



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

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

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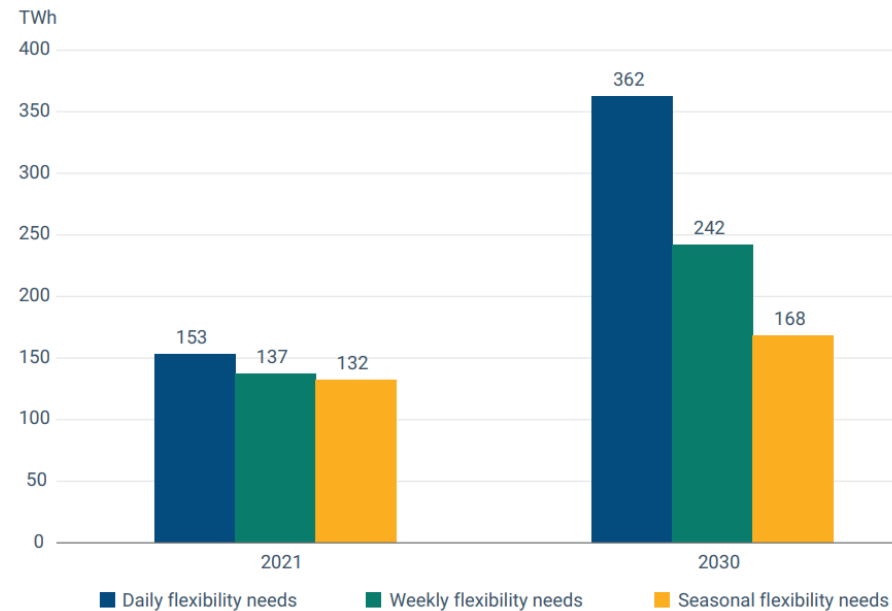
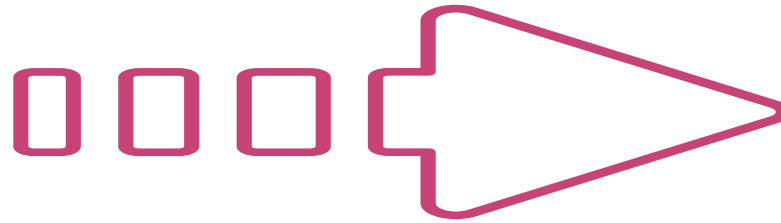
# Flexibility is becoming the ‘name of the game’ ...

EU renewables target:



**42.5%**  
by 2030

Currently at  
22% in 2021



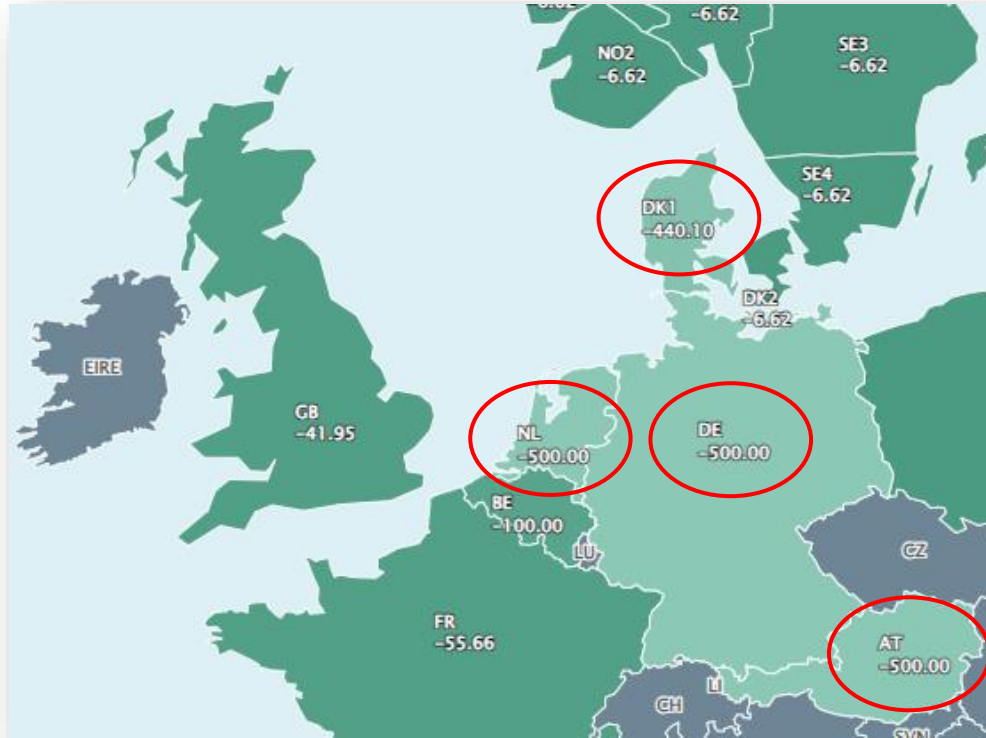
Flexibility in the EU power system  
needs to double by 2030

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

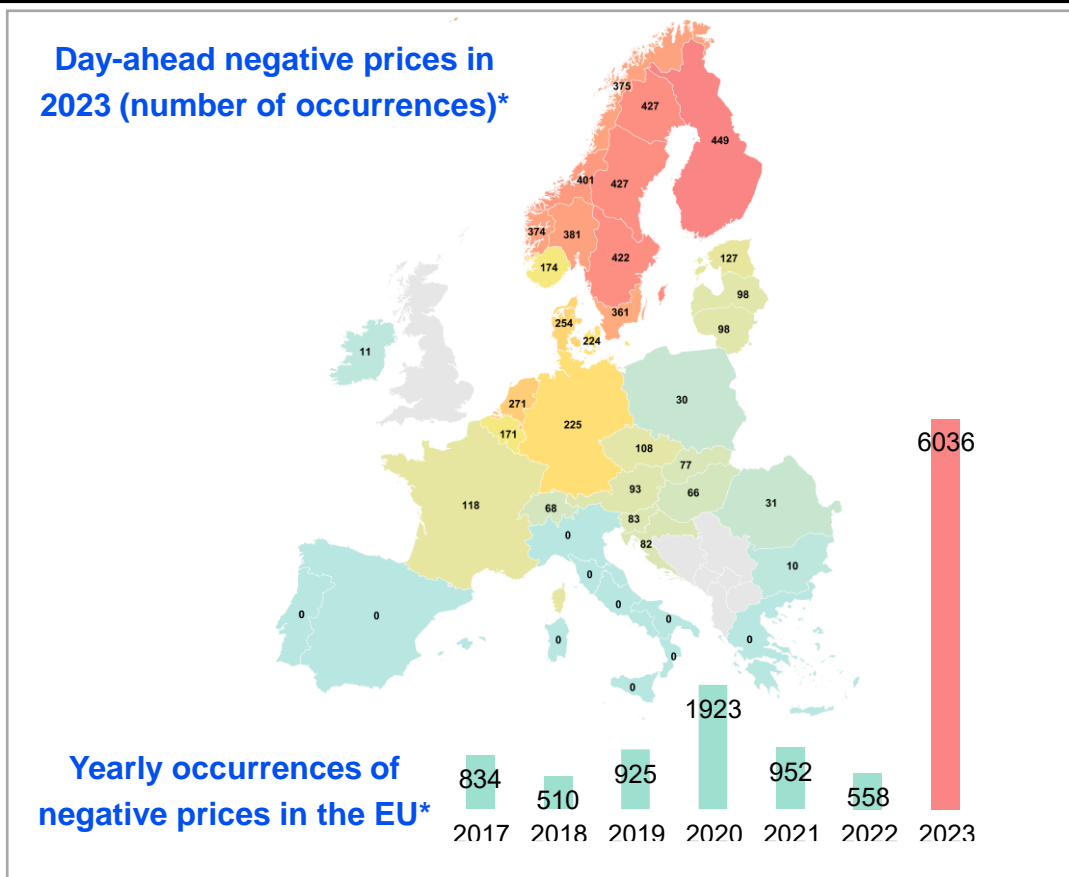


High/low wholesale prices send signals to generators (*where to invest / when to produce*), to traders (*where to trade*) and to consumers (*if/when to consume*).

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

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

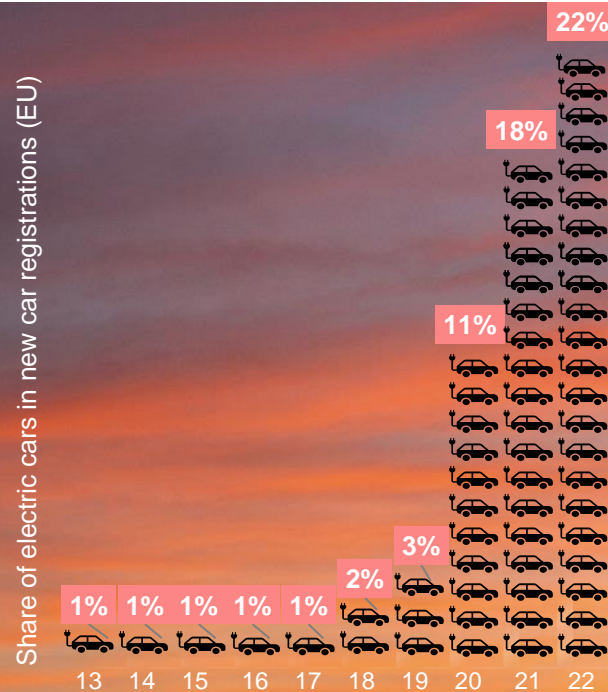
# Bringing challenges, yes, but also opportunities

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

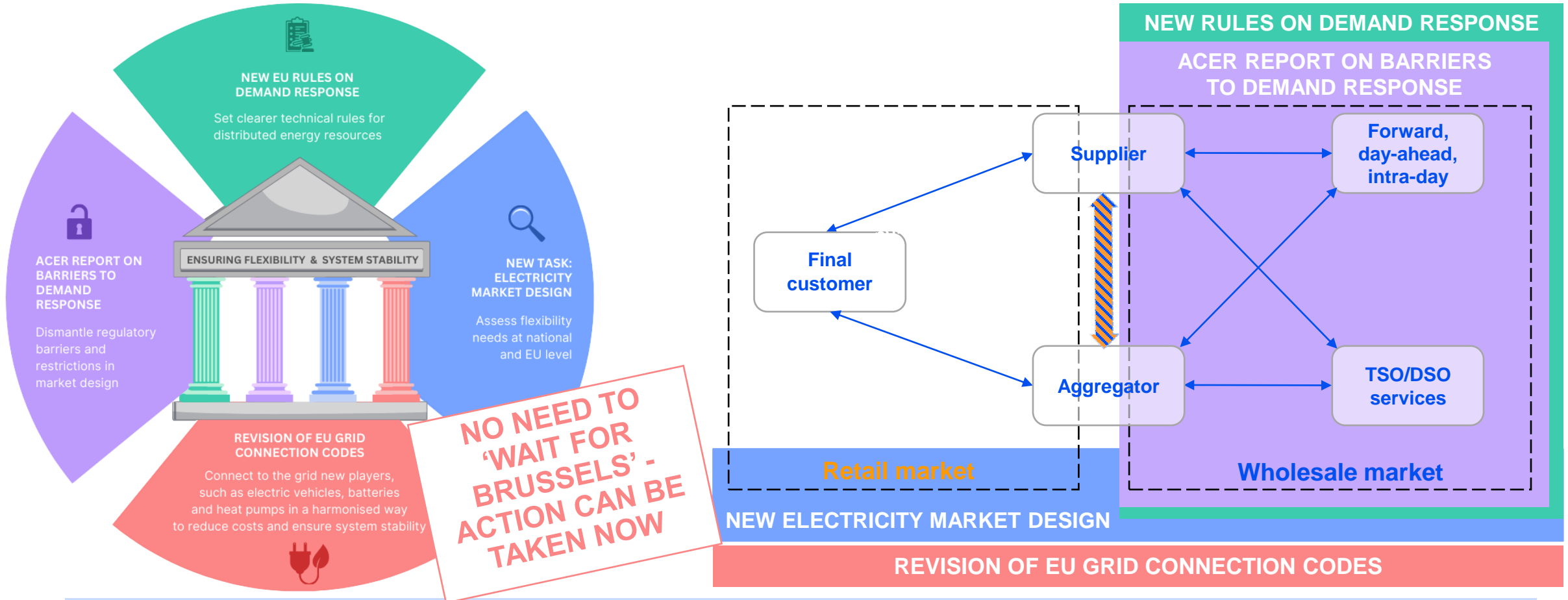
- Reducing the risk of grid overload
- Helping to solve network congestion as an alternative/complement to more costly grid build-out

# Barriers come in many sizes and shapes ...

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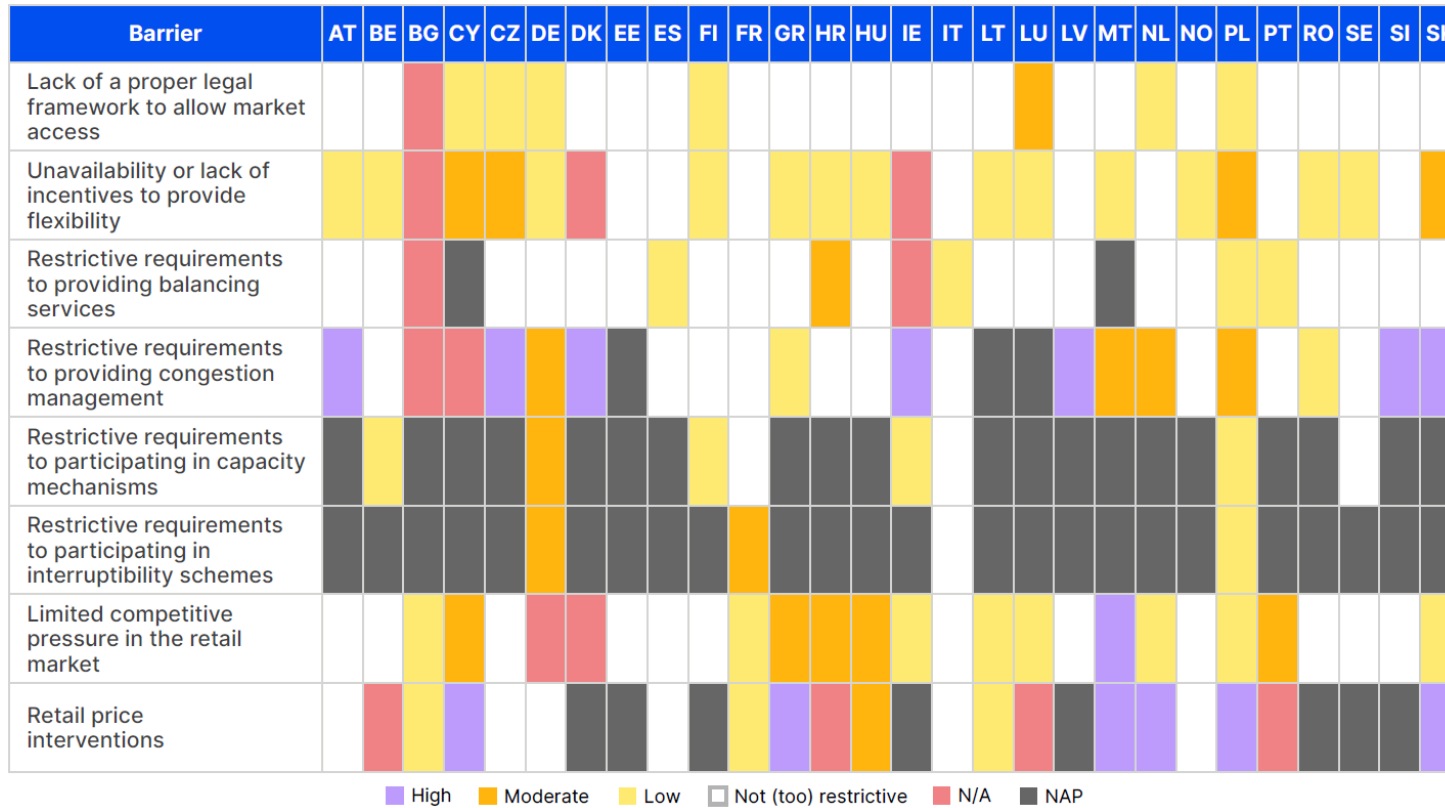


# Multiple EU efforts ongoing to ‘unlock’ flexibility



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

# Barriers to demand response, zooming in ...

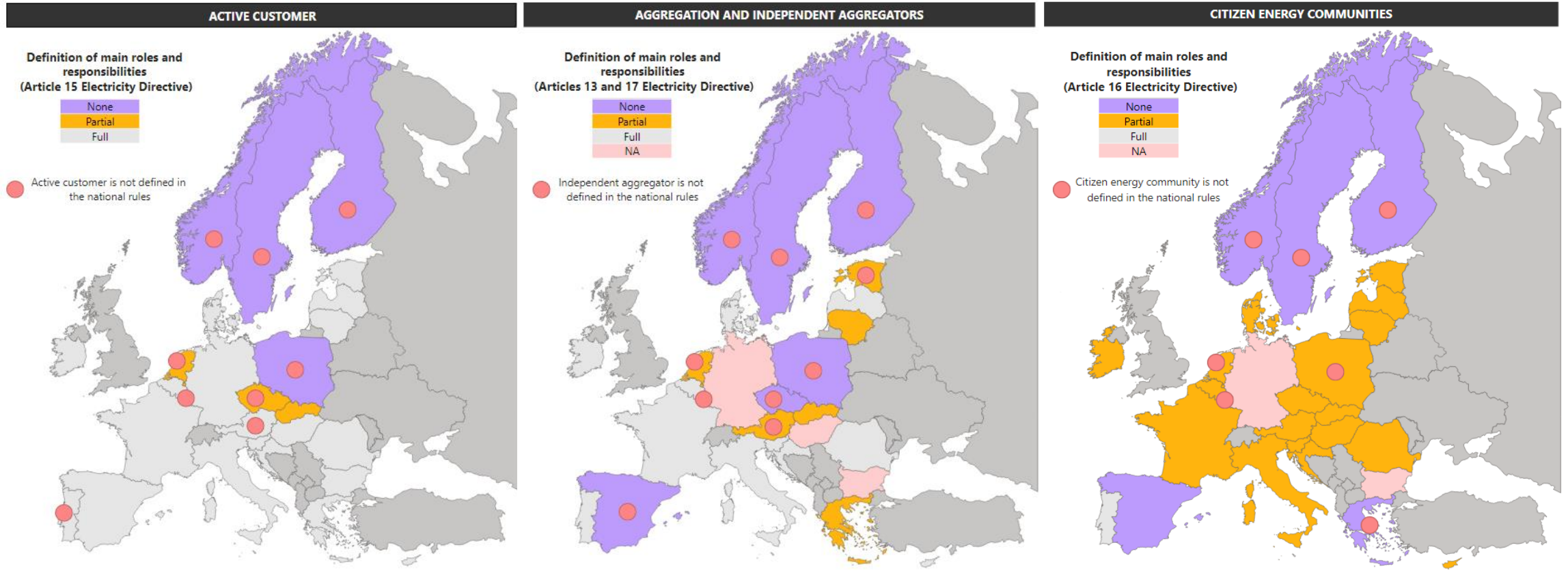


**Barriers to demand response are often 'hiding in plain sight'.**  
**The sum of many small obstacles can add up to significant barriers, impeding system flexibility.**

# Some examples of barriers holding back demand response ...

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# 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)

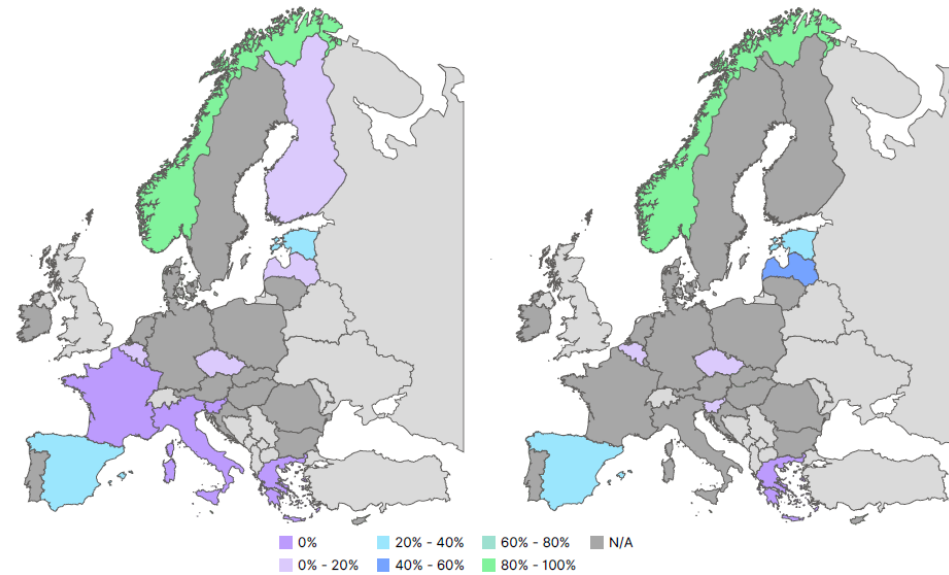


- 13** SUCCESSFUL
- 4** PROGRESSING
- 6** BARELY STARTED
- 5** NO SMART METERS


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.

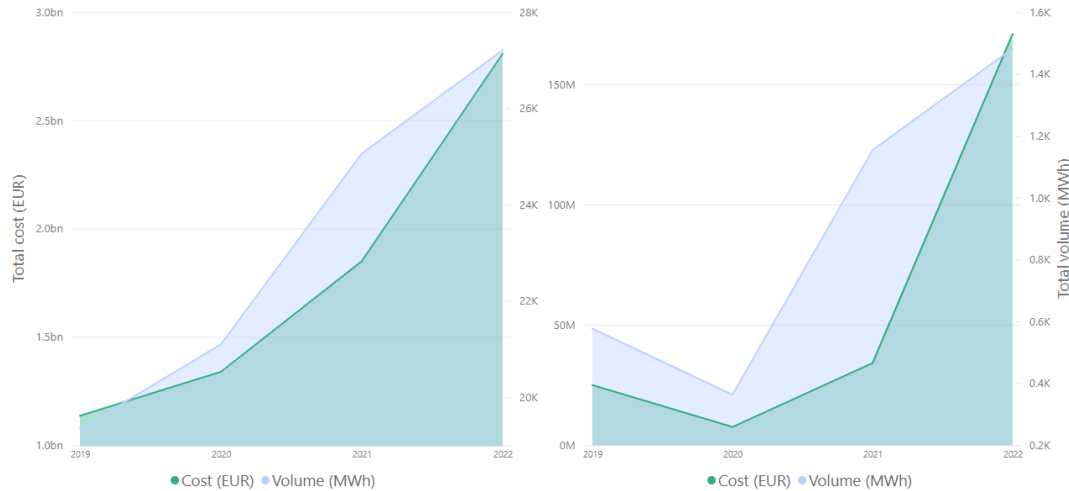
 For consumers to become **active** they need both the relevant **technical means** (e.g. smart metering) and the **incentives** to do so (hence, the role of price signals and accessible informational tools).

\*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.

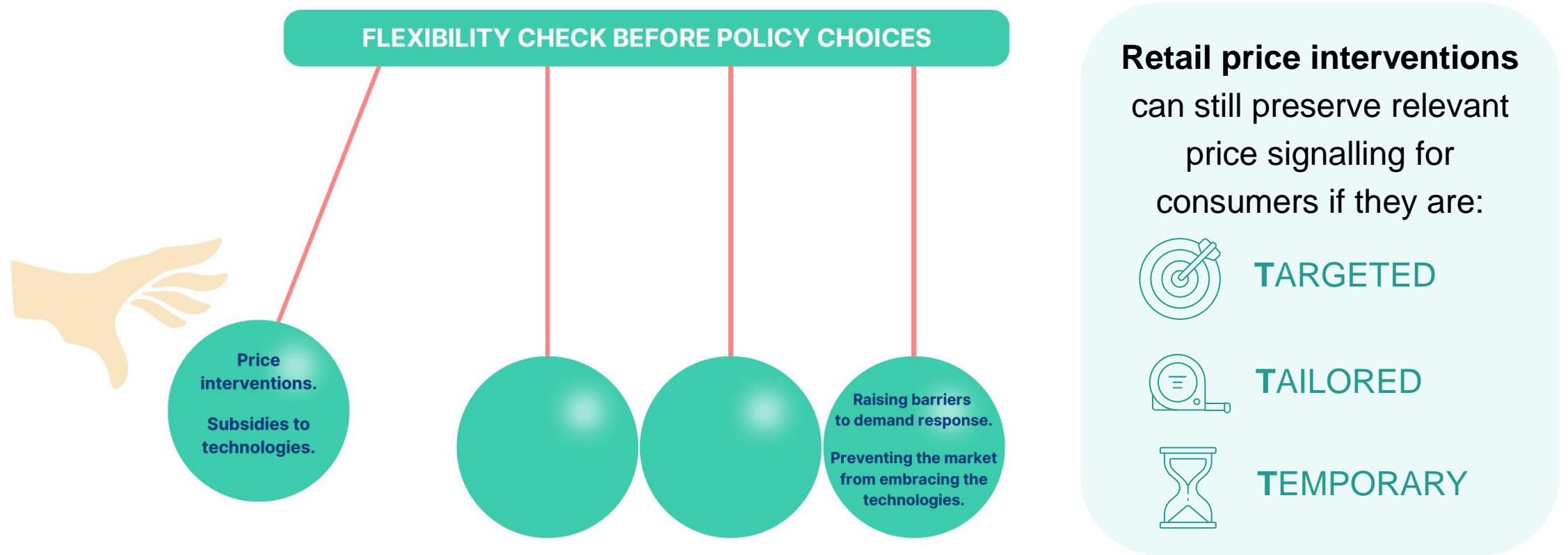
### How can system operators solve network congestion?

- 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 ...

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# 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

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- **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.