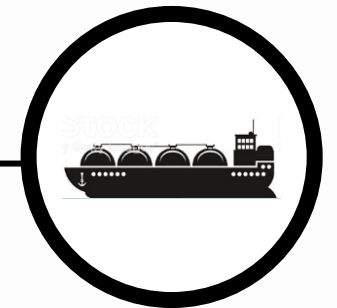


# Global & Regional Market Analysis

Natural Gas

November 2022

21/12/2022





# Stories of the recent weeks

Russian flows have remained at 0% on the NS1 and Yamal, subdued flows via UA were not suspended, while flows via TurkStream remained stable. Gazprom threatened to cut flows to Moldova on 28 Nov due to a surplus accumulated in UA.



On 22 Nov the EC proposed a cap of €275/MWh for FM TTF products from Jan, but EU ministers failed to agree on it, accepted only joint gas buying & new LNG index. EU gas storage must be at least 45% full on average on 1 Feb 2023 the EC said on 24 Nov.



The German government plans to cap gas and electricity prices in March 2023 retroactively covering prices from Jan. Brussels green-lights nationalization of Gazprom's German arm renamed to SEFE.



The Hungarian government announced that a new independent Ministry of Energy will be established on 1 Dec under the leadership of Csaba Lantos.

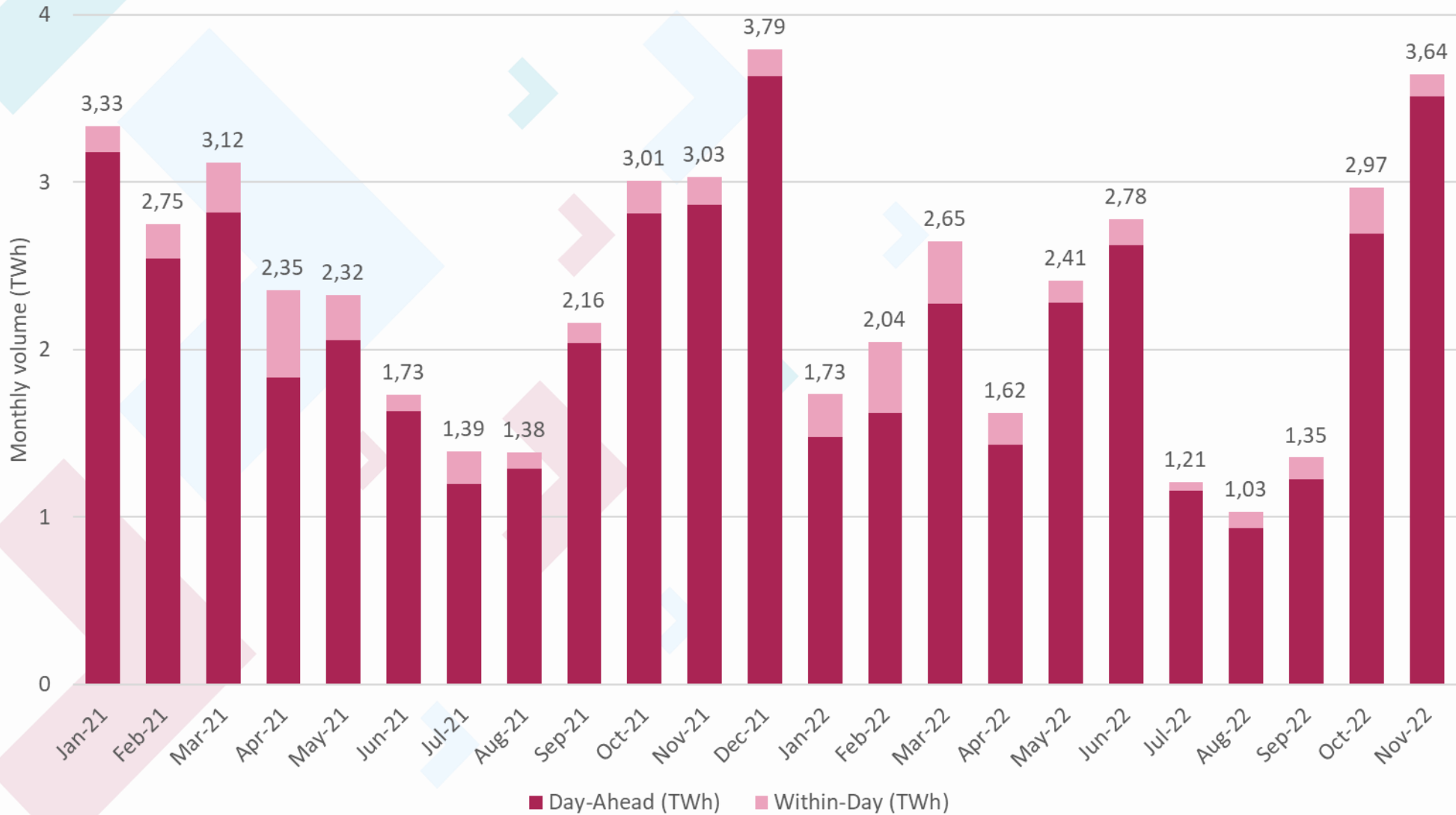


Germany completes Wilhelmshaven FSRU LNG terminal in 200 days. US Freeport LNG announced on 18 Nov that the operator is targeting a mid-December start date for initial production.



# CEEGEX monthly traded volumes

Source: CEEGEX

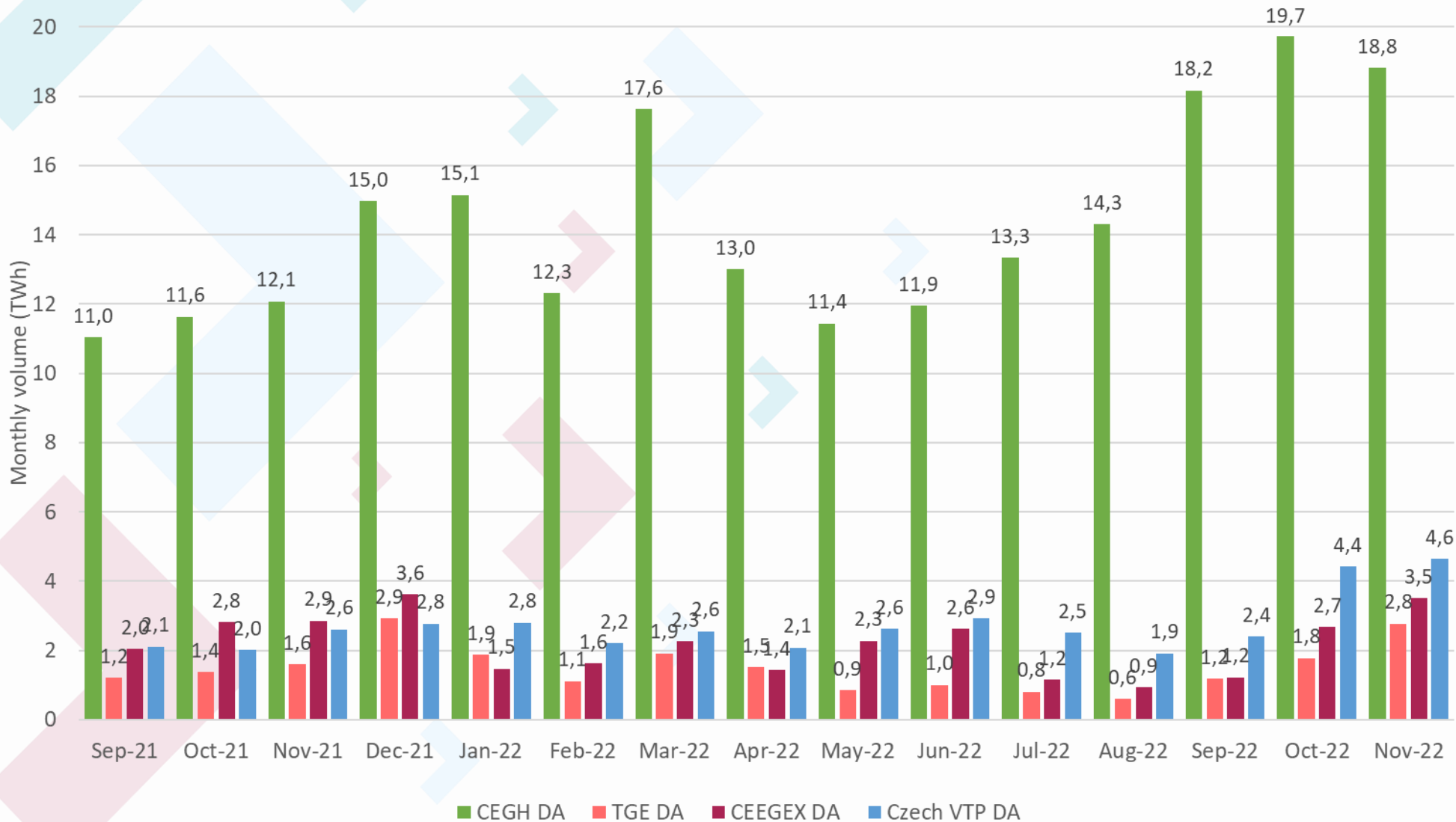


## EXPERT OPINION:

- CEEGEX traded volumes exceeded 2021 Nov and there was also a new record in traded daily volumes.
- Higher trades can be attributed most probably to the fact that CX prices were below CEGH DA and TTF DA prices in the second half of Nov.
- The TTF FM-spot spread was still in the negative territory in Nov, however, in Dec it is expected to change.

# Regional scope DA markets

Source: CEEGEX, CEGH

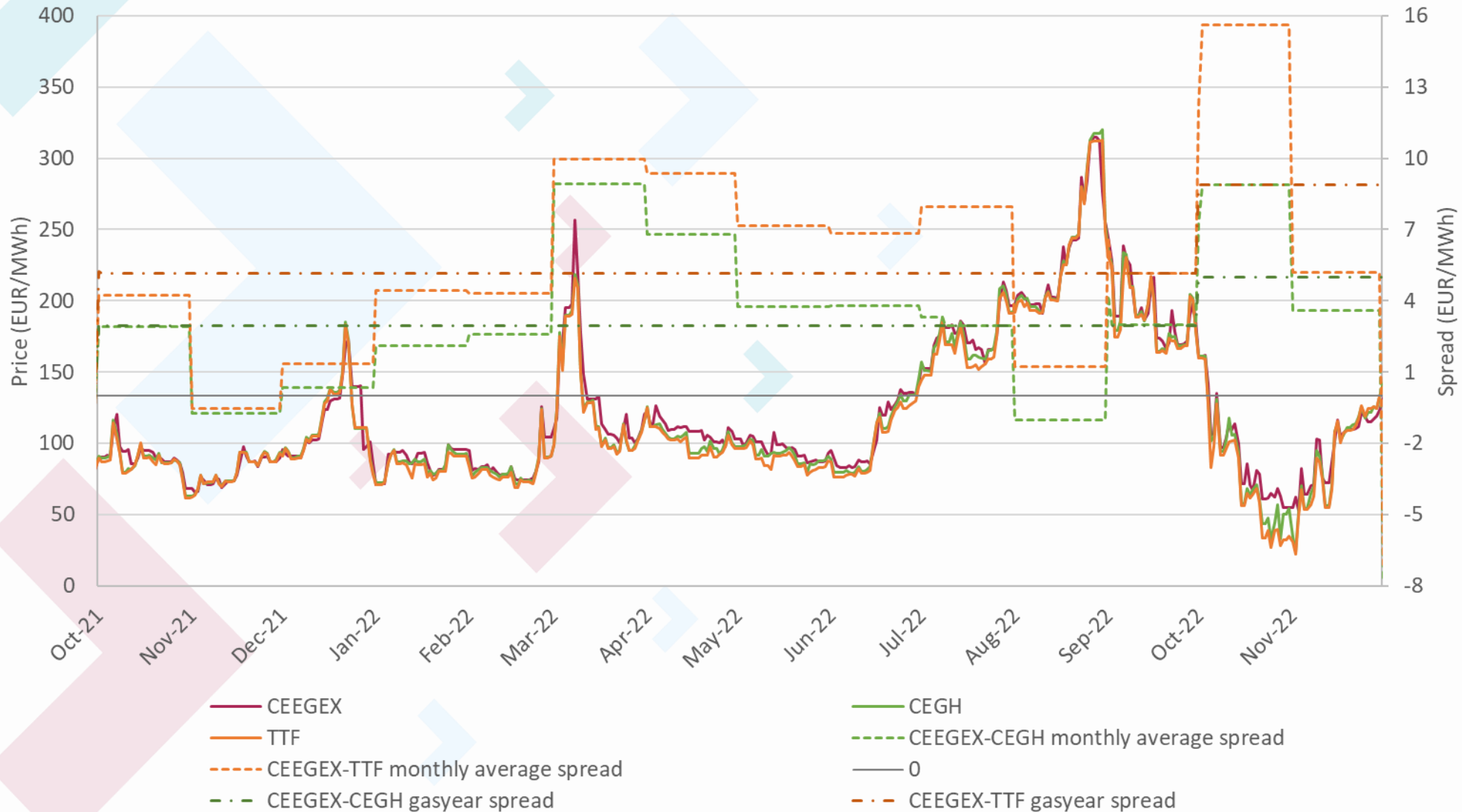


## EXPERT OPINION:

- Similar increase in volumes is observable on the Polish and Czech markets, while CEGH DA volumes are not expected to reach Oct level.
- In Nov gas flows were both directed from IT to AT and the opposite direction. (In the second half of October only IT>AT flows were detected).
- AT>HU flows lowered in the second half of Nov.
- In the second half on Nov HU>SK flows ramped up.

# Regional prices and spreads

Source: CEEGEX, EEX, IEA

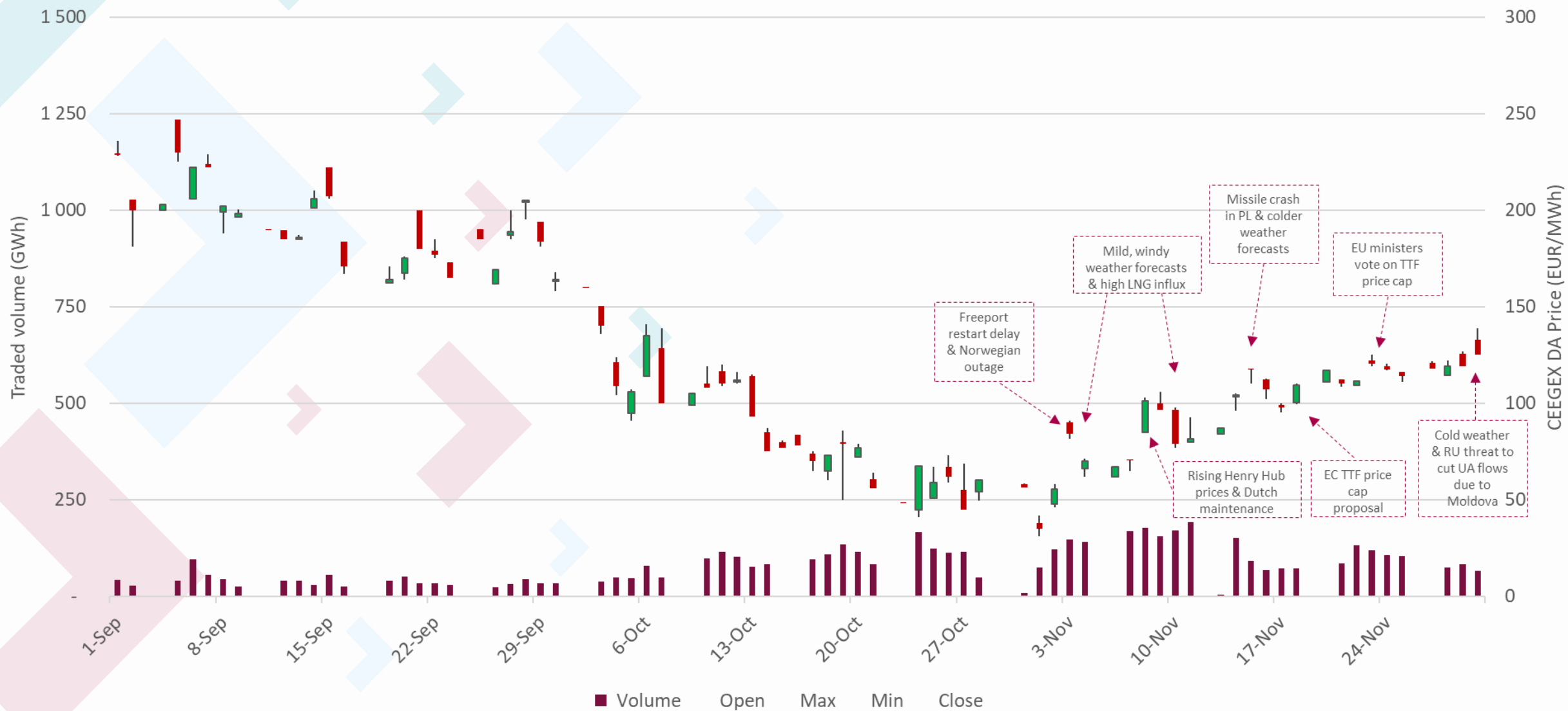


## EXPERT OPINION:

- In Oct the CX-CEGH and CX-TTF spreads significantly widened. But in Nov the spread narrowed and on some days its value was even negative.
- In Nov, on overall imports to HU lowered, exports increased and storage withdrawals started.

# Japanese candles

Source: CEEGEX, ICIS

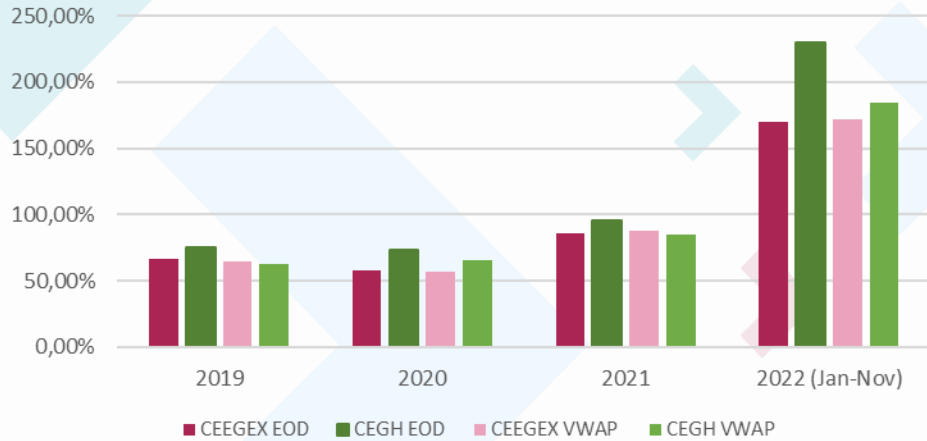


■ Volume    Open    Max    Min    Close

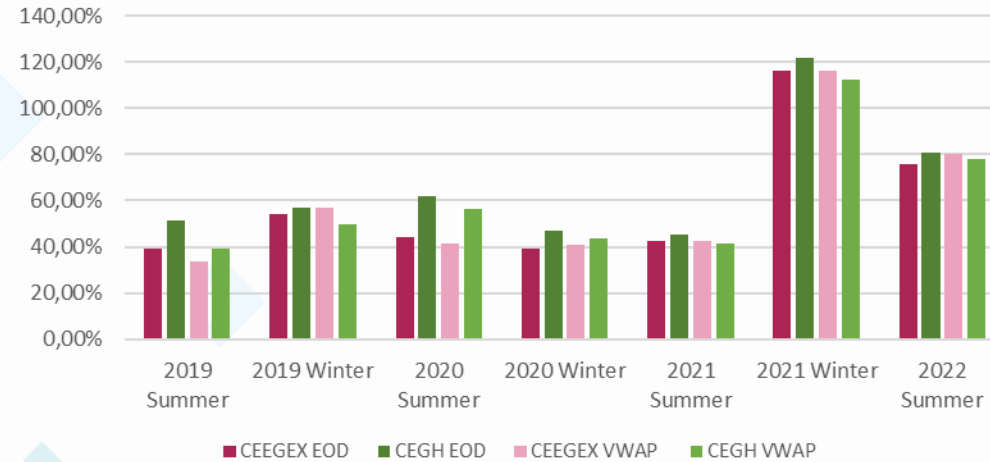
# Volatility

Source: CEGH CEEGEX

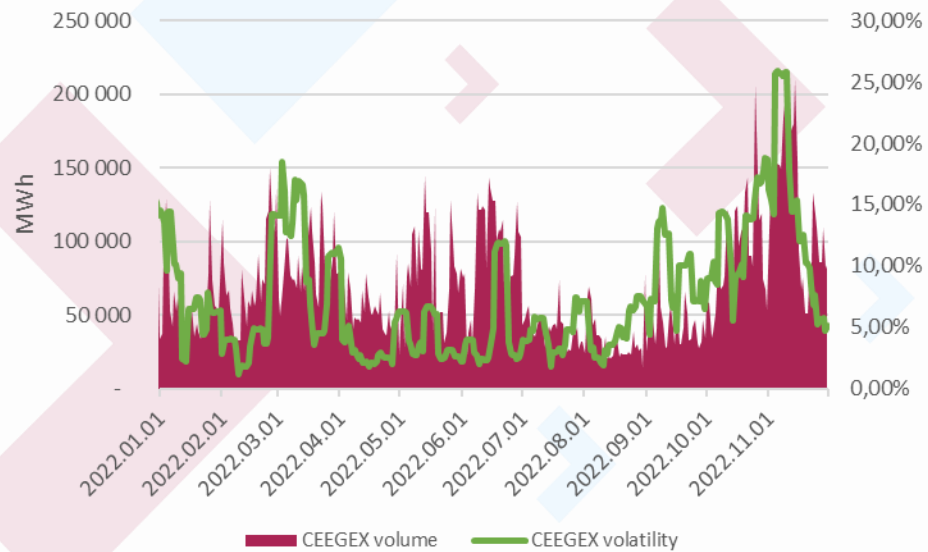
Yearly volatility



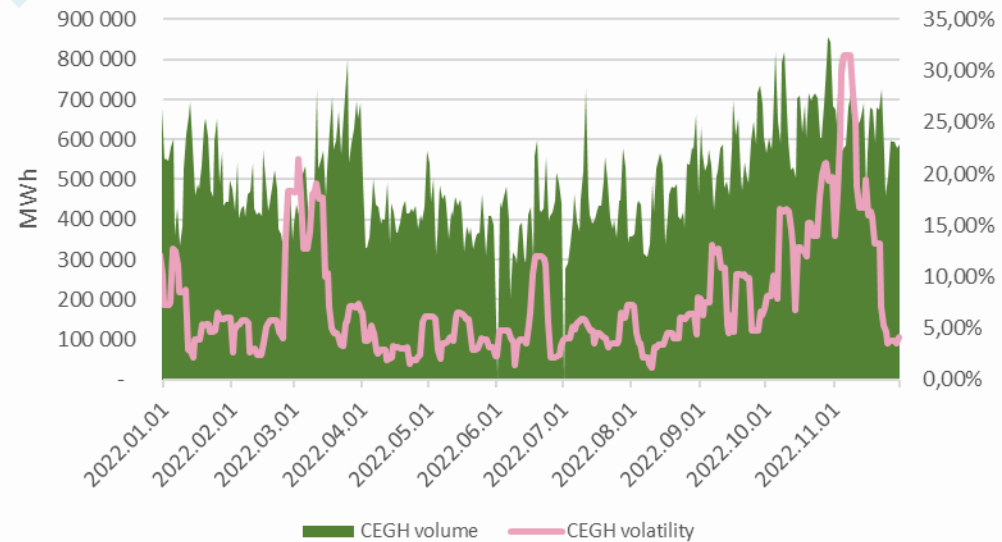
Seasonal volatility



CEEGEX volatility & volumes



CEGH volatility & volumes

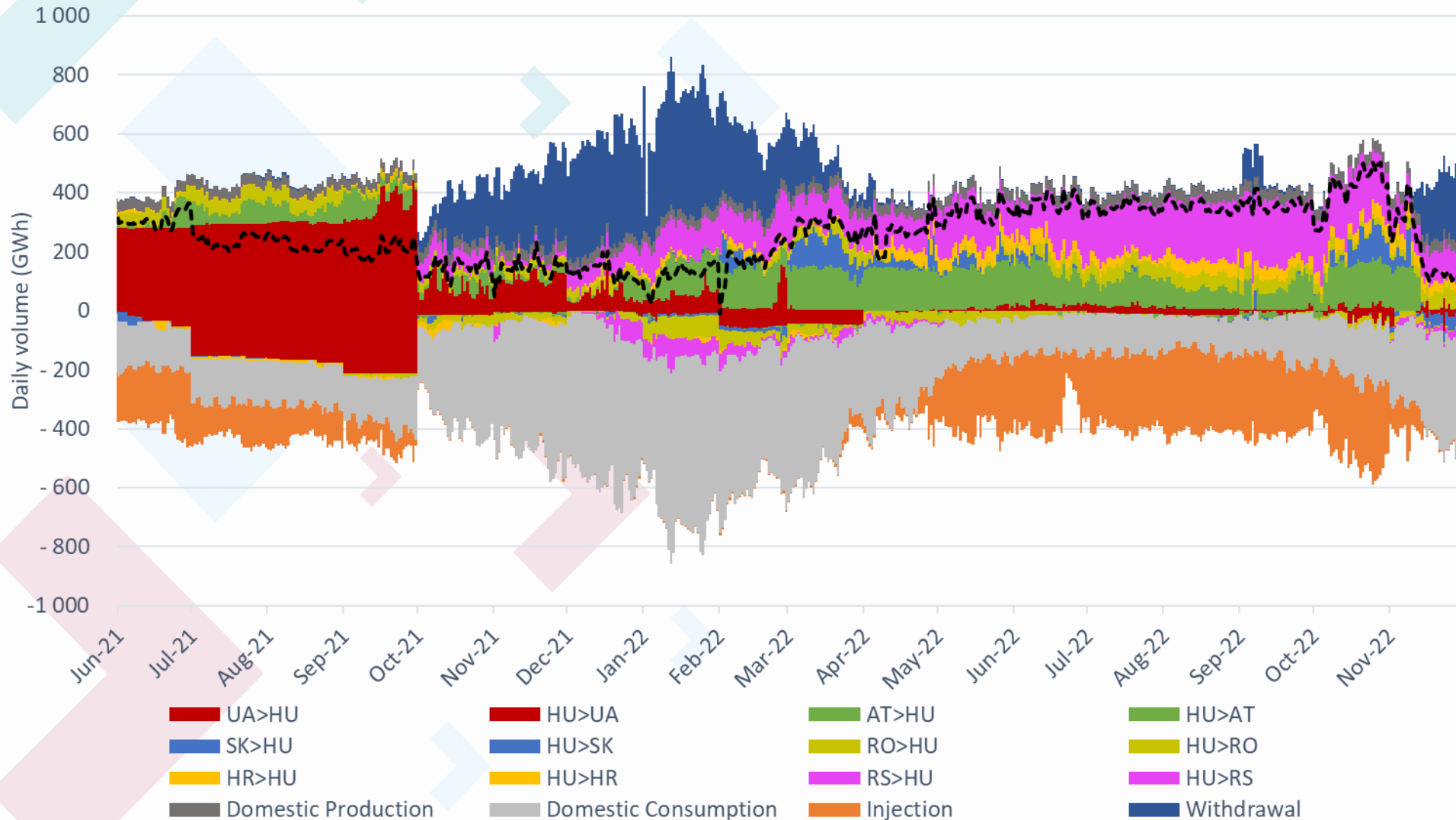


## EXPERT OPINION:

- A comparison of CEEGEX and CEGH prices in recent years basically shows that CEGH prices are slightly more volatile, with larger swings
- 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 October and November have been much more volatile. This may be related to the increase in traded volumes

# Hungarian gas market balance

Source: AGSI, FGSZ



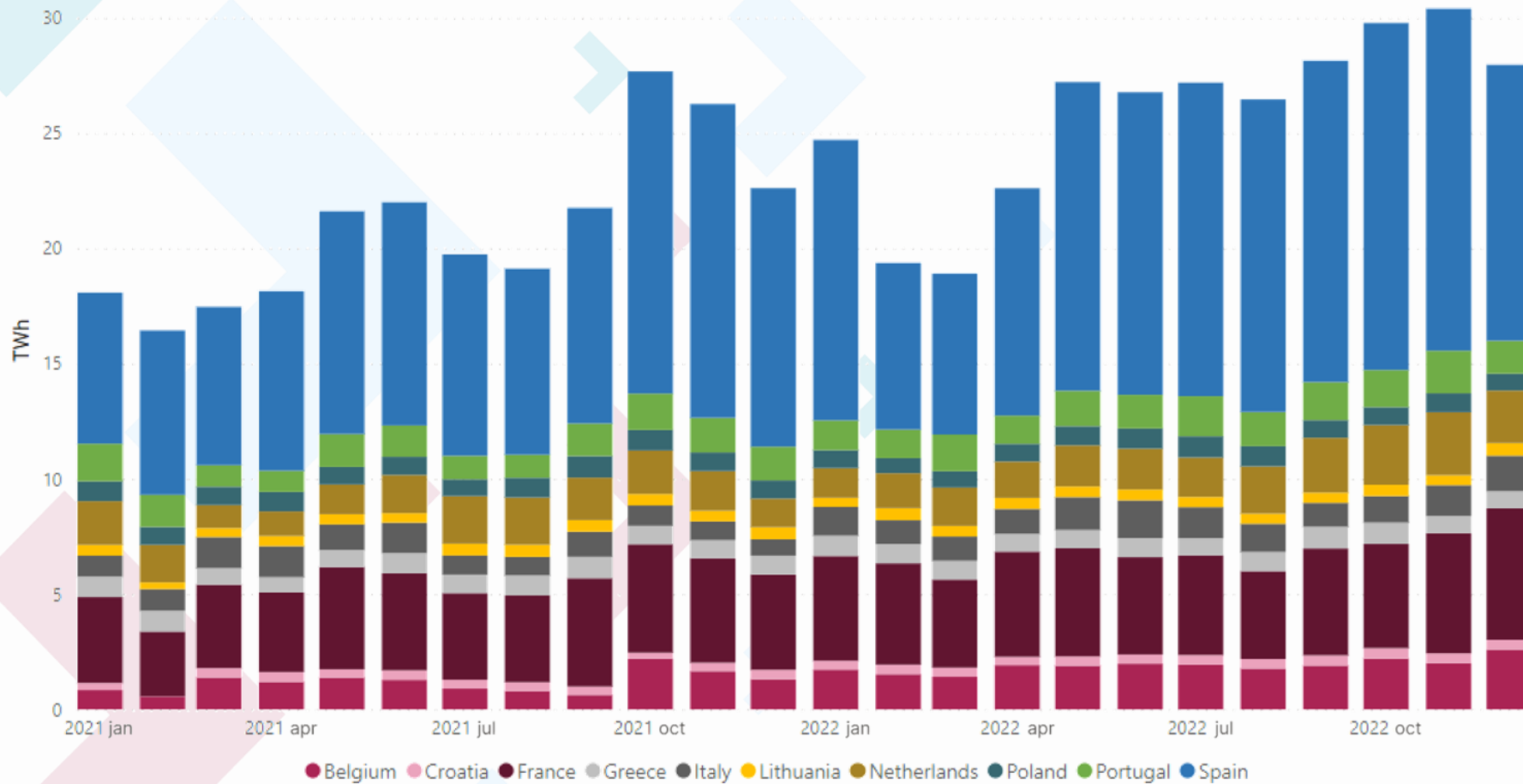
## EXPERT OPINION:

- Domestic consumption further increased in Nov, but it remained below 2021 Nov values. Injections ended and withdrawals started with one month delay.
- In Nov overall imports dropped significantly and exports to SK increased.
- AT imports remained low after the HAG maintenance.
- In 2022 RS imports were becoming dominant, while in Nov these flows halved.
- It can be related to the 500mcm of gas stored in Hungary by Srbijagas during this summer.



# Monthly average volume of LNG storage (EU)

Source: ALSI

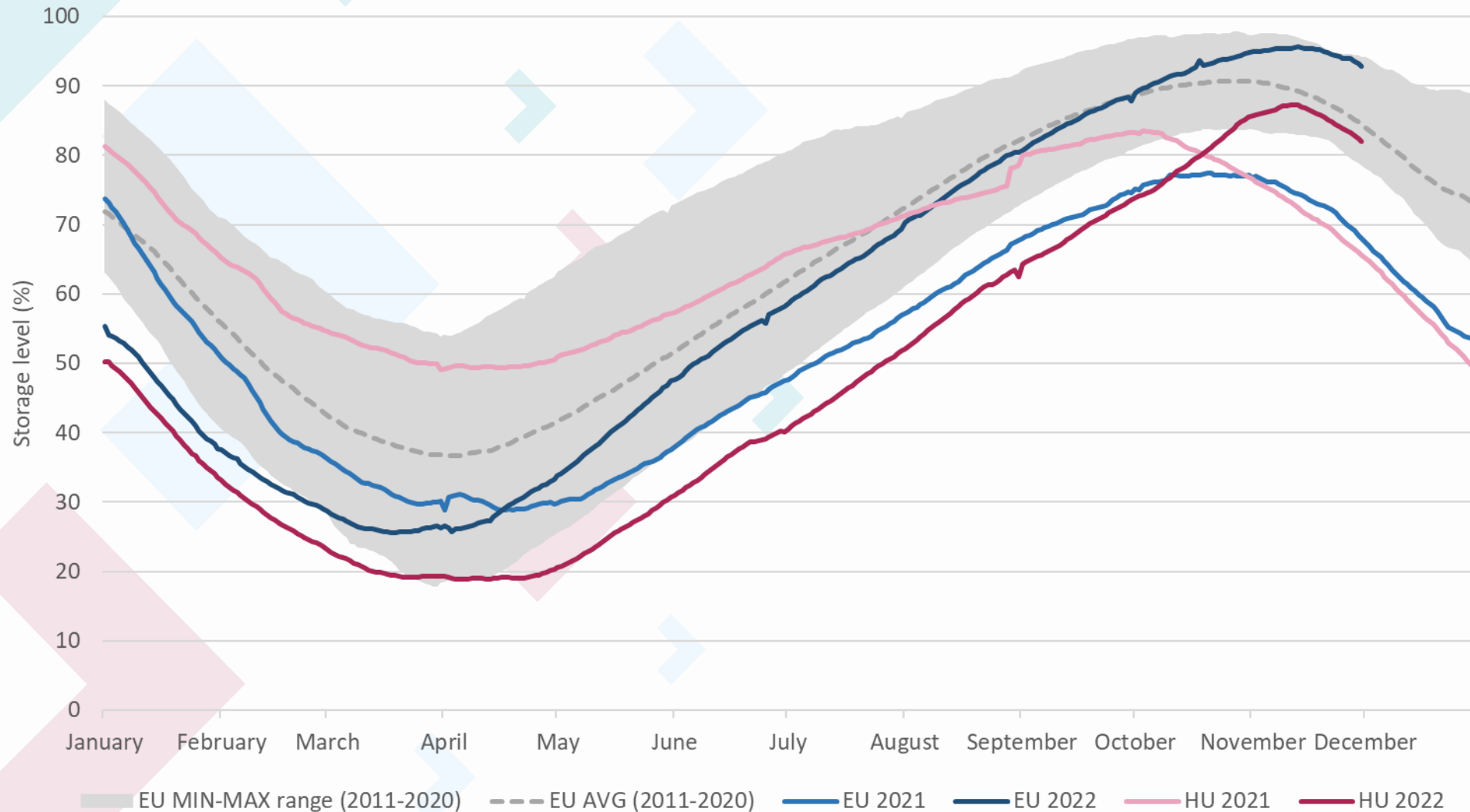


## EXPERT OPINION:

- Comparing the years 2021 and 2022, we can see that the average volumes stored in European LNG storage facilities are consistently at higher levels compared to the previous year.
- This suggests that this year's high prices and uncertain pipeline volumes have attracted foreign LNG tankers.
- Most of the surplus cargoes have been added to the ports of Spain, Portugal and the Netherlands, as the graph shows.

# Gas storage level in EU and HU

Source: AGSI, ICIS, MEKH

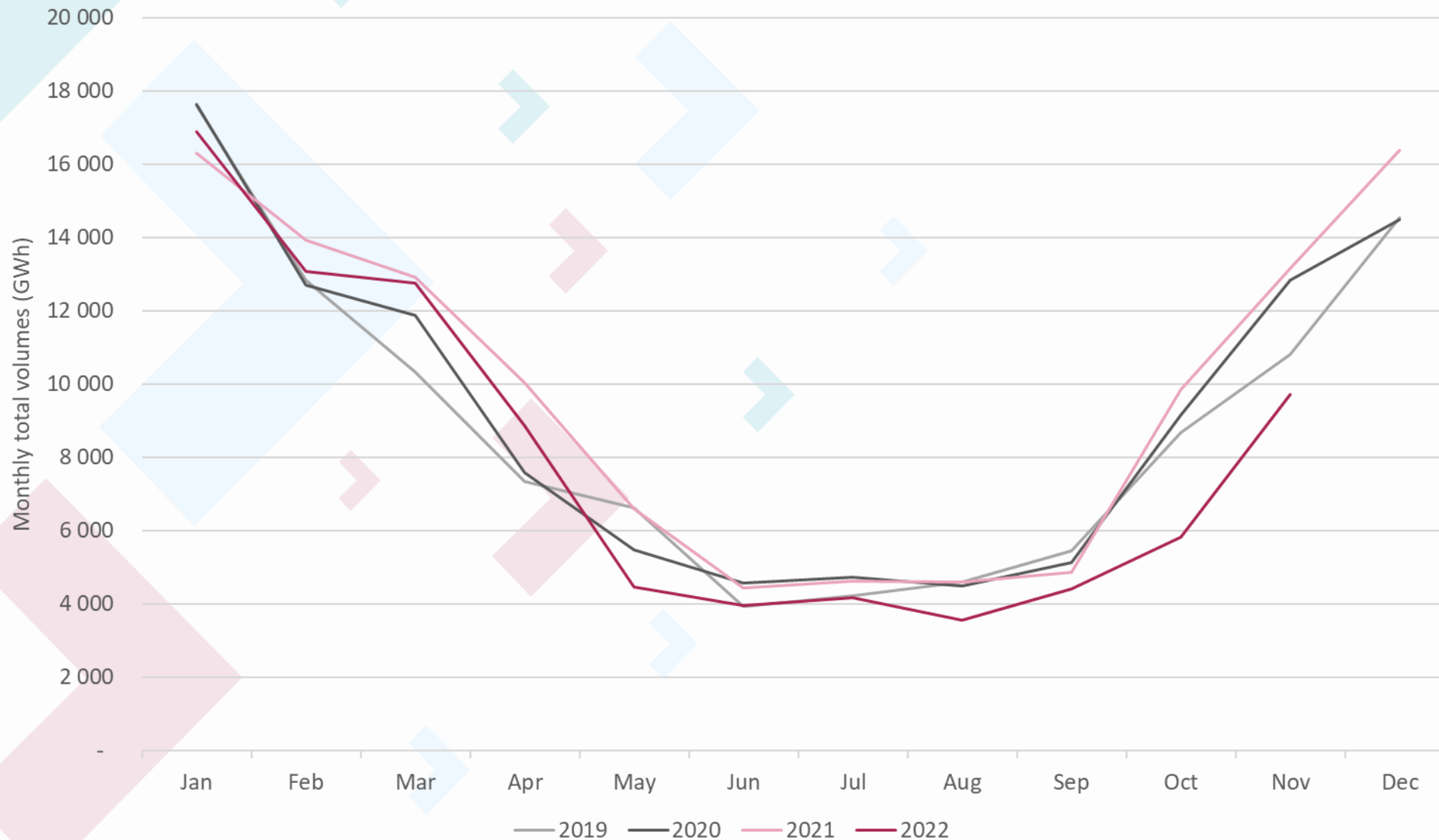


## EXPERT OPINION:

- Europewide withdrawals started in Nov.
- The pace of Hungarian withdrawals is 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 exceeded 80% of the total storage capacity by the end of Oct.
- 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.

# Domestic consumption (HU)

Source: AGSI, FGSZ, ICIS, IEA, MEKH

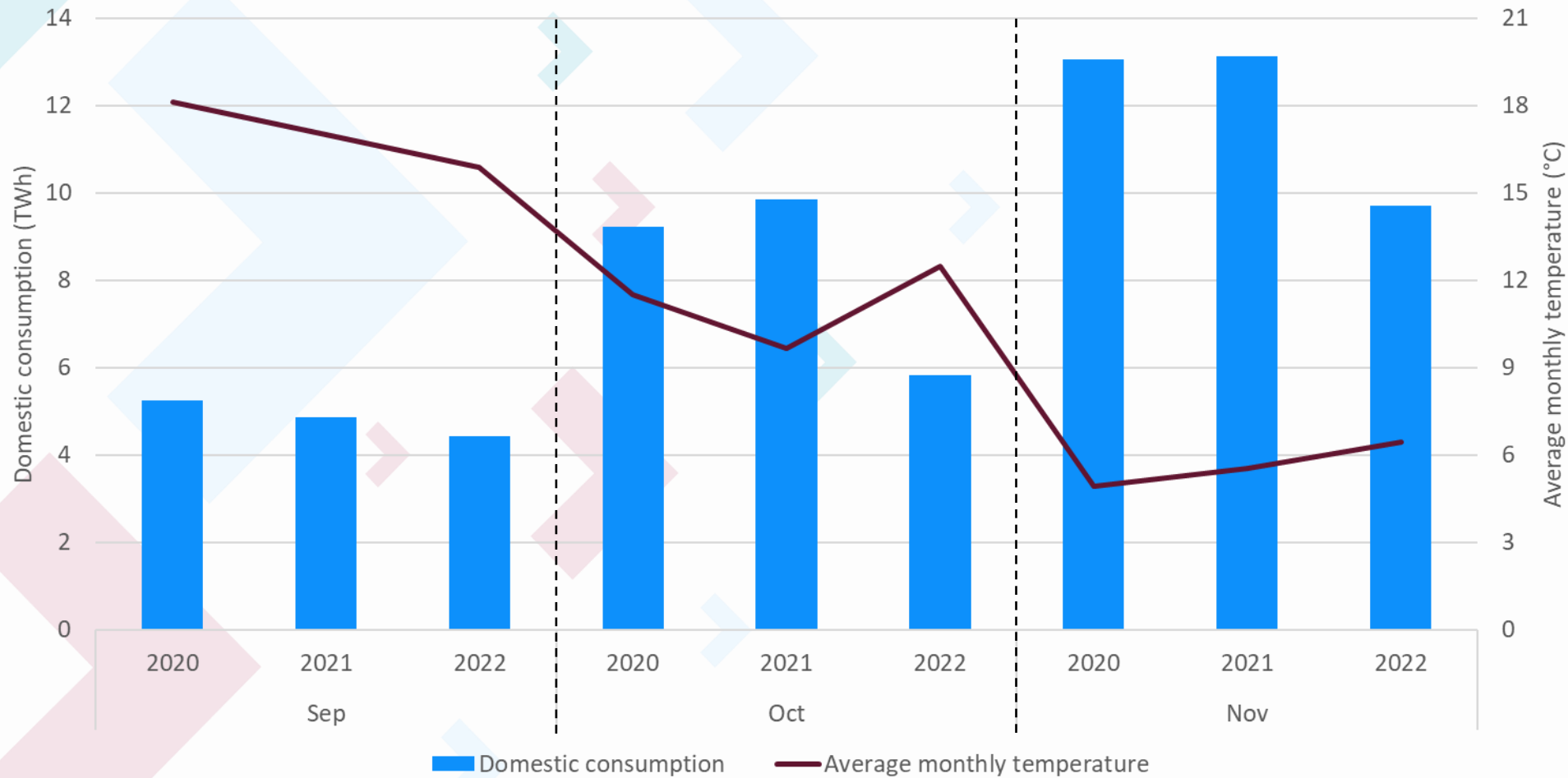


## EXPERT OPINION:

- Hungarian domestic consumption started to increase in September, still usage is well below the 2019-2021 lowest values.
- Since May, the consumption fell even below 2020 values.
- In October milder weather contributed to gas savings.
- In November colder temperatures resulted in the start of withdrawals and higher gas usage.

# Temperature and domestic consumption (HU)

Source: FGSZ, CEEGEX, Weather underground

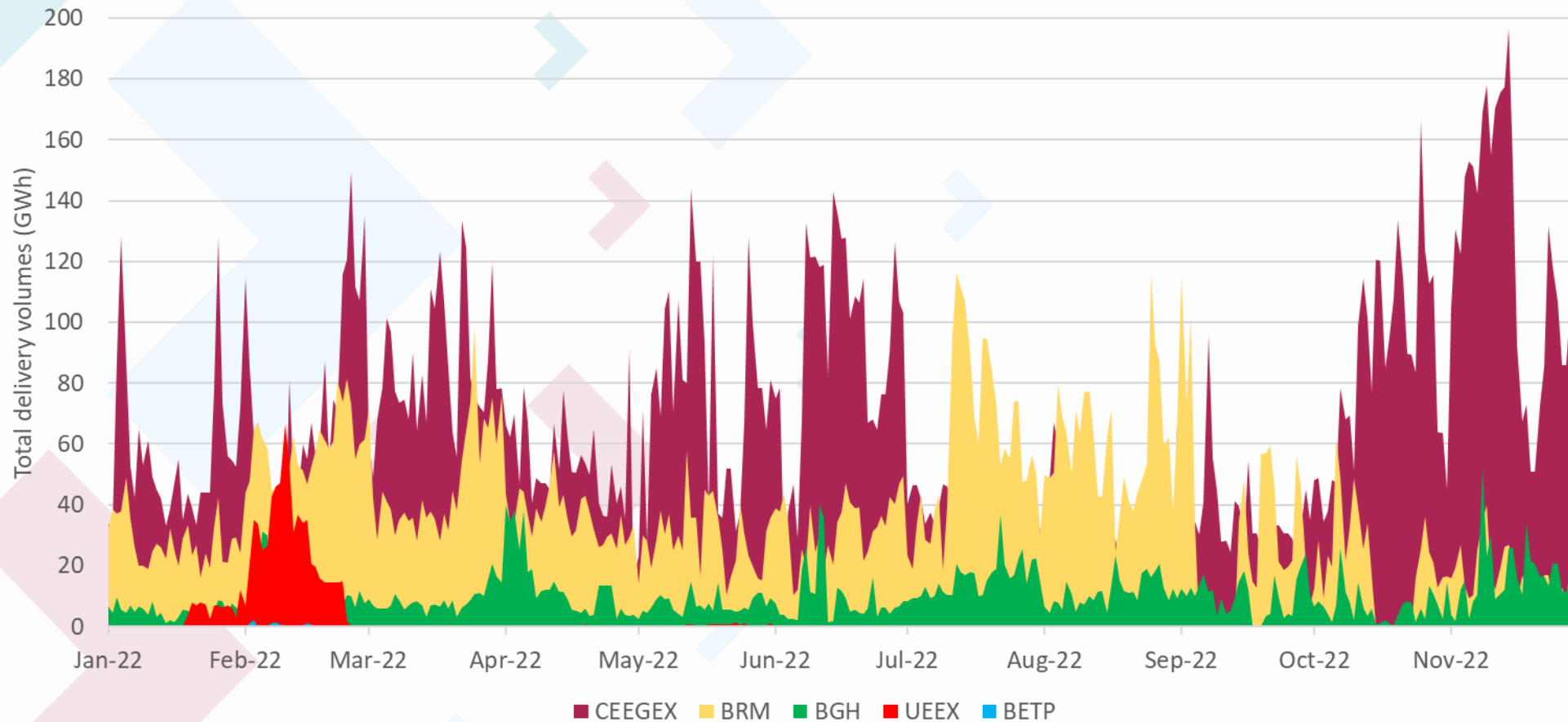


## EXPERT OPINION:

- There is a strong correlation between temperature and domestic consumption, the heating season typically starts only in October.
- The higher-than-average temperature and the governmental decisions regarding the energy charges have caused natural gas consumption to fall this year.
- The trading volume on CEEGEX in November was **3.6 TWh**. The increased trading might be due to the delay in the start of the storage withdrawal.

# Emerging gas hubs & CX spot volumes by delivery days

Source: CEEGEX, BRM, BGH, UEEX, BETP



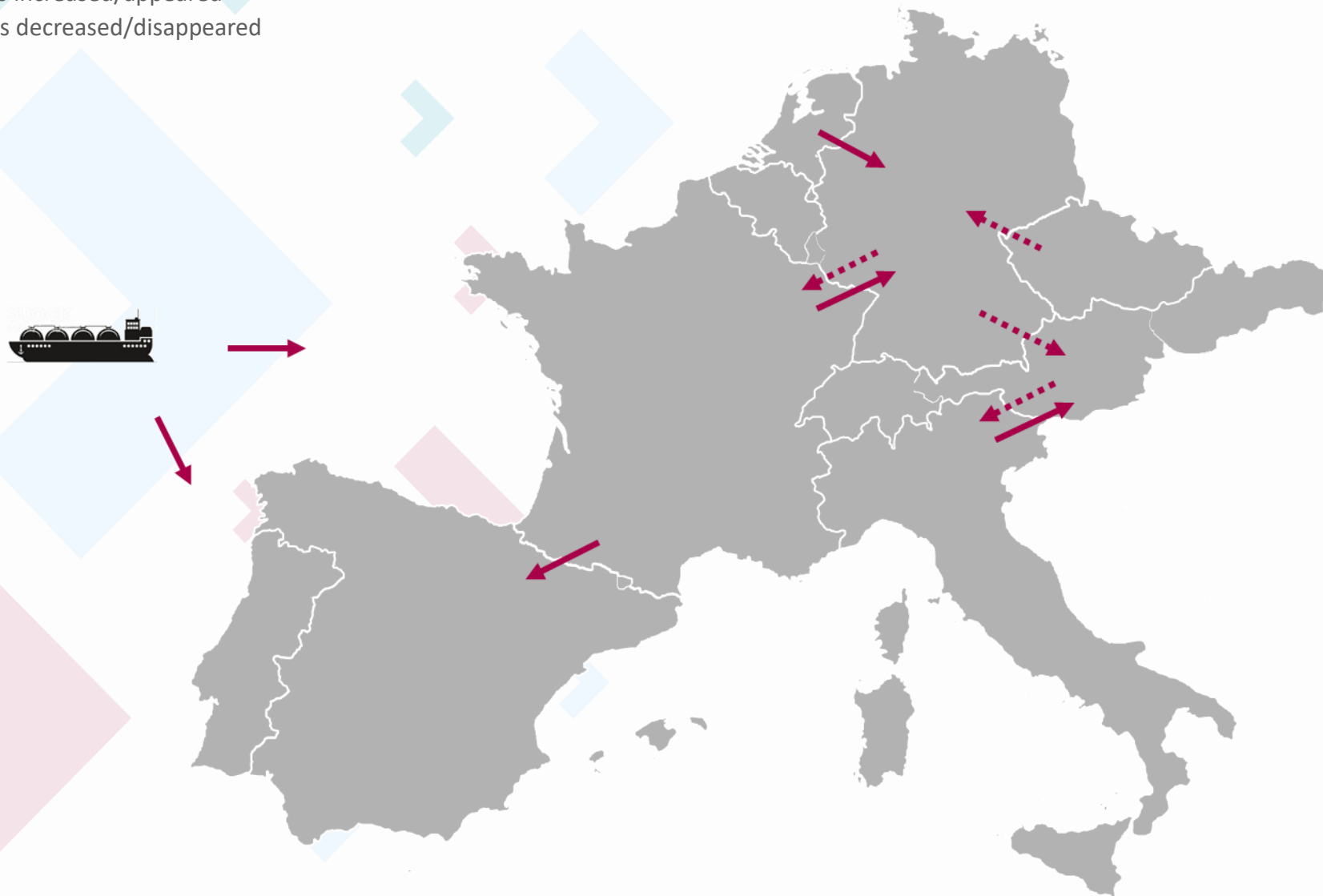
## EXPERT OPINION:

- The BETP market was launched last year, and spot trading volumes have been slowly increasing, however trading has completely stopped since February.
- Prior the outbreak of the war UEEX spot market delivery volumes reached a record high **671 GWh**, since then trading has fallen significantly.
- During summer, BRM produced record volumes, outperforming even the CEEGEX spot market.

# Major changes in flows in 2022 – NW Europe

Source: ENTSOG

- Flows increased/appeared
- Flows decreased/disappeared



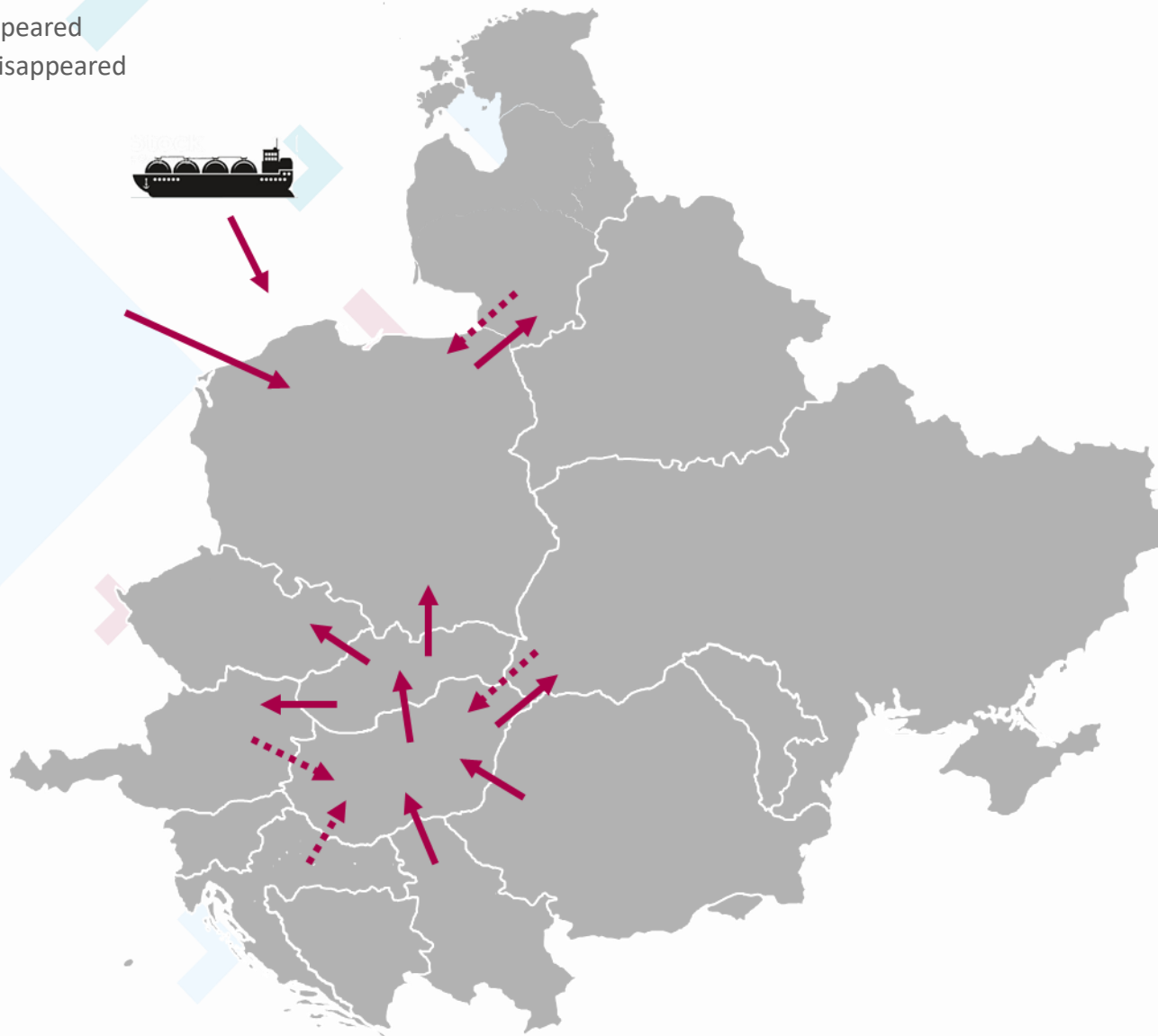
## EXPERT OPINION:

- After the decrease of Russian flows in 2021 and following 2022 Feb gas routes changed in Europe.
- LNG to Spain and France ramped up since Feb.
- Germany decreased its export and increased non-RU imports in 2022.
- France became a key supplier to Germany after Oct, while German flows to France dropped in Sept.
- The traditional direction of flows from Austria to Italy flipped in Oct for one month.
- Due to the Iberian gas cap Spanish power exports to France increased during the summer, lowering gas demand in France and gas prices on PEG. As the cap is increased monthly by 5 EUR/MWh, flows flipped back in Oct.

# Major changes in flows in 2022 – CEE

Source: ENTSOG

- Flows increased/appeared
- Flows decreased/disappeared



## EXPERT OPINION:

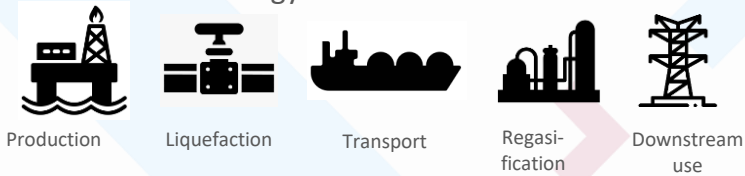
- Infrastructure developments in 2022 rerouted flows also in CEE.
- RS export to HU became the dominant route of RU flows instead of UA. (in Nov RS>HU lowered as RS volumes stored in HU in July were „withdrawn”).
- The other important route of RU supplies via AT dropped since mid Nov as the CX-CEGH spread has been negative.
- In Nov imports from RO to HU increased on the expense of imports from CR (Csanádpalota capacity increase, start of IGB).
- Since Oct HU exports to SK and UA ramped up, while SK imports to PL, AT and CZ also increased.
- PL imported more LNG via the Baltic Pipeline and directly to Swinoujscie in 2022 YoY.
- The GIPL (since May) and GIPL (since Oct) changed the direction of flows from PL to LT and flows from SK to PL appeared.

# Green LNG

Source: ACS, CEEnergynews, Forbes, FSR, OIES

**Emission of LNG trades:** companies in the LNG value chain can:

- **reduce GHG emissions** by using biogas for feedstock, reducing emissions from upstream, pipeline, and liquefaction facilities, using renewable energy to power their liquefaction facilities, using CCUS,
- **purchase offsets** to compensate for their GHG emissions e.g. reforestation, investment in renewable energy.



**Reports of carbon-neutral LNG cargos began in 2019**, by 2021, the number of these cargos had increased substantially: e.g. Verra Registry (2019 Jun-2022 Jun) **50 carbon neutral LNG cargos** destined mostly to **Asia**, the majority of a CO<sub>2</sub>-equivalent volume of ~200 000-250 000 tonnes.

The majority of publicly available data are drawn from **estimates**, recent studies have shown this usually leads to **under-reporting compared to measurement**. -> **Measurement, Reporting and Verification (MRV)** mechanisms are necessary.

**Certification mechanisms** are concentrated on **US standards** and practices (Verra Registry, MiQ, Project Canary, Veritas). Aside from the US, the 3 largest LNG exporters in 2021 were Qatar, Australia, and Russia (GIIGNL, Statement of Gas Emissions).

By the end of 2025, the proposed European **methane regulation will establish standards and charges for imports of all fossil fuels including LNG** ~carbon EU ETS

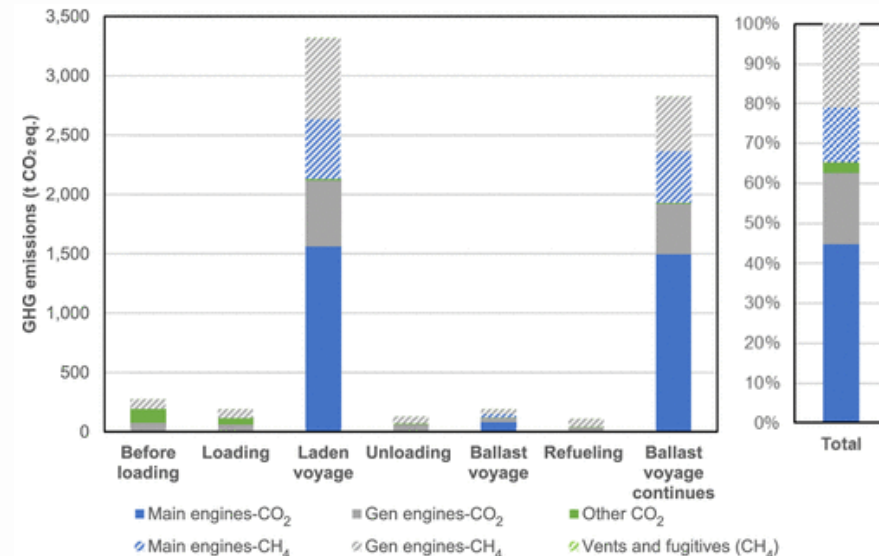


**Quantification of GHG emissions for LNG must be resolved**

**LNG as marine fuel:** recent studies show **~20% GHG emission reduction** by the use of LNG as a marine fuel compared with oil-based marine fuels.

An **example study** measured and modelled the methane and CO<sub>2</sub> emissions from an LNG carrier on a round trip **voyage from the USA to Belgium and back**, including loading, laden voyage, unloading, and ballast voyage, measuring emissions from exhaust stacks, vents, and fugitives.

**Emissions are dominated by CO<sub>2</sub>** emissions, both from the main engines (45% of total GHGs) and the generator engines (18%). Methane emissions contribute 35% of the total GHG.



**LNG cargos should be 'greenhouse gas verified'**



# Market surveillance fines

Source: ACER

- **Dutch national regulatory authority fines PZEM Energy for not publishing inside information**

- On 14 June 2022, the Netherlands Authority for Consumers and Markets (ACM) imposed a **fine of EUR 150,000** on the Dutch energy company PZEM Energy B.V. (PZEM) for **breaching Article 4 of Regulation (EU) No 1227/2011** on wholesale energy market integrity and transparency (REMIT).
- ACM found that PZEM had **not always disclosed inside information** about **interruptions, ramping-ups, and restrictions** in the production of a power plant under its management in an effective and timely manner.
- Sloecentrale has two production units: **Sloe 10 and Sloe 20**, each with a nominal **maximum capacity of 435 MW**. **Sloe 10 was not permitted to generate power** from 8 to 20 May 2017 and from 22 to 24 May 2017. **Sloe 20 had to generate power during this period** with a capacity between a minimum of 220 MW ('must run') and a maximum of 400 MW. On 5 May 2017, **PZEM disclosed the information that Sloe 10 would be unavailable during the network restriction**. This **notification**, however, **was limited** to the capacity unavailability of Sloe 10 during the period of the network restriction and did not include information on the must run of Sloe 20.
- After ACM started the investigation, **PZEM informed the National Regulatory Authority** that it had taken a number of compliance measures to **prevent any future reoccurrence of this type of behaviour**.

- Pursuant to **Article 2(1) of REMIT**, information qualifies as **'inside information'** if it fulfils the following four cumulative conditions:

- **Precise:** ACM considers **that the information on the network restriction must be considered precise** within the meaning of Article 2(1) of REMIT in any case - At that time, a commercial agreement was in place concerning the network restriction.
- **Not public:** The information on the **unavailability of Sloe 10 was not made available until the late disclosure**, while the information on the **limited availability of Sloe 20 was never made public**.
- **Related to one or more wholesale energy products:** Both the information was **related to a wholesale energy product**, in particular to the **daily and hourly electricity** products for delivery in the period **affected by the restrictions**.
- **Likely to significantly affect prices:** ACM assessed, based on a wholesale market survey, that in the Netherlands, information on changes in the **availability of capacity of more than 50-100 MW** is, as a general rule, **information** that a reasonable market participant **would use for its trading decisions**.