

# **Trends in European Management of Water and Sanitation Services**

**Liberalization, regulation and role of private sector**

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# The “neo-liberal” view ...

- Why is PSI *desirable*

- promise of higher efficiency: markets expected as better allocators of resources than state officers
- WatSan are complex industrial activities and require professional water companies with a business approach
- Public sector failures: raiding of funds, diversion of cash flows, allocation of monopoly rents to “private agendas” of policymakers, lower efficiency

- Why is PSI *necessary*

- commercial WatSan as a solution to the crisis of the traditional model based on expanding supplies and public spending
- need of professional expertise and business-oriented mentality
- lack of managerial-financial capabilities in the public sector, especially (but not solely) in LDCs
- alleviate the burden suffered by public budget ⇔ need to rely on capital markets for gathering financial means

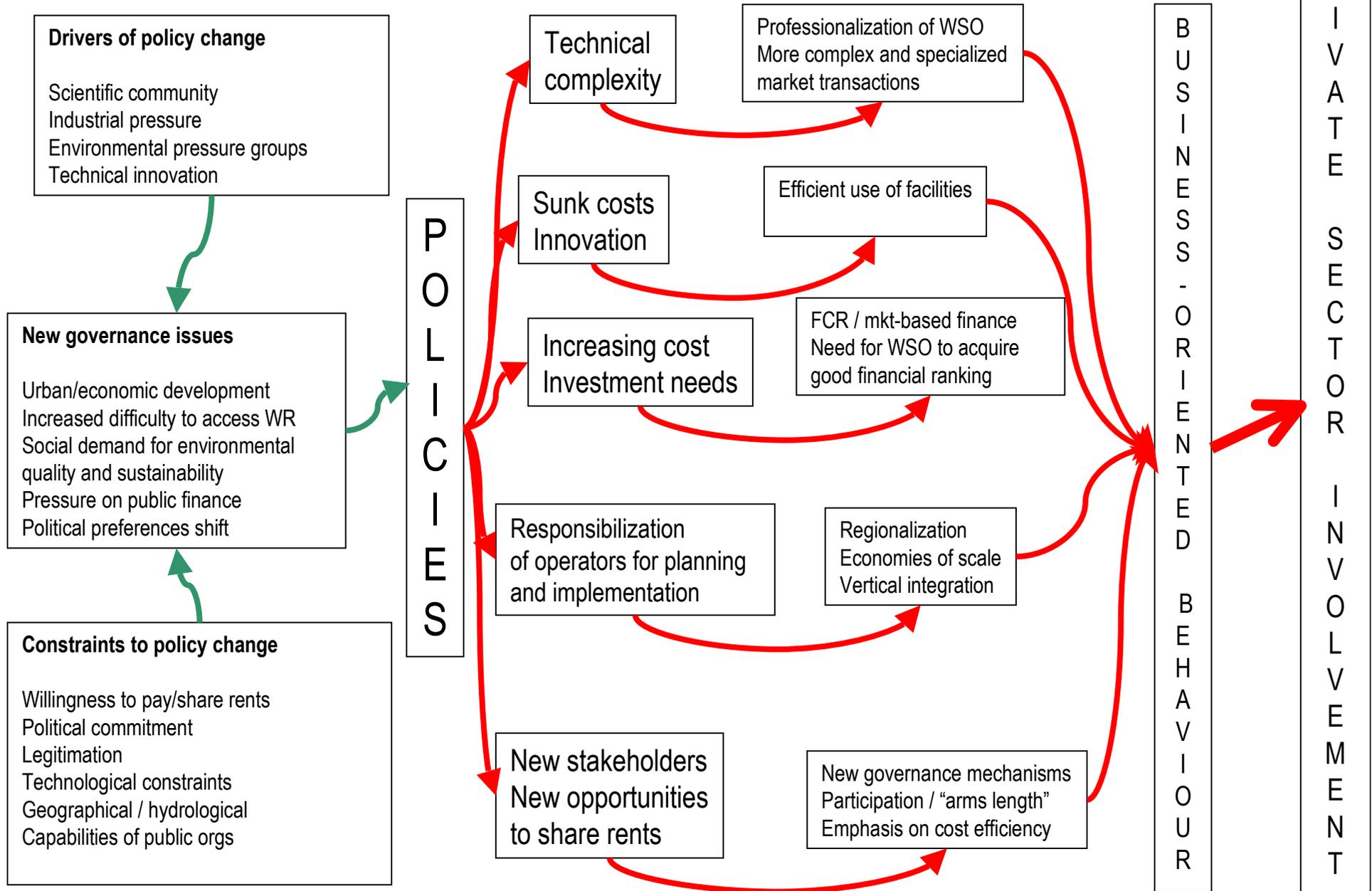
# ... and some problems

- Why is PSI **problematic**: economic reasons
  - evidence that privatization alone does not improve efficiency  $\Leftrightarrow$  competition is needed, but not easy in the water sector
  - WatSan as a natural monopoly  $\Leftrightarrow$  no direct competition (in the market) possible; pro-competitive regulation feasible but imperfect
  - Long economic life of assets + large capital outlays to be anticipated  $\Leftrightarrow$  business very vulnerable in the long term;
  - need to shorten repayment schedules, guarantee revenues and secure debt service (usually at a high cost for consumers)
  - Dynamics mostly exogenous (eg env policy)  $\Leftrightarrow$  need to ensure flexibility and adaptability of operators' commitments (renegotiation is a source of transactions costs)
- Why is PSI **problematic**: social and political reasons
  - Politically hot issue: water perceived as a social right, “commodification”
  - Need to balance affordability with cost recovery and financial viability
  - Institutional counterbalances not easy to put in place
  - Risk of corruption

# As a matter of fact:

- Evidence against PSI
  - Schemes sponsored by international institutions during the 90s failed to deliver and caused a lot of problems
  - In most developed countries, public management performs well and often entails lower costs
  - FCR and economic efficiency are compatible with public management
  - Historical record of corrupted relations with PS, favoured by discretionary and opaque regulation
- Evidence in favour of PSI
  - Evidence of successful PSI in many cases
  - Failures in PSI do not mean that problems can be more easily and effectively solved by public sector, as the delays in achieving MDG show
  - Biased criticism: too severe when private, too loose when public
  - PSI can take place in many different ways, not only “concessions”
  - Institutional learning and capacity building as a key aspect
  - Corruption is high in procurement also ⇔ public is not immune

# Drivers of WatSan modernization



# Modernization vs. privatization

- Modernization does NOT necessarily imply privatization, but requires that WatSan undertakings are able to meet the challenges
- This usually implies “enterprising”:
  - Adoption of a business-oriented mentality (≠“profit-making”)
  - Capacity to gather finance from the capital market
  - Capacity to manage complex value chains on a global scale
  - Economies of scale (especially for risk-pooling and self finance)
- At odds with “traditional” public sector undertakings
  - Constrained by institutional boundaries
  - Constrained by politics
  - Constrained by public sector governance rules (budgeting, tendering etc)
  - Constrained by the dominant administrative and bureaucratic culture

# Wrong questions about PSI

- Is “private” better/worse than “public”
- Does ownership of water companies matter
- Does ownership of assets matter
- Is it justified to make profit on essential services ?
- Will “private” mean “more expensive”?

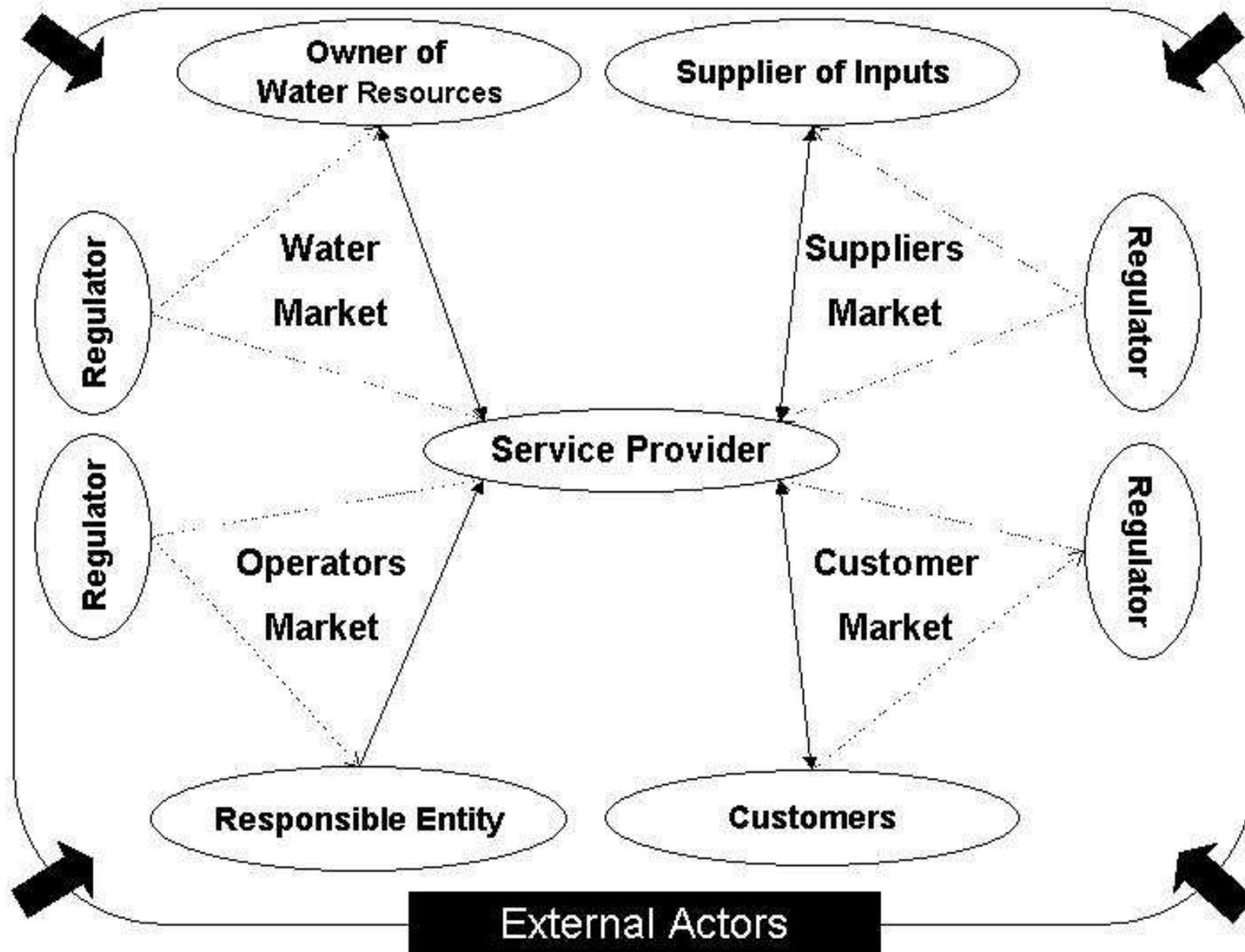
# The right questions

- Who holds responsibility for providing the service
- What are the regulatory principles, and how are they established and enforced?
- What are the obligations (of water companies, customers, public authorities) and how are they defined and adjusted along time
- Who is responsible for making investment and ensuring that assets can perform in the long run
- Who pays what (and how)
- Where does capital come from, and how is it gathered
- How is risk allocated (consumers, taxpayers, investors)
- What kind of competition does actually take place

# Four (conflicting) dimensions of sustainability

<p><b>Environmental sustainability</b> Discourage depletion of critical natural capital</p> <ul style="list-style-type: none"> <li>◆ Guarantee ecological functions of water natural capital</li> <li>◆ Minimize the recourse to “supply side”</li> <li>◆ Minimize the alteration of natural outflow patterns</li> </ul>	<p style="text-align: right;"><b>Equity</b></p> <p>Guarantee that “merit uses” have due access to water resources under fair and equitable conditions</p> <ul style="list-style-type: none"> <li>◆ Identify “water needs” (<math>\Leftrightarrow</math> basic environmental functions)</li> <li>◆ Keep level and dynamics of prices below the threshold that makes it unaffordable for some users</li> <li>◆ Achieve an equitable and democratically accepted way to share the cost of managing water resources</li> </ul>
<ul style="list-style-type: none"> <li>◆ Guarantee financial stability of water systems</li> <li>◆ Compensate adequately economic resources that are used as inputs</li> <li>◆ Cash flows should guarantee the conservation of value of physical assets</li> <li>◆ Each new infrastructure binds the next generation to cover its cost in the future <math>\Leftrightarrow</math> minimize the creation of artificial capital</li> </ul> <p><b>Financial sustainability</b> Guarantee long term reproduction of physical assets</p>	<ul style="list-style-type: none"> <li>◆ Allocative efficiency: available water should be allocated in order to privilege uses with the highest social value</li> <li>◆ Allocative efficiency: the cost of provision of water services (to non-merit uses) should be confronted to their value</li> <li>◆ X-efficiency: costs should be as close as possible to the minimum (intended in dynamic terms)</li> <li>◆ Not encourage over-capacity, over-staffing, gold-plating etc</li> <li>◆ Cost coverage should be intended as for efficient costs only</li> <li>◆ Regulation should ensure an optimal allocation of risks among shareholders, users and taxpayers</li> </ul> <p style="text-align: right;"><b>Efficiency</b></p> <p>Guarantee that water is allocated to its most beneficial uses and economic resources are not wasted</p>

# The value chain of WatSan



# Transactions along the value chain of WatSan

- Market I: operators vs. responsible entities
  - WatSan as a service of general economic interest implies that a public entity assumes responsibility for providing the service and decide about network extension, connection, performance targets, strategies
  - WatSan implies many components of public good and externalities that should be specified by the public sector
- Market II: operators vs. owners of water resources
  - WatSan have access to water resources that are owned by the community as a public good
  - Regulations about how to access the natural resource and discharge are imposed by the state
  - Ev. trade-offs and conflicts with other water users
  - IWRM and management of the resource  $\Leftrightarrow$  bulk water supply schemes, ev. shared with other users

# Transactions along the value chain of WatSan

- Market III: operators vs. the supply chain
  - Retail WatSan services as a terminal of a complex industrial value chain
  - Supply of technology, construction, engineering etc
  - Supply of capital for investment
- Market IV: operators vs. final consumers
  - Delivery of service to individuals
  - Collective systems vs. community/cooperative/self-supplied systems
  - WatSan as natural monopolies  $\Leftrightarrow$  economic regulation aimed at avoiding the arising of monopoly rents

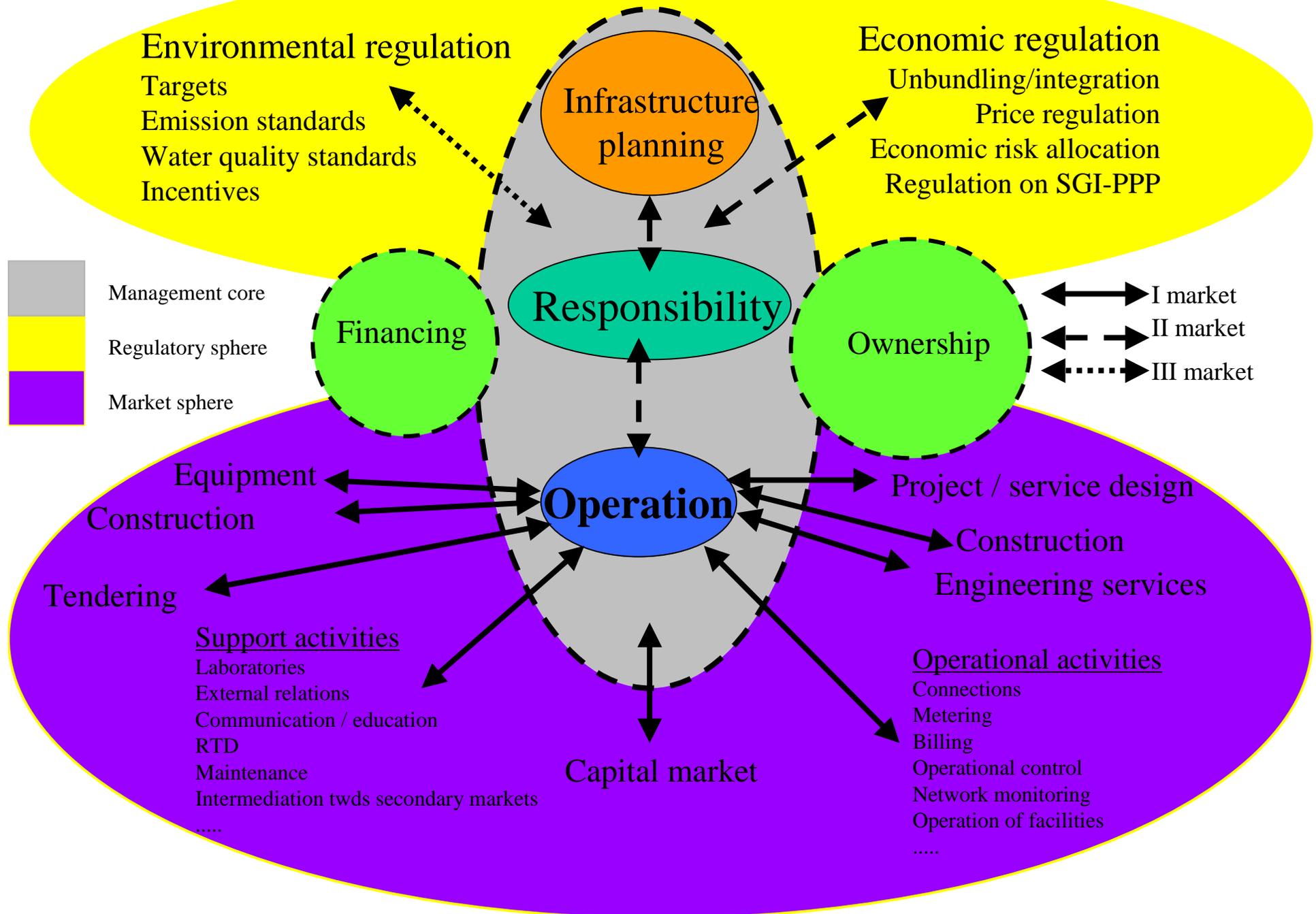
# Patterns of competition along the value chain

- Market I (operators vs. responsible entities):
  - competitive tendering for operation (and/or asset management)
  - incentive regulation, benchmarking
  - Corporatization (ev. PPP) and soft regulation of public companies
- Market II (operators vs. owners of property rights on water):
  - tradable property rights
  - Innovative agreements (eg with agriculture)
- Market III (operators vs. providers of inputs):
  - outsourcing
  - Market-based finance
  - procurement
  - DBFO, project-finance
- Market IV (operators vs. final consumers):
  - customers' eligibility for free autonomous organizations;
  - users' cooperatives + community systems for asset ownership/management

# Market failures in the value chain of WatSan

Axis	Description	Regulatory issues / market failures
I	Transactions between the WSS operator and public entities holding the responsibility for service provision	Incomplete contracts Transactions costs Sunk costs Information asymmetries
II	Transactions between the WSS operator and suppliers of inputs along the value chain	Vertical integration Cost of capital for long-run undertakings Principal-agent relations in procurement
III	Transactions between WSS operator and entities holding the property rights on natural resources	Externalities Long-run sustainability of water management systems Transactions costs in the trade of water rights
IV	Transactions between WSS operators and final consumers	Natural monopoly Public good dimensions (eg health issues) Accessibility and affordability issues Resilience and flexibility

# Value chain of water services



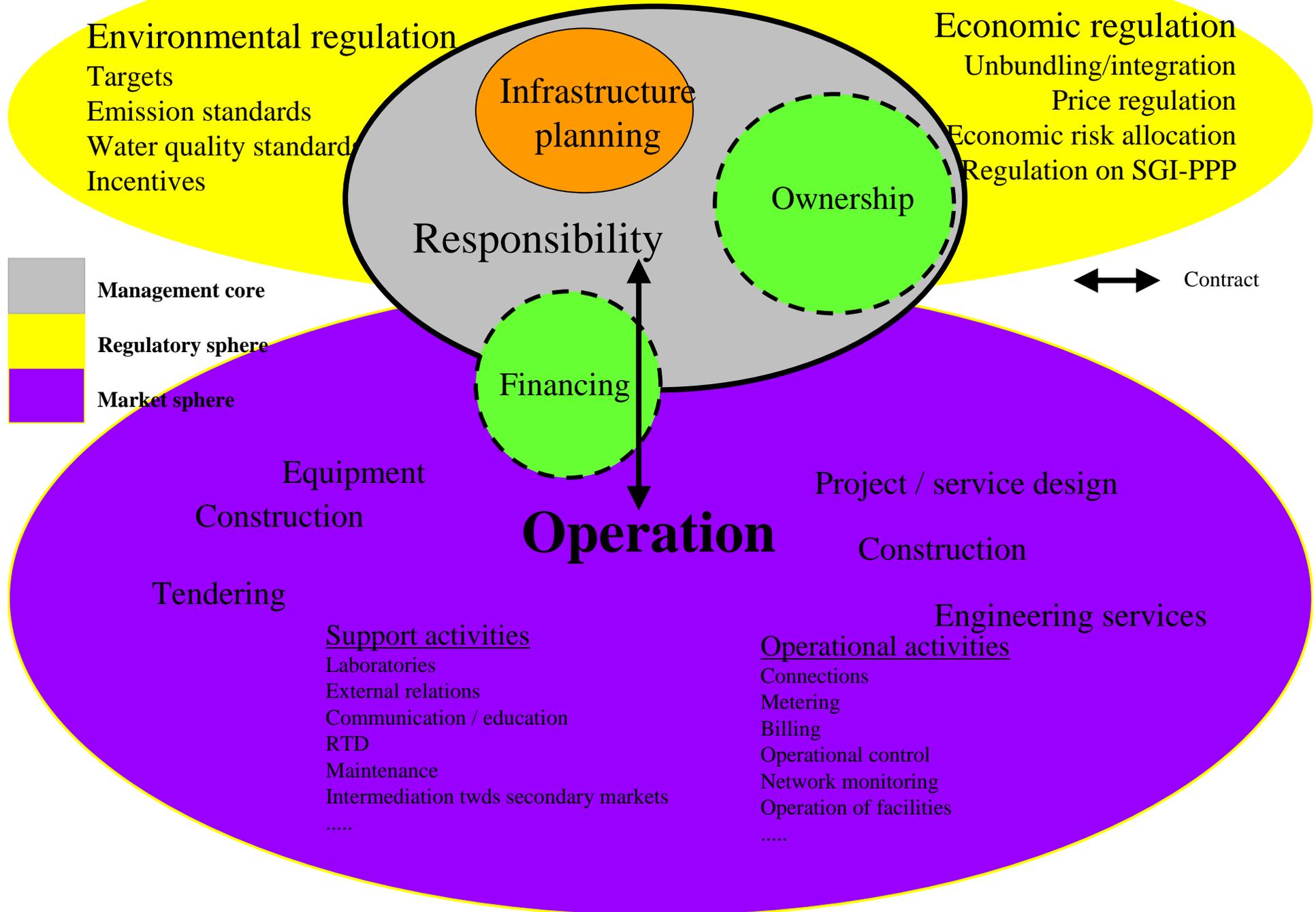
# Alternative management models

- Regulated monopoly (eg England and Wales)
  - full privatisation of assets and responsibility: water companies are obliged to supply the service with the desired quality level and maintain assets and have the right to charge customers
  - legal monopoly (no competition)
  - Full sale of water company property on the stock exchange market
  - arms' length regulation
- Delegation (eg France)
  - public responsibility and property of assets
  - Range from full concession to pure lease contracts
  - (more or less competitive) delegation through tenders
  - Concentration and vertical integration of the water industry along the value chain

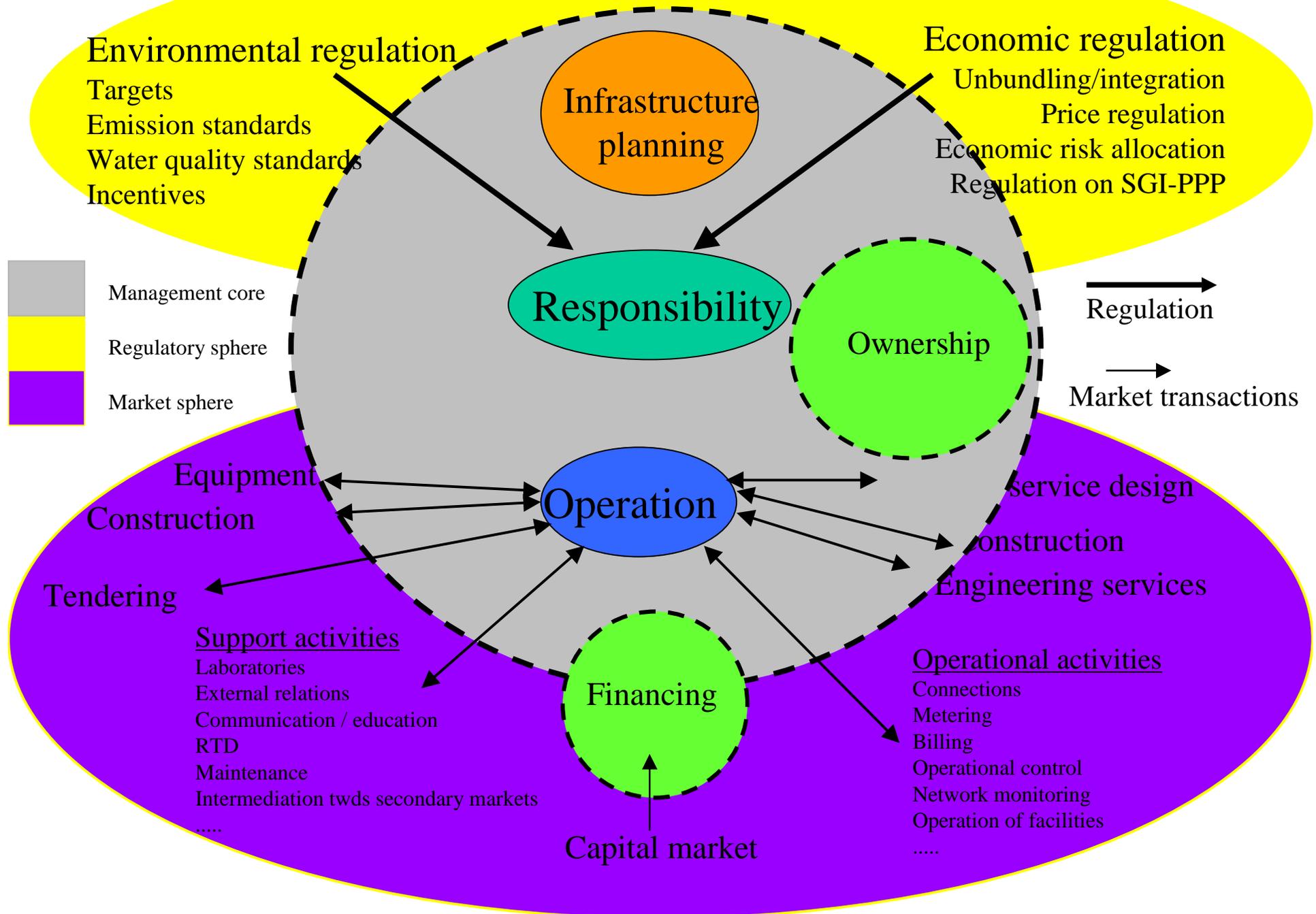
# Alternative management models

- Direct public management (eg Northern Europe, Usa):
  - public responsibility for service provision
  - public property of assets
  - Public responsibility for asset management and development
  - public management of water undertakings
  - Public sector accounting base (cash expenditure)
  - Diffused involvement of private capital market on case-by-case (es. PPP or DBFO for single facilities)
  - Intensive outsourcing of value-added functions
- Corporate public management (eg Italy, Germany, NL)
  - Water companies run under private law
  - commercial water service
  - Private sector accounting base
  - (eventual) partial privatisation of municipal enterprises maintaining entrepreneurial autonomy (D) or with limitations and unbundling (NL); quotation on stock exchange (ITA)
  - competition along the value chain is highest

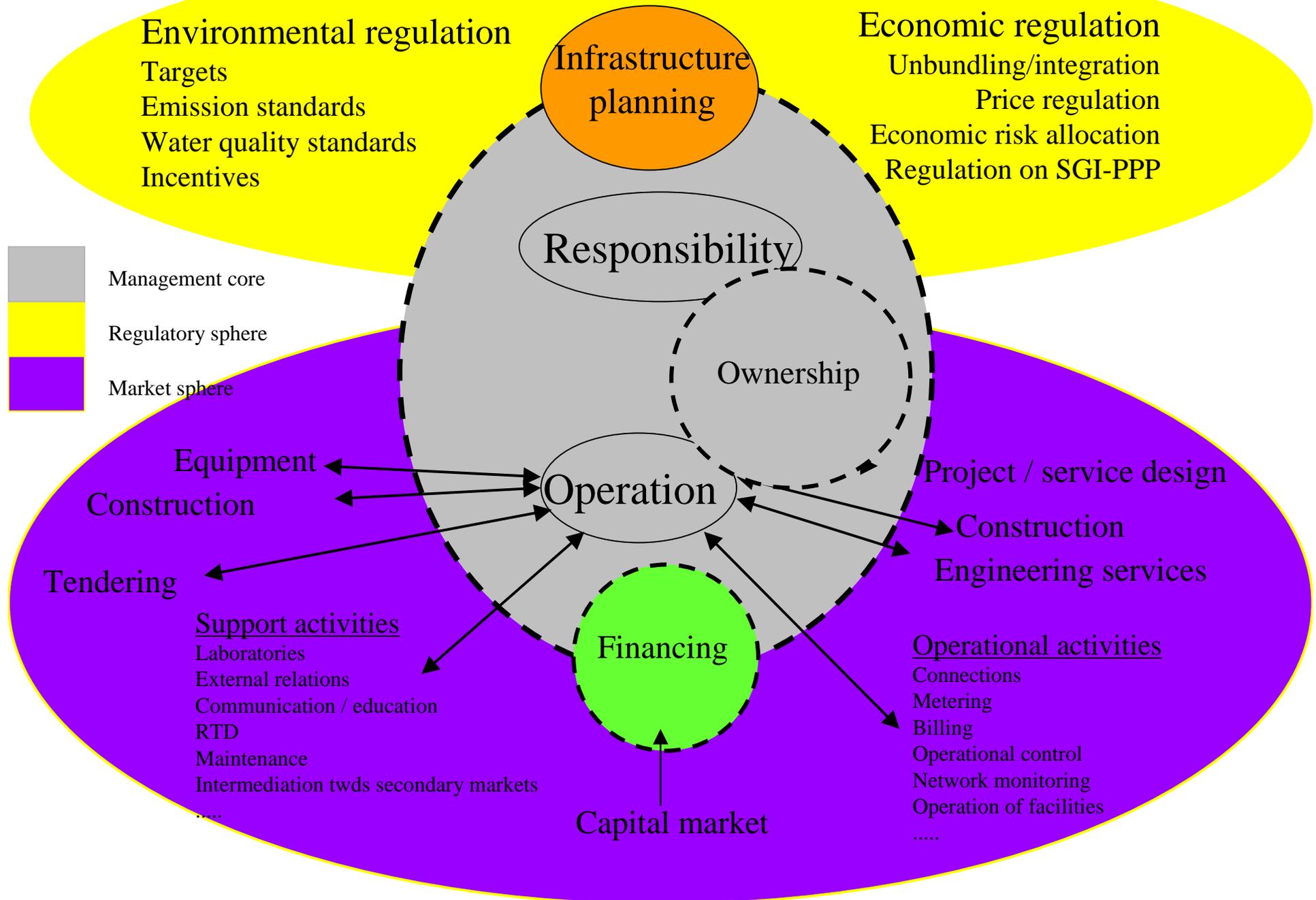
# Value chain of water services - delegation



# Value chain of water services – regulated monopoly



# Value chain of water services – direct public management



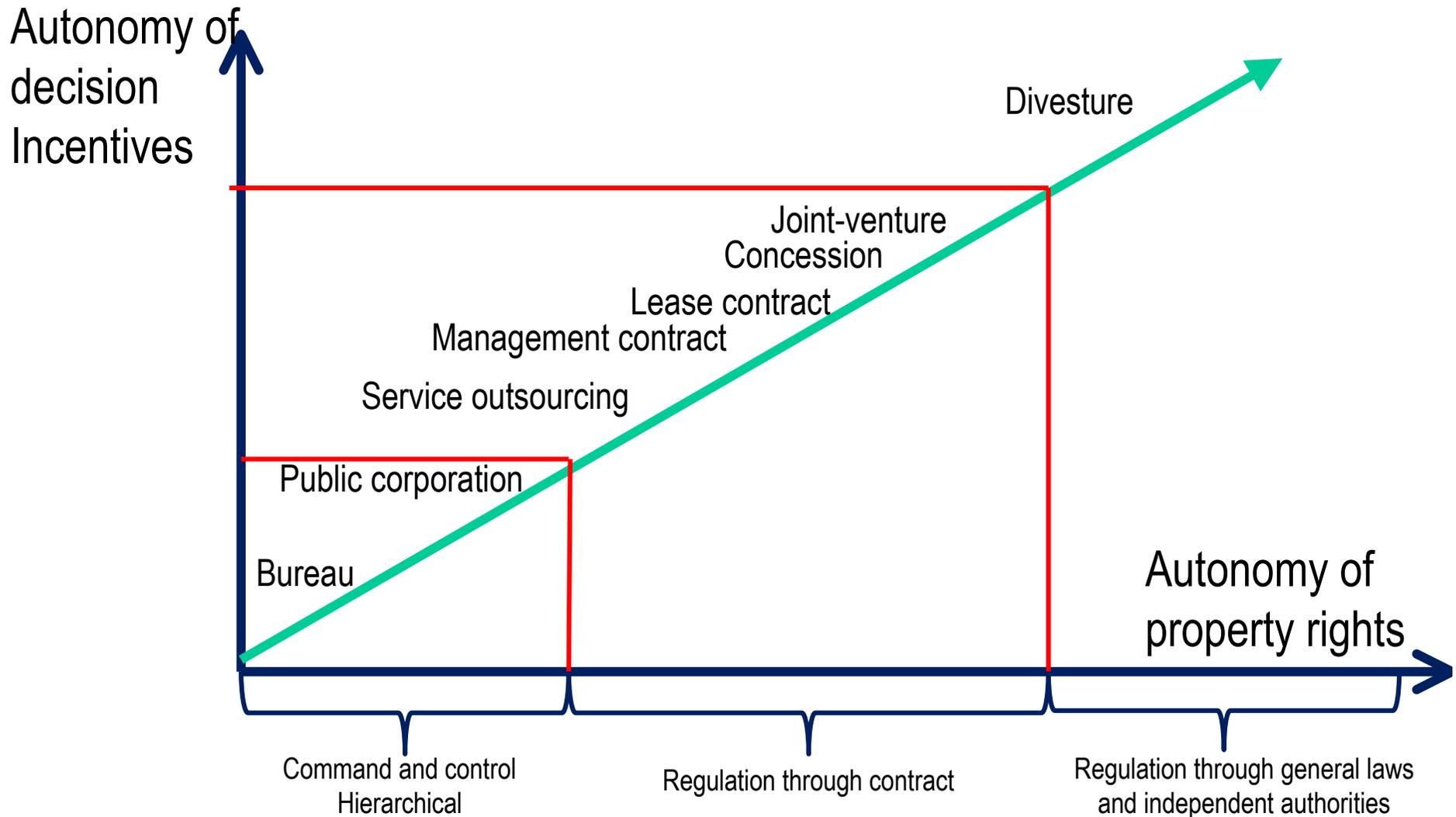
# Hybrids and alternatives

- Public-private partnerships (PPP)
  - Flexible delegation (management contracts, lease contracts)
  - alternative to delegation: tender for choosing partners in PPP
  - Flexible risk allocation, commitment vs. conflict of interest
- Corporate public management
  - Public water companies under private law (in-house)
  - quoted on stock exchange or participated by financial investors
  - Business mentality and access to capital markets vs. loose regulation, lack of control
- Beyond the public utility approach
  - Inter-sectoral water service trade and ecosystem services compensation
  - Self-supply, community systems and eligible customers
  - Not always feasible (although, technical innovation helps)

# Main lessons from economic theory

- Public vs. private is a false problem; evidence of good and bad outcomes under all models
- Performance is explained by quality of regulation and allocation of risk more than from ownership
- Alternative models are compatible with very different patterns of risk allocation and regulation; what matters is risk allocation and regulation, not the model per se
- Full-cost recovery implies price increases anyway; capital cost depends on risk allocation and not on “profit”
- Service dynamics is the main source of risk; need to ensure flexibility of commitments vs. incentive to economic efficiency  $\Leftrightarrow$  contract renegotiation and cost-passthrough = main source of regulatory problems
- Economic regulation and affordability are separate issues

# Management models for WSS

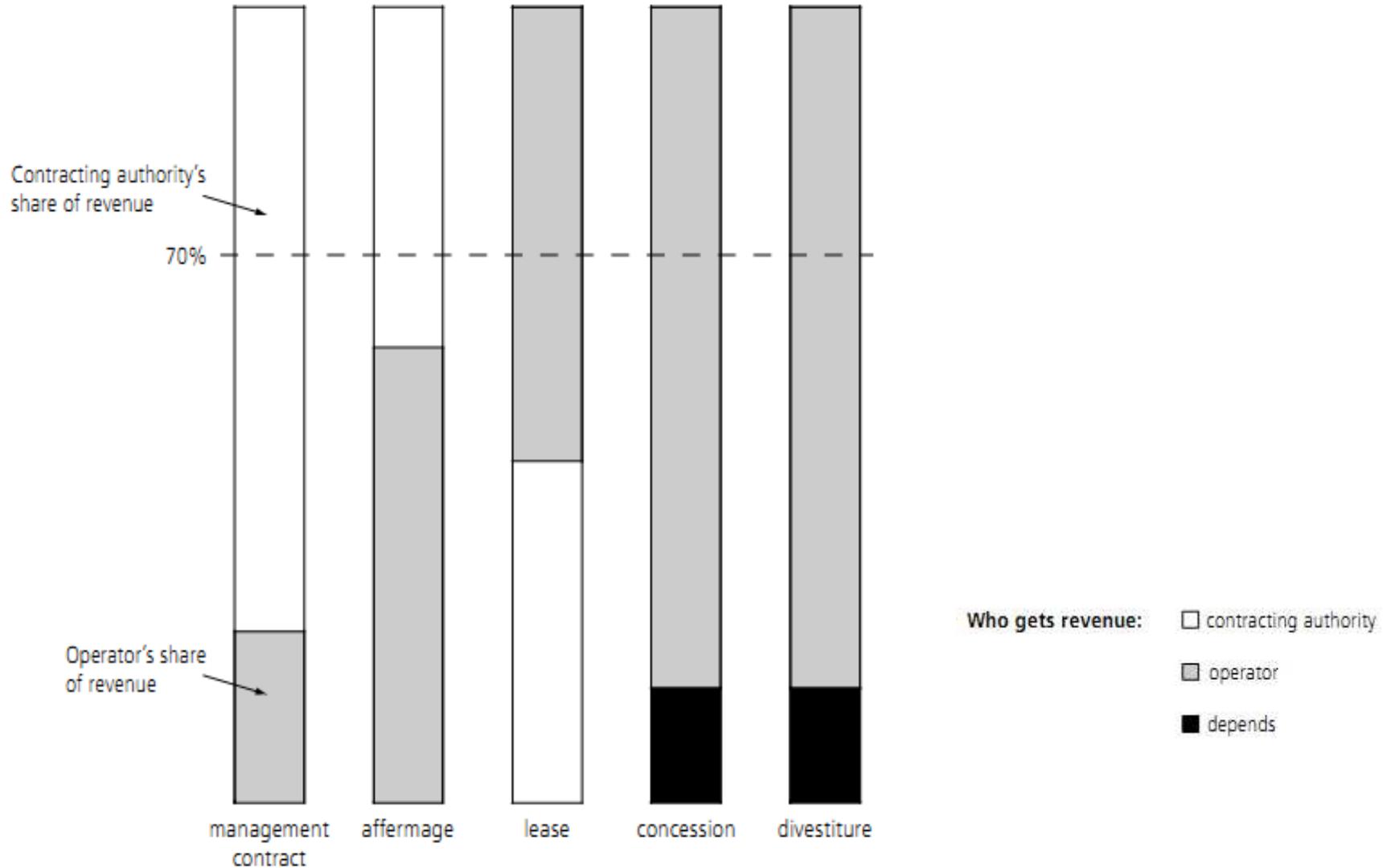


Source: adapted from Menard and Peeroo, 2011

# Alternative schemes for involving the private

Type of arrangement	Definition in the <i>Toolkit</i> of operator duties	Selected responsibilities of the operator	Stylized typical profit function for operator	Selected risks typically borne by operator—and typical share of total project risk	Ownership of operating assets	Ownership of infrastructure assets
Management contract	Supplies management services to the utility in return for a fee	Providing management services to the utility	Fixed fee + bonus – managers' salaries and related expenses	Depends on the nature of the performance bonus—very small	Contracting authority	Contracting authority
Affermage	Runs the business, retains a fee (generally not equal to the customer tariff) based on the volume of water sold, but does not finance investments in infrastructure assets	Employing staff Operating and maintaining utility	(Affermage fee x volume of water sold) – operating and maintenance costs	Operating and commercial risks—significant <sup>a</sup>	Operator	Contracting authority
Lease	Runs the business, retains revenue from customer tariffs, pays a lease fee to the contracting authority, but does not finance investments in infrastructure assets	Employing staff Operating and maintaining utility	Revenue from customers – operating and maintenance costs – lease fee	Operating and commercial risks—significant <sup>a</sup>	Operator	Contracting authority
Concession	Runs the business and finances investment, but does not own the infrastructure assets	Employing staff Operating and maintaining utility Financing and managing investment	Revenue from customers – operating and maintenance costs – finance costs – any concession fee	Operating, commercial, and investment-related risks—major	Operator	Contracting authority
Divestiture	Runs the business, finances investment, and owns the infrastructure assets	Employing staff Operating and maintaining utility Financing and managing investment	Revenue from customers – operating and maintenance costs – finance costs – any license fee	Operating, commercial, and investment-related risks—major	Operator	Operator

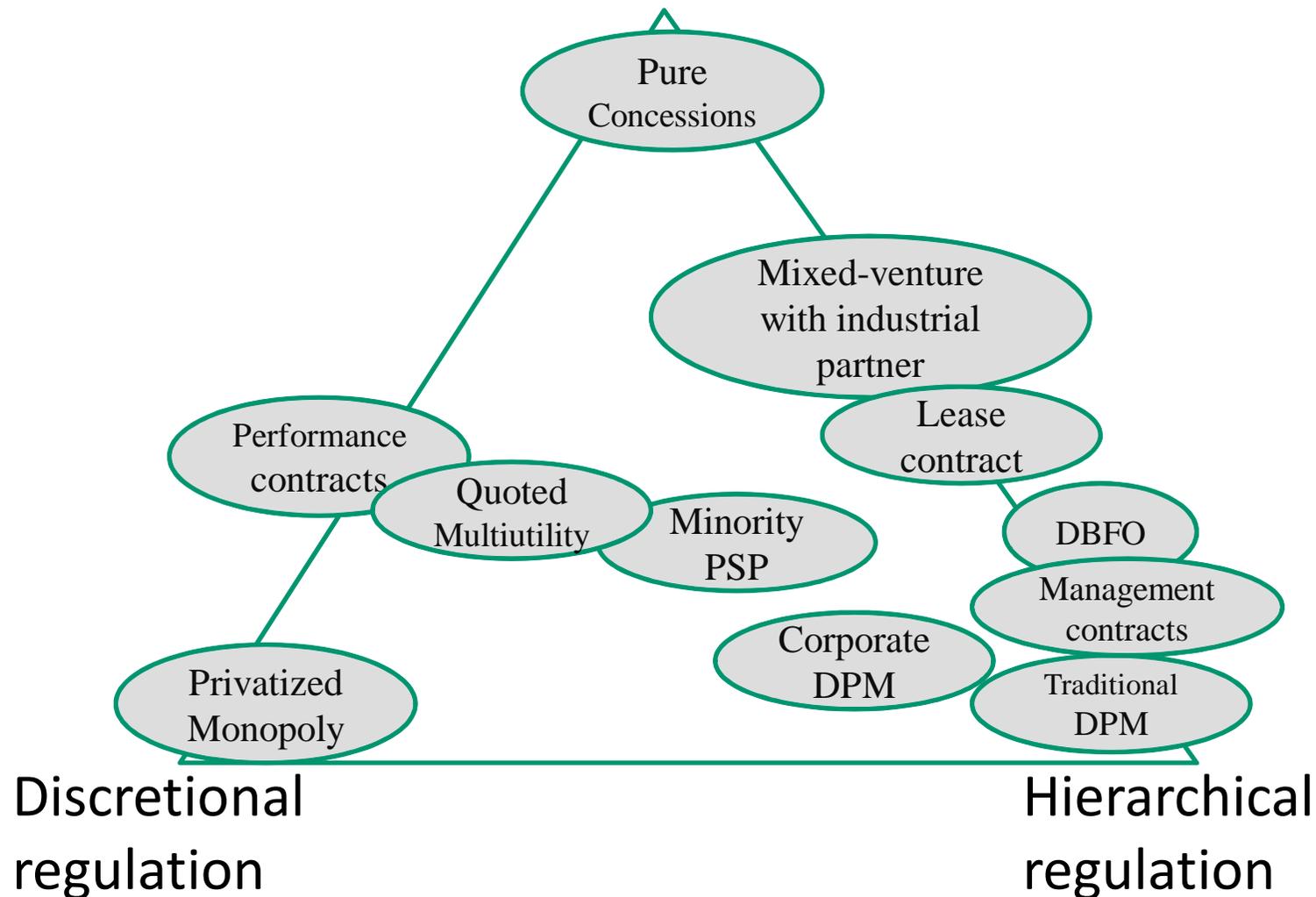
# Share of customer revenues



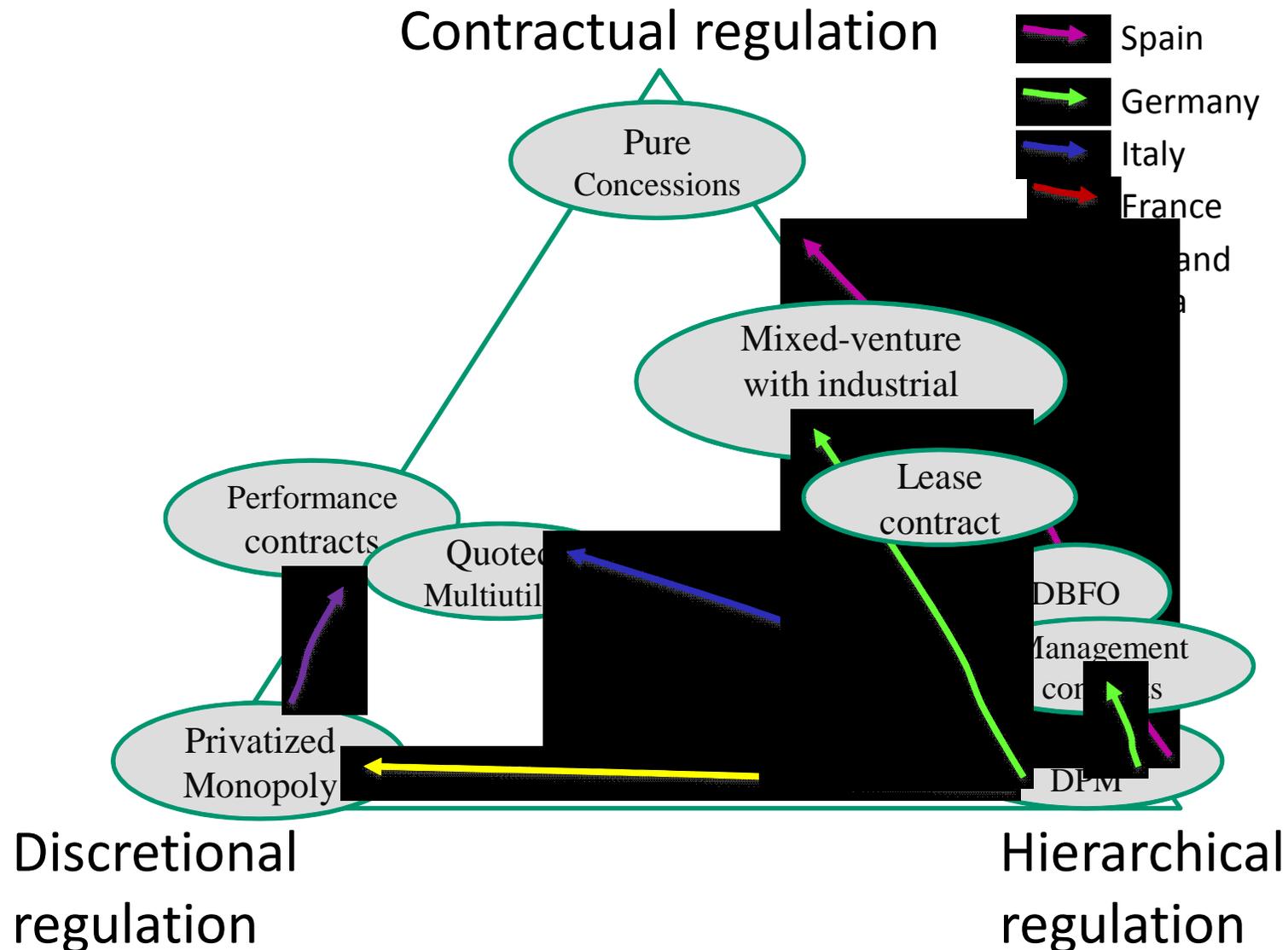
	Delegation	Private monopoly	Direct public mgmt
<b>Main regulatory instrument</b>	Contract (concession)	Independent regulation	Hierarchical control
<b>Main pro-competitive incentives / potential sources of efficiency</b>	Tenders (competition for the market)	Price caps	Procurement
	Threaten to go back public	Yardstick competition	Outsourcing
		Market for takeovers & corporate control	Threaten to privatize
<b>Main pitfalls / sources of potential failures</b>	Incomplete contracts	Asymmetric information	Vulnerability to political influence
	Transactions costs	Regulatory capture	Limited incentives to efficiency
	Competitive advantage of incumbents		
<b>Critical aspects to monitor</b>	Transfer prices (vertical integration)	Cost evaluation and comparison	Overstaffing
	Renegotiation	New investments	Loose enforcement
	Responsibility for investment and risk sharing	Cost pass-through of new obligations	Raiding of funds by municipal departments
	Strategic decisions & planning	Hidden profits	Tendency to enter the debt spiral due to unwillingness to raise prices
<b>Risks for private investors</b>	Contract enforcement	Expropriation of free cash flows	Political unwillingness to secure cash flows for debt service
	Failure to renegotiate in case costs are higher	Setting unrealistic or too demanding efficiency targets	Political priority on keeping low prices and protect delinquent payers
		Asymmetric gain: regulators learn how to anticipate progresses, companies find it more difficult to outperform	
<b>Hybrids (examples)</b>	Lease / mgmt contracts	Quoted multiutilities	Management contracts , DBFO
	Institutional PPPs	Corporate privatization	Community systems, cooperatives

# From theory to practice

## Contractual regulation



# Trends in selected countries



**REGULATION: TOWARDS AN  
INTEGRATION OF REGULATORY  
PRINCIPLES**

# Regulation vs regulator

- Regulation = governance
  - agreed set of rules of the game, that enable an economic sector to work
  - Can arise from a mixture of legal rules, voluntary agreements, commonly agreed social norms, etc
  - Can also be delegated to an independent referee to whom all concerned actors recognize the authority to decide
- Indicators of a good regulation
  - Companies recover costs and get along
  - Investors are happy to invest
  - Consumers are “not too unhappy” to pay since they perceive the price is fair
  - Service is sustainable : infrastructure maintains its value, the environment is not depleted, future generations are not worse off
- Regulator = independent subject
  - authority to take discretionary decisions over some aspects of the governance of an economic activity
  - Willingness of concerned actors to lie down under the authority of the “referee”

# Alternative models: regulation

- Delegation (eg France)
  - Competitive elements: tenders; competition for the market (market I)
  - Focus on contractual obligations and tender documents
  - Shortcoming: need to renegotiate  $\Leftrightarrow$  flexibility vs. risk of capture, corruption etc; tends to favour vertically integrated water companies (little competition in market III)
- Regulated monopoly (eg England and Wales)
  - Competitive elements: yardstick competition
  - Focus on discretionary regulation of service dynamics at arms' length
  - Shortcoming: requires informed regulators and sophisticated tools; need for public participation and open decision
- Direct public management (eg Germany)
  - Competitive elements: none in market I, but potentially high in market II
  - Focus on hierarchical control
  - Shortcoming: bureaucratic operation; vulnerable to political pressures

# Why a regulator is needed?

- The rationale for a regulator depends on incompleteness of contracts (particularly concessions)
  - Contracts cannot be specified ex-ante for many relevant issues (prices etc)
  - This is particularly true when operators are requested to invest
  - Concession schemes cannot be based on contracts alone: regulation is concerned with ex-post settlements (renegotiation)
- How can ex-ante incomplete contracts be completed ex-post?
  - The two parties may freely renegotiate
    - Disputes have to be settled by judges
    - “Excess of agreement” is also dangerous
    - French case: moving from informal to formal and transparent renegotiation has multiplied the case for disputes
  - In both cases, transactions costs are very high
  - Independent regulation as a way to reduce transactions costs implicit in the disputes that may emerge along the contract about the interpretation of clauses

# Is regulation needed only in case of privatization?

- The regulator is concerned with discretionary ex-post decisions
  - A regulator is needed as far as discretionary decisions are needed
  - Discretion should never become arbitrariness  $\Leftrightarrow$  need to ensure that discretionary decisions are inspired by a coherent and agreed philosophy
  - Ensure credibility  $\Leftrightarrow$  need to persuade investors that risks are low enough to justify reasonable interest rates
  - Ensure consensus  $\Leftrightarrow$  need to provide citizens with evidence that they obtain value for money
- Regulation is needed whatever the management model
  - Public ownership is not alternative to regulation; it requires regulation on its own
  - Need to promote efficiency and facilitate benchmarking with the private sector
  - Prevent “political capture” (raiding of funds, overstaffing, corruption etc)
  - Prevent poacher-gamekeeper relationships within the public sector (eg loose enforcement of quality standards to compensate for under-funding)

# Why should the regulator be independent?

- Advantages

- Need to ensure that short-term political stakes influence the price-setting process, hampering the capacity of water companies to recover costs
- Need to ensure continuity and credibility of “regulatory promises”
- Need to facilitate the acquisition of sector-specific expertise and “learning by doing” (but avoid capture)

- Pitfalls

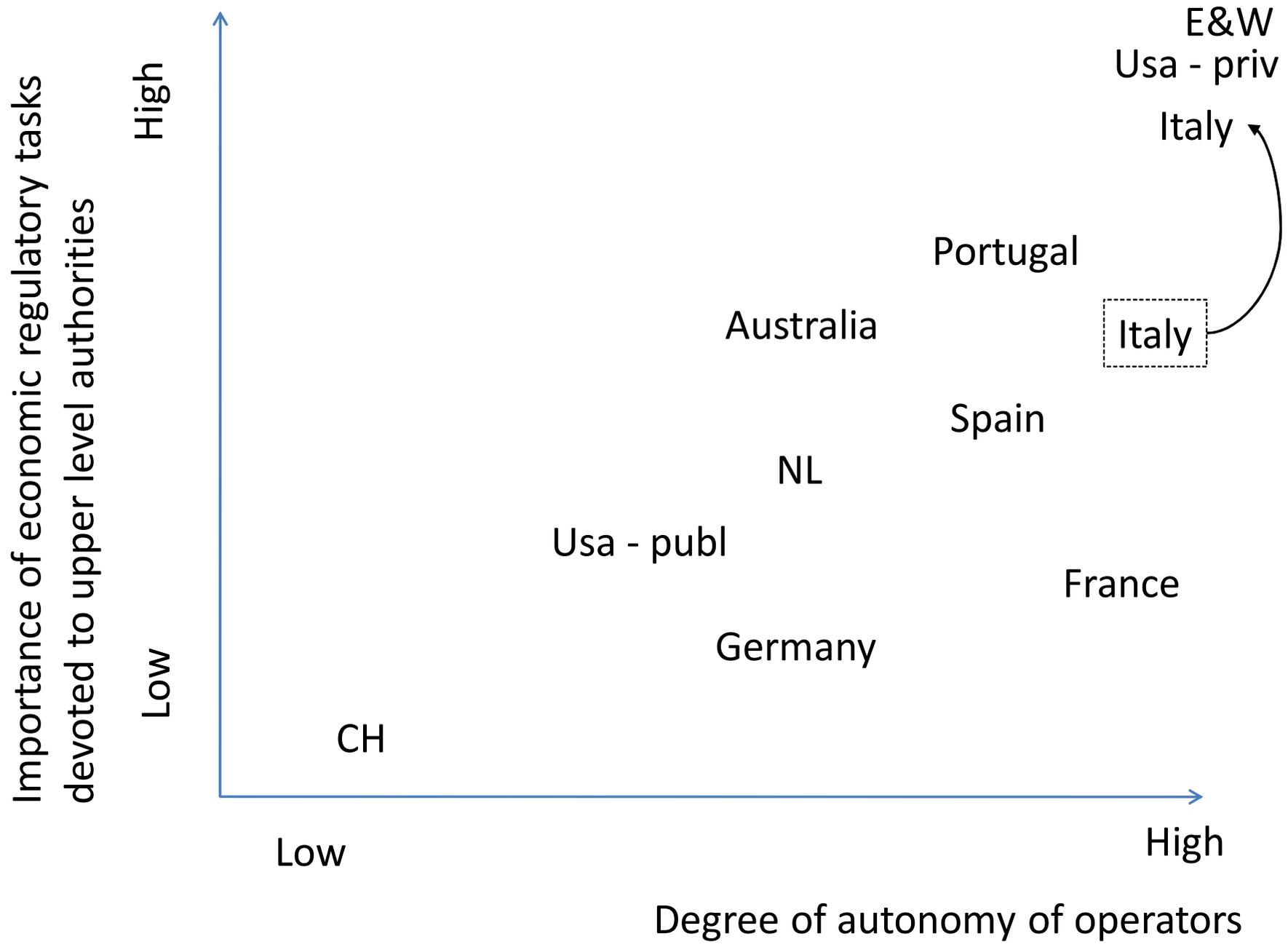
- Risk of “regulatory capture”
- Appropriate governance and balance/checks should avoid that independence degenerates in arbitrariness

# Trade-offs

- National vs local
  - Why national: benchmarking easier; political capture more difficult; economies of scale in the regulatory process (eg Ofwat employs only 170 persons)
  - Why local: the cost function is often site-specific; difficult to standardize, case-by-case decision often needed
  - Mixed solutions also possible (eg. USA)
- Multisector vs water-specific
  - Why multisector: economies of scope
  - Why water-specific: water is special (not competitive at all); environmental policy and regional development are the main cost drivers (need to harmonize env and econ regulation in order to ensure coherence)
- Ex-ante (norms, contracts) vs ex-post (discretionary decisions)
  - Why ex-ante: promote efficiency (higher risk for operator)
  - Why ex-post: guarantee cost recovery; reduce risk (and cost of capital)
  - Need to find an equilibrium between what should be kept fixed and what can be renegotiated

	Usa		Ger	Fra	Spa	Por	E&W
	Priv	Pubbl					
Modalità ammesse per affidamento			legge	legge	legge	legge	Legge
Procedure per affidamento				legge			
Scelta modalità gestione	EL		EL	EL	EL	EL	Legge
Scelta soggetto gestore	EL		EL	EL	EL	EL	Legge
Contabilità regolatoria	PUC		Land		Regione	IRAR	Ofwat
Contenuti contratti servizio	PUC					IRAR	Ofwat
Stipula contratti di servizio	EL	EL	EL	EL	EL	EL	Ofwat
Principi fissazione tariffe	PUC	PUC	Legge	Legge	Legge	Legge	Legge
Approvazione tariffe	PUC				Commissioni prezzi (Reg)	Stato (su proposta IRAR)	Ofwat
Rinegoziazione contratti	PUC						Ofwat
Verifica contratti di servizio	PUC					IRAR	Ofwat
Analisi comparativa	PUC					IRAR	Ofwat
Reporting istituzionale	PUC					IRAR	Ofwat
Soluzione dispute						Arbitraggio privato	Public inquiry
Tutela consumatori	PUC	PUC					Ofwat
Raccolta informazioni	PUC	PUC					Ofwat

Nome (Paese)	LIV	Caratteristiche	Funzioni
Agenzie municipali (Usa)	LOC	Agenzie specializzate, costituite da comuni o loro associazioni per sovrintendere in modo specializzato all'erogazione dei servizi pubblici Dipendenti dalle autorità municipali; di solito non sono autonome, ma hanno ampie deleghe ad operare sulle questioni tecniche di loro competenza	Gestione e monitoraggio dei contratti di servizio Concertazione degli investimenti con i gestori Approvazione delle tariffe (utility non regolate da PUC)
PUC (USA)	REG	Agenzie specializzate e indipendenti che operano a livello di stato Operano in modo trasversale su tutti i settori di servizio pubblico locale, compresa l'energia	Approvazione tariffe (solo utility private e quelle pubbliche su base volontaria) Elaborazione standard contabili Analisi comparativa e benchmarking
NARUC (USA)	NAZ	Costituita su base volontaria come associazione cooperativa delle PUC Si avvale di una stretta collaborazione con il NRRI (National Regulatory Research Institute)	Elaborazione di standard di riferimento su base cooperativa Elaborazione di studi e analisi di settore Diffusione di buone pratiche
OFWAT (E&W)	NAZ	Autorità indipendente dedicata alla regolazione economica del settore idrico	Fissazione delle tariffe Tutela dei consumatori Tutela degli investitori Standard contabili di riferimento Politica industriale di settore Raccolta e diffusione delle informazioni
IRAR (Portogallo)	NAZ	Autorità indipendente nominata dal governo Competente per servizi idrici e rifiuti	Approvazione tariffe Contabilità regolatoria Tutela consumatori
Comision precios (Spa)	REG	Organo costituito su base cooperativa con la partecipazione di diversi soggetti istituzionali Opera con criteri prevalentemente politici	Approvazione revisioni tariffarie
(Francia)	NAZ	Autorità istituita con legge nel 2002 ma mai effettivamente costituita	Reporting Benchmarking Soluzione dispute
IPART (Australia)	REG	Autorità indipendente su base statale (Nuovo Galles del Sud), analoghe autorità sono state costituite da altri stati Competente su tutti i settori caratterizzati da monopolio Opera come un tribunale, sulla base di istruttorie condotte in modo partecipato	Fissazione delle tariffe massime per tutti i servizi erogati in regime di monopolio Tariffe si basano su RoR ma con costi riconosciuti su base parametrica Amministrazione dei contratti di affidamento di questi servizi Supporto al governo e consulenza
URSEA (Uruguay)	NAZ	Agenzia indipendente che emana dal potere esecutivo; responsabile della regolazione nei settori dell'energia elettrica, gas, servizi idrici e combustibili I servizi idrici sono erogati dal settore pubblico (per scelta costituzionale) e raggiungono la quasi totalità della popolazione	Tutela dei consumatori Vigilanza su servizio universale, sicurezza della fornitura Incentivazione del livello ottimale di investimento Promozione della concorrenza Standard tecnici e di servizio Fissazione della componente tecnico-economica delle tariffe (al netto della fiscalità) Irrogazione delle sanzioni

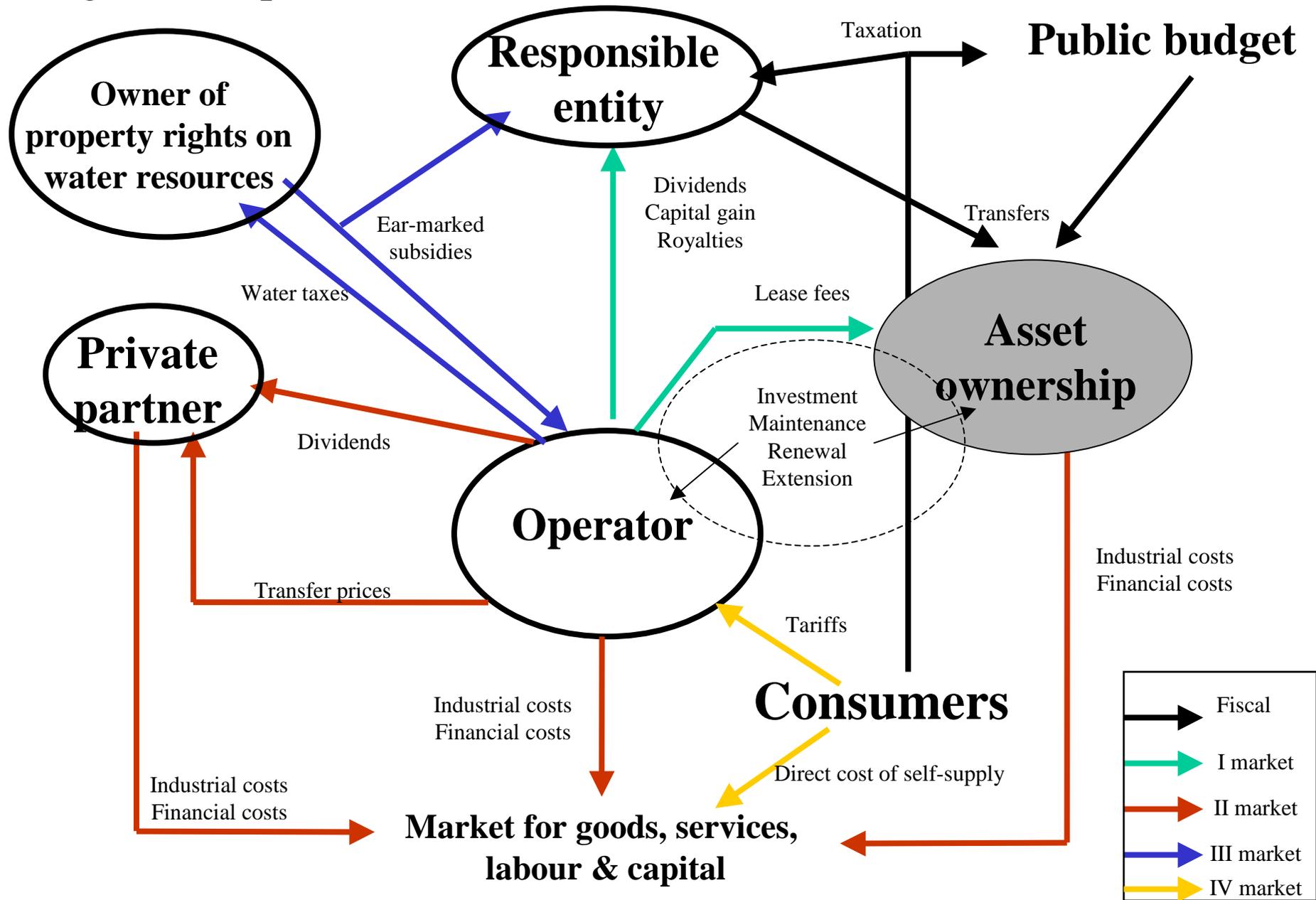


# **FINANCE: BEYOND TAXATION VS. MARKETS**

# Financial sustainability: issues

- Ensure that WatSan companies are able to have access to economic inputs required for service provision
- Ensure that cash flows originated by operation of WatSan are coherent with capital expenditure in the long run
- Provide adequate guarantees to investors that their money will come back
- Economic risk is better managed when some “pooling” is possible, but this requires economies of scale that may be impossible to achieve for local public entities

# A general representation of economic and financial flows in WS&S



# Alternative models: asset base

- Traditional direct public management
  - Public responsible for both OPEX and CAPEX
  - Cost recovery for OPEX only; public finance for CAPEX
  - Ev. local taxes earmarked to water services (eg Sweden; NL)
  - Public finance or publicly-guaranteed financial institutions ⇔ interest rate corresponds to conventional inter-government lending rate
- France (lease contracts)
  - Private responsible for OPEX, public for CAPEX
  - FCR includes OPEX + lease charges (corresponding to loans)
- England and Wales (regulated monopoly)
  - Private responsible for both OPEX and CAPEX
  - Market finance mechanism + FCR of new investment + existing assets evaluated at the privatization price (in E&W this corresponds only to 5% of reconstruction cost!)

# Alternative models: asset base

- German model: publicly-owned, partially privatized companies
  - Public enterprise responsible for both OPEX and CAPEX
  - FCR for the full OPEX + CAPEX of all assets (including existing ones, valued at full reconstruction cost, depreciation according to economic life)
- Italian model: delegation of operation and investment
  - Private (or publicly-owned ltd) responsible for both OPEX and CAPEX
  - Market finance mechanism + FCR for planned investment only
  - Tariff regulation caps the cost of capital at max 7% (whatever the managing model adopted)

# Advantages and shortcomings

- Traditional model
  - Advantage: minimizes the cost of capital
  - Shortcoming: need to rely directly or indirectly on public budget and public planning of investment
- British (and Italian) model
  - Advantage: tariff provides only for new investment
  - Shortcoming: no guarantee that actual investment corresponds to true depreciation; risk that costs are shifted to future generations
- French (and Italian) model
  - Advantage: reduces the cost of capital
  - Shortcoming: risk of “dualism” if OPEX and CAPEX are separated; risk of “capture” is CAPEX is decided by operator but financed by the public
- German model
  - Advantage: cost recovery is ensured in literal terms; infrastructure can be rebuilt at any time
  - Shortcoming: need to monitor the use of cash flows that do not correspond to actual expenditure ⇔ OK if public companies, but careful if private !!
  - Other shortcoming: could lead to “gold plating” (unnecessary investment)

# Alternative models: economic risk (and r)

- UK model
  - No market risk (except risk of takeover)
  - Operational and capital risk is borne by water companies
  - Performance risk also borne by water companies (quality regulation)
  - Regulatory risk is reduced since Ofwat is committed to ensure industry viability
- French model
  - Some market risk (although incumbents are normally favoured)
  - Main market risk represented by threaten to go back public (eg. Paris, Grenoble)
  - Operational and performance risk on the private company
  - Capital risk suffered by municipality (ev. shared)
  - Regulatory risk is reduced via cooperative renegotiation of contracts; tradition of low conflictuality vs. risk of corruption
  - Cost-pass through of capex through lease charge, but limited to financial costs actually paid (debt service)
  - Mutual finance through the Agences de l'Eau

# Alternative models: economic risk (and r)

- German model
  - No market risk (publicly-owned companies, even if partially privatized)
  - Performance risk on the company
  - Operational and capital risk on the consumer via commitment to ensure ex-post full-cost recovery
  - Financial risk pooled via local public savings bank (Sparkassen) and shared with other public services (multiutility model)
- Italian model
  - Market risk (concession contracts, tenders)
  - Operational and performance risk on the company
  - Capital risk on the company (limited by the assumptions contained in the plan but how are plans adjusted along time?)
  - Regulatory risk difficult to predict since depends on future attitudes of local authorities; no formal commitment for regulators to ensure viability of investment

# Alternative models: economic risk (and r)

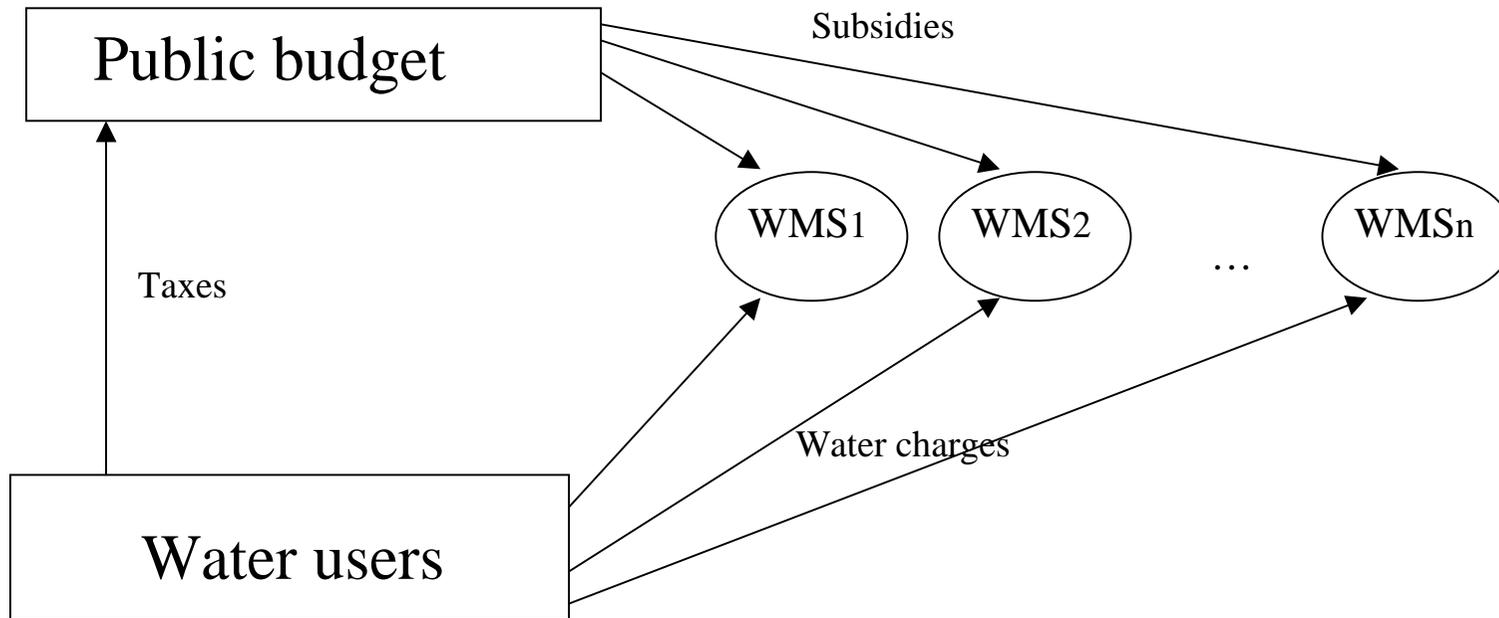
- Portugal
  - State holding (Aguas de Portugal) entering with shares of capital in the new investment and responsible for larger projects
  - AdP centralizes recourse to capital market and provides guarantees to investors (but are these enough?);
  - Involvement of the EIB
- Wales
  - Public-law entity (NGO) responsible for managing service and asset ownership
  - Service operation outsourced to private water company that uses assets but does not assume risk
  - Main financing source = long-term bonds

# Alternative models: economic risk (and r)

- Usa
  - Mainly under DPM, some RM and D
  - Initial investment financed publicly, then FCR
  - State revolving funds  $\Leftrightarrow$  mutual systems secured by the Federal government, supplying subsidized loans
  - SRF are fed by federal contributions (20%) and by cash flows generated by debt repayment  $\Leftrightarrow$  separate loan reimbursement from financial guarantee
  - Cost of capital halved with respect to market (??)
- Netherlands
  - No market risk (publicly-owned corporate water companies)
  - Performance risk lies on operator
  - Economic risk lie partly on consumer (ex-post FCR) and partly on taxpayer (cost evaluated on the base of actual cash expenditures and not on economic accounting)
  - Specialized institutions providing subsidized credit lines coherent with economic life of assets (Watershapsbank)

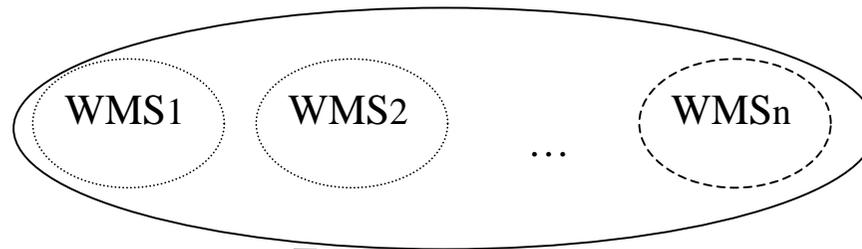
# Equalization mechanisms

- England and Wales (and to some extent Italy)
  - Large management units  $\Leftrightarrow$  redistribution between high- and low-cost areas
  - Water charges proportional to property size and not to consumption (E&W)
  - “green dowry”: a significant part of the pre-existing debt has been re-publicized (E&W)
  - Continuing role of the public sector at least for “large” investment (eg interbasin transfers) (Ita)
- France
  - Agences de l’Eau manage an ear-marked budget fuelled by a taxation mechanism  $\Leftrightarrow$  around 15% of investment is financed at 0 interest
  - Own capital is remunerated only if provided by the private company (what occurs only in a few cases)
  - Two-part tariffs with significant connection charge  $\Leftrightarrow$  allows some redistribution in favour of large families / low property values
- Germany
  - Cross-subsidies  $\Leftrightarrow$  cash flows generated by all infrastructure fuel municipal CAPEX
  - Very long depreciation schedules
  - Two-part tariffs with high marginal rate per m<sup>3</sup> (but low consumption !!)

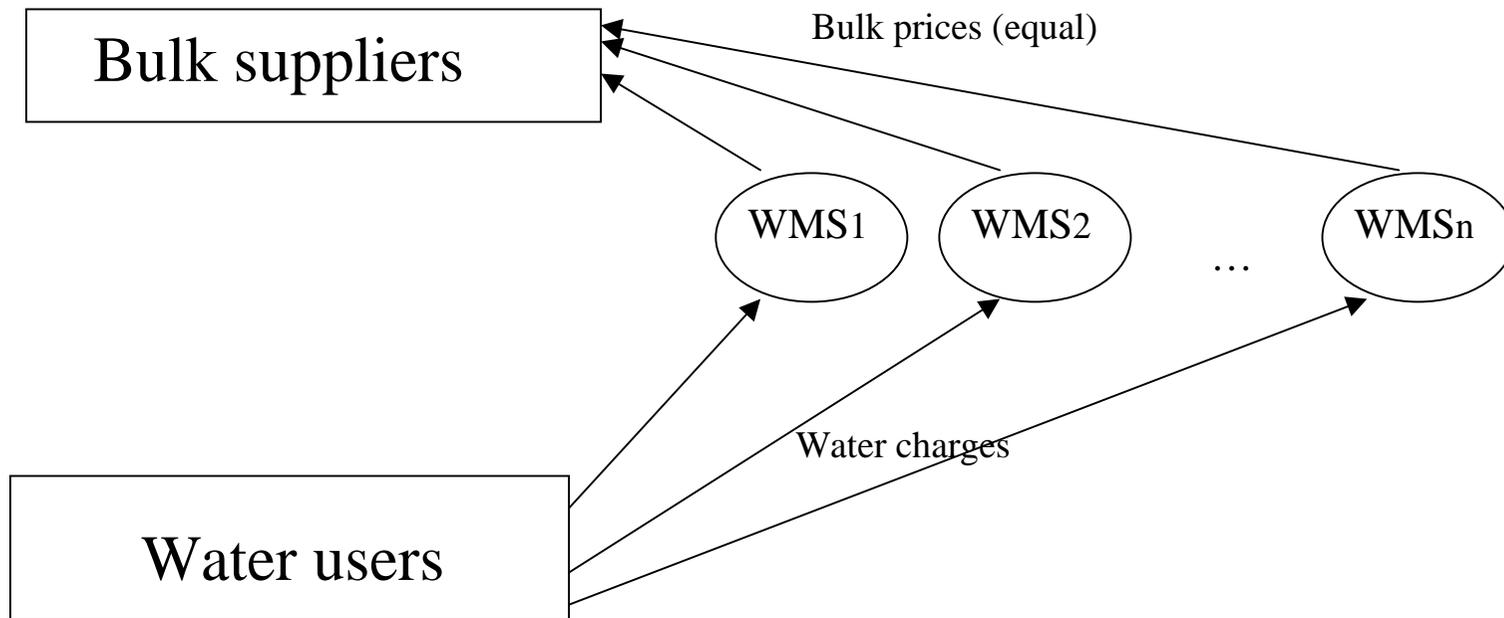
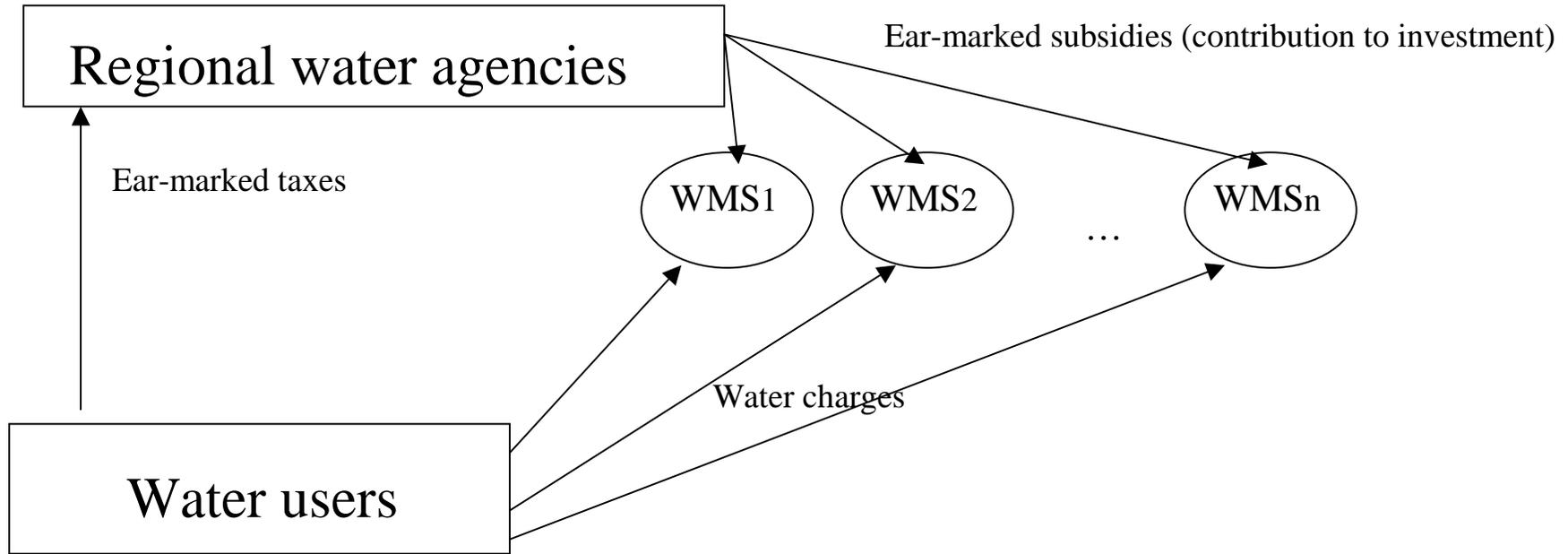


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Public budget



Water users



Thank you !!

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