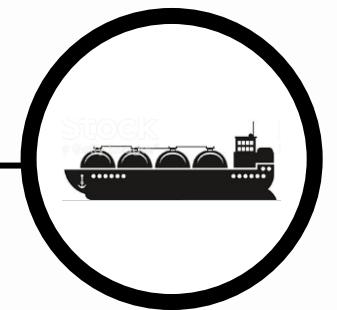


# Global & Regional Market Analysis

Natural Gas

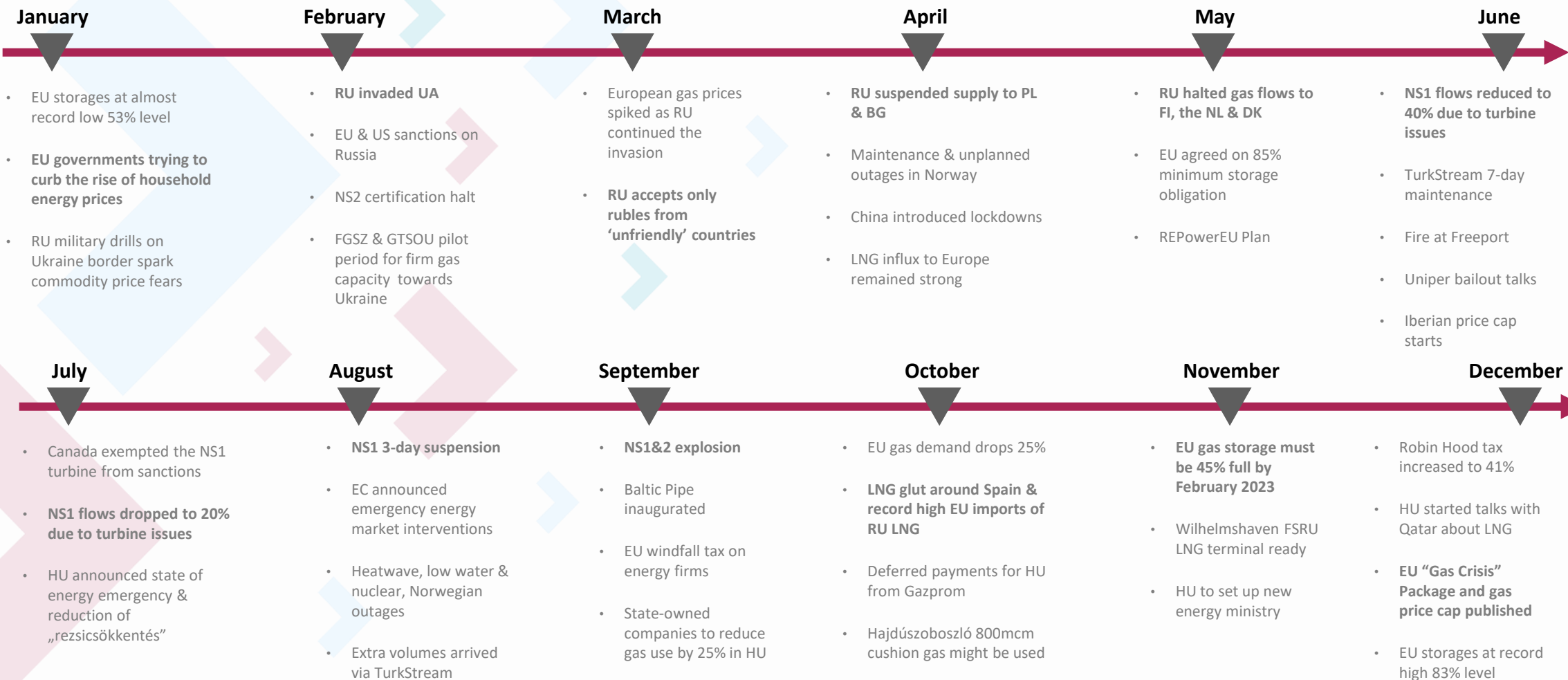
Annual review 2022

18/01/2023



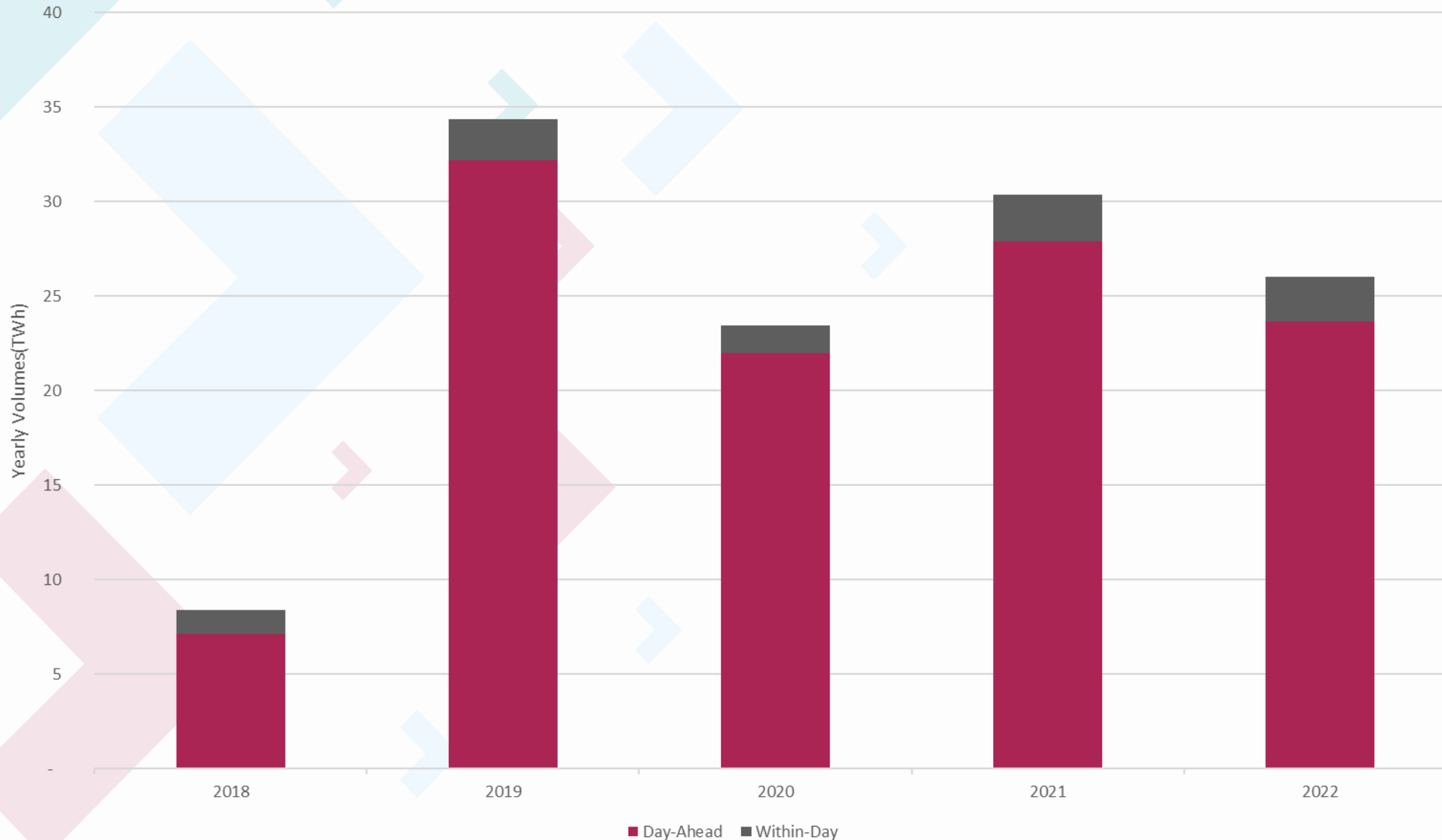


# Stories of the last year



# CEEGEX yearly traded volumes

Source: CEEGEX

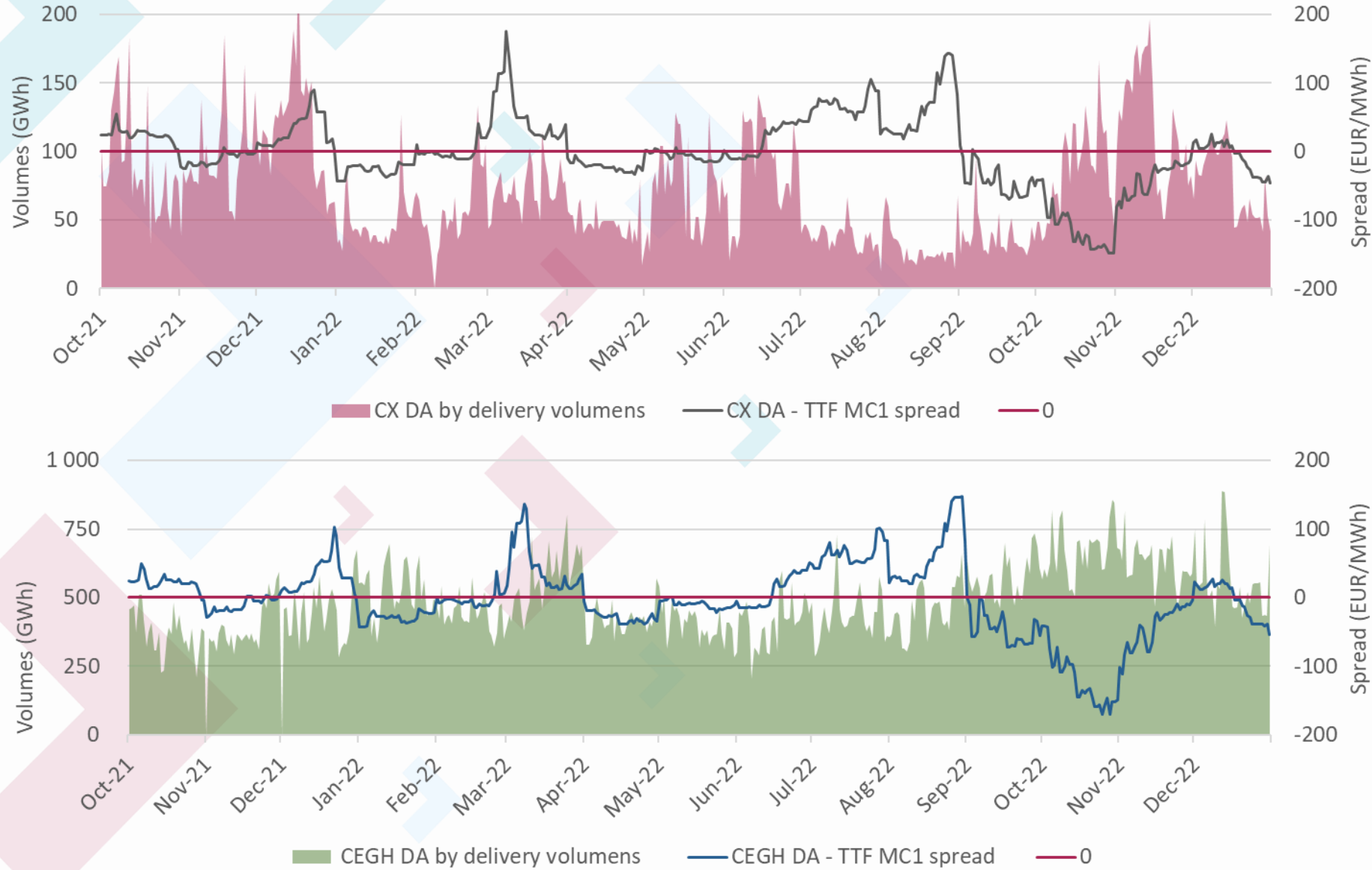


## EXPERT OPINION:

- Compared to the last year, Day-Ahead volumes decreased, but Within-Day volumes maintained last years level.
- CEEGEX DA – TTF FM MC1 spread was the strongest driver for traded volumes in 2022.

# TTF FM vs CX and CEGH spreads vs volumes by delivery

Source: CEEGEX, EEX

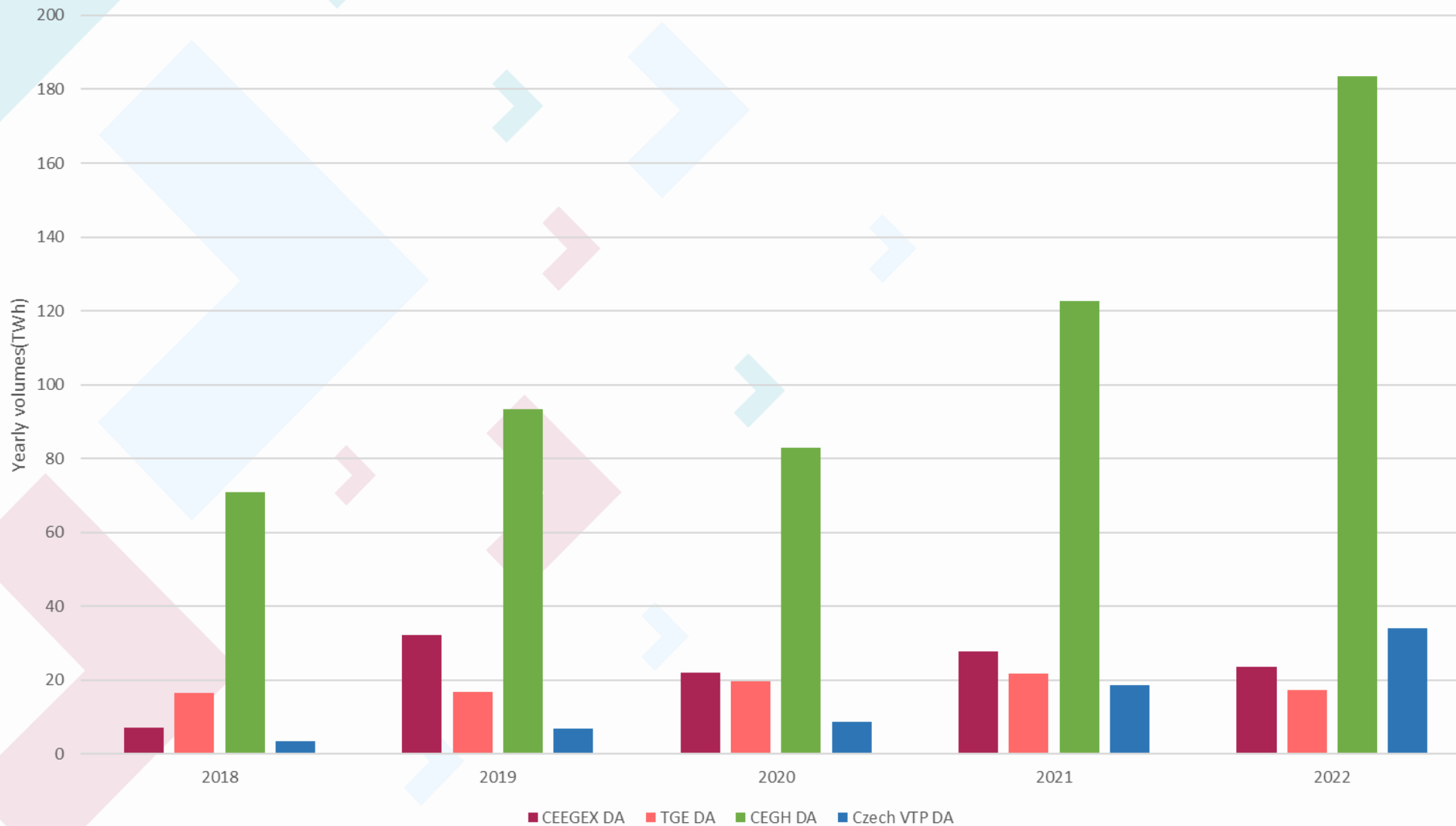


## EXPERT OPINION:

- Most of Gazprom's contracts with European countries are linked to the TTF FM index.
- Spot prices tended to remain below the TTF FM, thus European buyers had an incentive to buy gas on spot markets and to nominate lower volumes under their long-term contracts with Gazprom.
- Spot prices below the TTF FM were not associated with higher traded volumes on CEEGEX. In case of CEGH similar movements were observed.

# Regional scope DA markets

Source: CEEGEX, CEGH

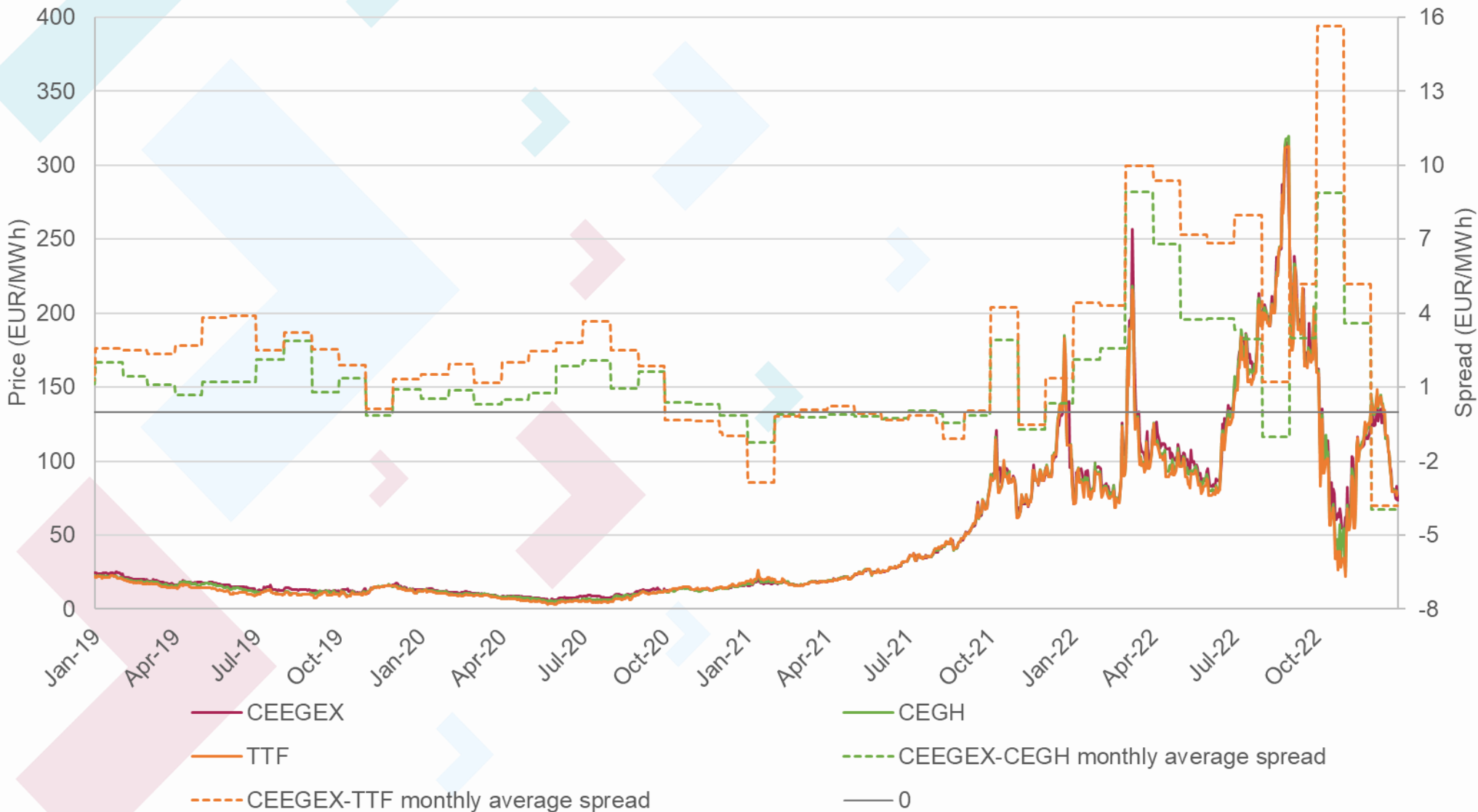


## EXPERT OPINION:

- Czech VTP volumes have been growing steadily since 2018 and overtook CEEGEX in traded volume in 2022.
- Czech VTP was constantly increasing the number of its members.
- CEEGEX DA and TGE DA volumes decreased compared to the last year.

# Regional prices and spreads

Source: CEEGEX, EEX, IEA

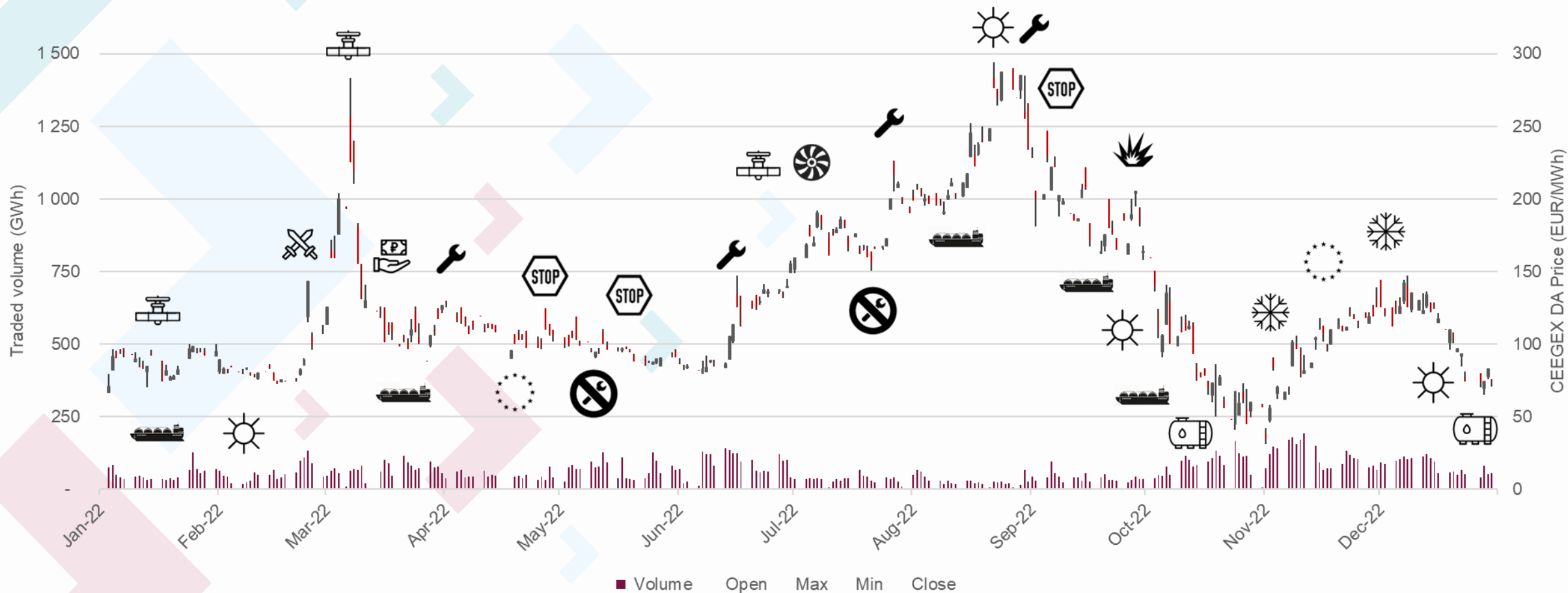


## EXPERT OPINION:

- In 2022 the CX-CEGH and CX-TTF spreads significantly widened. The spread went from negative to positive this year, but in Nov the spread narrowed and on some days its value went back to negative in Dec.
- In late Oct and Nov, the prices dropped to its lowest point in 2022. Overall imports to HU lowered, exports increased, and storage withdrawals started in mid Nov.
- Volatility remained strong on regional exchanges in this year.

# Japanese candles

Source: CEEGEX, ICIS

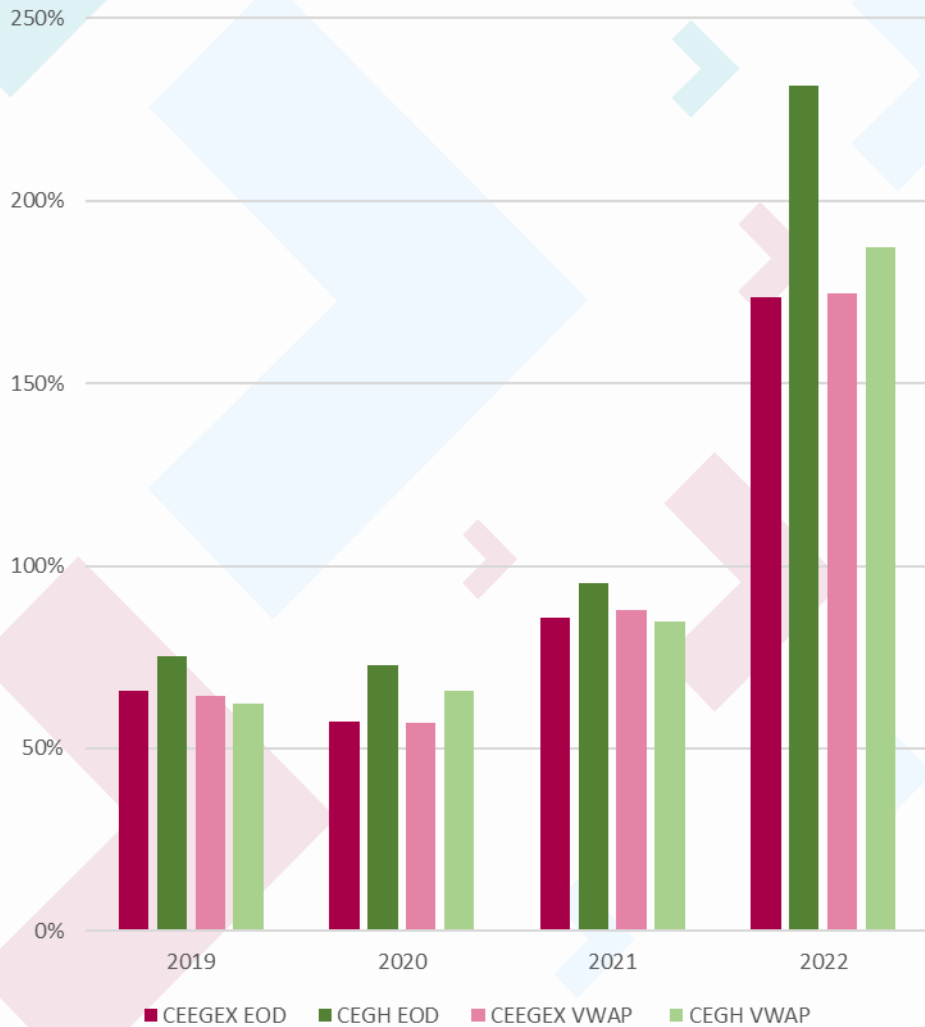


- High LNG influx
- Maintenance start
- Maintenance end
- High EU storage levels
- Reduction of RU flows
- Halt of RU flows
- Invasion of Ukraine
- Ruble payment
- EU agreement
- Turbine issues
- NS explosion
- Warm weather / Heatwave
- Cold weather

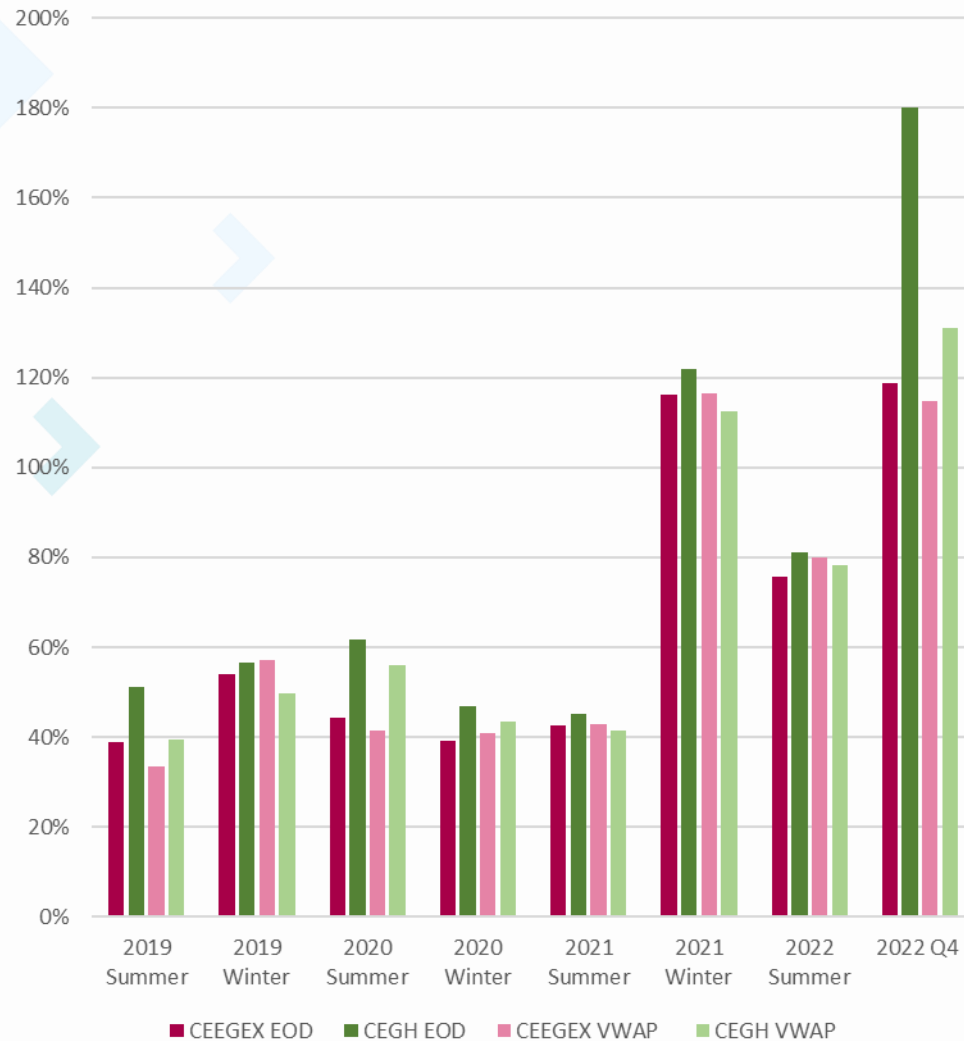
# Volatility

Source: CEGH CEEGEX

### Yearly volatility



### Seasonal volatility



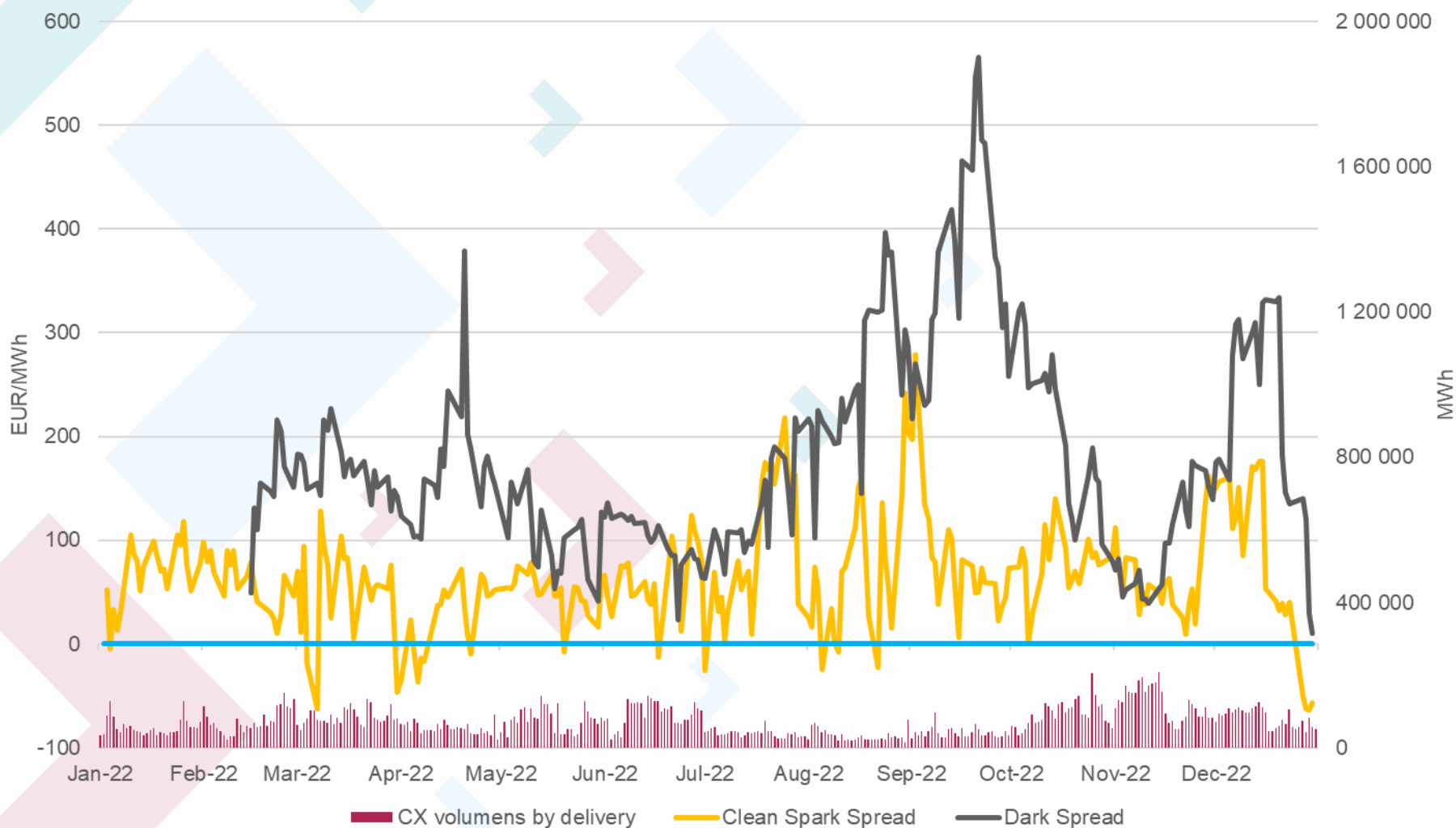
## EXPERT OPINION:

- A comparison of CEEGEX and CEGH prices in recent years basically shows that CEGH prices are slightly more volatile, with larger swings
- This difference mainly due to the liquidity and structure of the two markets and differences in the calculation of end-of-day prices.
- The most volatile of the closed seasons was the Winter of 2021 (the first time the price crossed the €100 and €200 levels and Russia invaded Ukraine)
- However, the record high price environment of the summer did not include such large volatility
- In contrast, the price falls of 2022 Q4 have been much more volatile



# FM Clean spark spread and dark spread

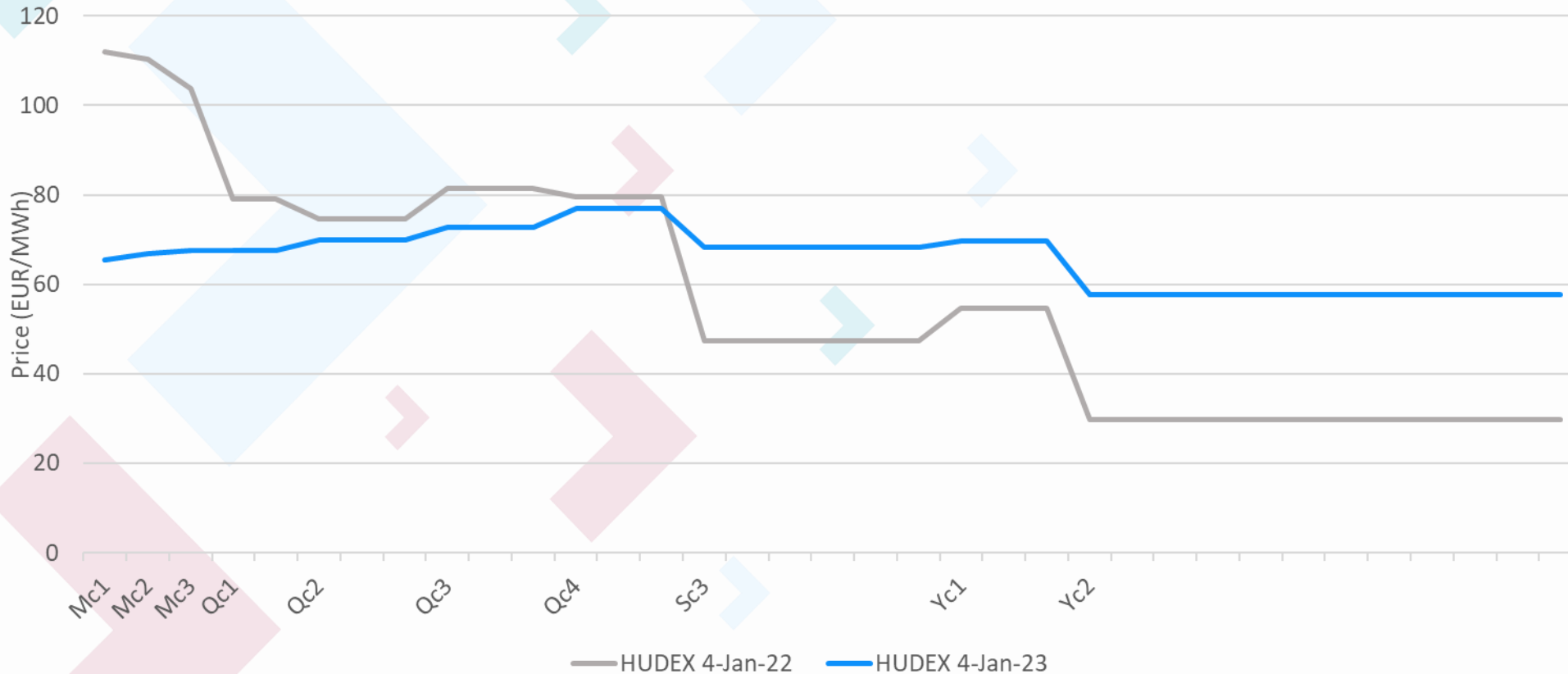
Source: ...



## EXPERT OPINION:

- The average CCS was 65 for the year, while the average DS was 180, which means power generation was profitable both from natural gas and coal, taking into consideration carbon costs.
- In September both the CSS and DS increased to their highest levels this year.
- The peak proved to be short-lived, and spreads decreased in the second half of the month. During the peak CEEGEX attained its lowest volumes for the year
- The CSS returned below 100 EUR/MWh – it was mostly in this territory during the year. But the DS remained above 200 EUR/MWh - to a higher level than so far this year.

# Forward curve

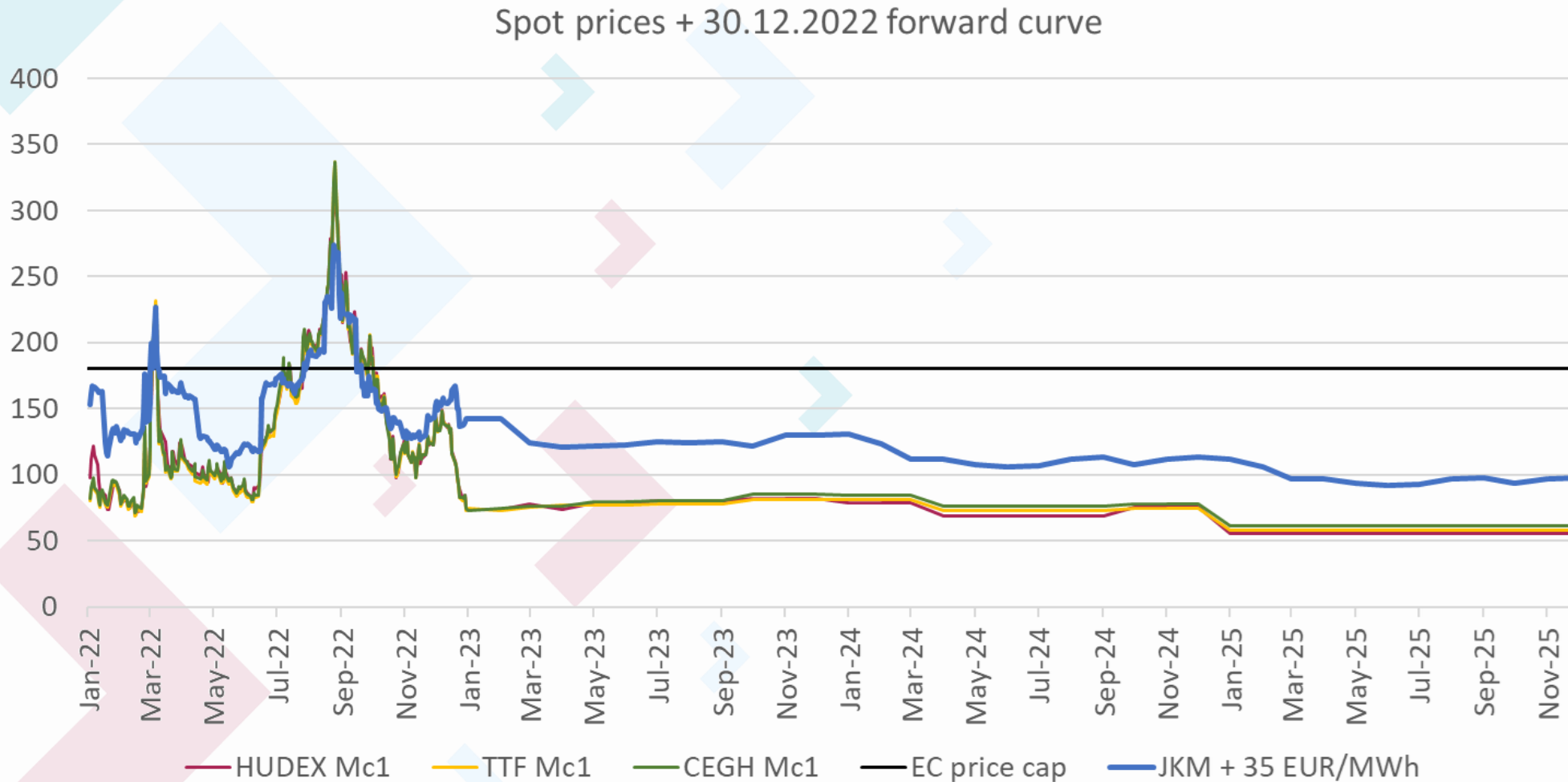


## EXPERT OPINION:

- Due to seasonal demand, the forward curve has historically shown significantly lower prices for the summer period.
- This trend started to disappear last year. The energy crisis and the war in Ukraine have made the market highly volatile and future prices less predictable.
- Nowadays, futures market prices for these products barely differ, and seasonality has almost completely disappeared.

# Gas forward curves and EC price cap

Source: EEX, CEEGEX, ICIS, Platts

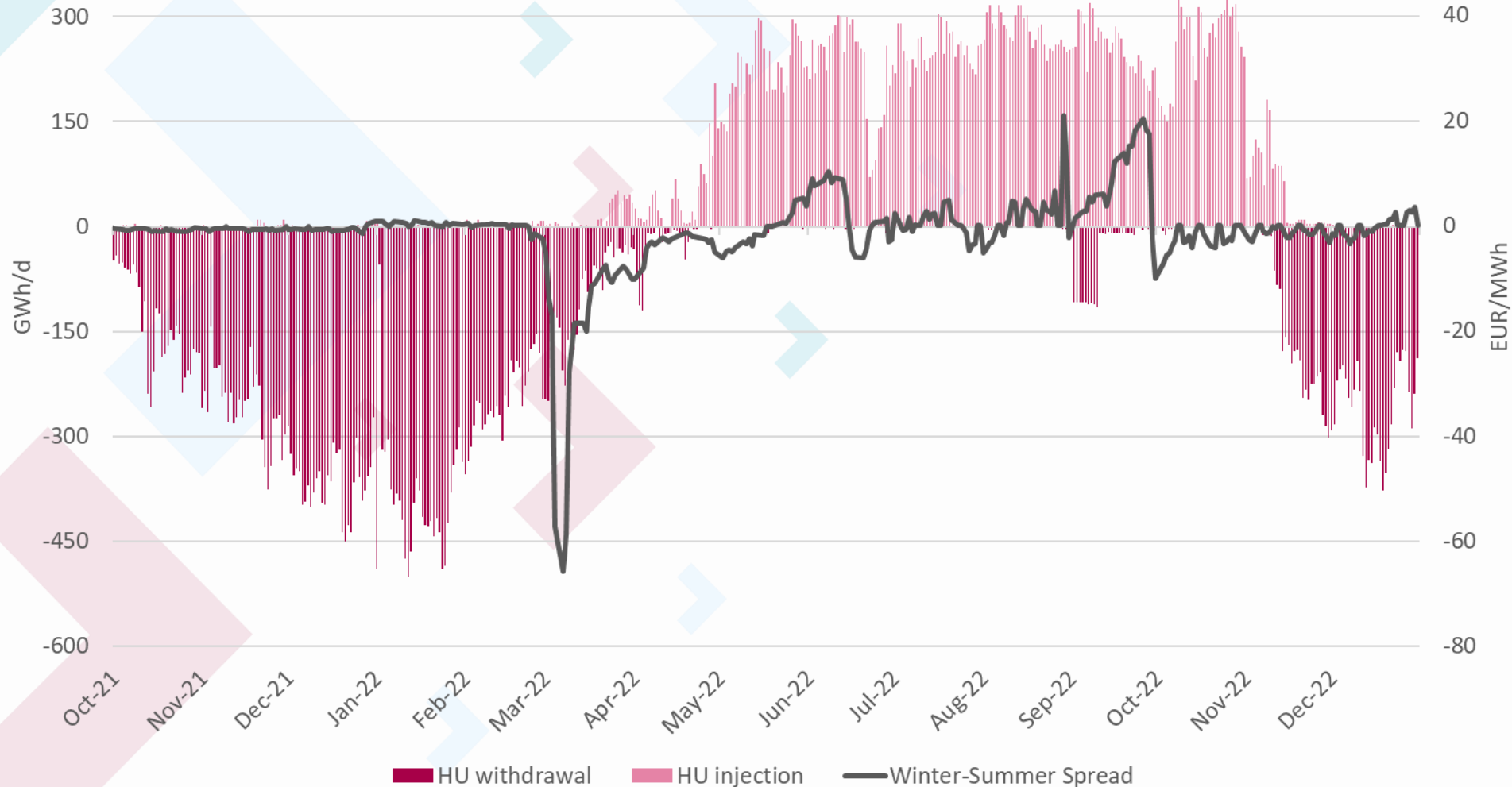


## EXPERT OPINION:

- Forward curves are on lower level than EC price cap
- There are marginal Winter-Summer spreads in 2023 and 2024.
- Based on JKM forward curve, JKM + 35 €/MWh price is much higher than expected in the future.
- ACER's LNG price assessment was not available at the time of the analysis.

# Winter-summer spread

Source: Refinitiv

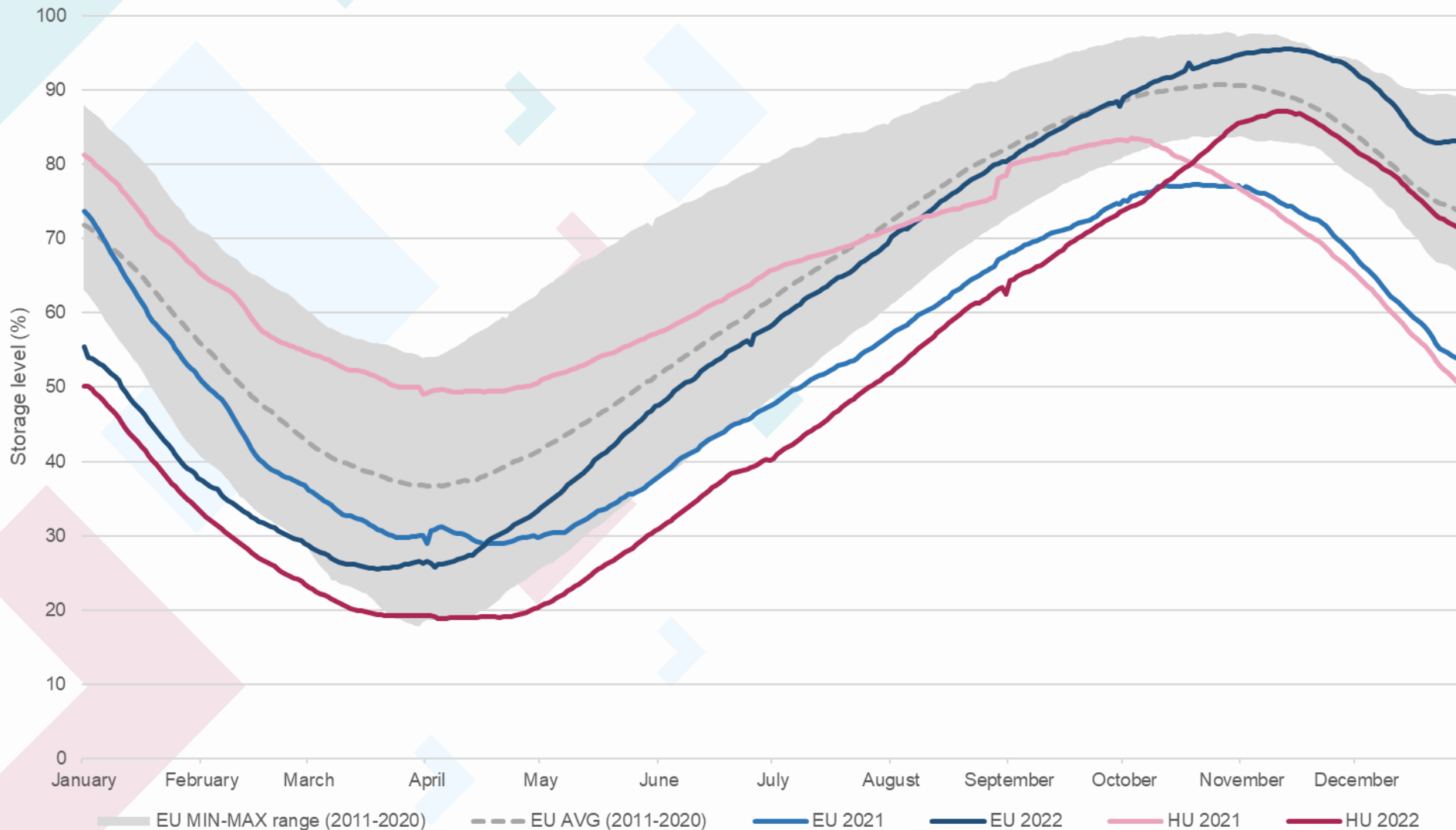


## EXPERT OPINION:

- The continuous bearish trend in May pushed the winter-summer spread back into positive range.
- However, the bullish mid-June prices pulled the spread back into negative.
- The larger swings are mainly due to uncertainties about the European gas supplies. According to the market expectations, these will be followed by a prolonged correction, which will remove the seasonality of the natural gas prices and maintains the negative spread.
- The role of the spread has decreased in case of withdrawals/injections compared to previous years.

# Gas storage level in EU and HU

Source: AGSI, ICIS, MEKH

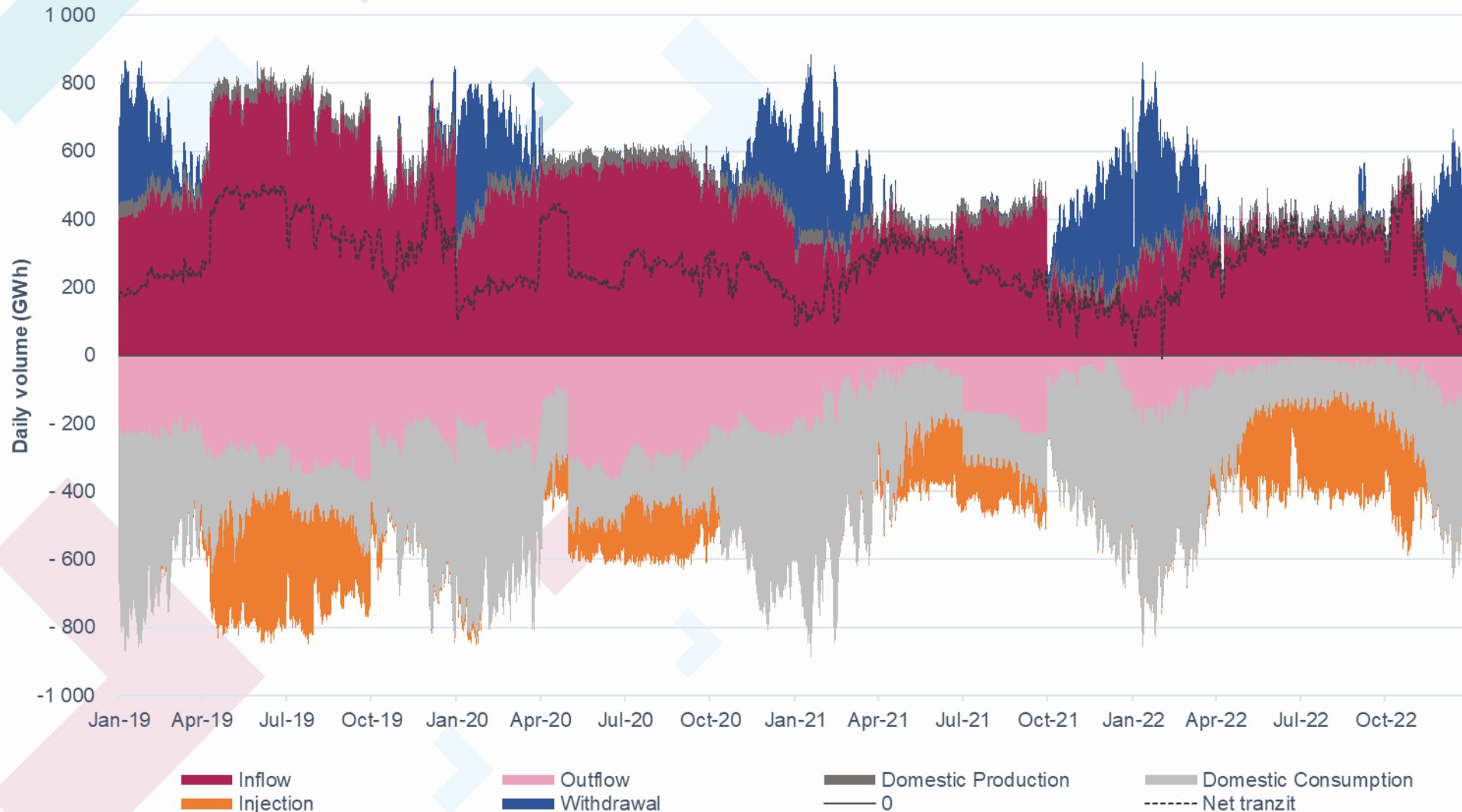


## EXPERT OPINION:

- Europewide withdrawals started in the middle of November. The pace of Hungarian withdrawals was higher than the European average most probably due to lower imports.
- European aggregated storage levels exceeded 90% by the end of Oct approaching the highest values of the last 10 years.
- Hungarian storage levels peaked at 87% of the total storage capacity by the middle of November.
- EU storages turned to injection in December.
- EU gas storage must be at least 45% full on average on 1 Feb 2023 to safeguard the bloc's energy security, the EC said on 24 Nov.

# Hungarian gas market balance

Source: AGSI, FGSZ

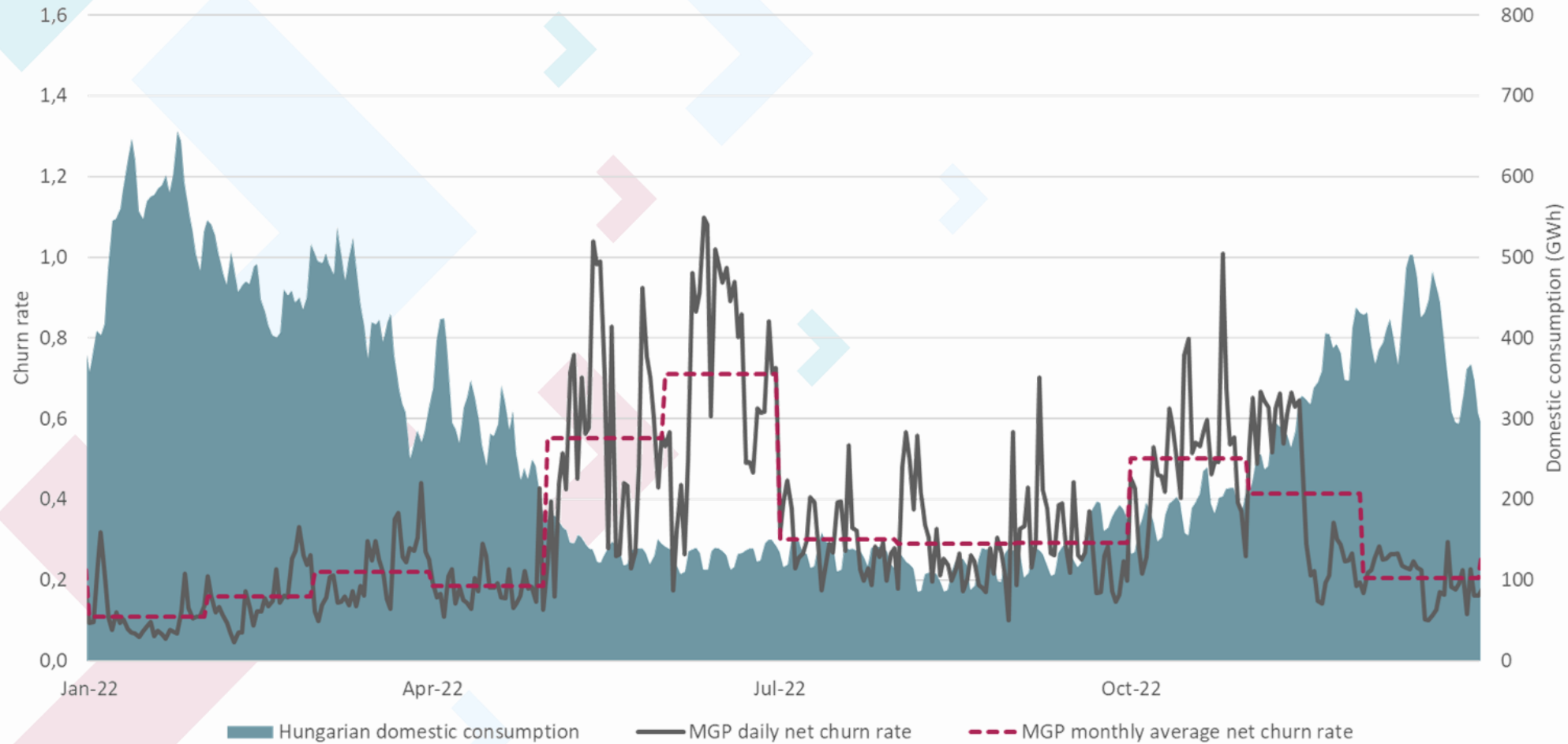


## EXPERT OPINION:

- Domestic consumption decreased below the 3-year values, even below the pandemic years.
- Injections ramped up in 2022 due to EU storage filling obligations, withdrawals started with one month delay. In Dec the pace of withdrawals slowed down due to mild weather.
- Domestic production could not increase.
- Overall imports remained on similar level to 2021, but significantly dropped after UA transit flows disappeared. Exports also decreased by 1/3.

# CEEGEX churn rate

Source: FGSZ, CEEGEX



## EXPERT OPINION:

- Daily churn rate hit record level on the beginning of summer 2022.
- The average monthly churn rate was high during June 2022 due to the higher liquidity on CEEGEX Spot Market.
- The average yearly churn rate was higher in 2022 than in 2021.
- Annual churn rate increased to 0,33 in 2022.



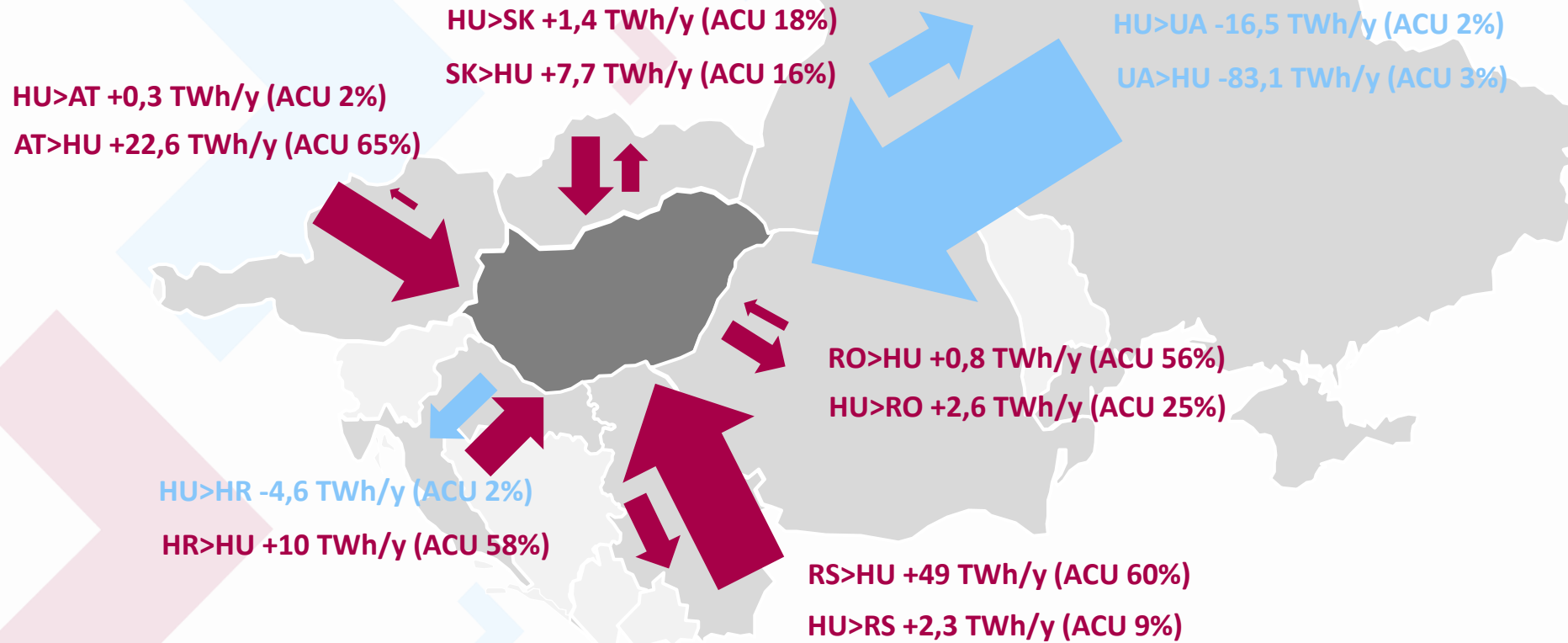
# HU cross border allocations in 2022

Source: AGSI, FGSZ

 Flows increased

 Flows decreased

ACU = Annual capacity utilisation rate (%)

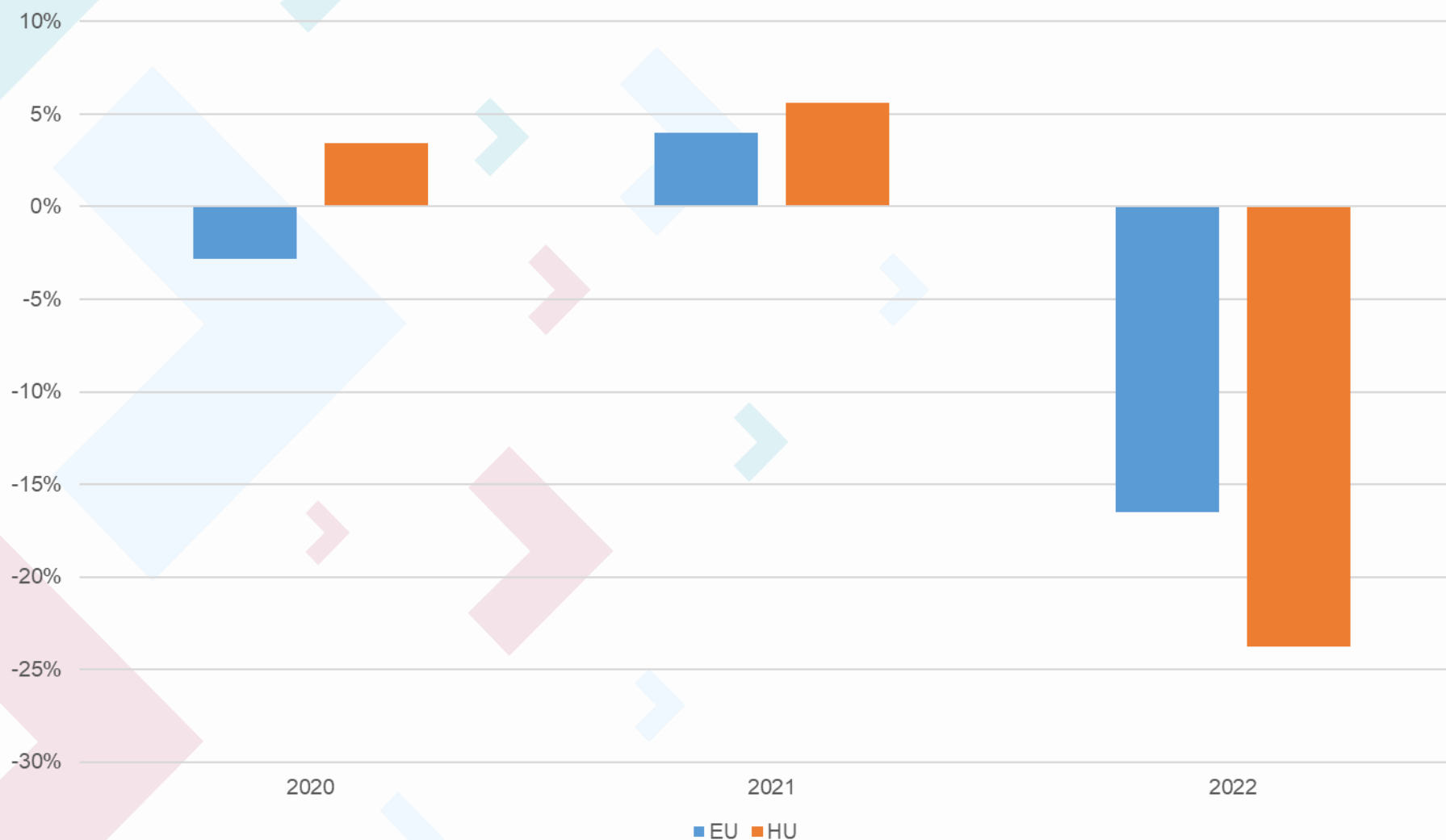


## EXPERT OPINION:

- Total HU export in 2022 was 23,4 TWh/y (-38% YoY change)
- Total HU import in 2022 was 124,6 TWh/y (+5% YoY change)
- HU net import-export +26% YoY change
- In 2022 RS imports became dominant, followed by flows from AT in line to the long term gas contract
- SK and HR imports ramped up (infrastructure, Krk)
- AT and RO exports rose due to capacity increase
- Former transit flows to UA, HR and RS also lowered in comparison to historical volumes.



# Natural gas demand changes

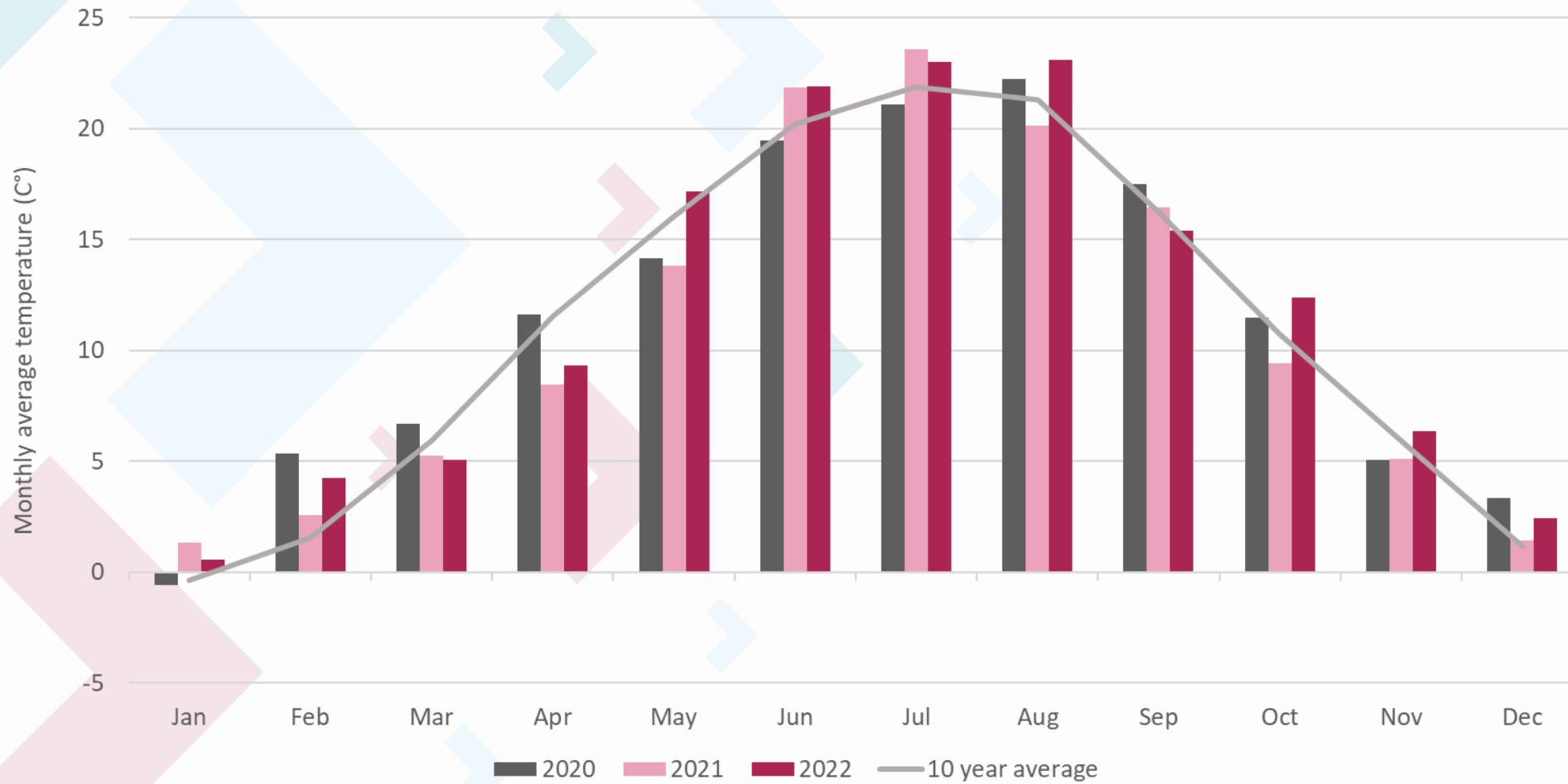


## EXPERT OPINION:

- In 2022 European gas demand decreased significantly on a YoY basis, even compared to last years change. Hungarian demand followed a similar pattern.
- Natural gas demand was decreased nearly every month. According to ICIS the September was even lower than the five-year average.
- Data for the European Union for November and December, was estimated based on last year's monthly change.
- Year 2019 was used as base year.

# Annual temperatures

Source: OMSZ

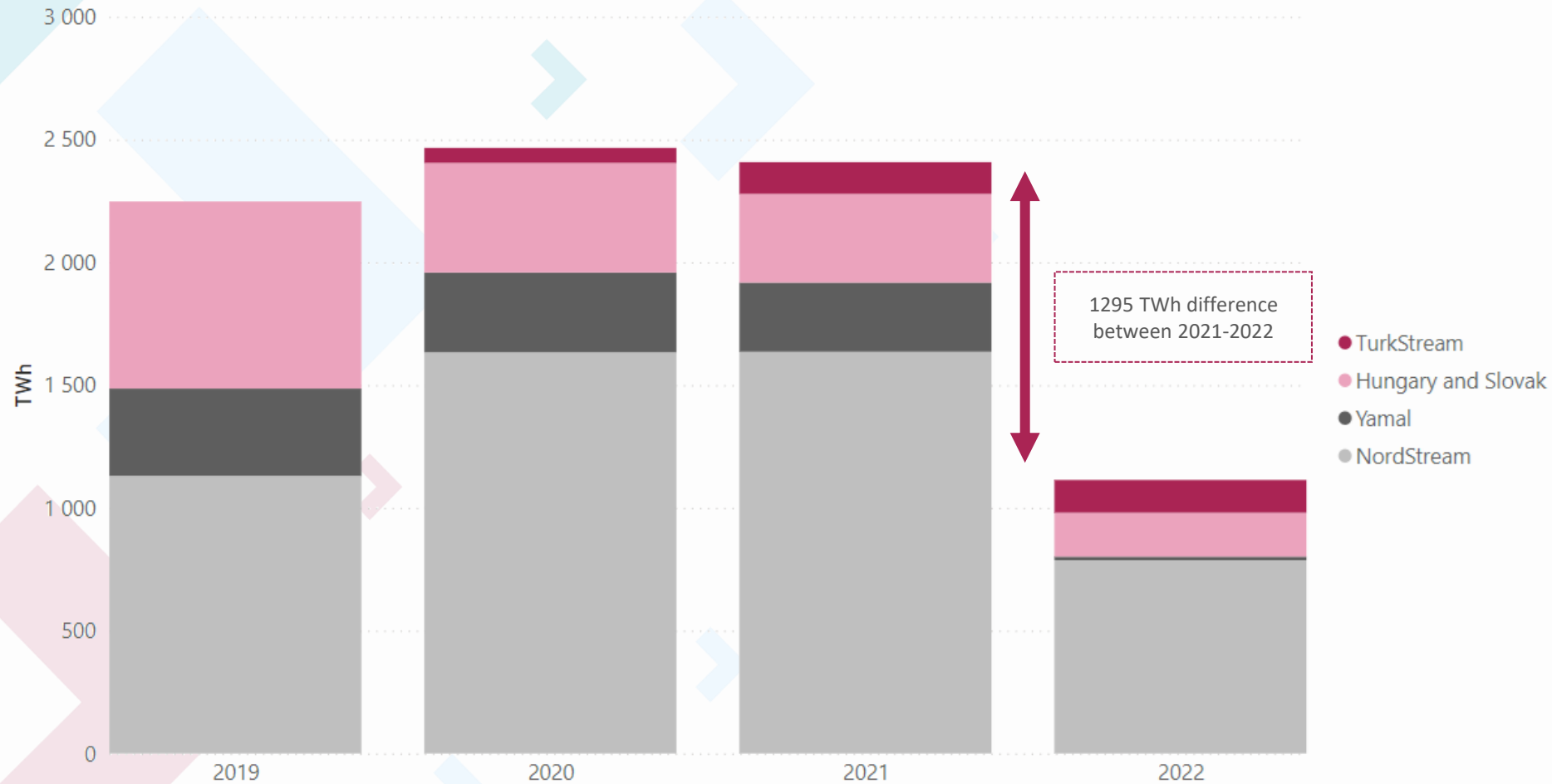


## EXPERT OPINION:

- The average monthly temperature only fell below zero in January 2020, apart from that the weather was mild in the heating season.
- 2021 was the coldest of the last three years, resulting in high domestic consumption.
- In October 2022, the weather was exceptionally high. Although it fell sharply in November, it has been warmer ever since, than the usual, which could imply a colder Spring in 2023.

# Russian Flows

Source: ENTSO-G

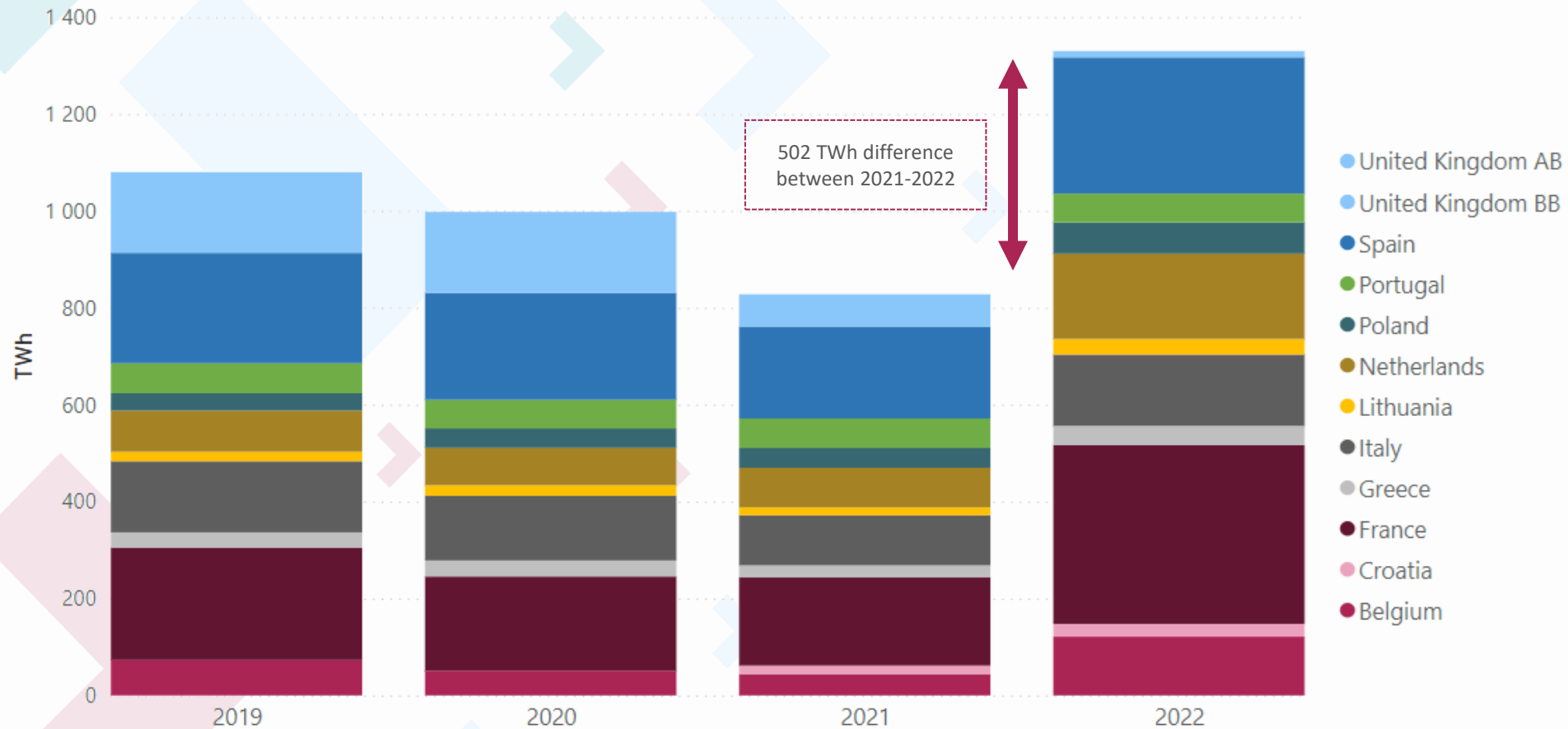


## EXPERT OPINION:

- The volumes from Russia on the Brotherhood Pipeline appear to have been decreasing year on year, while the NordStream pipeline to Germany has been increasing.
- The ongoing war between Russia and Ukraine since February 2022 and the subsequent European Union sanctions have reversed previous trends.
- The Yamal and NordStream pipelines were almost completely shut down in 2022, while gas flows from Turkey to Hungary have increased.

# LNG Send-Outs\* by European countries

Source: ALSI



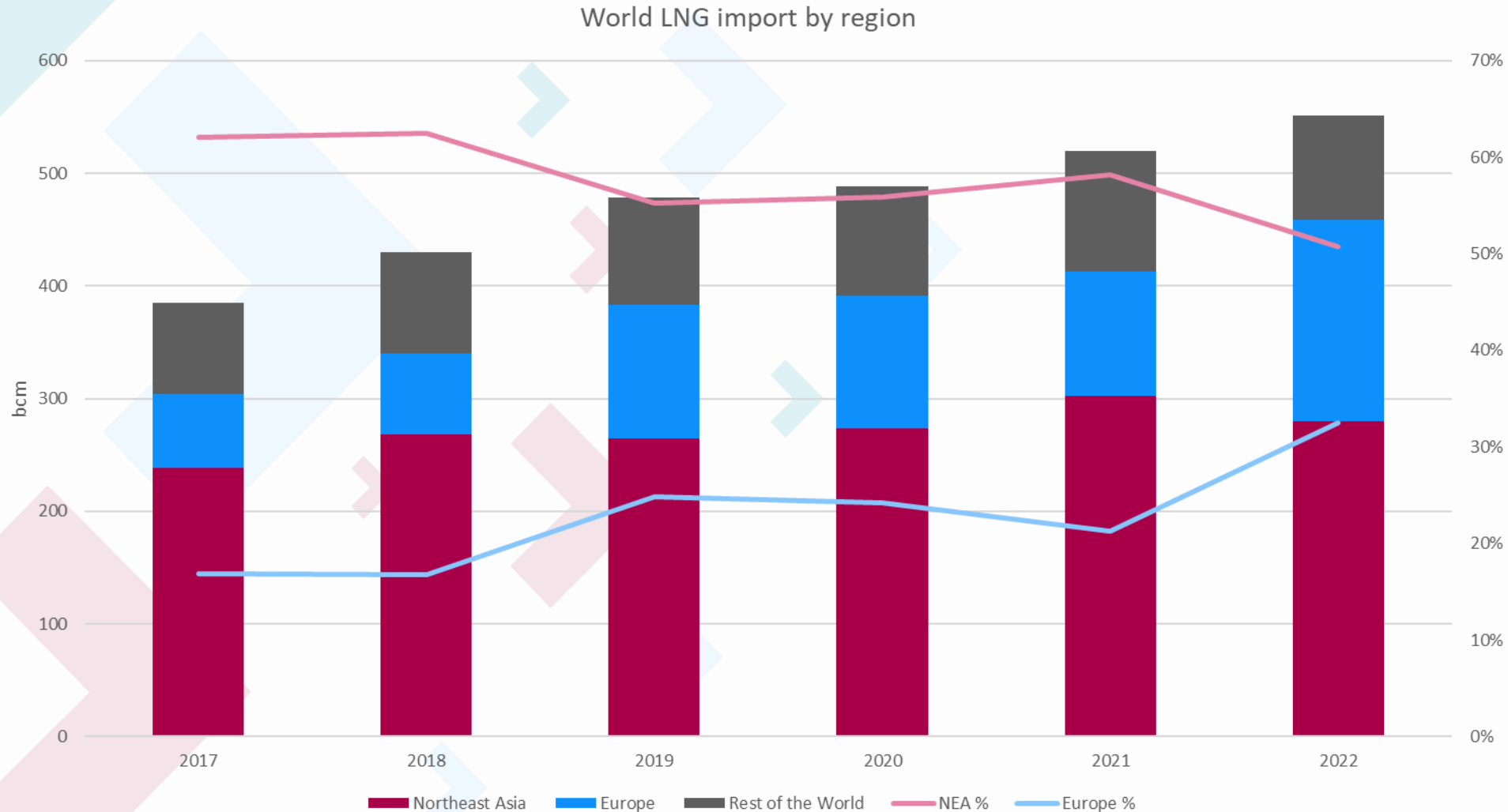
## EXPERT OPINION:

- Compared to previous years, there has been a significant increase in the volume of LNG shipped to Europe in 2022.
- One reason is Europe's independence from Russia's pipeline gas.
- This has pushed up the prices of gas purchases in Europe.
- Asian demand has also slowed down. Australian exporters serve that region.
- It has attracted the world's biggest exporters: USA, Qatar.

\*Send-Out = Aggregated gas flow out of the LNG facility

# Northeast Asia, the main competitor of the EU's LNG demand

Source: Refinitiv

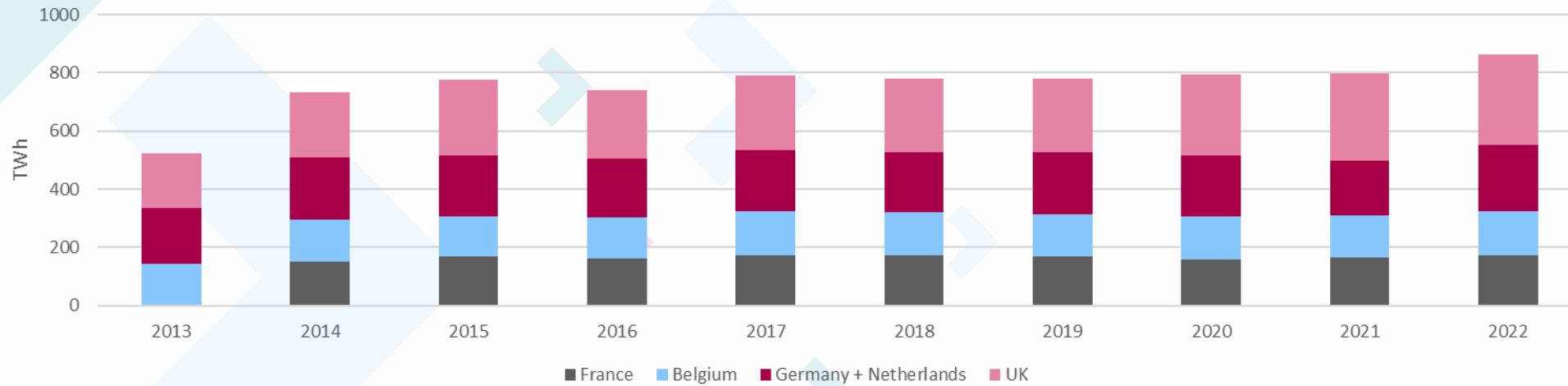


## EXPERT OPINION:

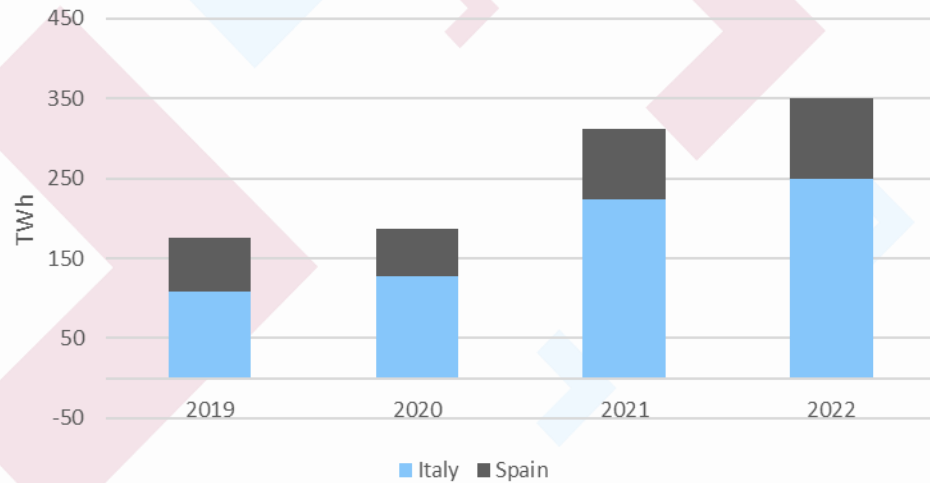
- World LNG imports continue to grow in 2022.
- Northeast Asian countries imported the most LNG in last year
- However, the European energy crisis and the loss of Russian flows have led Europe to increase its LNG imports by 40%.
- The high price environment in Europe has attracted LNG to European ports.
- These volumes have mainly been moved from the (South and Noreast) Asian market to the European customers.
- At the same time, South American LNG imports have also decreased compared to the previous year, but this is mainly due to unusually high volumes imported in 2021.

# Norwegian & Algerian flows

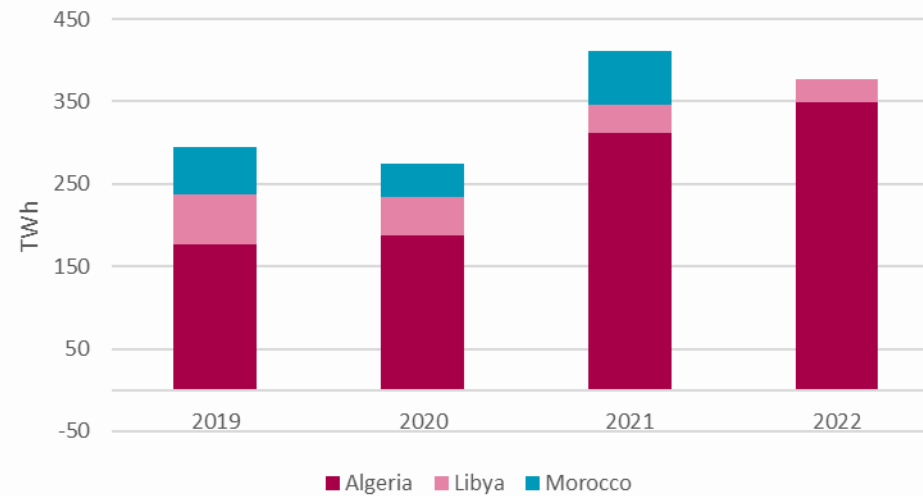
Norwegian flows



Algerian export



North African export to EU



## EXPERT OPINION:

- Natural gas imports from Norway have increased last year to record level
- Most of the imports are destined for the continent (mainly Germany and the Netherlands)
- However, UK imports also increased
- Pipelines to the continent were operating at near full capacity
- The Algerian flows also increased in 2022
- However, the total North African export decreased since Morocco stopped exporting and started to import natural gas from Spain

# Infrastructure developments in 2022

Source: ICIS, CEEnergynews, LinkedIn, Montel, NRGreport, Reuters

1

## GIPL:

- Poland – Lithuania - Access to Lithuanian LNG
- Became operational: 1 May 2022
- Capacity: LI>PL 1.9 bcm/y PL>LI 2bcm/y

2

## Baltic pipe:

- Norway – Denmark - Poland
- Became operational: 27 September 2022
- Length: 275 km
- Capacity: NO>DK>PL 10bcm/y / PL>DK 3bcm/y

3

## GIPS:

- Poland - Slovakia
- Became operational: November 2022
- Length: 165 km
- Capacity: SK>PL 5.7 bcm/y PL>SK 4.7 bcm/y

4

## IGB:

- Greece – Bulgaria
- Became operational: 1 October 2022
- Length: 180 km
- Capacity: 3-5 bcm/y

9

## Finland's first FSRU anchors in Inkoo

- Became operational: on 28 Dec 2022
- It will serve Finland, Estonia, the Baltic Sea region (10-year charter agreement)
- The vessel can provide more than 5 bcm/y

5

## Eemshaven FSRU LNG terminal

- Became operational: 19 September 2022
- Reach its full capacity in Nov-Dec
- Total capacity: 8 bcm/y

6

## Csanádpalota capacity increase

From 1.75 bcm/y to 2.5 bcm/y

7

## Hungary opened its 3rd LNG filling station

8

## Wilhelmshaven FSRU LNG terminal

- Completed on 15 Nov in just 200 days
- expected to be operational early 2023

