SHIPPERS' FORUM

14 March 2024

Safety Guide

Emergency Exits

Defibrillator

Gathering Point

PROGRAM

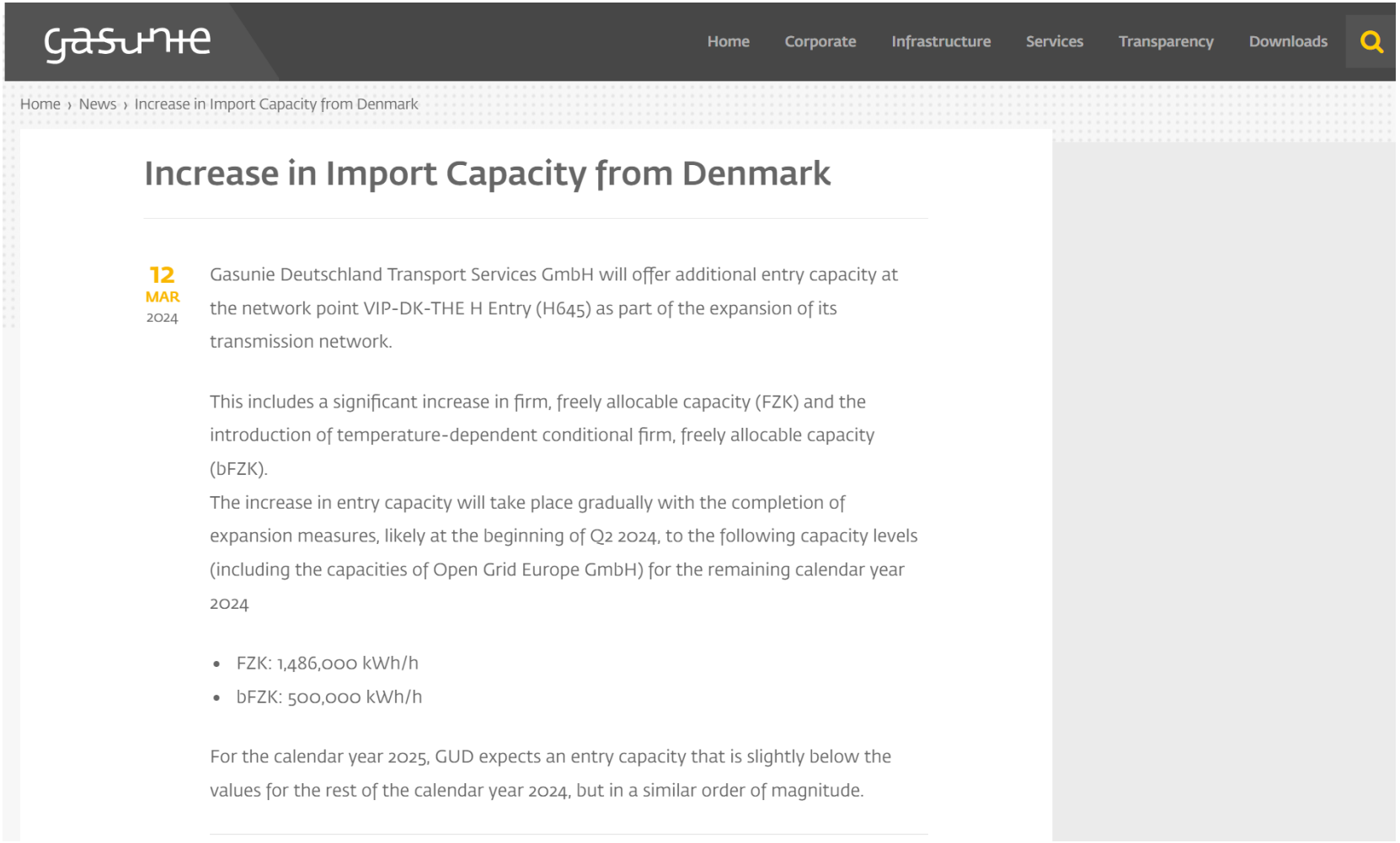
13:00	Welcome - *Clement Johan Ulrichsen, Energinet*
13:10	Startup of Tyra, - *Mads Arndal-Lauritzen, TotalEnergies*
13:30	Eastern European perspective on transport of gas - *Gergely Molnar, International Energy Agency*
14:00	BREAK
14:30	Diversification of Energy Supplies - *Jeppe Danø, Energinet*
14:40	Security of Supply - *Jane Glindvad Kristensen, Danish Energy Agency*
15:00	Gas Storage Denmark - *Iliana Nygaard & Marni Jacobsen, Gas Storage Denmark*
15:20	Final remarks - *Clement Johan Ulrichsen, Energinet*

WELCOME

Clement Johan Ulrichsen, Energinet

INCREASE IN SOUTHBOUND CAPACITY AT ELLUND

https://www.gasunie.de/en/news/increase-in-import-capacity-from-denmark



gasunie

Home Corporate Infrastructure Services Transparency Downloads

Home › News › Increase in Import Capacity from Denmark

Increase in Import Capacity from Denmark

12 MAR 2024

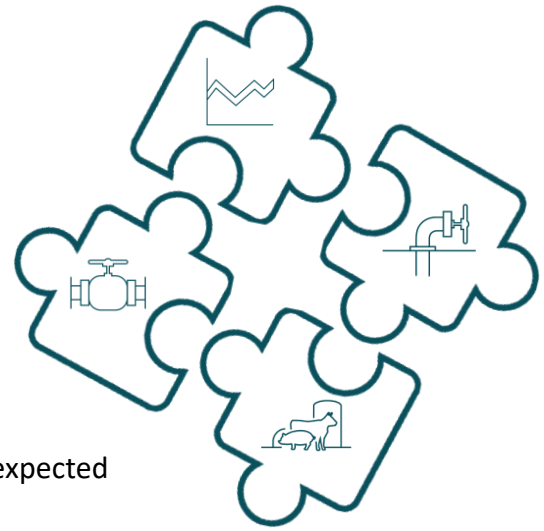
Gasunie Deutschland Transport Services GmbH will offer additional entry capacity at the network point VIP-DK-THE H Entry (H645) as part of the expansion of its transmission network.

This includes a significant increase in firm, freely allocable capacity (FZK) and the introduction of temperature-dependent conditional firm, freely allocable capacity (bFZK).
The increase in entry capacity will take place gradually with the completion of expansion measures, likely at the beginning of Q2 2024, to the following capacity levels (including the capacities of Open Grid Europe GmbH) for the remaining calendar year 2024

- FZK: 1,486,000 kWh/h
- bFZK: 500,000 kWh/h

For the calendar year 2025, GUD expects an entry capacity that is slightly below the values for the rest of the calendar year 2024, but in a similar order of magnitude.

DEVELOPMENTS IN THE GAS MARKET



Feb 1
Start of dynamic green zone calculation

Feb
Danish business promotion of green restructuring of the European gas system in Poland

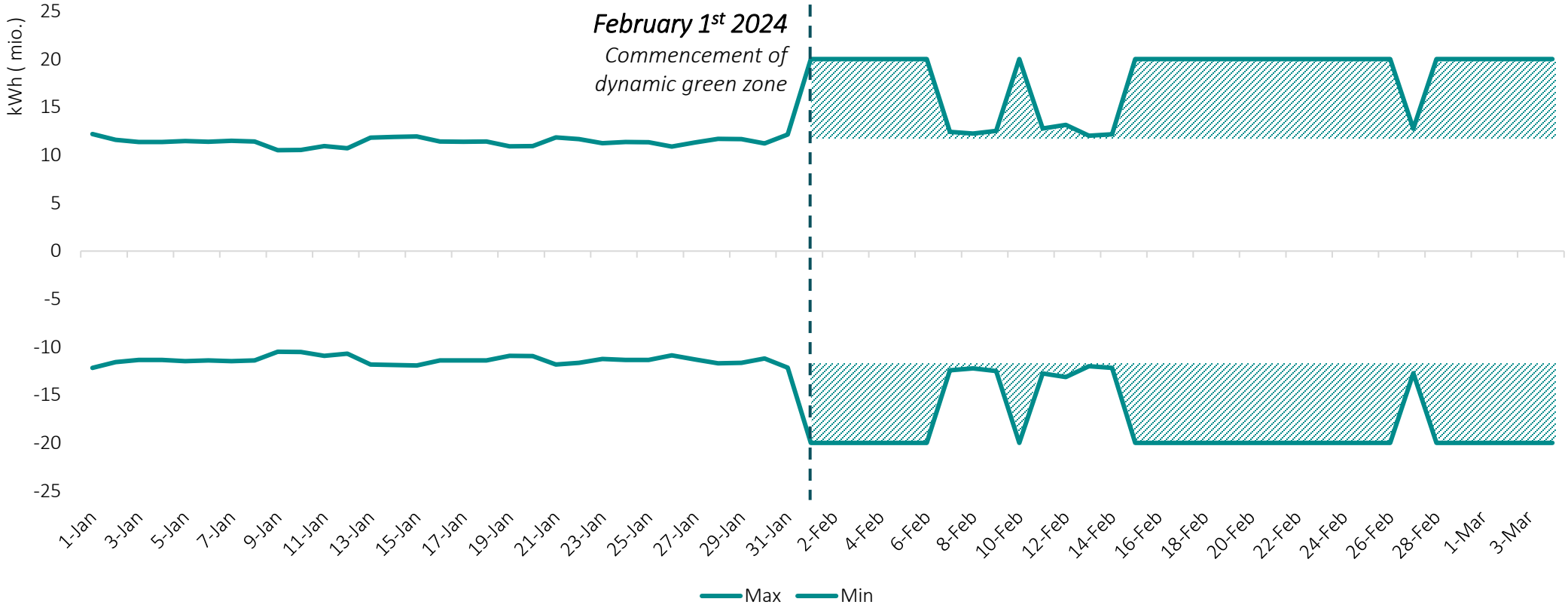
March 1
E-gas guarantees of origin can be issued

11 March
Gas price of 27 Euro/MWh & storage filling of 63%

March
Balancing invoicing 2023 expected to be completed

--> End March
Tyra Field starts ramping up

DEVELOPMENT OF GREEN ZONE SIZE (2024)



QUESTIONS

TYRA REDEVELOPMENT

Mads Arndal-Lauritzen, TotalEnergies

ENERGINET

Tyra Redevelopment

Energinet Shippers' Forum | 14 March 2024

Mads Arndal-Lauritzen

Head of Commercial and Public Affairs | TotalEnergies in Denmark

TotalEnergies: a global multi-energy company

Our businesses

OIL GAS ELECTRICITY HYDROGEN BIOMASS WIND SOLAR CCS

TotalEnergies produces and markets the following energies:

- Oil and biofuels
- Natural and green gases
- Renewables and electricity

Our ambition and mission

- Develop energy that is ever more affordable, cleaner, more reliable and accessible to as many people as possible
- Reach net zero by 2050 – together with society

Key numbers

- More than 100,000 people with 160 nationalities
- Active in more than 130 countries
- Revenue of $263.3 bn in 2022

TotalEnergies secures Denmarks energy supply

ESBJERG

North Sea oil and gas activities

Danish Underground Consortium

TotalEnergies 43.2%

BlueNord 36.8%

nordsø fonden 20.0%

COPENHAGEN

Technical Centre Conventional Offshore

Carbon Capture Storage

Renewables

1200 Employees in Denmark

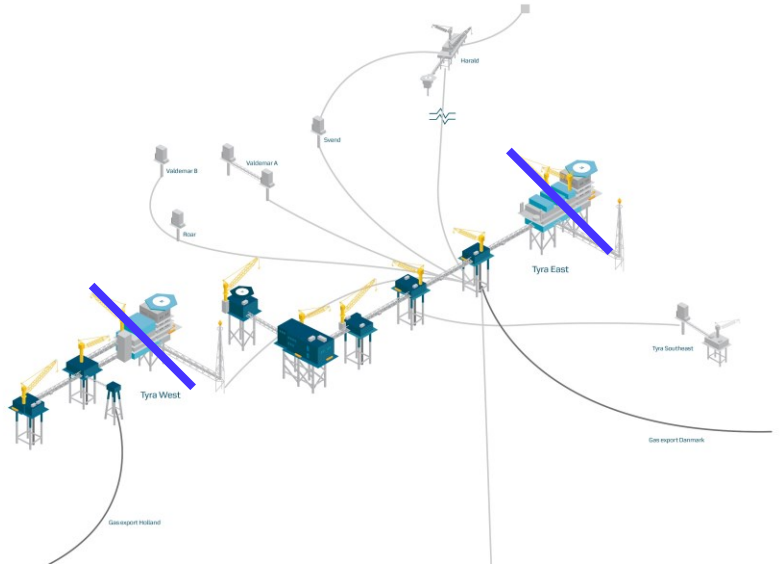
Tyra: Denmark’s largest natural gas field

Final Tyra-topside lift broke world record – a past redevelopment highlight

The new Tyra II is expected to operate with 30%* lower emissions per energy unit

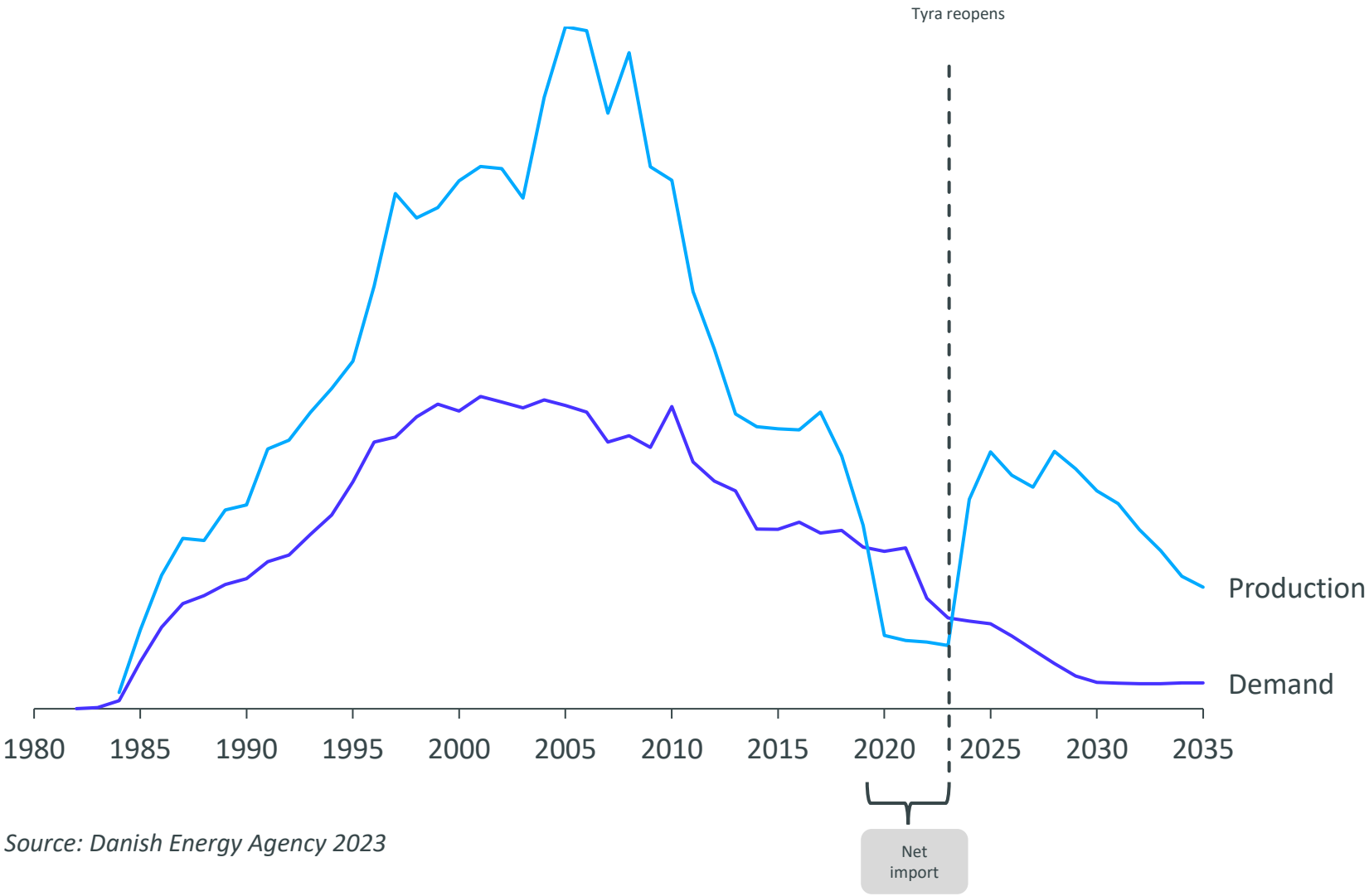
Simplified infrastructure and improved energy efficiency

100,000 data points help optimize production, emissions and safety



** Compared to the old Tyra*

Tyra II makes Denmark self-sufficient and net exporter of gas to Europe



Source: Danish Energy Agency 2023

Tyra II takes shape: Denmark's high-tech hub for natural gas production

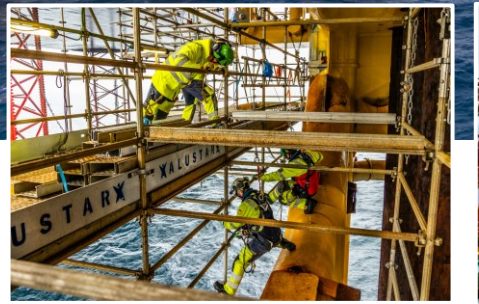
TotalEnergies

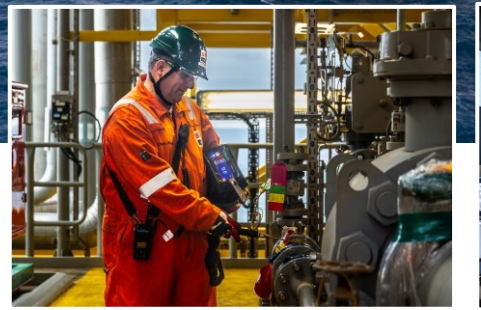
Start-up and ramp-up - Technical capacity*
- 8.1 million m3/d → Nybro
- 3.2 million m3/d → NOGAT

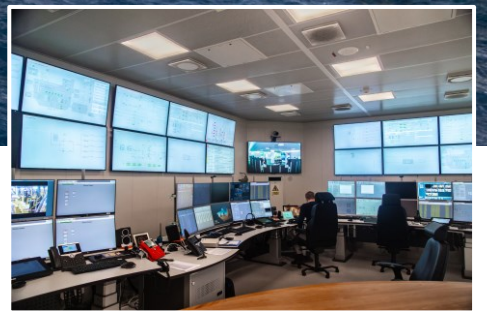
NOGAT 26'' reconnect*
- 8.1 million m3/d → Nybro
- 3.2 million m3/d + 8.1 million m3/d → NOGAT

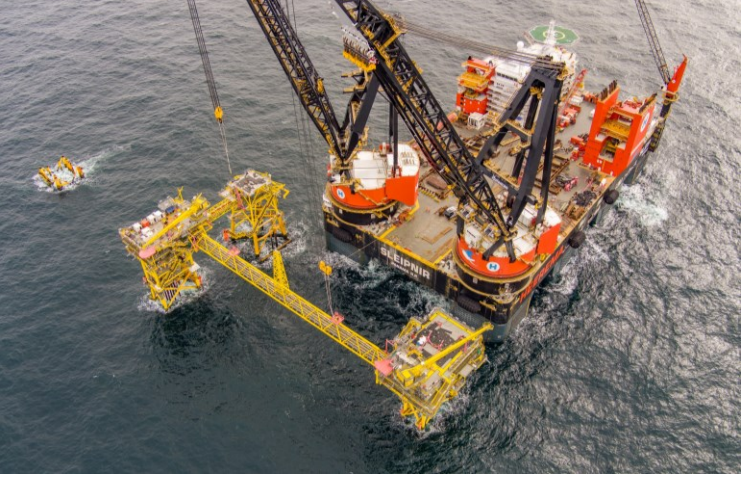
** Subject to gas availability and commercial choice*

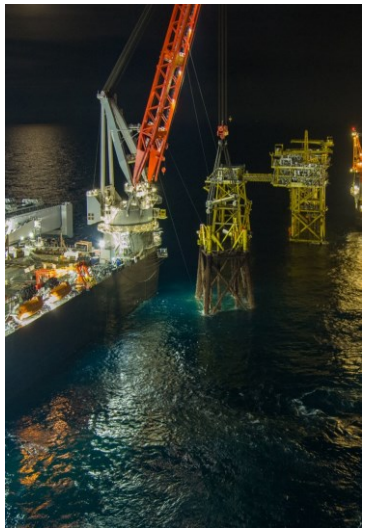
The redevelopment is in its final phase towards first gas and ramp-up

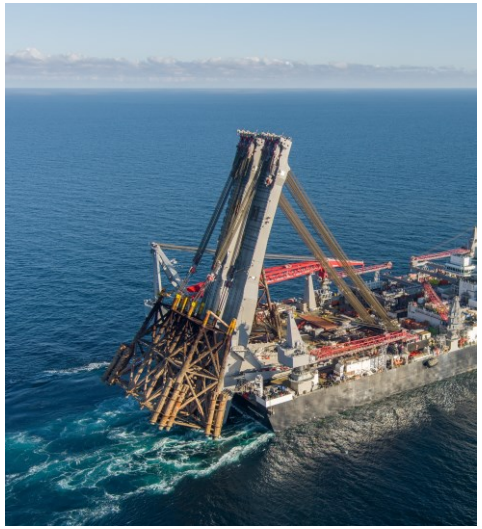












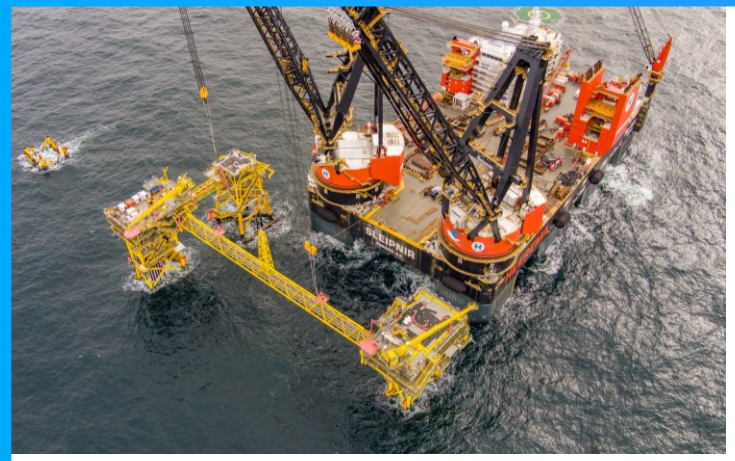
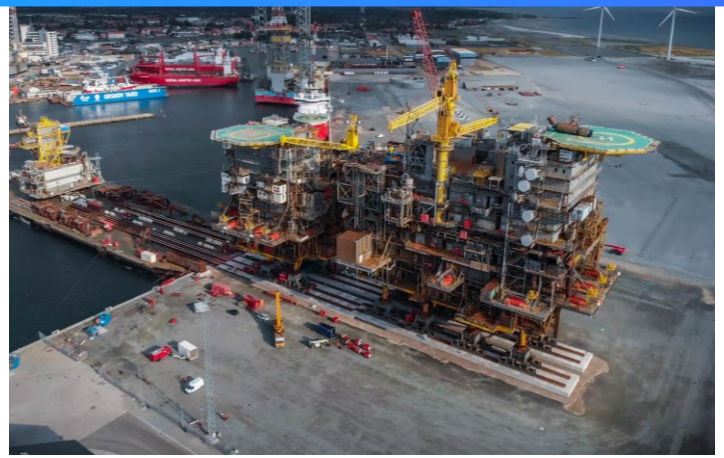
Thank you!

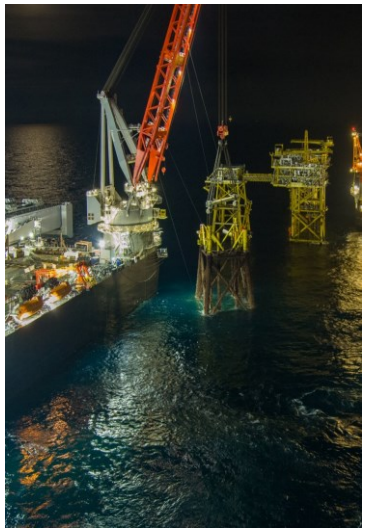
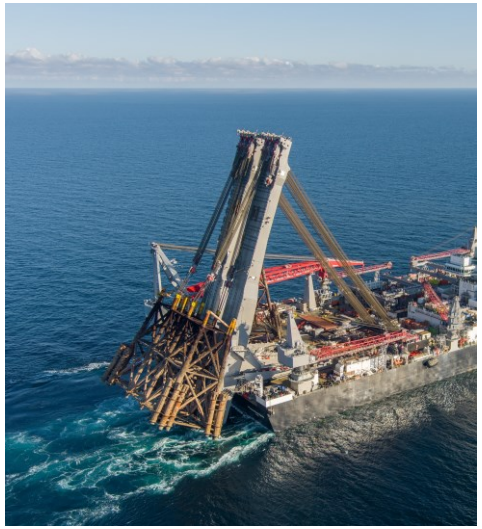
https://tyra2.dk

nordsø fonden

BlueNord

TotalEnergies


TotalEnergies

Questions?

nordsø fonden

BlueNord

TotalEnergies

CENTRAL AND EASTERN EUROPE: A RAPIDLY CHANGING GAS MARKET

Gergely Molnar, International Energy Agency

International Energy Agency

Central and Eastern Europe: a rapidly changing gas market

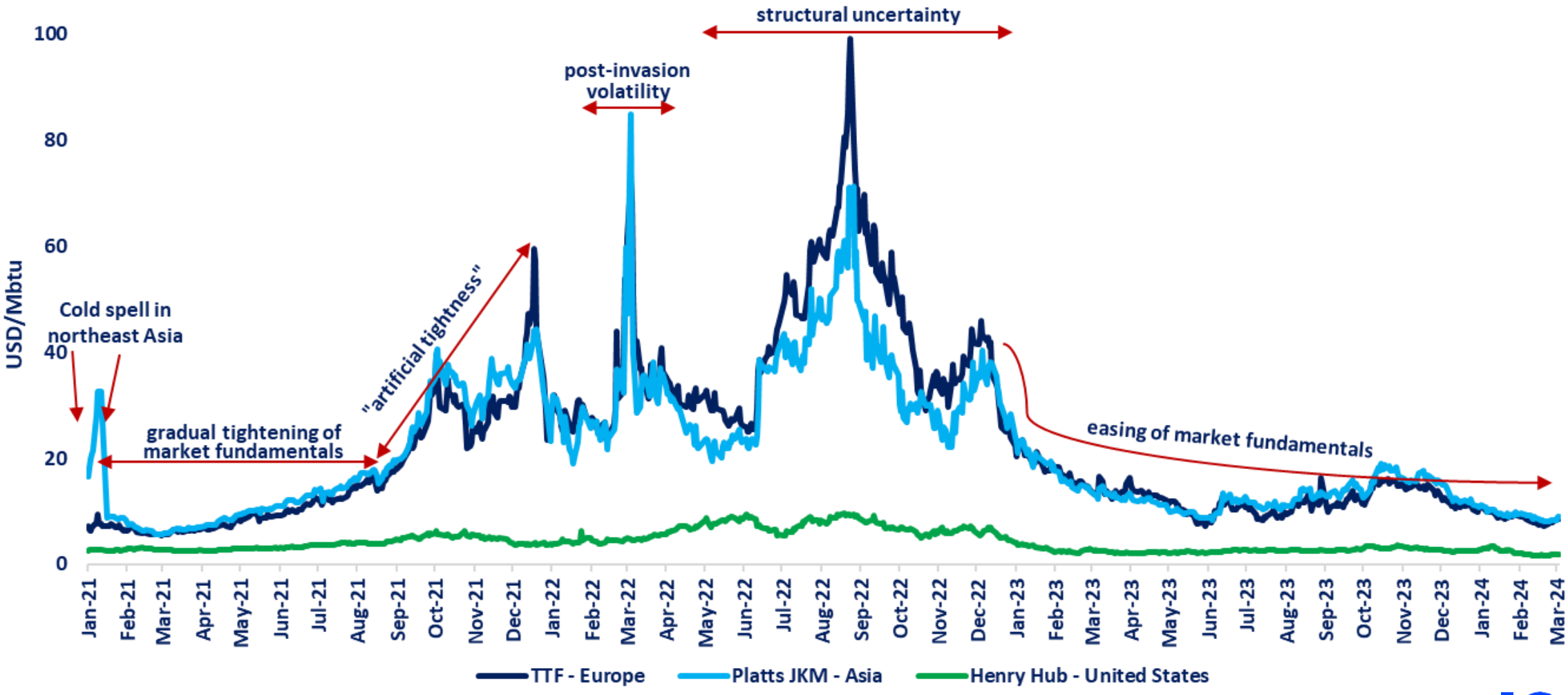
Gergely MOLNAR, Gas Analyst

Energinet Shippers' Forum, 14 March 2024

RECENT GAS MARKET TRENDS AND SHORT-TERM OUTLOOK

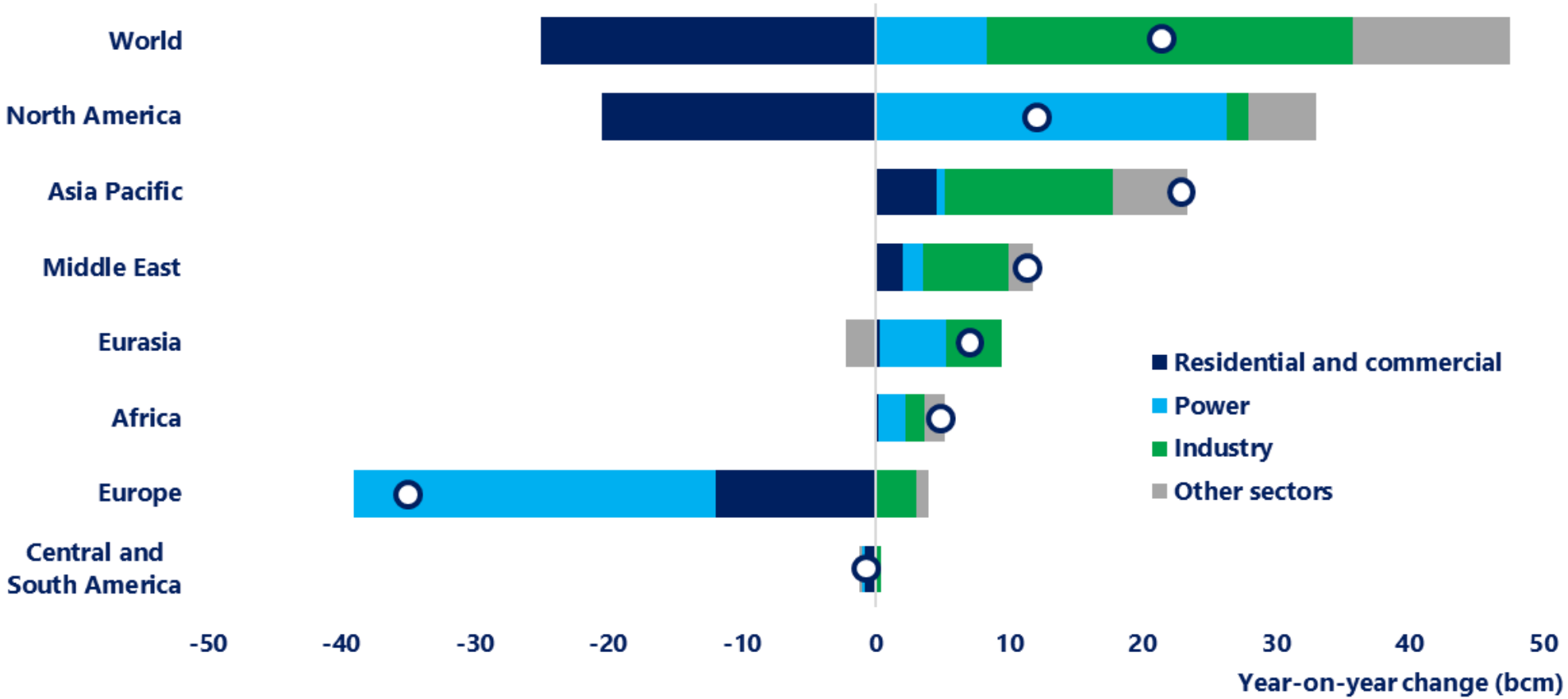
GAS PRICES FELL TO BELOW PRE-CRISIS LEVELS IN Q1 2024

Evolution of key regional natural gas prices, 2021 – 2024



GLOBAL GAS CONSUMPTION GREW MARGINALLY IN 2023

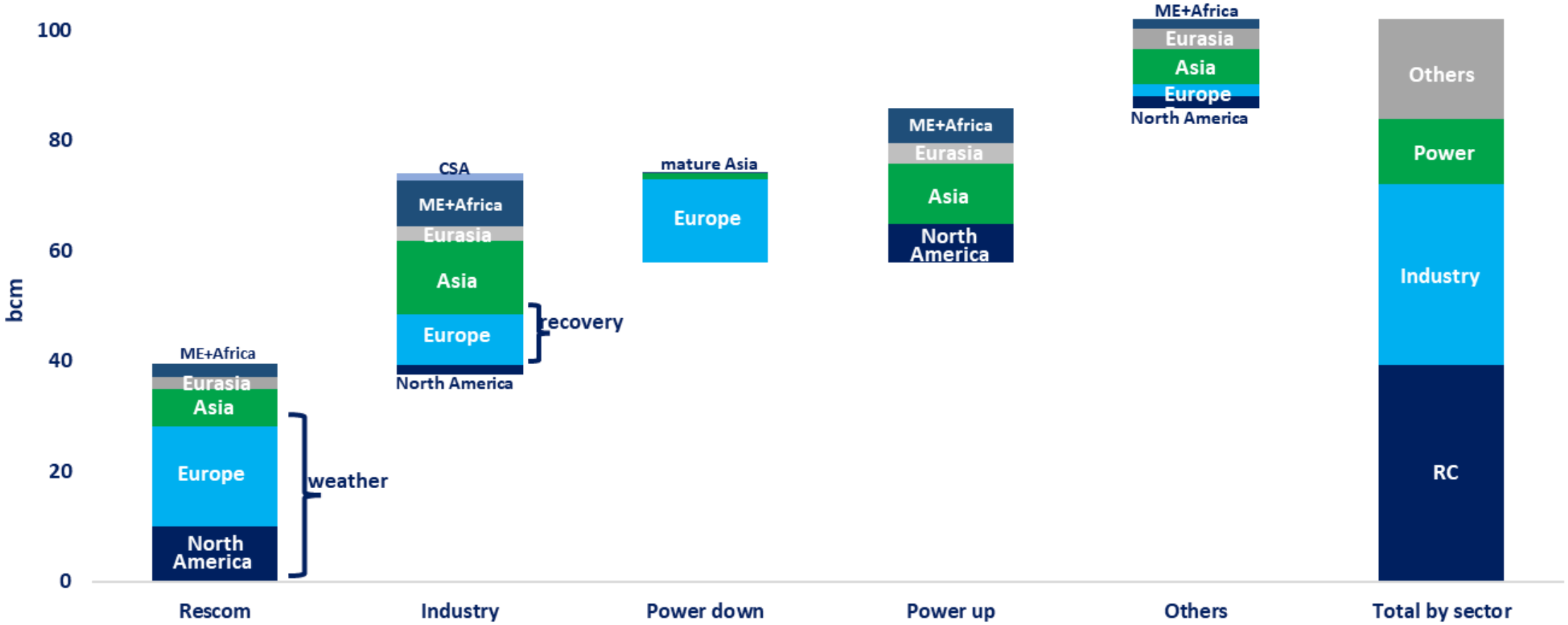
Estimated change in natural gas consumption by region and sector, 2023 vs 2022



Natural gas consumption grew by an estimated 0.5% in 2023, which was not enough to offset the losses incurred in 2022 when demand dropped by 1.5%.

GLOBAL GAS DEMAND IS SET TO RETURN TO GROWTH IN 2024

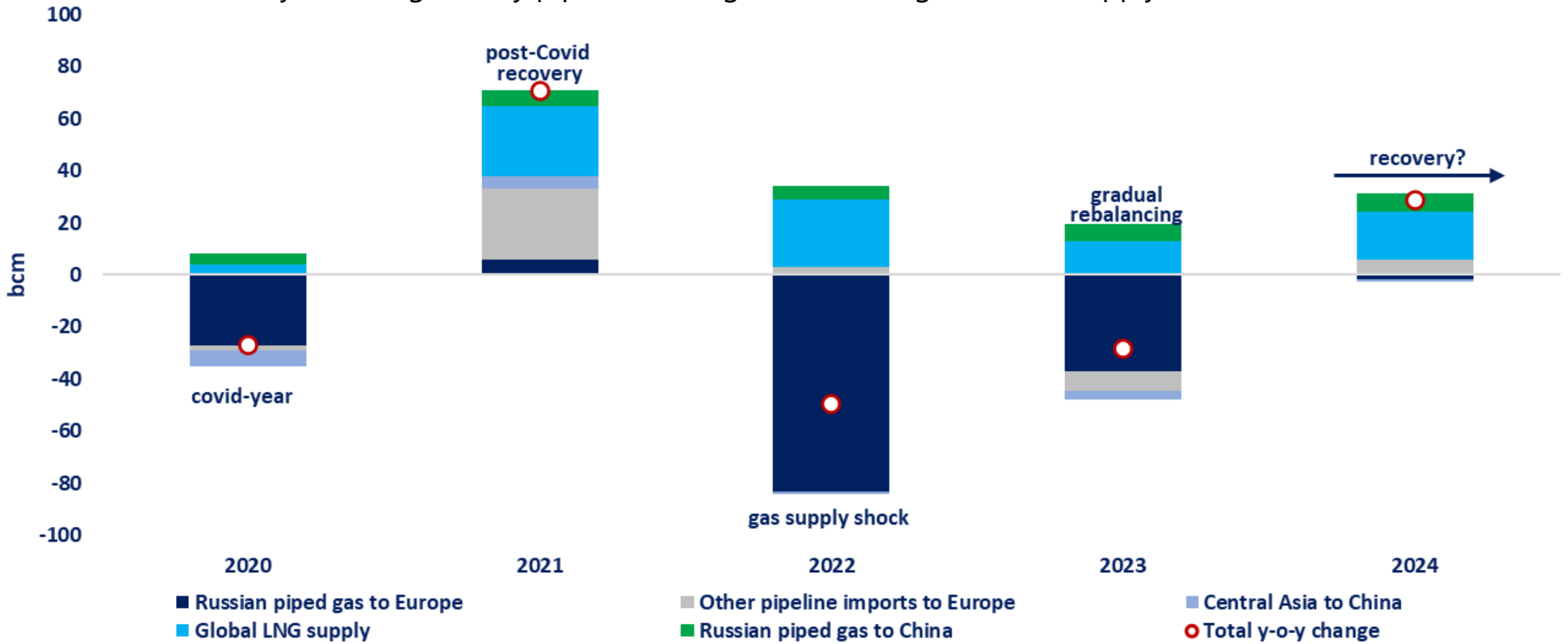
Year-on-year change in natural gas demand by sector and by region (2024 vs 2023)



Assumed return to average weather conditions and continued recovery from the 2022 gas supply shock, drives almost half of the demand growth expected in 2024.

GLOBAL GAS TRADE IS MOVING TOWARDS A GRADUAL RECOVERY…

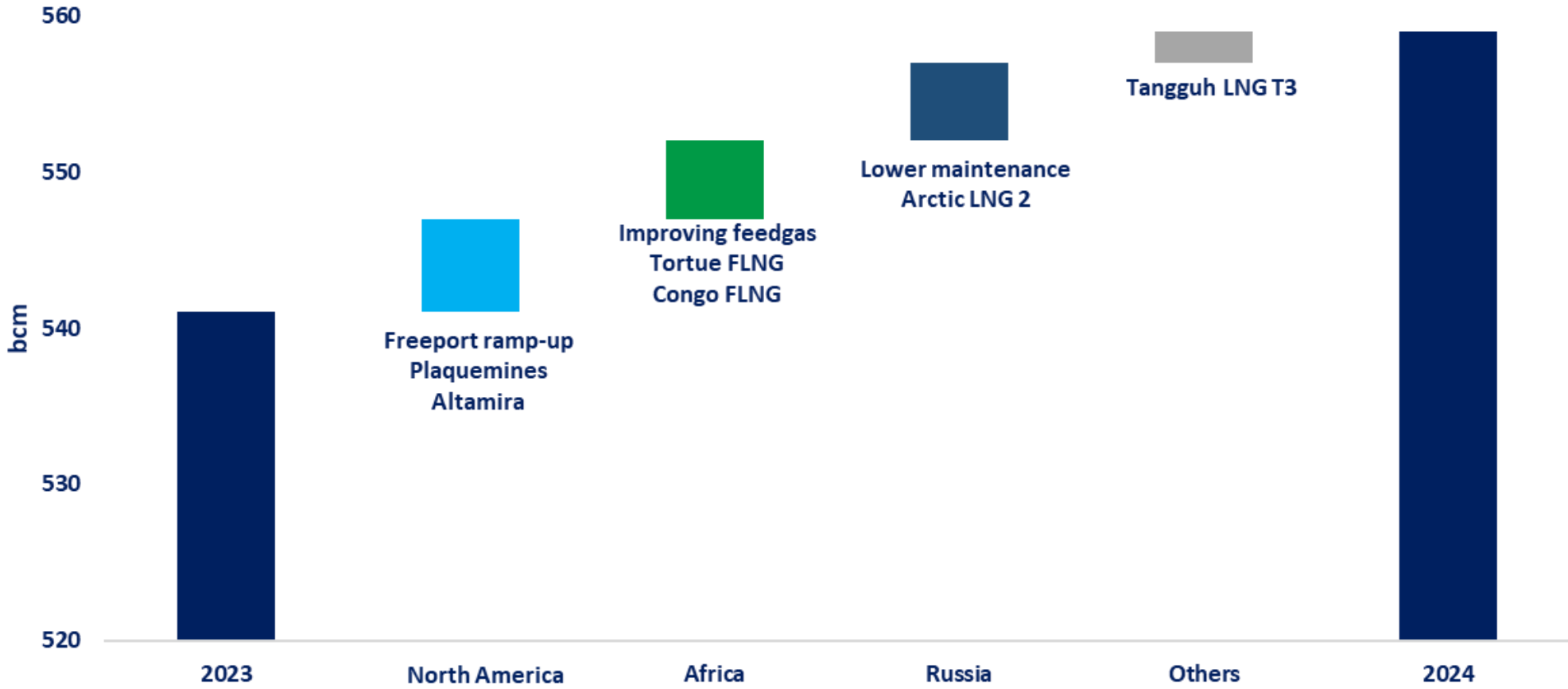
Year-on-year change in key piped natural gas trade and global LNG supply, 2019 – 2024



After two years of tightening, global gas trade is expected to expand in 2024, enabling stronger demand growth in key Asian and European import markets.

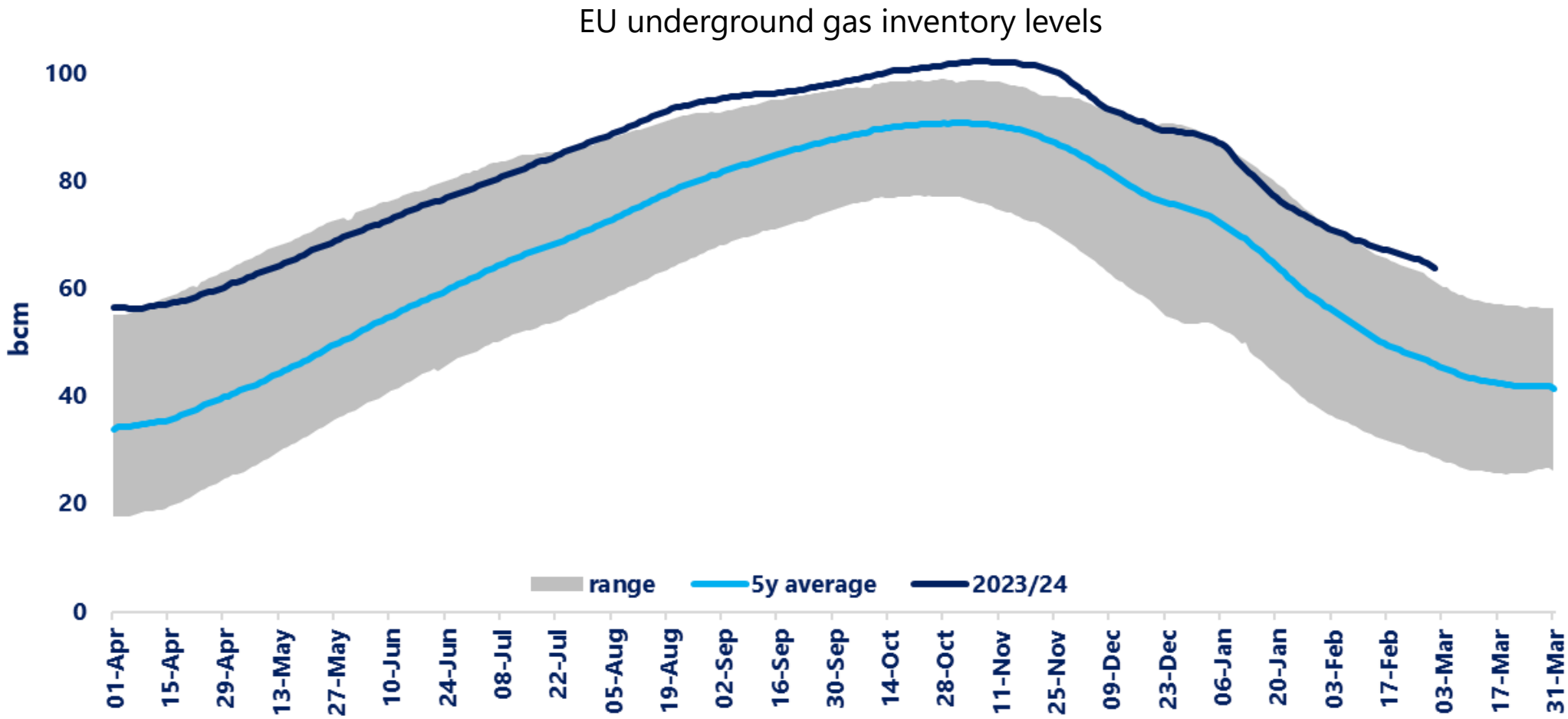
…ALTHOUGH LNG SUPPLY GROWTH IS EXPECTED TO REMAIN LIMITED

Year-on-year change in LNG production by key region (2024 vs 2023)



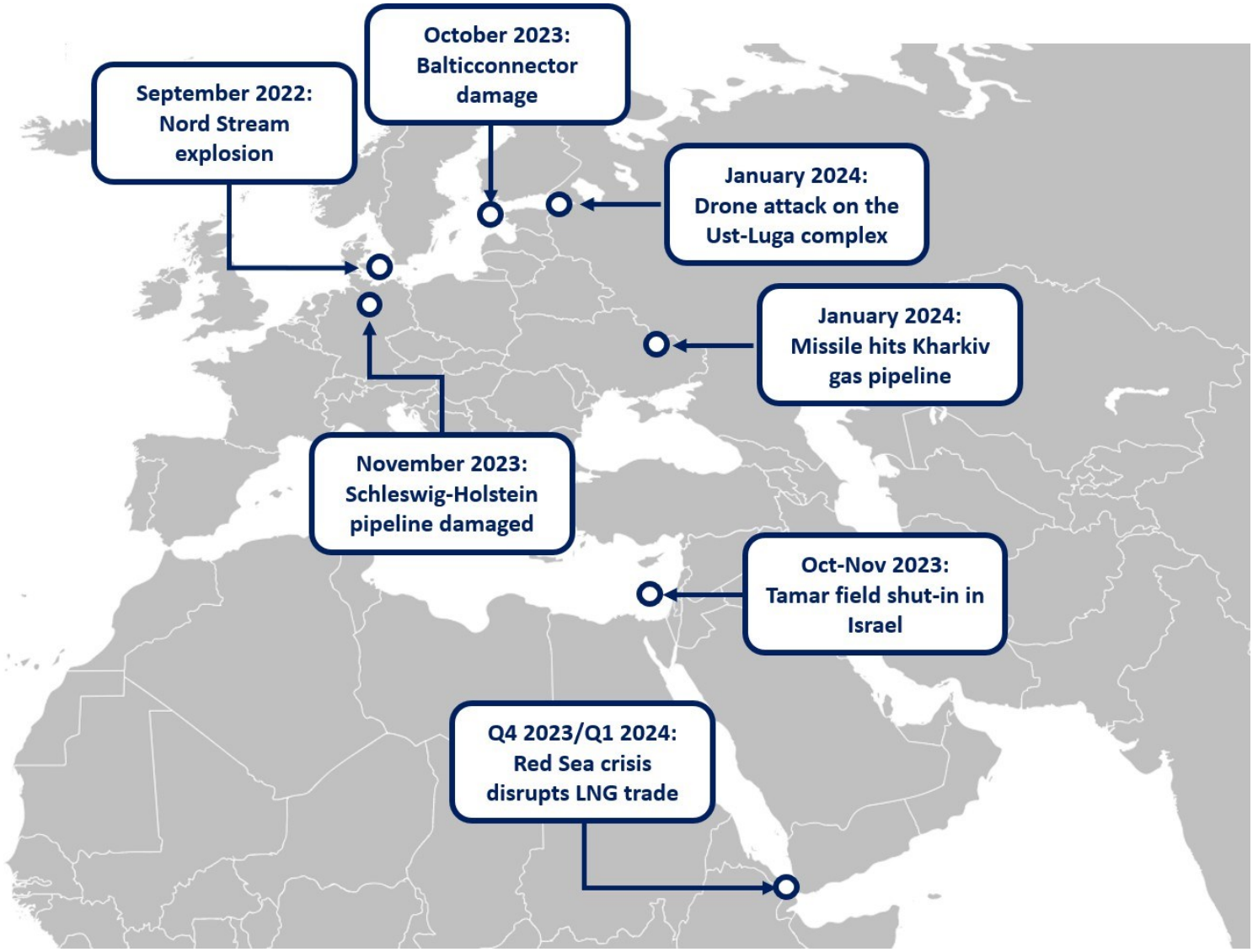
Global LNG supply is set to increase by a mere 3.5% in 2024 –well-below the 8% growth rate experienced between 2016-20. Incremental supply is primarily driven by the US, Africa, Indonesia and Russia.

HIGH STORAGE LEVELS COULD EASE THE MARKET IN SUMMER 2024



EU storage sites are 60% full –standing 40% above their five-year average. High inventory levels provide safety buffer for the remainder of the heating season and can ease market tensions in 2024 summer.

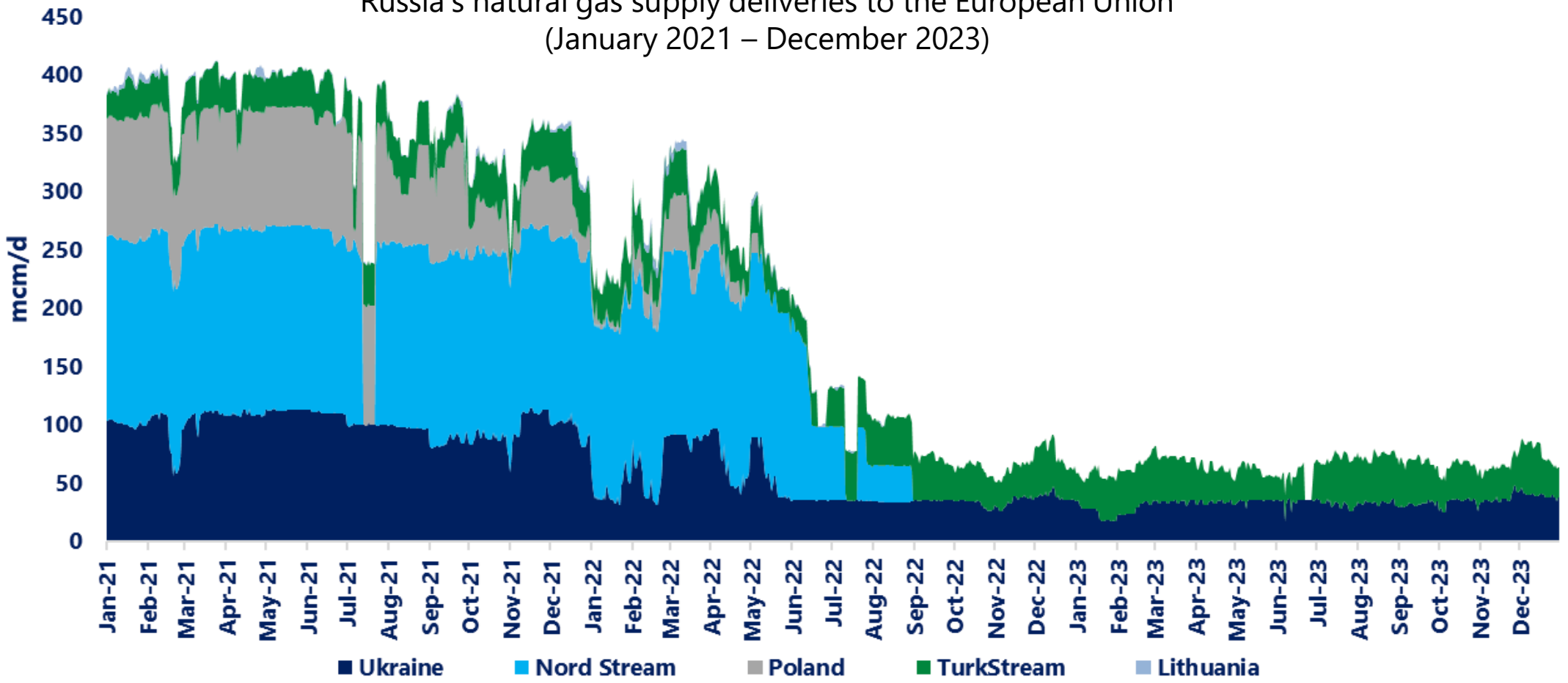
GEOPOLITICS PRESENT GREATEST SHORT-TERM RISK FOR GAS MARKETS



CENTRAL AND EASTERN EUROPE: NEW TRADING OPPORTUNITIES

THE GAS SUPPLY SHOCK OF 2022/23…

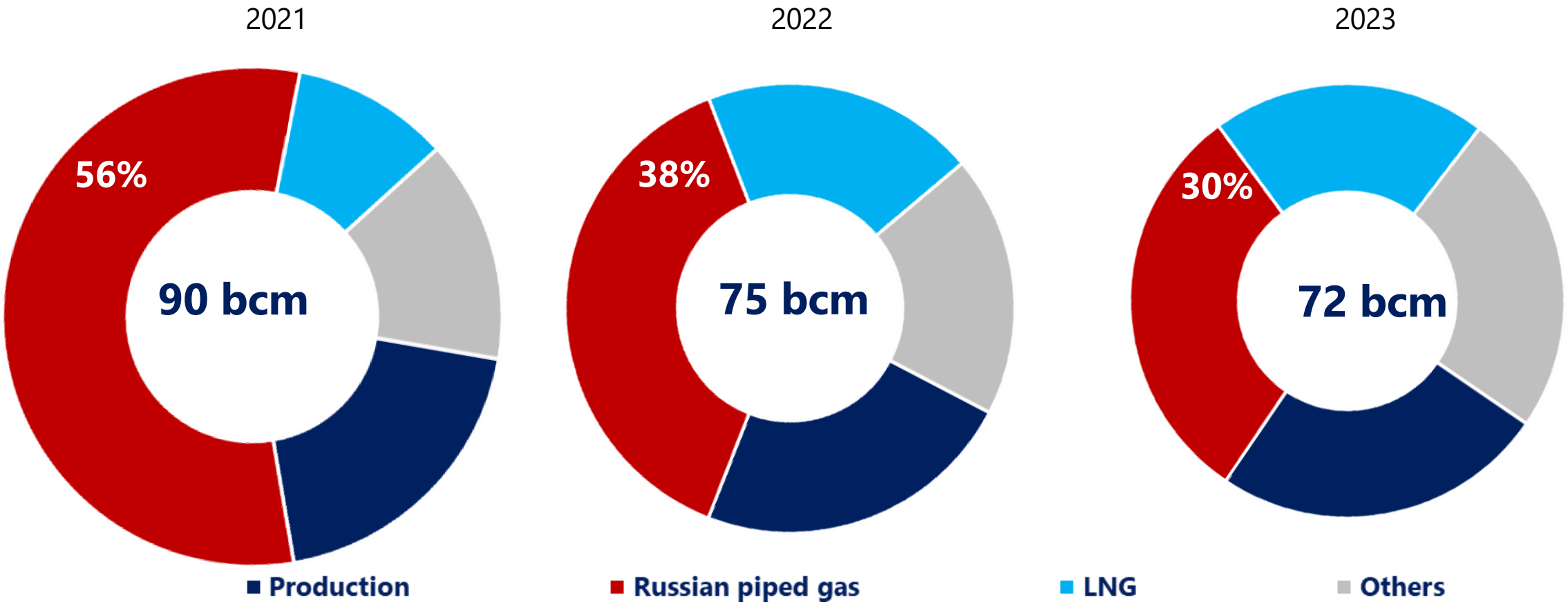
Russia's natural gas supply deliveries to the European Union
(January 2021 – December 2023)



Russia reduced its piped gas supplies to Europe by more than 80% since 2021, putting an unprecedented pressure both on the European and global gas markets.

…DRASTICALLY CHANGED THE EASTERN EUROPEAN TRADING LANDSCAPE

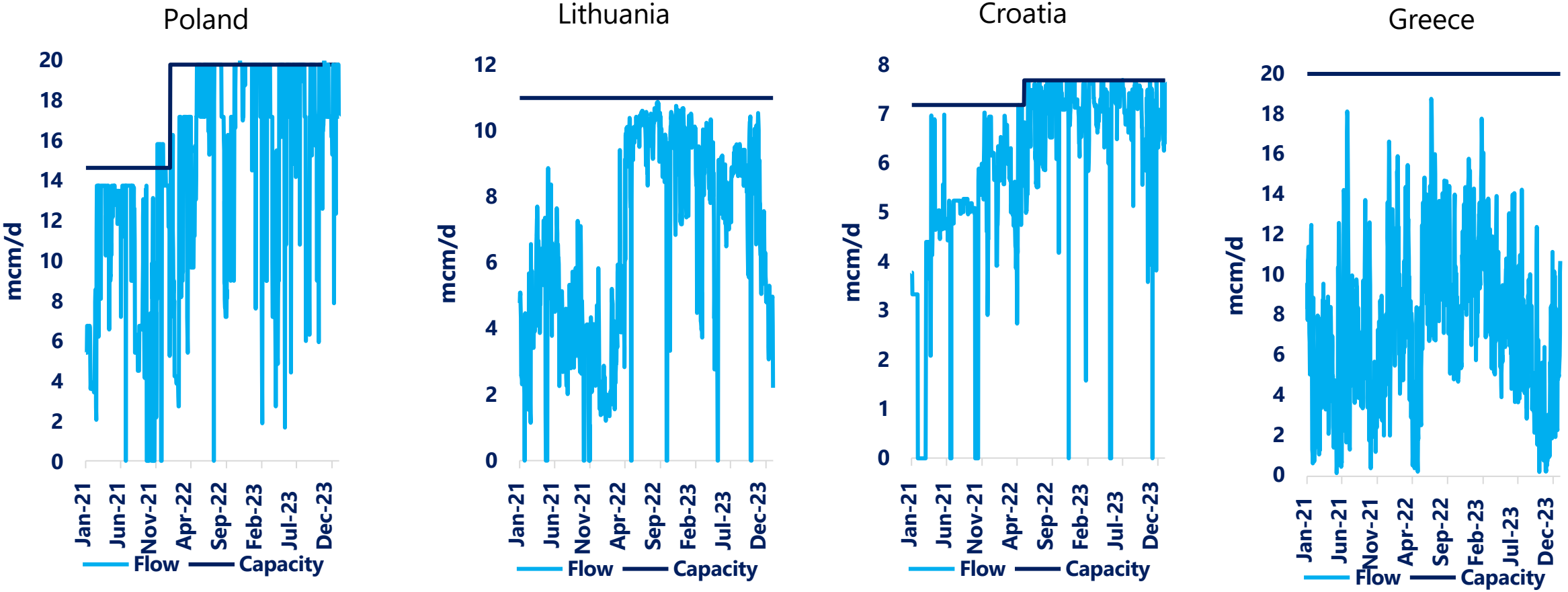
Estimated primary gas supply in Eastern Europe by source, 2021 – 2023



The Central and Eastern European gas market shrunk by 20% in size in the last two years, while the share of Russian piped gas dropped from over 55% in 2021 to just above 30% in 2023.

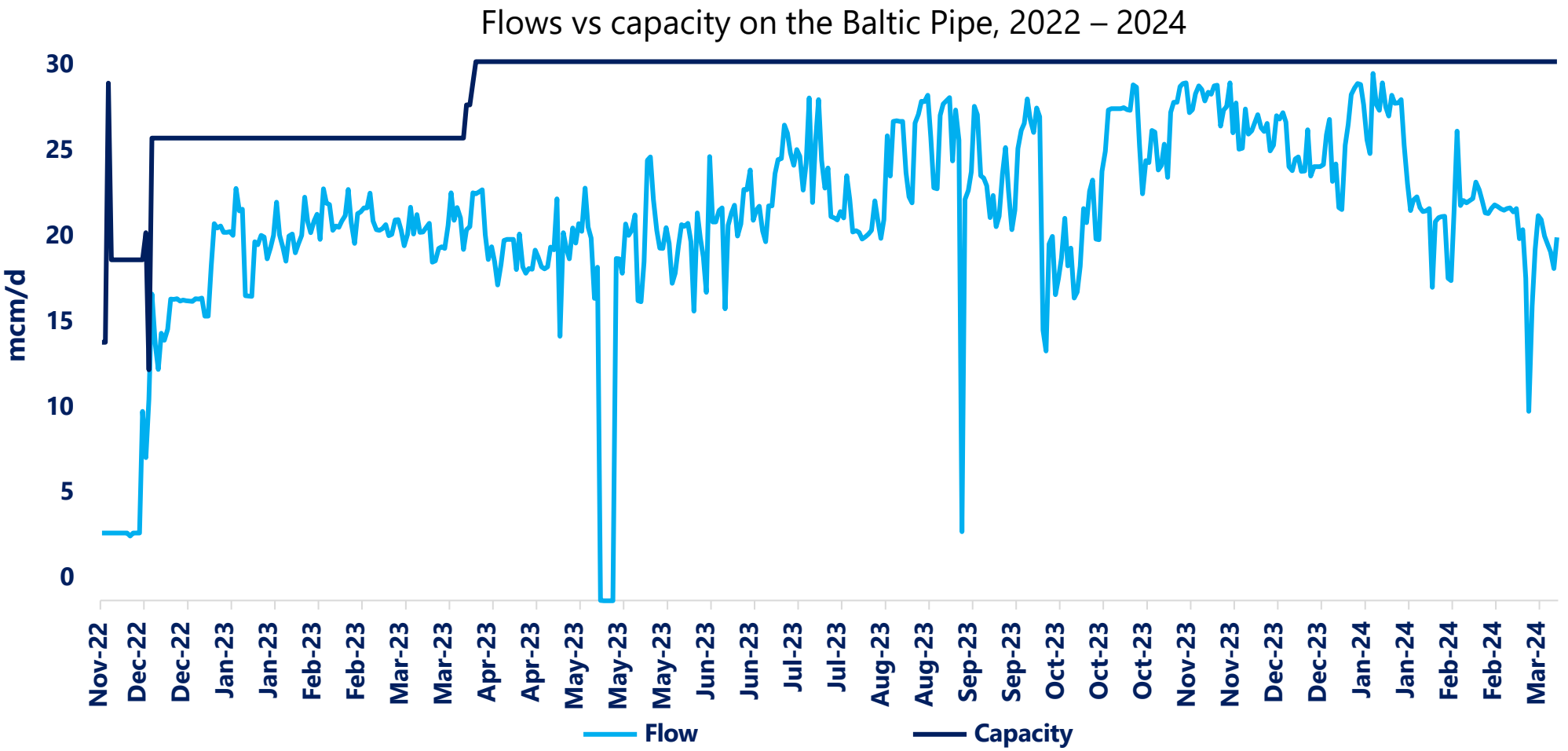
THE UTILIZATION RATE OF LNG IMPORT TERMINALS INCREASED SHARPLY

LNG import flows vs nameplate capacity, 2021 – 2023



LNG imports into Central and Eastern European markets jumped by 60% in 2022 and drove up utilisation levels of regas facilities close to their nameplate capacities.

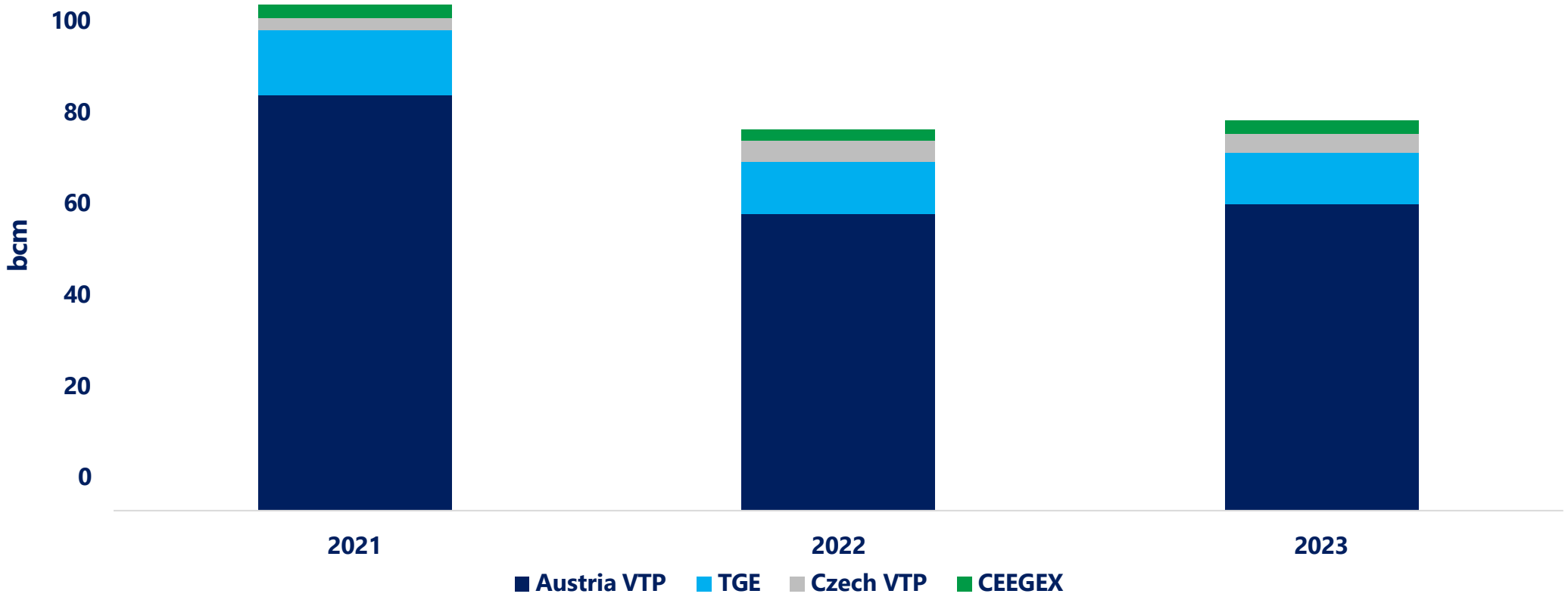
BALTIC PIPE INCREASED THE REGION'S SUPPLY DIVERSITY AT A CRITICAL TIME



The start-up of Baltic Pipe ahead of the 2022/23 winter season was key to enhance the supply diversity and the gas supply security of Central and Eastern European markets.

TRADING IN CENTRAL AND EASTERN EUROPE REMAIN SUBDUED

Estimated traded volumes across key Central and Eastern European gas hubs, 2021 – 2023



Natural gas trading collapsed in Europe in 2022 as all-time high price levels and volatility drove up margin calls. While trading on TTF recovered, volumes on CEE hubs remain subdued.

KEY TAKEAWAYS

- **Gas market tensions moderated significantly** since the start of 2023, amid timely policy action, effectively working market forces and favourable weather conditions.
- **Global gas demand** is expected to **return to a more pronounced growth** in 2024 and increase by 2.5% or 100 bcm. Weather and price driven recovery accounts for half of projected growth.
- **High inventory levels** can further loosen market conditions in 2024 summer, although **geopolitical tensions** could easily distort the market and fuel price volatility.
- The **2022/23 gas supply shock** drastically changed the trading landscape in Central and Eastern Europe, offering new marketing opportunities for non-Russian suppliers.
- **Baltic Pipe** played a key role in enhancing **supply diversity and security** in Central and Eastern Europe ahead of the 2022/23 winter season.
- **Hub liquidity** in Central and Eastern Europe **remains low**, with volumes remaining below their pre-crisis levels. Greater supply diversity and interconnectivity can facilitate the development of trading.

BREAK

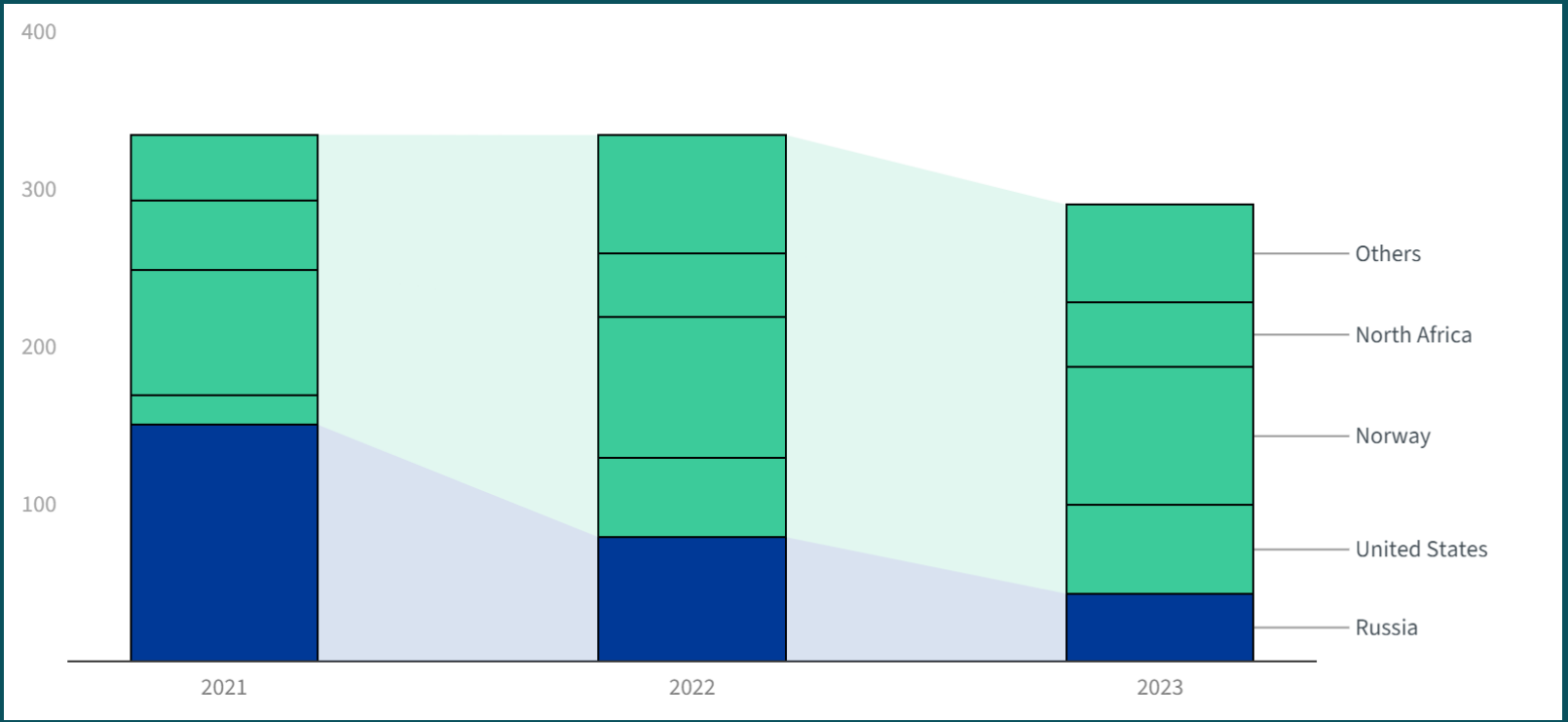
DIVERSIFICATION OF ENERGY SUPPLIES

Jeppe Danø, Energinet

ENERGINET

DIVERSIFICATION OF ENERGY SUPPLIES

Moving away from Russian gas



EU (still) imported 14,8% of its gas from Russia in 2023.

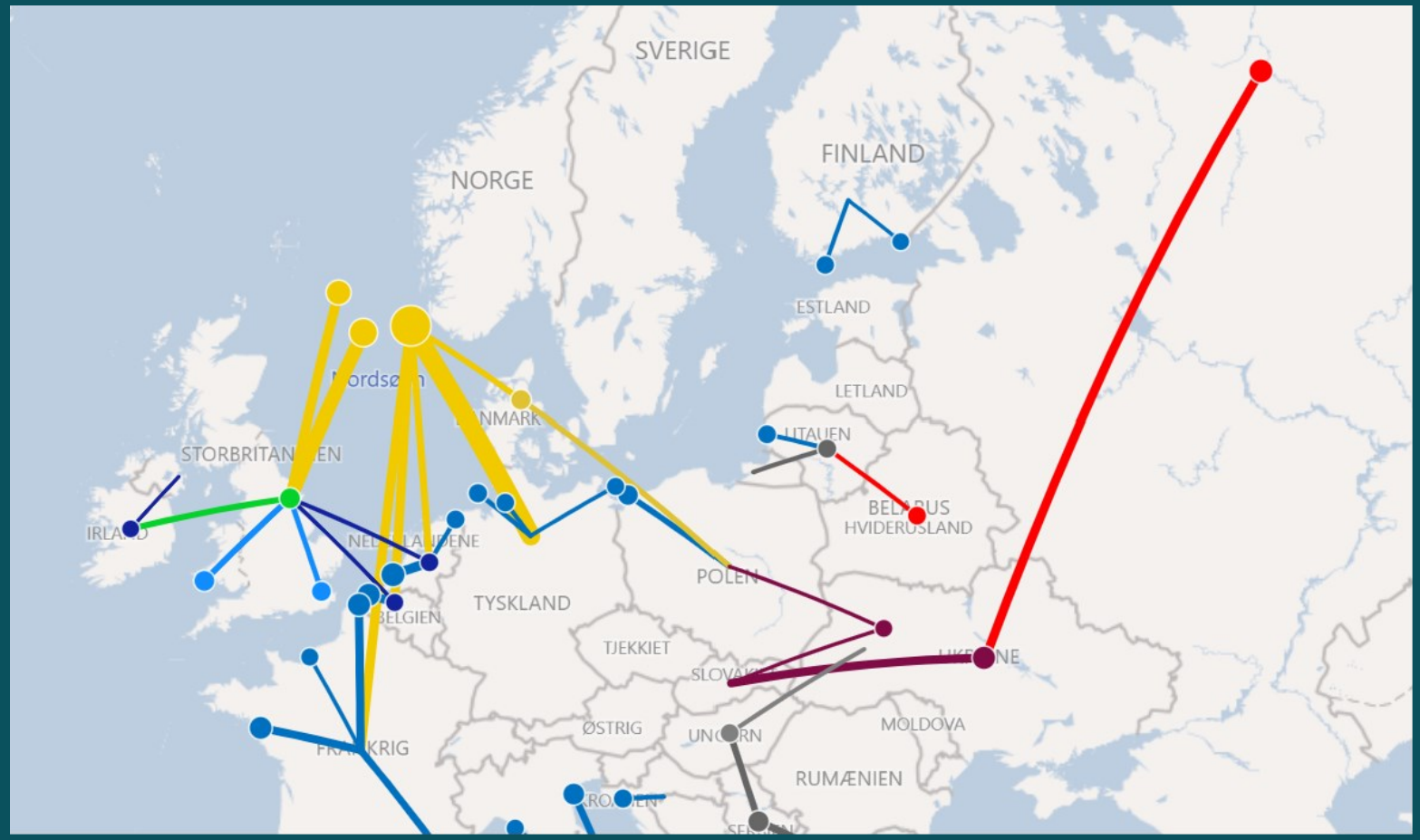
Russian pipeline gas dropped from 40% in 2021 to 8,7% in 2023.

6,1% of EU's gas import stems from Russian LNG

Source: https://www.consilium.europa.eu/en/infographics/eu-gas-supply/

DIVERSIFICATION OF ENERGY SUPPLIES

Moving away from Russian gas



Source: https://gasdashboard.entsog.eu/

Import from Russia is important for the East- and Central European countries.

The import goes through Ukraine to Slovakia.

In January and February 2024 Ukraine imported approximately 13.000 GWh pr. month.

BALTIC PIPE CAN DIVERSY THE EU'S ENERGY SUPPLIES

The Baltic Pipe still has 20% (ca. 2 GWh/h) unbooked capacity that can further aid the diversification.

Picture: https://www.entsog.eu/sites/default/files/2021-11/ENTSOG_CAP_2021_A0_1189x841_FULL_066_FLAT.pdf

Energinet and Gaz System will make a joint effort to make the Shippers aware of the unbooked capacity that can support the diversification of the European energy supplies.

Approximately. 2 GWh/h capacity left for booking.

Events at Central- and Eastern European embassies and conferences.

SECURITY OF SUPPLY

Jane Glindvad Kristensen, Danish Energy Agency

ENERGINET

Security of gas supply – 2024

Shippers' Forum

Jane Glindvad Kristensen

19. marts 2024

Energistyrelsen

Supply situation – now and the rest of 2024

	NOW	Rest of 2024 (risk factors)
GAS	Stable supply. Lower but still volatile prices.	Risk of total cutoff from Russian gas to EU and/or lower LNG supply from Asia, which may cause increasing prices in DK.
EL	Stable supply. Higher prices	Risk of lower production in Europe, due to e.g. maintenance or sabotage. However there is an expected lower risk of brownouts in 2024 and DEA expect volatile prices.
OIL	Stable supply. Potentially high prices.	Potentially higher prices if e.g. The geopolitical situation in the middle east escalate.
HEAT & BIOMASS	Stable supply. Higher prices.	Potentially higher prices. Expected stable supply for the rest of 2024, however with a risk of geopolitical cascading effects in the Baltics.

Gas supply

19. marts 2024

Energistyrelsen

Sligthly challenged gas supply this winter

- Danish gas storages are more than 60 percent filled
- Gas consumption is at a lower level. Reduction of app. 7-10 pct. compared to pre-crisis.
- Lower gas prices in 2023 and 2024, but still volatile prices.
- Baltic Pipe has from 2022 become the primary supply road to Denmark
- Low or no Russian gas is expected to the EU
- Greater competition for LNG on the world market is expected, especially due to Chinas industrial reopening after COVID-19
- Increased Danish gas production: 37 % of gas consumption is from biomethane.
  Reopening of Tyra production field by the end of March

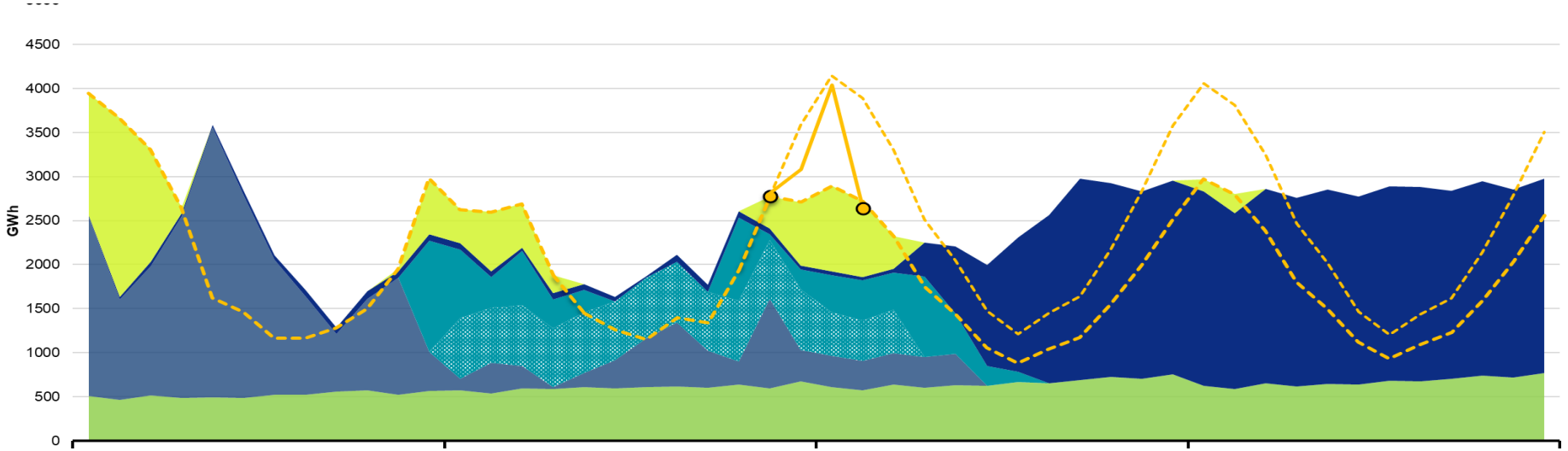
Scenario G0: Unchanged supply

At the "normal consumption" level as before the invasion, there will be a need to go to emergency and gas will be missing to supply some consumers at the end of the winter. Disruption of non-protected customers is likely to occur in emergency.

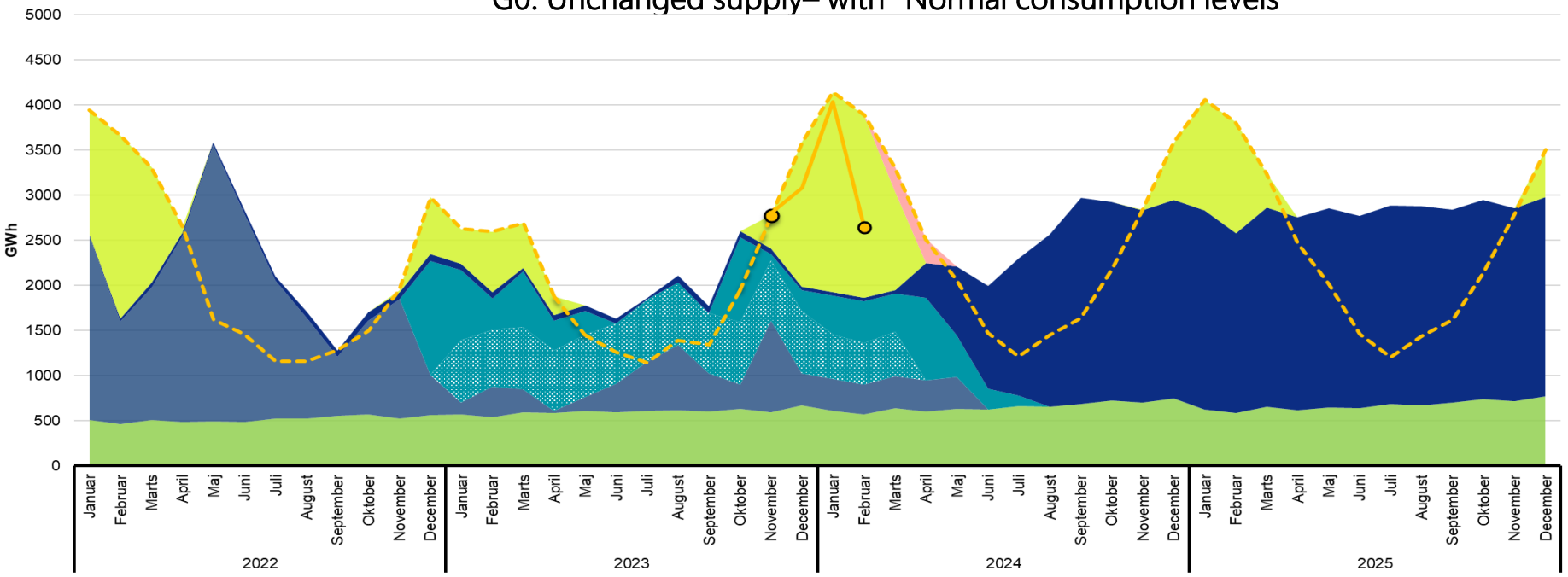
Low gas filling levels at the end of the winter also mean that larger quantities must be filled in storage towards the next winter season.

DK Biomethane
Gas storage usage
Import Germany
DK North Sea Production (to DK)
Import Norway (contracted)
Import Norway
Emergency gas
Shortage
DK+S consumption with continued demand reduction
DK+S "Normal consumption"

G0: Unchanged supply – with continued consumption reduction



G0: Unchanged supply– with "Normal consumption levels""



Scenario G2: Russian halt of pipeline gas to the EU

Current conditions: The supply of gas has been stable in the winter 2023/24. The European gas storages have been well filled, and storage withdrawal has been moderate throughout the year. Furthermore, Danish consumers have been great at saving gas.

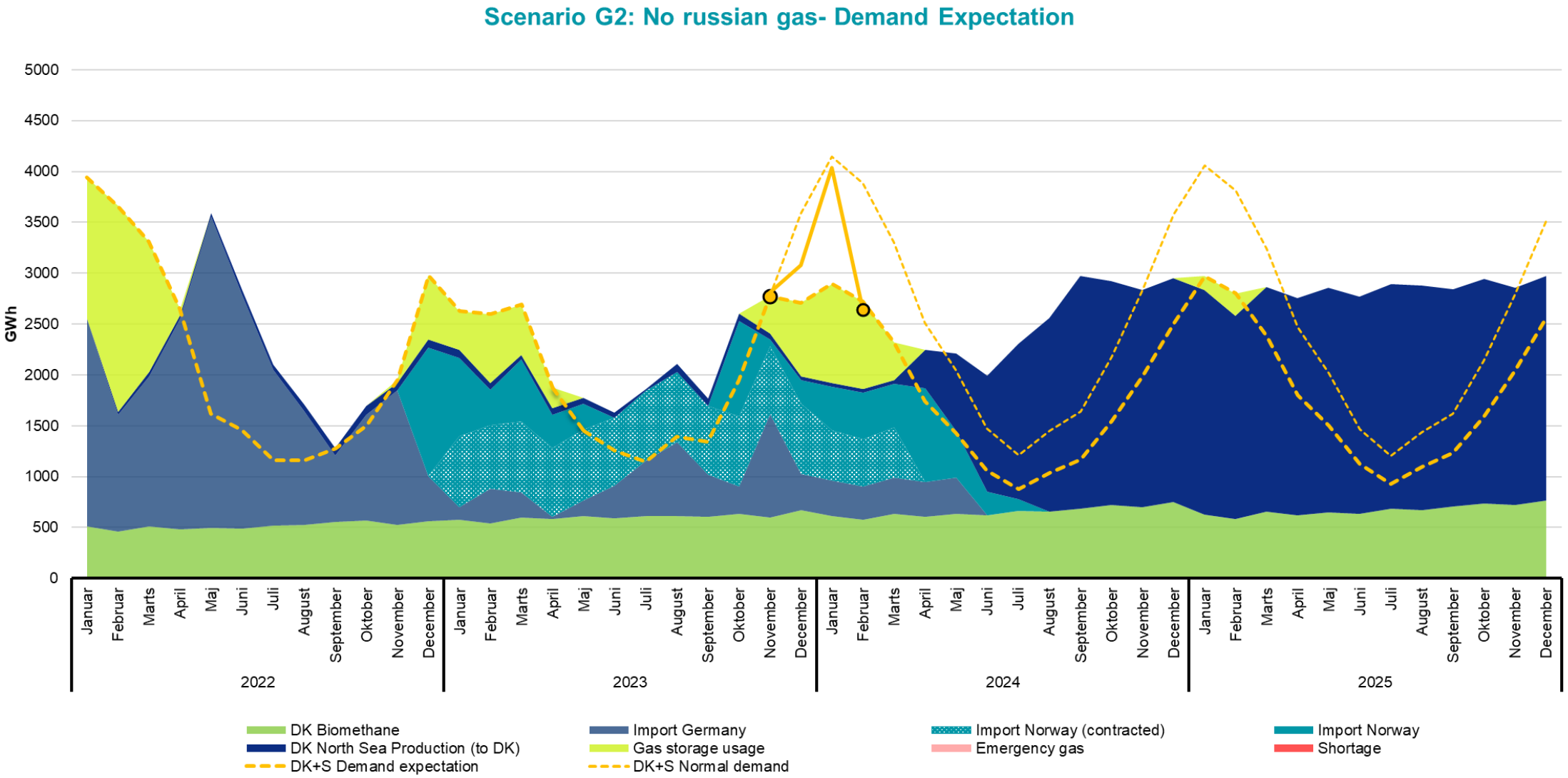
Potential consequences for the Danish supply situation:

If Russia completely shuts down the export of gas to the EU, it will lead to increased uncertainty and higher prices on the market. Denmark should therefore prepare to reduce gas consumption, so that we contribute to handling the gas quantities that disappear from the market if the Russian supply to the EU stops in the winter of 2024.

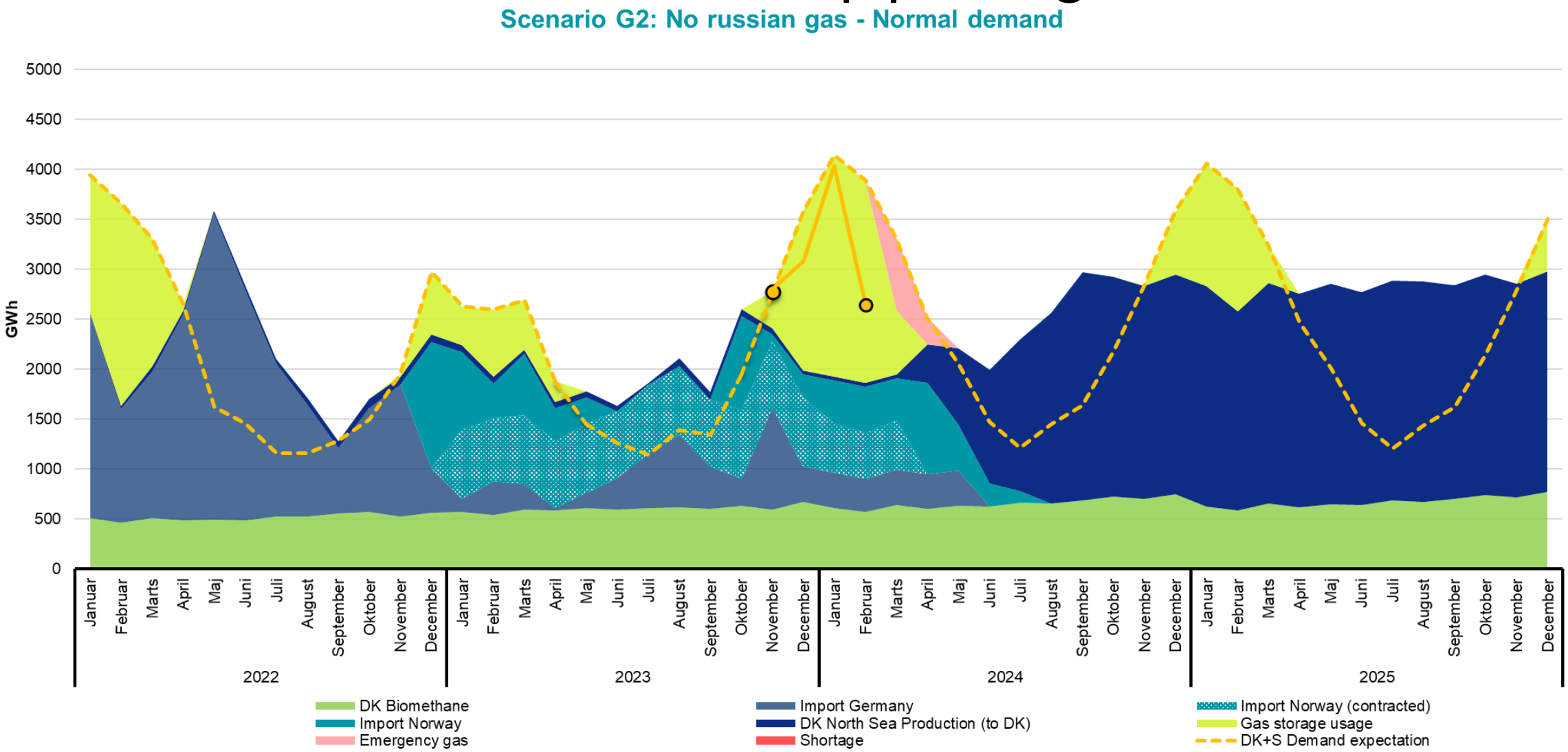
Concretely, however, this will mean that pipeline gas to the EU will be reduced by 9% compared to the first 5 months of 2023.

Danish imports from Germany and Norway will in the scenario be reduced by 35% compared to the 'normal import volume' before the war in Ukraine.

Scenario G2: Russian halt of pipeline gas to the EU



Scenario G2: Russian halt of pipeline gas to the EU

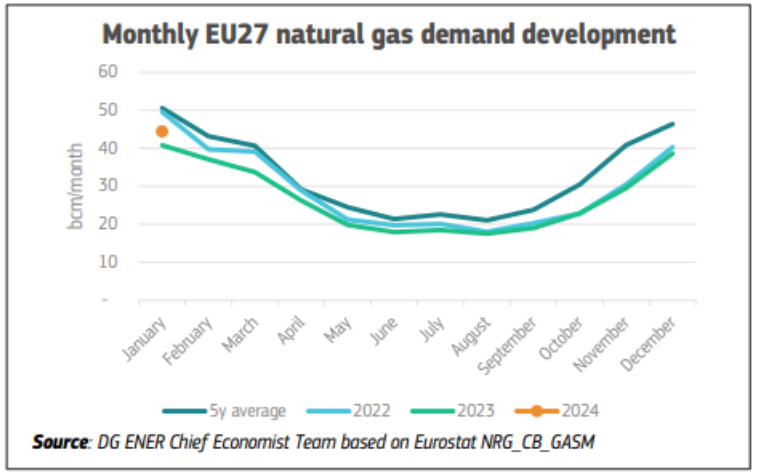


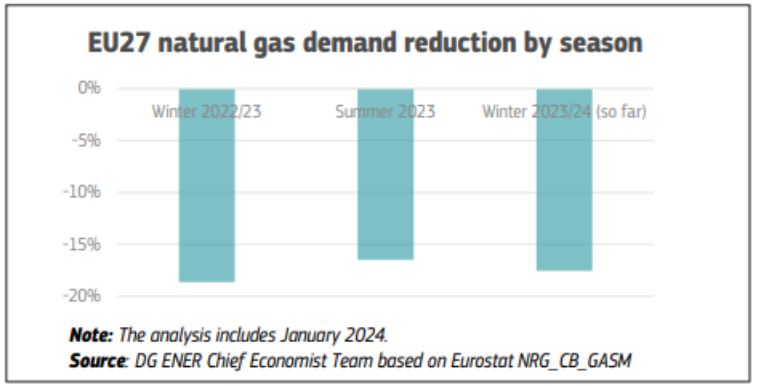
Council recommendation on 15 pct. gas demand reduction

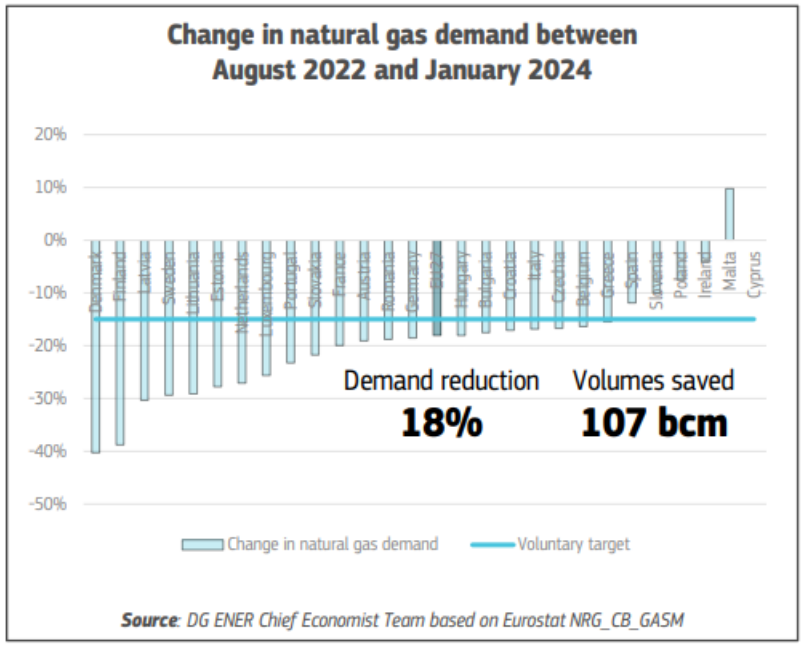
Energistyrelsen

DEMAND REDUCTION HAS BEEN EFFECTIVE

Demand reduction analysis

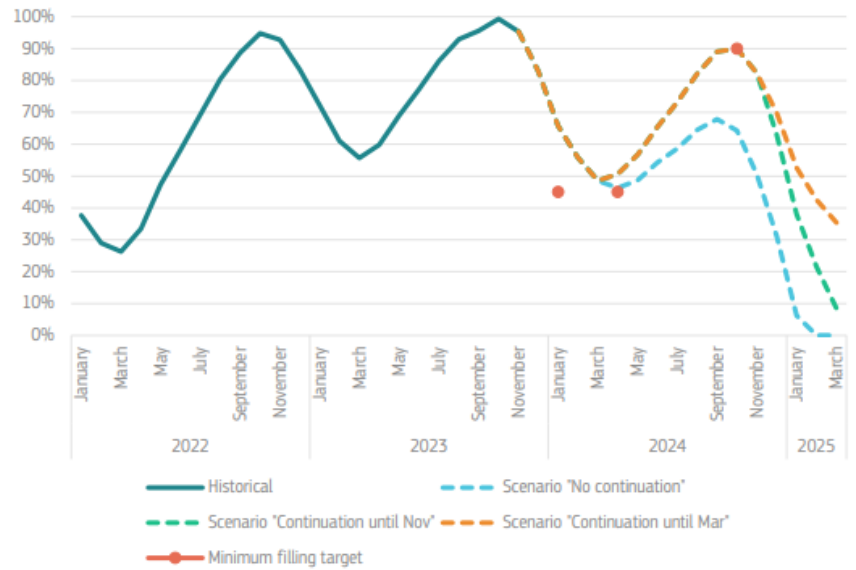






CONTINUATION REMAINS IMPORTANT

Storage filling in case of RU disruption



Note: *The figure depicts storage levels at the end of each month.*
Source: *ENER Chief Economist, based on Eurostat, AGSI and market intelligence data on gas flows*

"**No continued demand reduction**" scenario:

- Gas demand does not continue beyond 31 March 2024.
- Result: This would lead to storage levels falling to 64% by 01 November 2024.

"**Continued demand reduction until November 2024**" scenario:

- Gas demand reductions continue until November 2024.
- Result: Storages quickly deplete afterwards reaching only around 10% of filling levels by end-March 2025

"**Continuation of demand reduction until March 2025**" scenario:

- Gas demand reductions continue until end of March 2025.
- Result: Gas storages reach November target and could reach around 35-40% by end-March.

➔ Russian pipeline imports are disrupted in all scenarios.

Hydrogen and decarbonised gas market package

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HYDROGEN AND DECARBONISED GAS MARKET PACKAGE (GAS PACKAGE)

The gas package envisions the gradual replacement of natural gas with renewable and low-carbon gases, including hydrogen, to achieve climate neutrality in 2050, as set out in the European Green Deal.

- In December 2023, the EU Council and Parliament reached a preliminary agreement on the gas package establishing common rules for the internal markets for renewable and natural gases and hydrogen.

- The agreement will be formally adopted by both institutions within the next couple of months.

Main policy objectives:

- Enabling the development of dedicated hydrogen infrastructure and market - allowing hydrogen to become a key component of the energy sector.
- Facilitating access of renewable and low carbon gases into the existing gas network
- Fostering network planning of electricity, gas and hydrogen
- Improving and promoting consumer engagement and protection
- Increasing security of supply and cooperation

Yearly meetings with non-protected gas customers

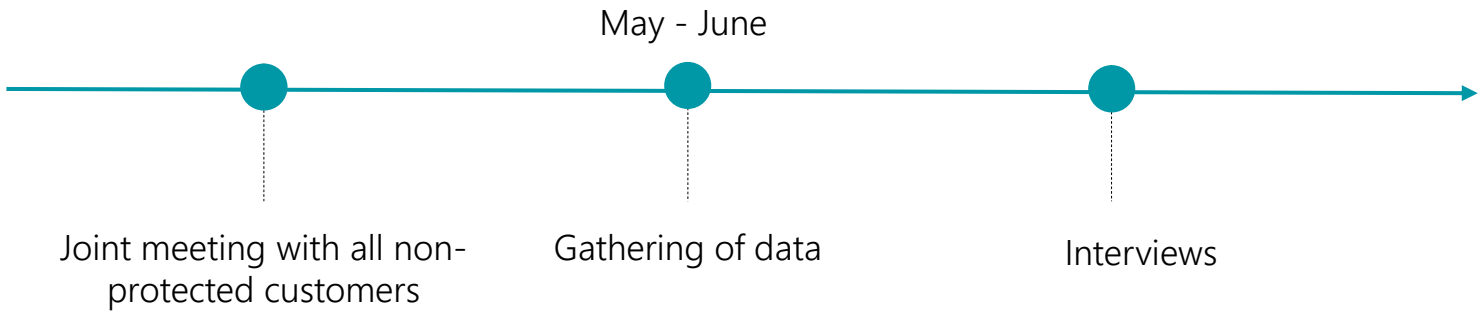
Energistyrelsen

YEARLY MEETINGS WITH NON-PROTECTED GAS CUSTOMERS

Under EU legislation, non-protected customers (typically large enterprises) are not guaranteed to have their gas needs met in the event of a serious supply crisis.

The DEA has therefor initiated a process of gathering data and information from the non-protected customers to ensure that as many as possible have enough gas to keep production running. This is done by:

- Sending out surveys with questions on their current gas consumption, the possibility of reducing their gas consumption, switching to alternative fuels etc.
- Inviting the non-protected customers for in-depth interviews
- Inviting all non-protected gas customers for a joint meeting with the Deputy Director General to discuss the current supply situation, the risk of interruption of non-protected gas and any concerns the companies may have.



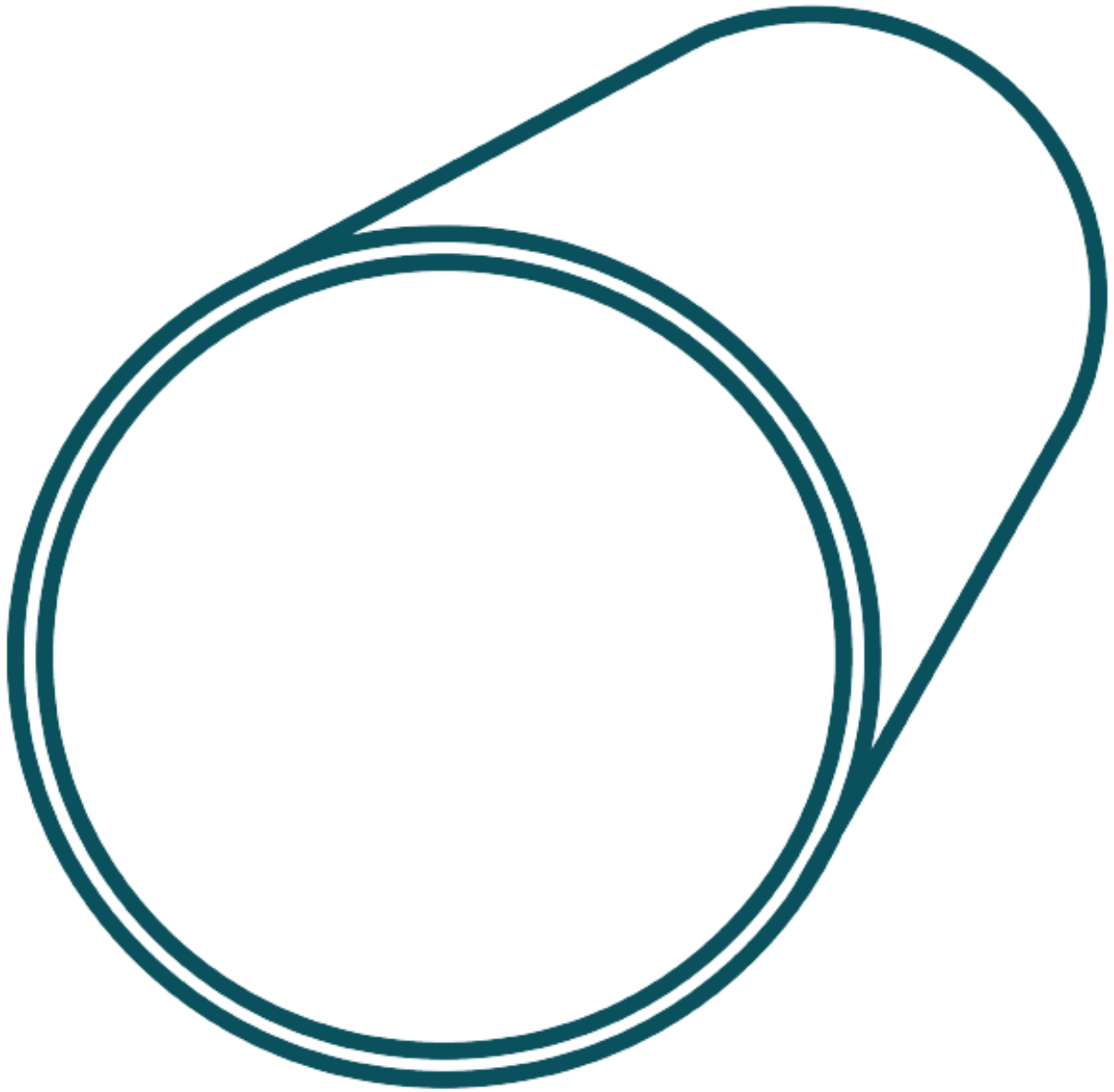
Thank you for your time

19. marts 2024

Energistyrelsen

GAS STORAGE DENMARK

Iliana Nygaard & Marni Jacobsen, Gas Storage Denmark



GAS STORAGE DENMARK

SHIPPERS FORUM

14 MARCH 2024

AGENDA

1. CAPACITY OVERVIEW
2. THE STORAGE PORTAL IS OPEN FOR ONLINE BOOKING OF CAPACITY
3. REMIT
4. CO2RYLUS

CAPACITY OVERVIEW

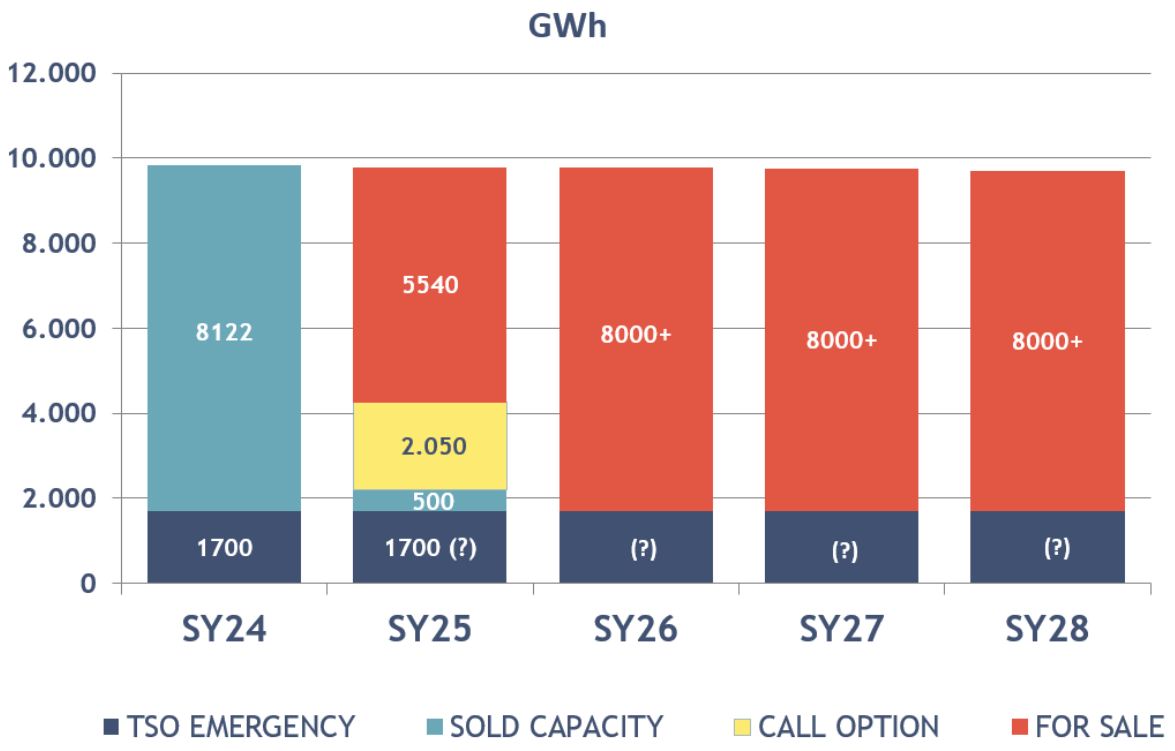
- ❑ 2024 → sold out
- ❑ 2025+ → available for bilateral sale

PRICING

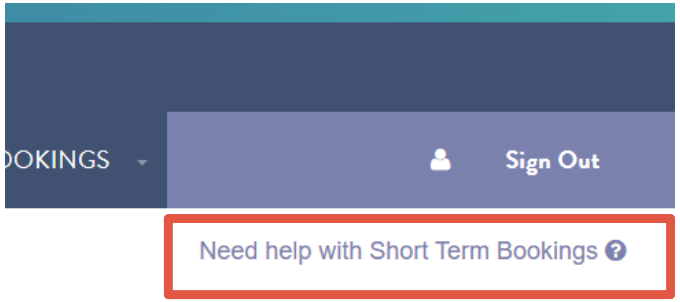
- ➢ 170/170: **3.60** €/MWh/year
- ➢ 170/85: **4.11** €/MWh/year
- ➢ 120/60: **4.62** €/MWh/year

PRICING of Additional Flexibility:

- ➢ Injection: **750** €/MW/year
- ➢ Withdrawal: **2,100** €/MW/year



THE STORAGE PORTAL IS OPEN FOR ONLINE BOOKING OF CAPACITY



https://gasstorage.dk/news/2024/03/04/online-booking-go-live/

PRODUCTS for BOOKING TODAY

- ❑ VOLUME
- ❑ INJECTION
- ❑ WITHDRAWAL

HOURLY	➢	intra-day TODAY
DAILY	➢	all remaining days in March
MONTHLY	➢	all 12 months until 1 April 2025

REMIT PUBLISHED 12.3.2024 17.18

https://gasstorage.dk/news/2024/03/12/remit-reduced-withdrawal-sy24/

Before the REMIT → 2,833 MW firm withdrawal available for sale

After the REMIT → 1,833 MW firm withdrawal available for sale

CO2RYLUS
CONDITIONS PRECEDENT

GSD is not obligated to fulfil obligations unless the following conditions are satisfied (or waived):	Deadlines:
1. GSD is awarded:	
a) The **license** under section 23 of the Consolidated Act no. 1533 of 16 December 2019 on the Subsoil with later amendments (in Danish: Undergrundsloven);	1 June 2024
✓ b) The **permit** by the Minister for Climate, Energy and Utilities under section 5 of the Consolidated Act no. 271 of 9 March 2023 on Energinet with later amendments (in Danish: Lov om Energinet);	1 April 2024
c) The **decision** by the Environmental Protection Agency (in Danish: Miljøstyrelsen) allowing the Storage Operator to establish and operate the Stenlille Facility through a screening process (in Danish: screeningsafgørelse) according to the Consolidated Act no. 4 of 3 January 2023 on Environmental Assessment with later amendments (in Danish: Miljøvurderingsloven); and	1 April 2025
d) The **approval** by the Minister for Climate, Energy and Utilities of the plan for storage under section 23d(2) of the Consolidated Act no. 1533 of 16 December 2019 on the Subsoil with later amendments (in Danish: Undergrundsloven).	1 April 2025
2. The **confirmation** that the intended well at the Stenlille Facility is suitable for the injection of CO2. Such confirmation must be provided by the Storage Operator in collaboration with an independent third party.	1 July 2024
3. All **storage customer condition precedents** included in the storage agreements entered into by the Storage Operator (in connection with the tender for Firm Volume Capacity to store CO2 at the Stenlille Facility held in the period from 25 October 2023 to 8 December 2023) are satisfied (or waived).	16 May 2024

CO2RYLUS
STATUS UPDATE – 14 MAR 2024

MILESTONES REACHED
- GSD received the minister permit for conducting CCS activity
- License application for exploration and storage submitted

CONSTRUCTION PHASE
- GSD has started the construction phase of CO2RYLUS and expect to initiate supplier tenders within the next few months

RESERVOIR EVALUATION
- Further investigations of the Stenlille reservoir to bring more clarity to the total storage capacity
- The results are expected in the next 3-4 months, and will determine if, and in such case, how we can market further CO2 storage capacity

PUBLICATION OF CCS NEWS
- All news from GSD is published via our direct mail service on our website: https://gasstorage.dk/news/
- Subscribe for “Future storage news” if you want to follow our CCS activity

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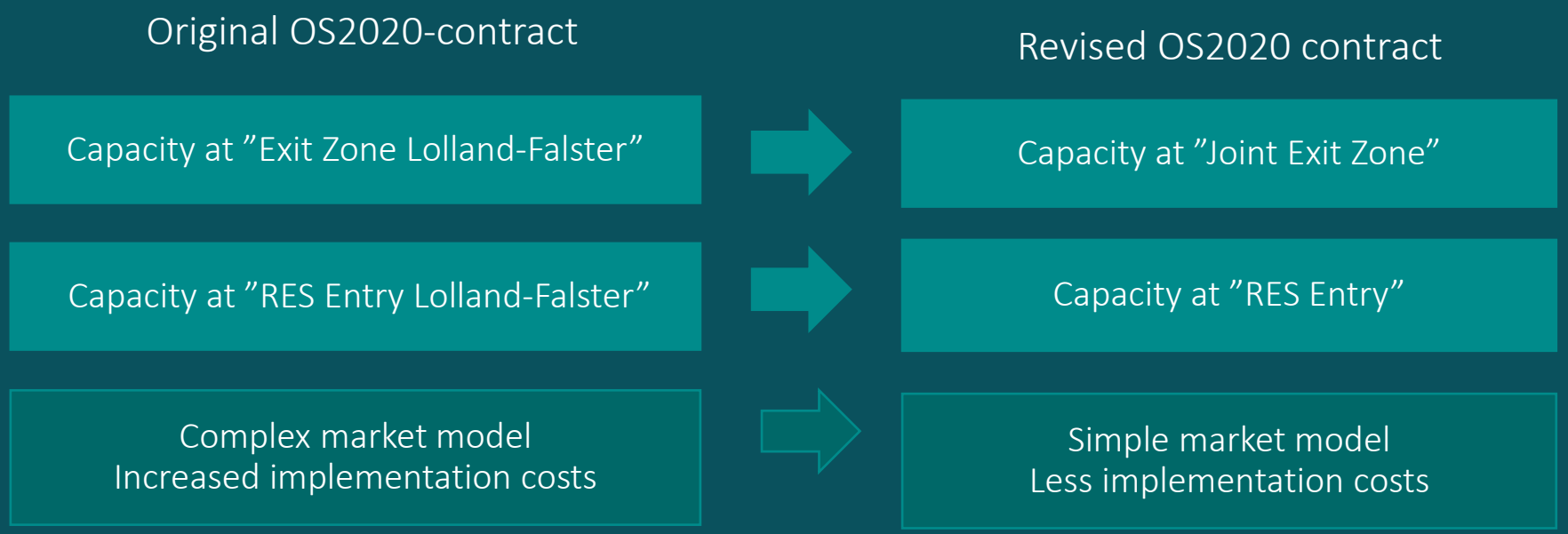
FINAL REMARKS

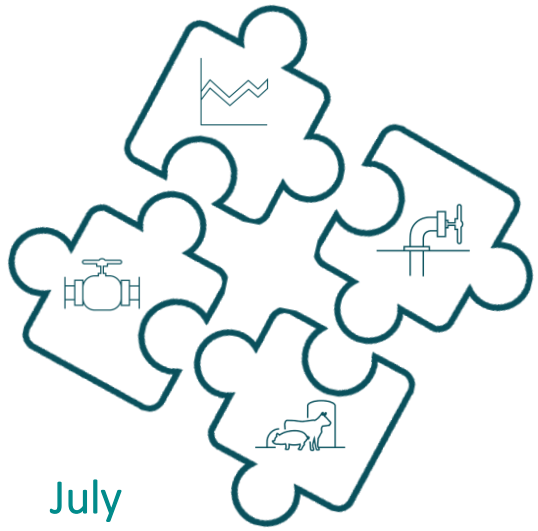
Clement Johan Ulrichsen, Energinet

CONSULTATION ON CHANGES IN THE ‘GREEN GAS LOLLAND FALSTER’ OPEN SEASON CONTRACT

Consultation period: 13 March - 3 April 2024. See Gas News for more info.



DATES AHEAD



March 27
Deadline for feedback on Evaluation of Gas Balancing Model

Q2
Northbound gas spec. at Ellund expected to be within Danish gas spec.

Q2
EU gas & hydrogen package enters into force

Apr 29
Deadline for feedback on consultation for tariff methodology for non-protected emergency customers

May 14
Deadline for feedback on Evaluation of Joint Balancing Zone

June
Expected shipper dialogue regarding the implementation of the EU gas & hydrogen package

July 1
Annual capacity auction

July
Green Gas Lolland Falster goes live

Q3/Q4
Expected shipper dialogue on possible adjustments to the balancing model

NEXT SHIPPERS FORUM: 13 JUNE 2024 (ONLINE)