ACER

European Union Agency for the Cooperation of Energy Regulators

The EU electricity market: Key developments and challenges ahead

Fingrid Current Conference

Helsinki – 23 November 2021

Christian Zinglersen, *Director at ACER*

ACER
European Union Agency for the Cooperation of Energy Regulators

Agenda

- Energy price developments in Europe: Main drivers & impact
- Gas vs. electricity price differentials
- Select policy considerations
  - Price volatility and its effects
  - Electricity market design
- A propos … ACER/CEER's Market Monitoring Report for 2020
  - Main developments
  - Challenges ahead

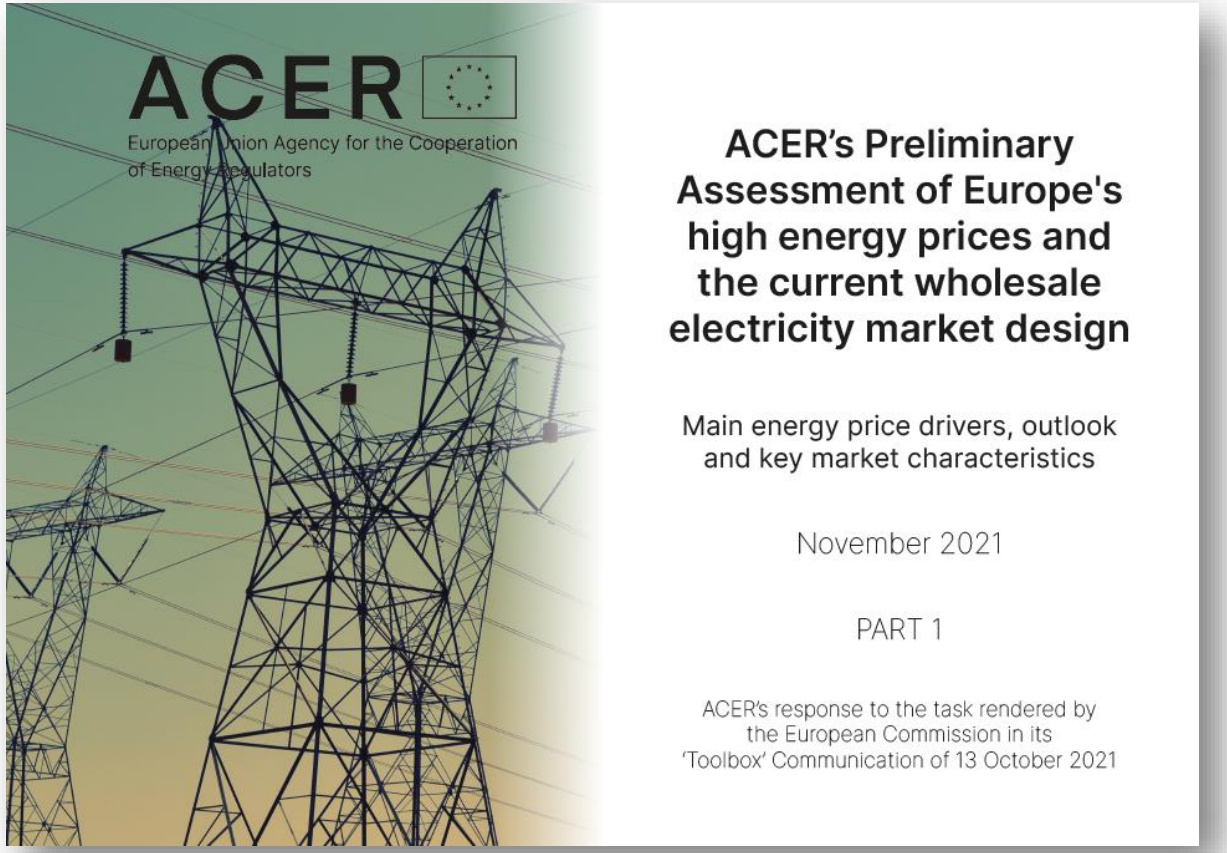
ACER
European Union Agency for the Cooperation of Energy Regulators

ACER's Preliminary Assessment of Europe's high energy prices and the current wholesale electricity market design

Background

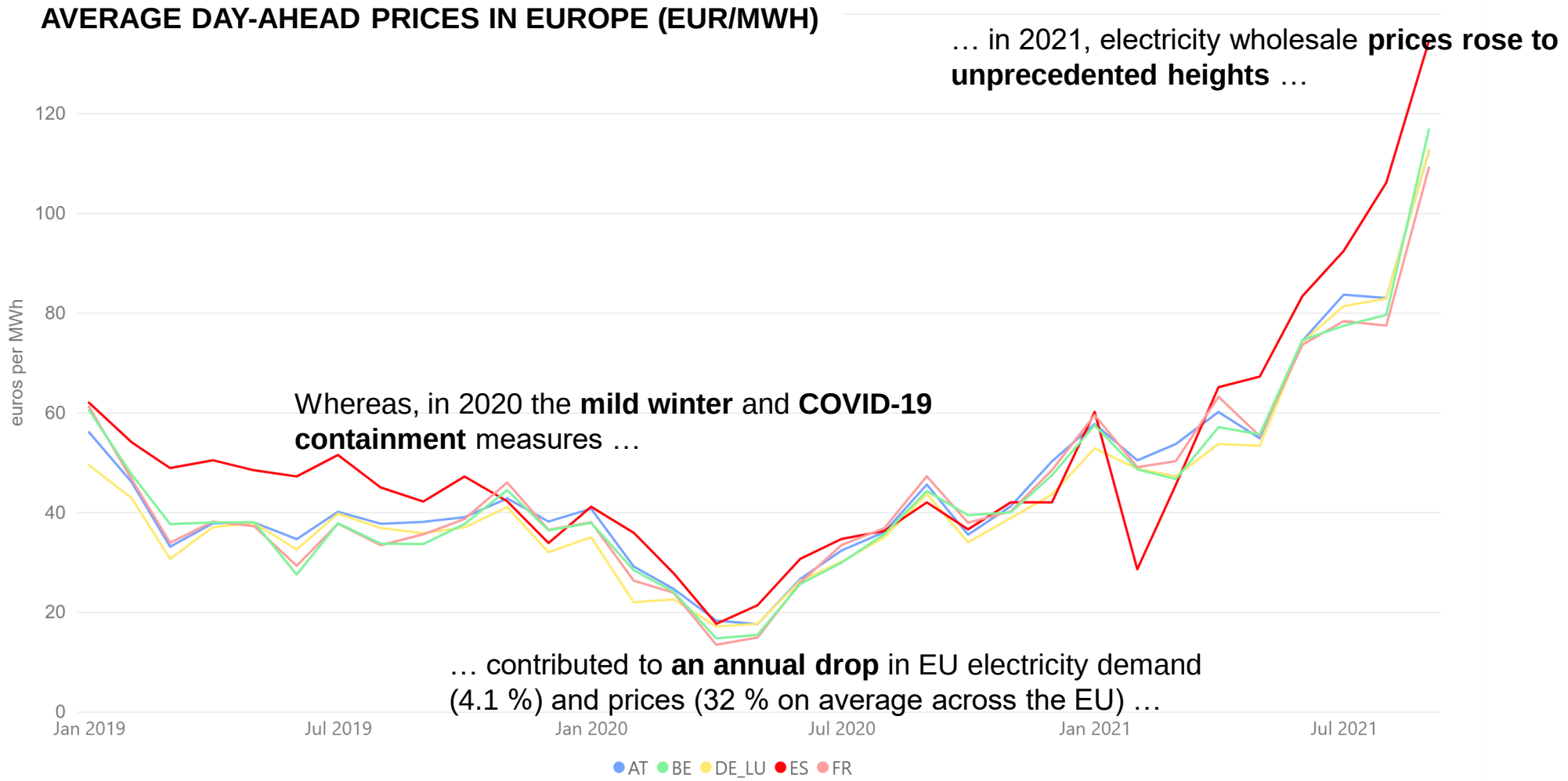
European Commission's 'Toolbox' Communication of 13 October tasks ACER with:

- studying the benefits and drawbacks of the existing electricity market design & proposing recommendations for assessment by the European Commission **by April 2022**;
- undertaking a preliminary assessment of the situation in the electricity market & reporting **by mid-November**.



ACER
European Union Agency for the Cooperation of Energy Regulators

What a difference a year makes …

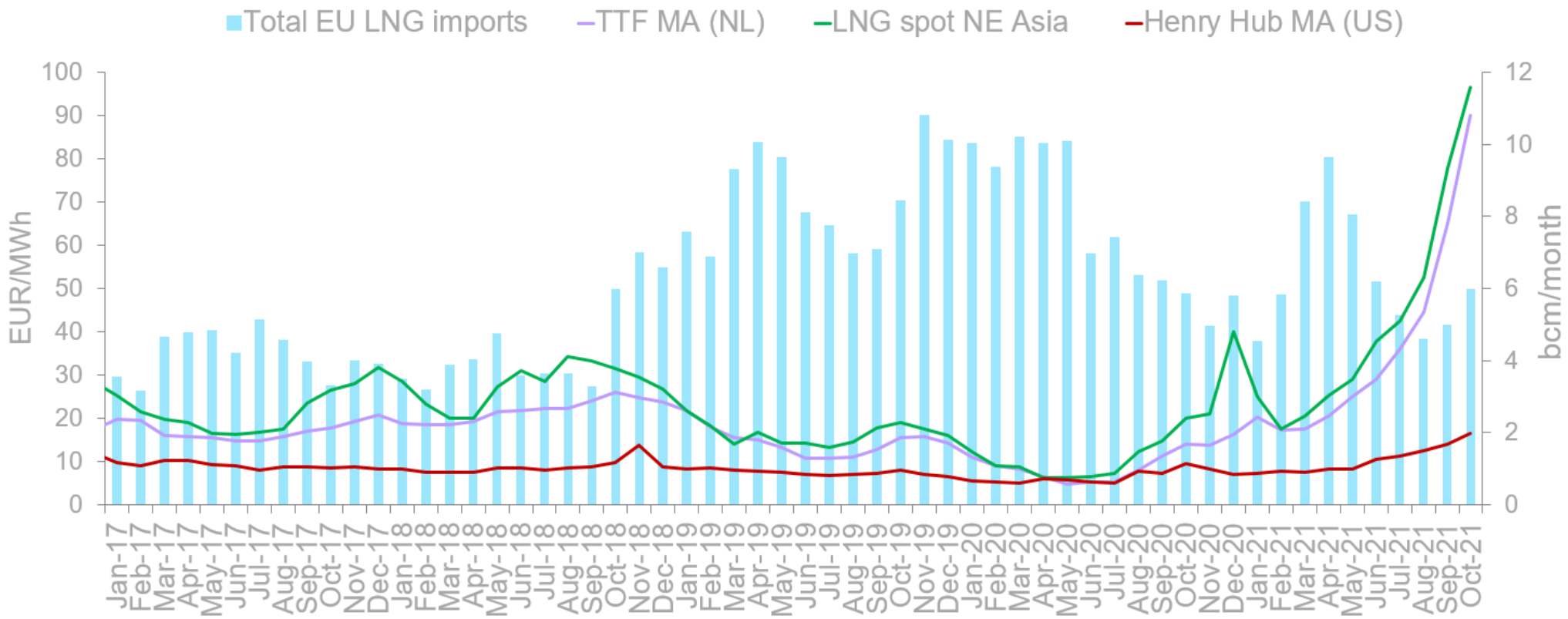


Source: ACER calculations based on ENTSO-E data.

ACER
European Union Agency for the Cooperation of Energy Regulators

Strong global demand for LNG. Tight supply.

COMPARISON OF INTERNATIONAL GAS PRICES VS EU LNG IMPORTS: 2017 – 2021



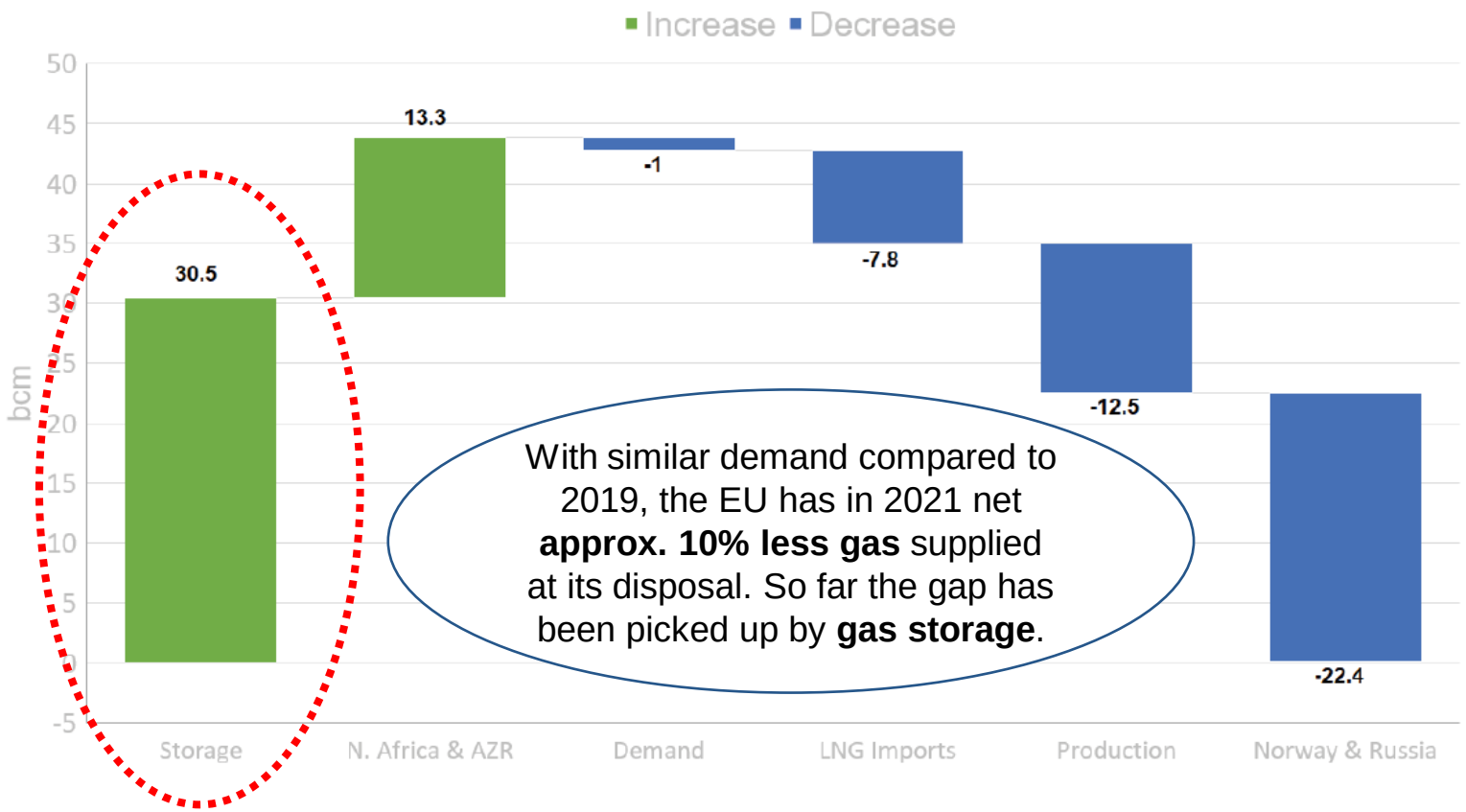
Global competition for LNG supplies leading to less LNG arrivals in the EU (the global 'swing market' for LNG).

Source: Reuters and ACER calculation.

ACER
European Union Agency for the Cooperation of Energy Regulators

Contributing factors for the EU specifically

CHANGE IN SUPPLY TO THE EU MARKET: 2019 vs 2021 in bcm



ADDITIONAL FACTORS:

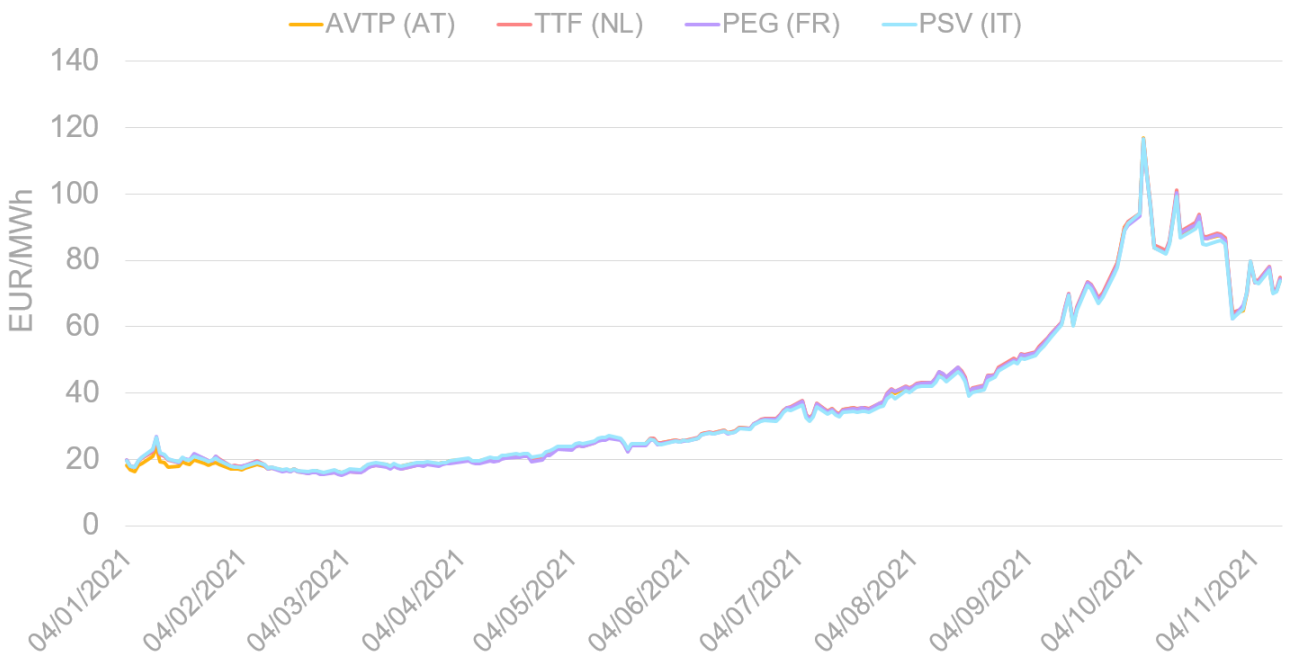
- Coal and carbon price increase
- Weather (e.g. hot summer)
- Lower renewable generation (wind, hydro)
- Steady pipeline supply affected by maintenance and lessening investment in new production

Source: Oxford Institute of Energy Studies based on ENTSOG, GIE and Kpler

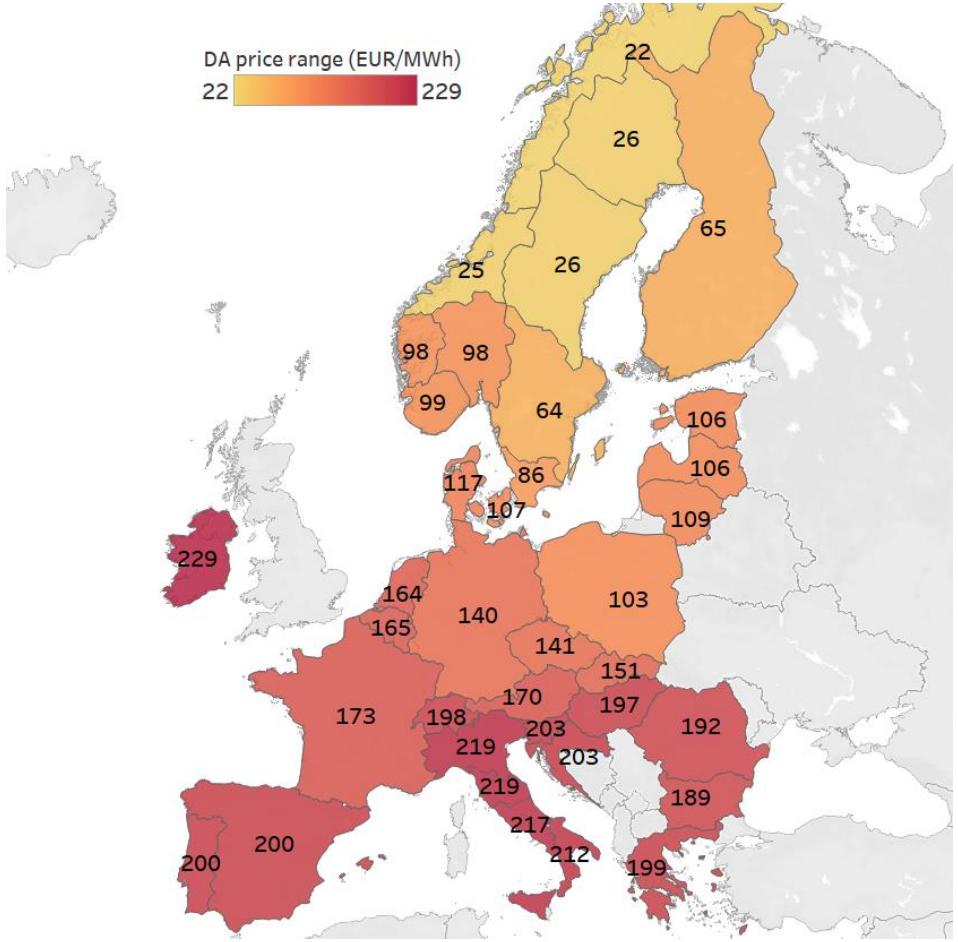
ACER
European Union Agency for the Cooperation of Energy Regulators

Impacts more uniform for gas than for power

GAS FRONT MONTH CONTRACTS FROM JANUARY – NOVEMBER 2021 (EUR/MWh)



AVERAGE ELECTRICITY PRICES FOR BIDDING ZONES IN EUROPE: OCTOBER 2021 (EUR/MWH)

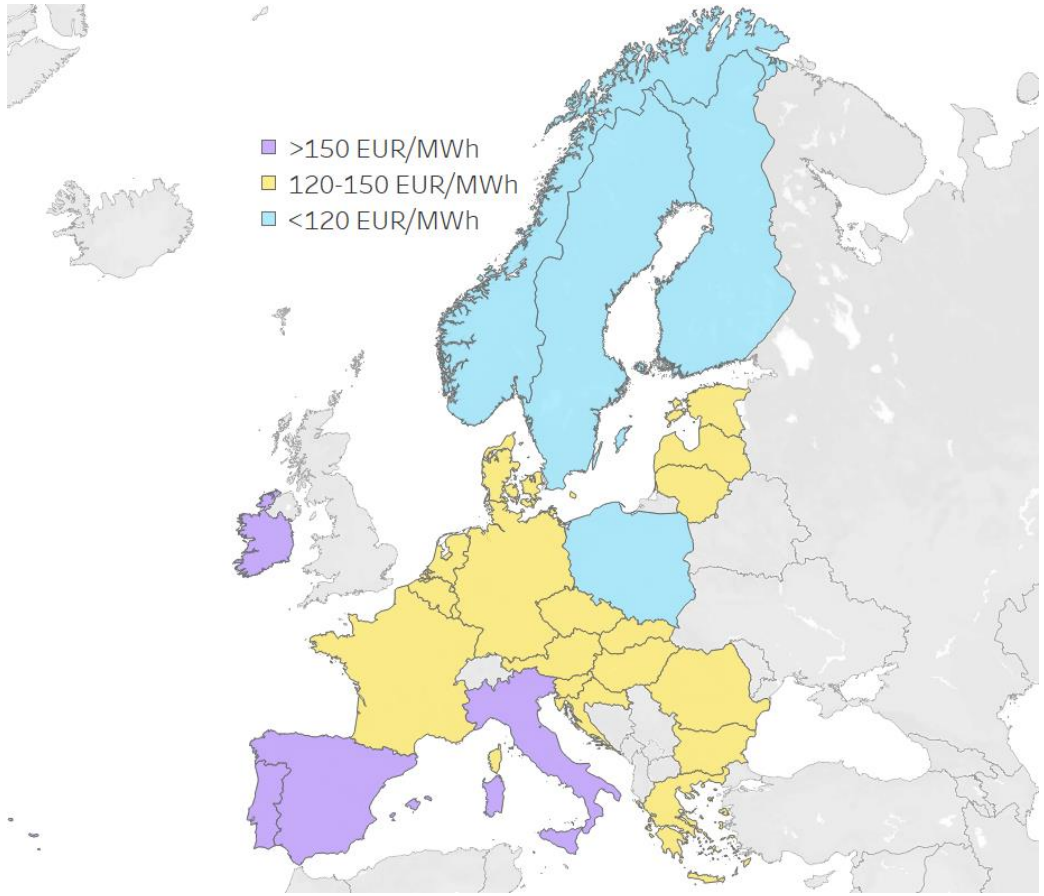


Source: Reuters and ACER calculation (for gas); ACER calculation based on ENTSO-E (for electricity).

ACER
European Union Agency for the Cooperation of Energy Regulators

Drivers of power price differentials

COUNTRIES AND THEIR EXPOSURE TO HIGH ELECTRICITY PRICES IN SEPTEMBER 2021



AVERAGE DAY-AHEAD ELECTRICITY PRICES (EUR/MWh) AND AVERAGE GAS GENERATION AS A PERCENTAGE OF ELECTRICITY DEMAND IN EUROPE (%): SEPTEMBER 2021

	Main characteristics of the Member States pertaining to the group	Average day-ahead prices (EUR/MWh)	Electricity demand covered with gas (%)
Group 1	Highly gas-dependent and/or limited interconnected countries	167	34
Group 2	Moderately gas-dependent and/or well interconnected countries	132	14
Group 3	Limited gas-dependent countries	89	3

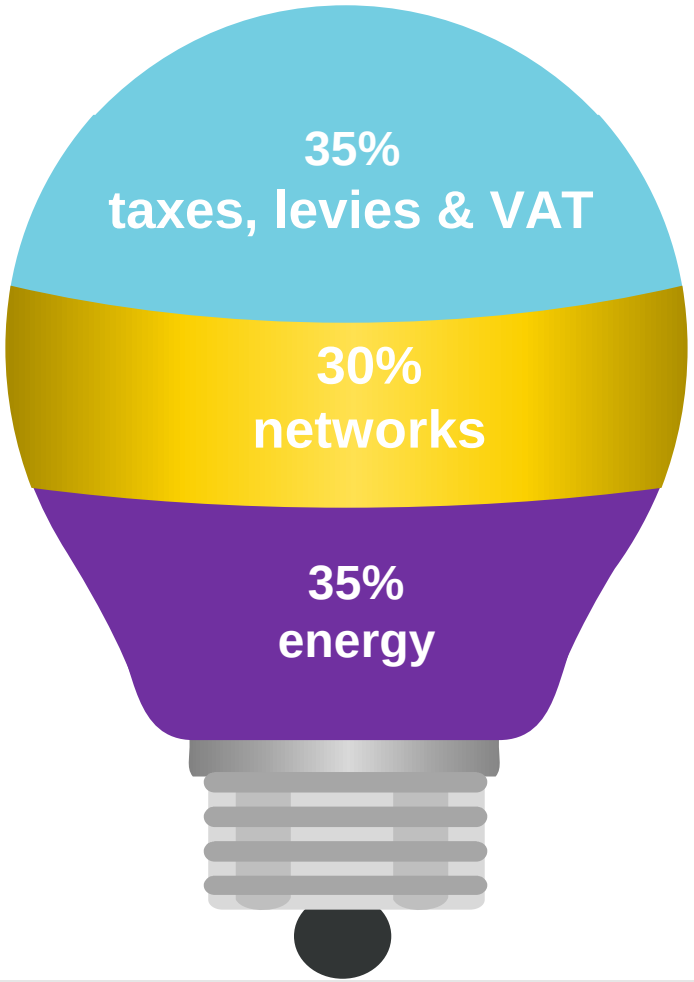
Source: ACER calculation based on ENTSO-E data.

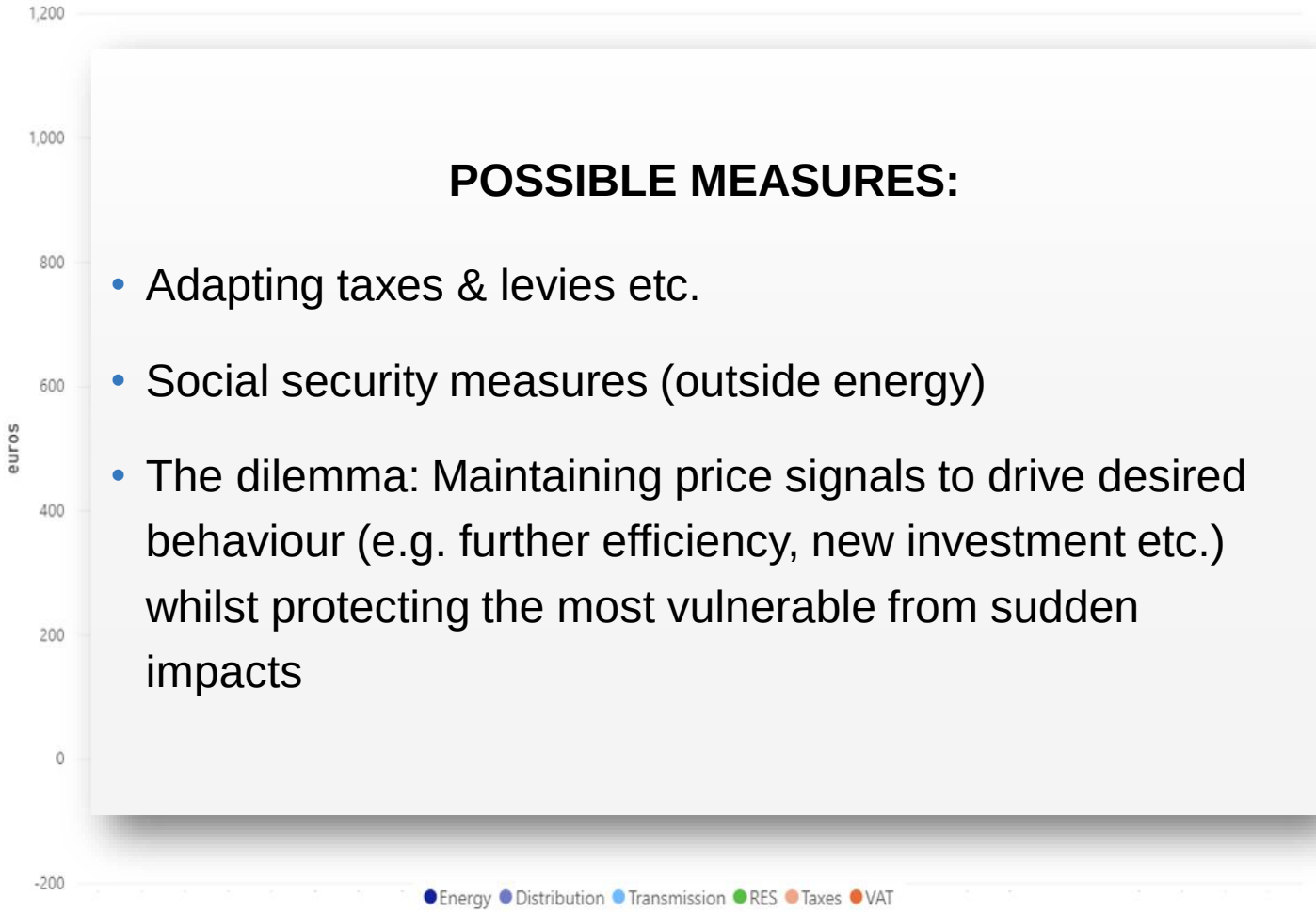
ACER
European Union Agency for the Cooperation of Energy Regulators

Select policy considerations

Policy considerations (1/3): Short-term relief

AVERAGE ELECTRICITY BILL BREAKDOWN





POSSIBLE MEASURES:

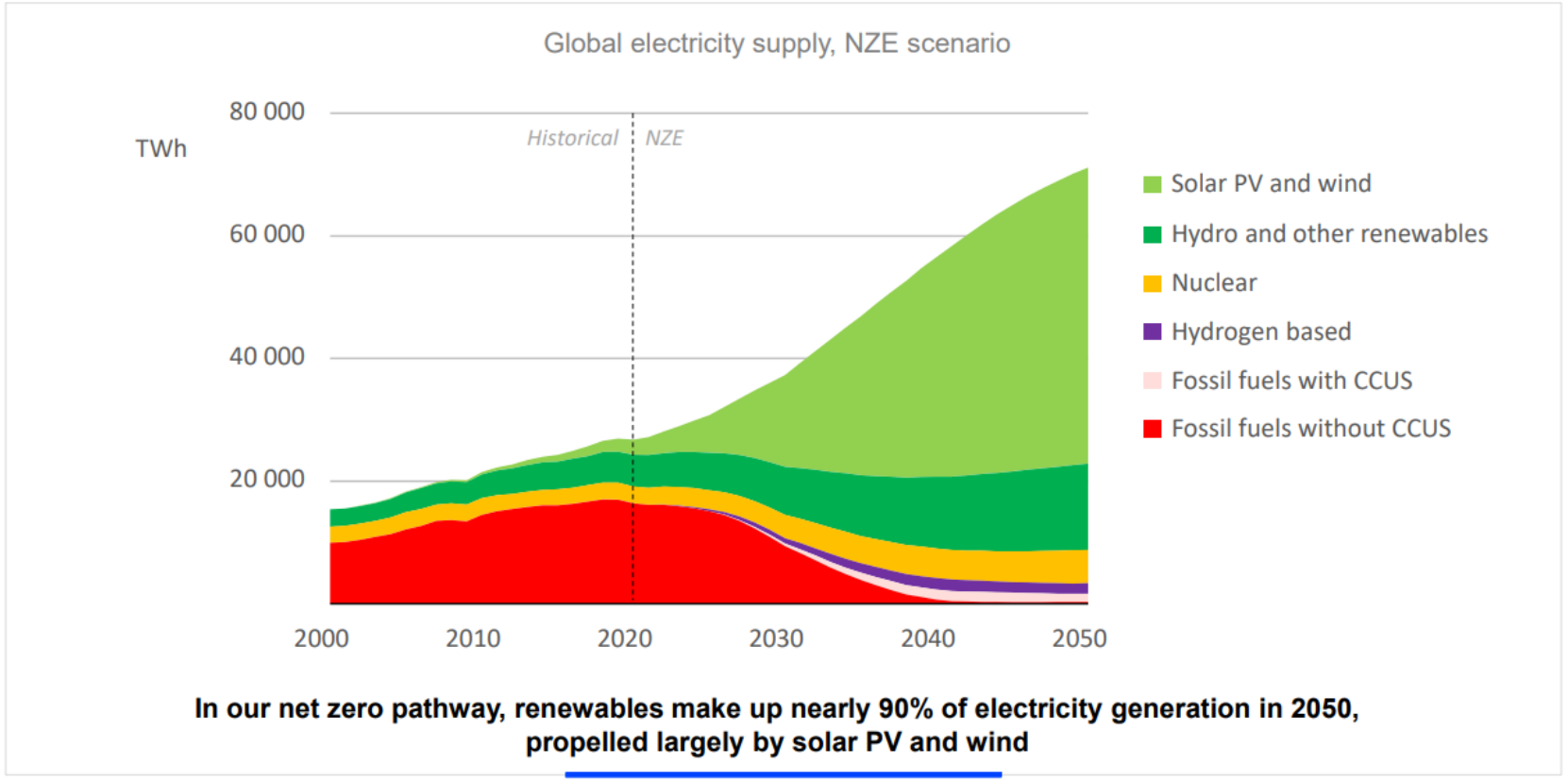
- Adapting taxes & levies etc.
- Social security measures (outside energy)
- The dilemma: Maintaining price signals to drive desired behaviour (e.g. further efficiency, new investment etc.) whilst protecting the most vulnerable from sudden impacts

Source: Eurostat, Band DC: 2,500–5,000 kWh (household electricity consumption) (May 2021)

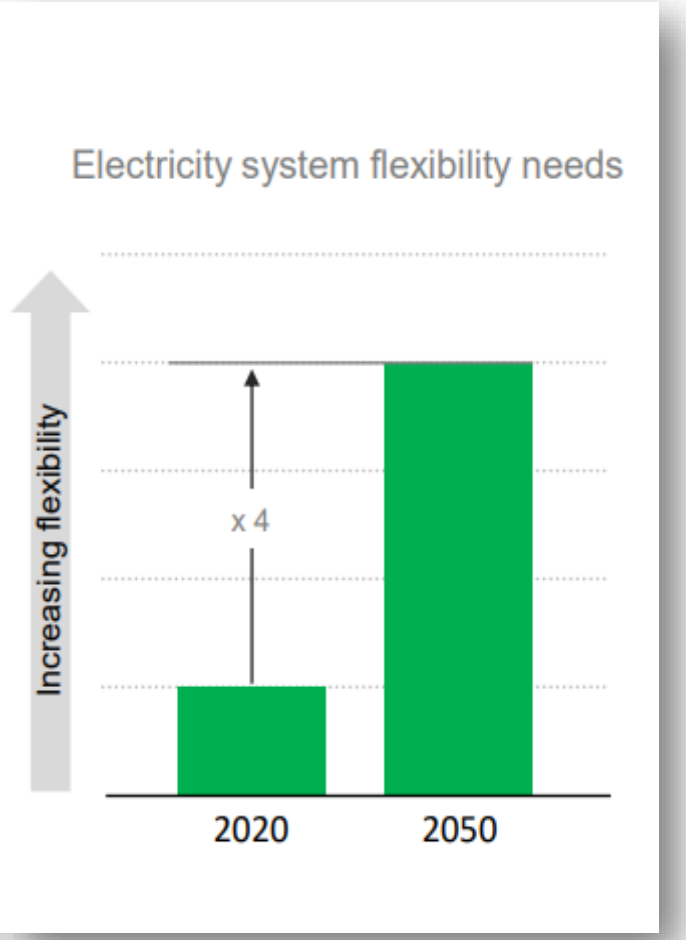
ACER
European Union Agency for the Cooperation of Energy Regulators

Policy considerations (2/3): Price volatility

Electricity leads the way to net zero



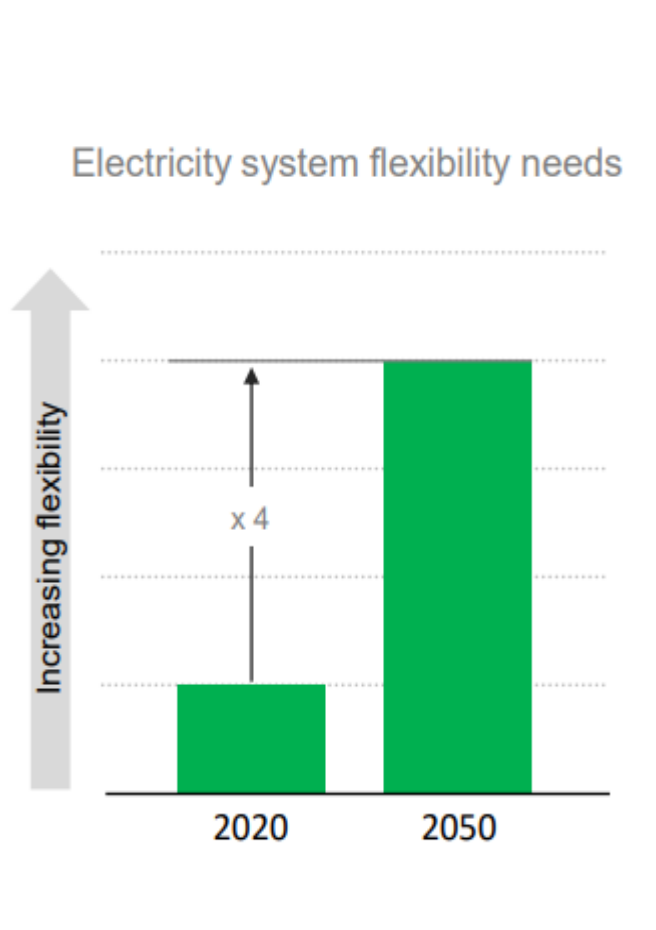
In our net zero pathway, renewables make up nearly 90% of electricity generation in 2050, propelled largely by solar PV and wind

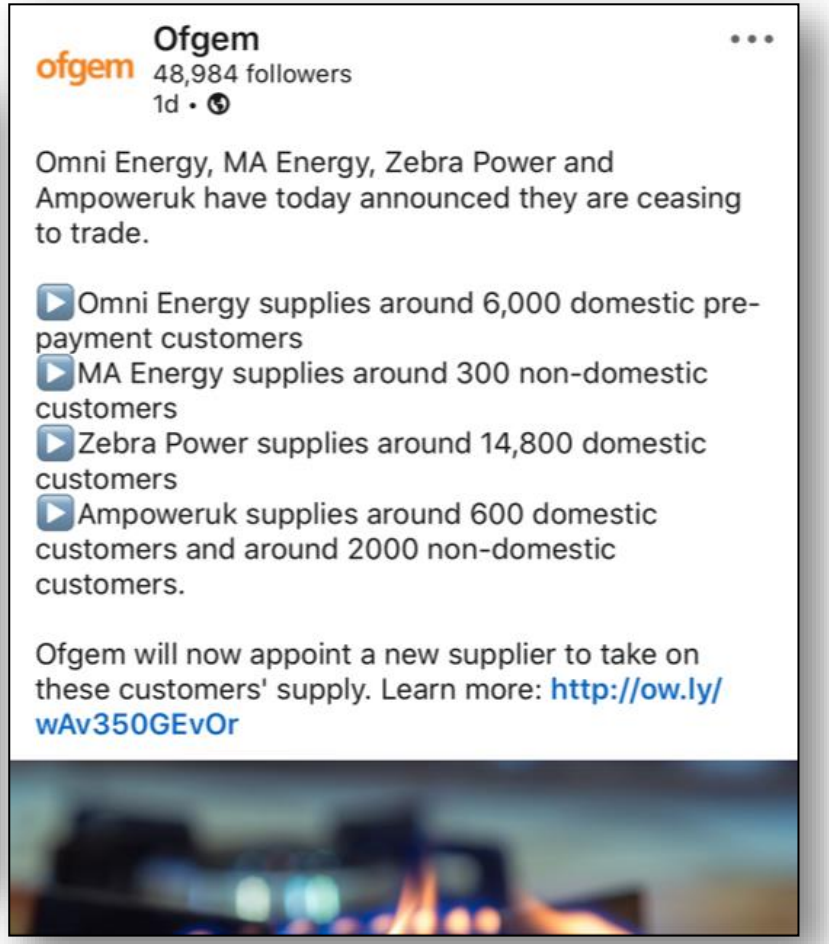


Source: IEA's 'Net Zero By 2050' report of 18 May 2021 (LINK).

ACER
European Union Agency for the Cooperation of Energy Regulators

Policy considerations (2/3): Price volatility



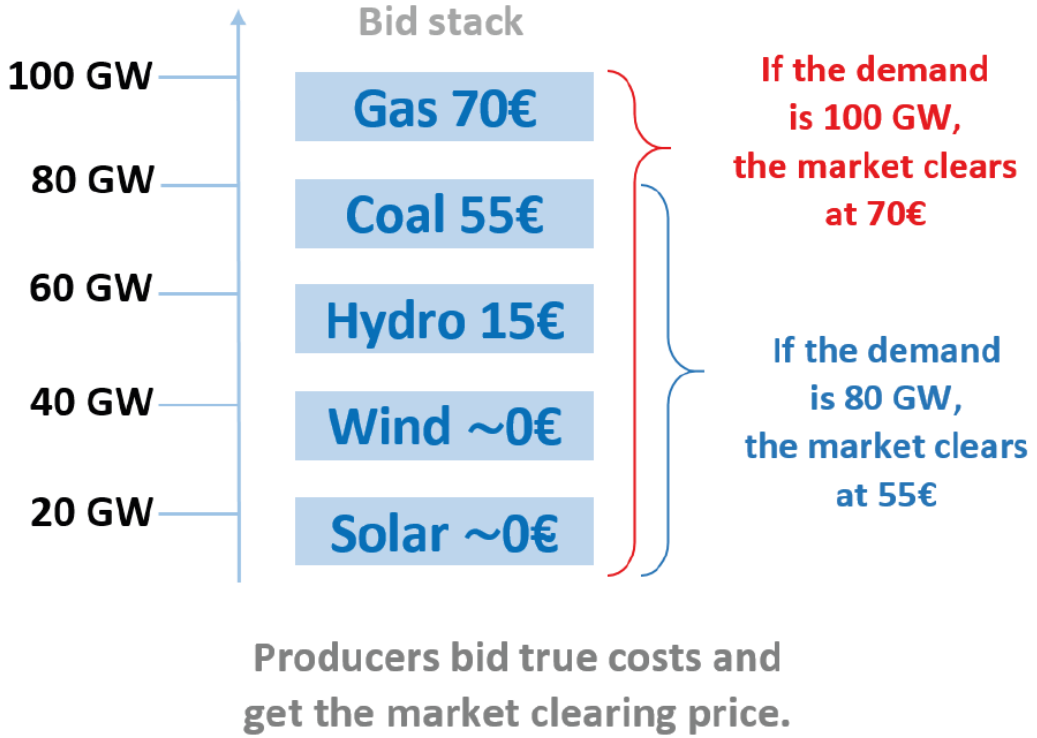


Volatility is here to stay. The ‘new business model’. Cushioning impacts for vulnerable consumers.

ACER
European Union Agency for the Cooperation of Energy Regulators

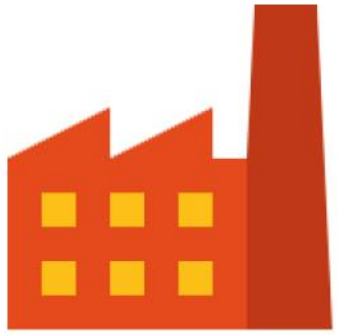
Policy considerations (3/3): Market design

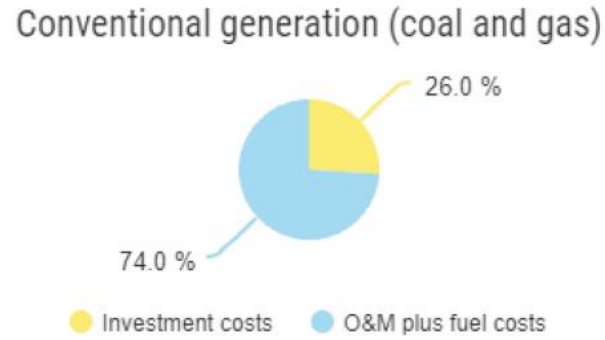
PAY-AS-CLEAR

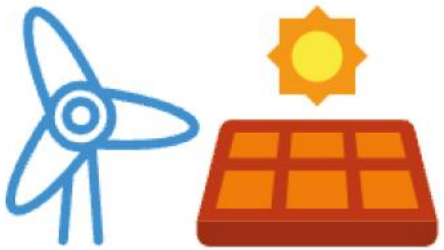


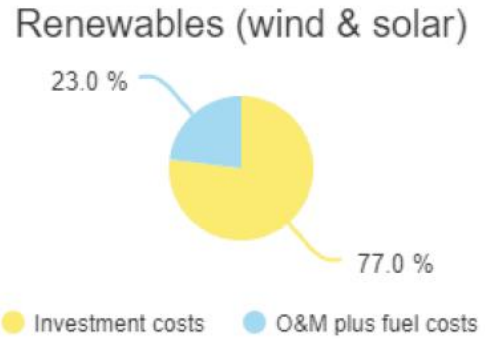
Producers bid true costs and get the market clearing price.

BREAKDOWN OF COSTS FOR CONVENTIONAL AND RENEWABLE GENERATION TECHNOLOGIES









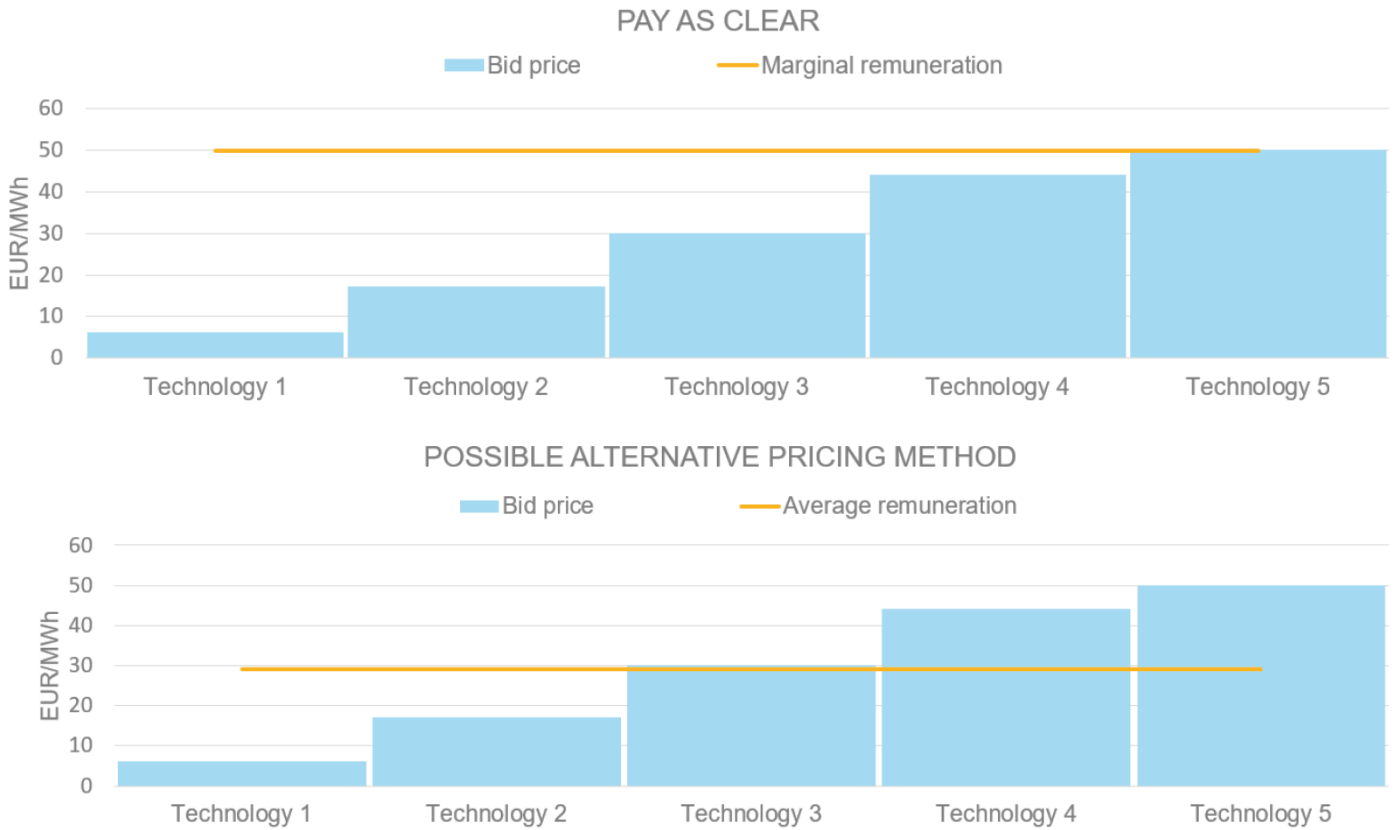
The ‘pay-as-clear’ electricity market model: Incentives to bid marginal costs, not more. Designed to recuperate capitals costs above marginal costs.

Source: ACER and ACER based on IEA

ACER
European Union Agency for the Cooperation of Energy Regulators

Policy considerations (3/3): Market design

ILLUSTRATION OF THE CURRENT ELECTRICITY WHOLESALE PRICING METHOD AND A POSSIBLE ALTERNATIVE



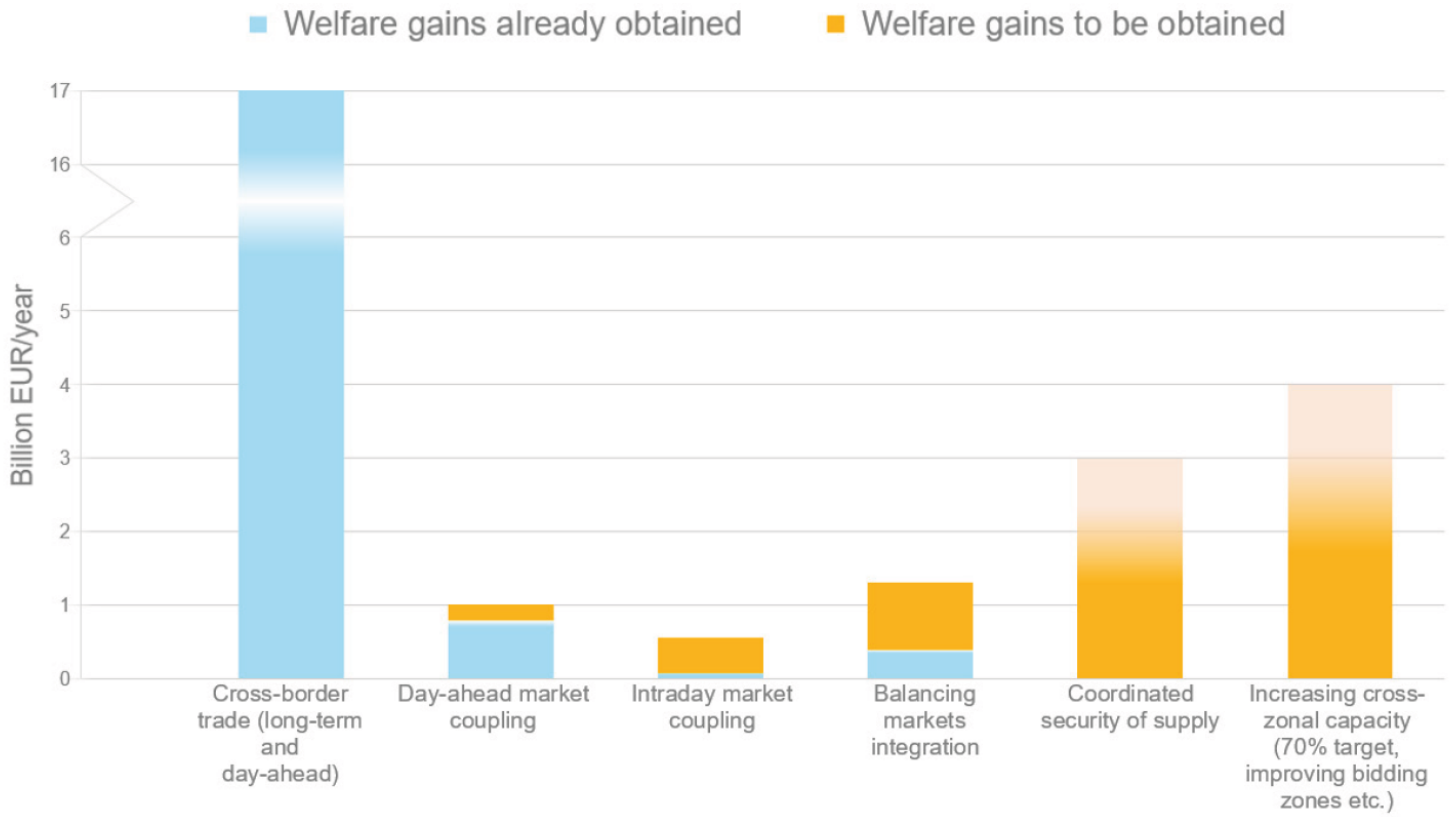
Other approaches recently raised, e.g. the notion of 'decoupling' bids and the respective clearing price and/or introducing price ceilings per particular technologies.

Source: ACER elaboration.

ACER
European Union Agency for the Cooperation of Energy Regulators

Policy considerations (3/3): Market design

SOCIAL WELFARE BENEFITS* ALREADY OBTAINED AND TO BE OBTAINED FROM VARIOUS ACTIONS INTENDED TO INCREASE EU MARKETS INTEGRATION



Current market model underpinning European energy market integration has brought significant benefit. Continued and strengthened efforts could deliver more than 300 billion euros over the next decade.

Source: ACER Market Monitoring Report, various editions.
*Note: *Gross benefits. The faded colour for some categories indicates that the welfare gains rely on third-party estimates and/or are subject to uncertainty.*

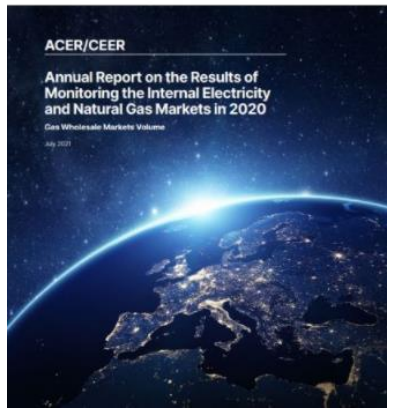
ACER
European Union Agency for the Cooperation of Energy Regulators

A propos market design … Moving to our yearly Market Monitoring Report

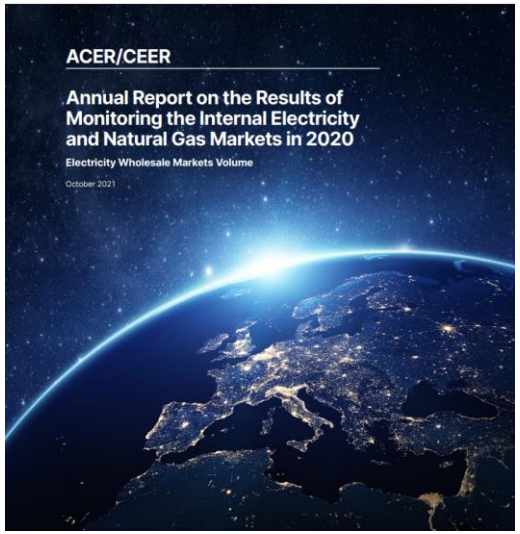
ACER
European Union Agency for the Cooperation of Energy Regulators

The MMR: One report – three volumes

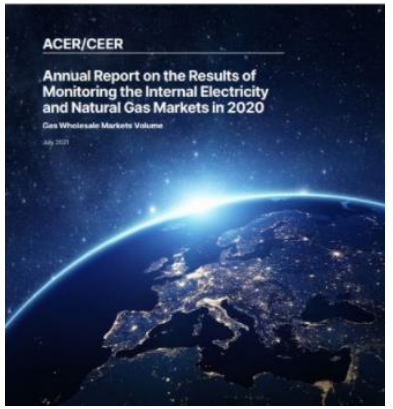
Gas Wholesale
6 July 2021



Electricity Wholesale
5 November 2021



Energy Retail and
Consumer Protection
10 November 2021

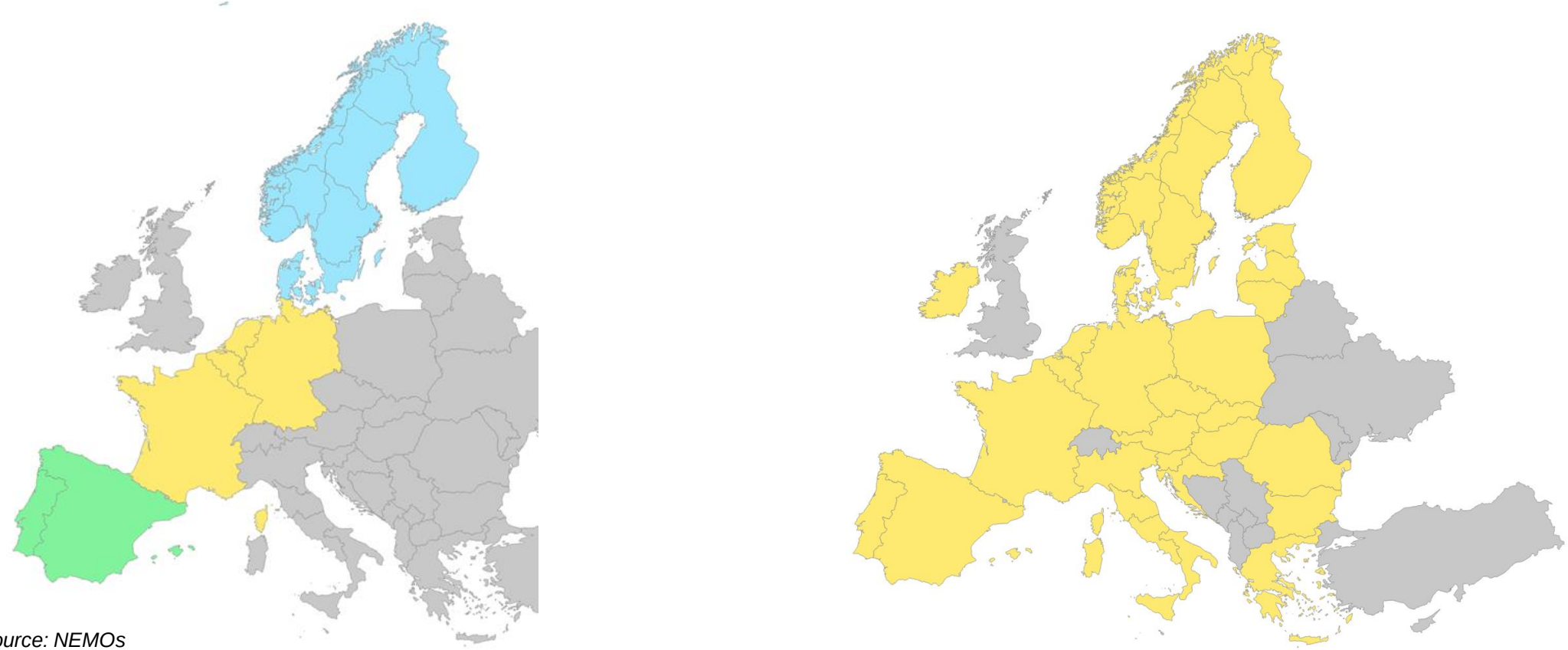


For accessing ACER-CEER's Market Monitoring Reports, including the latest summary of all three volumes, see LINK

ACER
European Union Agency for the Cooperation of Energy Regulators

Market integration progressed in 2020

EU DAY-AHEAD MARKET COUPLING IN 2010 (LEFT) AND 2021 (RIGHT)



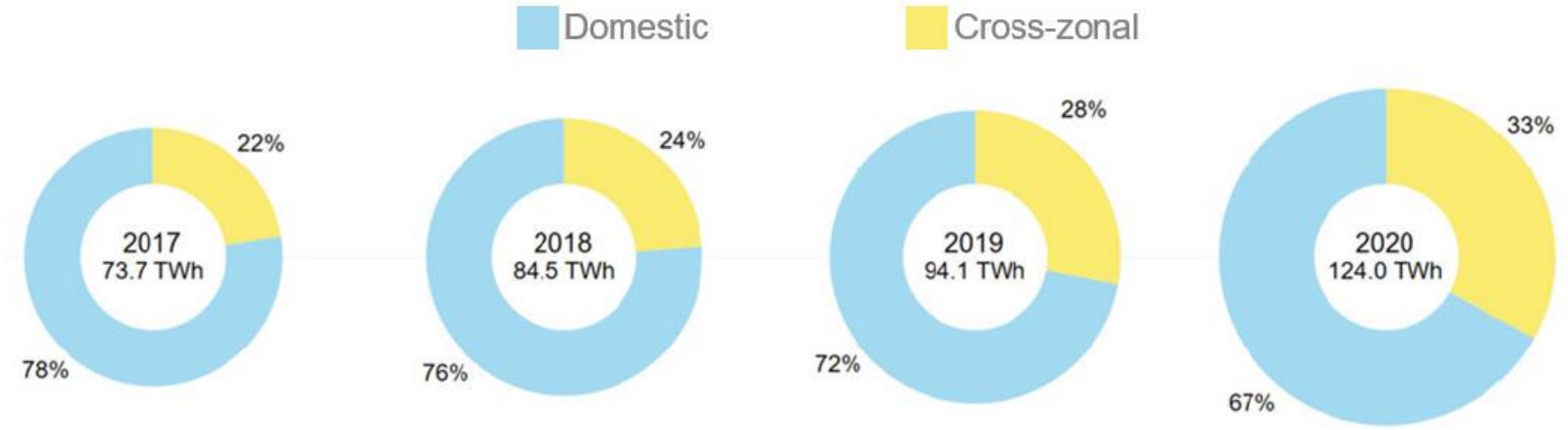
Source: NEMOs

The integration of Europe's national markets via market coupling optimises the use of resources across Europe. Market coupling has significantly progressed over the last decade.

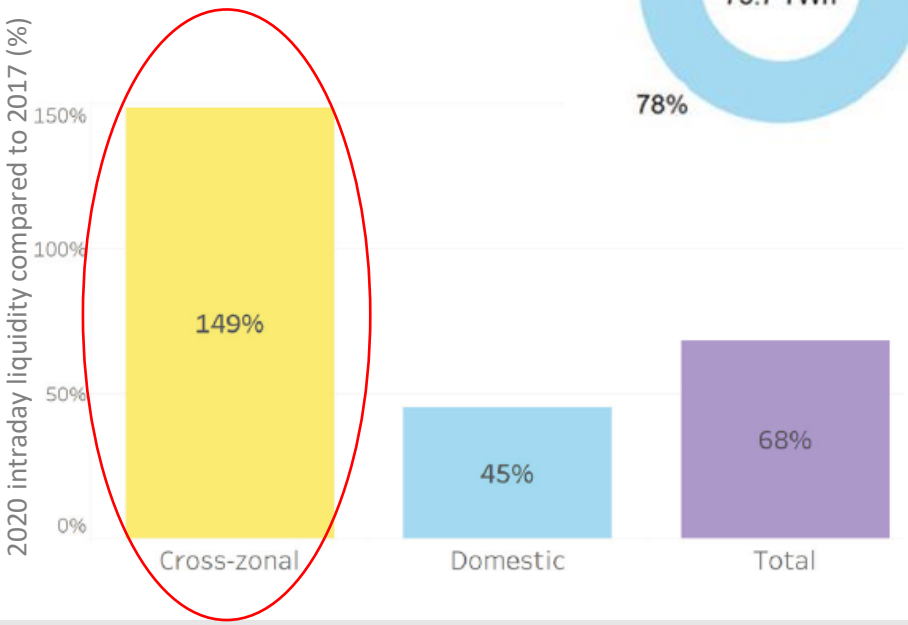
Market integration progressed in 2020

EVOLUTION OF INTRADAY TRADE IN EUROPE (% AND TWH)

Volumes 2017-2020



Relative increase 2017 to 2020



Similarly, 2020 saw further progress in the integration of EU intraday markets; important for facilitating large-scale integration of renewable resources, not least to manage their intermittency and variability.

To note, cross-zonal intraday trades increased by around 150% following the go-live of single intraday market coupling in 2017.

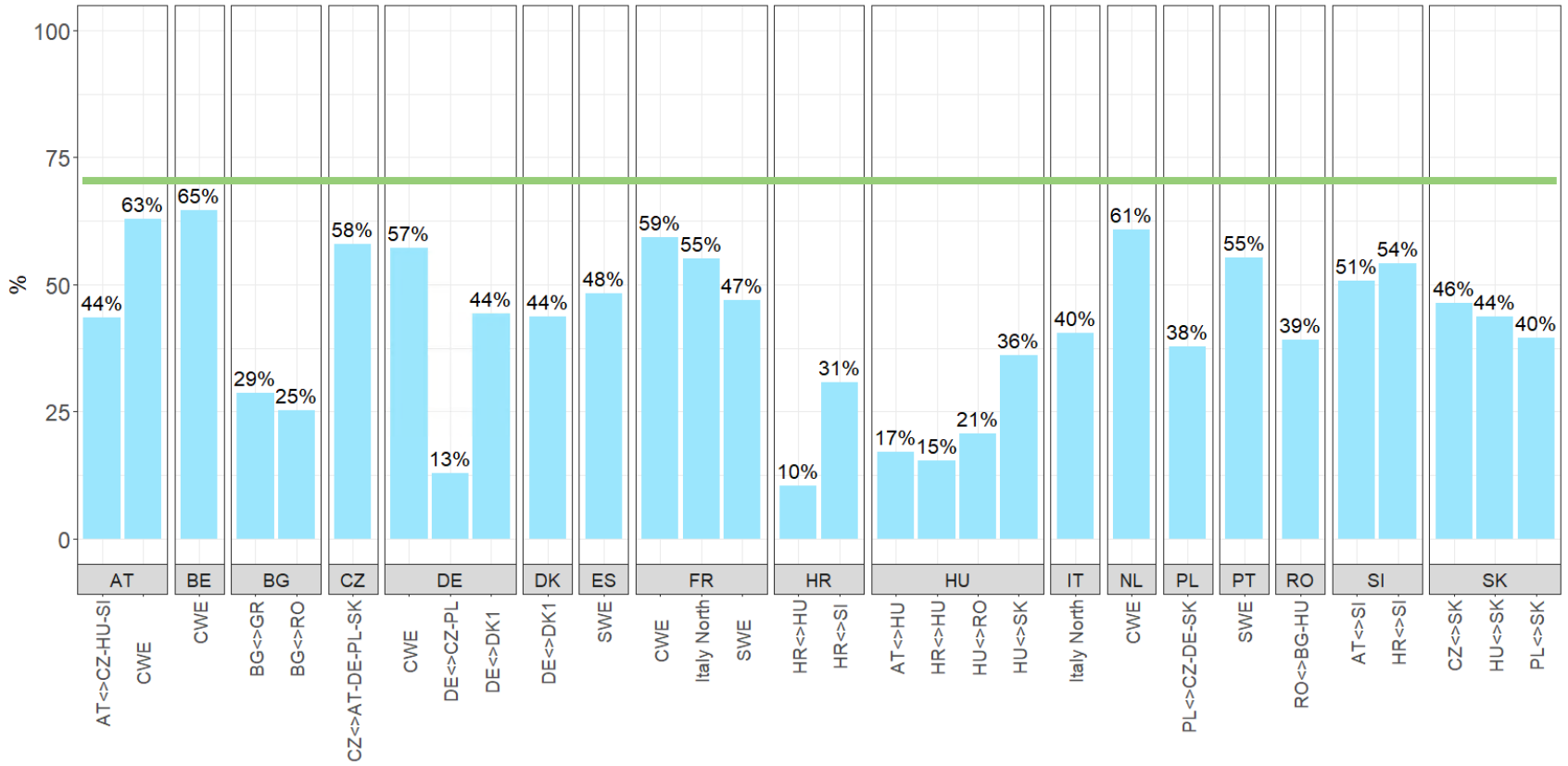
Source: ACER based on NEMOs

Note: this slide focuses on trade through single intraday coupling

ACER
European Union Agency for the Cooperation of Energy Regulators

"70% target": Significant improvement needed

AVERAGE MARGIN AVAILABLE ON (AC) INTERCONNECTORS WHERE THE MINIMUM 70% TARGET IS NOT REACHED – 2020 2ND SEMESTER



Various options available to meet the target: TSOs' remedial actions, grid investments and/or bidding zone reconfiguration.

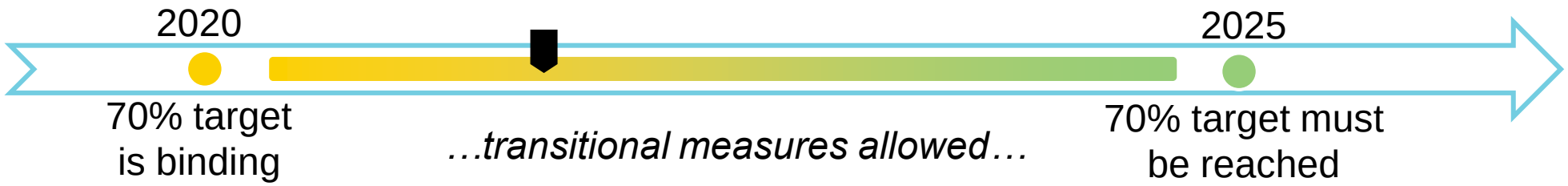
Source: ACER elaboration based on TSOs data

Dedicated reports on the 70% target available at *https://www.acer.europa.eu/en/Electricity/Market%20monitoring/Pages/Cross-zonal-capacity-70-target.aspx

DC interconnectors are not included in this figure. The Nordic and Baltic regions are not included due to lack of data. Results for the Nordics will soon be published by ACER.

ACER
European Union Agency for the Cooperation of Energy Regulators

Moving forward towards the “70% target”



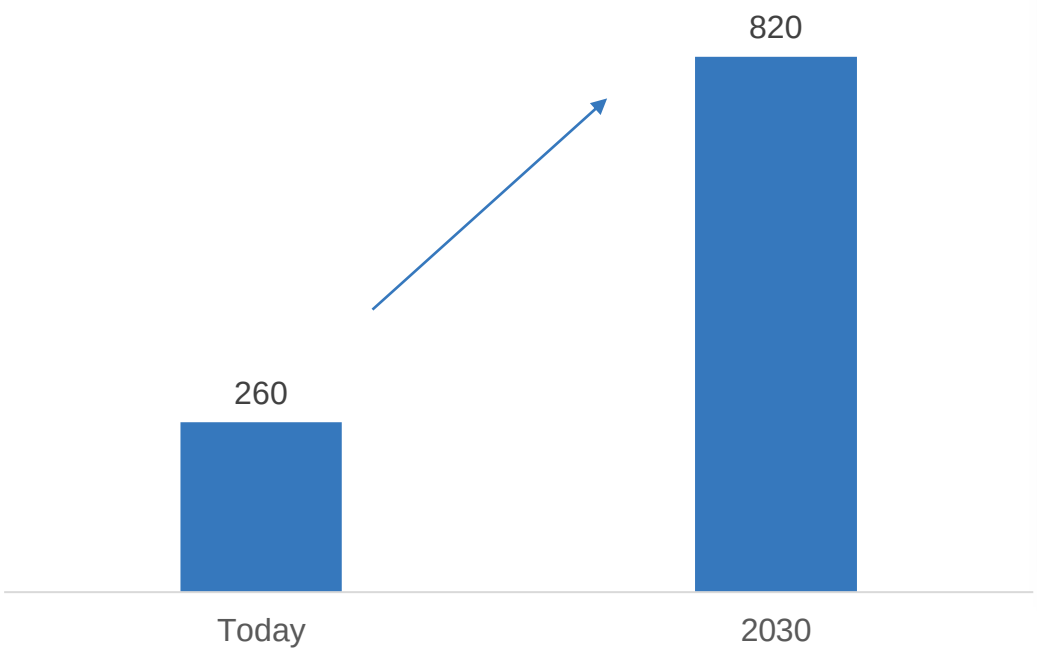
- The 70% target **is binding** since 2020, while allowing for **gradual implementation** (action plans, derogations) until 2025 upon Member States decision.

- **A coordinated approach to monitoring and compliance** with the 70% rule, based on ACER’s recommendation, is key.

ACER
European Union Agency for the Cooperation of Energy Regulators

(Btw … scaling up infrastructure is a challenge, too)

Yearly global estimated T&D investment in USD (to net zero pathway)



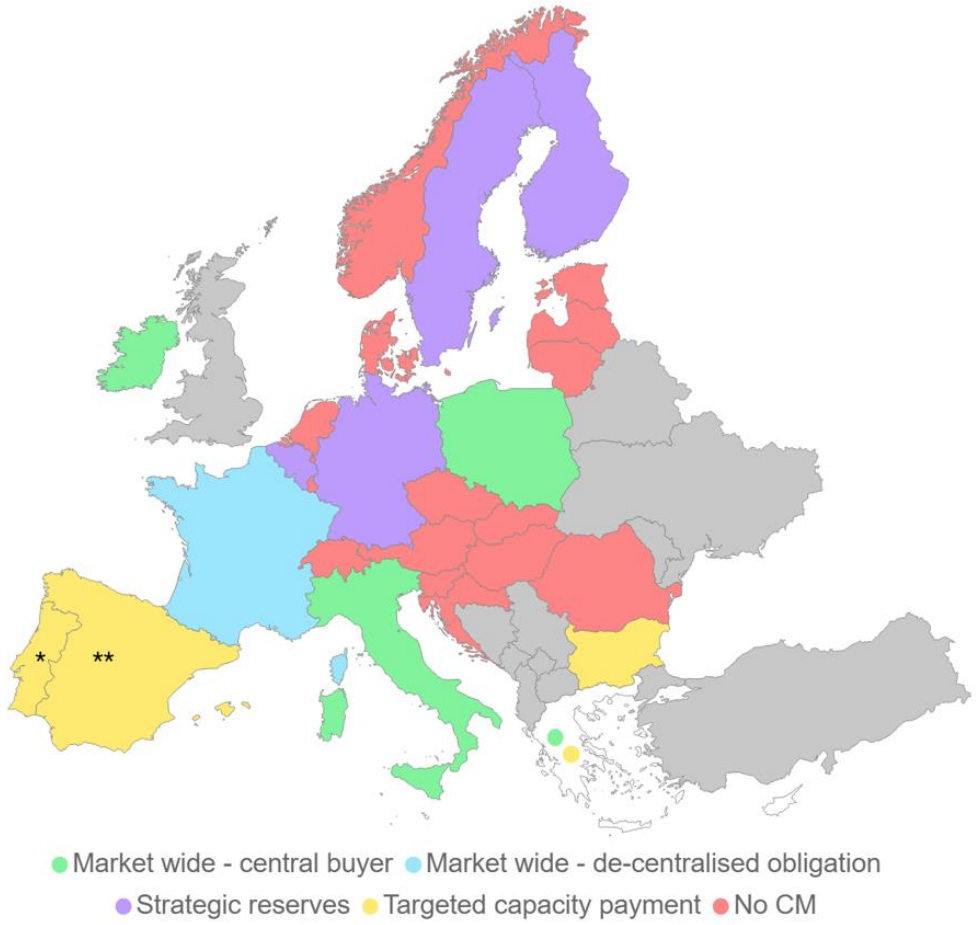
- **Already today, infrastructure delays are a recurrent feature.**
- **For Electricity Projects of Common Interest, ACER reports show e.g. permit granting accounts for more than 40% of delays.**

Source: IEA's 'Net Zero By 2050' report of 18 May 2021 (LINK). ACER's PCI Monitoring report of 1 June 2021 (LINK).

ACER
European Union Agency for the Cooperation of Energy Regulators

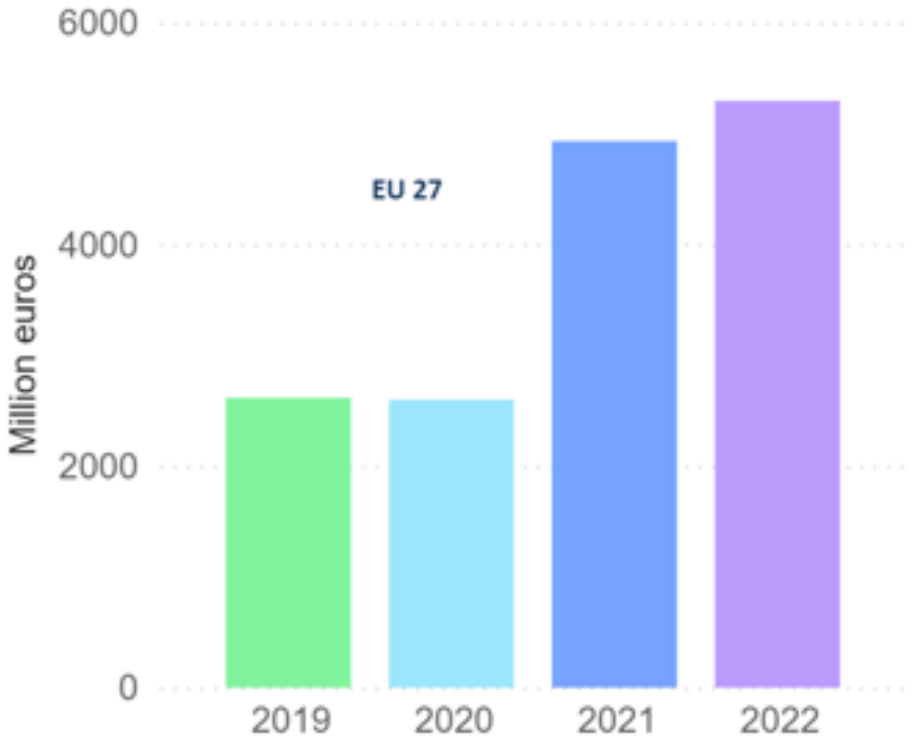
Addressing adequacy needs in a coordinated manner

OVERVIEW OF CAPACITY MECHANISMS IN EUROPE (2020)



Source: National Regulatory Authorities.

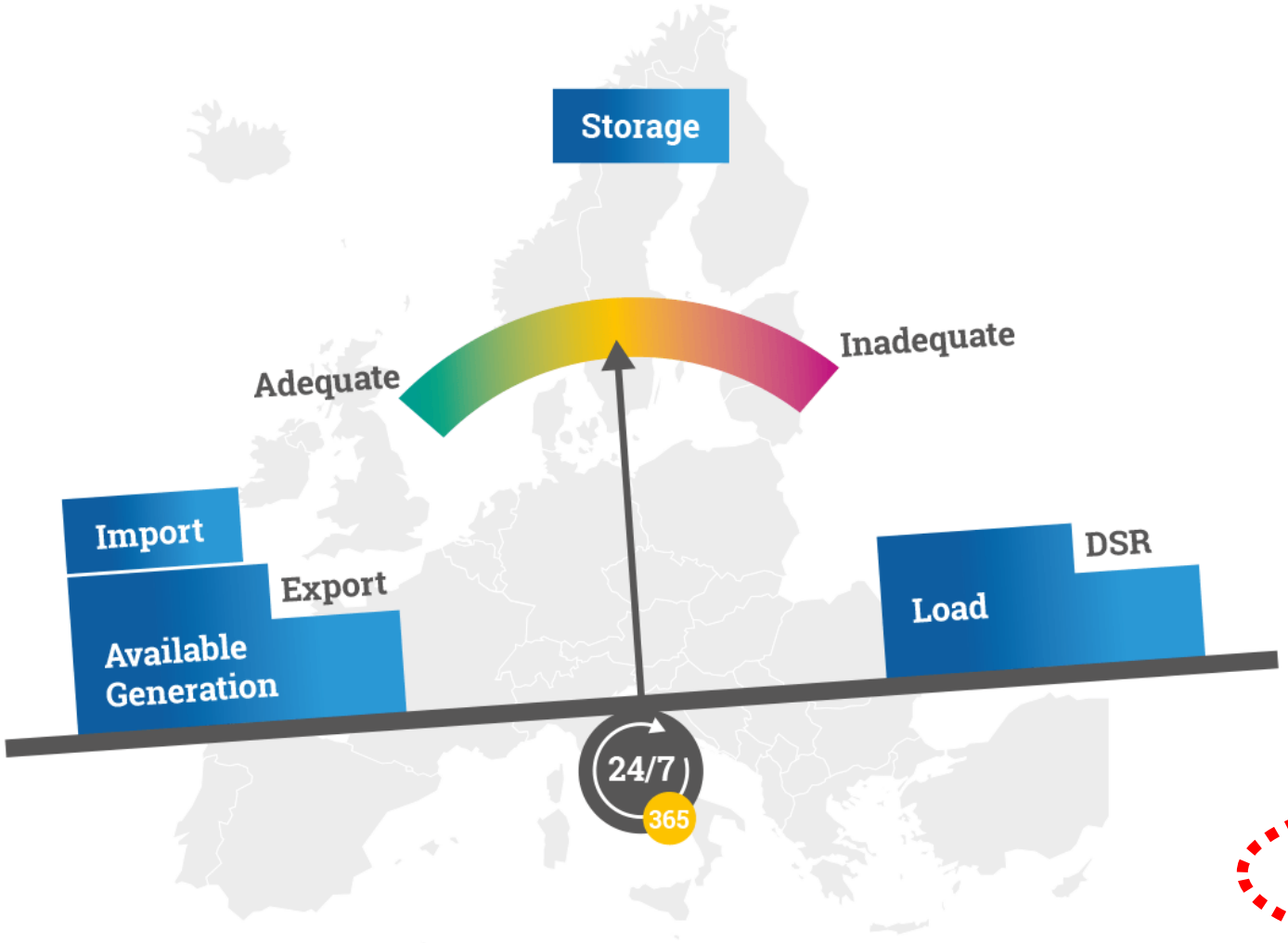
ASSOCIATED COSTS (2019 – 2022) (MILLION EUROS)



Source: ACER calculations based on NRAs data.

ACER
European Union Agency for the Cooperation of Energy Regulators

Resource adequacy: '*By yourself*' or '*in it together*'?



Resource adequacy assesses the level of (electricity) security of supply in the long term: Does Europe / its Member States have enough generation, storage, network to supply demand from now until 2030?

A European approach

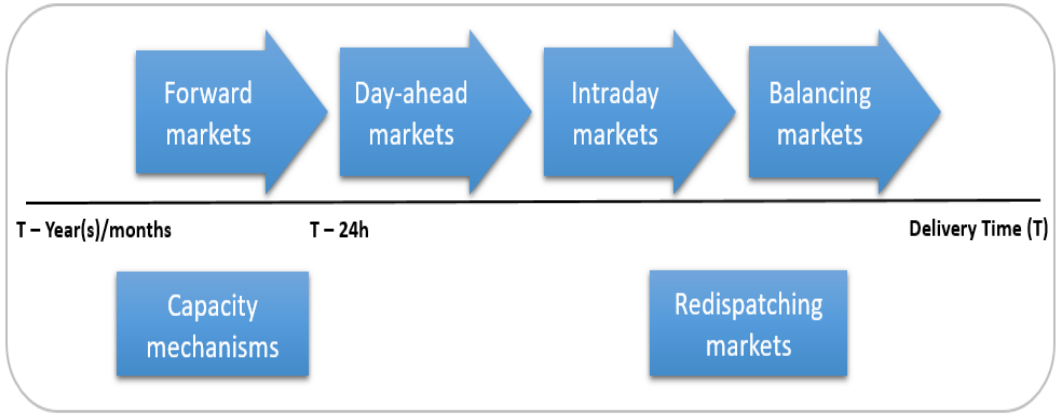
- Highlights the benefits of interdependence, minimising risks of over- or under-estimation of adequacy needs
- Keeps in check the costs of capacity mechanisms across the EU (currently on the increase)
- Paves the way for new technologies (storage, demand-response …)

Source Figure on resource adequacy is taken from ENTSO-E.

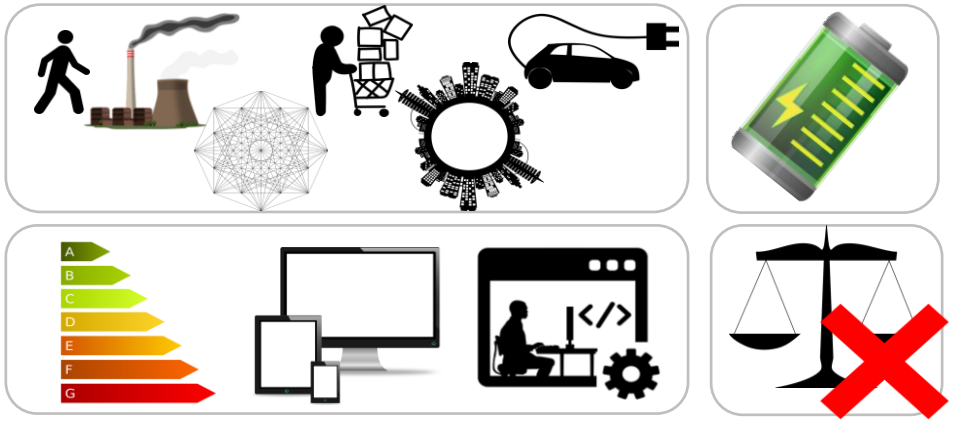
ACER
European Union Agency for the Cooperation of Energy Regulators

A wide scope to identify barriers …

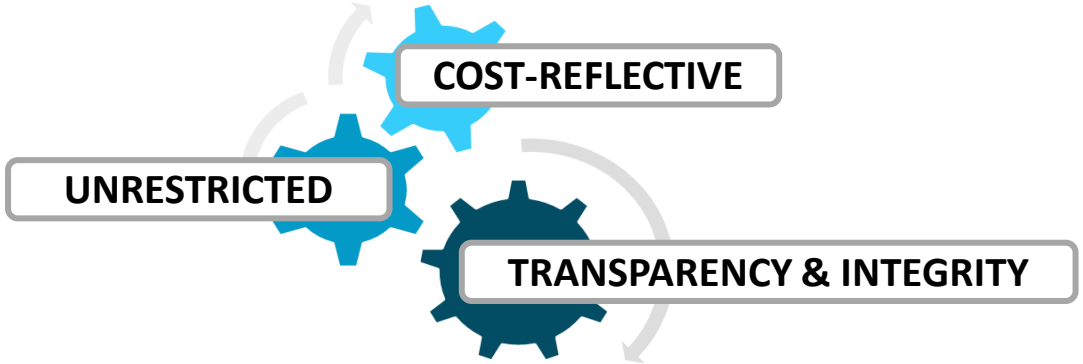
PRICE FORMATION



NEW ENTRANTS AND SMALL ACTORS



BARRIERS TO EFFICIENT PRICE FORMATION



BARRIERS FOR NEW ENTRANTS AND SMALL ACTORS

Significant barriers remain with regard to the efficient formation of electricity wholesale prices and to the easy entry of new and small market participants.

ACER
European Union Agency for the Cooperation of Energy Regulators

All Member States have some barriers …

BARRIERS TO EFFICIENT PRICE FORMATION																											
Price limits and restrictions on features of imbalance settlement	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
Limited competitive pressure and/or liquidity in wholesale markets	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
Insufficient cross-zonal capacity	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
Bidding zones not reflecting structural congestions	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
Restrictive requirements in prequalification and/or the design of products for balancing	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
End-user price interventions	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
Limited incentive to contract dynamic retail prices	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
Insufficient information provided by system operators	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

BARRIERS TO ENTRY AND PARTICIPATION FOR NEW ENTRANTS AND SMALL ACTORS																											
Restrictive requirements in prequalification and/or the design of products for balancing	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 enable new entrants and small players	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
Restrictive requirements to participate in capacity mechanisms and interruptibility schemes	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
Limited competitive pressure in the retail market	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
End-user price interventions	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
Limited incentive to contract dynamic retail prices	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
Insufficient information provided by system operators	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

High (0-0.2) | Moderate (0.2-0.4) | Light (0.4-0.6) | Not restrictive (>0.6) | NA | None

While Member States perform satisfactorily in some areas, relevant barriers to price formation and new entrants still widely apply

Note: "High" refers to a significant barrier with a score x ≤ 0.2, "moderate" 0.2 < x ≤ 0.4, "light" to a score 0.4 < x ≤ 0.6 and not restrictive to x > 0.6. NA (not available) refers to Member States where it was not possible to assess the barrier due to insufficient data available. None (not applicable) refers to Member States where the barrier does not apply, e.g. if no capacity market was operational, if there were no price interventions in the retail price settings, etc.

ACER
European Union Agency for the Cooperation of Energy Regulators

Recommendations - overview

1. Implement re-dispatching and countertrading methodologies.

2. Amend cross-border capacity calculation methodologies, in line with the Clean Energy Package

3. Sound and neutral bidding zone reviews.

I. Increase cross – zonal capacity

4. Finalise market coupling (flow-based projects in Core and Nordic regions)

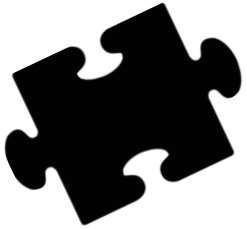
5. Finalise the common grid model methodologies

6. Implement the Electricity Balancing Guideline

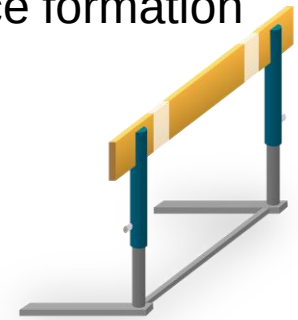
7. Pan-European intraday auctions for pricing cross-zonal capacity

8. Improve forward markets (cross-border hedging tools)

II. Complete market integration across all timeframes



III. Remove barriers to market entry and price formation



9. Remove wholesale price restrictions

10. Ensure that requirements for prequalification and aggregation enable the entry of new actors

11. Transposition of the Electricity Directive (definition and roles of new market players)

12. Protect vulnerable consumers without interfering with free price formation

13. Roll-out of smart meters

14. Reduce non-contestable charges in electricity bills

15. TSOs to increase transparency

IV. Efficiently address adequacy concerns

16. Robust adequacy assessments at the EU and national levels

17. Only capacity mechanisms where needed

18. Dedicated interruptibility schemes only when no alternative market for demand response

ACER
European Union Agency for the Cooperation of Energy Regulators

To conclude ...

- Global gas (LNG) supply/demand dynamics key factor impacting currently high energy prices. CO2 allowances, weather etc. play secondary roles.
- Impacts all of Europe. Differences in power prices per gas exposure and level of interconnection compared to national demand.
- Policy considerations are significant:
  - Short-term vs. longer-term. Relief for the most vulnerable; dealing with price volatility; electricity market design; retaining the benefits of the integrated energy market.
- EU electricity market integration has evolved, yet challenges remain:
  - Further integration e.g. of intra-day and balancing markets
  - Making more cross-zonal capacity available for trade (“70% target”)
  - Reaping the benefits of European-wide resource adequacy assessment
  - Addressing barriers to price formation and market entry

Thank you for the opportunity. Looking forward to the discussion.

ACER

European Union Agency for the Cooperation of Energy Regulators

info@acer.europa.eu
acer.europa.eu
@eu_acer
linkedin.com/company/EU-ACER/

Back-up slides

ACER
European Union Agency for the Cooperation of Energy Regulators

info@acer.europa.eu
acer.europa.eu
@eu_acer
linkedin.com/company/EU-ACER/

ACER
European Union Agency for the Cooperation of Energy Regulators

Barriers analysed in the 2020 MMR

BARRIERS TO EFFICIENT PRICE FORMATION

Upcoming MMRs:
- Distortions due to support schemes
- Distortions due to capacity mechanisms
- Market integrity issues
- Insufficient market transparency
- Issues related to network tariffs

2020MMR:
- Price limits
- Restrictions in balancing markets
- Limited competitive pressure and liquidity Insufficient cross-zonal capacity
- Bidding zones not reflecting structural congestions

BARRIERS FOR NEW/SMALL ACTORS

2020MMR:
- End-user price interventions
- Low incentive for dynamic retail contracts
- Insufficient information provided by system operators

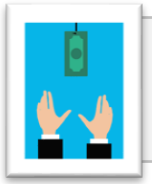
2020MMR:
- Lack of a proper legal framework
- Restrictions in balancing markets
- Restrictions in capacity mechanisms and interruptibility schemes
- Low competitive pressure in retail markets

Upcoming MMRs:
- Complex administrative and financial requirements
- Lack of incentives for non-wire alternatives

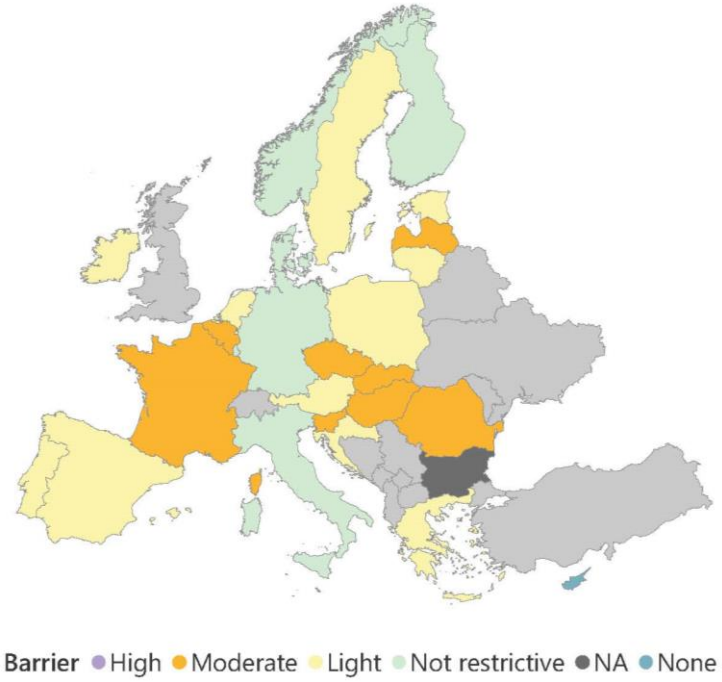
Note: Methodological study defining the barriers and indicators:
https://extranet.acer.europa.eu/en/Electricity/Market%20monitoring/Documents_Public/DNV_Final%20Report%2018%20August%202021_Rev2.0.pdf

ACER
European Union Agency for the Cooperation of Energy Regulators

Efficient price formation: the most common barriers…(1/2)

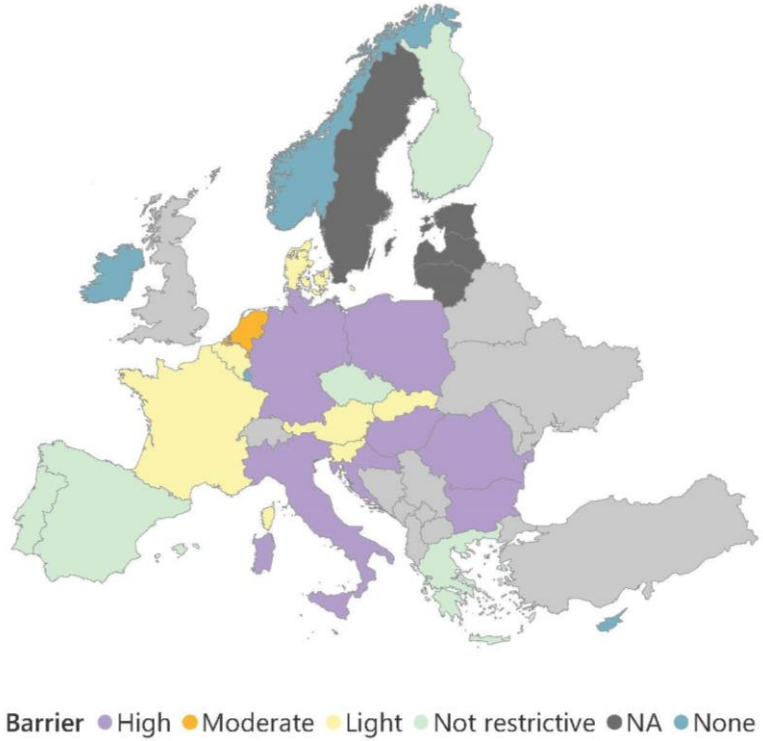


Limited competitive pressure and/or liquidity in wholesale markets



- Market concentration still high in several cases
- A share of the electricity is subject to some type of wholesale price regulation rather than to market prices, in FR, RO, IE and IT, which may discourage investments in new cost-efficient technologies.

Insufficient capacity available for cross-zonal trade



- The TSOs of the so-called Core Region (particularly DE and PL), and those in IT, BG, HR, HU and RO need to make the biggest efforts to meet the minimum 70 % capacity target, required by the Clean Enery Package

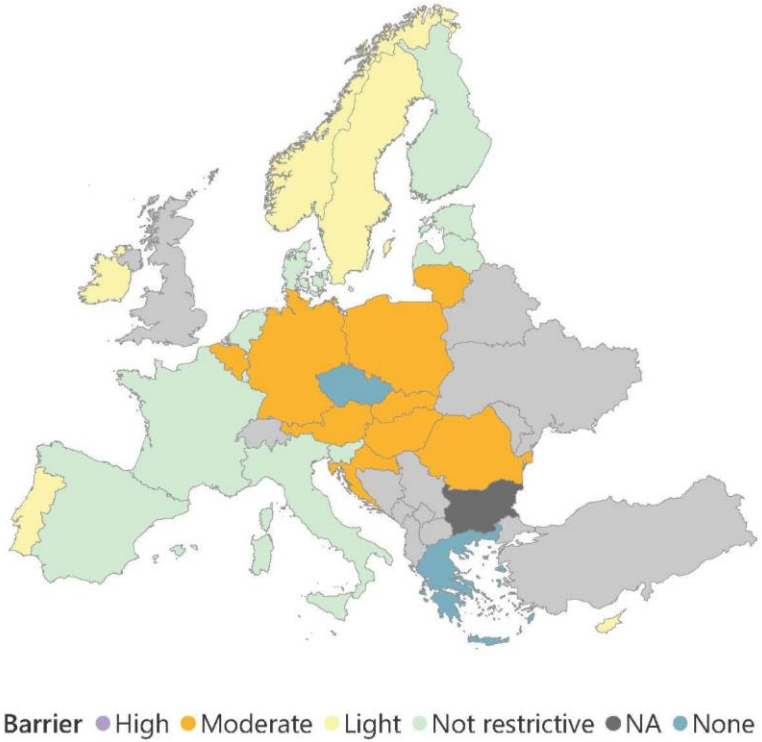
ACER
European Union Agency for the Cooperation of Energy Regulators

Efficient price formation: the most common barriers…(2/2)

End-user price interventions

- > 50% households with price some type of price regulation
- Most consumers with regulated prices are not necessarily among the most vulnerable ones

Dynamic prices should be a consumers' choice, but often limited incentives

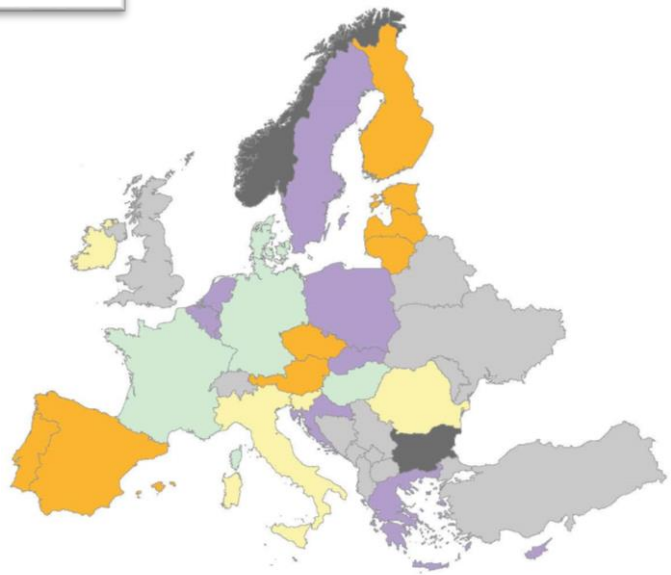


- Often a low roll-out rate of smart meters
- Often, the energy component represents a limited share (on average only around one third) of the electricity bill

ACER
European Union Agency for the Cooperation of Energy Regulators

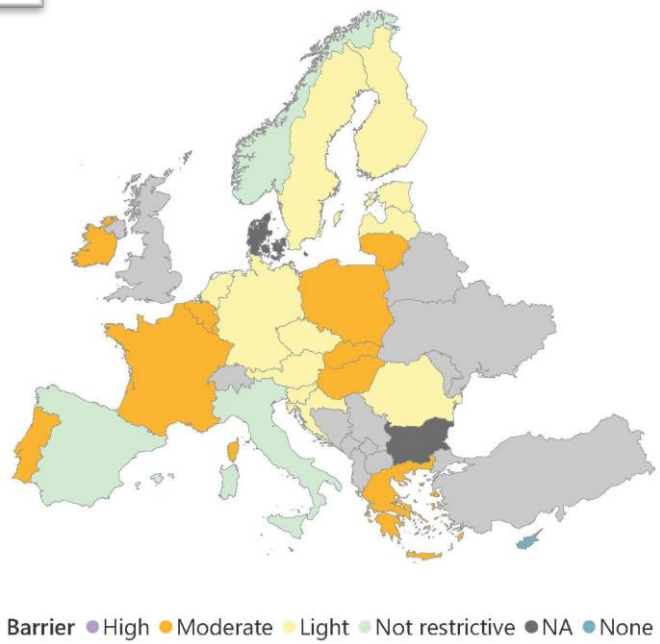
New entrants and small actors: the most common barriers...

Lack of a proper legal framework



- Main roles and responsibilities for new entrants (aggregators, energy communities, etc), not always defined
- New players often not eligible to participate in many market segments

Limited competitive pressure in the retail market



- Often highly concentrated retail markets
- Often low entry/exit activity

Restrictive requirements in balancing markets

New and small entrants with difficulties to participate due to:

- Long delivery periods
- Long procurement lead-times
- Long balancing capacity contracts
- Large minimum bid sizes
- Restrictions for the participation of aggregators
- Symmetric balancing capacity
- Regulated or pay-as-bid pricing
- …

Products not suitable for new entrants, e.g:

- bid size higher than 1MW (RO, CZ, BG, PT, FR)
- procured only in very long periods (year or month-head) (LT, SK, SL, HR, CZ, HU)

End-user price interventions and a limited incentive to contract dynamic prices may also hinder participation of new and small market players

ACER
European Union Agency for the Cooperation of Energy Regulators

ACER: Role & governance

- **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, **deterring 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.