enefirst.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 839509. The sole responsibility for the content of this presentation lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EASME nor the European Commission are responsible for any use that may be made of the information contained therein.

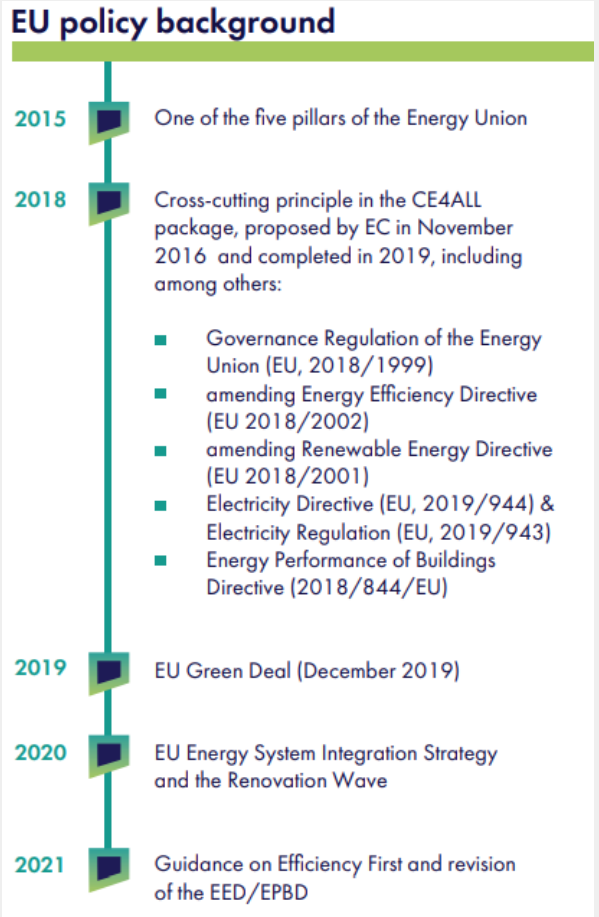
Getting EE1st implemented

Zsuzsanna Pató
RAP

EE1st is a crosscutting principle

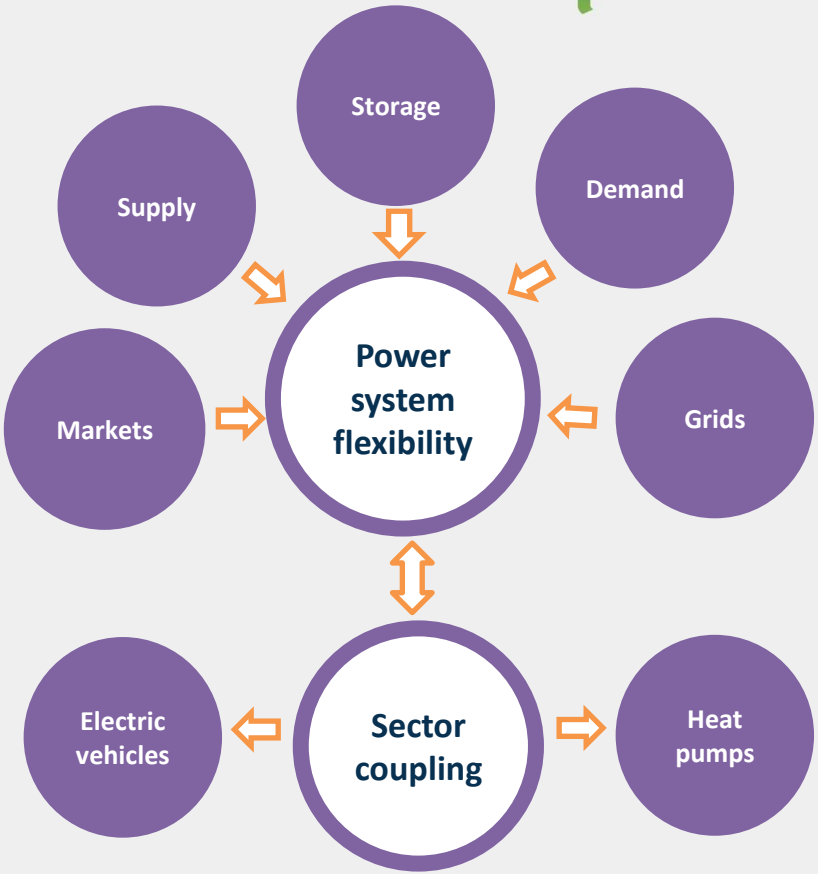
Most recently:

- Fit for 55
- RePowerEU



EE1st is one of the dimension of system integration:

- across supply, demand and storage
- across energy carriers



Source: Based on IRENA

Possible energy efficiency targets in the Energy Efficiency Directive

		PRIMES-2007 baseline [d]	PRIMES-2020 baseline [e]
	Targeted/projected level of final energy consumption in year 2030 | % difference to baseline		
Energy efficiency target for final energy consumption			
EED-2018 [a]	846 Mtoe	1,253 Mtoe | -32.5%	864 Mtoe | -2.1%
EED-2021 [b]	787 Mtoe	1,253 Mtoe | -37.2%	864 Mtoe | -9.0%
ENEFIRST scenarios [c]			
LOWEFF	800 Mtoe	1,253 Mtoe | -34.8%	864 Mtoe | -5.5%
MEDIUMEFF	792 Mtoe	1,253 Mtoe | -35.5%	864 Mtoe | -6.5%
HIGHEFF	786 Mtoe	1,253 Mtoe | -36.0%	864 Mtoe | -7.2%

(a) Based on amended Energy Efficiency Directive (European Union 2018a, Art. 3), excluding United Kingdom (European Union 2019) | (b) Based on Commission proposal for recast of Energy Efficiency Directive (European Commission 2021d, Art. 4) | (c) Projections for residential and tertiary sectors based on ENEFIRST project; industry and transportation sectors based on REG_MAX scenario in Impact Assessment accompanying recast of the Energy Efficiency Directive (European Commission 2021c) | (d) EU Reference Scenario 2007 (Capros et al. 2007) | (e) EU Reference Scenario 2020 (Capros et al. 2021)

… and electrification of heating

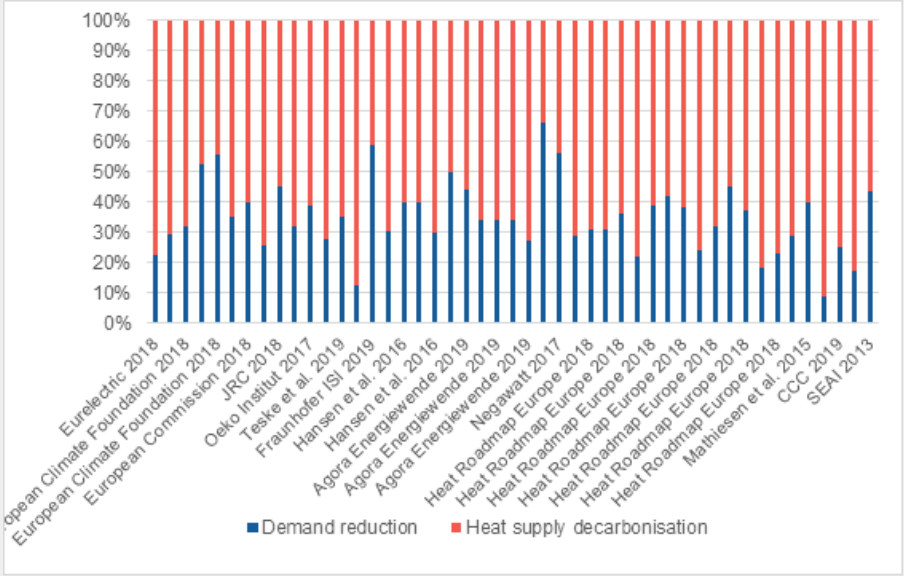
- Planning for a timely, efficient and equitable decommissioning of unneeded gas networks
- The coordination of the network investment and divestment by the national regulator

Source: Efficiency First For System Decarbonisation, 2022

A strategic approach supports the optimal mix and timing of energy efficiency and electrification effort

- Energy efficiency in power sector cannot be measured by lower consumption as we electrify heat and transport
- Sequencing of demand and supply side solutions is key to proper sizing of supply infrastructure
- Analysis required to identify least cost carbon abatement mix of efficiency and electrification in buildings

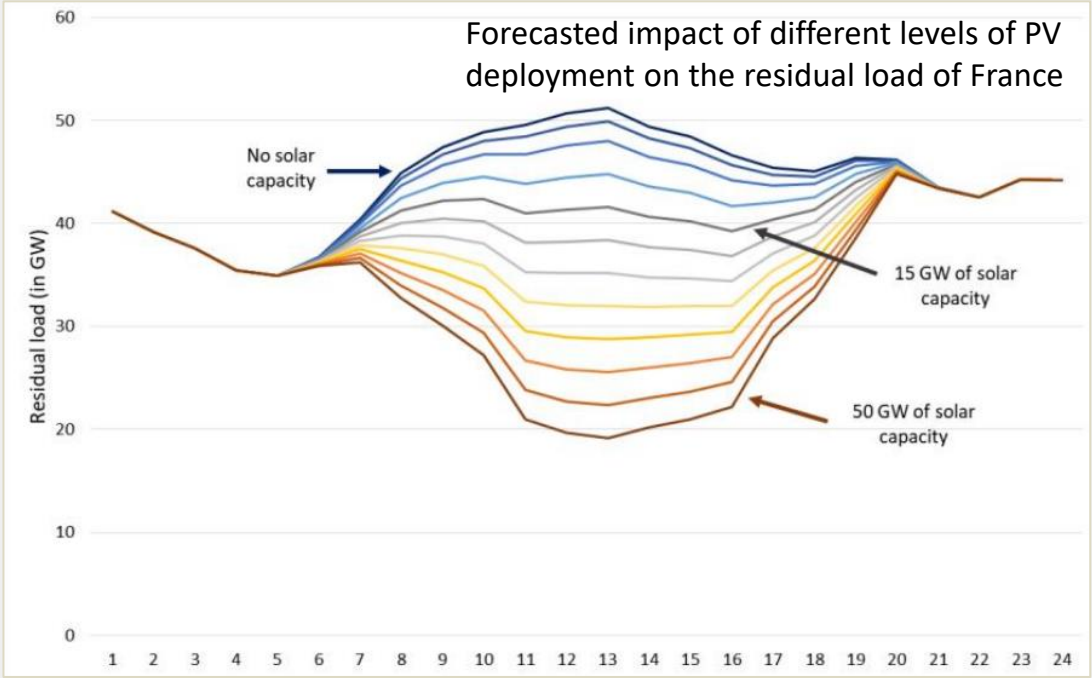
Demand reduction and heat supply decarbonisation in selected studies



Source: RAP, forthcoming

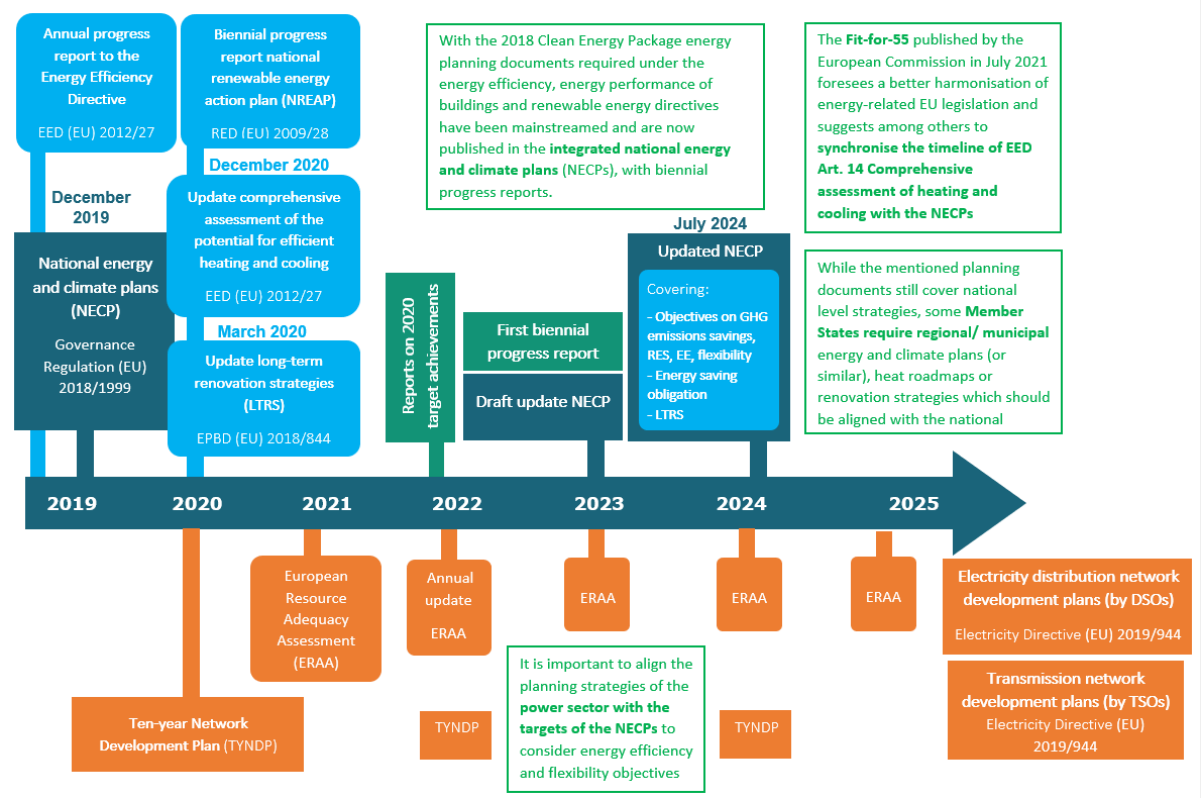
EE1st in the short term: need for new thinking

„from a world where we forecasted demand and scheduled supply to a world where we will forecast supply and schedule demand,”

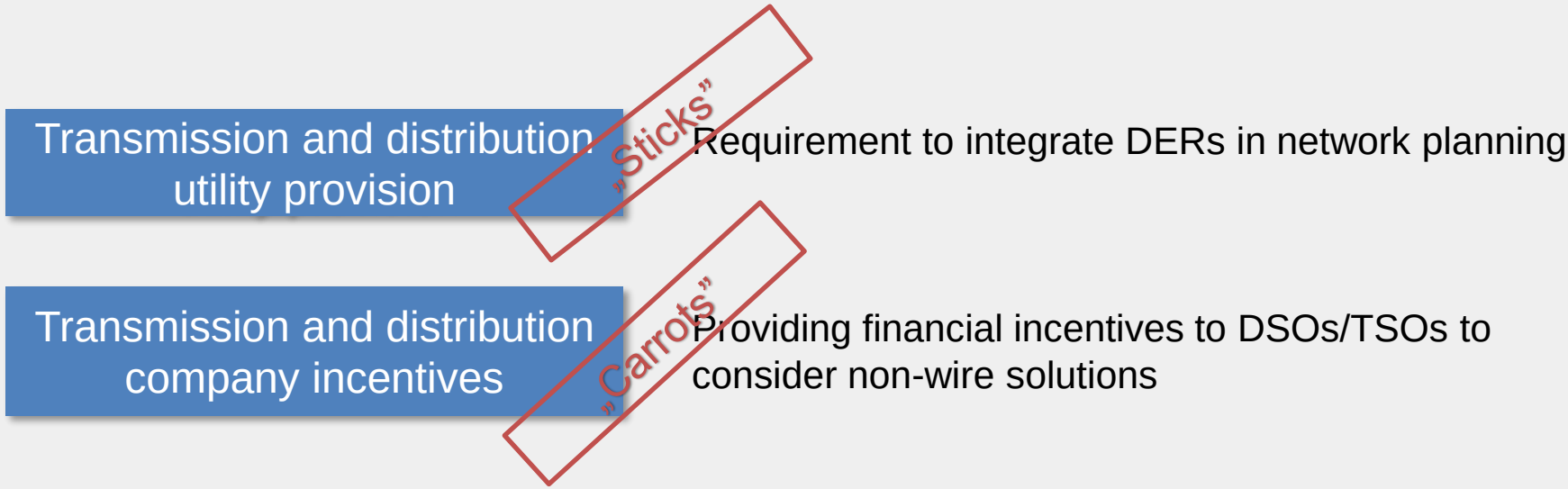


Source

EE1st in the long term: consistency across plans



Power infrastructure planning



Transmission and distribution utility provisions

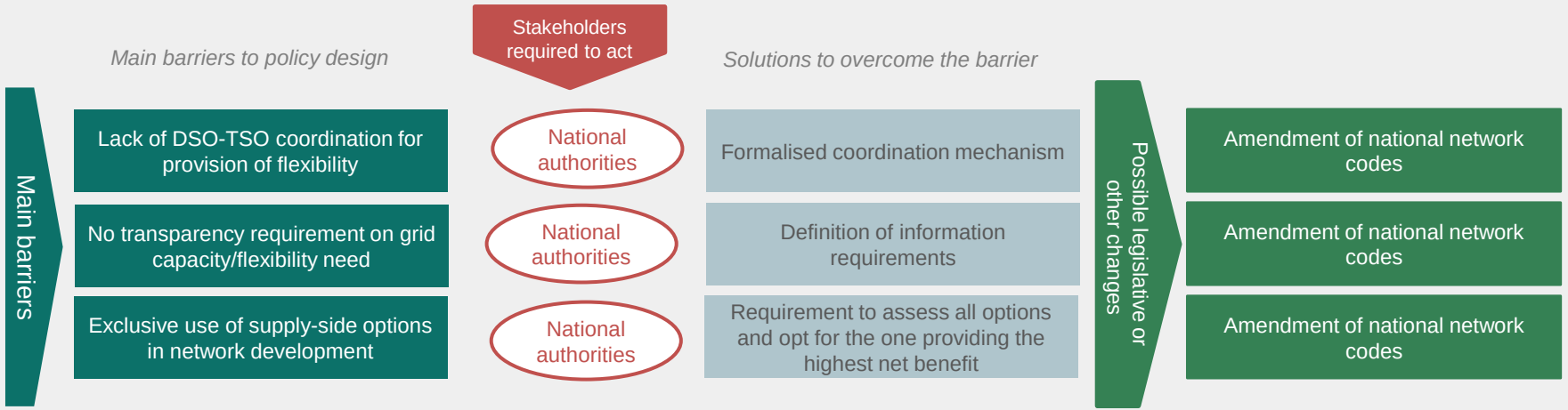
Provisions for network companies - both at transmission and distribution levels - that require the consideration of demand-side resources in grid planning and operations.

Business as usual	EE1st scenario
TSOs and DSOs planning is based on forecasted peak load and a fit-and-forget approach.	TSOs and DSOs have to assess the potential and the cost of mobilising demand-side resources and **use them as alternatives** to network investment whenever providing more net benefit.
Development plans are not public and only discussed with the NRAs.	Network planning is **public** so that the need for demand resources and their availability can be matched.

Overcoming the main barriers

Transmission and distribution utility provisions

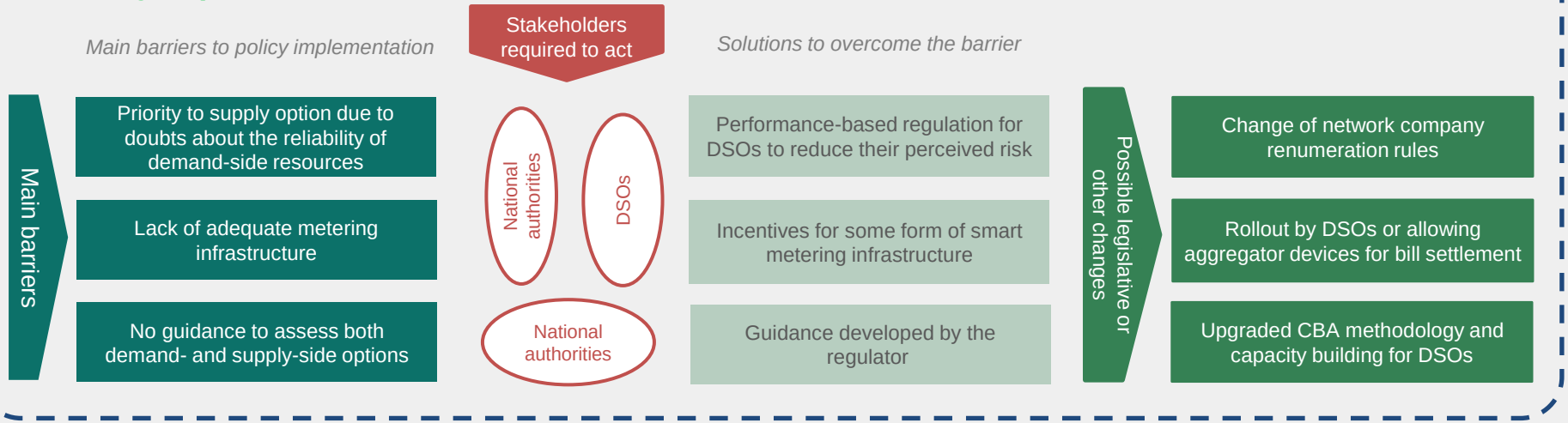
I. Policy design



Overcoming the main barriers

Transmission and distribution utility provisions

II. Policy implementation

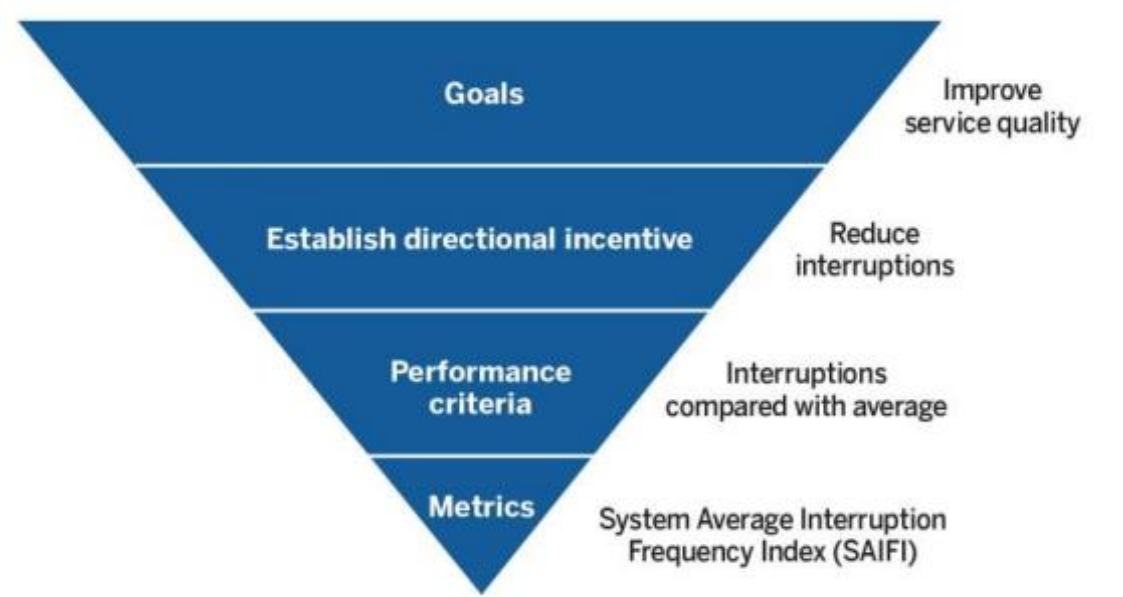


Transmission and distribution company incentives

Financial incentives for regulated network companies (DSOs, TSOs) to consider and invest into demand resources as an alternative to building new grid capacities.

Business as usual	EE1st scenario
Network companies have an **incentive to invest** into their assets as they earn a rate of return on the investment	The same revenue can be earned on **all types of costs** incurred (capex or opex)
Network companies have **no incentive** to actively innovate and **align with the power system transition**	**Performance-based incentives** could reduce the inertia of network companies and their appetite for more risky but potentially more efficient solutions.

Performance-based regulation (PBR): from goal to metrics

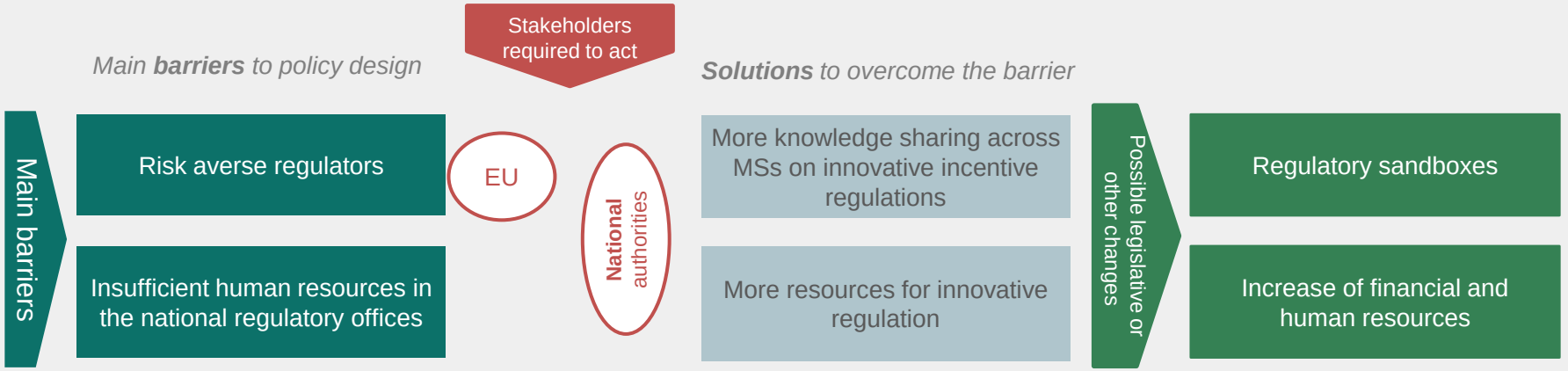


Source: RAP, 2019

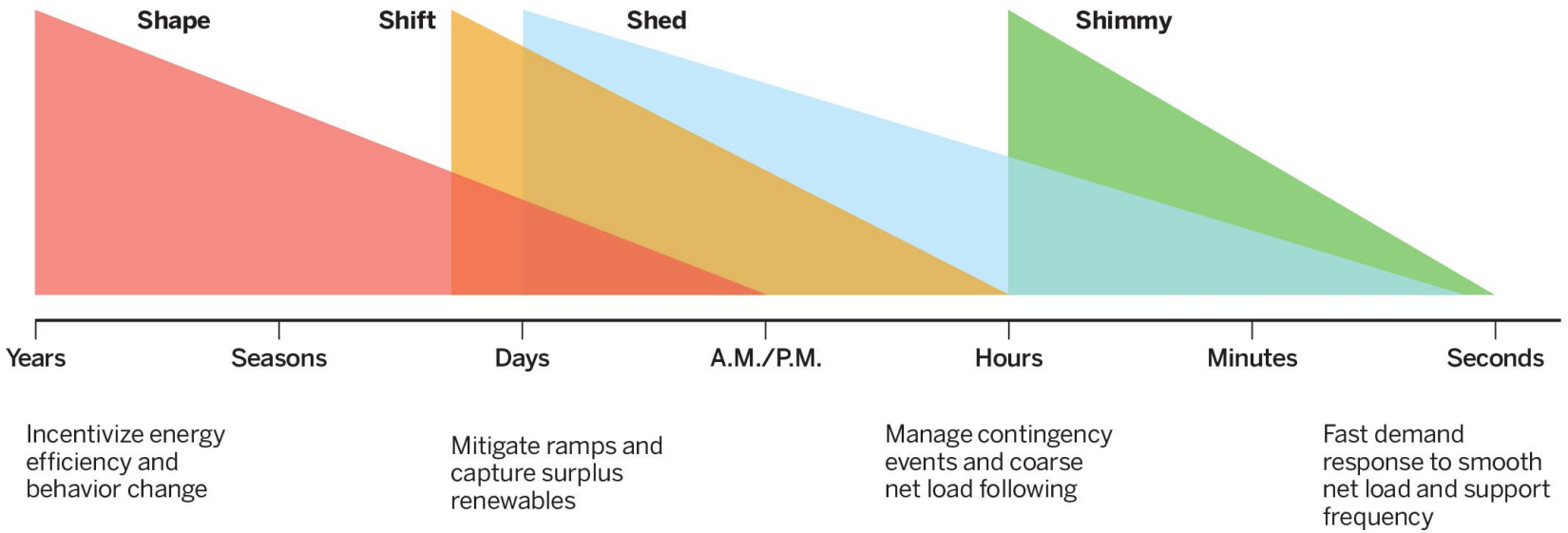
Overcoming the main barriers to the design and implementation of EE1st

Transmission and distribution company incentives

I. Policy design and implementation



Consumers are power system resources



Source: Alstone, P., et al. (2017). *2025 California Demand Response Potential Study — Charting California's Demand Response Future: Final Report on Phase 2 Results*

Thank you

Zsuzsanna Pató

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