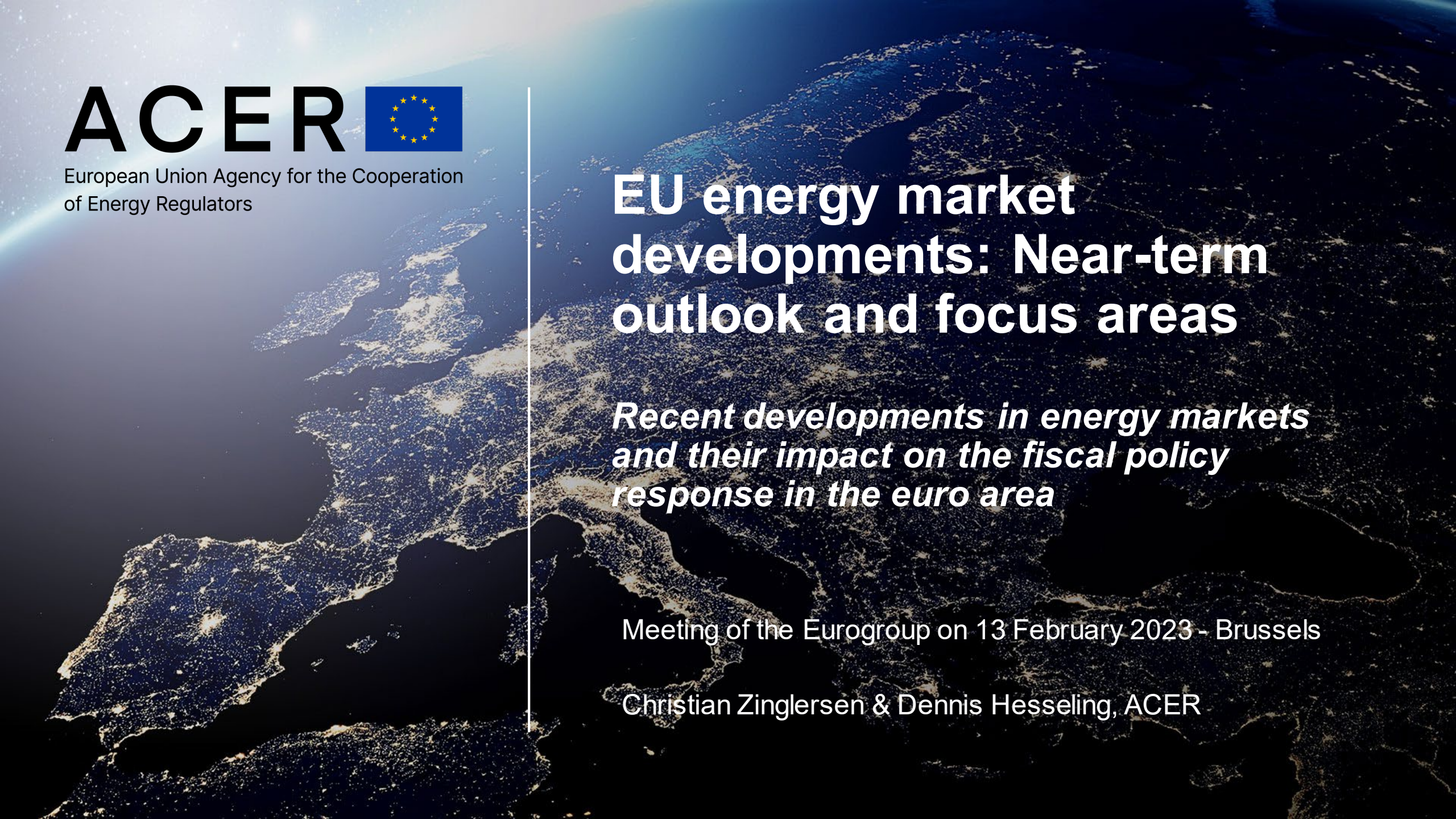

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EU energy market developments: Near-term outlook and focus areas

Recent developments in energy markets and their impact on the fiscal policy response in the euro area

Meeting of the Eurogroup on 13 February 2023 - Brussels

Christian Zinglersen & Dennis Hesseling, ACER

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Agenda

- *The glass half full*: Recent energy market developments & main factors
- *The glass half empty*: Though far from 'out of the woods' yet …
- *What to do about it*: Implications for near-term focus & vigilance
- *How about further ahead*: Beyond the near-term, the recent past may provide a few lessons

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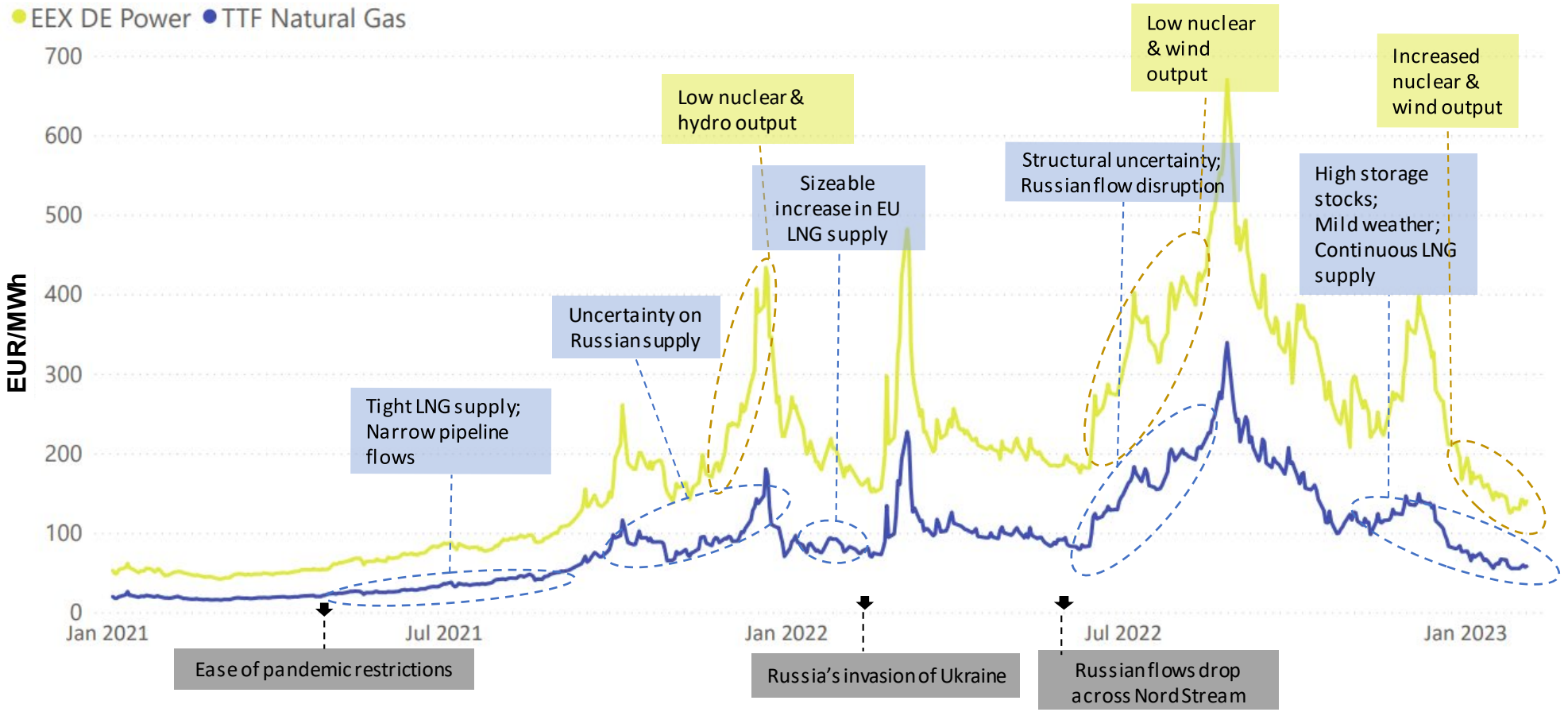
Recent energy market developments & main factors

Wholesale price decrease after 2022 'rollercoaster' ride

Electricity & natural gas price evolution, January 2021- February 2023 (Month Ahead, EUR/MWh)



Better than expected demand-supply balance has driven energy prices further down in the last months.

Source: ACER based on Platts price data

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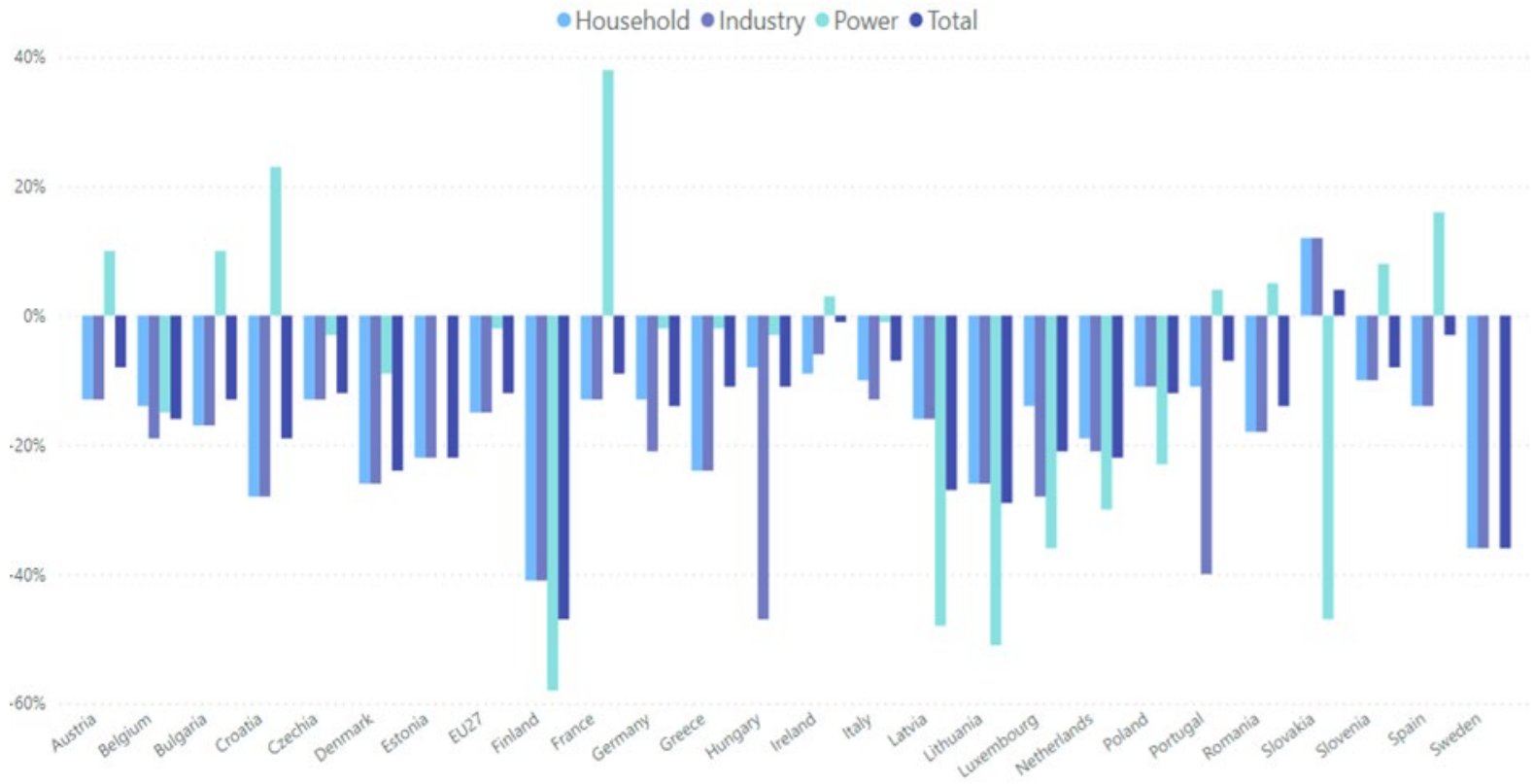
Gas demand reductions have played a key role

Total and sectorial gas demand evolutions across Member States – 2022 vs 2019-2021 average (%)



Mild winter weather has contributed to lower heating needs, next to overall demand reduction efforts. Highest contributions have come from industry. Household consumption has generally decreased. Power sector contributions vary.

Source: Bruegel European natural gas demand tracker

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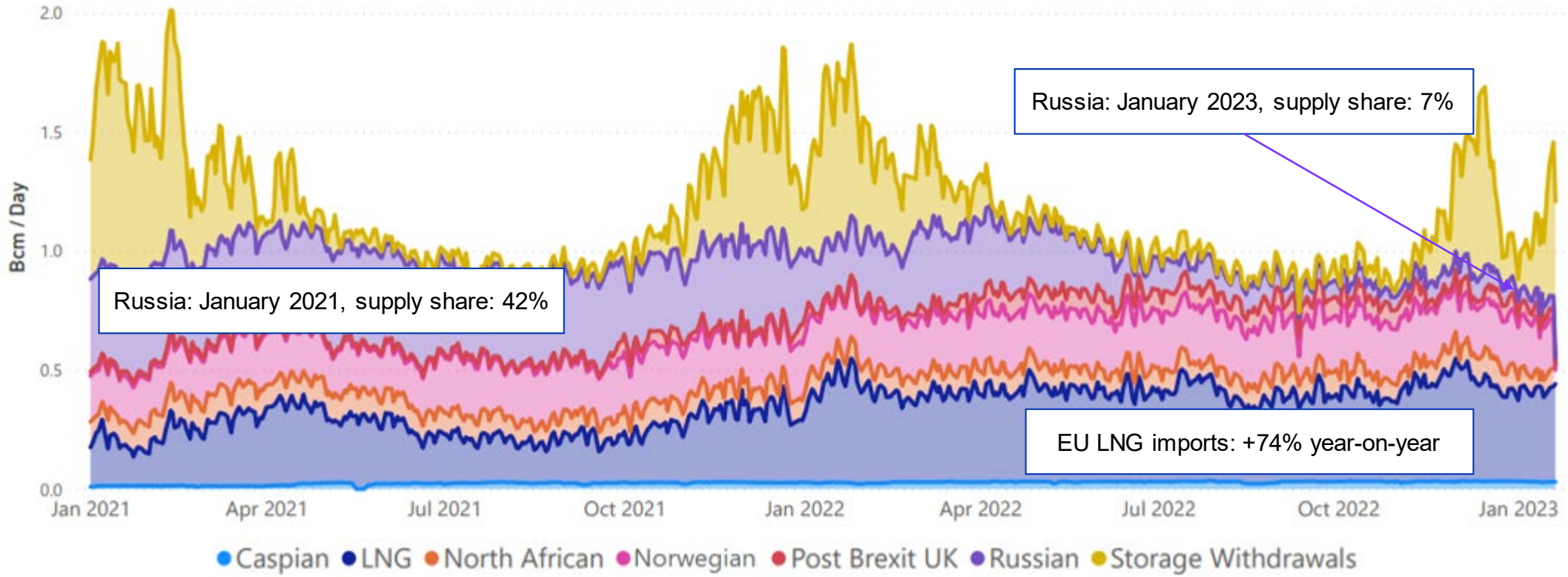
Supply alternatives to Russian gas coming strong

Daily evolution of gas imports by supply route from January 2021 to February 2023 (bcm/day)



The drop in Russian pipeline supply continues to be offset by rising EU LNG imports and lower overall demand. As a result, gas storage outflows to meet demand so far are lower this winter.

Source: ACER calculation based ENTSOG TP; Timera

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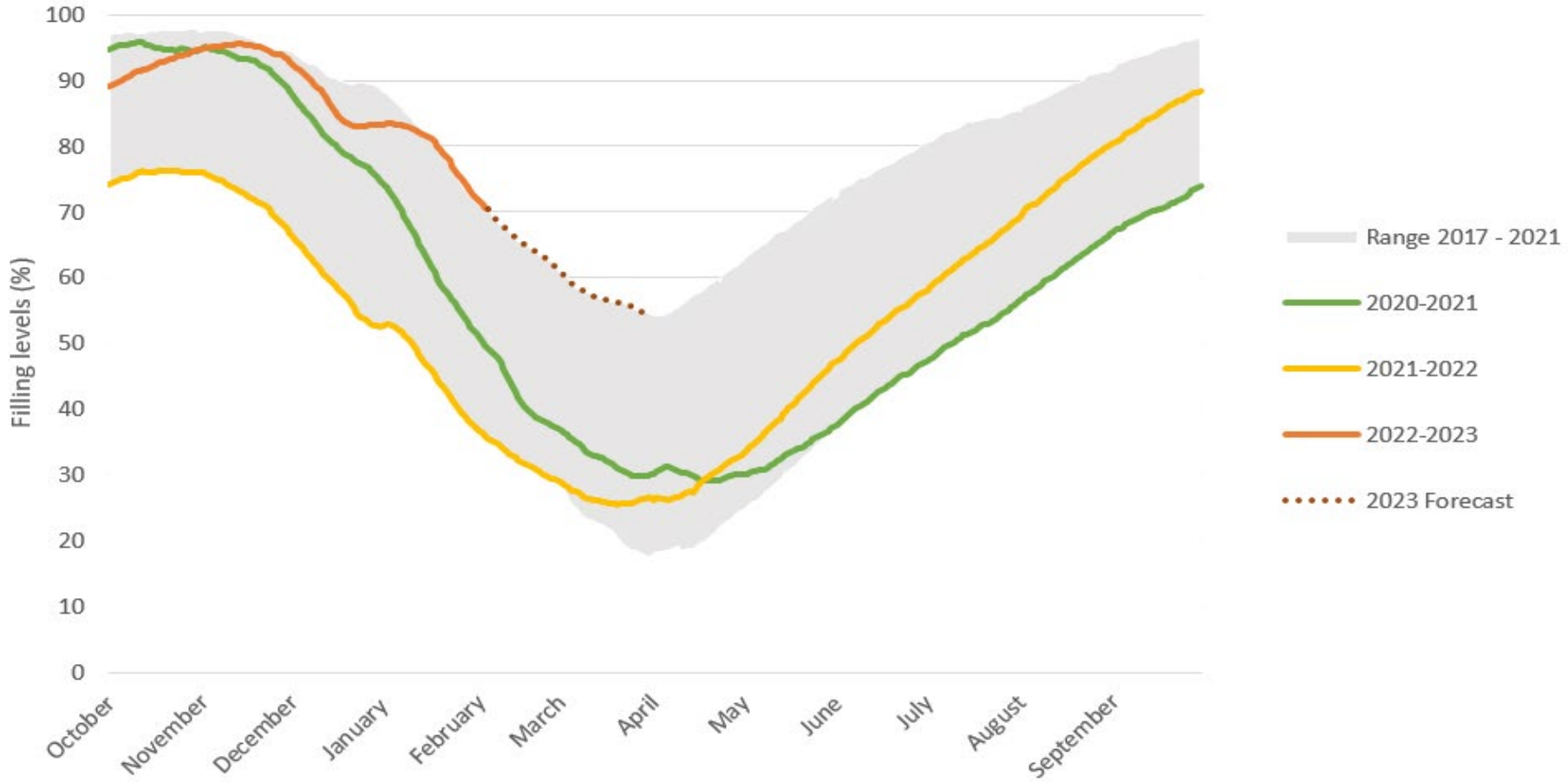
Gas storage 'supply' remains high this winter

EU gas storage levels evolution – 2017 – 2023 (% of total capacity)



Storage filling levels are above last years' average and have contributed to driving prices down. Stocks are anticipated to finish above 50% by the end of winter 2022-2023.

Source: ACER based on GIE data and Platts' estimates

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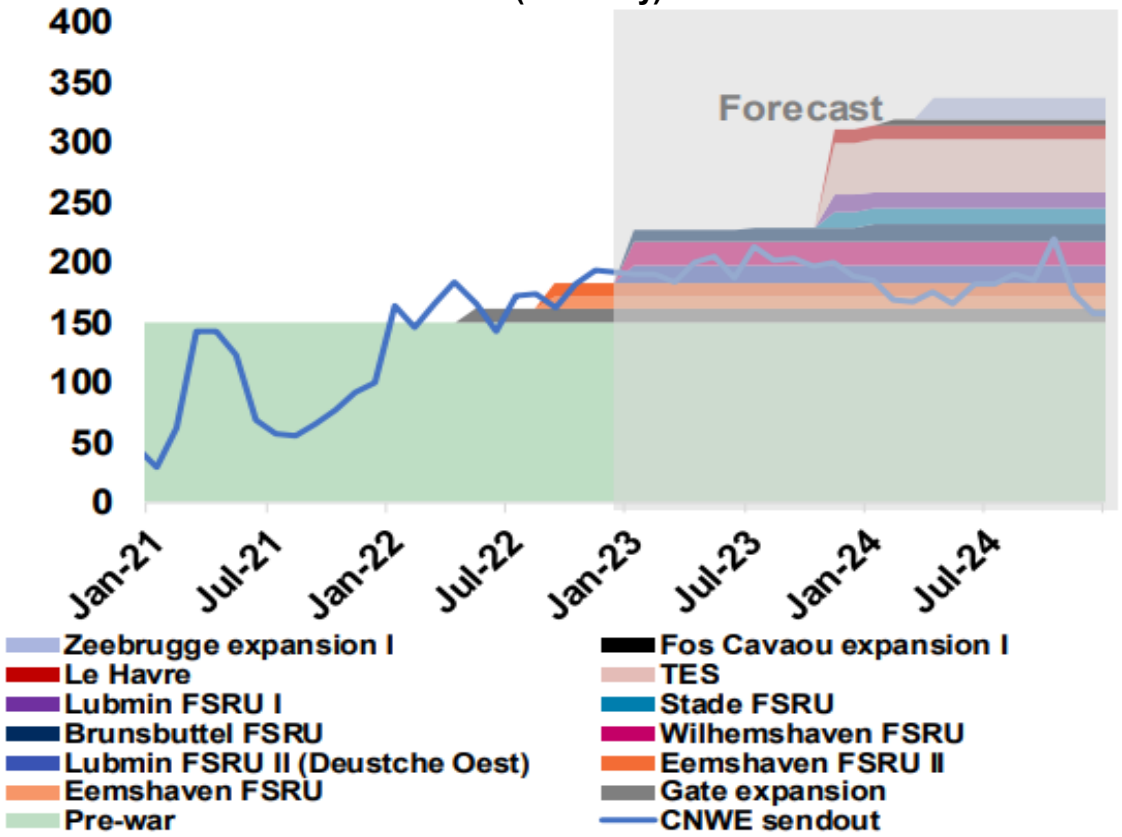
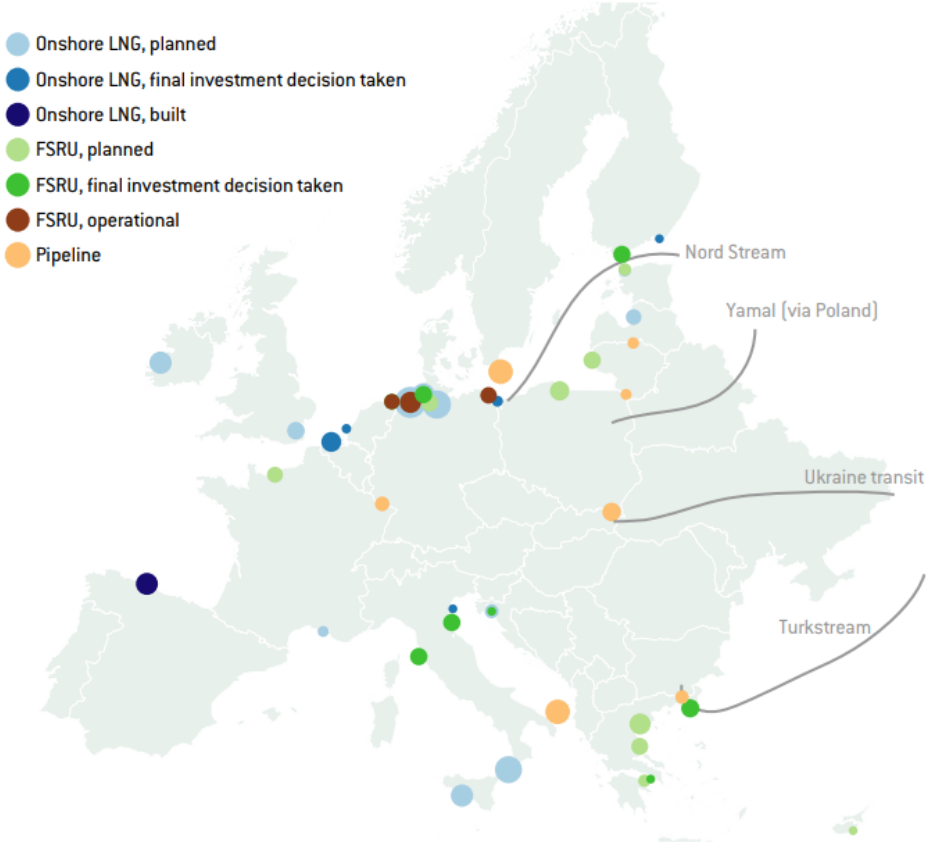
Past 'LNG receiving bottlenecks' now improving

Central and North-West LNG import capacity and flows – 2021-2024 (mcm/day)



Overview of new EU LNG planned capacity – October 2022



More LNG terminals coming online make for greater LNG import capacity.
Quicker planning, permitting and building for what normally takes several years.

Source: Platts and Bruegel

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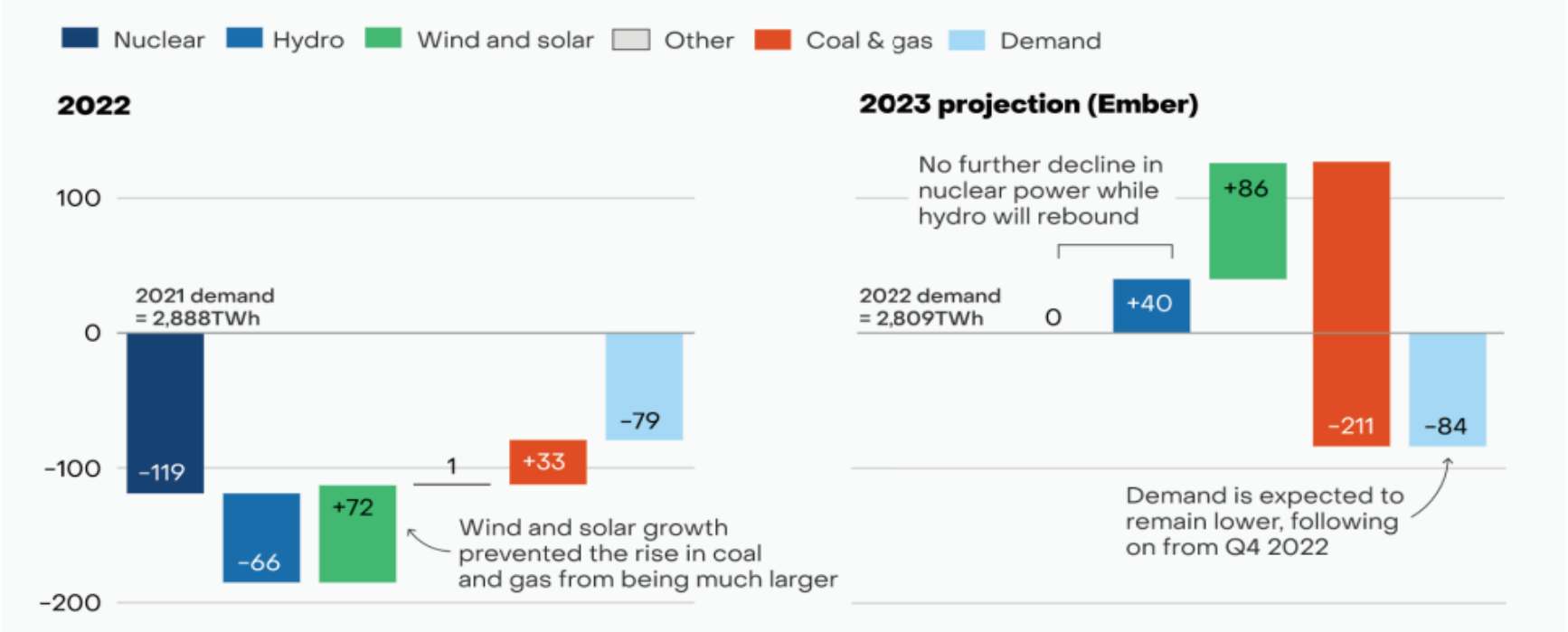
Electricity supply likely ‘turning a corner’

Year-on-year change in electricity generation in 2022 and prospects in 2023 (TWh)



EU power consumption fell by -3% year-on-year in 2022 (in contrast to -21% overall reduction of EU gas demand), with most of the drop occurring in winter. Renewable and nuclear power generation is anticipated to rise in 2023 (for nuclear, from its historical low in 2022), whilst total EU power demand is expected to remain low. As a result, coal & gas fired generation is projected to sizeably drop this year*.

Source: EMBER European Electricity Review 2023. Note: Other include bioenergy, other renewables, other fossil fuels and net imports.

Note: Gas-fired power generation rose slightly year-on-year in 2022 (+ 5 TWh, approx. 1-2%), with summer and early autumn accounting for most of rise, whilst winter dropped back again.

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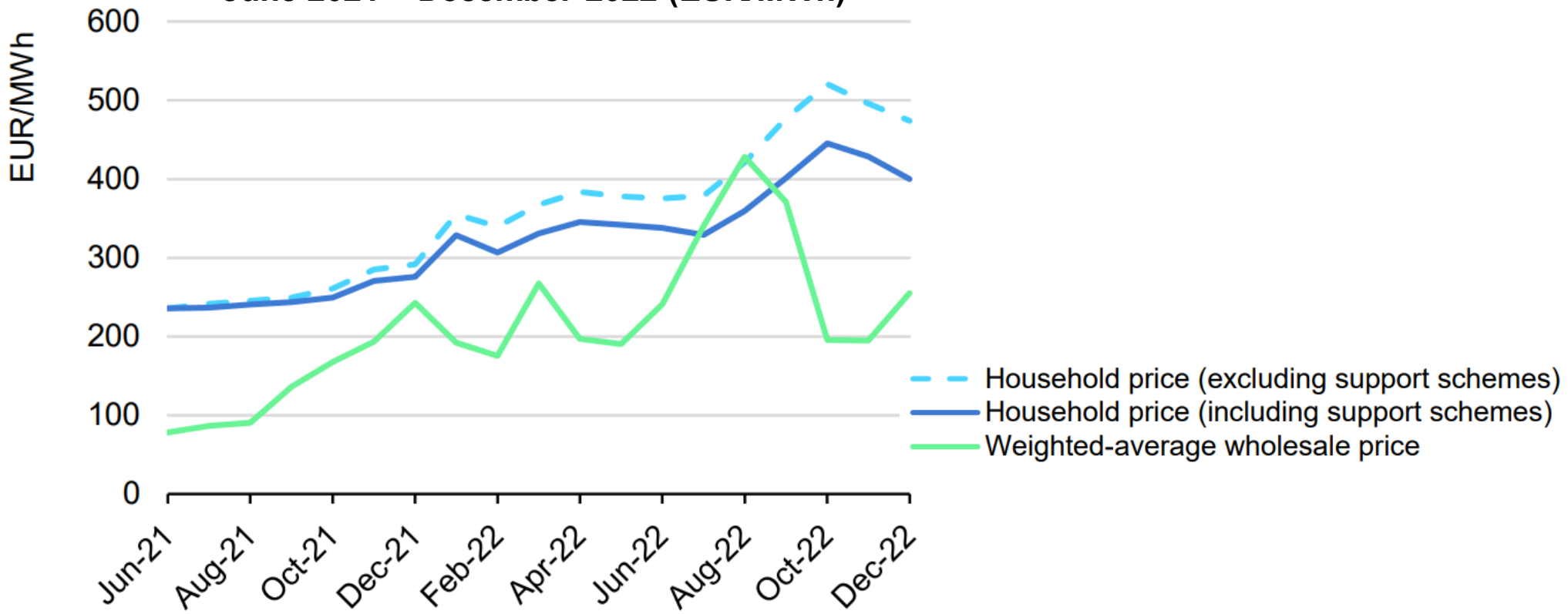
Providing (some) relief to retail prices

Representative household prices including and excluding support schemes in the EU, June 2021 – December 2022 (EUR/MWh)



Retail energy prices often fall more slowly than they rise. Several factors are at play, e.g. some suppliers incurring significant losses in 2022 seeing opportunity to recoup parts of those losses plus some consumers having signed fixed price contracts (meaning prices paid by those consumers will remain flat, at least for some time).

Source: IEA based on VaasaETT

Notes: The household price analysis focuses on general measures affecting typical consumers and selected capital cities which have applied such measures.

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However, we are far from being ‘out of the woods’ yet …

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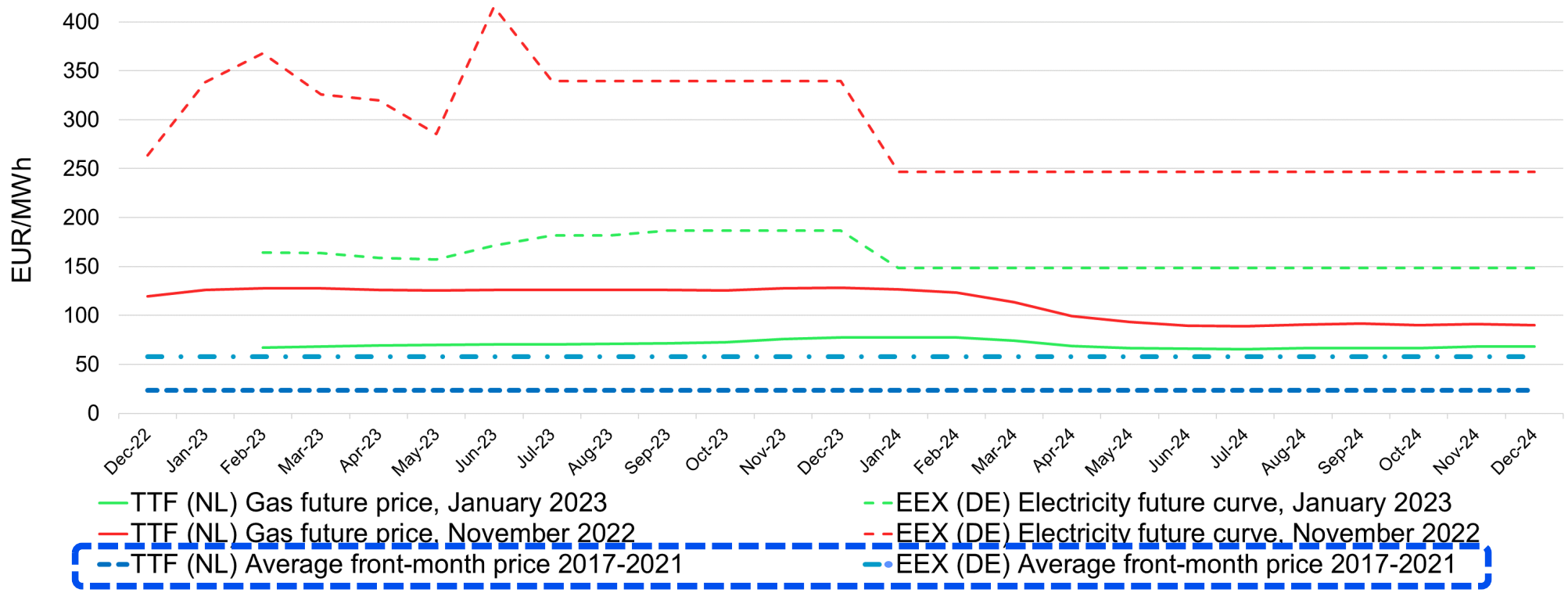
Gas price expectations remain higher than pre-crisis

Two-year evolution of TTF and EEX future prices - November 2022 and January 2023 (EUR/MWh)



Although gas and power futures' prices have substantially dropped in the last months, they remain almost three times above recent historical average.

Source: ACER based on ICE Endex and European Energy Exchange (EEX)

Note: EEX Power and TTF gas average prices are shown for comparison and are based on the front-month products traded in the period 2017-2021 (i.e., they are not future prices for delivery in 2023-2024).

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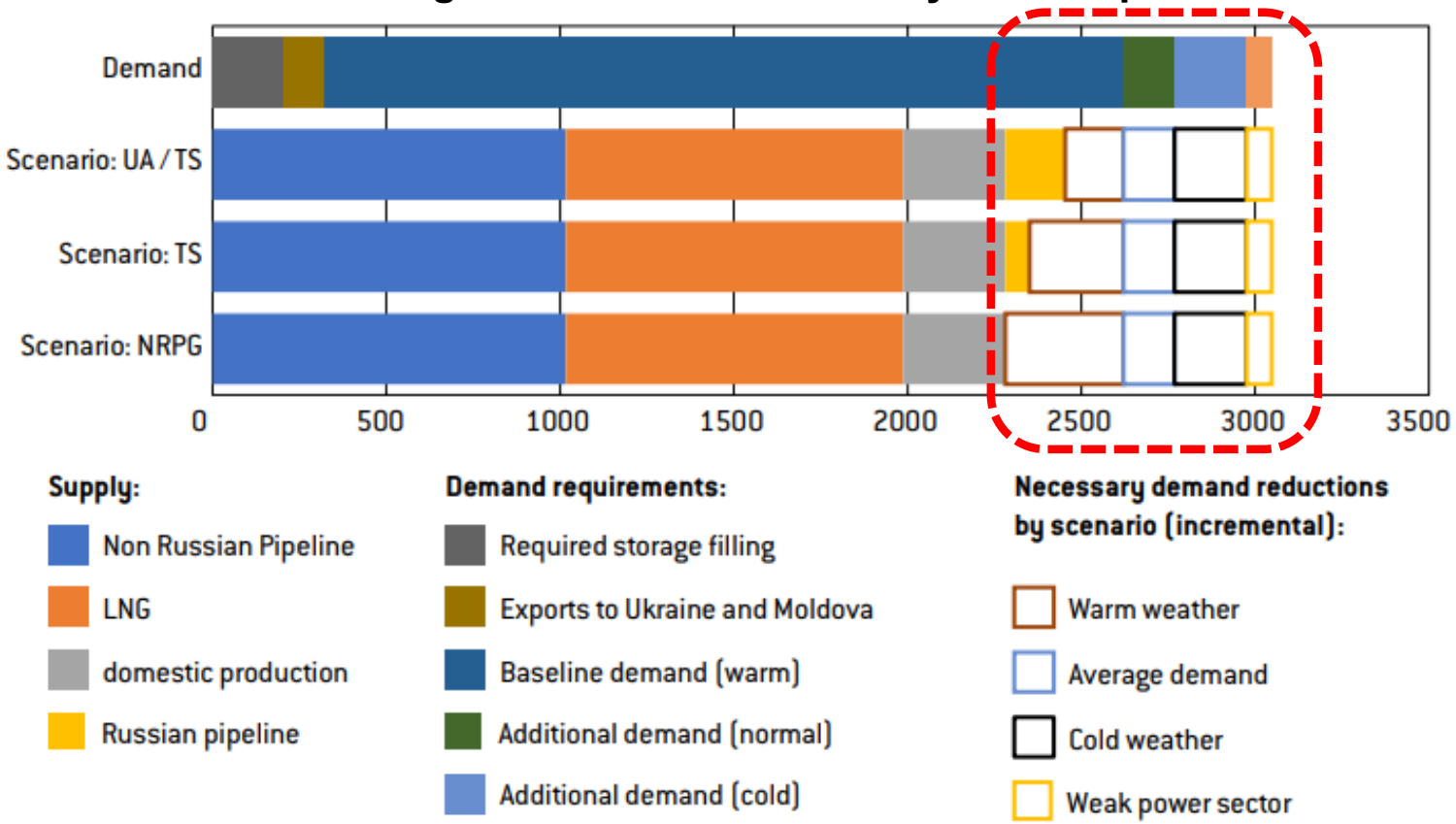
Much hinges on demand reductions & weather impacts

EU estimated gas balances – 1 February to 30 September 2023



Even though gas storages are expected to end the winter season relatively well-replenished, factors like rising gas demand due e.g. to cold weather or non-sustained demand reductions provide grounds for caution. (By way of example, Bruegel estimates a 'base case' need for 13% demand reduction, adding a 5–7 %-points 'swing' up or down per weather conditions).

Source: Bruegel, Preparing for the next winter, Europe's gas outlook for 2023

Note: 3 scenarios considered. The baseline scenario assumes that Russian pipeline flows continue across Ukraine and Turkstream ('UA/TS'). Scenario 'TS' assumes that Russian flows only continue across Turk stream. 'NRPG' assumes no Russian pipeline gas. EU countries agreed to reduce gas demand by 15% between 1 August 2022 and 31 March 2023, compared to the average of the previous five years.

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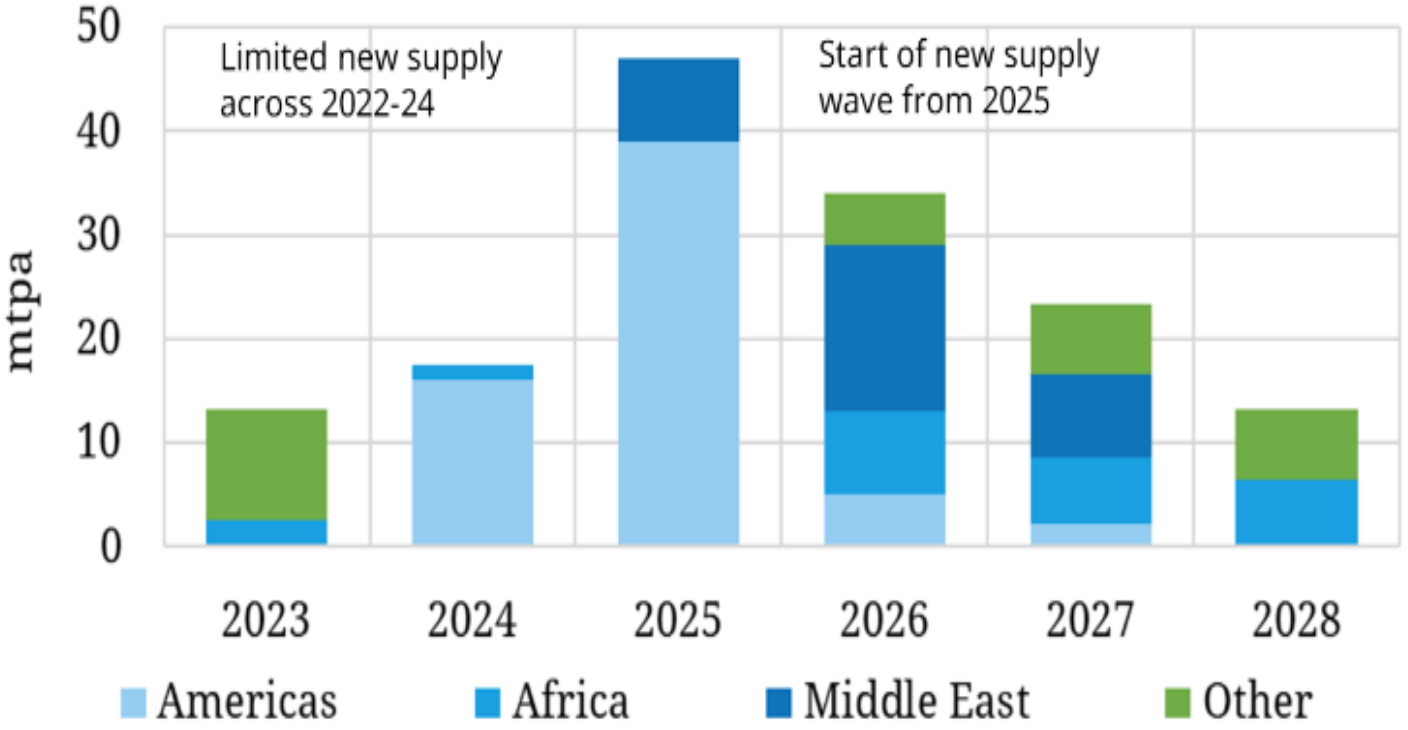
Supply (global LNG) remains tight the next two years

Global LNG liquefaction capacity additions by regions and start-up year – 2023-2028 (Mtpa)



The EU will compete for extra LNG volumes with Asia, which will see growing demand driven partly by overall economic growth, partly by lowering coal usage. Given market tightness, unexpected events, such as outages, can have outsized impacts, adding tension to global LNG supply and hence to EU gas prices.

Source: Timera Energy. Headlines from Bloomberg.

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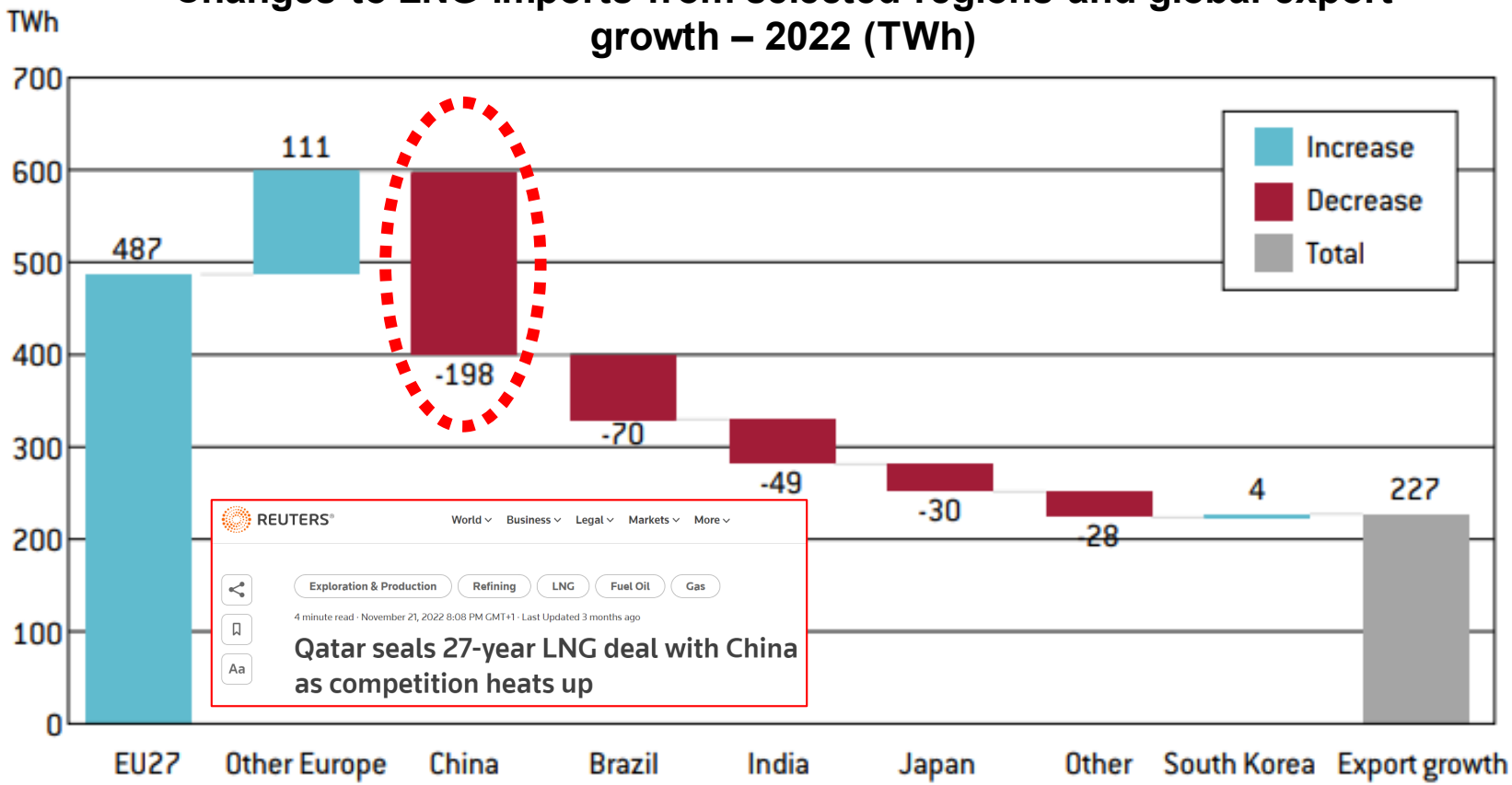
With one particular 'demand variable' standing out

Changes to LNG imports from selected regions and global export growth – 2022 (TWh)



China's COVID-19 driven demand decline in LNG volumes was absorbed by Europe, while US LNG supply continues to grow. However, in 2023, in line with the expected increase in its economic growth, China's LNG demand is expected to gradually rise, intensifying competition for overall LNG resources.

Source: Bruegel based on Bloomberg. Reuters 21 November 2022.

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Implications for near-term focus & vigilance

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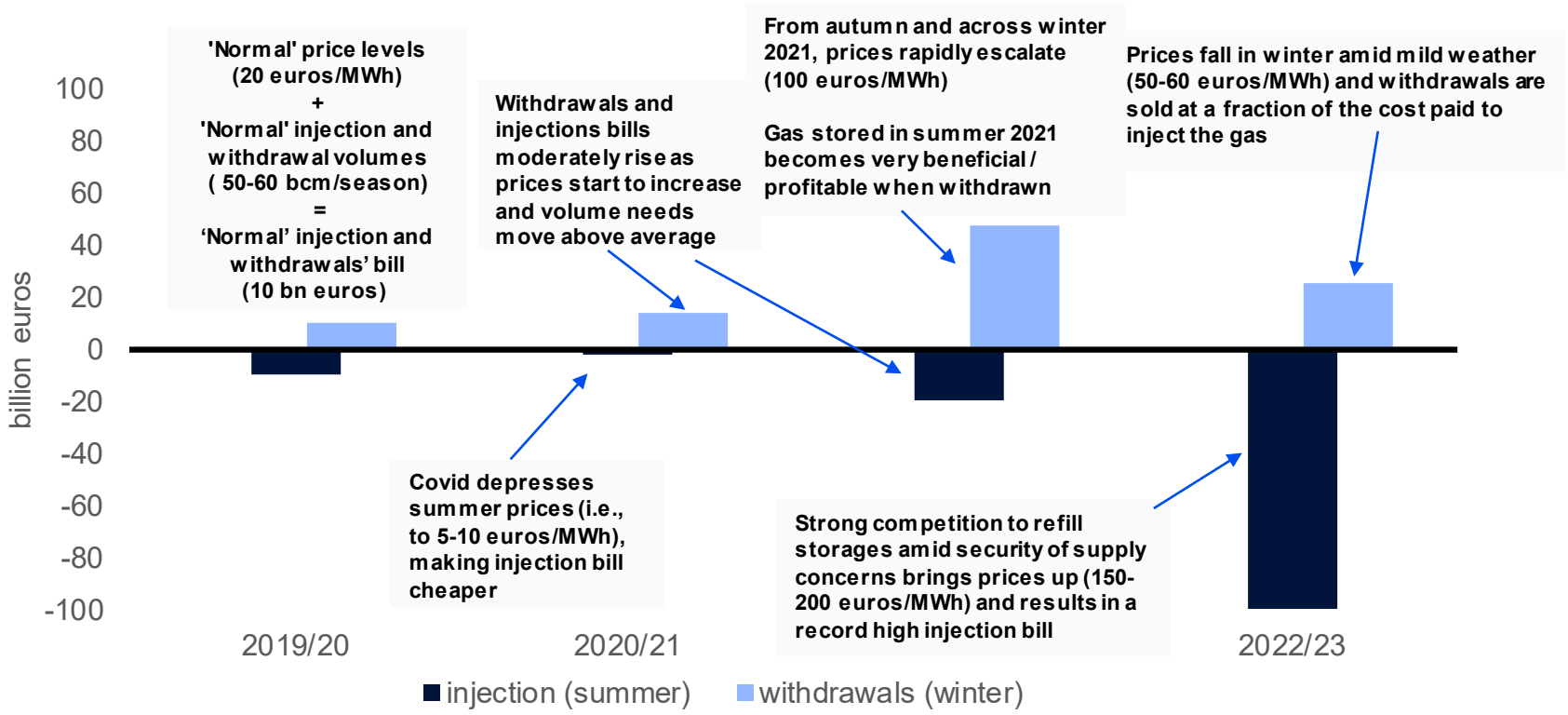
Recent gas storage injection patterns hold lessons

Volatile value of gas impacting EU storage – 2019 - 2023 (bn euros)



EU successfully filled gas storages for the winter 2022/20223, but at a cost of approx. 100 billion, thus contributing to very high gas prices over the summer. Different instruments (e.g. Contracts for Differences) could be considered to reduce price volatility and/or the risk of unattractive seasonal price spreads. Similarly, more gradual replenishment trajectories, adding cost-sensitive incentives, could be considered.

Source: ACER based on IEA

Note: Injection assessed as the average prompt prices across summer months and withdrawals as the average prompt prices across winter months

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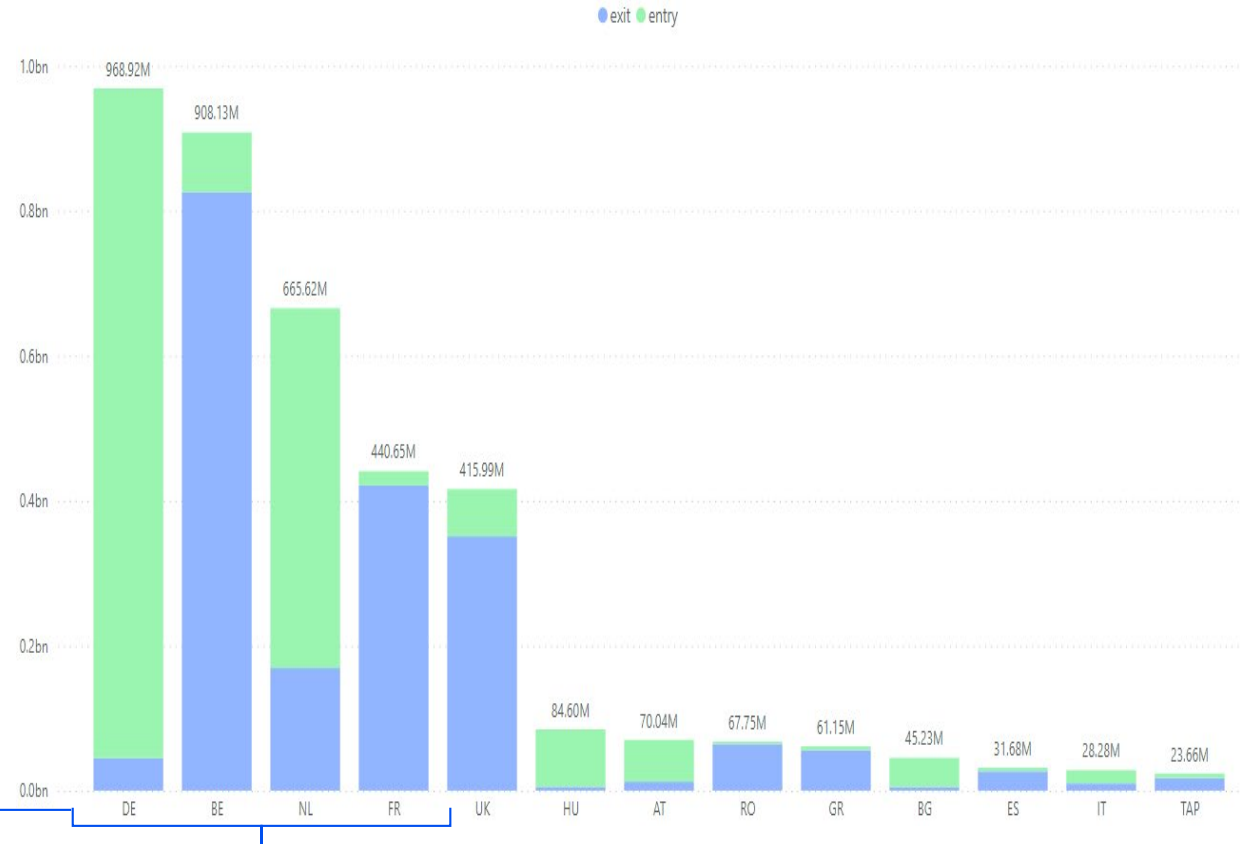
Changed gas flows hit by 'transportation bottlenecks'

Utilisation ratio for selected EU IPs in Jan. 2018 – Jan. 2023 (% of technical capacity)

Flow Direction	Interconnection Point	Average utilisation 2018-2021	Average utilisation 2022	Average utilisation 01/11/22 to 19/12/22	Average utilisation 20/12/22 to 11/01/23
AT to DE	VIP Oberkappel	10%	5%	30%	13%
AT to IT	Tarvisio-Arnoldstein	67%	26%	9%	3%
BE to DE	VIP THE-ZTP		138%	119%	145%
BE to FR	Virtualys	26%	0%	0%	0%
BE to NL	VIP-BENE	24%	79%	64%	93%
DE to AT	VIP Oberkappel	52%	79%	28%	22%
DE to BE	VIP THE-ZTP		0%	0%	0%
DE to FR	VIP France - Germany	45%	14%	0%	0%
DE to NL	VIP TTF H		46%	55%	49%
ES to FR	Vip Pirineos	3%	33%	52%	51%
FR to DE	VIP France - Germany	0%	44%	45%	64%
FR to ES	Vip Pirineos	41%	15%	5%	5%
IT to AT	Tarvisio-Arnoldstein	0%	3%	8%	12%
NL to DE	VIP TTF H		70%	117%	95%
NL to DE	VIP TTF L	44%	30%	36%	33%
NO to NL	Emden	2%	35%	25%	28%
PL to DE	Yamal	77%	1%	0%	0%
PT to ES	VIP Iberico	4%	12%	14%	8%
UK to BE	Zeebrugge IZT	18%	71%	56%	96%

Congestion revenues per country in 2022* (EUR)

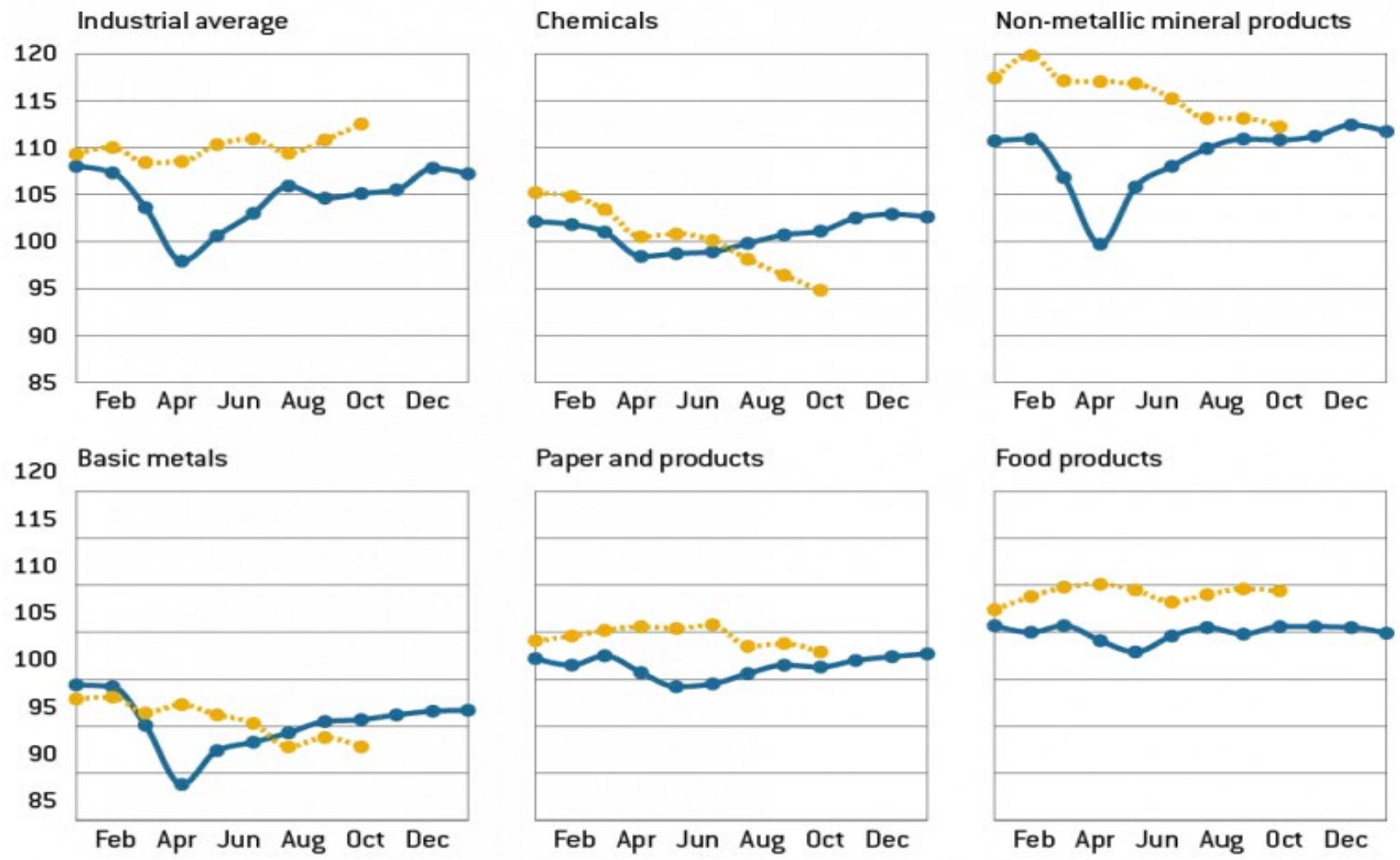


Congestion revenues have increased drastically to EUR 4 billion in 2022 (compared to EUR 55 million in 2021). Germany and the Netherlands have the most congested entries, while Belgium and France have the most congested exits.

Source: ACER based on GSA, PRISMA and RBP - gas transportation cong. revenues calculation is based on auction time (in 2022), not on delivery time (i.e. includes prod. for delivery after 2022)
Note: *Mem. States & third count. with cong. reven. exceeding EUR 10 MM during auctions held in 2022. (Swiss cong. reven. for transit Wallbach-Passo Gries, estimated at EUR 245 MM, but not depicted.)

Demand ‘reduction’ vs demand ‘destruction’?

EU 27 manufacturing output by sector



- Industrial energy consumption has decreased significantly in 2022.
- Despite this, overall manufacturing output is above past years average.
- However, output differs by sector, presumably a function of substitution and/or enhanced efficiency options.
- Generally, manufacturing relying on gas as feedstock (as opposed to fuel) has fewer substitution options.

Source: Bruegel based on Eurostat. Note: Index 100 = 2015

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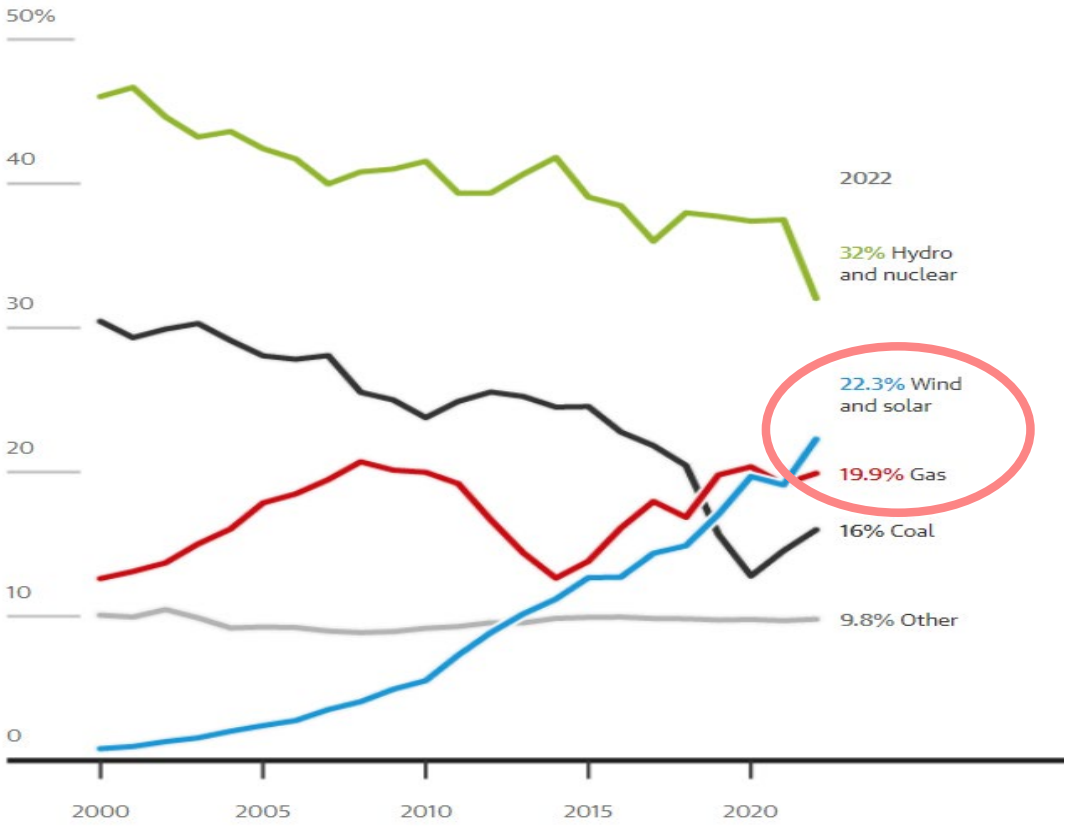
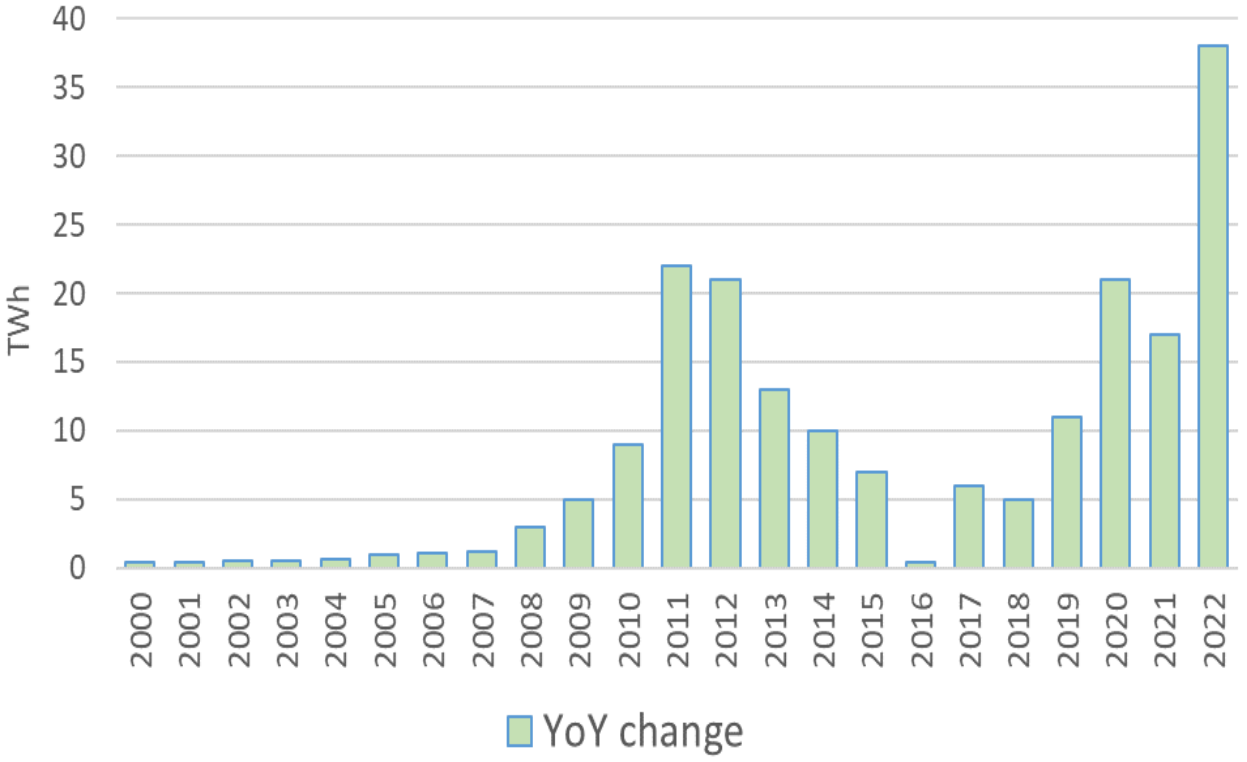
Accelerating electricity new-build (esp. low-lead time)

Share of EU power generation per technology – 2022 (%)



Annual change in solar electricity generation – 2000 – 2022 (TWh)



For the first time in the EU, wind and solar generation produced more electricity in 2022 than gas. New solar capacity additions - a particularly low-lead time generation source - doubled in 2022 compared to the year before.

Source: EMBER data

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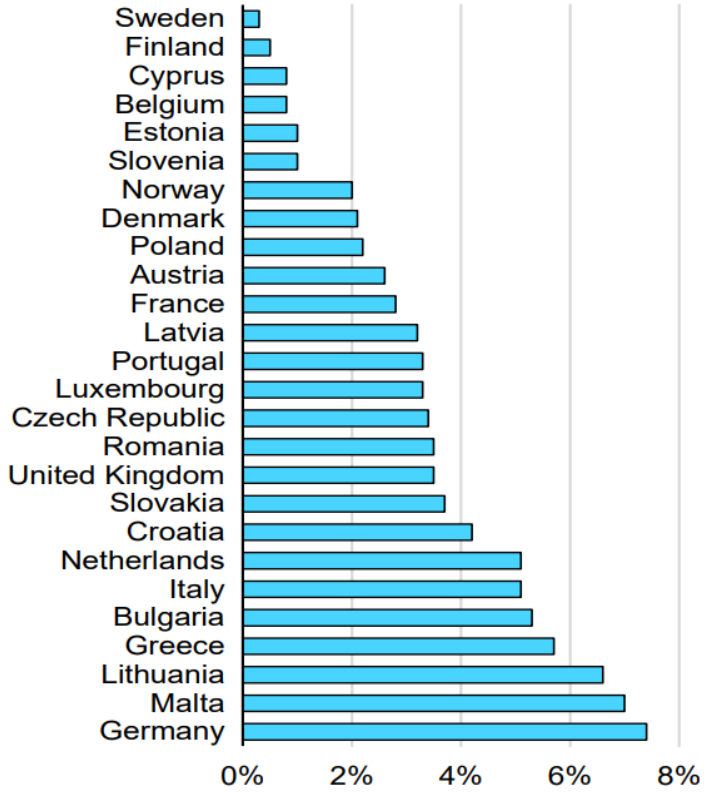
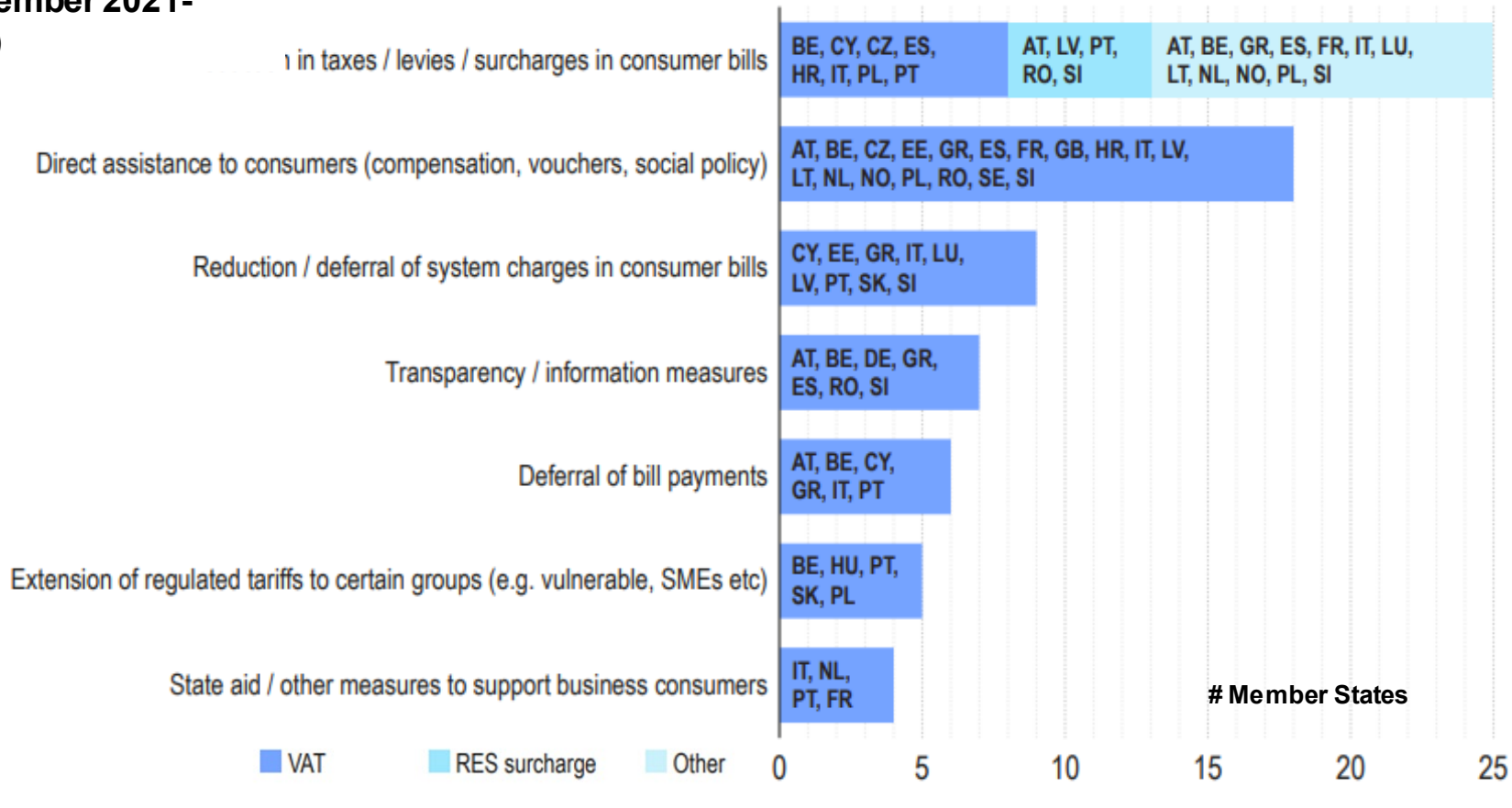
Support measures may well need adjusting …

Magnitude of support schemes to household and industrial consumers in the EU, Norway and UK, September 2021-November 2022 (% of 2021 GDP)



Type of support measures provided to consumers – 2022



To date ~EUR 600 billion+ have been spent on support measures in the EU. If support measures are retained, experience offers lessons e.g. for further targeting such measures plus retaining incentives to lower demand.

Source: IEA Electricity Market Report 2023 based on Bruegel and ACER-CEER Market Monitoring Report (Retail and Consumer Protection volume)

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Beyond the near-term, the recent past may provide a few lessons

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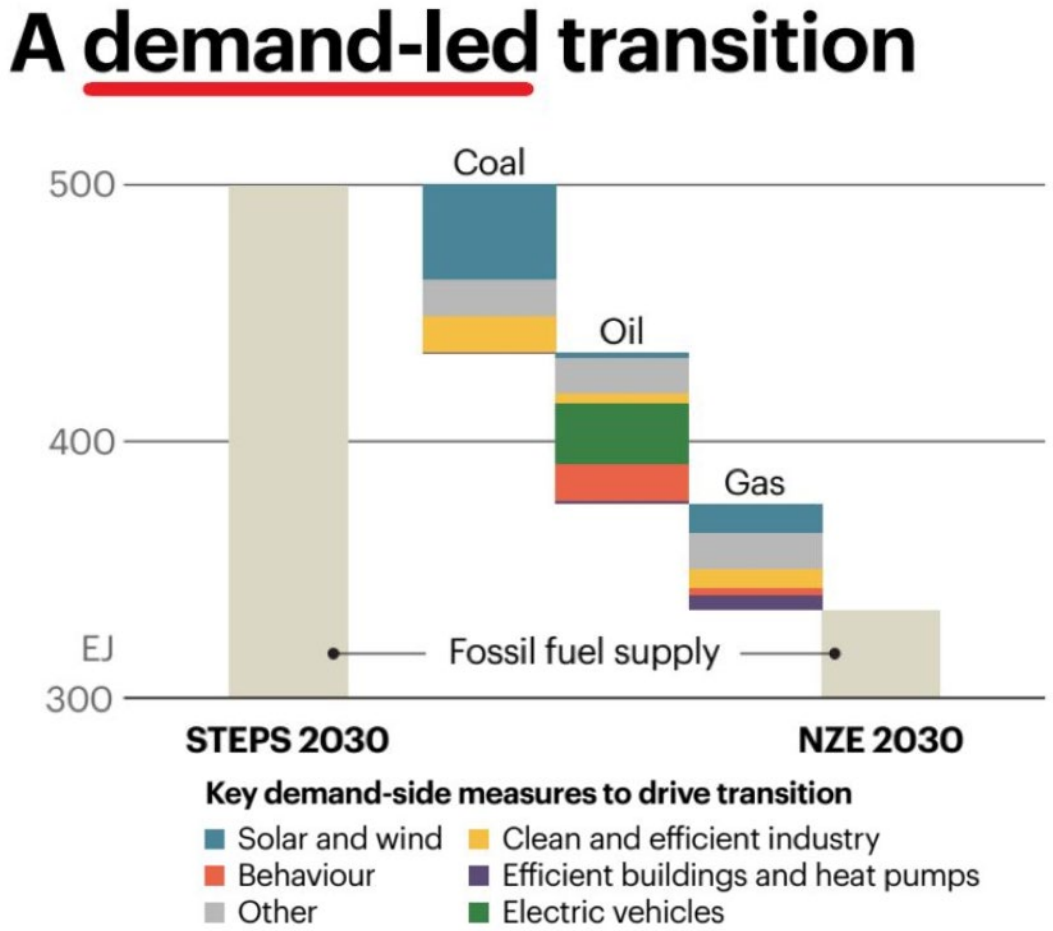
One-sided focus on the supply-side holds risks



- *"… The uncertainties around long-term fossil fuel demand and supply-side fossil fuel investments mean that **demand-side responses are now more important** than ever …"*
- *"… The **speed at which fossil fuel infrastructure can safely be retired depends** crucially on the speed at which **clean energy** technologies are **deployed** and **fossil fuel demand declines** …"*

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.

Source: IEA's World Energy Outlook, October 2022 (emphasis added)

Volatility is here to stay: A problem or a call to action?

Diverging views on how to tackle price volatility

'*Volatility needs to be avoided*' (e.g. new pricing rules)

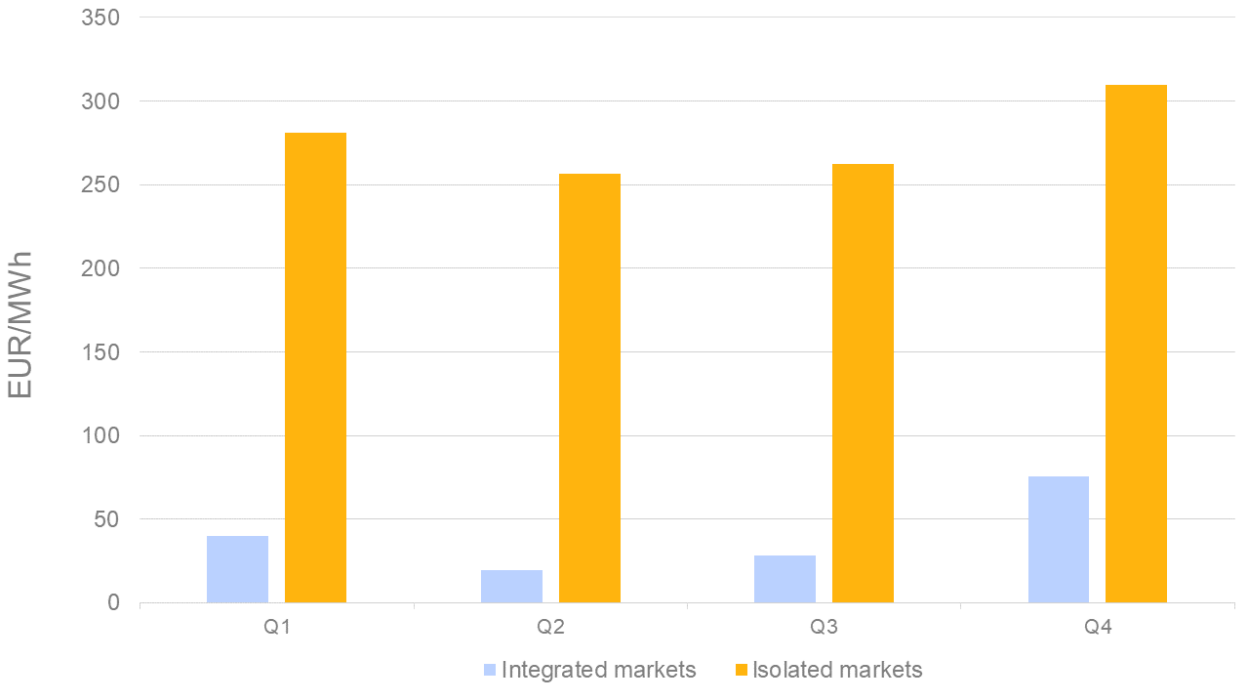
vs

'*Volatility needs to be managed*'

What are the ***tools to tackle price volatility*** in ACER's view?

- Preserve price signals: today's volatility triggers tomorrow's flexibility (technologies)
- Strengthened EU market integration
- Improved forward markets
- Consumer protection remains key
- Longer-term contracting may play a role (if done well, avoiding distortive effects)

Price volatility (EUR/MWh) in integrated and isolated electricity markets in the EU in 2021



Source: ACER based on NEMOs simulations (from ACER's Final Assessment of the EU Wholesale Electricity Market Design, April 2022)

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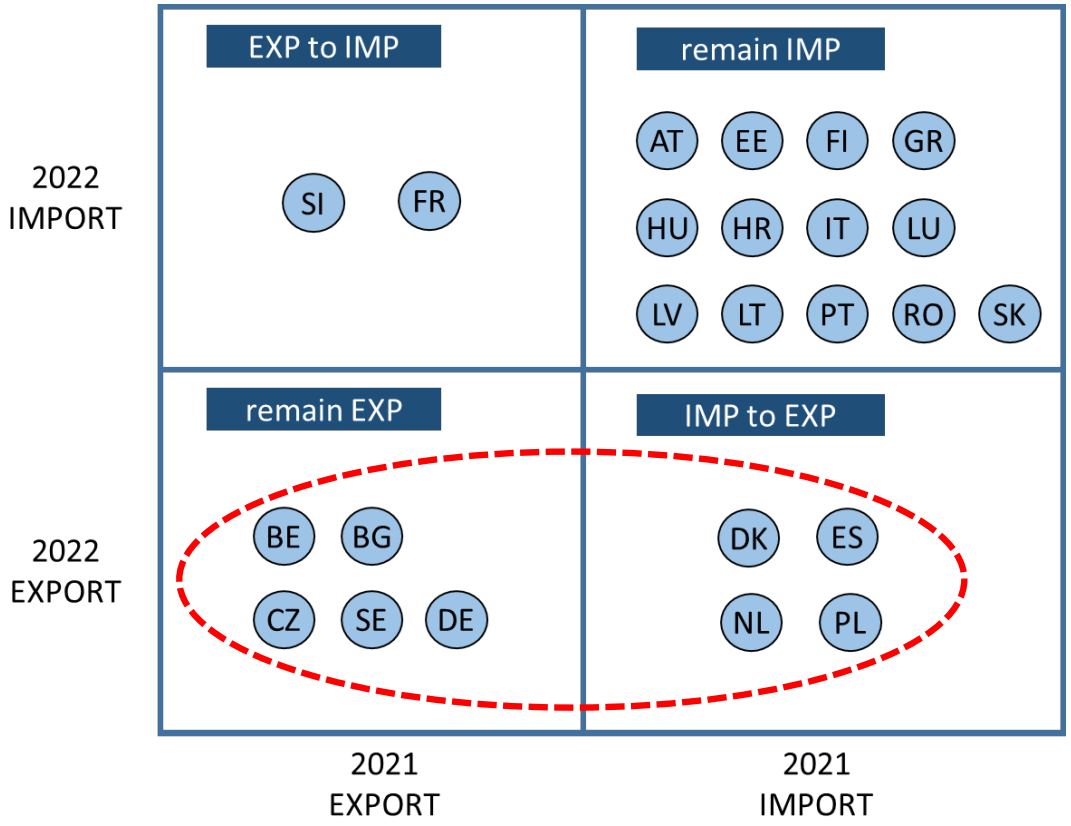
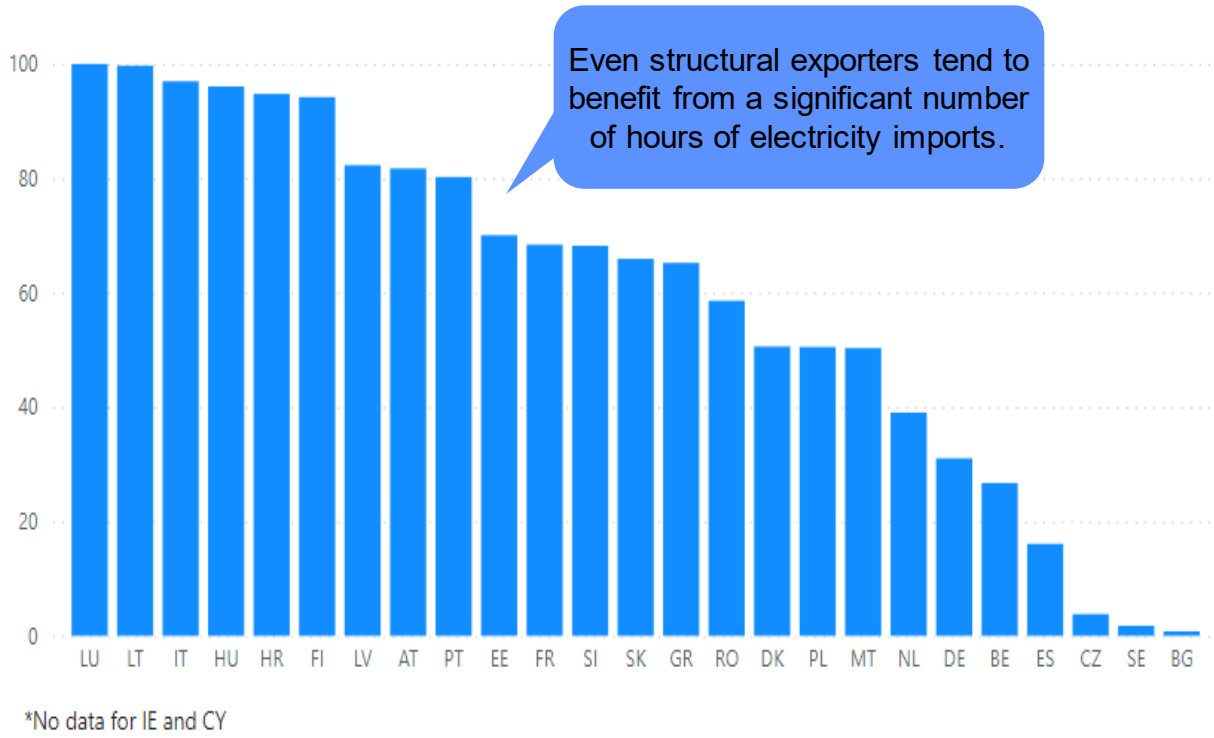
Dependence (import/export) often cuts both ways

Import ~ export swings from 2021 to 2022 *



% of electricity net import hours in 2022



*No data for IE and CY

Making cross-border electricity capacity available for trade (per also the so-called '70% target') is 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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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

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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ACER MCM Preliminary Data Report: Key findings

- *"**The effects of the Regulation seem to remain limited**. No significant impacts can be unequivocally and directly attributed to the adoption of the MCM."*
- ***"It cannot be concluded that the MCM has played a relevant role in reducing EU gas prices**. The lower prices seem driven by fundamental supply and demand factors."*
- *"Gas supply has remained reasonably stable following the adoption of the MCM Regulation and **security of supply has been well ensured**."*
- *"The **MCM Regulation has not prompted a discernible shift in trading activity**."*

ACER and ESMA published the two preliminary reports on 23 January with indicators to continue monitoring market developments and detect potential impacts and risks of the MCM.

ACER's MCM Preliminary Data Report is available at: https://acer.europa.eu/sites/default/files/documents/Publications/ACER_PreliminaryReport_MCM.pdf

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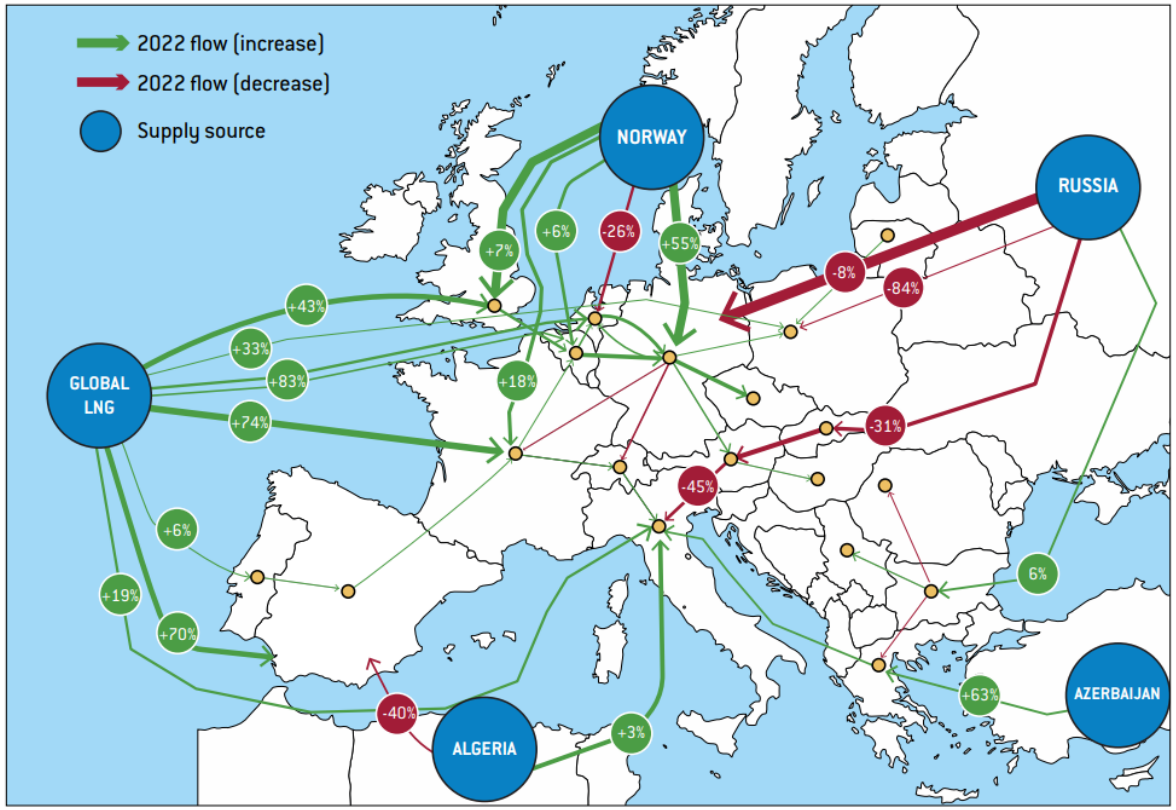
New gas flows hit by 'transportation bottlenecks'

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



The flow shift resulted in infrastructure congestion at North-West LNG terminals and at the gas pipelines flowing gas in West to East direction. In turn, this has moved hub spreads above historical averages.

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

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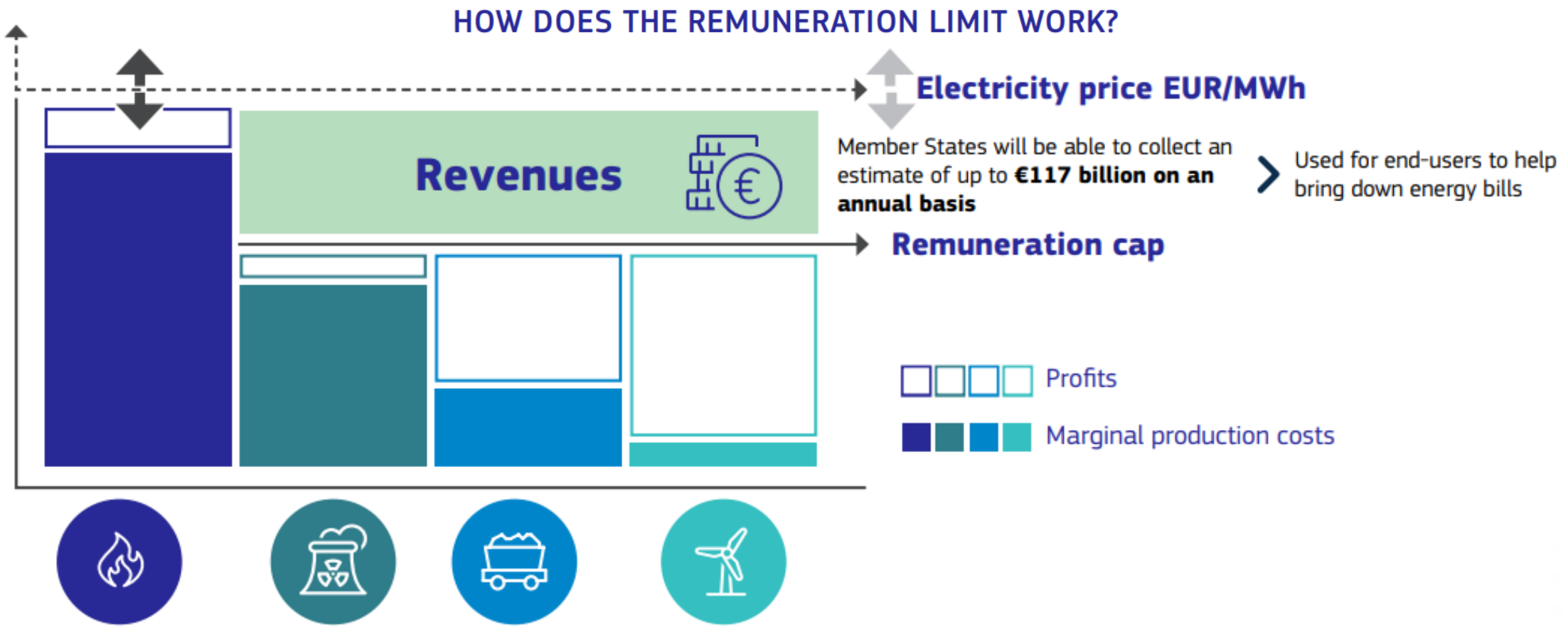
‘Energy redistribution’ may still be relevant

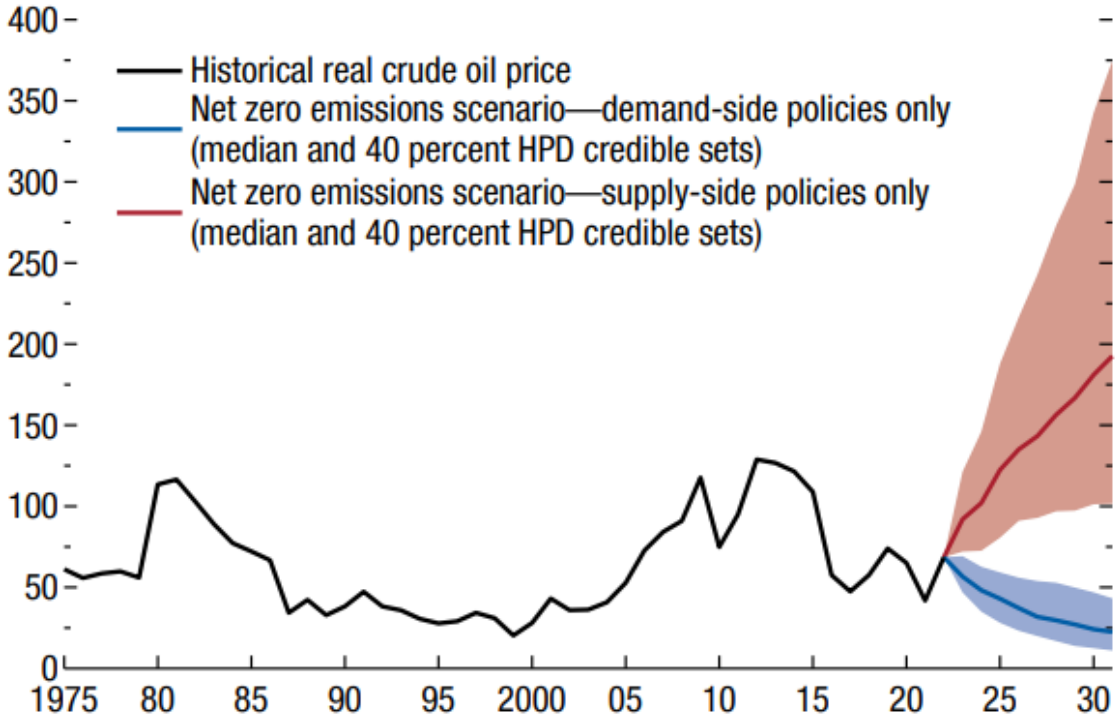


Given the risks of further supply shocks and/or sudden price spikes in the next couple of years, it may still be relevant to have measures in place redistributing unusually high revenue earned in the electricity market. Recent experience provides lessons on opportunities and drawbacks of different options available.

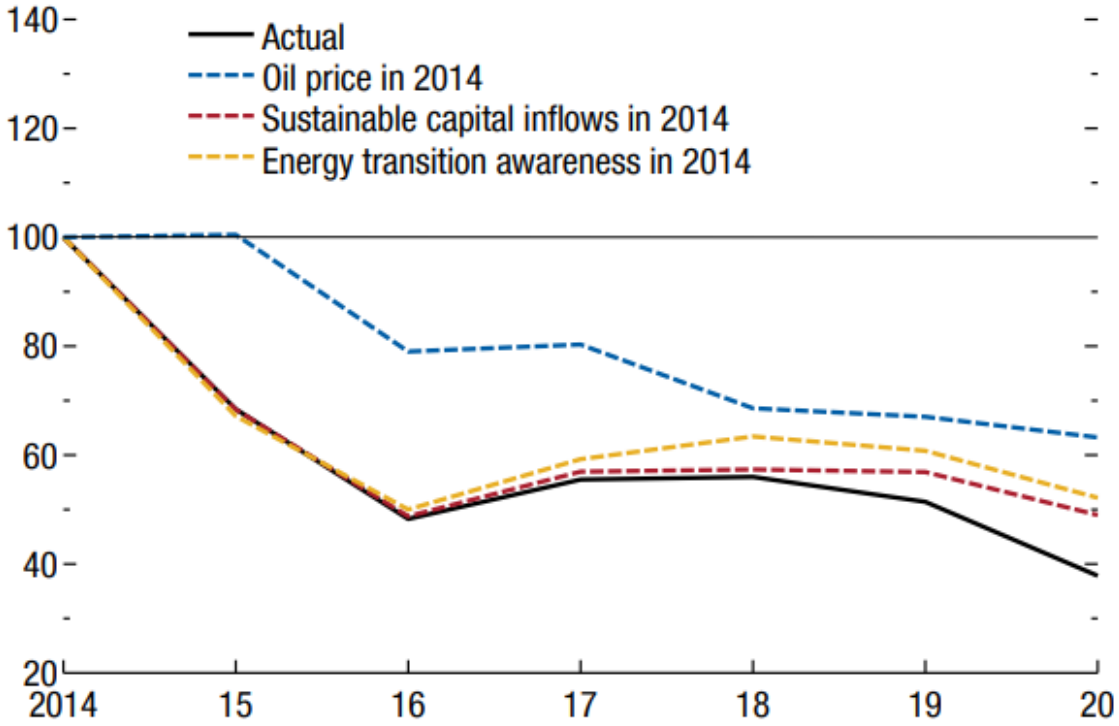
Source: European Commission factsheet (emergency intervention package proposal of 14 September 2022)

One-sided focus on the supply-side holds risks (2/2)

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



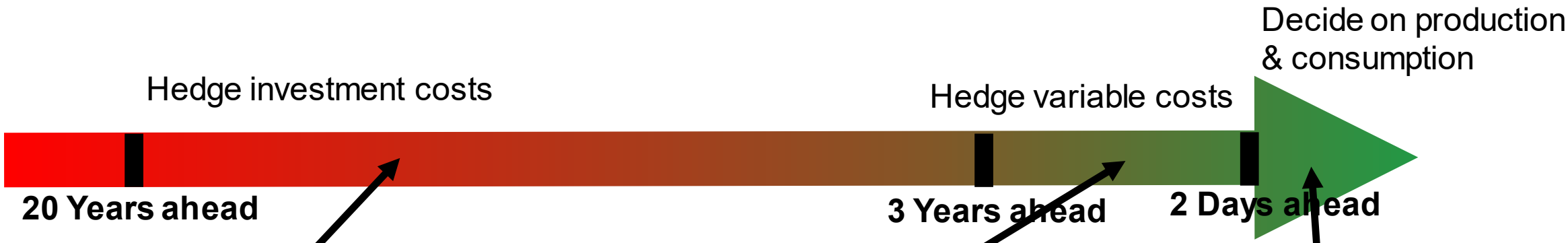
Focusing on supply-side restrictive measures as opposed to (also) focusing on demand-side measures may bring strong upward pressure on prices. Also, targets do not constitute results.

Source: IMF World Economic Outlook, April 2022

ACER
European Union Agency for the Cooperation of Energy Regulators

Long term market design, meaning what exactly

Electricity market diagnostics

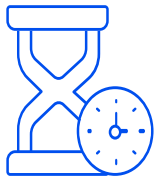
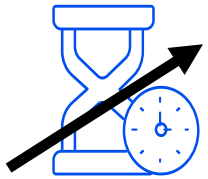


Far term market is almost non-existent (without state support)

Near term market struggles in many areas (lack of market integration)

Short term market works fairly well (yet improvements are still needed and planned)

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*