

University of Pisa

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Institutional and regulatory models in the water sector

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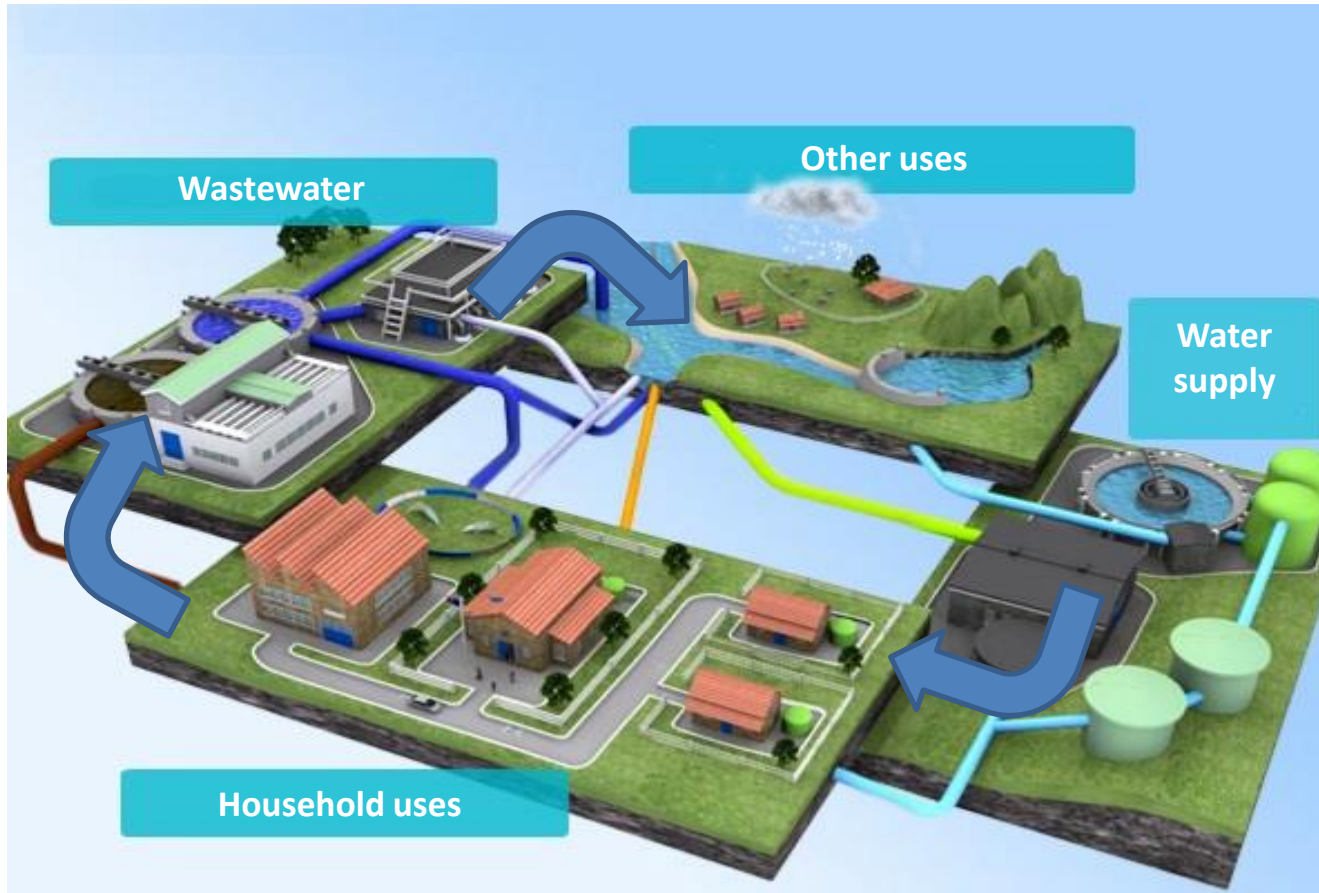


INTRODUCTION

Water and Wastewater services (WWS)



WWS are essential to human comfort, public health, environment, economy competitiveness and society's overall well-being.



Public service obligations

**Universal access
(coverage and affordability)**

Continuity

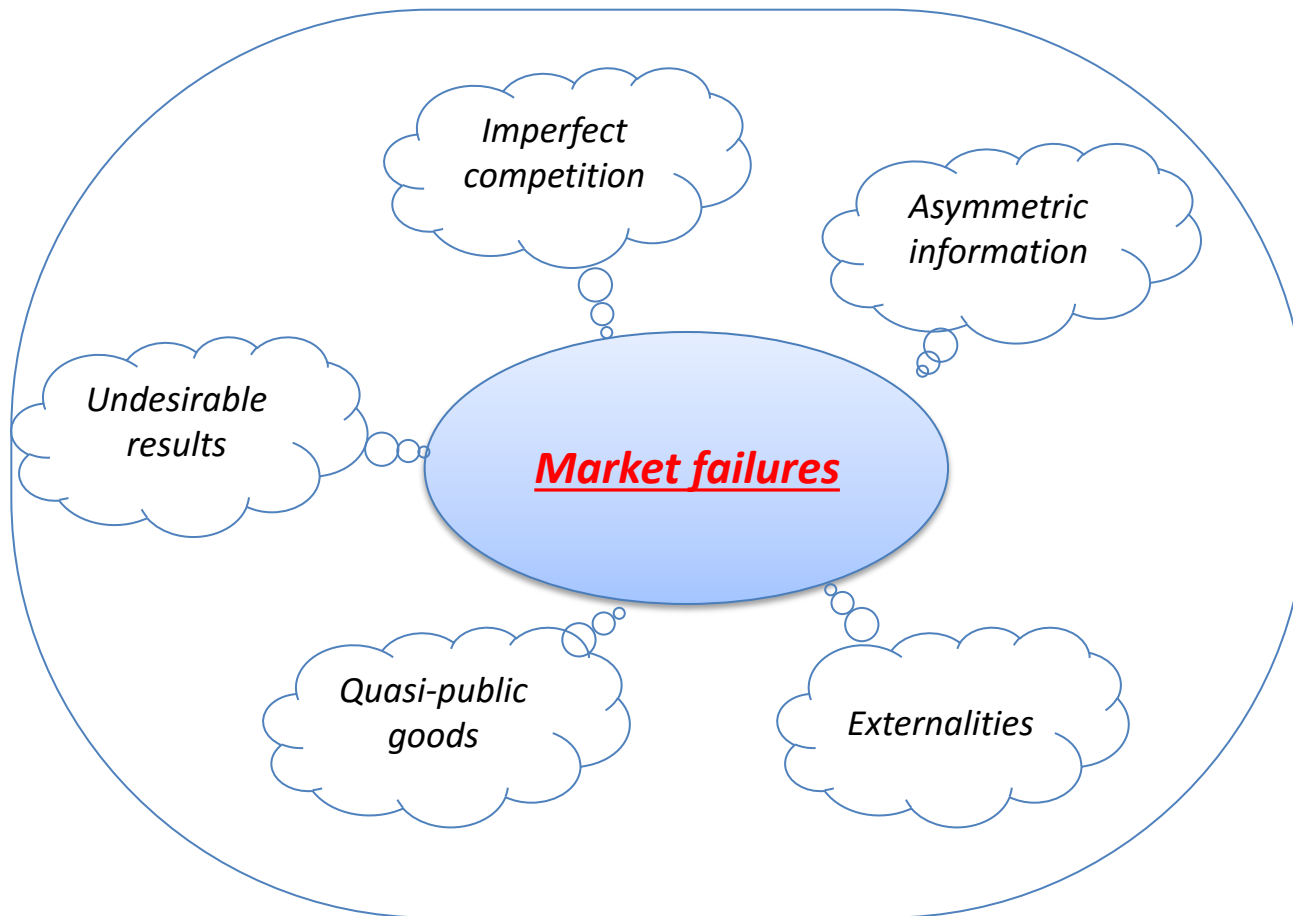
User protection

Quality of service

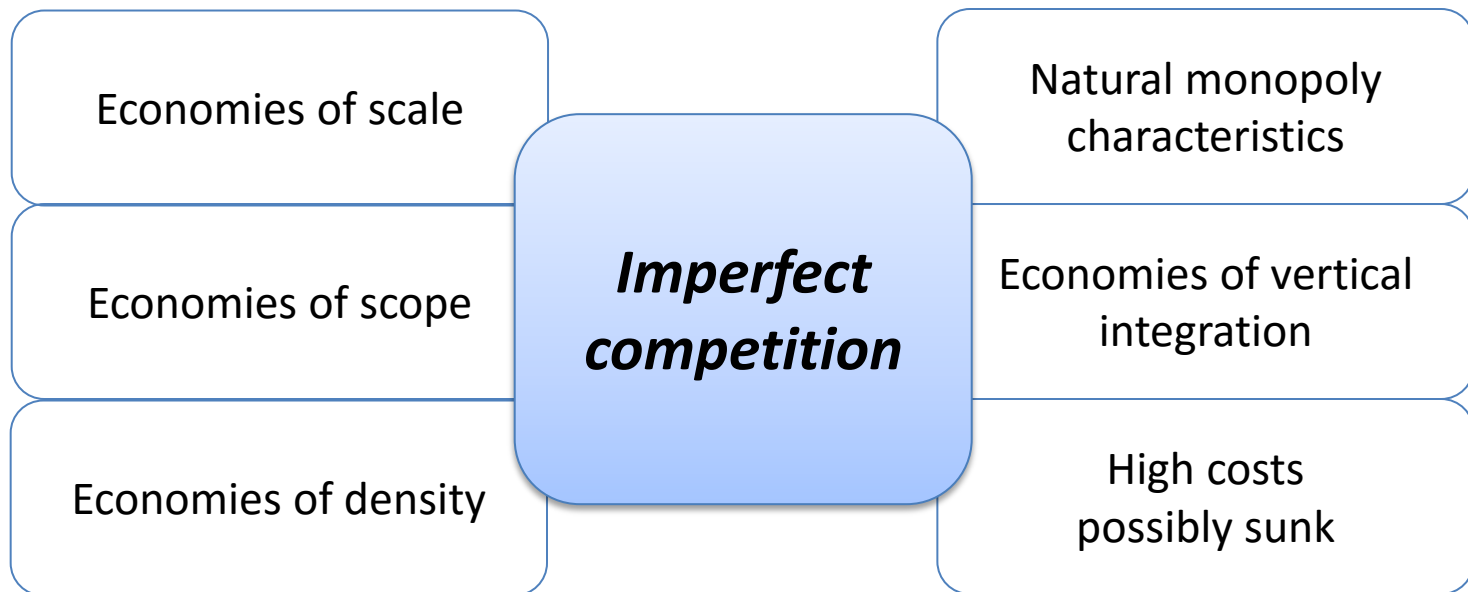
Main characteristics of WWS



Services of General Economic Interest (SGEI)



Monopoly and Strong Market Power



Paradigm shift



- In the last decades, **public authorities'** direct **intervention** in the economy has been **reduced**, contrasting with the **strengthening** of the State **regulatory functions** (*freer market, more rules*).



Paradigm shift



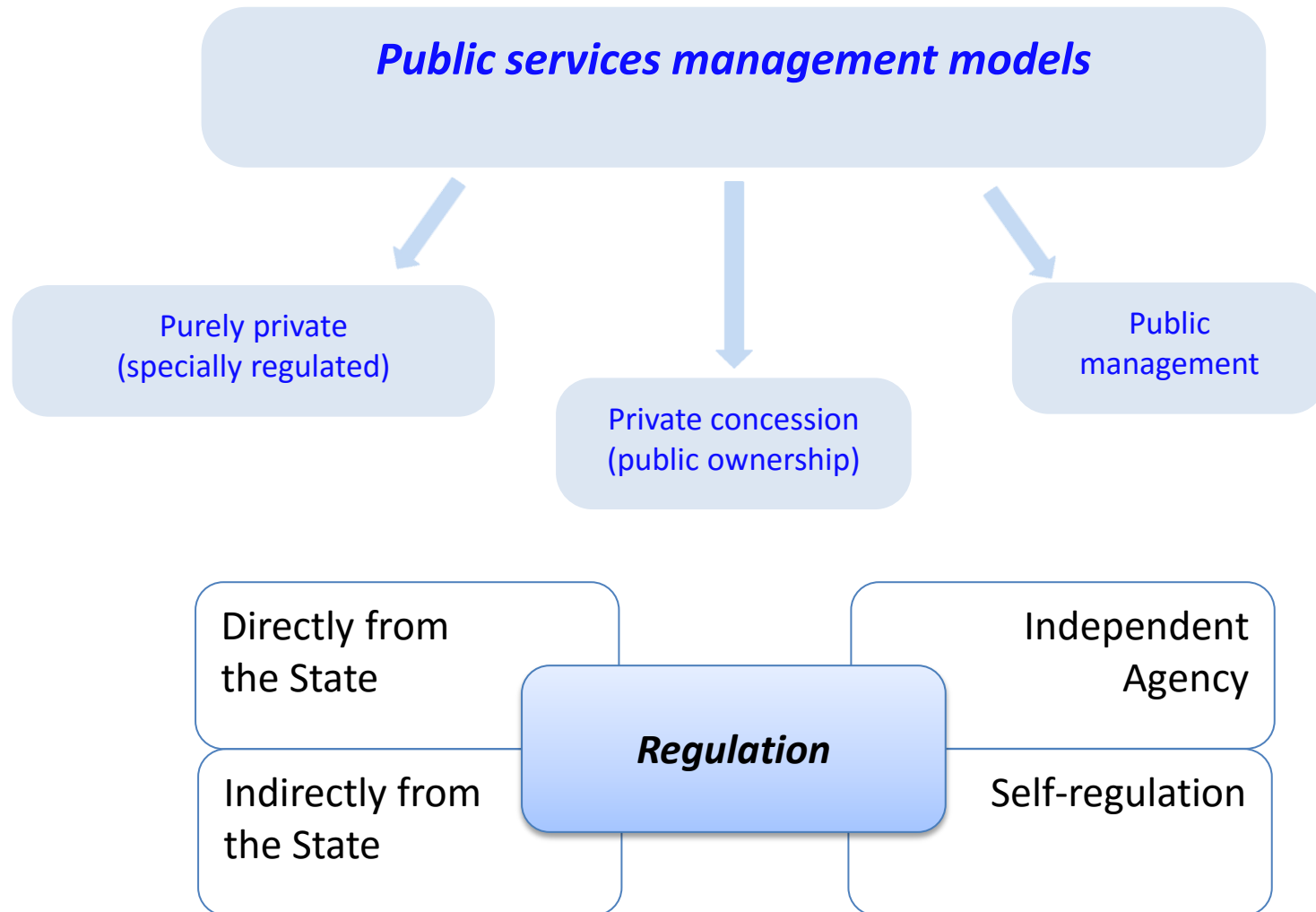
The developed 'mutations' led to a shift from the state interventionism paradigm to the market regulation initiative, mainly featured by:

a reduced State intervention in the economy (in the delivery of services of general interest)

the requirement to remove regulation from the government sphere

an 'escape' to private organizational forms from the public sector (creation of public companies and use of private law)

Different management models and types of regulation



TRADITIONAL MODELS

Public management model



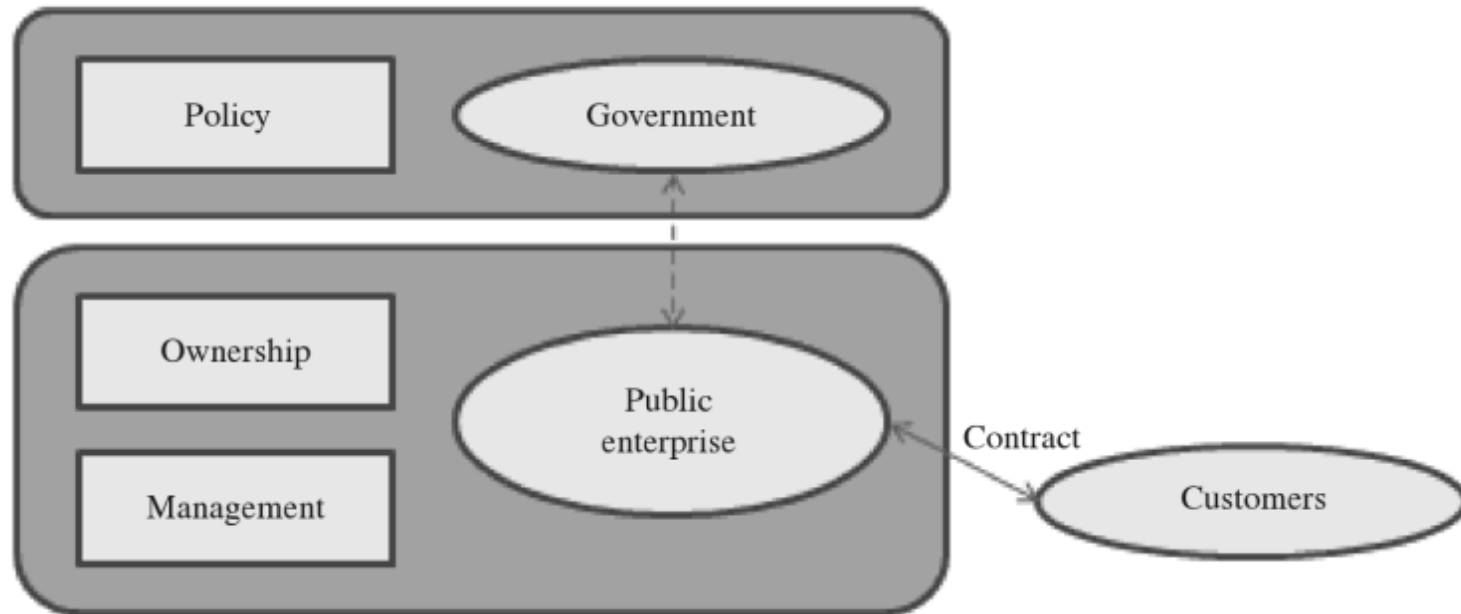
There are different types of public management arrangements, depending on their independence from the government.

Source: Marques (2011). Regulation of Water and Wastewater Services, IWA Publishing

	Direct <i>régie</i>	Indirect <i>régie</i>	Public company/ municipal authority
Legal entity (status)	No	No	Yes
Administrative and financial autonomy	No	Yes	Yes
Rules of law	Public	Public	Public/Private
Definition of tasks (assignment)	Municipal Executive	Municipal Executive	General assembly /Statutes
Supervision of the service	Municipal Executive	Municipal Executive	Municipal assembly
Tariff setting	Municipal Executive	Municipal Executive	Municipal assembly

Pure public management model	Public operator model
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Public operator model



The public sector is responsible for the management of the service and owns the assets;

Water supply service provided by **public companies (private law)**;

May be **little transparent** in an attempt to **avoid** any **responsibility** for some **inefficiency**;

This model is highly vulnerable to **state failures**.

This model needs some kind of regulation to be successful!

Public management model



The state, at all its levels, regulates itself by directly intervening in the market, thus maximizing social well-being;

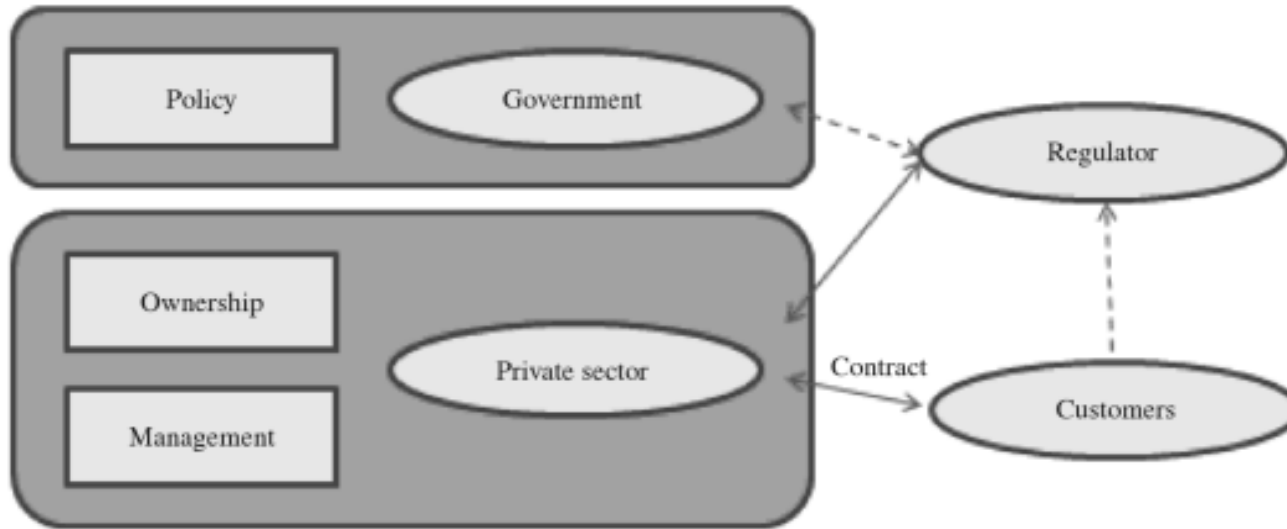
In theory, there is the possibility to promote **lower tariffs**, and to achieve further **social objectives**;

In practice, most WSS are inefficient with little transparency and a faulty management and lack strategic guidance;

Lack of market pressure, limitless budget, self-interest resource allocation (public choice theory) and political term defined strategies (short run);

The success of this model may not be specific of the sector, but due to transversal types of regulation (*e.g.*, social regulation, self-regulation).

English model



Water basin (regional) system management (scale);

A single regulatory independent authority (central level) that controls and supervises the WWS;

A **regulation (economic)** that fosters market conditions, protecting the customers and the operators (from opportunism). The customers are the centre of the model.

The success of the model is closely associated with the leading role played by the regulation and its effectiveness

Asymmetric information situation (the principal-agent problem)

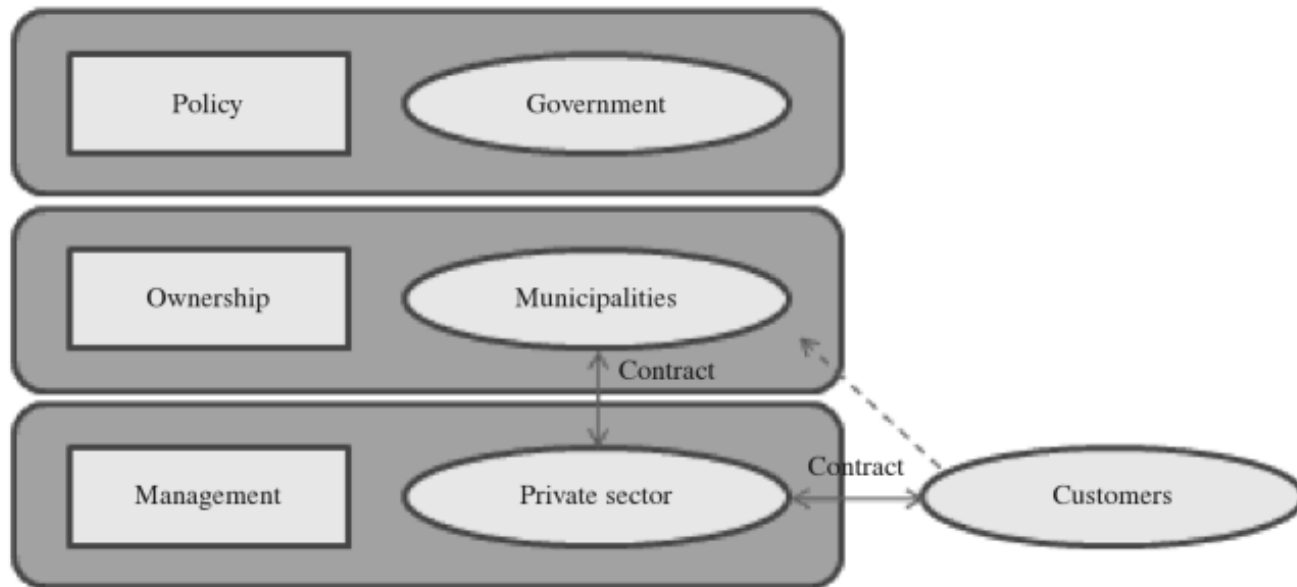
Short run and long run *equilibria*

Depending on the rate of return, different behaviors may arise (A-J effect, *gold-plate*, underinvestment, ...)

Transparency and accountability in regulation

Significant regulation costs (and lot of controversy)

French model



Based on **competition** for the market (franchising);

The success of the model depends on the number of competitors in the **public tenders and the effectiveness (completeness) of the contract design**;

Requires some **supervision (regulation)**, especially regarding the quality of service.

French model



Current trends



Possible traditional settings

Management by the state - public management model

Especially regulated private activity - English model

Concession to private providers - French model

The future trend

Licensed services

Contracted services

Regulation

Benchmark

Setting rights and obligations

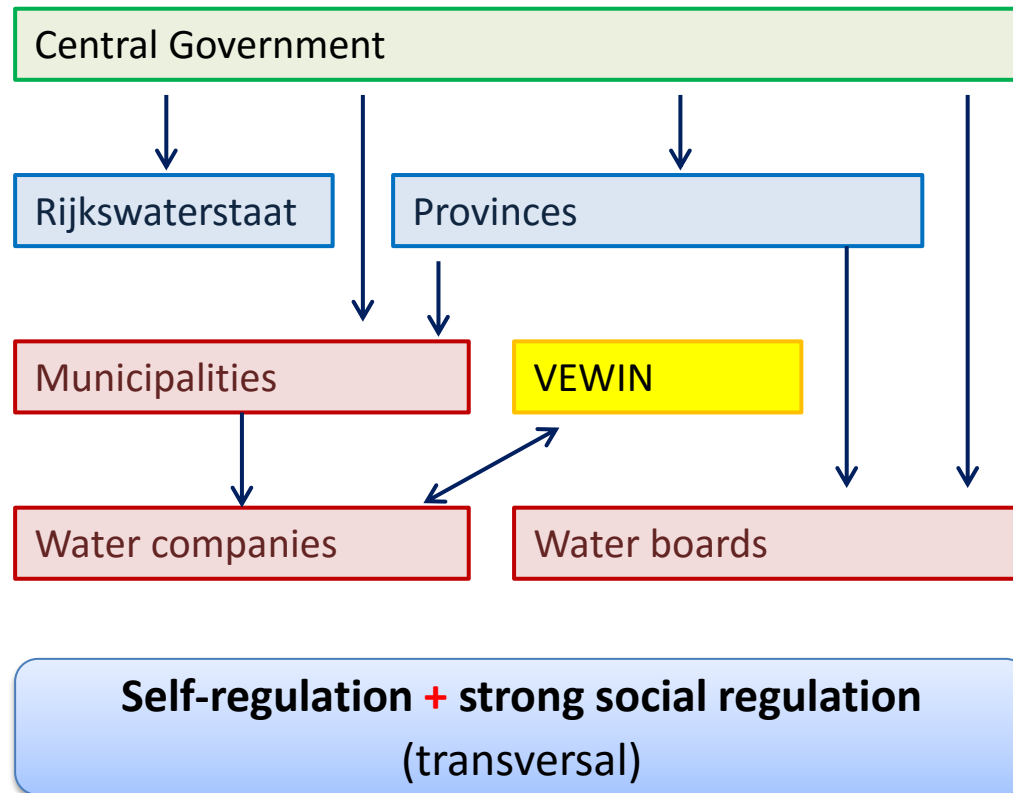
In a developed and modern society, ownership is of minor importance, what really matters is the ***value for money*** provided.

CURRENT MODELS

The evolution of the public operator model



The mentioned future **trend** also **affects** the **traditional models**!



The Dutch case

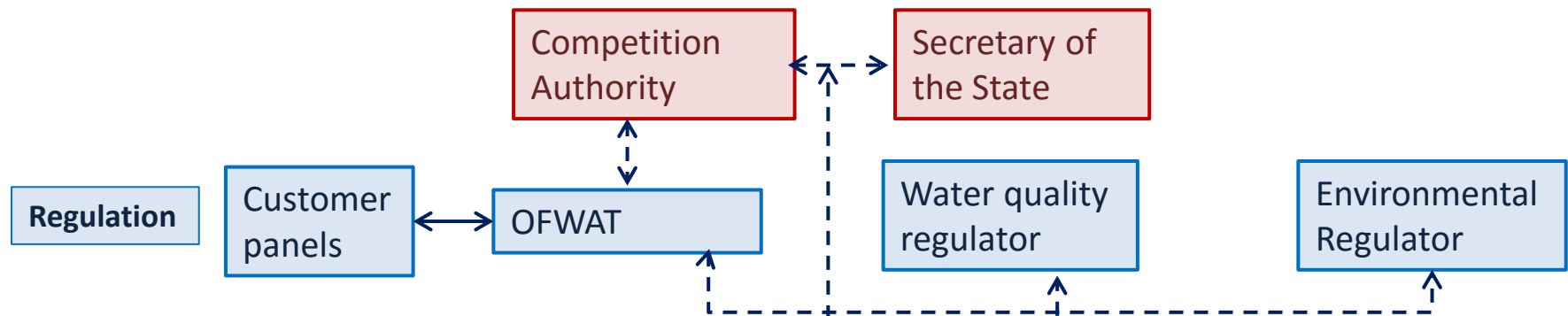
Role of VEWIN:

- Develops medium term development plans (10 years) ;
- Promotes benchmarking initiatives

The evolution of the English model

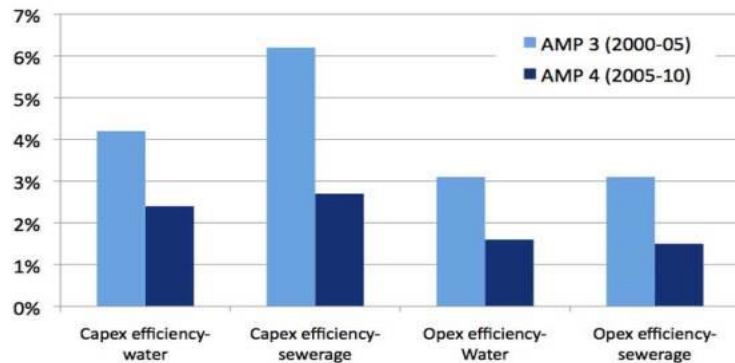


The mentioned future **trend** also **affects** the **traditional models**!



And the gains of the regulatory model are diminishing

% cost efficiency gains from comparative regulation AMP 3 versus AMP 4



Source: Ofwat future price limits impact assessment, 2011

- Regulation may be too costly, reducing the sector's attractiveness;
- There is a continuous need to adapt regulation to the sector's characteristics and needs.

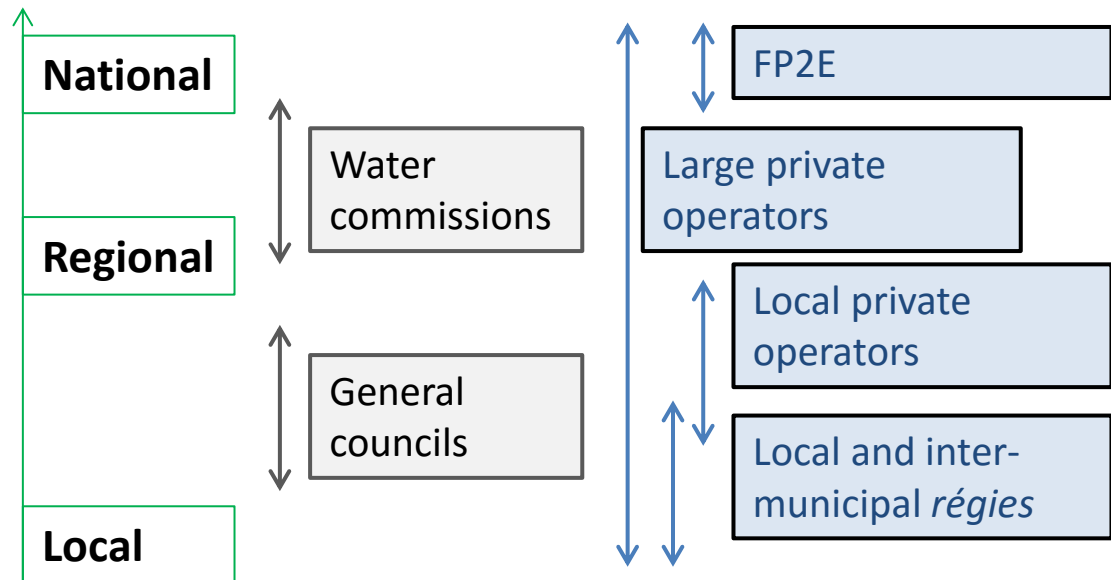
The evolution of the French model



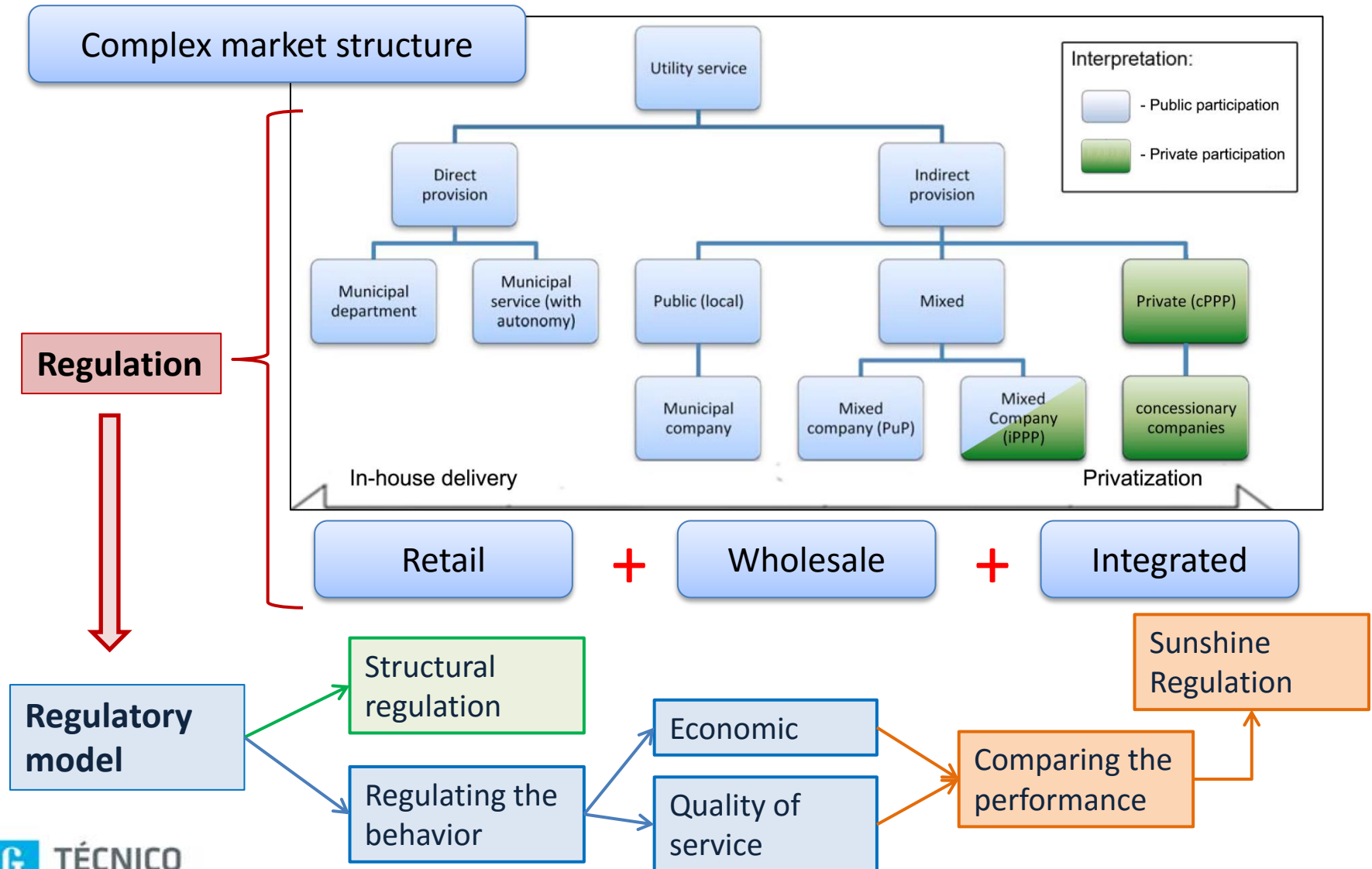
The mentioned future **trend** also **affects** the **traditional models**!

Framework, monitoring, technical support, financial support and management

- The Sapin Law (Duration of contracts);
- Charter of essential services;
- Improved role of Water Commissions (which use Pis);
- The role of Audit Office.



The case of Portugal



The case of Belgium



A **mix of models**: the public operator model and 'French' influences!

BelgAqua – National association that stimulates **scientific studies**, **technical**, **economic** and **administrative work** (**AquaBru**, ...**Flanders**, ...**Wal**)!



Brussels

- HydroBru (Intercommunale) and VivAqua (public regional company)
- IBGE (Specific institution)
- AquaBru



Flanders

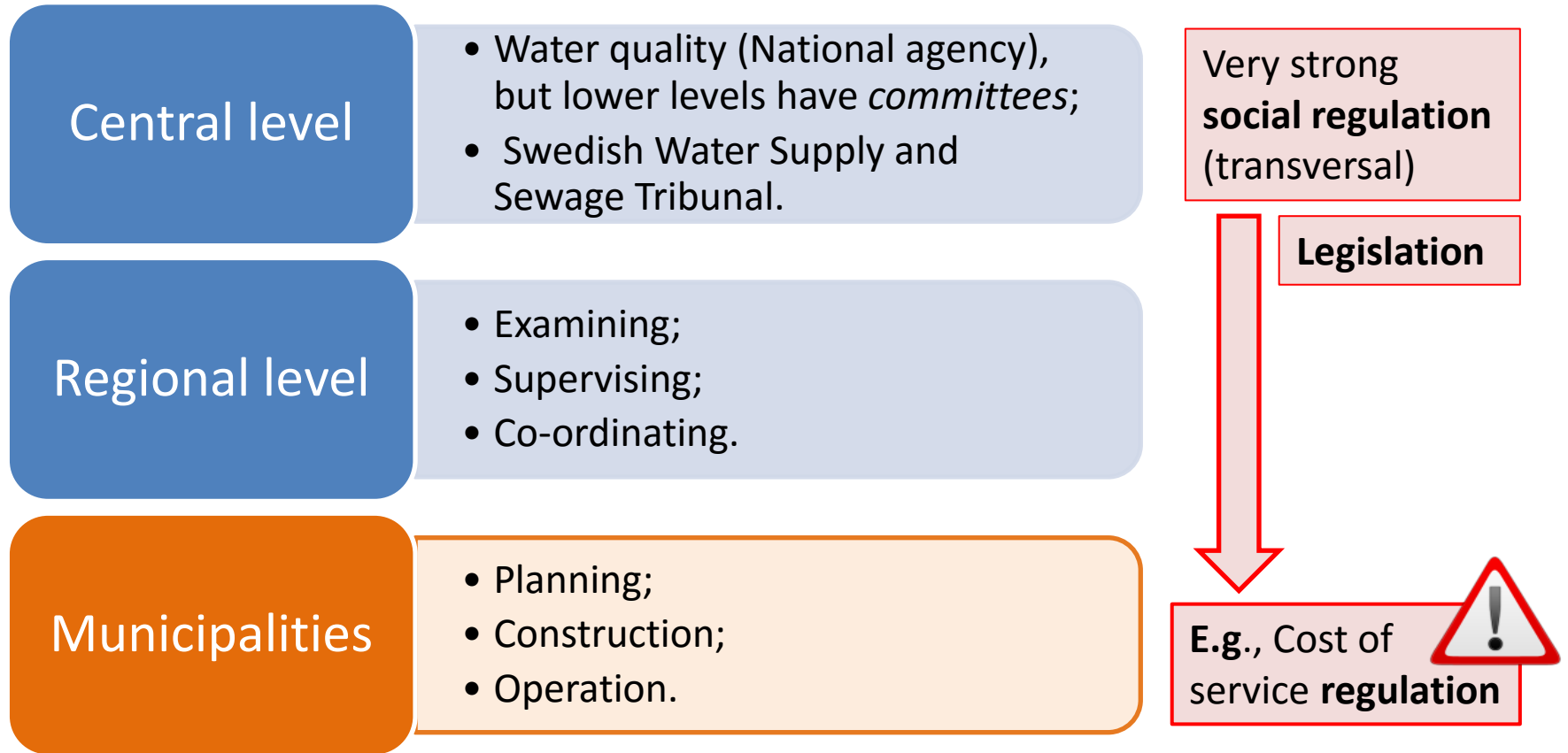
- DeWatergroep and Aquafin (regional public companies)
- VMM (Internal independent agency)
- AquaFlanders



Wallonia

- SWDE (regional public provider)
- Several *Intercommunales*
- DGARNE (Directorate General)
- AquaWal

The case of Sweden



A **mix of models**: the public operator model and 'French' influences!

The trend



All over the world, the trend is:

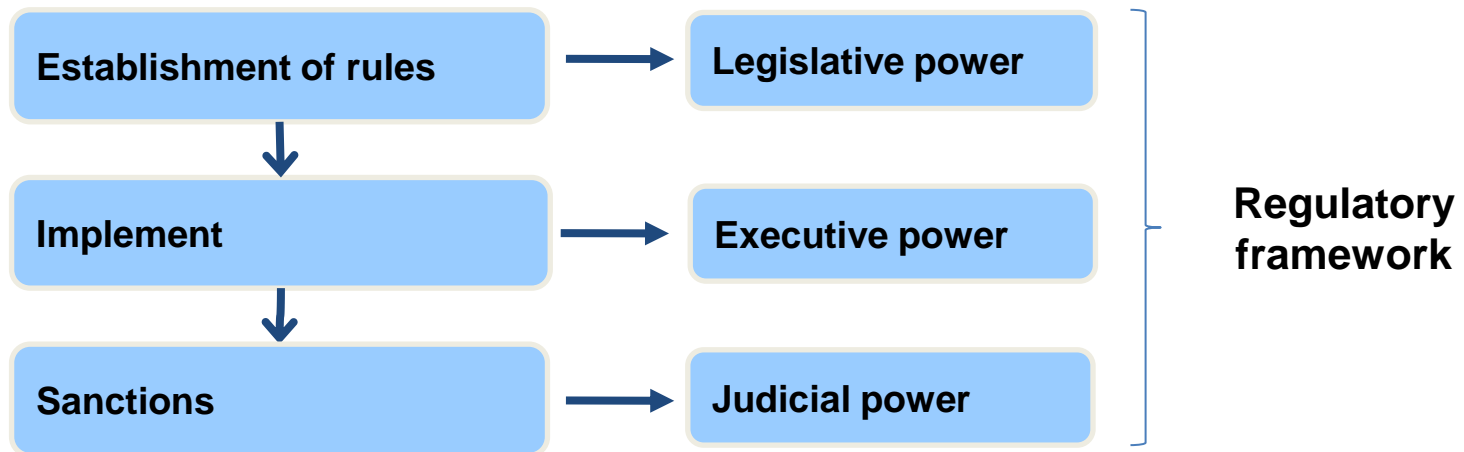


THE NEED FOR REGULATION

The concept and scope of regulation



- **Regulation** is related to **establishing and implementing the “rules of the game”**, that is, a set of specific rules required for an adequate provision of water and wastewater services, always defending the public interest;



Regulate what? And Who?

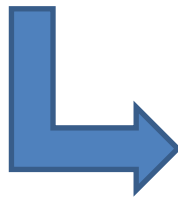
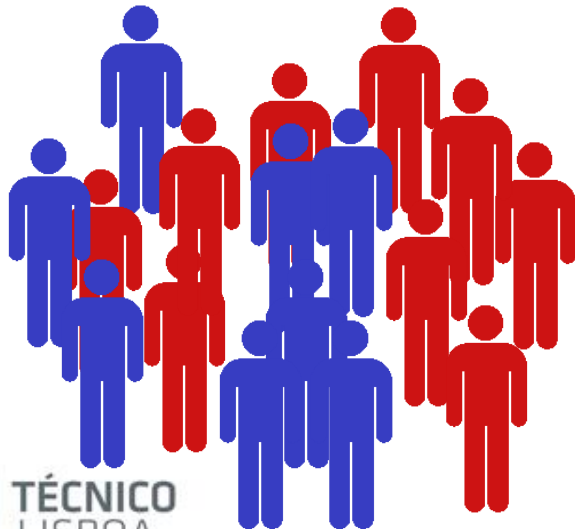


- *To reduce the market failures effect*



In private operators, the nature of their interests is known (i.e. **profit**)!

But what about the public operators?
Social Welfare? Or pervasive particular/political interests?



Regulation is a requirement regardless of the operator's nature!

Regulation

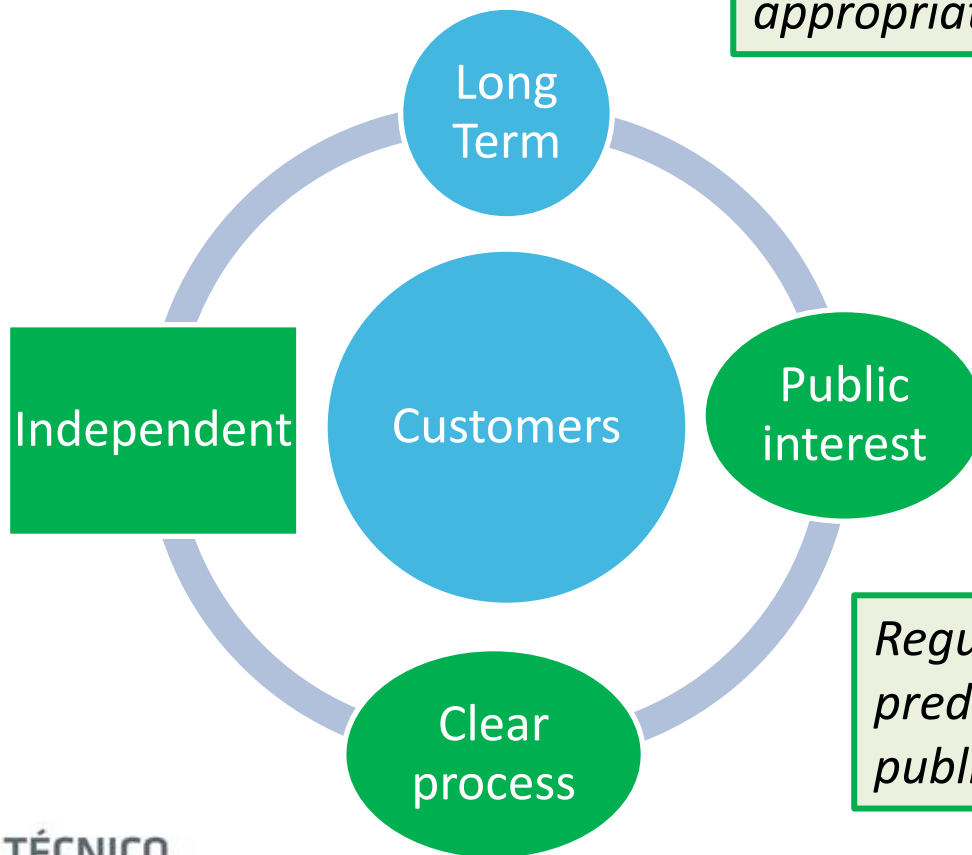
Long
Term

Customers

Avoid consensual and convenient short term options that jeopardise the long-term sustainability (e.g., postponement of investments).

The users must be the centre of regulation. Several service obligations must be defined and respected (e.g. universality, equity, ...).

Regulation



Financial, managerial and operational independence (e.g., political cycles) and appropriate tools (e.g. sanctions, ...).

Regulatory processes should be predictable, transparent and allow public participation.

Requisites of regulation



Regulation has to be **assertive**, however, it should be **‘just enough’**!



Too strict regulation may disrupt the market, and harm innovation!



Positive externalities

Portugal – Blocked private sector participation!

UK – Significant loss in innovation stimulus (lack of incentives)!

The European case



WWS are poorly regulated in Europe, at least, by sector specific regulation in comparison with other network industries. Why?

- WWS provision is, as a rule, a responsibility of local administrations;
 - Existence of transversal regulation coupled (or not) with self-regulation;
 - Private participation is mostly done through contracts (contractual regulation).
- ✓ Regulation evolved into a more **participative and contractual regulation** to promote greater accountability of all stakeholders and to mitigate asymmetric information issues;

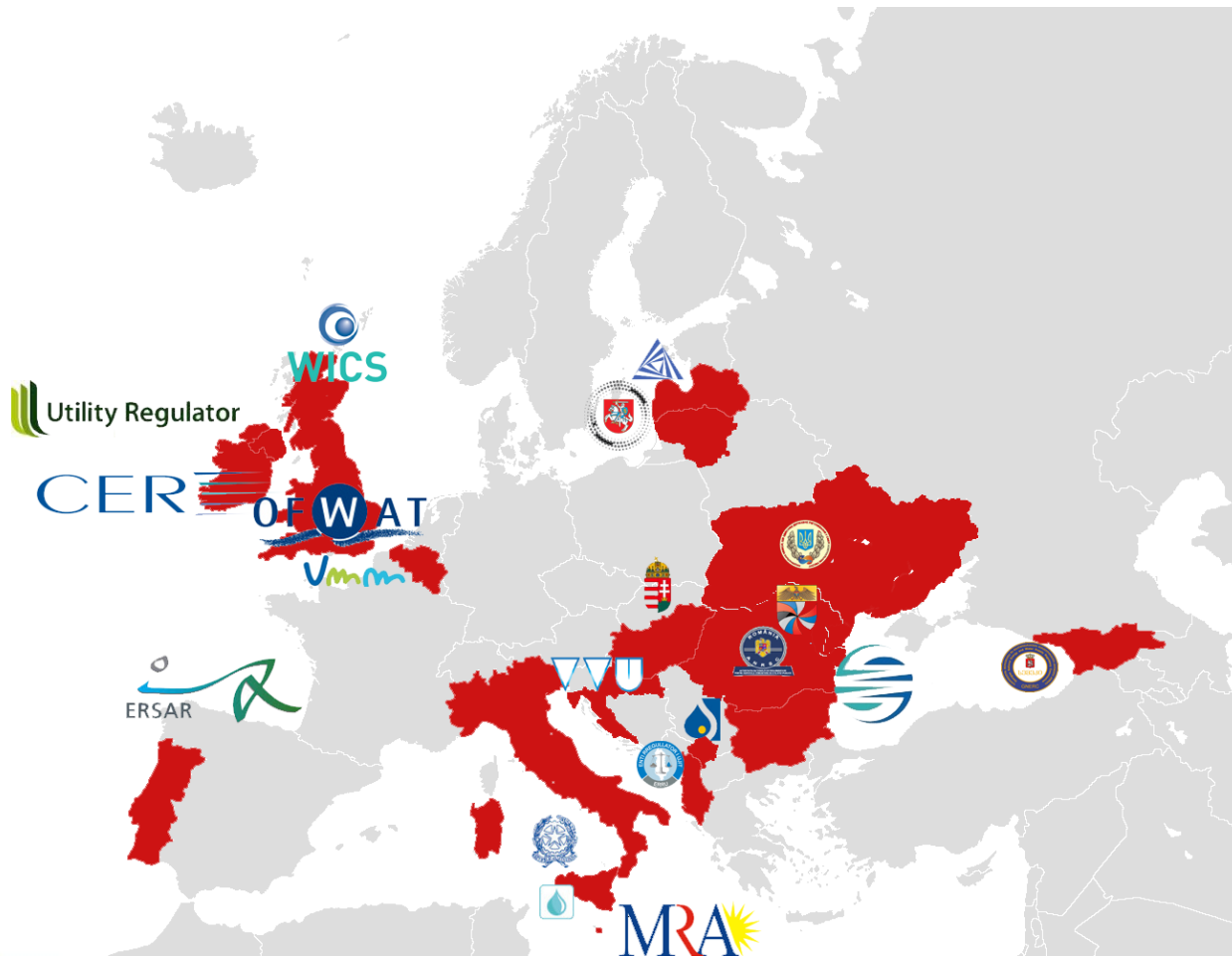
Recent objectives

- Promote competition;
- Reinforce social regulation.

Traditional objectives

- Promote efficiency;
- Protect the customer interests (OSGEI);
- Self financing;
- Predictable procedures;
- Sustainable and robust systems.

Main European water regulators



Others

- Several associations that develop benchmarking procedures
- Some national agencies have water related regulatory activities
 - Denmark
 - Norway
 - Spain
 - (...)

MITIGATING RISKS WHILE SIGNING CONTRACTS

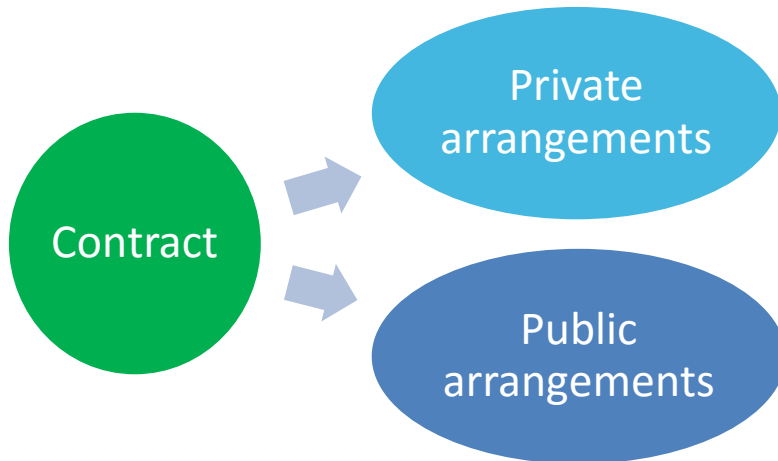
Signing contracts



A **contract** integrates the **setting** of **duties** and **rights**, the objective is to specify **who** **does what**!



Contract features



CAUTION

Design and management

Risk management

Contract implementation stage

Contracts are, by definition, mostly incomplete.

Contract renegotiation

Very important to complement regulatory efforts

Next presentation, contract issues will be discussed thoroughly!

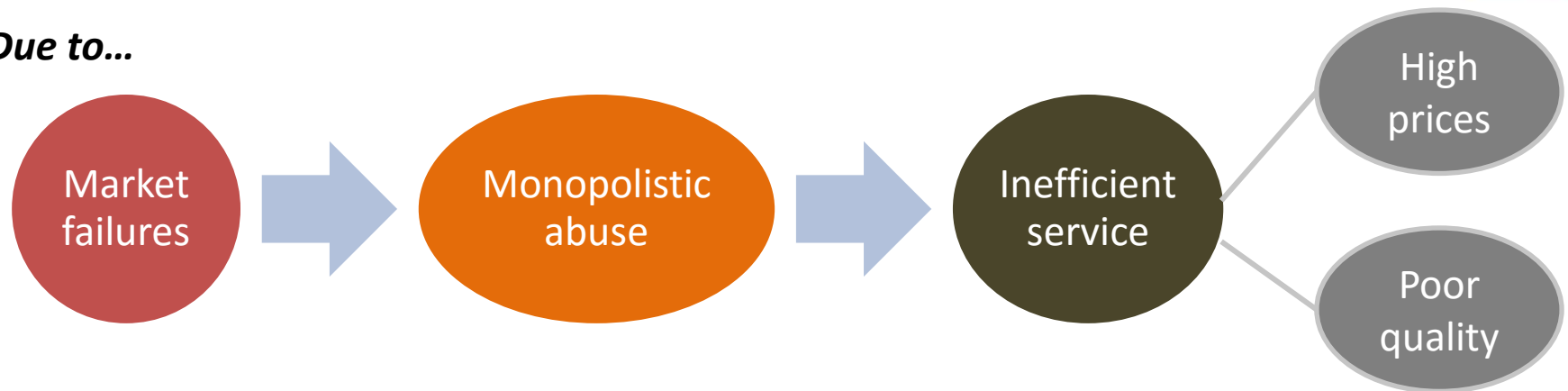


THE USE AND ABUSE OF BENCHMARKING

Regulation and benchmarking



Due to...



Benchmarking is important as an **incentive reorientation** for **efficiency improvements** by means of a **comparative analysis** based on the **information** obtained from 'all' the companies.



- The **objective** is to create an **artificial** form of **competition** between the utilities!

Benchmarking



*“**Benchmarking** can be defined, simply, as the process of **seeking excellence** through systematic **comparison of performance** measures to **reference standards**”*

Metric benchmarking



Process benchmarking

✓ Deal with internal performance over time and compare it with the sector's peers.

✓ Identifying work procedures to be improved through a step-by-step process mapping and, then, searching for the best practices that lead to superior performance.

Benchmarking to set operators' **prices** and **tariffs**

Comparing and publicly **discussing** operators' **performance** (Sunshine regulation)

Benchmarking procedures



- The most widely used methodologies for assessing the quality of service:
 - Performance indicators (PI).

Service & Performance

- ✓ Coverage;
- ✓ Unaccounted for water;
- ✓ Continuity;
- ✓ ...

Financial & Others

- ✓ Affordability;
- ✓ Cost and Staffing;
- ✓ ...

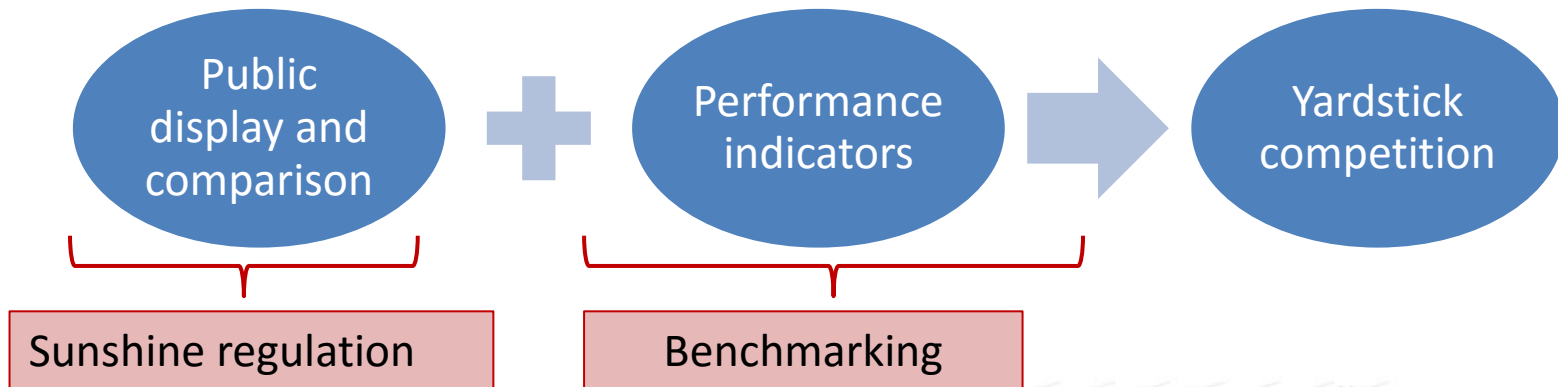
Customer Experience		
Service incentive mechanism (SIM)	69.90	score
Internal sewer flooding	78	incidents
Water supply interruptions	0.61	hrs/prop
Water quality	99.97	%
Environmental Impact		
Greenhouse gas emissions	521.7	KtCO ₂ e
Discharge permit compliance	97.46	%
Satisfactory sludge disposal	99.39	%
Pollution incidents (water)	2.80	No./10,000km
Pollution incidents (sewerage) – category 1, 2 & 3	8.08	No./1,000km
Pollution incidents (sewerage) – category 1 & 2	2.54	No./10,000km
Reliability and Availability		
Serviceability – water non infra	Stable	
Serviceability – water infra	Marginal	
Serviceability – sewerage non infra	Stable	
Serviceability – sewerage infra	Stable	
Leakage	464	ML/d
Security of supply index (SOSI)	99	index
Financial		
Post-tax return on capital	5.7	%
Credit rating	BBB+	
Gearing	58.7	%
Interest cover	3.7	

Going further...



- The approach followed is, in the vast majority of cases, that of **sunshine regulation**.

In short...



Is it enough?

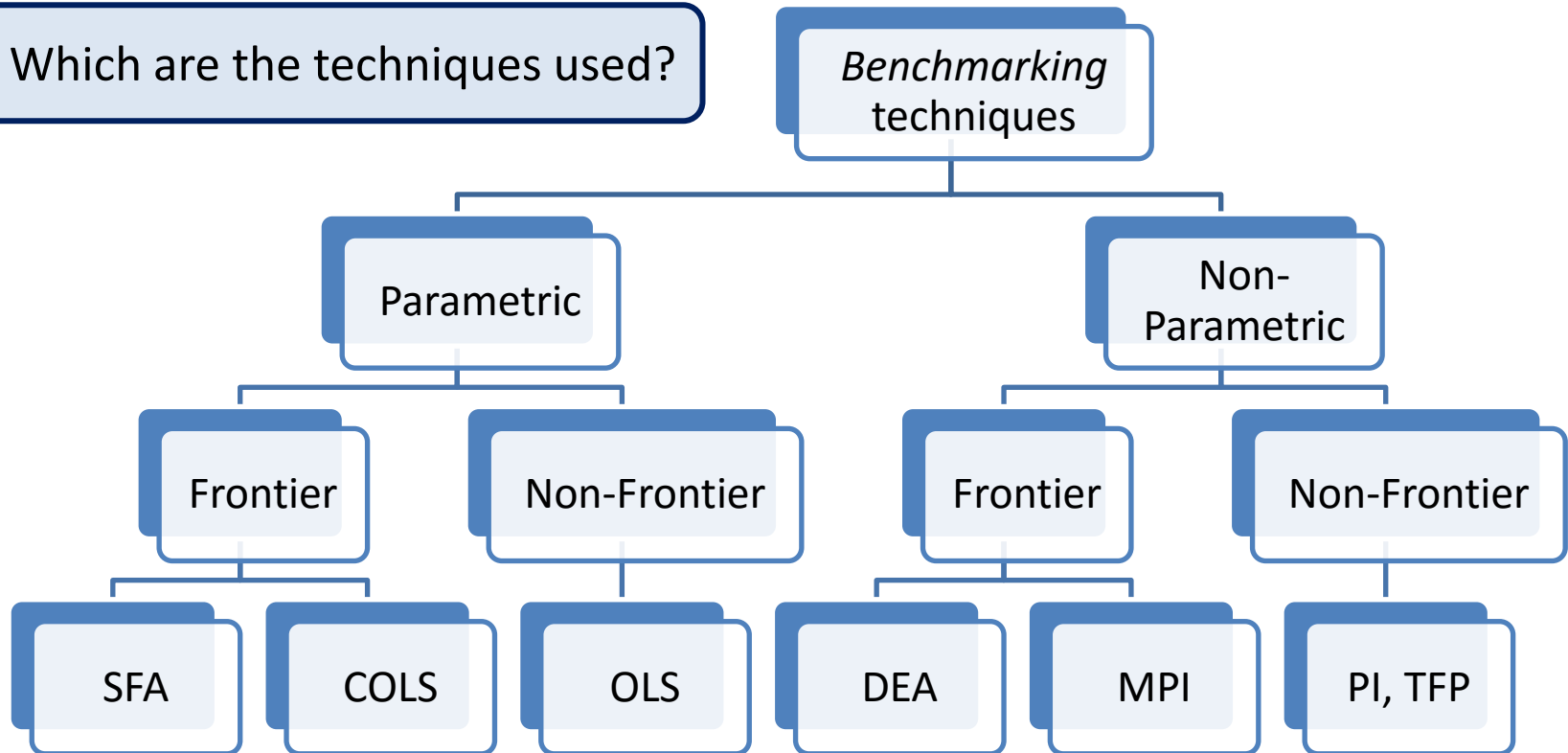
Carrot and stick approach!



Benchmarking techniques



- Which are the techniques used?



- Stochastic frontier analysis (SFA)
- Ordinary and corrected least squares (OLS and COLS)
- Data envelopment analysis (DEA)
- Malmquist productivity indexes (MPI)
- Performance indicators (PI), Total factor productivity (TFP)

In future presentations, benchmark will be discussed thoroughly!



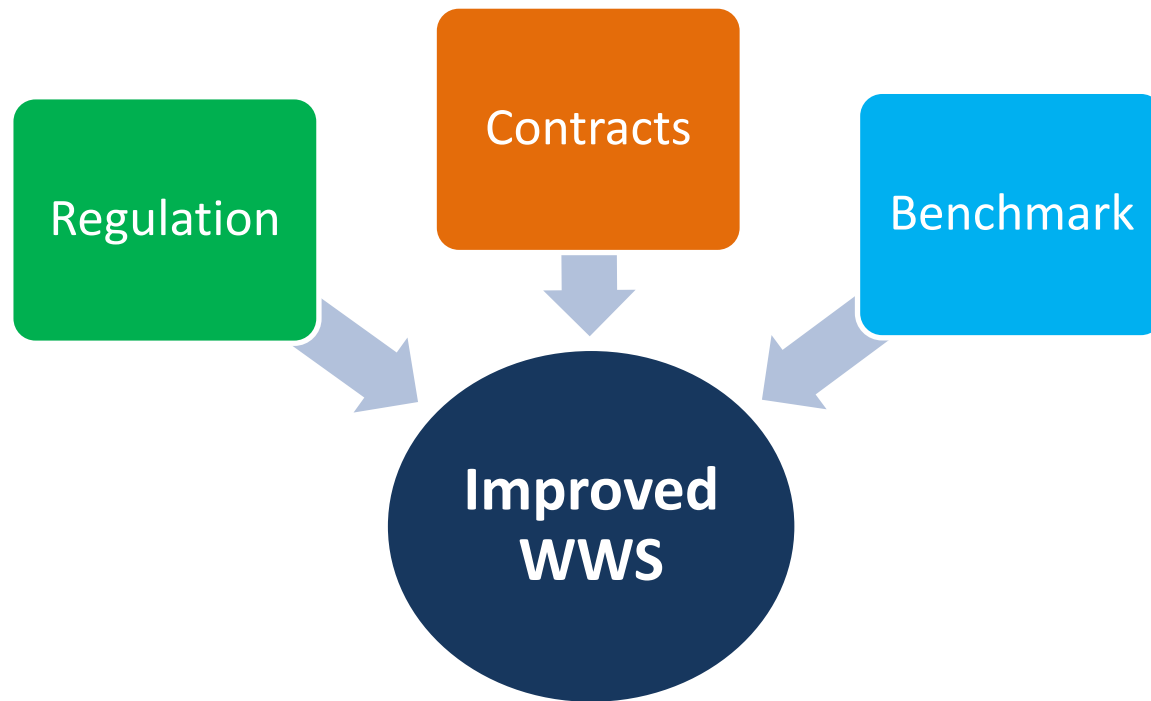
CONCLUDING REMARKS

- There are **different models** available, and *a priori*, it is **impossible** to select one as the **best model**. Indeed, **all** the **models** can work depending on the **circumstances**!

There is **no** such thing as
one size fits all!

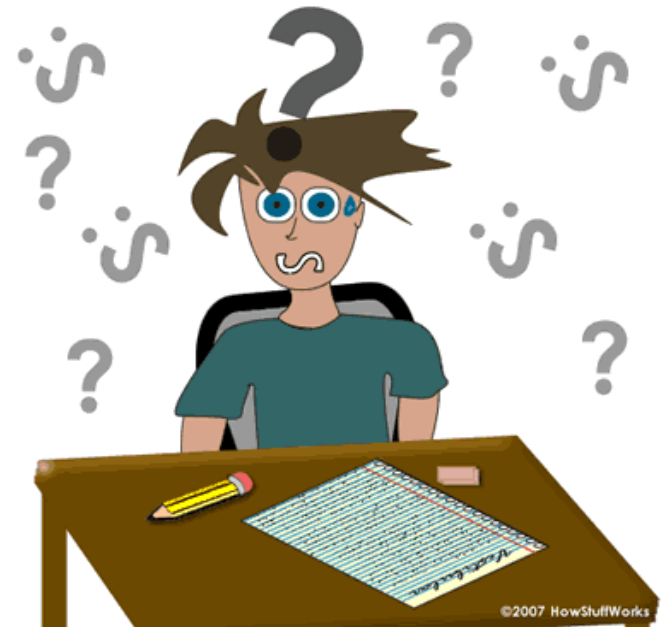
- Still there are always **trends**, and those include the increased use of **regulation**, **contracts** and **benchmarking** procedures, irrespective of the **delivery model** selected!





*The purpose is clearly to increase the **value for money** by improving **efficiency, innovation and risk management** (e.g., mitigation).*

Questions



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