water
governance worldwide.**

Thank you

Jaime Baptista (jaime.baptista@lis-water.org)



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