

ACER



Agency for the Cooperation
of Energy Regulators



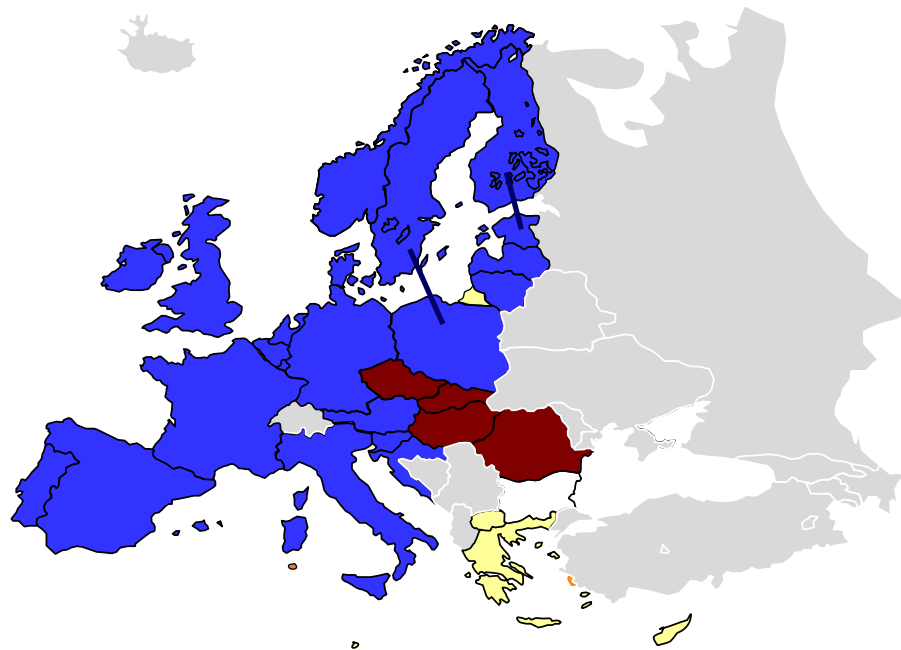
Economic regulation of monopolies: the energy sector experience

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**12th Florence Air Forum: Budapest Edition
Budapest, 18 October 2019**

The EU internal electricity day-ahead market



Today:

80% of borders coupled
46 borders coupled in a single coupling
3 borders coupled separately
12 borders still waiting to be coupled

Final goal:

EU-wide day-ahead market coupling
with implicit auctions

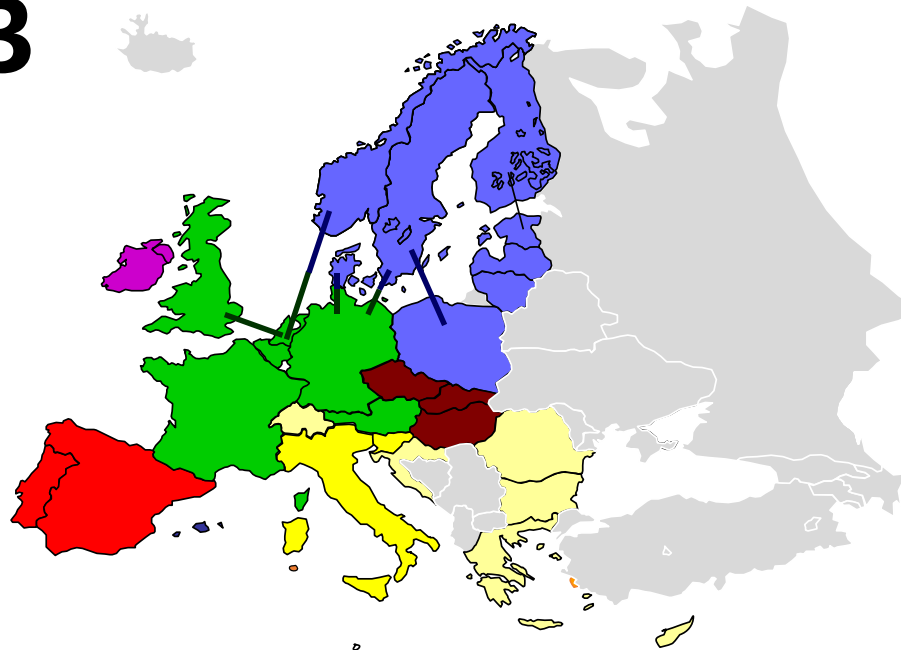
**PCR = Price
Coupling of
Regions**

**4M MC =
4M Market
Coupling**

**Not coupled
yet**

Day-Ahead Electricity Market Coupling: a Success Story!

2013



2

The main actors in the new organisational framework for the energy sector

European level

Regional level

National level




ACER
EU regulatory Agency established to support cooperation and coordination among NRAs to promote the integration and well-functioning of the IEM (including through market monitoring)



ENTSOs
European Networks of Transmission System Operators for effective cooperation among TSOs (for network rules and planning) for optimal management of the transmission system



EU DSO Entity
EU Entity for distribution system operators to cooperate at Union level to promote the optimal management and a coordinated operation of distribution and transmission systems



RCCs
Regional Coordination Centres to support the regional coordination of TSOs in a number of areas, excluding real time operation of the electricity system



National Regulatory Authorities
NRAs contribute to the development of the IEM, ensure a level-playing field and are responsible for protecting and empowering customers



TSOs
Transmission system operators responsible for operating, ensuring the maintenance of, and developing the transmission system.



NEMOs
Nominated Electricity Market Operators are designated by Member States to perform the single day-ahead and/or intraday coupling

Hierarchy of Norms for the Internal Electricity Market

Type of Act		Adoption Process
Directives and Regulations (of the European Parliament and the Council)		Normal legislative process
Network Codes and Commission Guidelines		“Comitology” process
Terms and Conditions or Methodologies (TCM)	EU-wide	By the Agency
	Regional (RCC-wide)	By the relevant NRAs, or by the Agency if: <ul style="list-style-type: none"> - NRAs fail to agree - upon NRAs’ request - if the TCM impact beyond the region

Models economic regulation (in the energy sector, but not only)

**Traditional
Regulation**

Cost-of-Service (CoS) Regulation

Rate-of-Return (RoR) Regulation

Revenue Cap Regulation

**Incentive-based
Regulation**

Price Cap Regulation

Profit- sharing Regulation

Yardstick Competition

Performance-based Regulation

Incentive-based Regulation

Incentive[-based] regulation is the use of **rewards and penalties** to induce the utility to achieve **desired goals** where the utility is afforded **some discretion** in achieving goals.

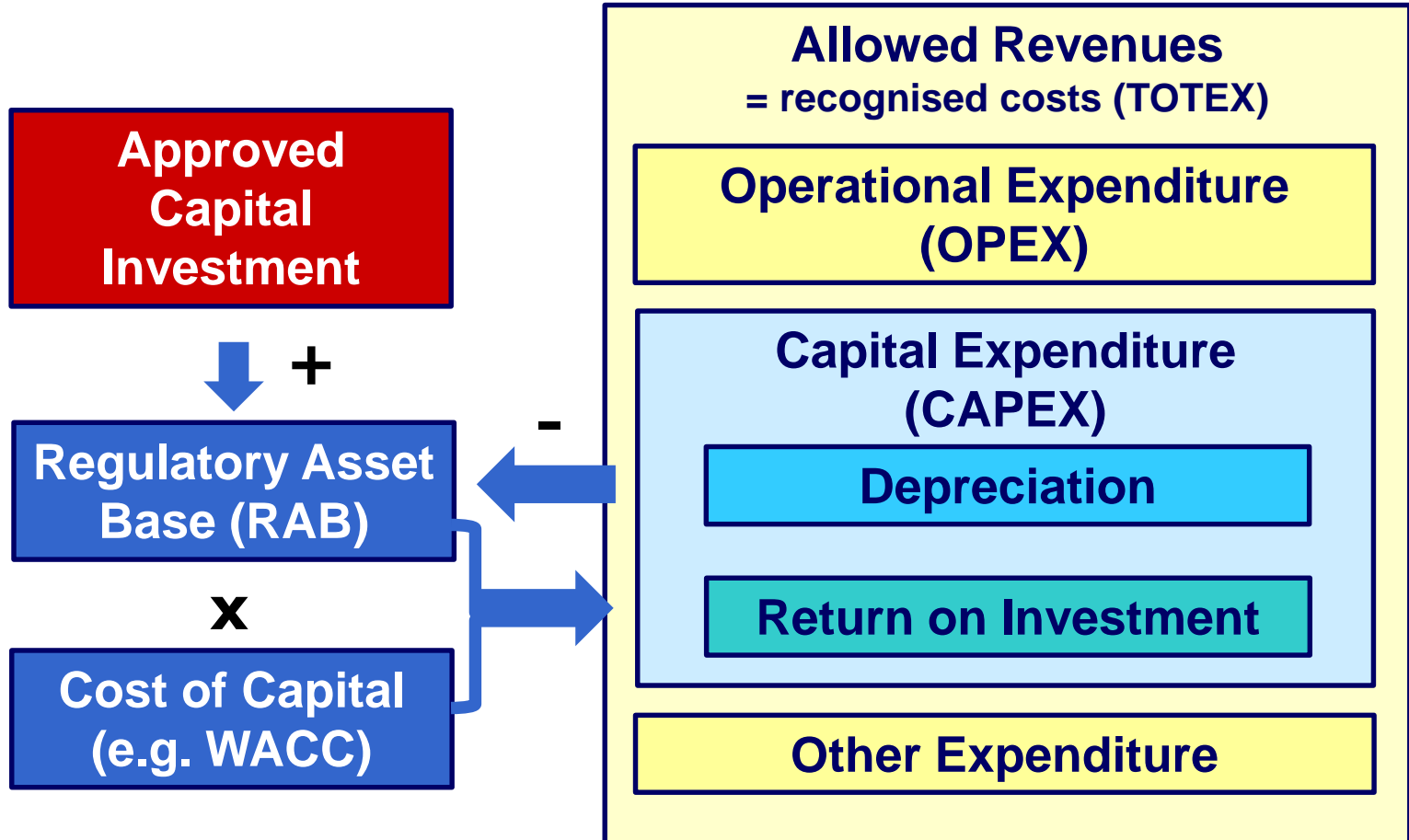
Tracy Lewis and Chris Garmon, 'Fundamentals of Incentive Regulation.' PURC/World Bank International Training Program on Utility Regulation and Strategy, June 1997.

Incentive-based regulation is often referred to as

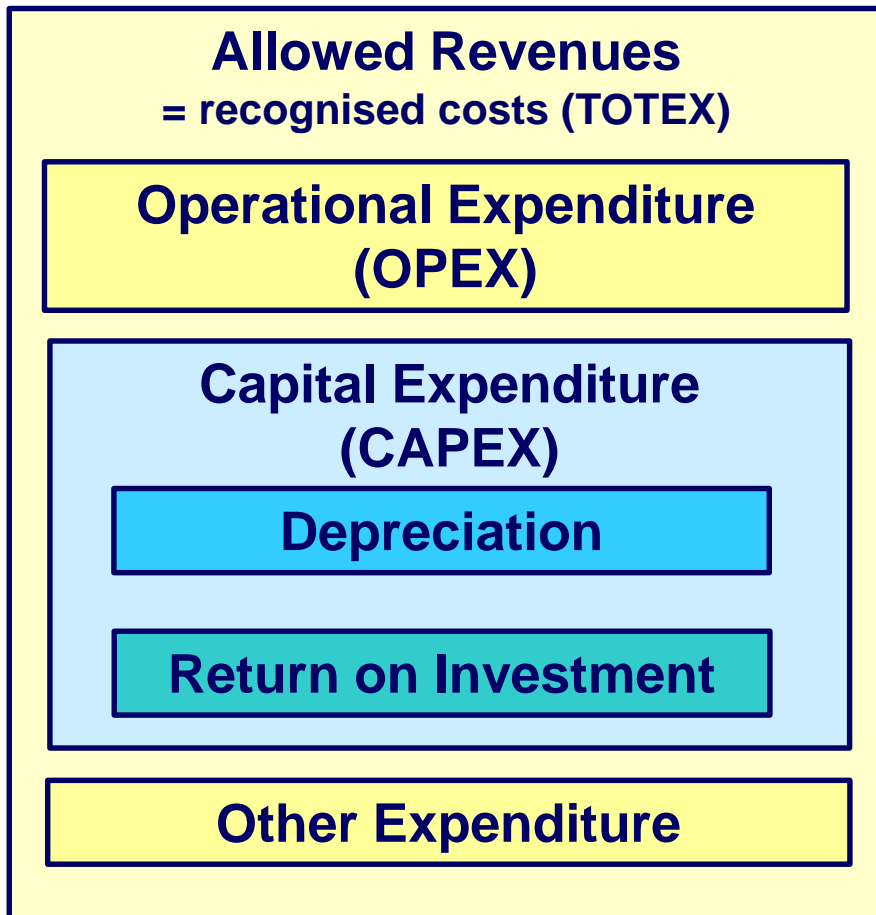
RPI - X Regulation

- Price/allowed revenue adjusted for inflation, but reduced by an efficiency factor (X)
- In reality, other adjustments might be included (e.g. for **quality**, unexpected events, ...): $RPI - X + Z$

The basic regulatory approach



Single or differentiated regulatory approach



- Incentive-based regulation has typically been mainly used for OPEX, while CoS regulation has been applied to CAPEX
- However, a number of Regulators are now moving to TOTEX Regulation (applying the same regulatory treatment to OPEX and CAPEX)
 - This avoids the risk of providing distorted incentives

Approaches to economic regulation in the energy sector

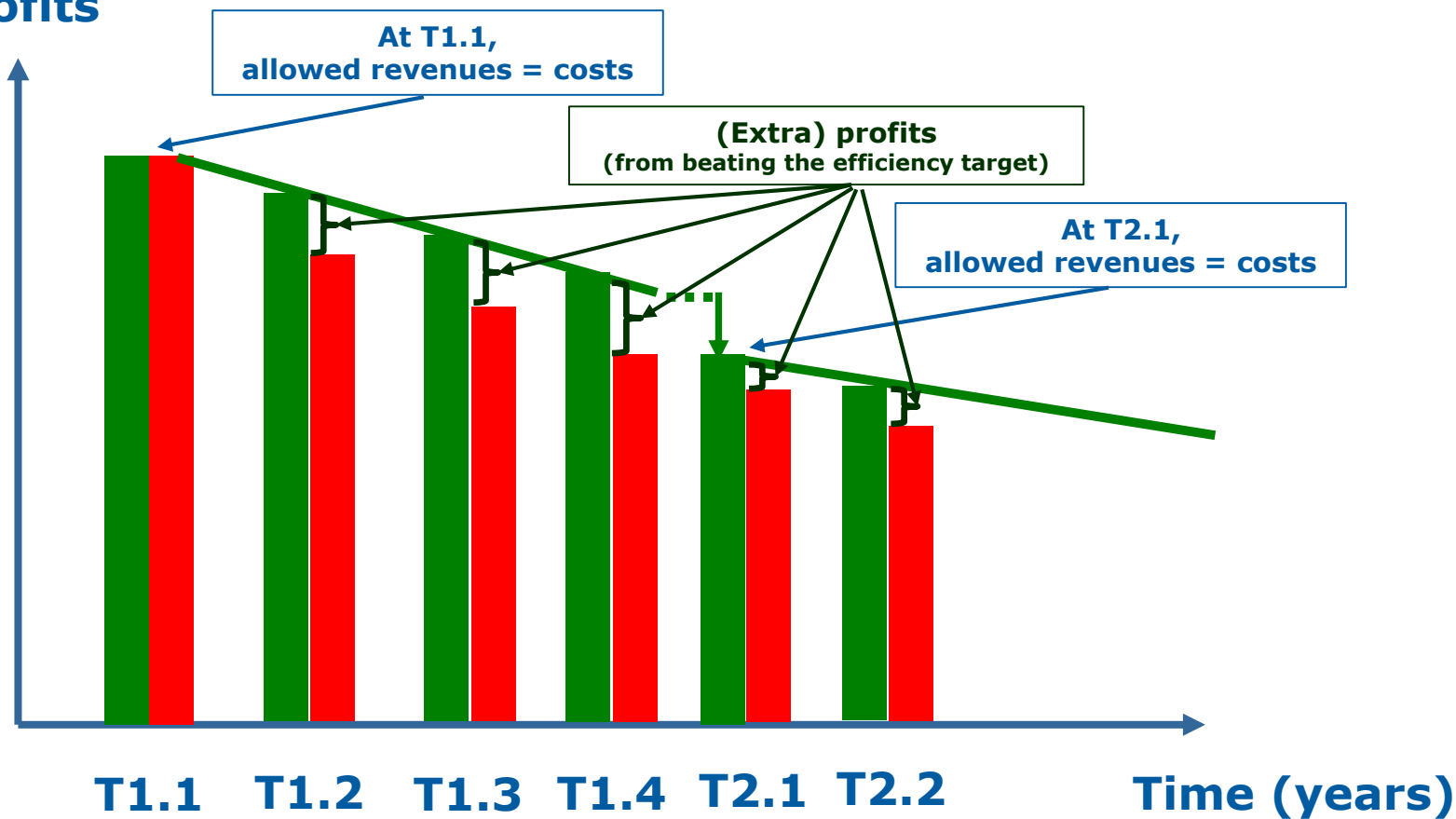
- CoS/RoR Regulation most frequent in the US, also for vertically-integrated utilities (non all States have liberalised their electricity sector)
- In the European Union, incentive-based regulation (price or revenue cap) has prevailed, at least since the 1990s for the regulation of network (monopoly) activities
- The EU preference for Incentive-based Regulation is due to CoS/RoR Regulation being seen as:
 - Providing little incentives for efficiency
 - Promoting over-investment (Averch-Johnson effect)
 - Possibly creating excessive administrative burden
 - Possibly intruding into the operators; management decisions (to allow or disallow certain costs)

A broad characterisation of price/revenue cap

- The current level of total costs, possibly split between OPEX and CAPEX is defined
 - This is also the basis of CoS/RoR Regulation
- The length of the regulatory period is determined
 - Typically 4-5 years
- An efficiency factor (X) is defined
 - Alternative interpretation of X exist
- The need for other adjustments is assessed
 - Quality regulation (to ensure that quality is maintained or improved)
 - Different for price and revenue cap (e.g. throughput, exogenous factors)
- Define the allowed price/revenue trajectory over the whole regulatory period
- If the operator reduces its costs below the allowed revenues level for the year, it profits from the difference

Revenue cap variants

Revenues,
 costs, profits



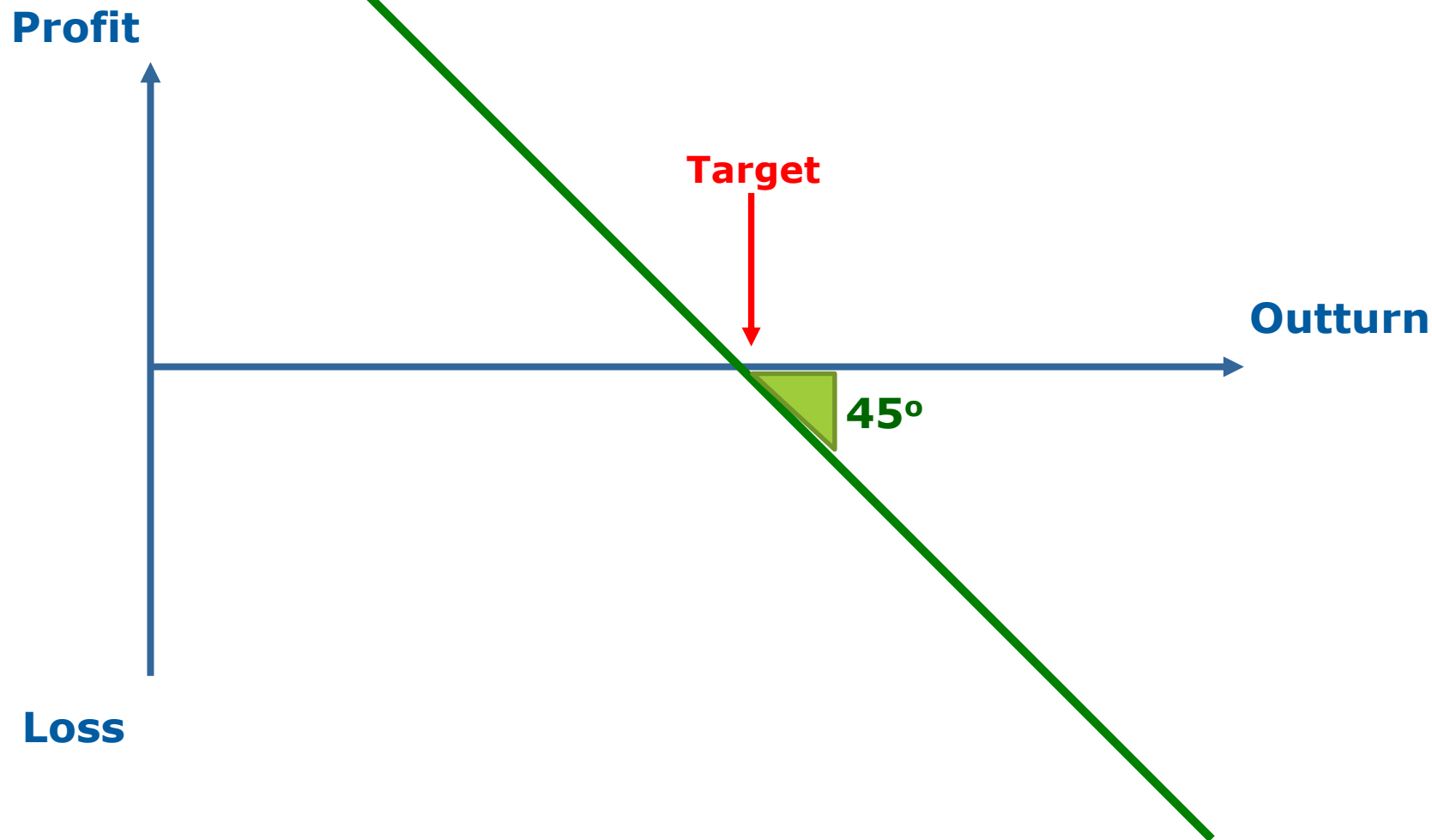
Revenue cap variants

- Profit sharing scheme
 - Any difference between allowed revenues and actual costs is shared between the operator and its customers
 - Lower risk/lower reward/lower incentive to reduce costs for the operator
 - The customers participate earlier in efficiency gains achieved by the operator
- Cap-floor scheme
 - The operator fully benefits from/absorb the difference between the allowed revenues and actual costs, as long as this difference stays within a cap-floor range. Beyond this range, the difference in excess is passed on to consumers
 - The risk for the operator is reduced, but so are also the incentive for efficiency

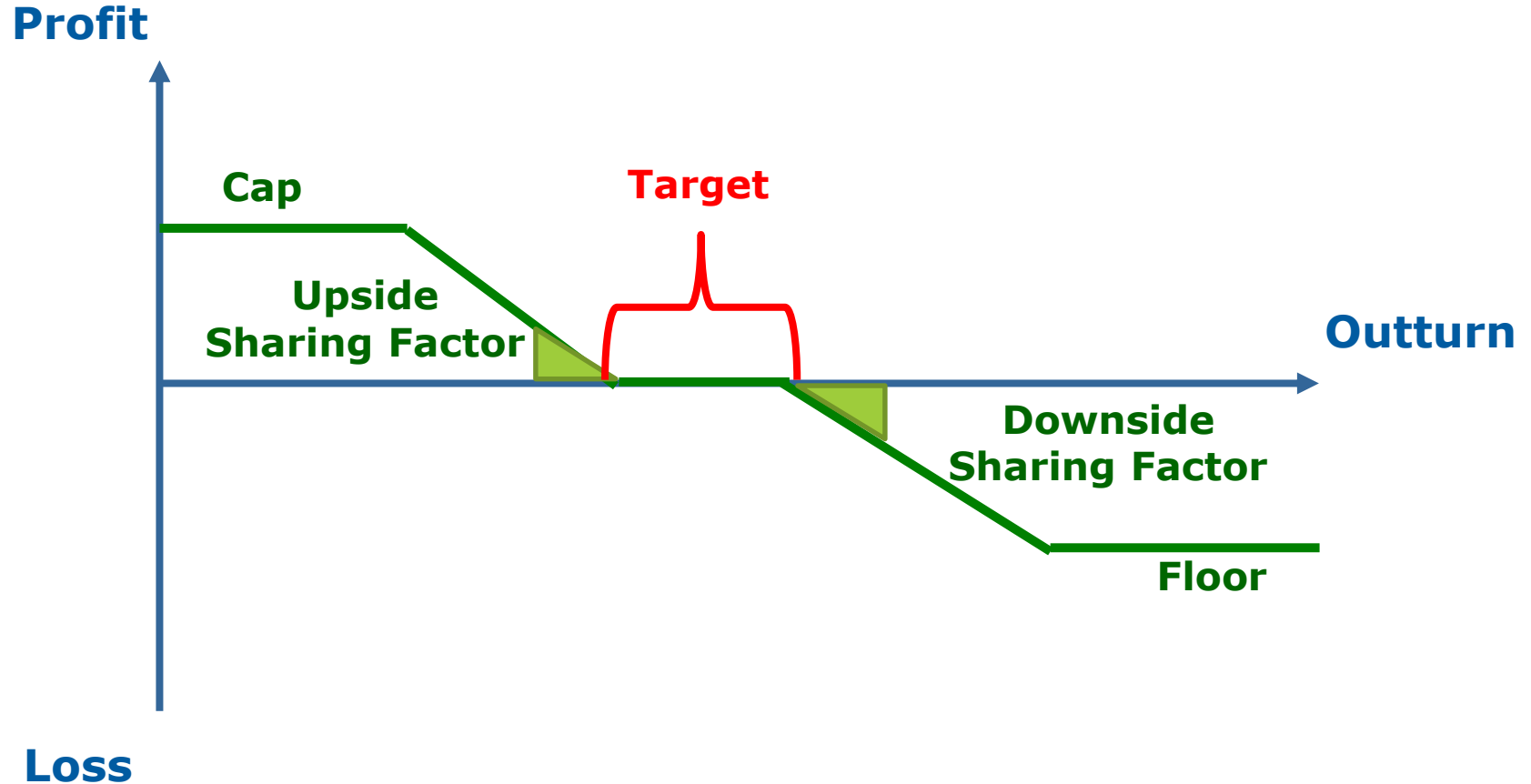
Price-cap, Revenue-cap or Profit-sharing Regulation

- Price-cap Regulation is best fit when costs highly depend on output/throughput (on which the price is charged)
- Revenue-cap Regulation is best fit when costs do not significantly depend on output/throughput (an adjustment to the revenue-cap level might be envisaged)
- Profit-sharing Regulation might be best when there are significant unknowns

A typical Revenue cap scheme (also used for quality regulation)



A typical profit sharing scheme (also used for quality regulation)



System Operation Balancing Services Incentive Scheme (National Grid – UK)

Year	Target (£m)	Sharing factors (%)		Cap (£m)	Floor (£m)	Actual (£m)	NIA (£m)	NG Share (£m)
		Up	Down					
2001/02	382	40	12	46.3	-15.4	263.0	58.2	46.3
2002/03	367	60	50	60	-45	285.6	-51.7	48.6
2003/04	340	50	50	40	-40	280.8	0.43	32.2
2004/05	320	40	40	40	-40	289.2	-11.4	12.2
2005/06	378	40	20	40	-20	427.2	-104	-4.0
2006/07	n.a.	n.a.	n.a.	n.a.	n.a.	495	n.a.	n.a.
2007/08	430-445	20	20	10	-10	451	-128	-1.2
2008/09	530-545	25	25	15	-15	827	-94	-15
2009/10	571.43-601.43	25	15	15	-15	416	-261	15

NIA = Net Imbalance Adjustment

Pros and Cons of Incentive-based Regulation

PROS

- Simple and clear incentives
- Balance between the interests of the operators and of the consumers
- Moderate information requirement
- Robust vis-à-vis accounting systems

CONS

- Requires a cost review to set the starting level (but the same would be needed for CoS/RoR Regulation)
- Requires the definition of the efficiency target level (X)
- Political acceptability of extra profits between two reviews
- May lead to degrading performance quality, if quality is not included in the scheme



**Thank you
for your attention**

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