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Avenues for reform of the electricity market

Informal Ministerial meeting in Prague on 11 – 12 October 2022

Czech Council Presidency of the EU

Christian Zinglersen, ACER Director

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Agenda

- What to make of our energy challenges next year?
- 'Getting it right' for the next 10-15 years:
  - The *when*: Effects of a reform likely to kick-in by when
  - The *what*: Key elements to tackle
- Early lessons for energy transition policies going forward
- A final word on what to avoid …

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Challenges facing us next year(s)

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'*Beginning of the end*' vs. '*end of the beginning*'?

Europe | Shiver for longer

Europe's next energy crunch

The winter of 2023 could be worse than 2022

The Economist

Source: The Economist, 29 September 2022

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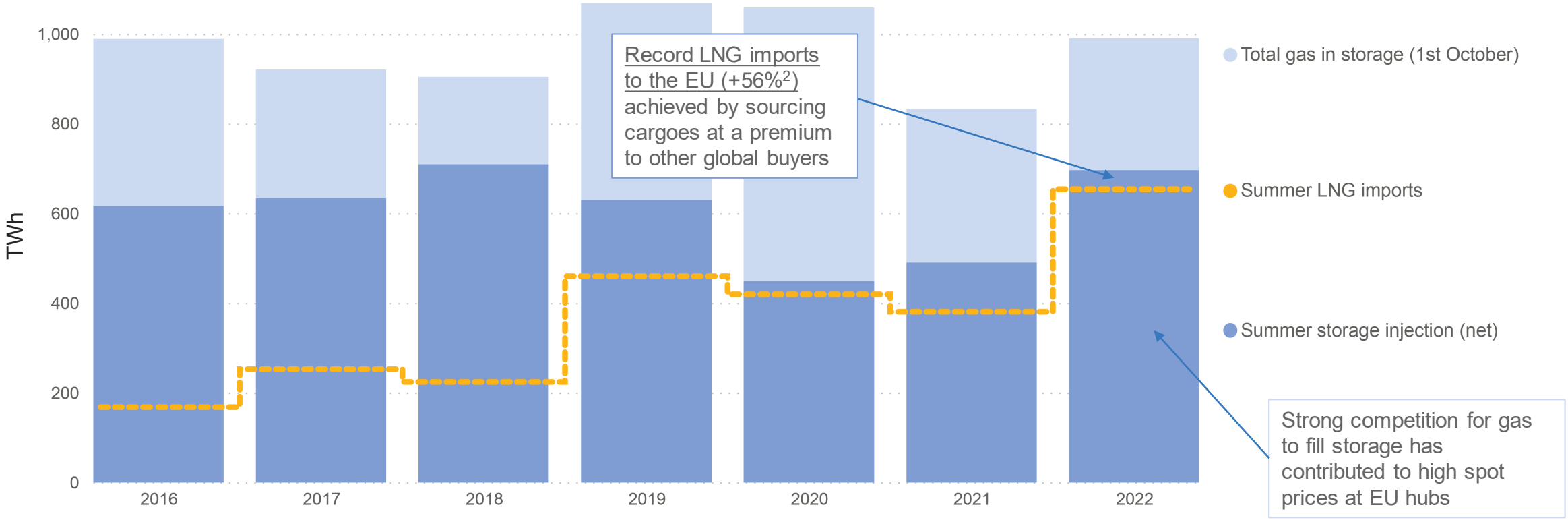
Current gas storage 'success' has come with a price

EU[1] gas storage build and LNG imports – April to October (2016 - 2022)



After significantly higher injections than in 2021, EU gas storages are on track to be filled to capacity by the start of the heating season (+90%) but reportedly at eight times historical costs (est. 50 billion euros).

Source: GIE, Reuters
Notes: (1) EU 27; (2) compared with average imports in corresponding months between 2019 and 2021

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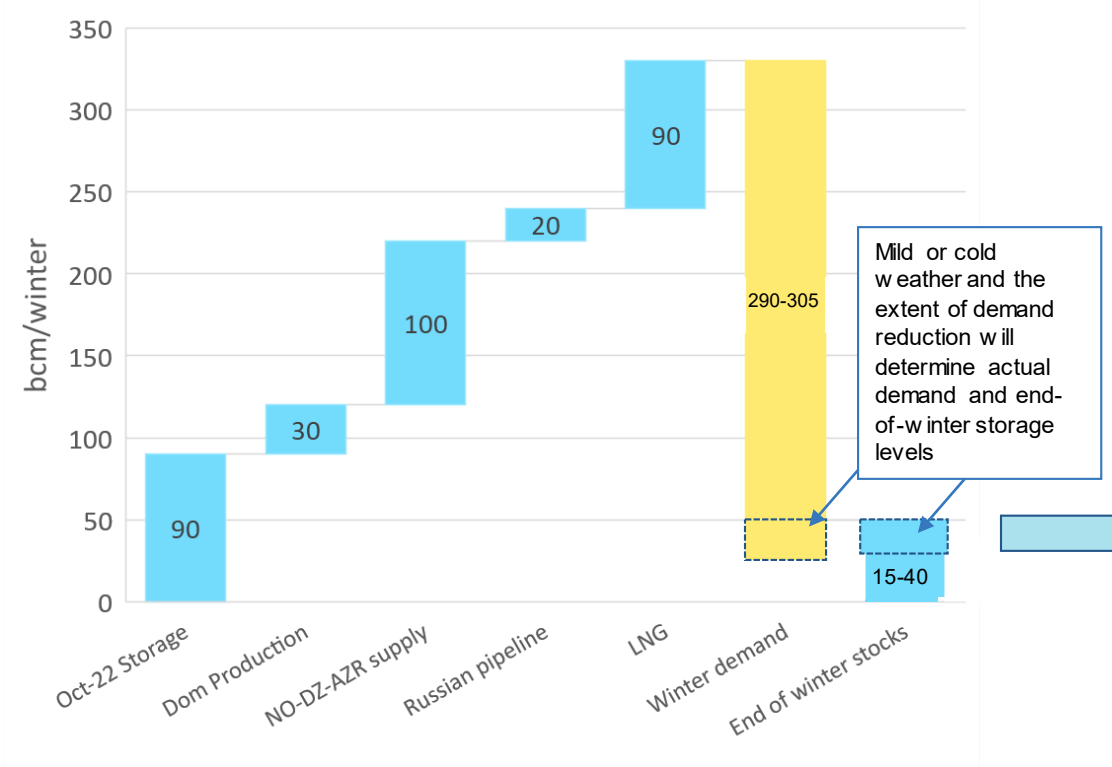
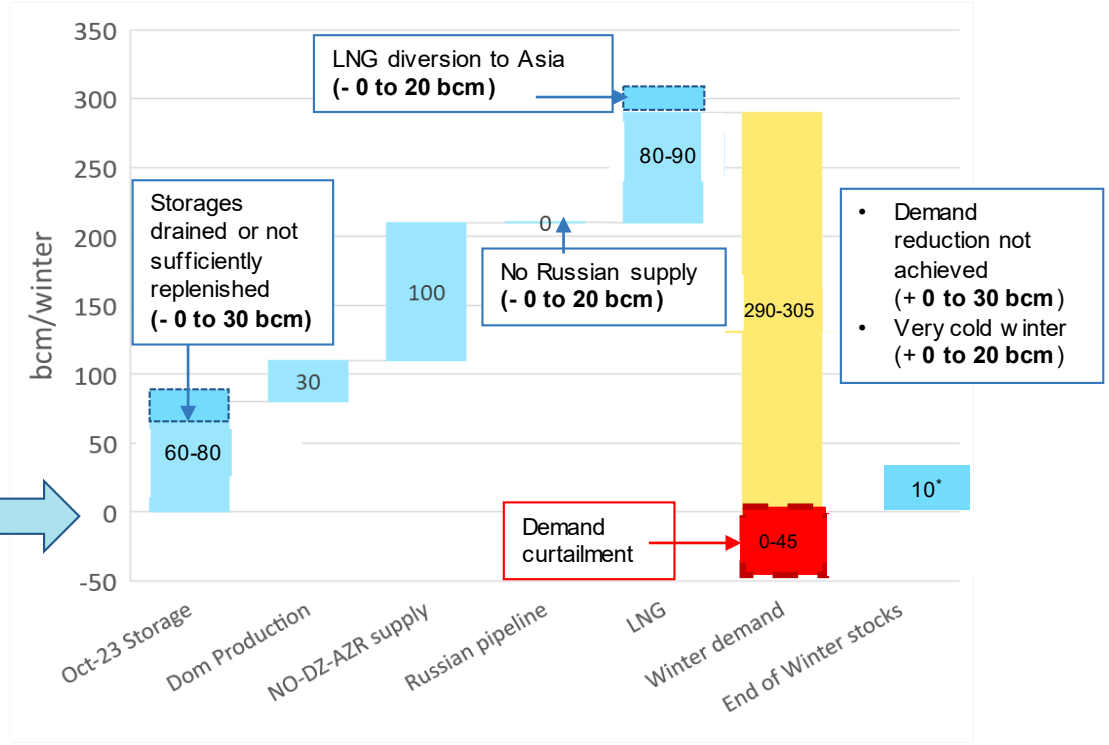
Hence, gas storage faces challenges next winter

Scenario for winter 2022-2023 - EU + UK - bcm/winter



Scenario for winter 2023-2024 - EU + UK - bcm/winter



'*A season of if's*': Europe might face demand curtailments in winter 2023/2024 *if* gas storages are fully depleted during winter 2022/2023 and/or not sufficiently replenished in summer 2023; *if* Russian supplies fully halt; *if* larger volumes of LNG are diverted to Asia; and/or *if* gas demand rises (due to e.g. cold weather or demand reduction targets not being met).

Source: Estimates; ACER based on Timera and ENTSOG

** Stocks can't be fully depleted by end-winter for operational reasons*

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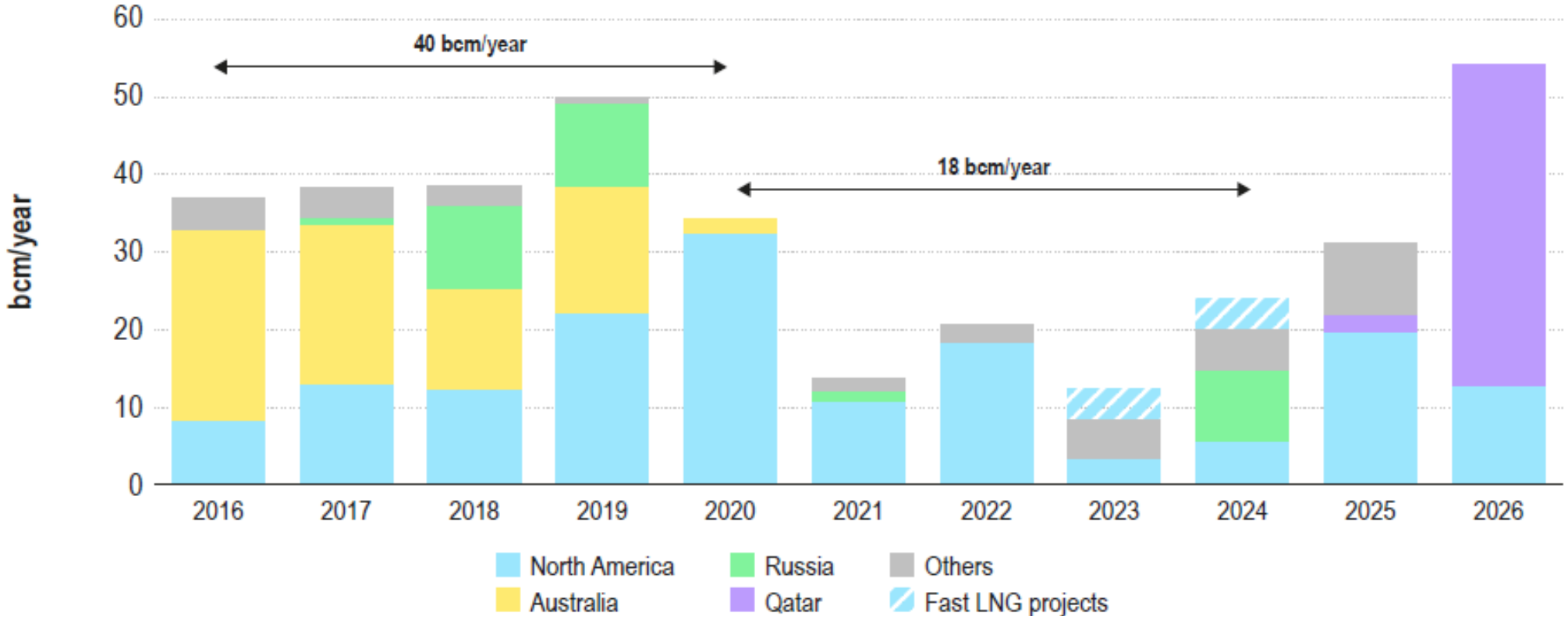
LNG capacity remains tight in the coming years

Global LNG liquefaction capacity additions by regions by start-up year – 2016-2026



The EU will compete for extra volumes with Asia which will see growing demand, partly for overall economic growth, partly for lowering coal usage.

Source: IEA Gas Quarterly Report Q2 2022

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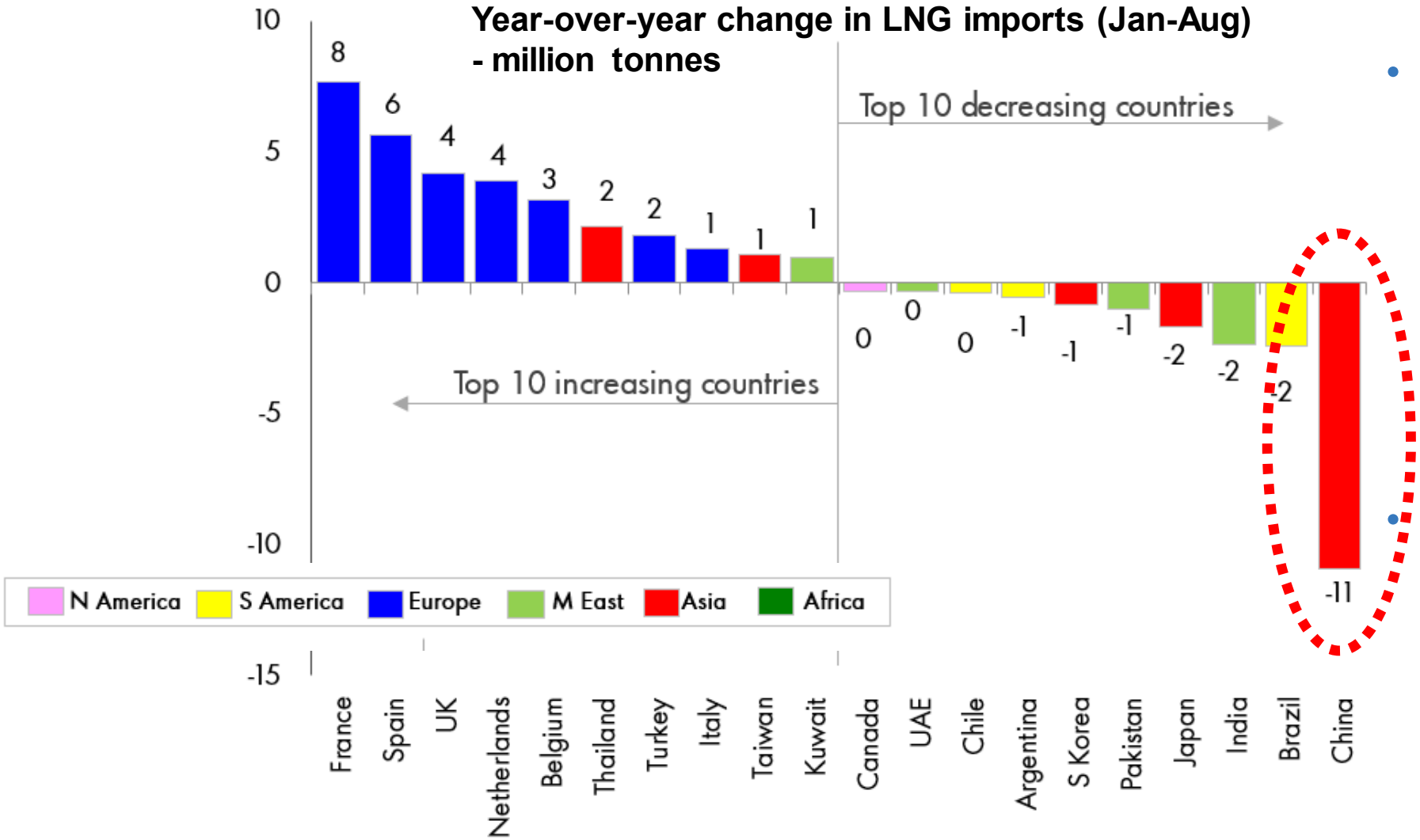
With one particular 'demand variable' standing out



- China's COVID-driven demand decline in LNG volumes is currently being absorbed by Europe while US LNG supply continues to grow.
- This raises questions as to when China's LNG demand may turn back towards normal growth rates.

Source: Shell interpretation of Kpler and customs data

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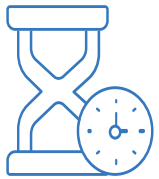
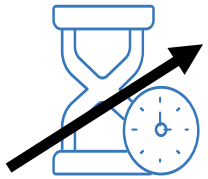
Implications for reform of the electricity market: Effects to kick-in by when?

Judging from experience, implementation takes time

	Examples	
	The Clean Energy Package	**CACM Regulation**
 Legislative process	11/2016 - 12/2020*	2012 – 08/2015
 Implementation	Ongoing • European Resource Adequacy Assessment (ERAA): 2024-2025 • Minimum capacity targets: 01/2026 • Imbalance settlement period: 01/2025	Ongoing • Core Flow-based: 06/2022 • Nordic Flow-based: 2023 • Redispatching and countertrading: 2024 • Intraday auctions: 2024
 Average implementation	**Using <u>existing</u> governance & entities** **approx. 3 - 6 years**	**Establishing <u>new</u> governance & entities** **approx. 4 - 8 years**

** Note: Includes transposition into national law*

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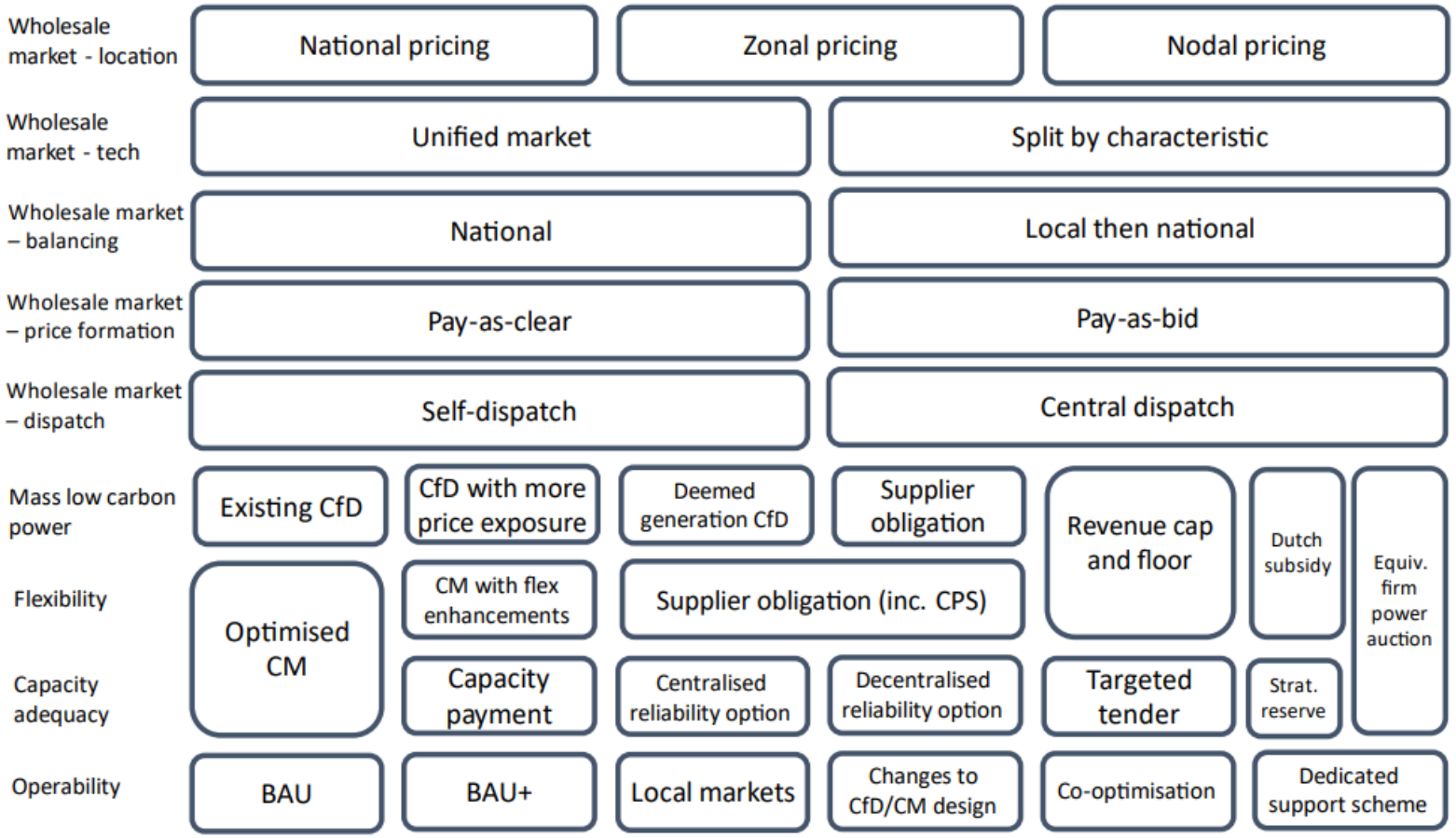
By way of example, the UK's electricity market review

An overview of elements in the UK's ongoing electricity market review (REMA)



- Thorough consultation and analysis process stretching well into 2023
- Multiple options for review across various dimensions
- Sequence of consultation, analysis of input, further consultation, then analysis etc.
- Ending with a full delivery plan and overseeing implementation (from the mid-2020s)

Source: UK government website (https://www.gov.uk/government/consultations/review-of-electricity-market-arrangements)

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Implications for reform of the electricity market: ‘Getting it right’ for the next 10-15 years

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A spectrum of reform options to consider

Degree of complexity and likely time required for implementation

Targeting long-term markets

Improving long-term markets

- Supporting liquidity
- Enhanced forward markets integration, e.g. by coupling forward markets for long-term cross-zonal capacities

Introducing government-driven mechanisms

- Specific mechanisms to drive investments in renewables and/or flexibility: CRMs, CfDs, support for PPAs.
- Insurance mechanisms: Affordability options to protect consumers, two-sided options to protect both consumers and producers

Targeting short-term markets

Structurally reforming short-term markets

- Splitting the market per generation type (dispatchable vs. not dispatchable, etc.)
- Improving locational price signals (nodal pricing, local markets……)

'Average pricing' via different mechanisms

In the current high price setting, many proposals aim at strong investment signals for new-build; more (cost-based) average pricing; less price volatility; thereby also tackling the impact e.g. of gas generation prices on consumers. There are several options for achieving the desired objectives.

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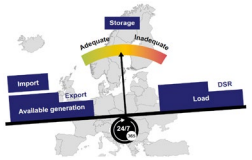
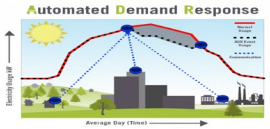
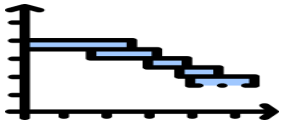
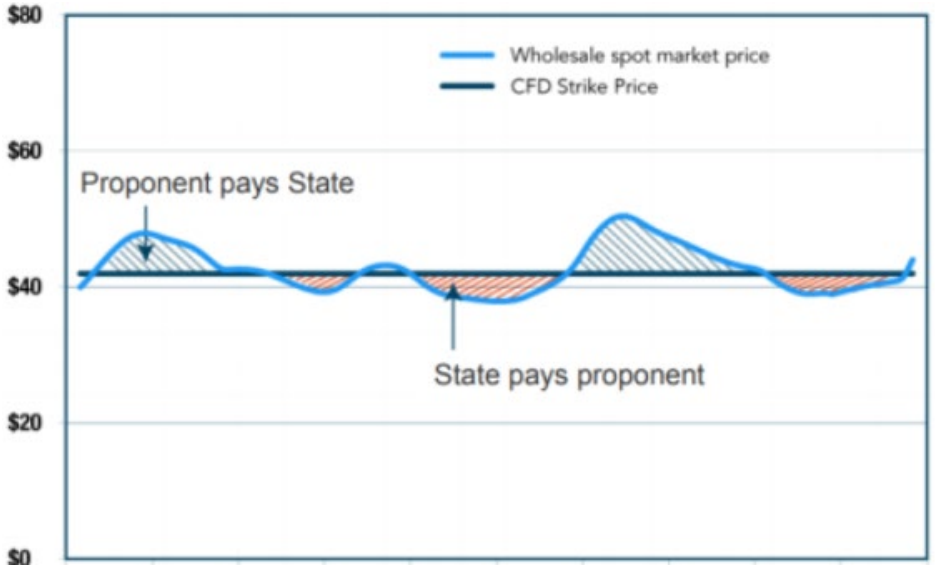
Key questions to be posed towards such options

Criteria	Option 1	Option 2	Option 3	Option ….
 Affordability?	✓	✓	✓	…
 Security of supply & facilitates cross-border flows?	✗	✓	✓	…
 Energy transition compliant?	✗	✓	✓	…
 Signals for needed demand response?	✓	✗	✓	…
 Investment signals (incl. for CAPEX-intensive technologies)?	✓	✗	✓	…
 Implementation time?	✓	✓	✗	…

One element: Investment signals & inframarginal revenue

How a contract for difference (CfD) works



Les Echos

Idées Économie Politique Entreprises Finance - Marchés Bourse Monde Tech-Médias Start-up Régions Patrimoine

Eolien, solaire : vers un jackpot d'au moins 8,6 milliards d'euros pour l'Etat

Les énergies renouvelables et surtout les parcs éoliens implantés en France pourraient rapporter selon les estimations de la CRE 8,6 milliards d'euros au budget de l'Etat en 2022 et en 2023.

Lire plus tard | Commenter | Partager | Budget de l'Etat et impôts | Consommation

"… In some Member States, the revenues obtained by some generators are already capped by way of State measures such as … two-way contracts for difference. These generators do not benefit from increased revenues resulting from the recent spike of electricity prices. Therefore, existing producers subject to that type of State measure … should be excluded from the application of the cap …"

Source: CfD image from WRI: 'Corporate Guide to Green Power Markets'. Les Echos, 18 July 2022. Quote from Council Regulation adopted on 30 September 2022, preambular paragraph 37.

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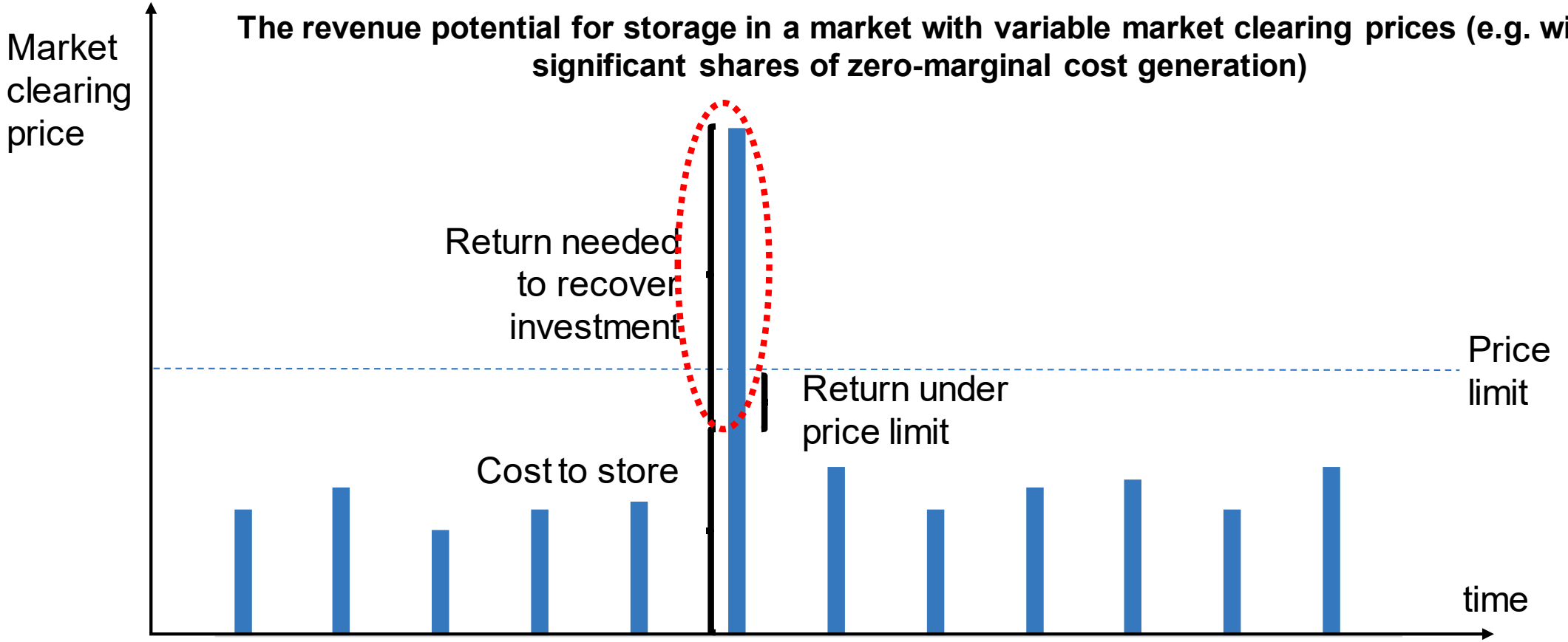
Another element: Zero-marginal cost & 'missing money'

The revenue potential for storage in a market with variable market clearing prices (e.g. with significant shares of zero-marginal cost generation)



More of a discussion some years ago, the challenge of potentially 'missing money' & 'revenue cannibalisation' is countered by the enhanced uptake of storage and electrolysis, adding revenue streams by 'shifting' generation across time frames. However, instituting price limits may hamper investment incentives for such technologies, thus inadvertently bringing back past discussions on 'missing money' & 'revenue cannibalisation'.

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Early lessons for energy transition policies up ahead

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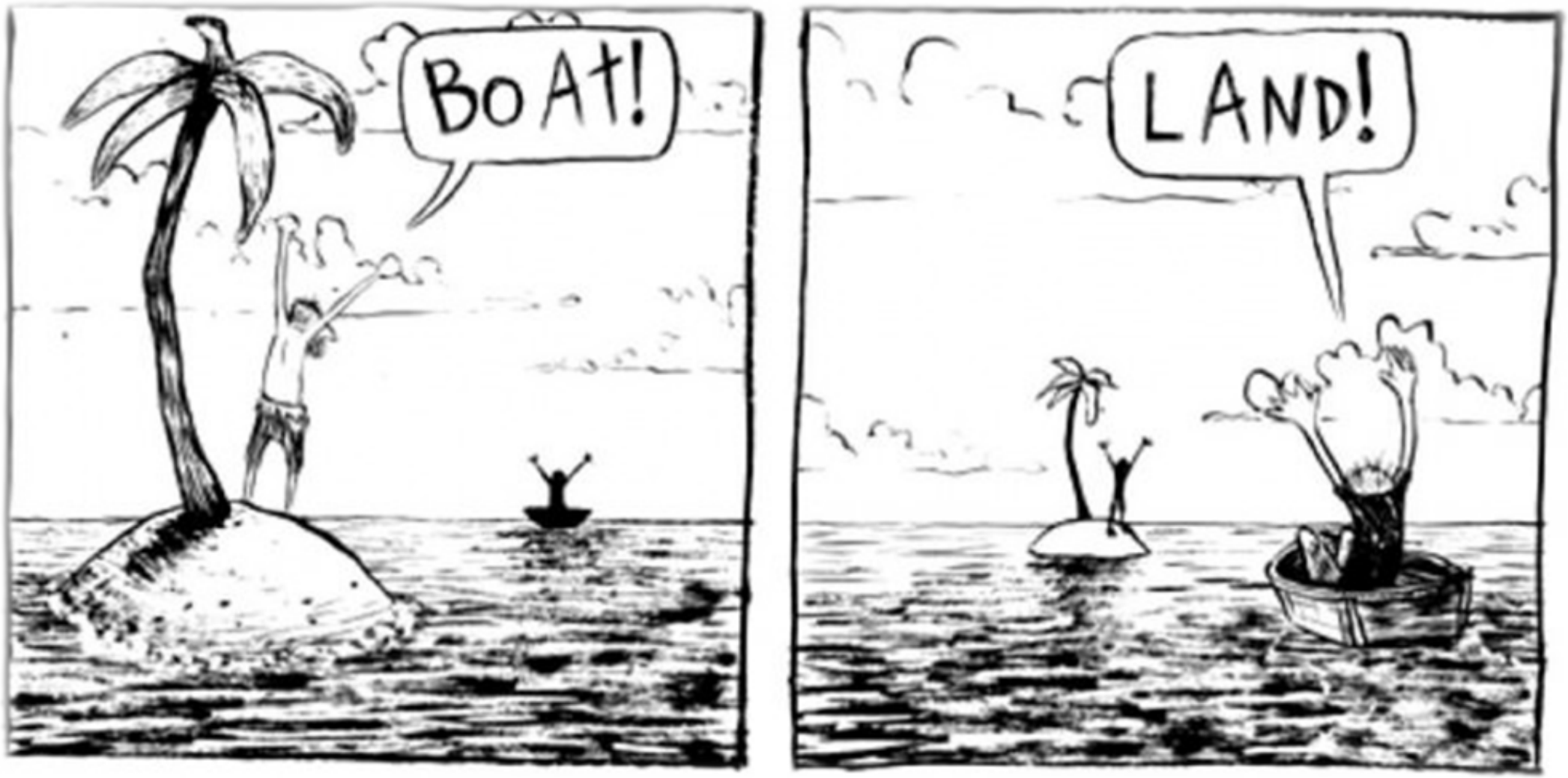
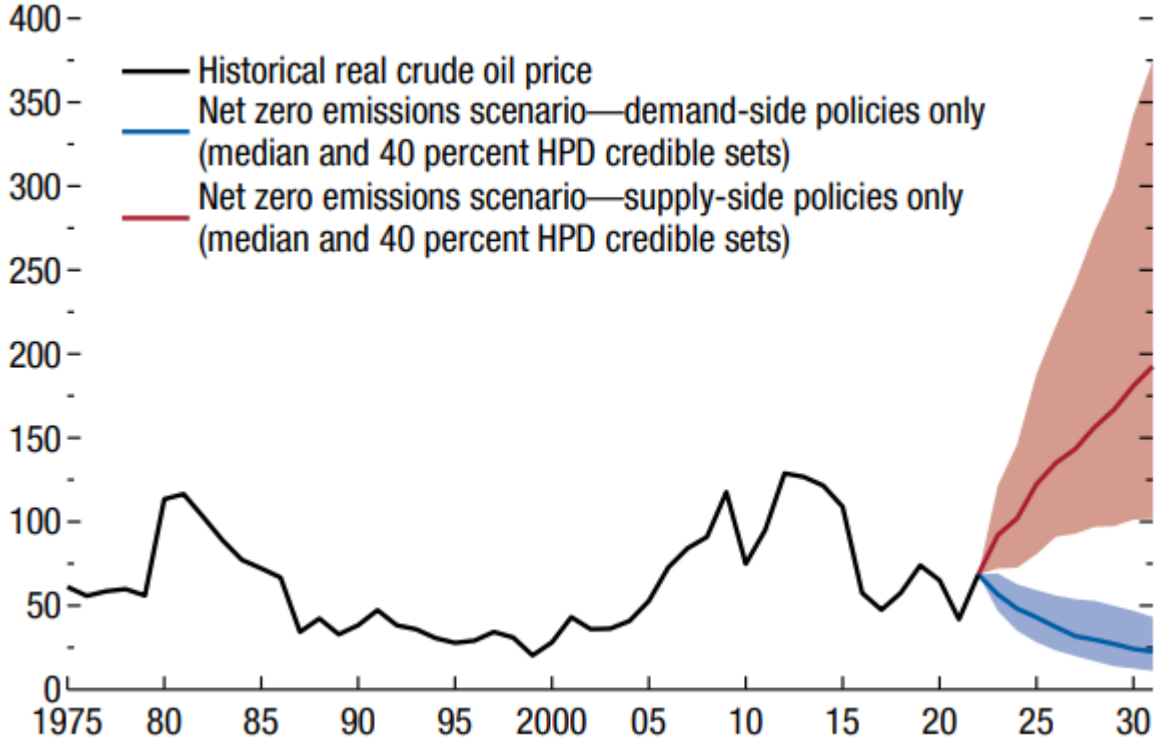
It’s the supply. No, it’s the demand. No, it’s the …

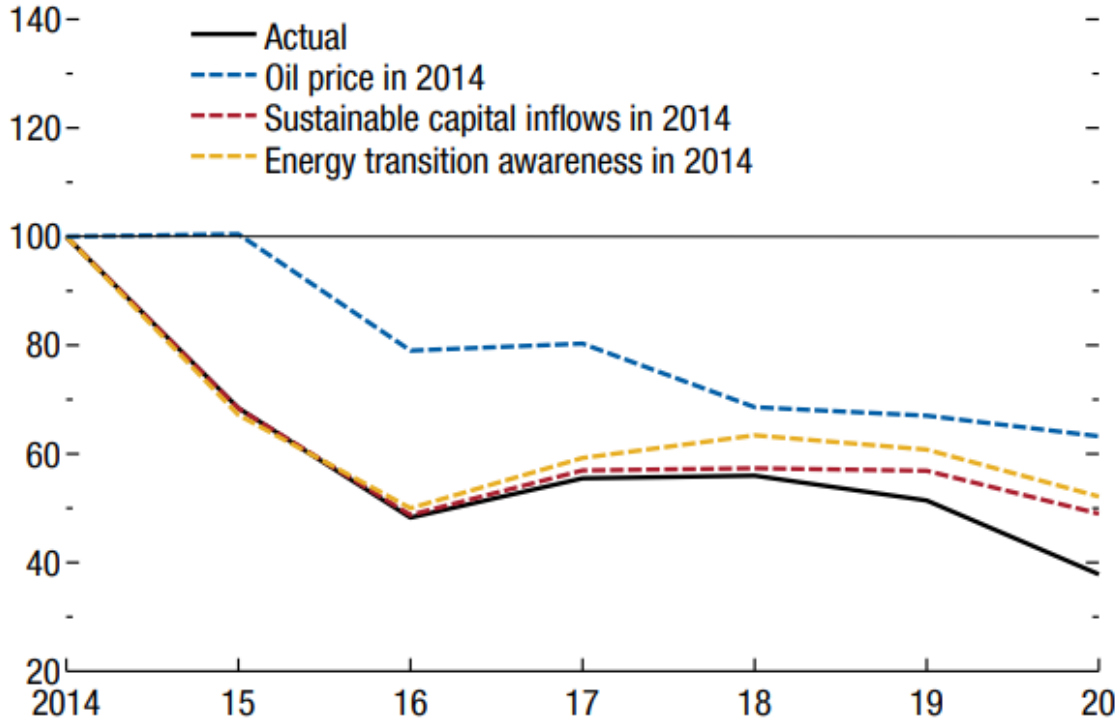


One-sided focus on the supply-side has risks

Oil prices rise in a net zero emissions scenario driven by supply policies vs. decline when driven by demand policies *(US dollars a barrel)*



Counterfactuals for oil and gas capital expenditure



Focusing on supply-side restrictive measures as opposed to (also) focusing on demand-side measures may bring strong upward pressure on prices. Also, targets do not constitute results. Recent history holds lessons.

Source: IMF World Economic Outlook, April 2022

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The EU holds advantages; will they be leveraged?

"... whilst increased energy independence vis-à-vis (particular) third-countries is a policy objective of growing importance, realising this may well depend on enhanced energy inter-dependence amongst EU Member States."

Further strengthening a 'shared resources' model across the EU requires investment; in infrastructure, rules, institutions and governance. Importantly, it also requires political investment in the 'comfort levels' of being more (inter-)dependent on other Member States for one's energy needs.

Source: ACER's Final Assessment of the EU Wholesale Electricity Market Design, April 2022

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A final word on what to avoid

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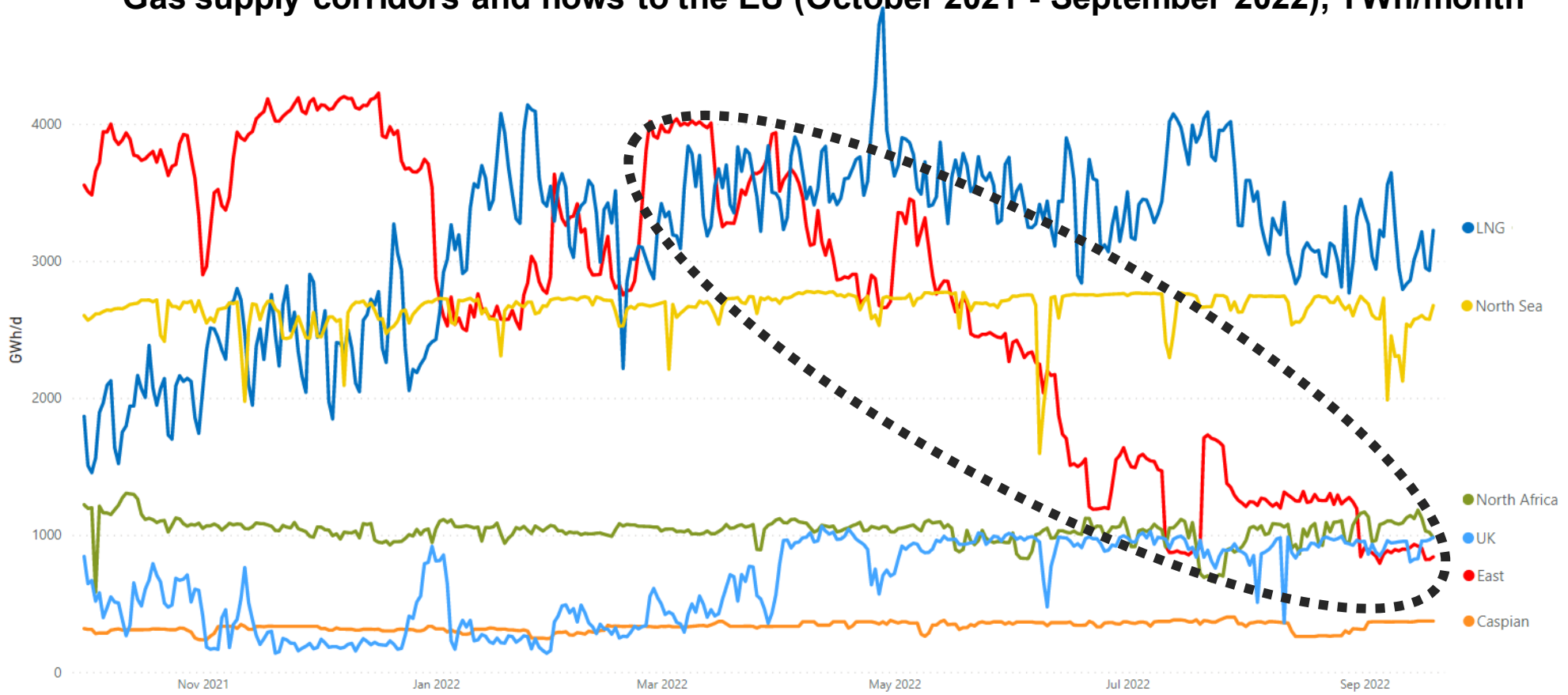
The gas supply picture has changed dramatically

Gas supply corridors and flows to the EU (October 2021 - September 2022), TWh/month



After the latest reduction in Gazprom exports, Russian pipeline supply represents an estimated 9-10% of EU daily gas imports.

Source: ENTSOG – for interactive version of graph go to https://gasdashboard.entsog.eu/#map-flows

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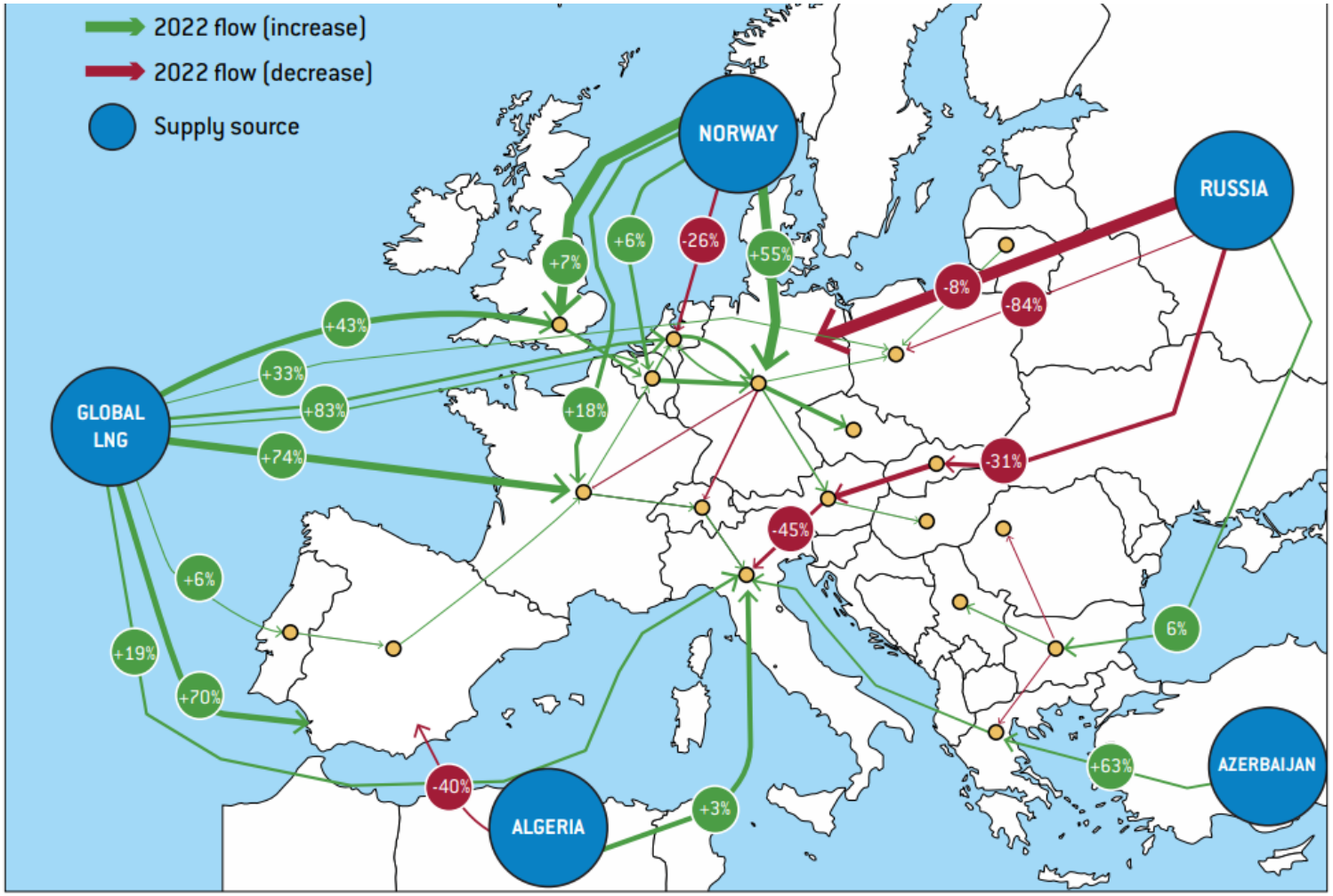
Revealing diverging vulnerabilities across Member States

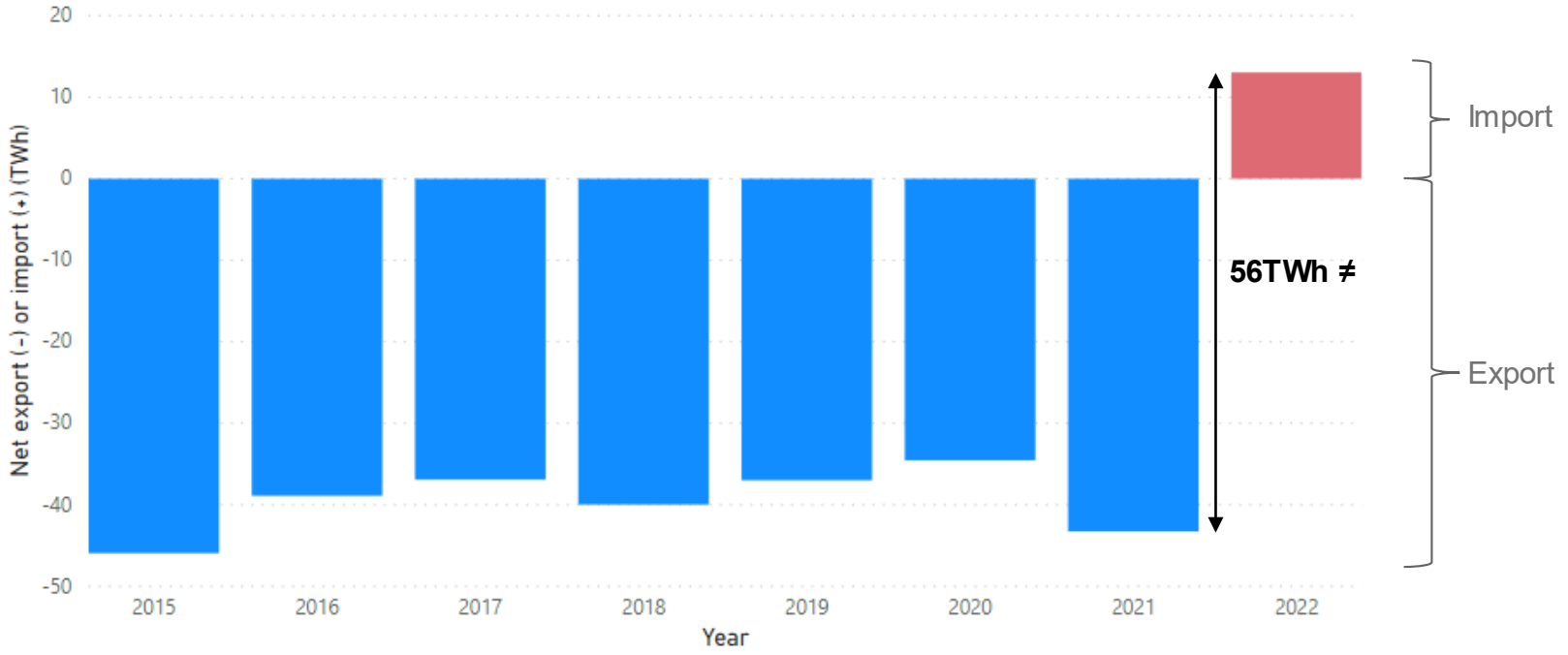
Natural gas flow changes – first half of 2021 vs first half of 2022



Source: Bruegel policy brief: "A grand bargain to steer through the European Union's energy crisis", September 2022

Tackling similar vulnerabilities for electricity flows (1/2)

Evolution of net electricity export (or import) of France



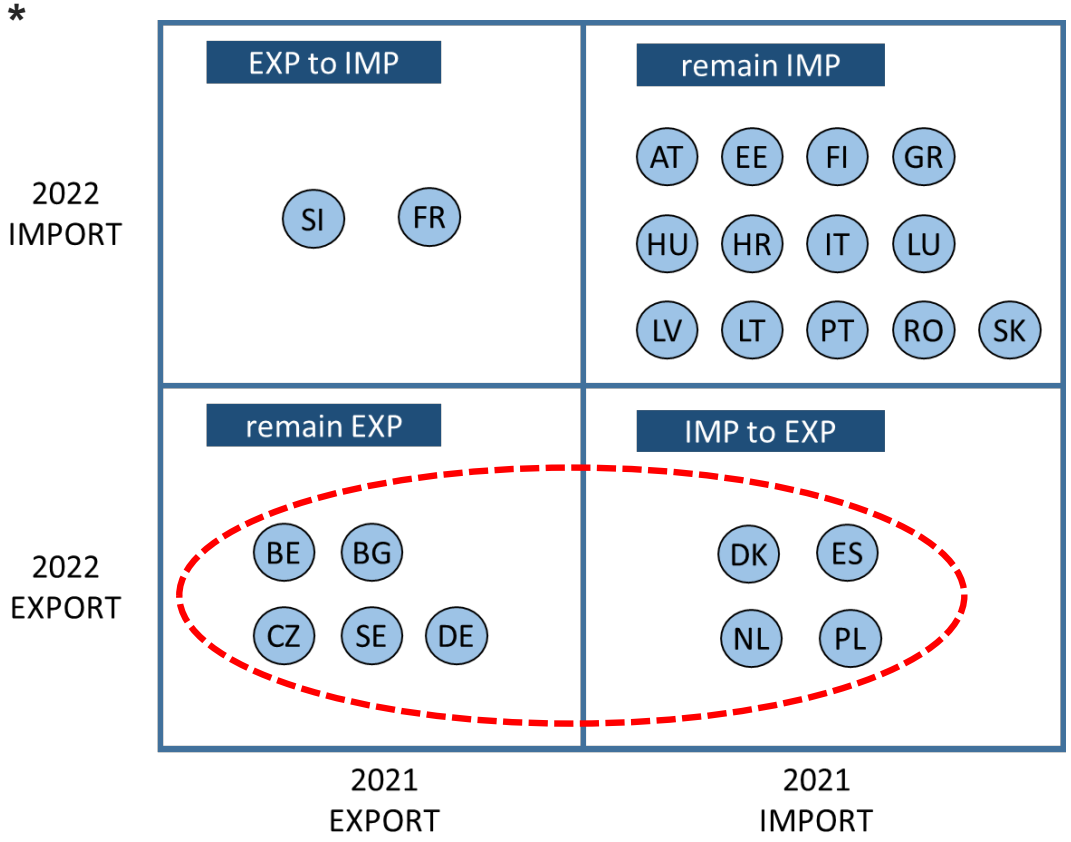
- France, one of the biggest EU exporters of power over the last years, **became a significant net importer in 2022**.
- This 'export-to-import' swing of 56TWh is **as big as the total demand of Belgium during the same period**.

'In view of the great uncertainties regarding decisions taken in neighbouring countries, balancing the electricity system in France will necessarily rely on very strong cooperation with neighbouring countries.'

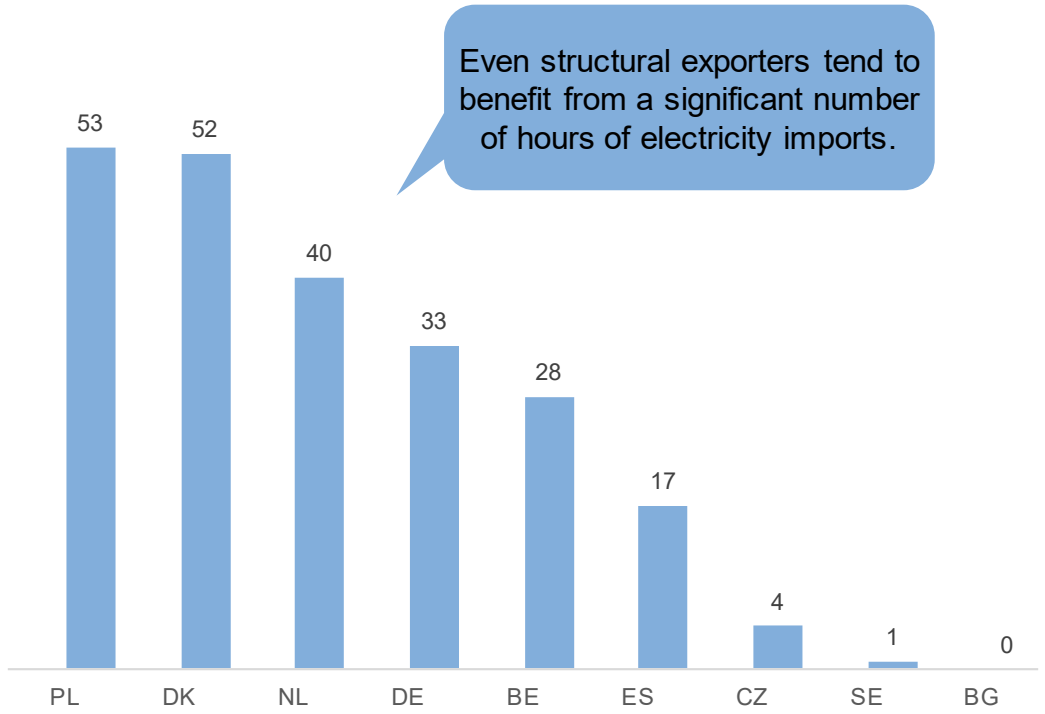
Source: ENTSO-E TP. Quote is from RTE's Winter Outlook.
** Note: Includes months of January – September for all years*

Tackling similar vulnerabilities for electricity flows (2/2)

Import ~ export swings from 2021 to 2022 *



% of net import hours in 2022



Making cross-border electricity capacity available for trade (per also the so-called '70% target') will be vitally important for many Member States. This also includes Member States that are predominant electricity exporters over the year.

** Covers all months for 2021 and January – September for 2022*
Note: Without MT, CY, IE

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Thank you for your attention.
Looking forward to the discussion.

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Annex

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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.

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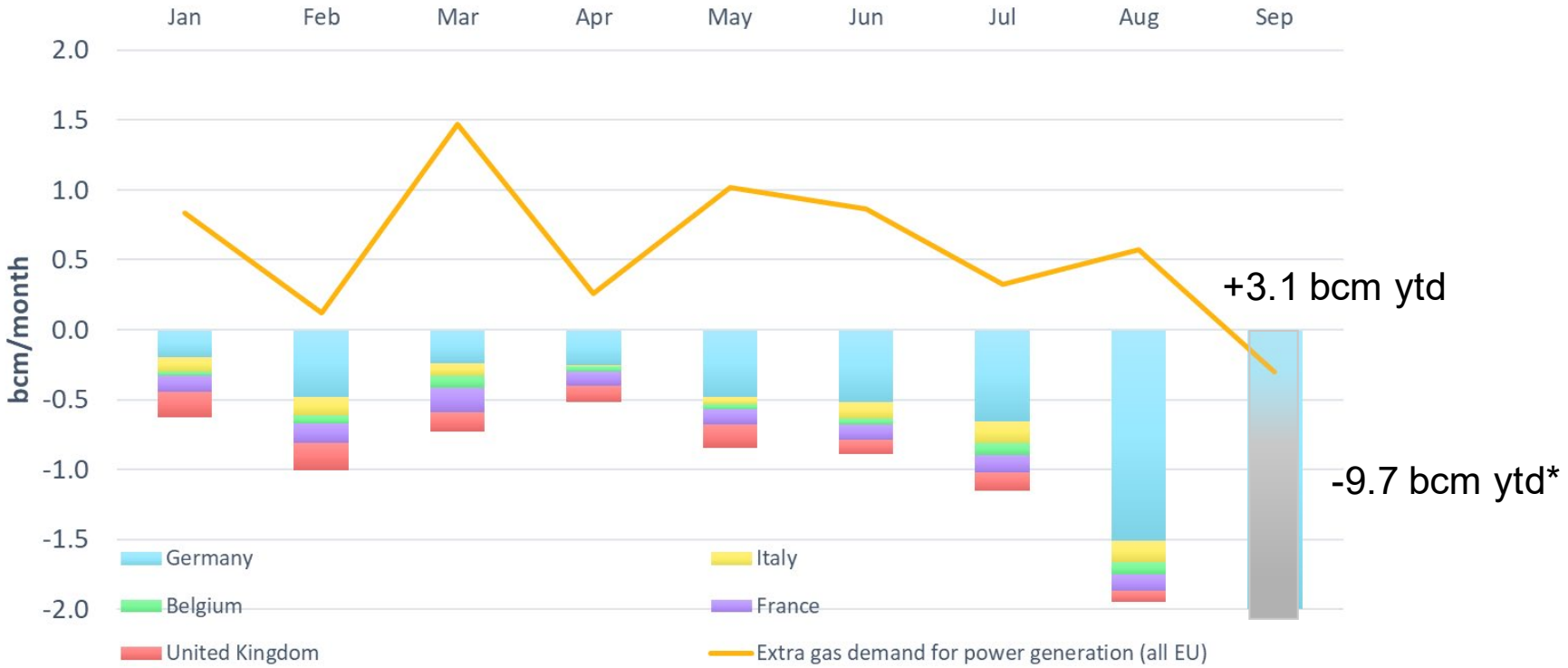
So far, 'gas demand flexibility' came from industry

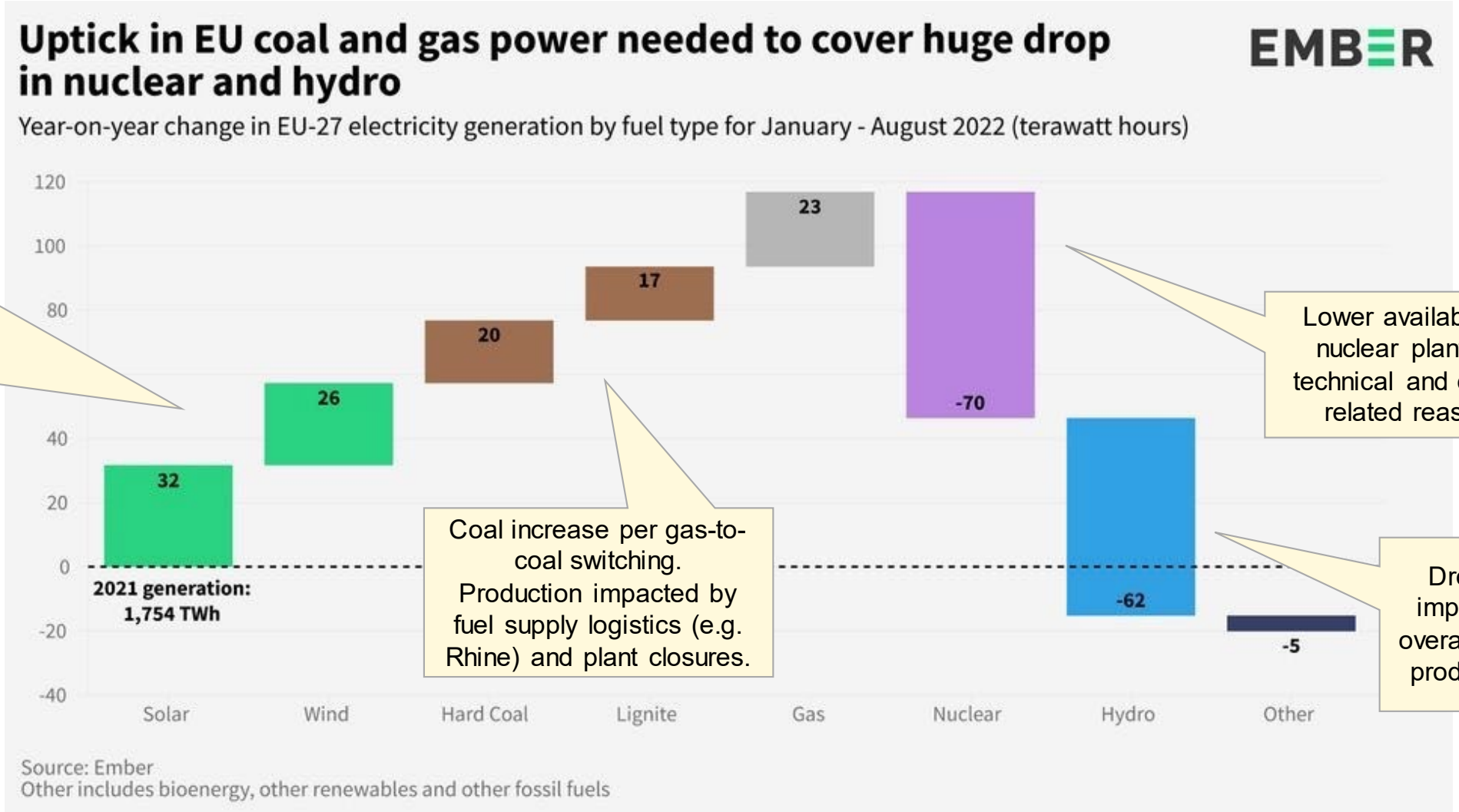
Drop in gas industrial consumption for selected European countries vs extra EU gas demand for power generation – bcm/month – 2022 vs 2018-2021 average



Industry and power generation each account for roughly one third of total EU gas demand. Industrial demand has dropped by 30% since August 2022, while gas demand power generation has risen by 8% year-to-date. The recent electricity demand reduction targets, if realised, are likely to counter the latter. Record high prices are forcing energy intensive industrial users to limit, stop or outsource production.

Source: For industrial demand - IEA analysis based on data from BNetzA, National Grid, GRTGaz, Fluxys and Snam. September drop is an estimate in the absence of data for some Member States. For gas demand for power generation - ACER analysis based on ENTSO-E (September gas-fired generation dropped Year-on-Year as a result of recovering wind power generation).

Addressing the mismatch in electricity supply & demand



Favourable solar conditions over much of Europe. Despite low wind output over the summer, overall high wind yields in 2022 (compared to unusually low wind output in 2021).

Coal increase per gas-to-coal switching. Production impacted by fuel supply logistics (e.g. Rhine) and plant closures.

Lower availability of nuclear plants for technical and drought related reasons.

Drought impacting overall hydro production.

Source: EMBER; ACER

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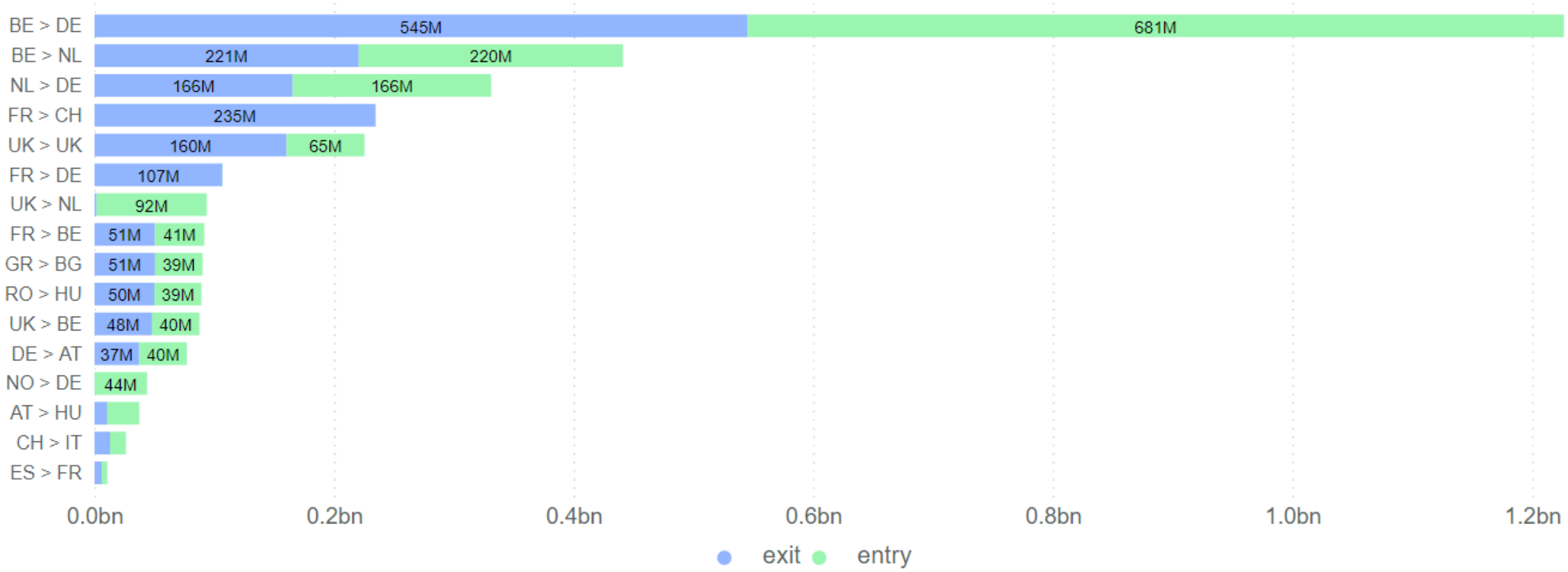
TSOs are collecting unprecedented congestion rents*

Gas TSO's network congestion rent – January to September 2022



Limited capacities on new supply routes have resulted in TSOs collecting unprecedented congestion rents. ACER estimates that congestion rents* have reached 3.4 billion euros between January and September 2022 - in the whole of 2021 they amounted to 55 million euros.

Source: ACER based on PRISMA, RBP and GSA

**Gas transportation congestion rent calculation is based on auction time (i.e. 2022) not product delivery time (i.e. includes products for delivery beyond 2022)*

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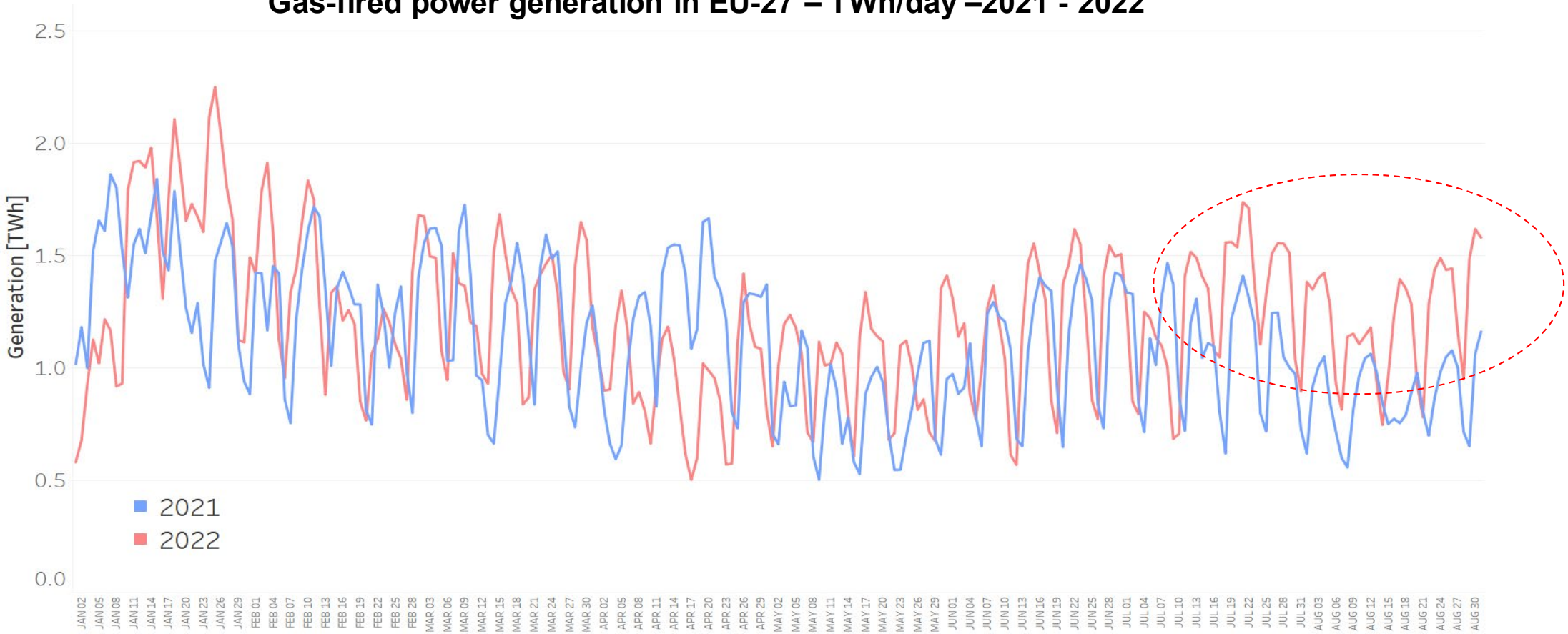
'*Gas driving electricity prices …*' is not the full story

Gas-fired power generation in EU-27 – TWh/day –2021 - 2022



Despite record-high gas prices, gas-fired power generation has increased year-on-year due e.g. to low hydro and nuclear availability issues.

Source: ACER based on ENTSOE

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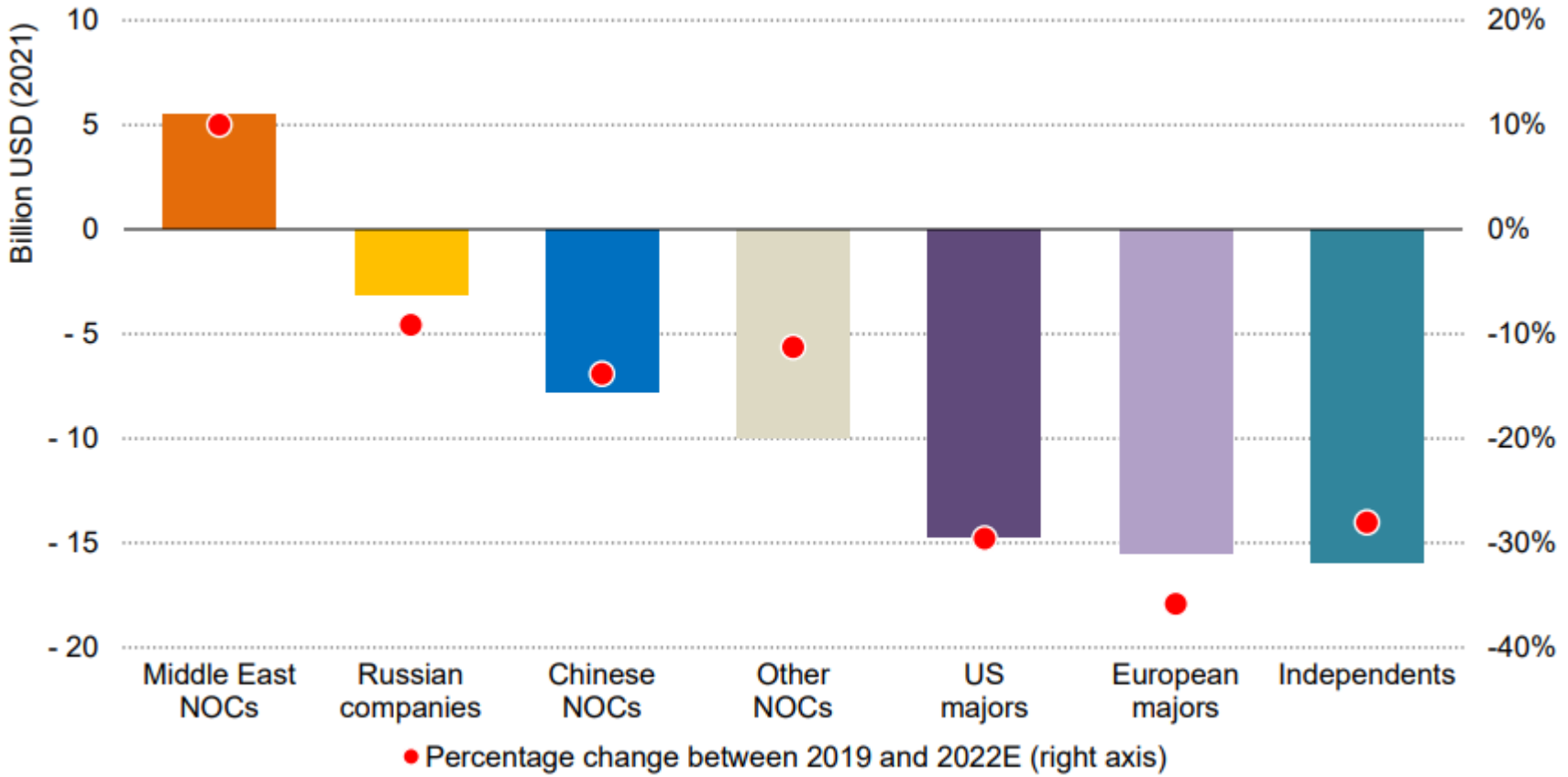
So cyclically, new LNG investment will be coming - right?

Estimated change in upstream oil and gas spending by selected company types (2019-2022E)



Upstream oil and gas investment is changing, with only the spending by Middle East national energy companies above pre-pandemic levels. This raises the question whether past 'cyclical dynamics' still apply.

Source: IEA's World Energy Investment Report, June 2022

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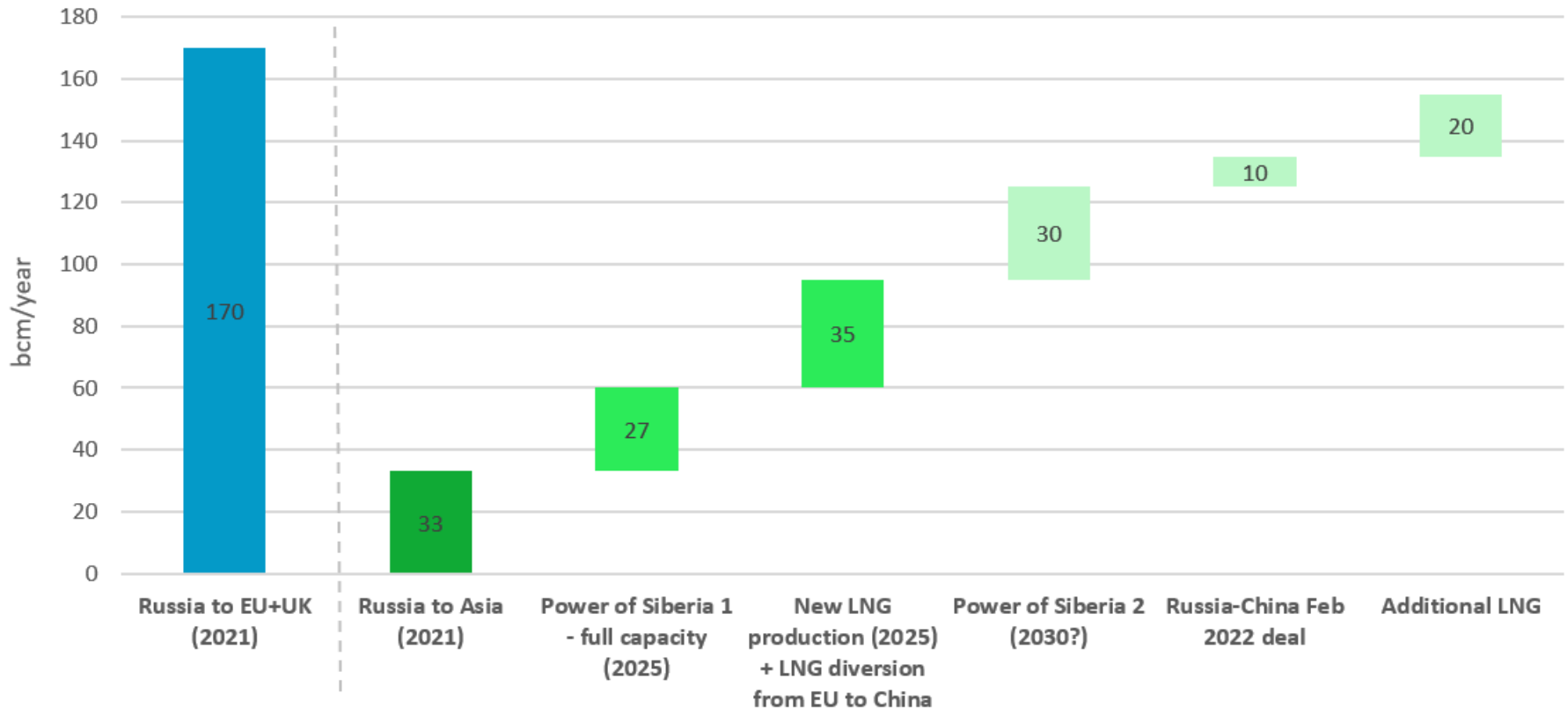
Current Russian gas supply cannot just ‘go elsewhere’

Existing and potential Russian gas exports to Asia vs Russian export to EU + UK

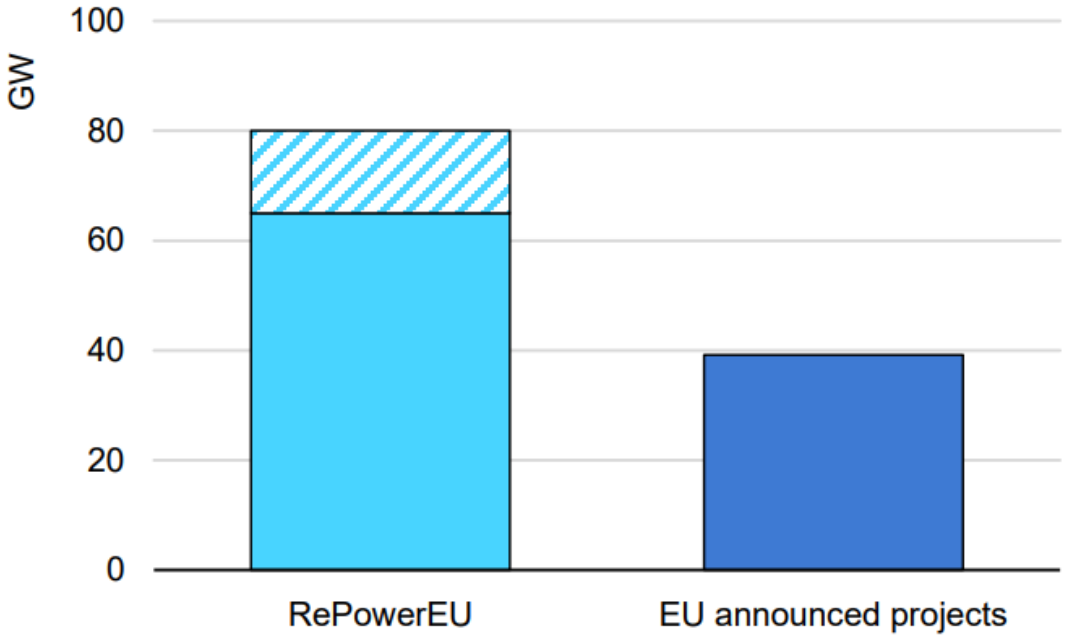


Russia expected to prioritise new export capacity, in particular towards China. This will involve significant investment and price concessions. Volumes are highly unlikely to make up for current EU + UK exports.

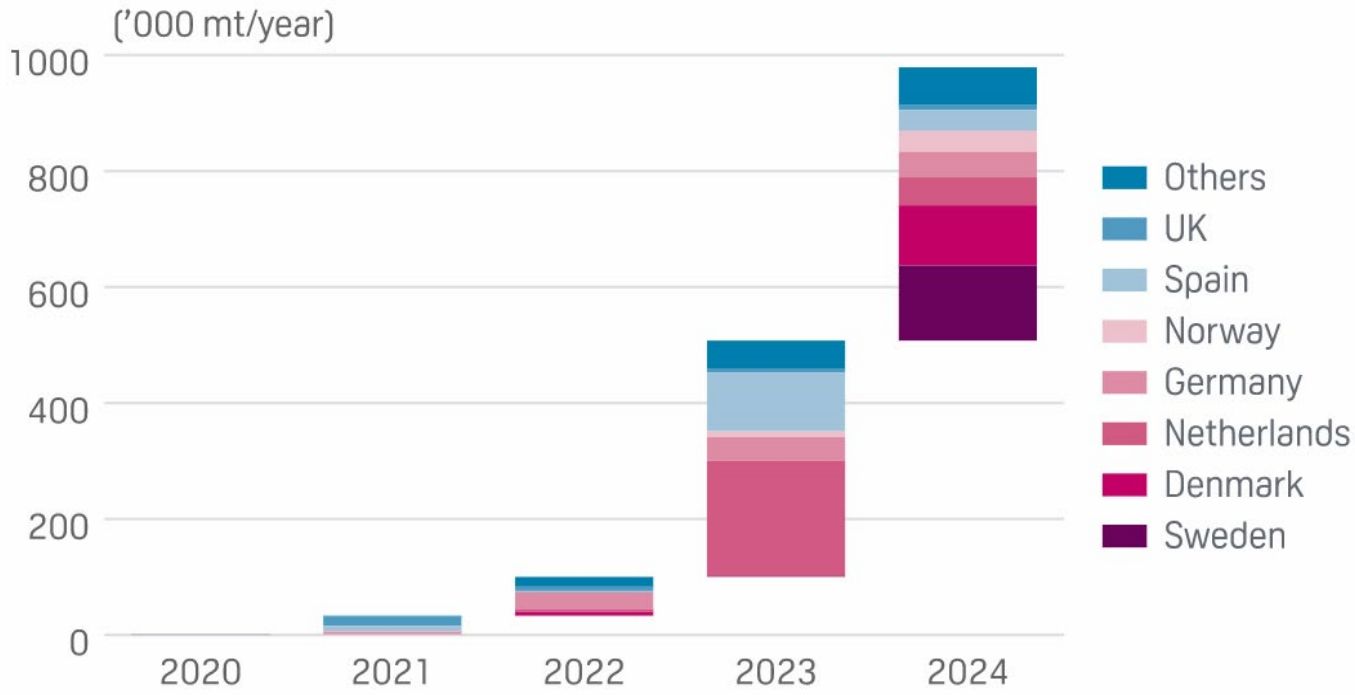
Source: Eurostat Energy database; Centre for Strategic and International Studies (May, 2022); IEA: Energy Fact Sheet: Why does Russian oil and gas matter?

Investment in ‘new solutions’; yes, but it takes time

Comparison of the REPowerEU Plan installed electrolysis capacity target with capacity of EU projects in the pipeline, 2030



European low-carbon hydrogen capacity additions



Source: IEA Global Hydrogen Review, September 2022; Platts Energy Commodities Review, 2022.