



European Union Agency for the Cooperation
of Energy Regulators

Demand response and other distributed energy resources: what barriers are holding them back?

2023 ACER Market Monitoring Report

TTE Council meeting - 19 December 2023 in Brussels
Christian Zinglensen, ACER Director

Our energy transition is linked to further improving demand response ...

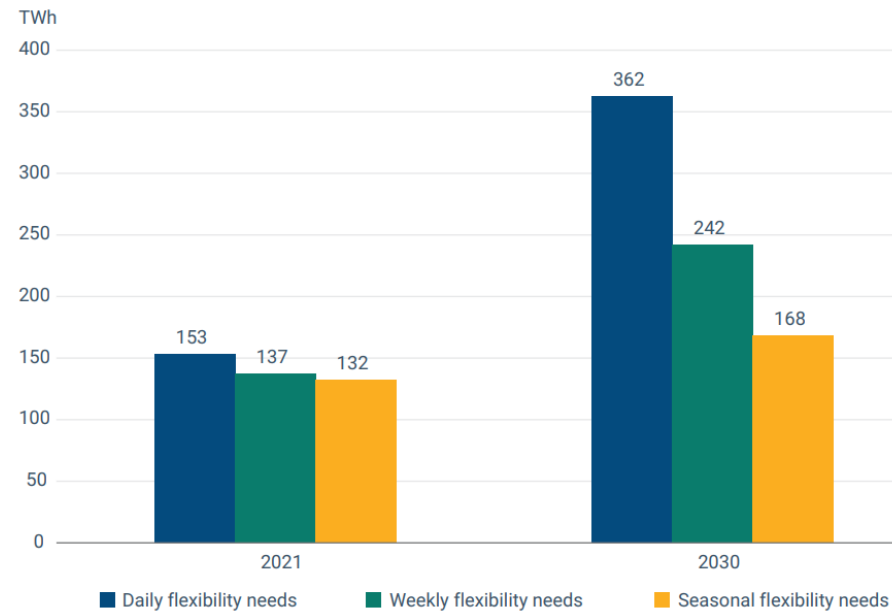
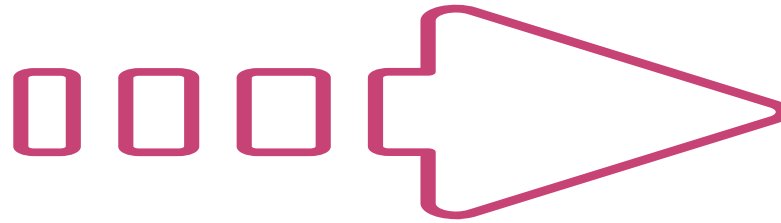
Flexibility is becoming the ‘name of the game’ ...

EU renewables target:



42.5%
by 2030

Currently at
22% in 2021

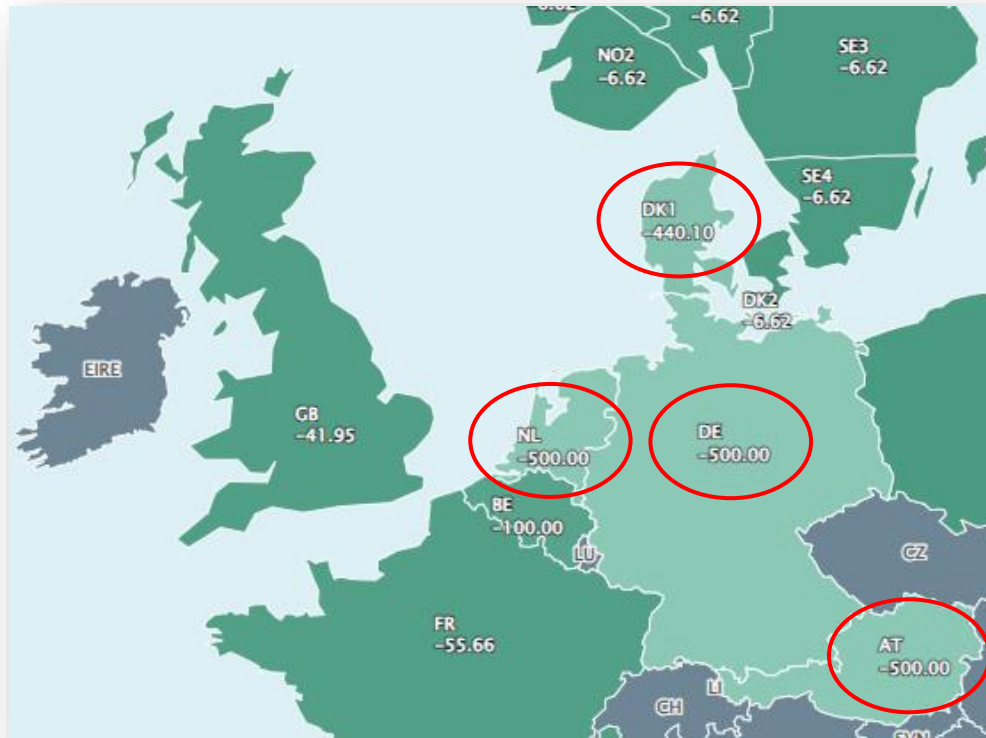


Flexibility in the EU power system
needs to double by 2030

The **energy transition** implies a surge in intermittent renewable energy sources and further electrification of energy needs, such as heating. As such, **future flexibility needs will increase significantly.**

Negative prices: indicators ‘telling us something’

Day-Ahead Price, North West Europe (EUR/MWh)*



John Doe, place unknown

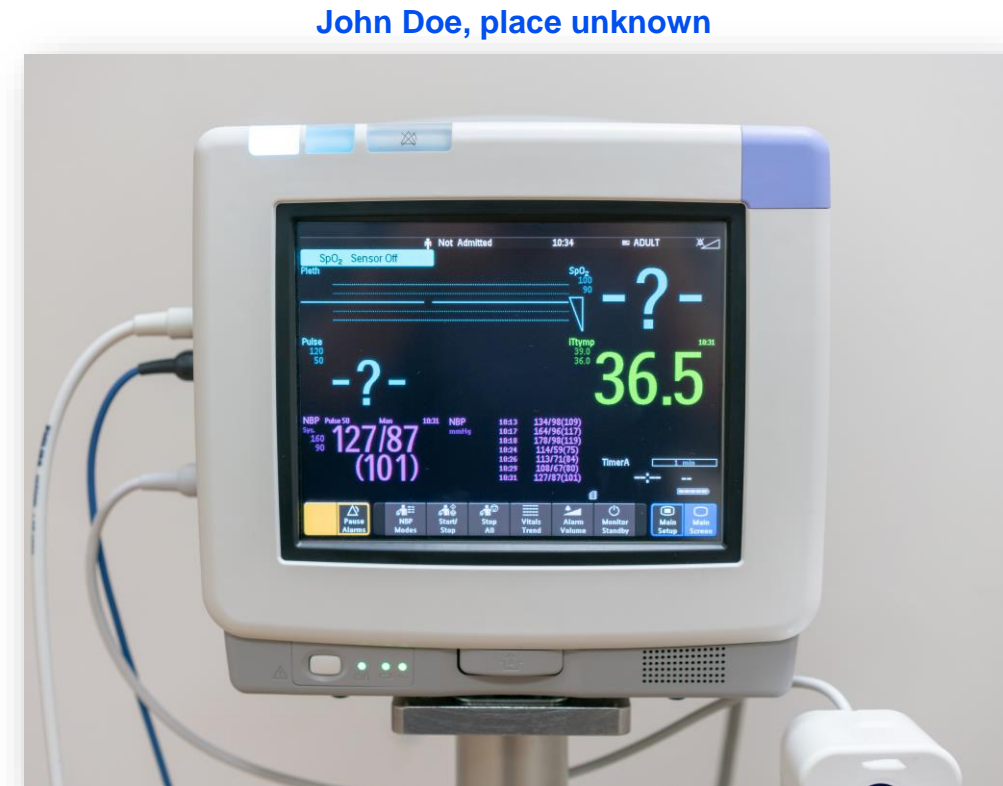
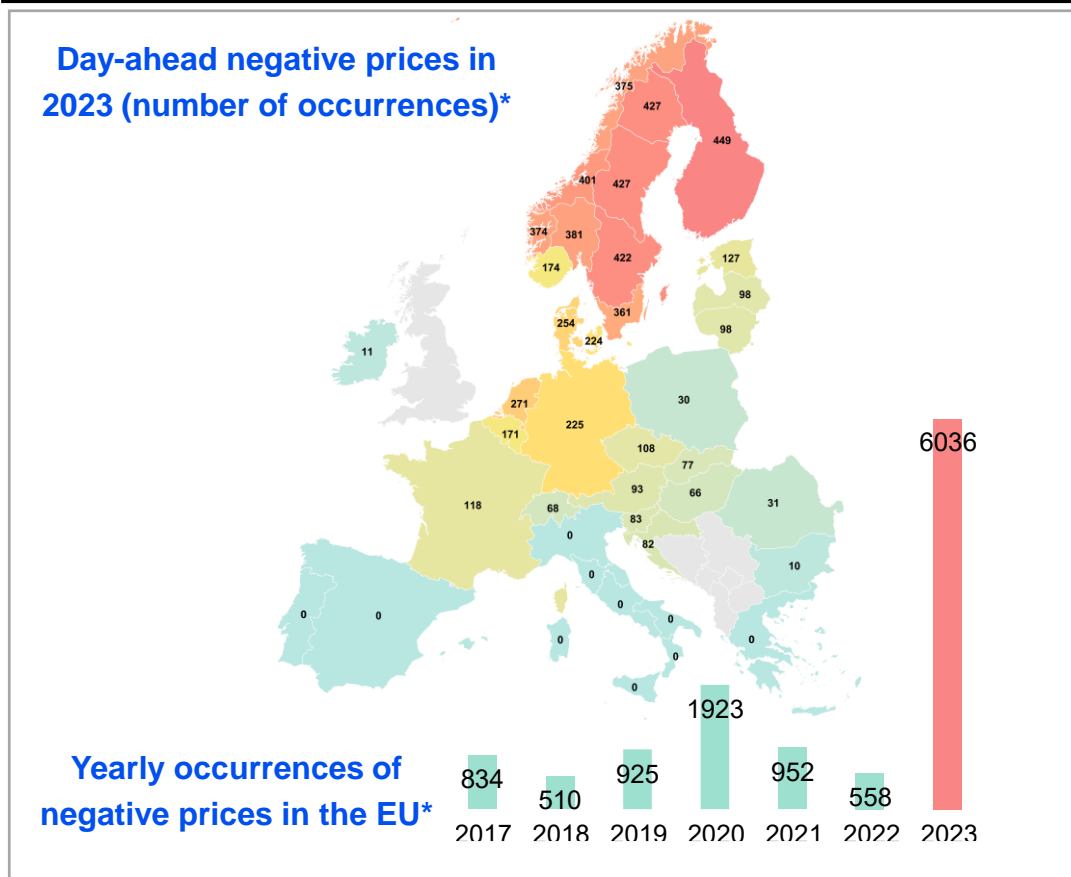


High/low wholesale prices send signals to generators (*where to invest / when to produce*), to traders (*where to trade*) and to consumers (*if/when to consume*).

Consistently low or high prices call for attention, possibly signalling the need for a more responsive power system.

* Source: Nordpool website <https://www.nordpoolgroup.com/en/maps/#/nordic>. Day-ahead prices 02/07/2023 14.00-15.00h.

Negative prices: indicators ‘telling us something’



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* Source: ACER calculation based on ENTSO-E data.
Note: One occurrence corresponds to one hour during which prices are negative.

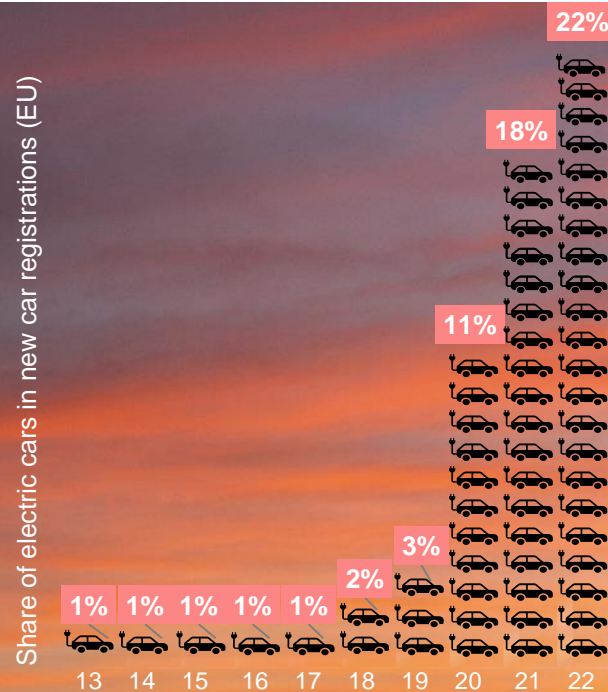
Bringing challenges, yes, but also opportunities

Unlocking demand response and other distributed energy resources can bring significant opportunities.

Making the most out of your resources

- Many consumers will invest in electromobility, rooftop solar panels, batteries, etc. They can become **AN ACTIVE PART OF THE SOLUTION.**

Sharp rise in electric car sales



Source: European Environment Agency



Bringing challenges, yes, but also opportunities

Unlocking demand response and other distributed energy resources can bring significant opportunities



More cost-efficient market and system operation

- Reducing peak prices
- Helping to balance the power system
- Preventing blackouts



Savings for consumers

- Electricity bill savings for **ALL CONSUMERS**, not just for those providing demand response

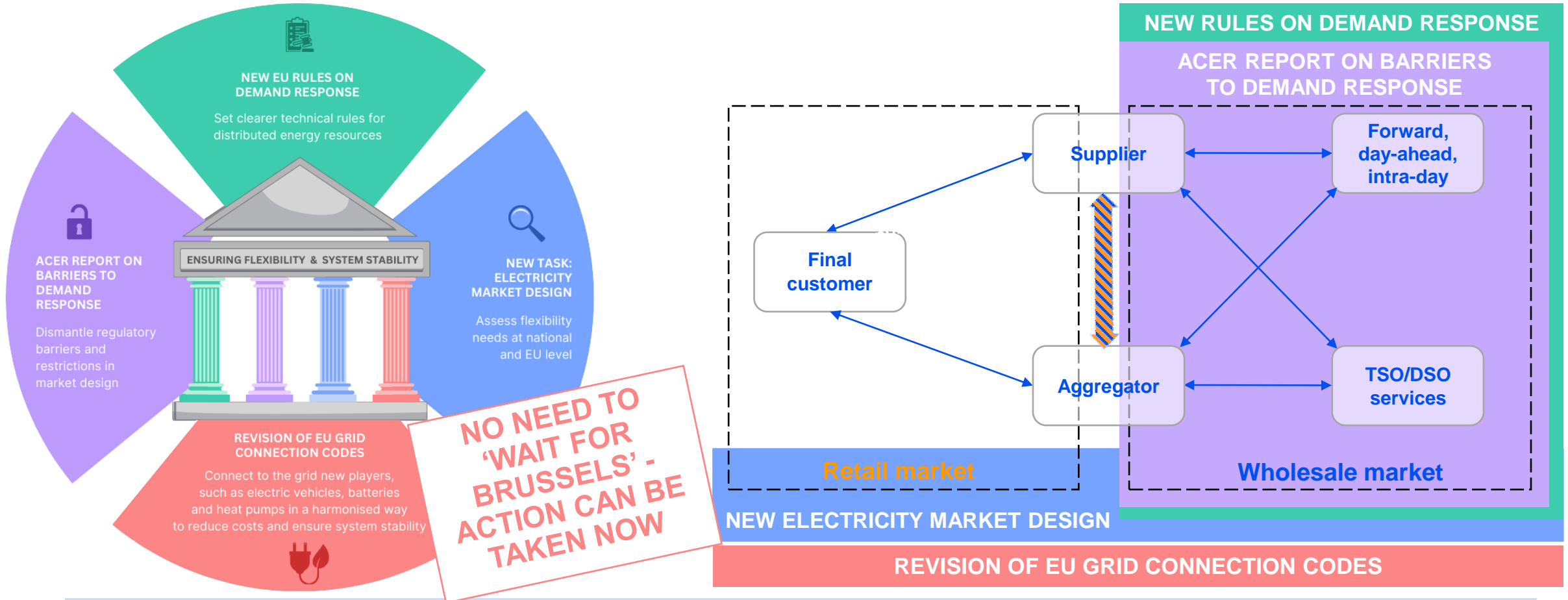


More cost-efficient network development

- Reducing the risk of grid overload
- Helping to solve network congestion as an alternative/complement to more costly grid build-out

Barriers come in many sizes and shapes ...

Multiple EU efforts ongoing to ‘unlock’ flexibility



This report presents **regulatory barriers** and **restrictions in market design** that merit further consideration and **possible removal**.

Barriers to demand response, zooming in ...

Barrier	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HR	HU	IE	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK
Lack of a proper legal framework to allow market access			High	Moderate	Moderate	Moderate				Moderate								Moderate			Moderate	Moderate						
Unavailability or lack of incentives to provide flexibility	Moderate	Moderate	High	Moderate	Moderate	Moderate	High			Moderate		Moderate	Moderate	Moderate	High		Moderate	Moderate		Moderate	Moderate	Moderate	High	Moderate	Moderate	Moderate	Moderate	Moderate
Restrictive requirements to providing balancing services			High	NAP				Moderate				Moderate		High	Moderate				NAP			Moderate	Moderate					
Restrictive requirements to providing congestion management	High		High	High	High	Moderate	High	NAP			Moderate				High		NAP	NAP	High	High	High	High	Moderate		Moderate		High	
Restrictive requirements to participating in capacity mechanisms	NAP	Moderate	NAP	NAP	NAP	Moderate		NAP	NAP	Moderate	NAP	NAP	NAP	NAP	Moderate		NAP	NAP	NAP	NAP	NAP	NAP	Moderate	NAP	NAP	NAP	NAP	NAP
Restrictive requirements to participating in interruptibility schemes	NAP	NAP	NAP	NAP	NAP	Moderate		NAP	NAP	NAP	Moderate	NAP	NAP	NAP	NAP		NAP	NAP	NAP	NAP	NAP	NAP	Moderate	NAP	NAP	NAP	NAP	NAP
Limited competitive pressure in the retail market			Moderate	Moderate		High	High				Moderate	Moderate	Moderate	Moderate	Moderate		Moderate	Moderate		High	Moderate	Moderate	Moderate	Moderate			Moderate	
Retail price interventions		High	Moderate	High			NAP	NAP		NAP	Moderate	High	Moderate	Moderate	NAP		Moderate	High	NAP	High	High	High	High	High	High	High	High	High

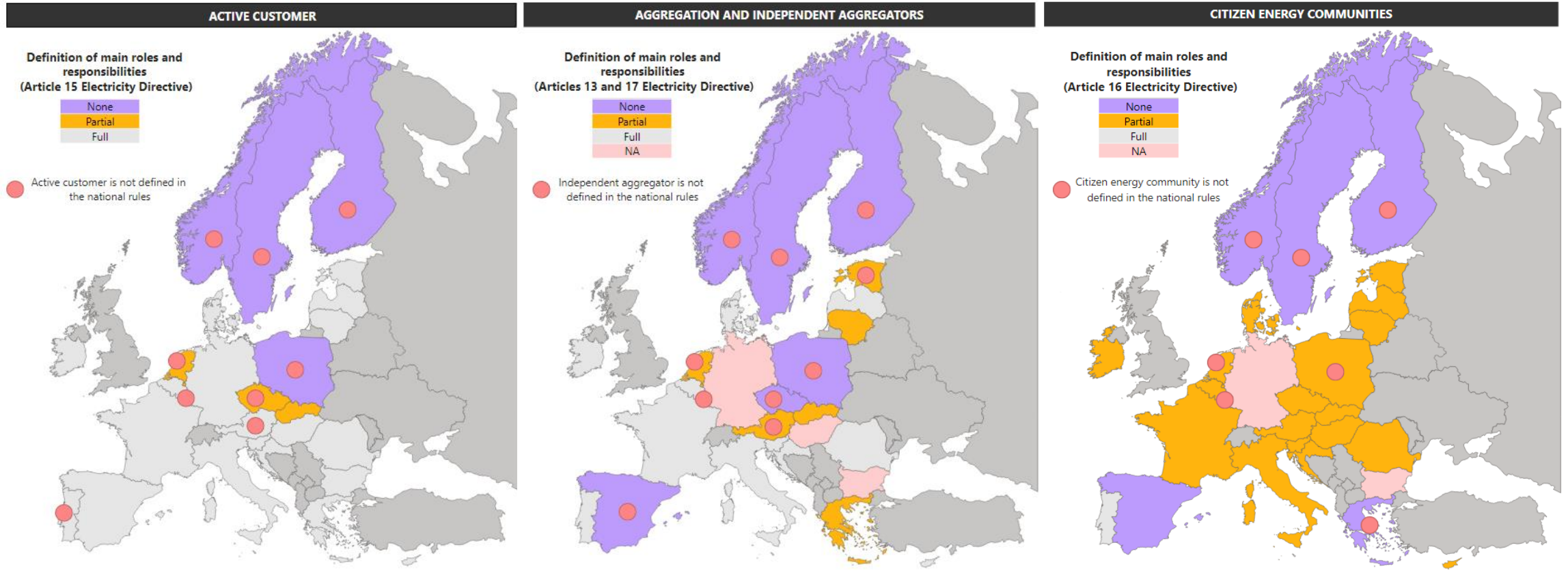
■ High
 ■ Moderate
 ■ Low
 ■ Not (too) restrictive
 ■ N/A
 ■ NAP



Barriers to demand response are often 'hiding in plain sight'.
The sum of many small obstacles can add up to significant barriers, impeding system flexibility.

Some examples of barriers holding back demand response ...


A proper legal framework is a precondition to unlock demand



Many Member States lack defining the **main roles and responsibilities** of new entrants and small actors in line with the **Clean Energy Package**.

Without price signals or incentives ... why respond?

The rollout of smart meters in Europe (EU-27 + Norway)

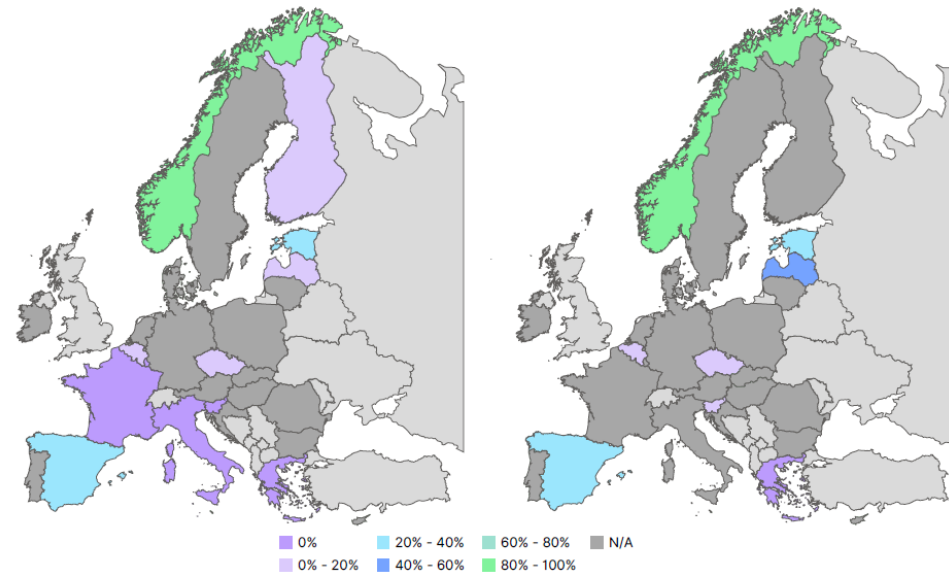


- 13** SUCCESSFUL
- 4** PROGRESSING
- 6** BARELY STARTED
- 5** NO SMART METERS


Consumers need **smart meters** to provide demand response.

Consumers need **proper price signals in their electricity bills** to provide demand response.

Share of households (left) and non-households (right) with dynamic electricity price contracts, 2022



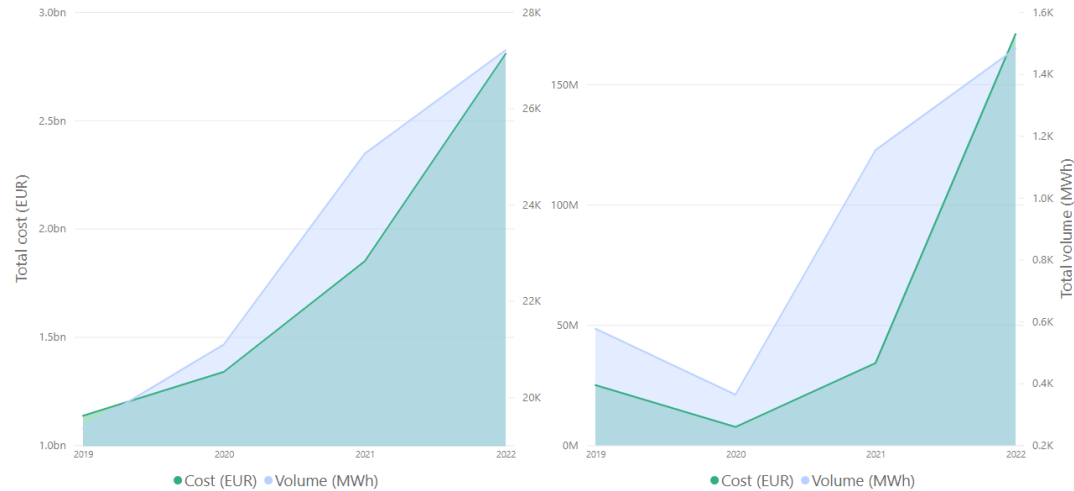
Consumers need to know **they can benefit** from demand response.

 For consumers to become **active** they need both the relevant **technical means** (e.g. smart metering) and the **incentives** to do so (hence, the role of price signals and accessible informational tools).

*Source: <https://europa.eu/eurobarometer/surveys/detail/3053>; Eurobarometer.

Demand response can reduce network congestion costs

Costs and volume of actions taken by transmission system operators to solve network congestion in Germany (left) and France (right) - 2019-2022*



In general, **network congestion** is expected to **further increase**. This applies even more so for the **distribution level** as more and more **rooftop solar, battery storage, electric vehicles** etc. are connected.

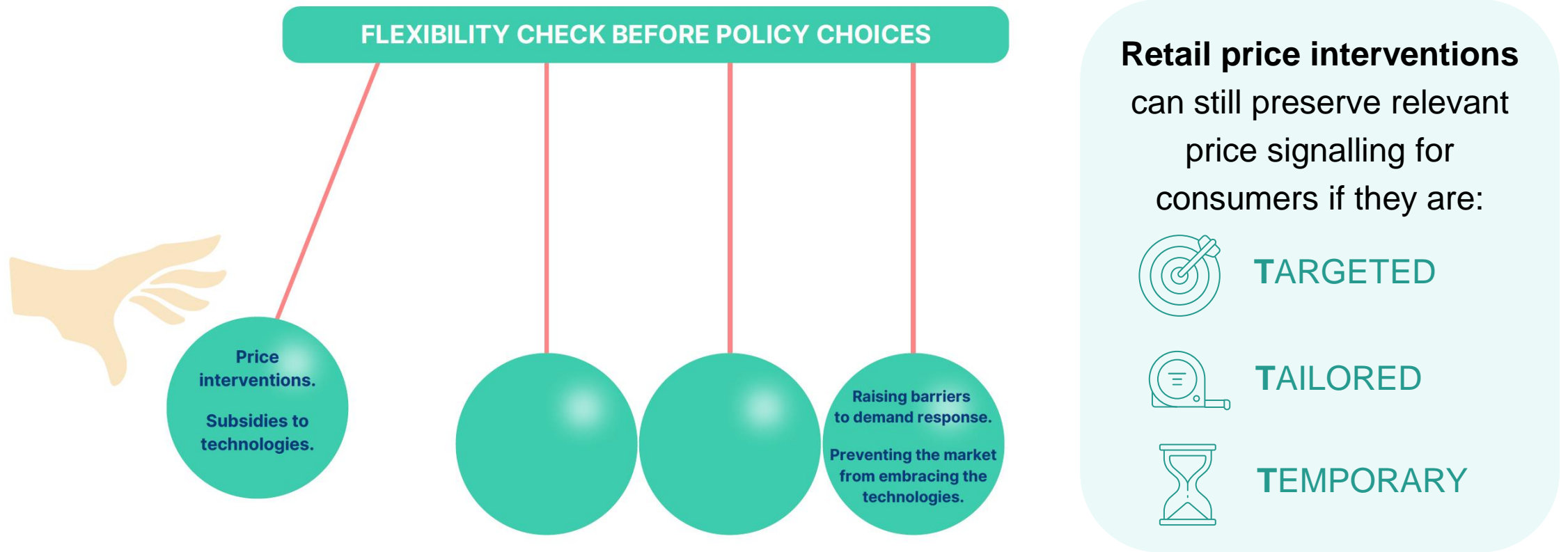
How can system operators solve network congestion?

- Network reinforcement/expansion*
- Re-dispatching of conventional power plants*
- Curtailing renewable generation*
- Interruptible tariffs*
-*
- Local markets for re-dispatching*** (still in an infancy stage)



Demand response and other distributed energy resources can play a role in **local markets**, at times being the **most cost-efficient manner to solve network congestion**.
Member States need a **transparent national process** to determine whether local markets could be an **appropriate response**.

Price interventions impact demand response



The impact of **retail price interventions** and **subsidies to certain technologies** needs to be carefully considered. The risk is that, unless well designed, they could **remove price signals** to reduce/shift electricity demand and/or prevent distributed energy resources from **accessing electricity markets**.

A possible “To-Do list” to address barriers ...

ACER's main recommendations for governments, regulators and system operators to remove regulatory barriers and restrictions in the market design for demand response and other distributed energy resources



1 Speed up implementing regulatory changes to **remove persistent barriers**.



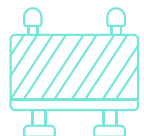
2 Set suitable **rules for new entrants**: clarify roles and responsibilities, define aggregation models, ensure data access, etc.



3 Ensure **open access** to all electricity markets and system operation services (balancing and congestion management services).



4 Provide the **technical means** and **incentives** by speeding up the rollout of smart meters, giving proper price signals in the electricity bills and raising consumer awareness.



5 Remove **restrictive requirements** to participate in balancing markets, capacity mechanisms and interruptibility schemes.



6 Ensure that **local markets for congestion management** have a chance to develop and mature. Define a transparent national process to assess when/where local markets may be implemented.



7 Facilitate new entrants' **access to retail electricity markets**.



8 Be **targeted, tailored and temporary** when considering retail price interventions.



9 Ensure **sufficient granular data** on all restrictions to demand response and other distributed energy resources.

Want to
learn more ?

Check out our ACER Market Monitoring Report on Demand response and other distributed energy resources: what barriers are holding them back?



Annex



- **Supporting the integration of energy markets in the EU** (by common rules at EU level). Primarily directed towards transmission system operators and power exchanges.
- **Contributing to efficient trans-European energy infrastructure**, ensuring alignment with EU priorities.
- Monitoring the well-functioning and transparency of energy markets, **detering market manipulation and abusive behaviour**.
- Where necessary, **coordinating cross-national regulatory action**.
- Governance: **Regulatory oversight is shared** with national regulators. **Decision-making** within ACER is collaborative and joint (formal decisions requiring 2/3 majority of national regulators). **Decentralised enforcement** at national level.