

Key developments in European gas wholesale markets

2024 Market Monitoring Report

18 July 2024

Report in PowerPoint format



The report provides an overview of **EU wholesale gas markets trends in the first half of 2024**.

Specifically, it addresses:

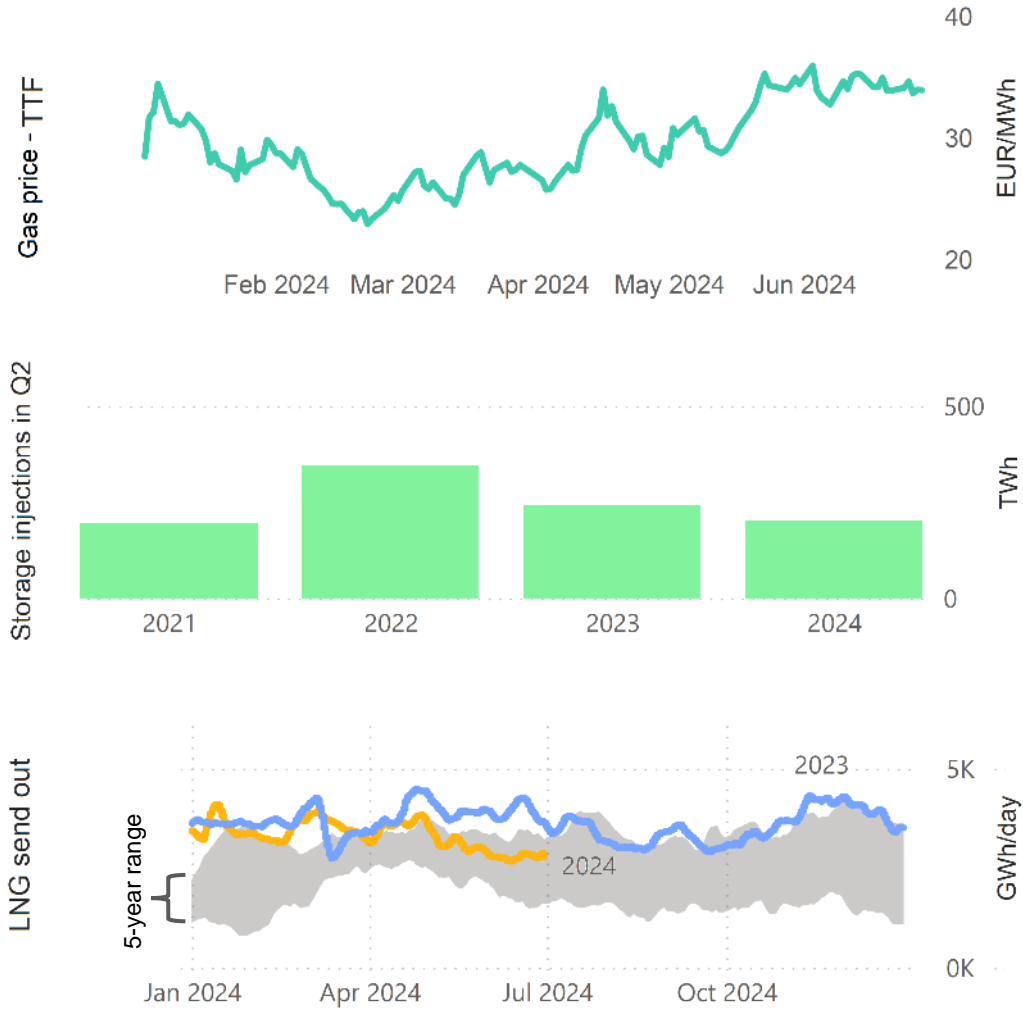
- Gas price evolution and drivers;
- Gas consumption and its components;
- Gas supply trends;
- Gas infrastructure utilisation;
- Gas trading developments.

It also includes considerations about the likely non-renewal of the Ukraine gas transit agreement.



Explore the **market monitoring section**
of the ACER website for additional
information about European energy markets.

Key numbers of EU gas wholesale markets in H1 2024



- 33%: Average TTF price in first half of 2024 compared to 2023¹.

While prices have increased since the start of the year, they have been lower, on average, than in 2023.

- 16%: Gas-fired power generation in first half of 2024 compared to 2023.

Gas-fired power generation is in decline due to the increased output of renewables. Mild weather, household savings, and sluggish recovery of industrial demand resulted in a decreasing overall gas consumption.

- 41 TWh: Less gas injected into storages in second quarter compared to 2023.

Despite slow injections, storages are on course to reach the mandated filling levels, at 77.5 % at the start of the third quarter.

- 11%: Decrease of LNG imports in first half of 2024 compared to 2023.

LNG production outages, global competition and limited demand reduced the utilisation of EU LNG terminals, especially in the second quarter.

Source: ACER based on ICIS and Gas Infrastructure Europe (GIE) data.

Note 1: All comparisons against 2023 relate to the same period referred for 2024.

LNG stands for liquified natural gas. TTF stands for Title Transfer Facility, the virtual gas trading point in the Netherlands used as benchmark for EU natural gas prices.

Gas wholesale markets in the first half of 2024

Prices, hub convergence, and trading activity

Prices fell to crisis low before climbing on supply risks

Natural gas price turn-out (TTF day-ahead) and market price expectation (TTF basket of forward products), July 2023-July 2025 (EUR/MWh)



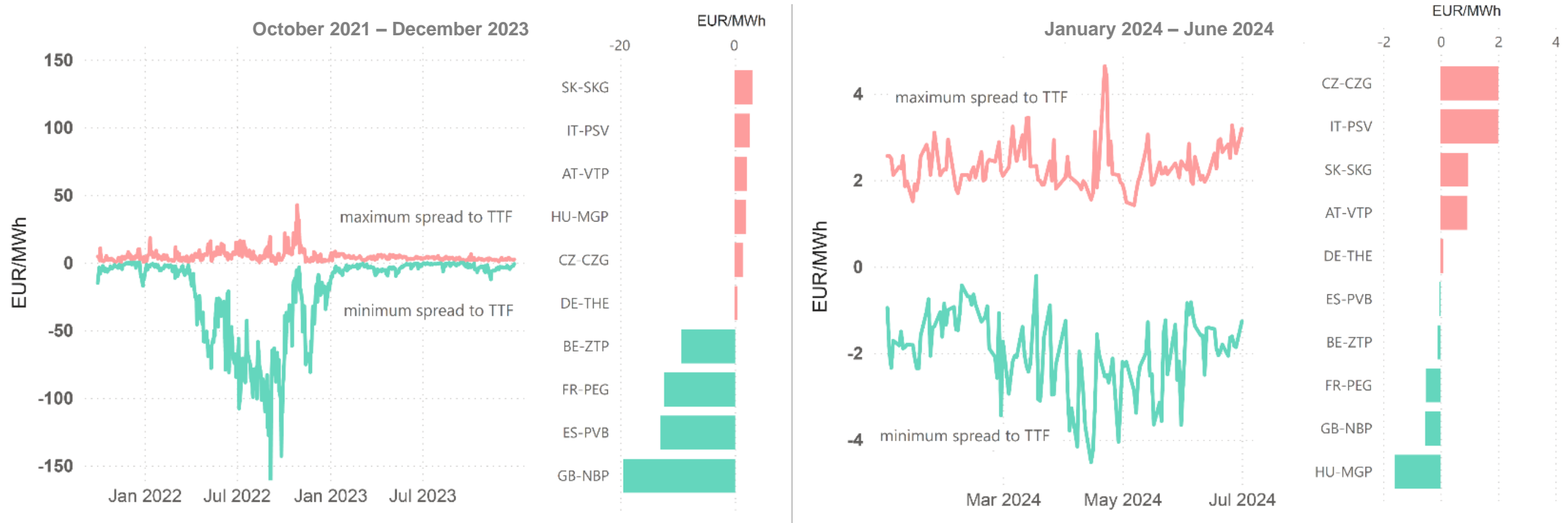
Prices decreased throughout the first quarter of 2024 as low consumption (e.g., reduced demand for gas-fired power generation) produced a comfortable gas supply-demand balance, including high storage stocks. In the second quarter the price trend reversed as actual (e.g., falling LNG supply) and potential events (e.g., the possibility of protracted Norwegian pipeline outages) threatened to upset the EU gas market's equilibrium.

Source: ACER based on ICIS.

Note: LNG stands for liquified natural gas. TTF stands for Title Transfer Facility, the virtual gas trading point in the Netherlands used as benchmark for EU natural gas prices.

Price order amongst gas hubs changing, spreads decreased

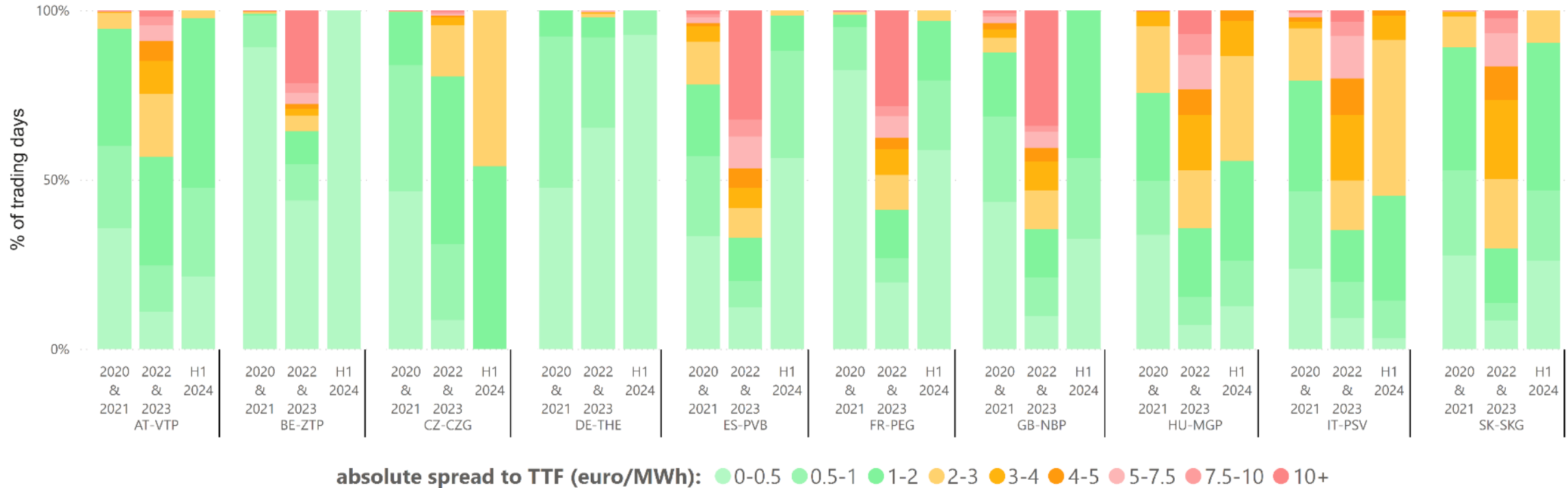
Range between hubs with cheapest and most expensive spot price & comparison of average spread to TTF, October 2021-June 2024 (EUR/MWh)



Changes in supply patterns have reshuffled the price order amongst EU gas markets. Hubs in the South-West (e.g., Spain) with established access to LNG now frequently trade at discount to Central European markets (e.g., Austria). However, the differences between cheapest and most expensively priced hubs declined in the first half of 2024 compared with the same period last year, an indication of easing network congestion.

Integration may be hindered by higher transportation costs

Natural gas price hub convergence, 2020-2024 (% of trading days with spreads in the price range (selected hubs vs TTF, day-ahead contract))

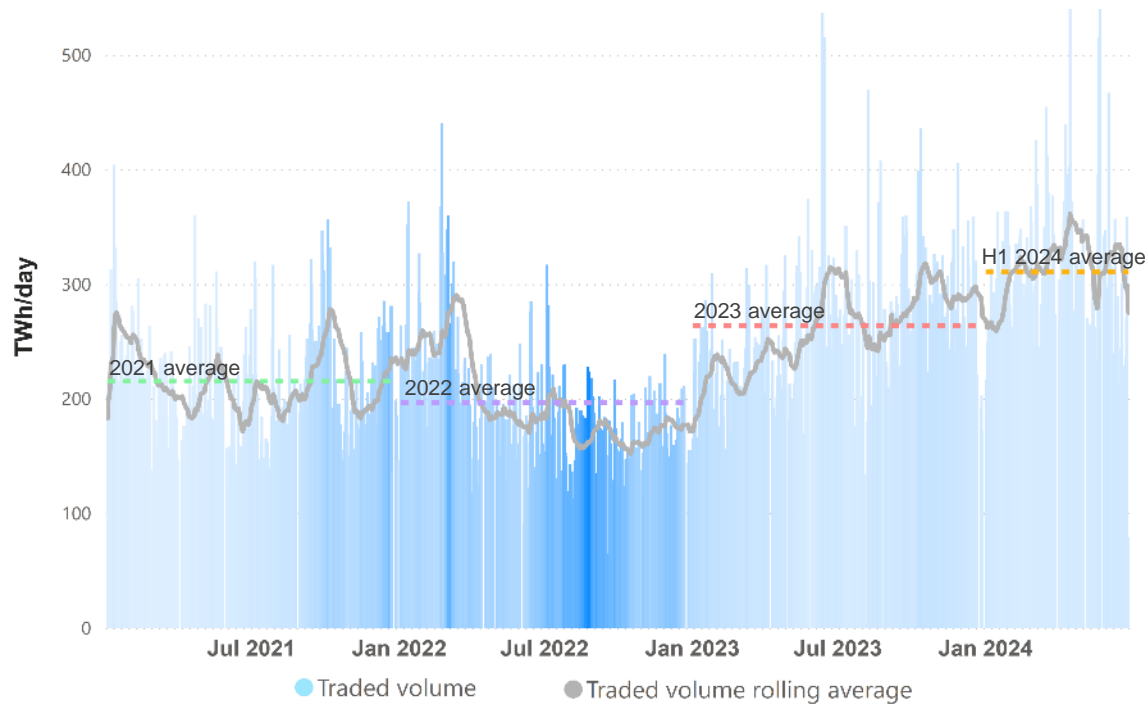


The convergence of hub prices has improved since the peak of the 2022 energy crisis, but overall price integration among EU markets has not yet returned to pre-crisis levels. While price formation in gas markets results from the interplay of various demand and supply drivers, on average, higher premiums are observed in 2024 in markets more reliant on cross-border trade, where transportation costs have simultaneously increased

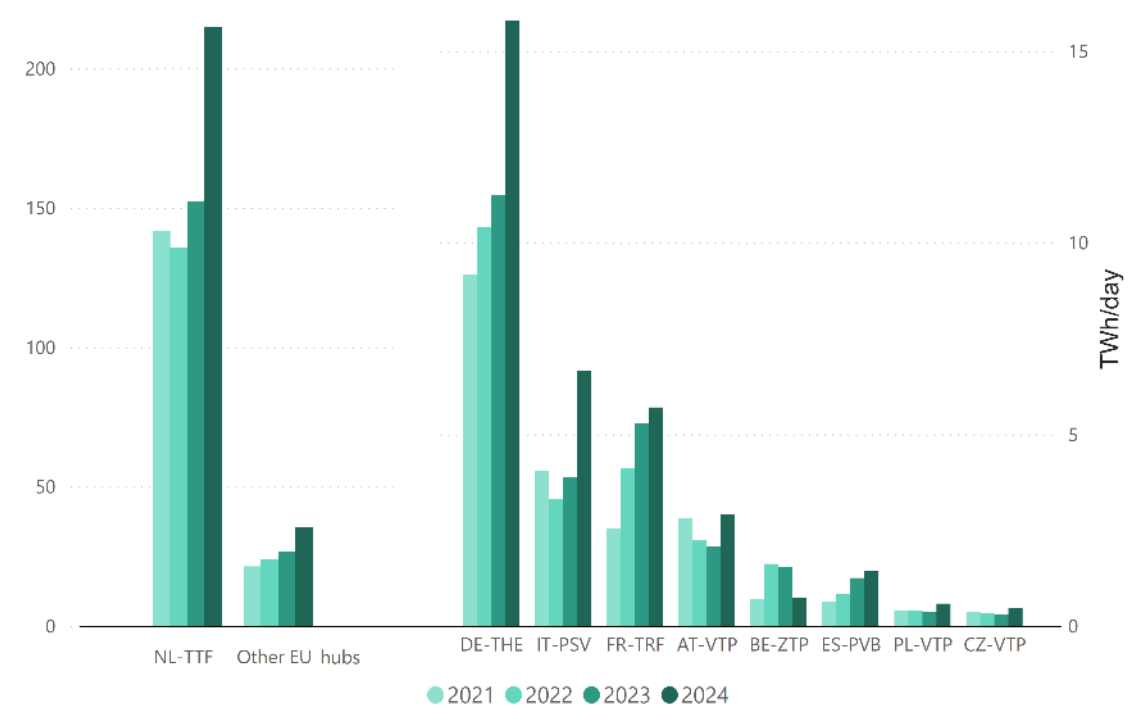
Source: ACER based on ICIS. Note: The analysis highlights absolute hub price spread differences but does not specify which hub is at a premium or discount. Historically, the NL-TTF hub has typically set the lowest price reference. However, since mid-2022, LNG reliant and less congested hubs such as FR-PEG or SP-PVB have often quoted at a (relevant) discount. This shift accounts for the relative increase in “red price ranges” in the graph, while indicating that French or Spanish hub prices were often at a discount.

Trading activity reached a new high

Exchange and brokered trading volumes at EU VTPs,
 2021-H1 2024 (TWh/day)



TTF and other EU VTPs traded volumes comparison,
 H1 2021-2024 (TWh/day)



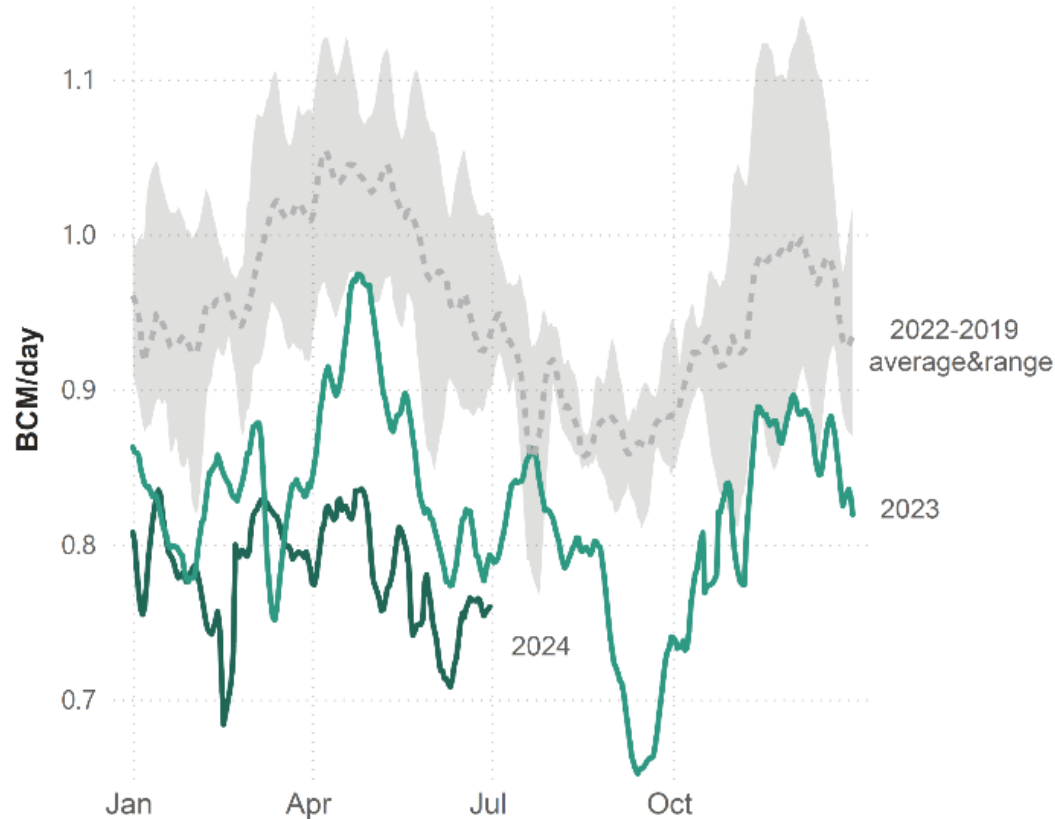
Liquid trading hubs allow market participants to effectively manage price risks associated with supplying, shipping, and offtaking gas making them a key component of the EU gas market. Gas trading activity witnessed strong growth in the first half of 2024, with most of the increase related to products for delivery at the Dutch TTF, though many hubs across the EU recorded growing volumes. The increase can be read both as a sign of confidence in the European energy markets and a sign that continued energy price volatility poses risks and opportunities to market participants.

Gas fundamentals in the first half of 2024

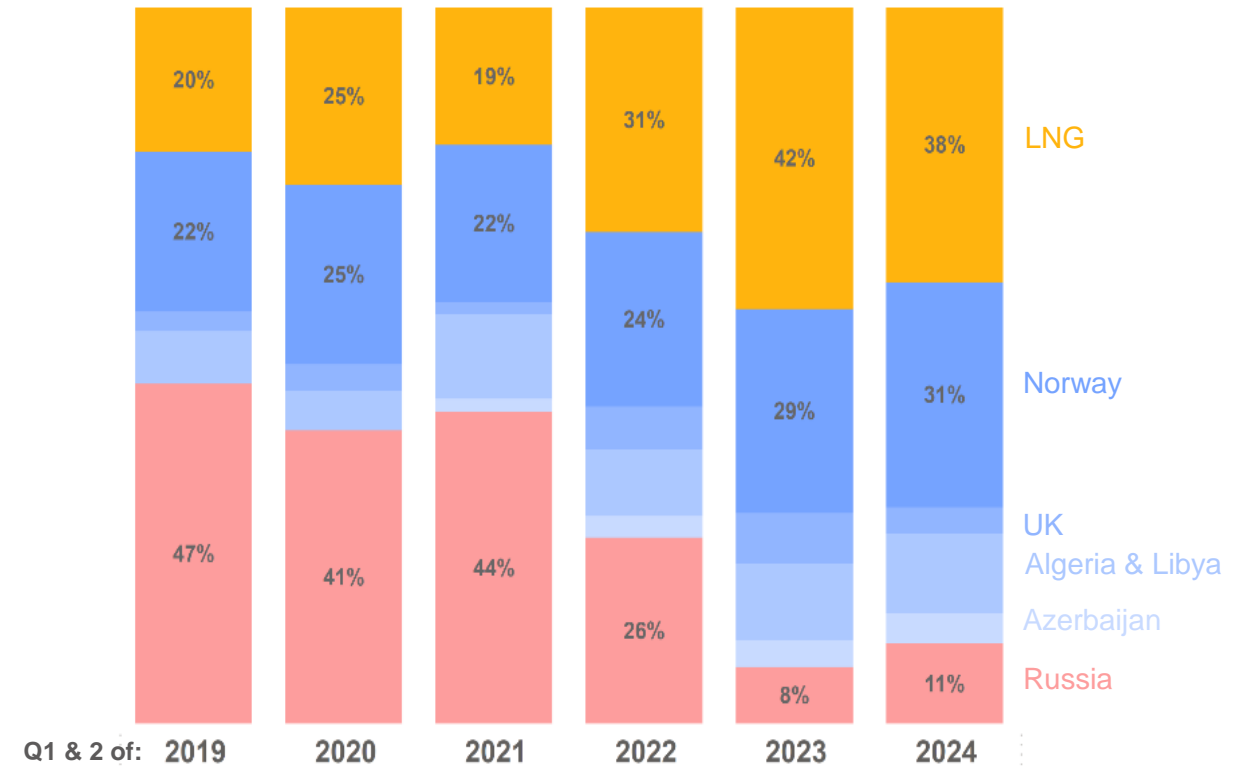
Supply, demand, and biogas production

EU gas imports decreased on lower LNG and UK flows

EU pipeline and LNG import flows, 2019-2024 (bcm/day)



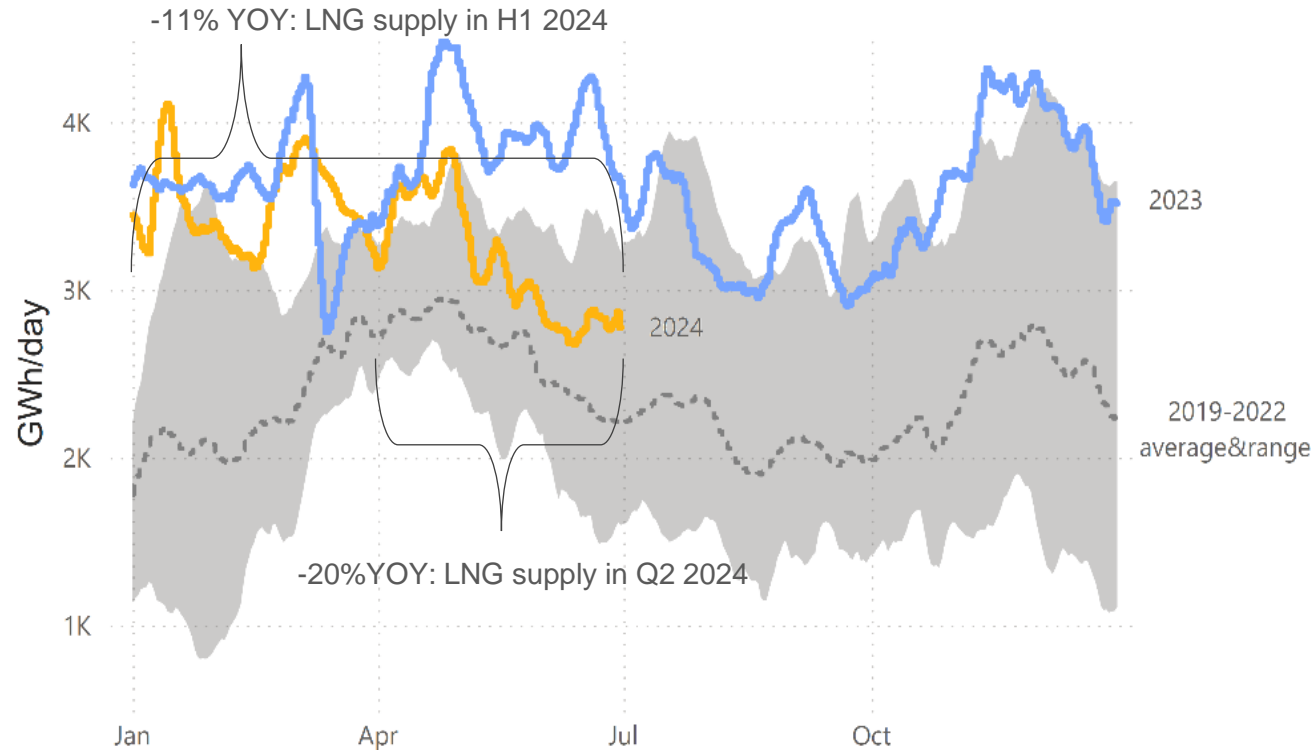
EU gas imports per source, Q1 & Q2 2019-2024 (% of total)



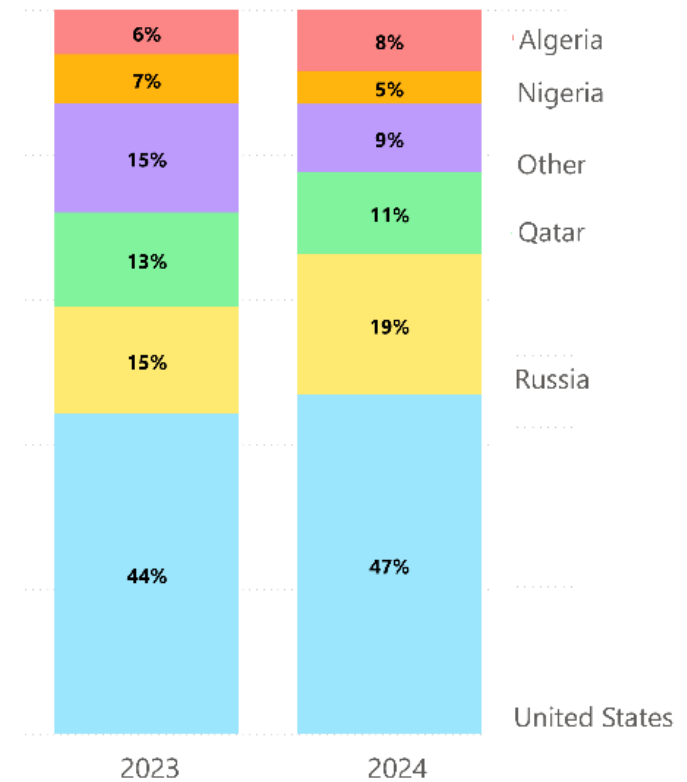
Pipeline exports to the EU remained relatively stable during the first and second quarters of 2024, except for a few notable changes. Exports from Russia increased due to higher Turkstream flows, while exports from the UK decreased compared to the previous year. Despite having more capacity to receive LNG, the EU's LNG imports fell year-on-year in the first half of 2024.

LNG imports fell amid global competition and low demand

EU LNG send-out, 2019-2024 (GWh/day)



Origin of EU LNG imports and share of total, Q1 & Q2 2023-2024 (%)



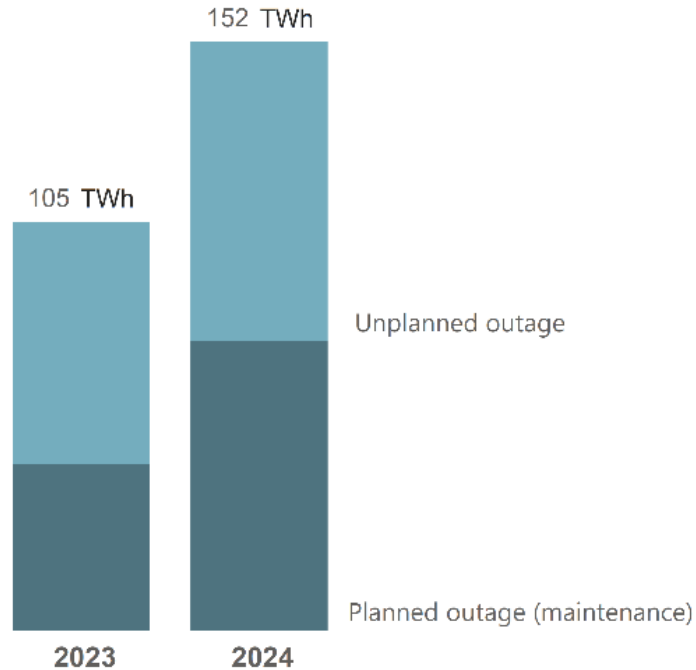
LNG continued to be a crucial part of the EU gas market's supply portfolio but send-out from regasification terminals fell significantly in the first half of 2024, down by 6.3 BCM compared to the same period last year. The main external factors driving this decrease were increased demand from Asia and other LNG-consuming regions, as well as outages at liquefaction facilities that limited the available supply.

Source: ACER based on Gas Infrastructure Europe transparency platform data.

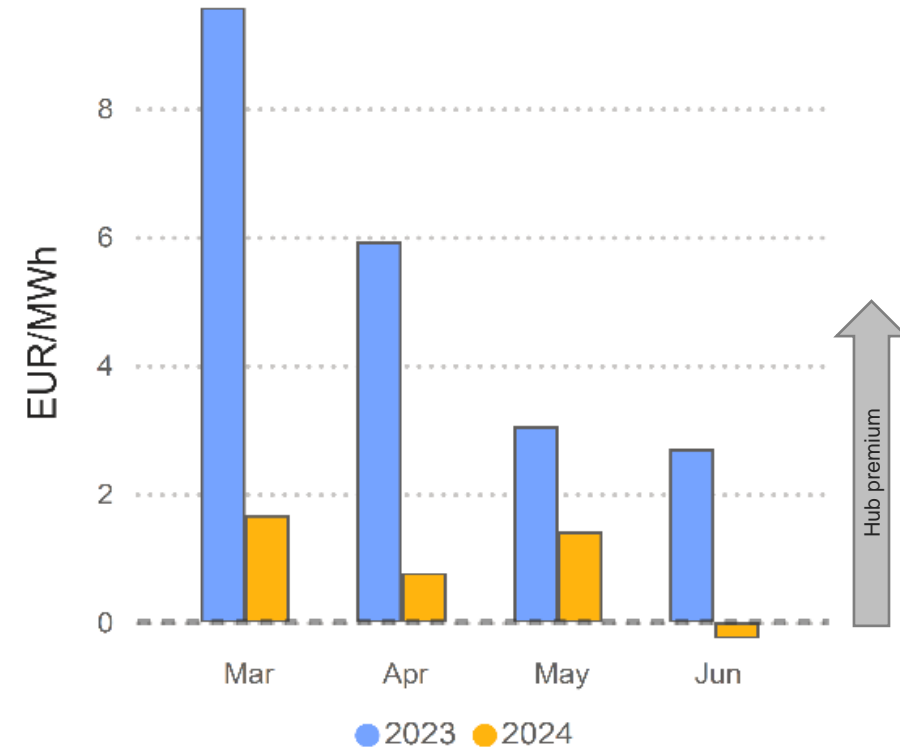
Notes: Values in the figure 'EU LNG send-out' are seven day rolling averages. Values in the figure 'Origin of EU LNG imports and share of total' refer to gross imports, a significant volume of LNG originating from Russia is re-exported from the EU to other markets.

Tighter global LNG markets led to fewer spot cargo imports

Outages of liquefaction capacity globally, H1 2023 & 2024 (TWh)



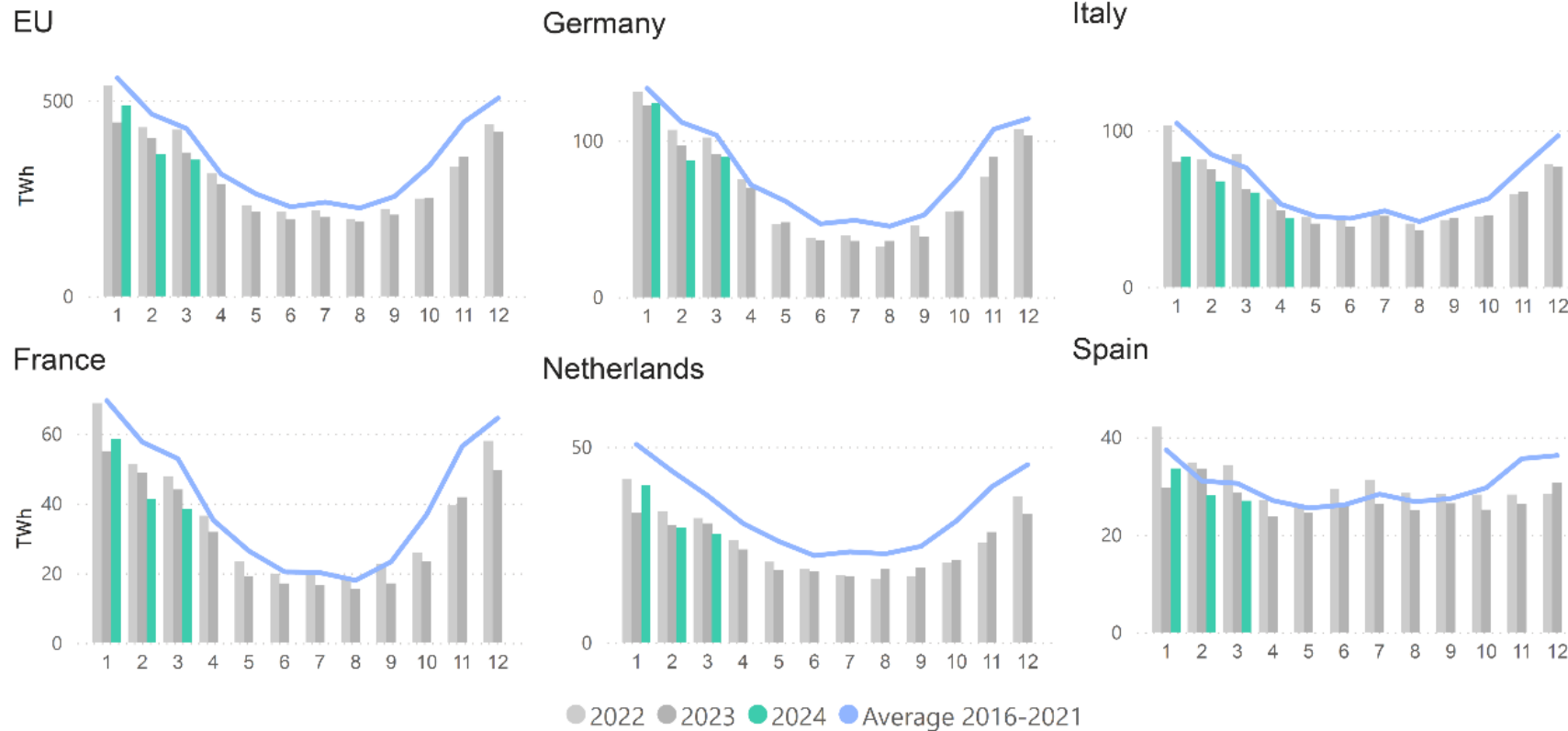
Monthly average TTF-EU spot LNG spread, 2023-2024 (EUR/MWh)



Global LNG production capacity increased marginally in the first half of 2024 but so did liquefaction facilities' outages (+44%) resulting in lower-than-expected supply. In addition, increased demand for LNG outside Europe and shipping route disruptions tightened the global LNG supply-demand balance. European buyers' lower demand for LNG was reflected in a year-on-year decline of premiums offered at EU hubs compared to spot LNG.

The trend of low gas consumption continued

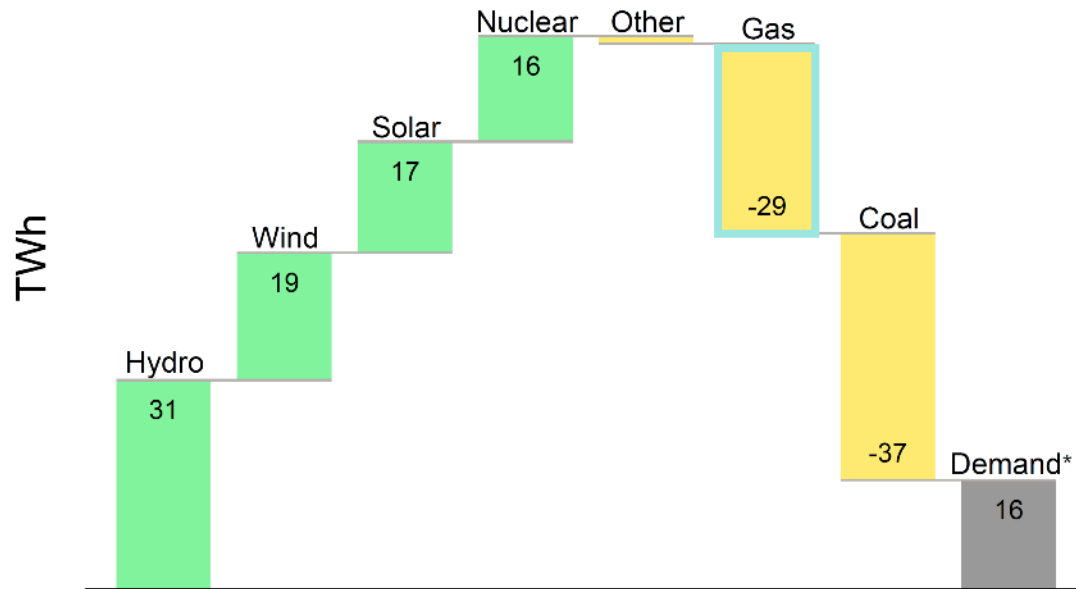
Consumption in EU and Member States with largest natural gas demand, 2016-March 2024 (TWh)



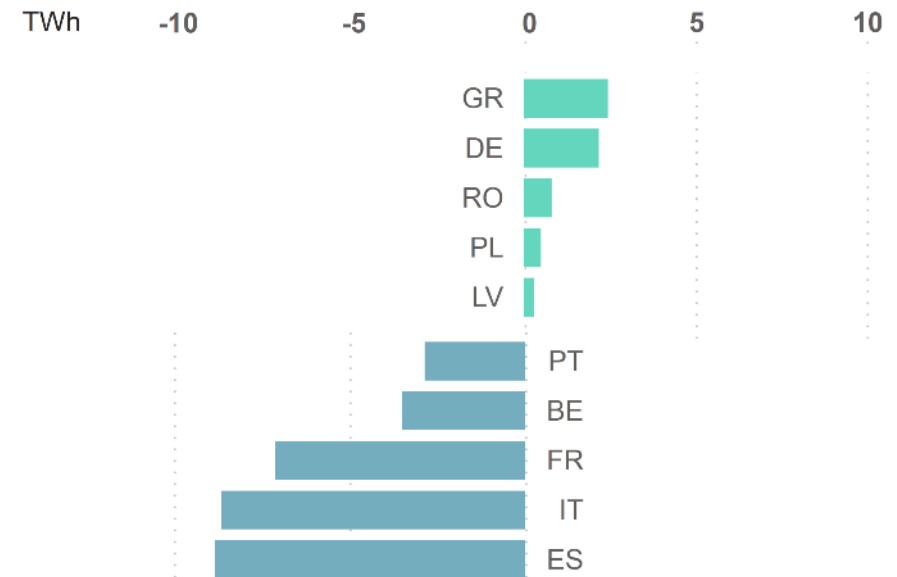
Benign weather, stagnant economic activity, and growth in renewables kept EU gas consumption steady year-on-year, despite lower prices. While industrial gas consumption did increase marginally compared to last year, it is still below pre-crisis levels. The EU has already made significant reductions in gas consumption needed to meet the Fit for 55 goals and is on track to achieve the more ambitious REPowerEU targets.

Growth in renewables is displacing gas generation

Year-on-year change for main electricity generation technologies, Q1 & Q2 2024 (TWh)



Year-on-year change in gas-fired power generation, Member States with largest variation, Q1 & Q2 2024 (TWh)



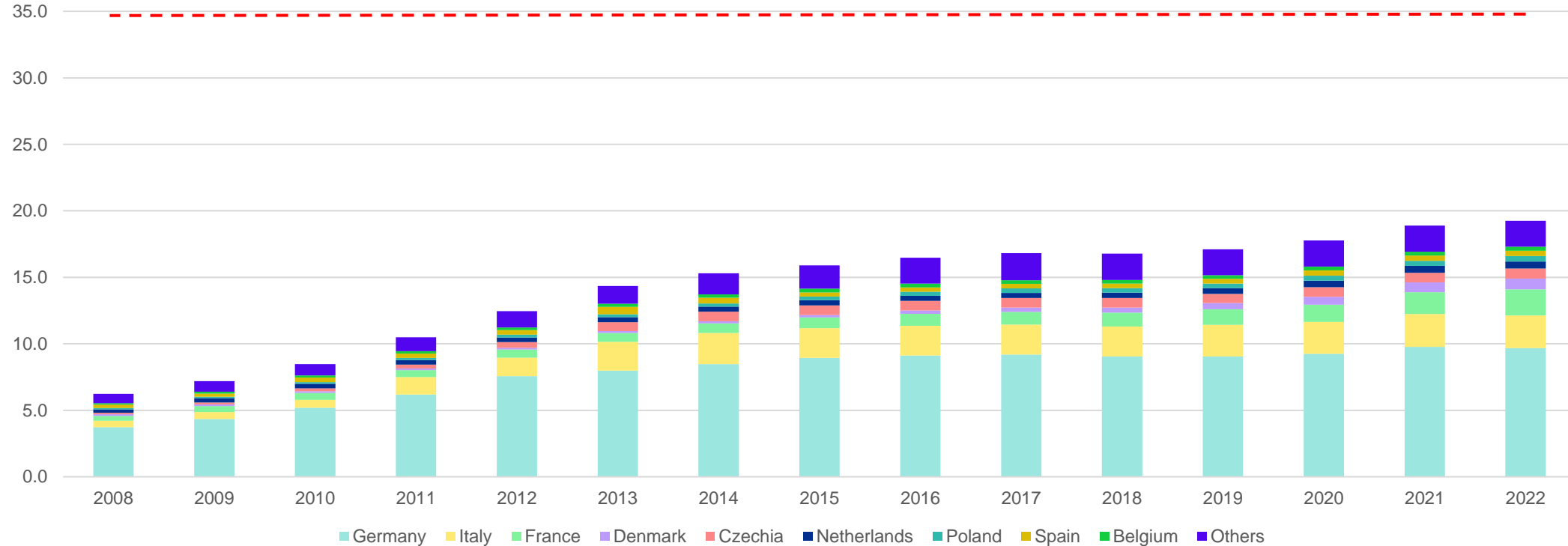
Compared with the same period last year, gas-fired power generation in the EU declined by 16% in the first half of 2024. Increased renewables' output limited the opportunities for conventional power plants (gas and coal) to run profitably, reducing carbon emissions and helping to loosen the EU gas demand-supply balance. Electricity network interconnectors continued to play a key role in ensuring renewable electricity was utilised efficiently. Markets where gas-fired generation increased saw an equal or greater decrease in coal generation.

Source: ACER calculations based on European Network of Transmission System Operators for Electricity (ENTSO-E) data.
 Note: Hydro does not include hydro-pumped storage. Hydro-pumped storage, biomass and other generation sources were accounted for separately, under the category 'Other'.
 'Demand' combines consumption and net imports from countries outside the EU.

Biogas production must accelerate to reach 2030 targets

EU biogas production, 2008-2022 (bcm/year)

REPowerEU biogas target for 2030



The EU's production of biogas and biomethane has doubled over the last 10 years, reaching approximately 6% of final EU gas consumption, partly offsetting the decline in conventional gas production. However, to meet the ambitious REPowerEU targets, growth must accelerate. Prioritizing production based on organic waste will also improve waste management, reduce greenhouse gas emissions from landfills, and contribute to a circular economy. However, using energy crops remains controversial due to concerns about land use and competition with food production.

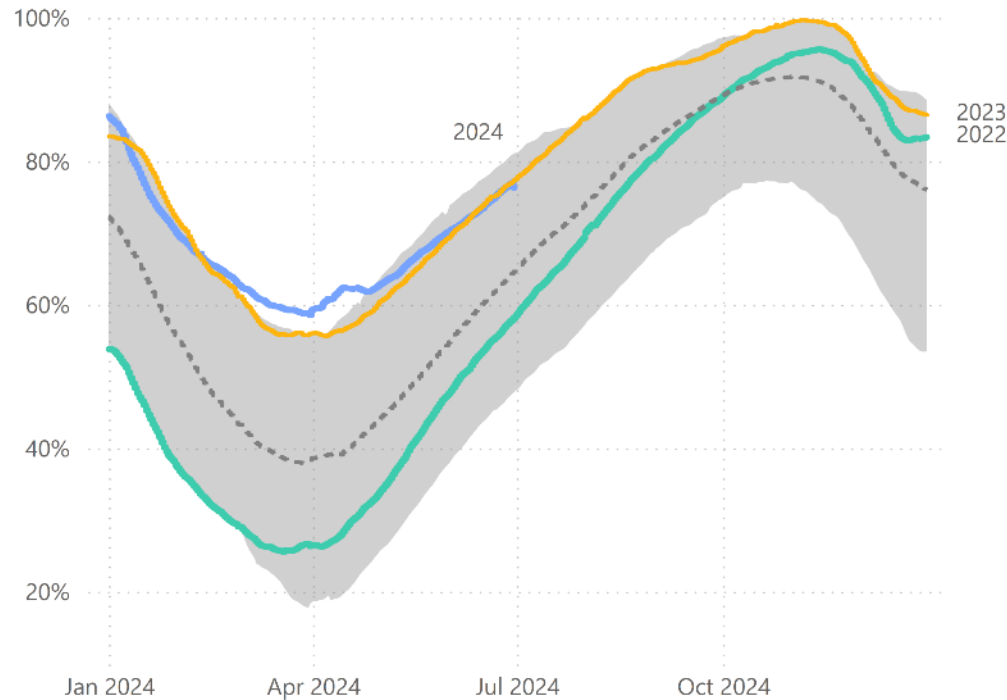
Source: Eurostat.
Note: Biogas comprises 60% methane and 40% CO2. It can be used for cogeneration of heat and electricity. Biomethane is a biogas from which the carbon dioxide, hydrogen sulphide and water have been removed. As a result of that purification process, the biomethane has the same characteristics as natural gas and can be injected into the grid.

Infrastructure developments in the first half of 2024

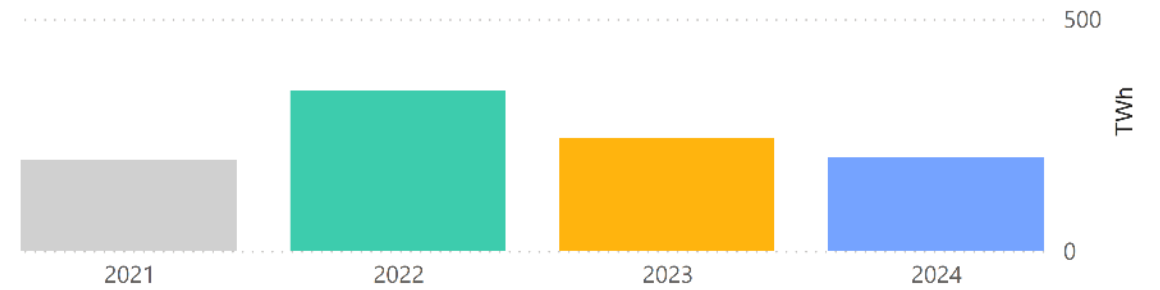
Utilisation of storage, LNG and transmission network

Storages at top of range despite slow injections in Q2

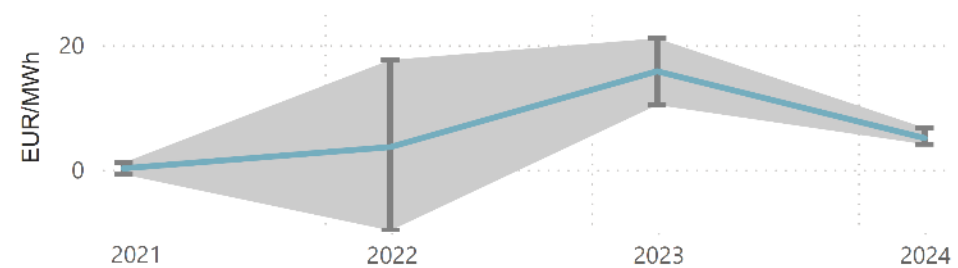
EU gas storage levels, 2018–2024 (% of working gas volume)



EU gas storage injections, Q2 2021-2024 (% of working gas volume)



winter season - day ahead time spread in Q2 (average and range)



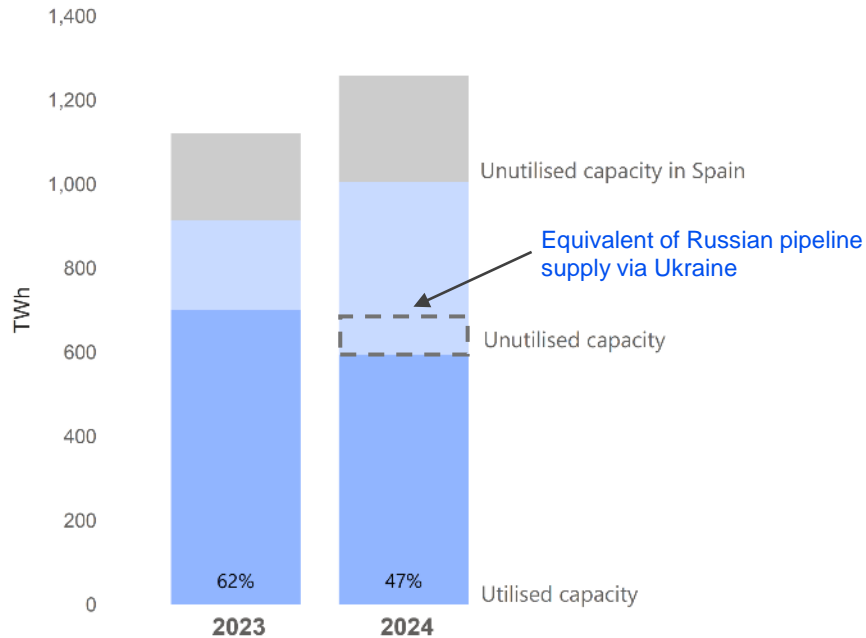
EU storages held 41 TWh more gas at the end of the 23/24 heating season compared to the same time last year, thanks to record storage levels at the start of 2024 and modest withdrawals in the first quarter. Despite slow injections in the second quarter, storages ended the first half of 2024 with nearly the same stock as in 2023 and are on track to meet mandated targets by November 2024¹. Although market prices have provided a weaker incentive to store gas than last year, the summer-winter time spread has remained consistently positive throughout the second quarter.

Source: ACER based on Gas Infrastructure Europe data and ICIS.

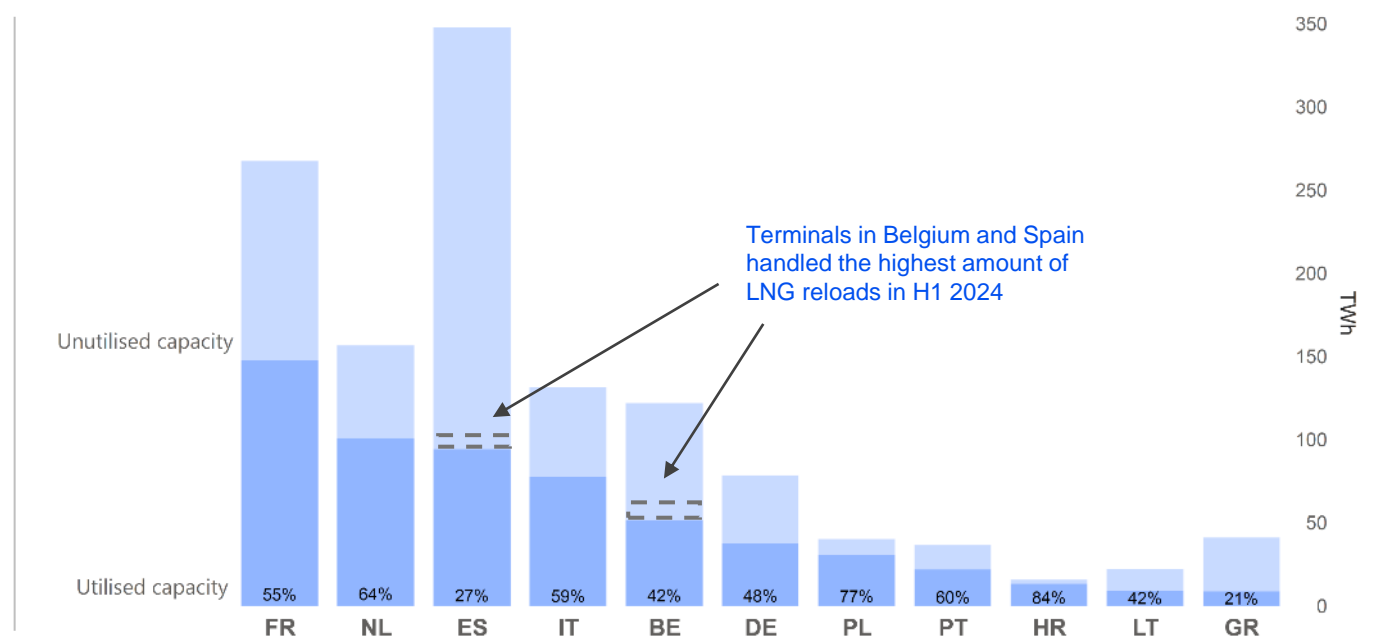
Note 1: The EU adopted the Gas Storage Regulation (Regulation (EU) 2022/1032) in June 2022 (amending the Security of Supply Regulation (Regulation (EU) 2017/1938)) mandating Member States to fill storage facilities to at least 80% of their capacity by 1 November 2022, and up to 90% by 1 November in subsequent years until 2025.

Spare LNG capacity providing buffer to manage risks

Utilisation of LNG terminals in the EU, H1 2023-2024
 (% of nominal technical capacity)



Utilisation of LNG terminals per Member State, H1 2024
 (% of nominal technical capacity)



New LNG terminals in locations most affected by cessation of Russian flows (e.g., Germany) was a turning point in the energy crisis, helping to stabilise prices. In the first half of 2024 regasification capacity increased but send out to the grid declined compared to 2023. Questions around EU LNG capacity saturation notwithstanding, spare LNG capacity is one of the key flexibility resources for managing the gas supply-demand balance both seasonally (e.g., in Greece*) and structurally (e.g., any additional decline of Russian pipeline supply will largely be substituted by LNG).

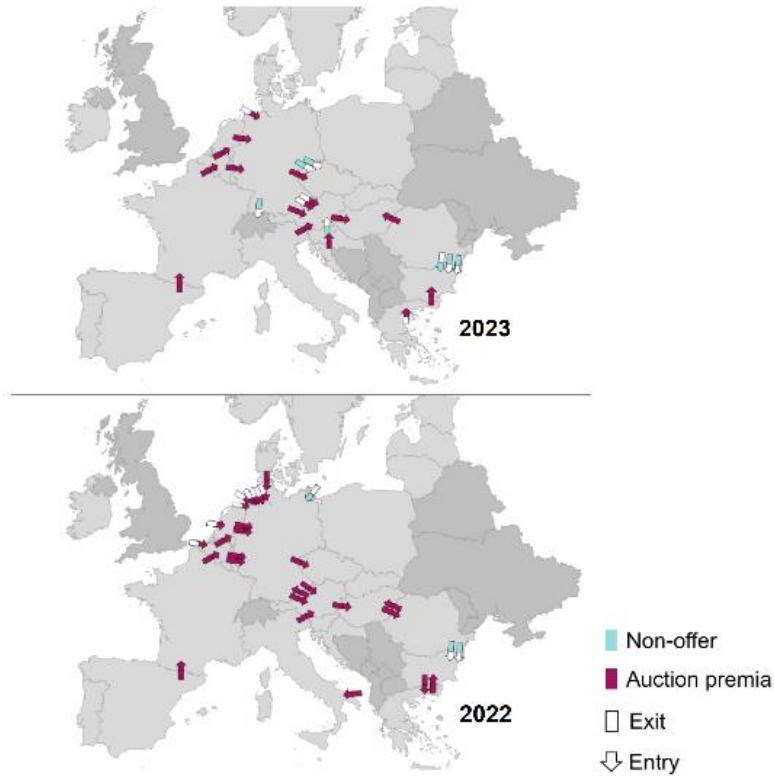
Source: ACER based on Gas Infrastructure Europe data and ICIS LNG Edge.

Note: Utilisation calculated as ratio between technical nominal capacity and send-out volumes. See expanded considerations on the subject in [ACER's LNG Market Monitoring Report](#), released in April 2024.

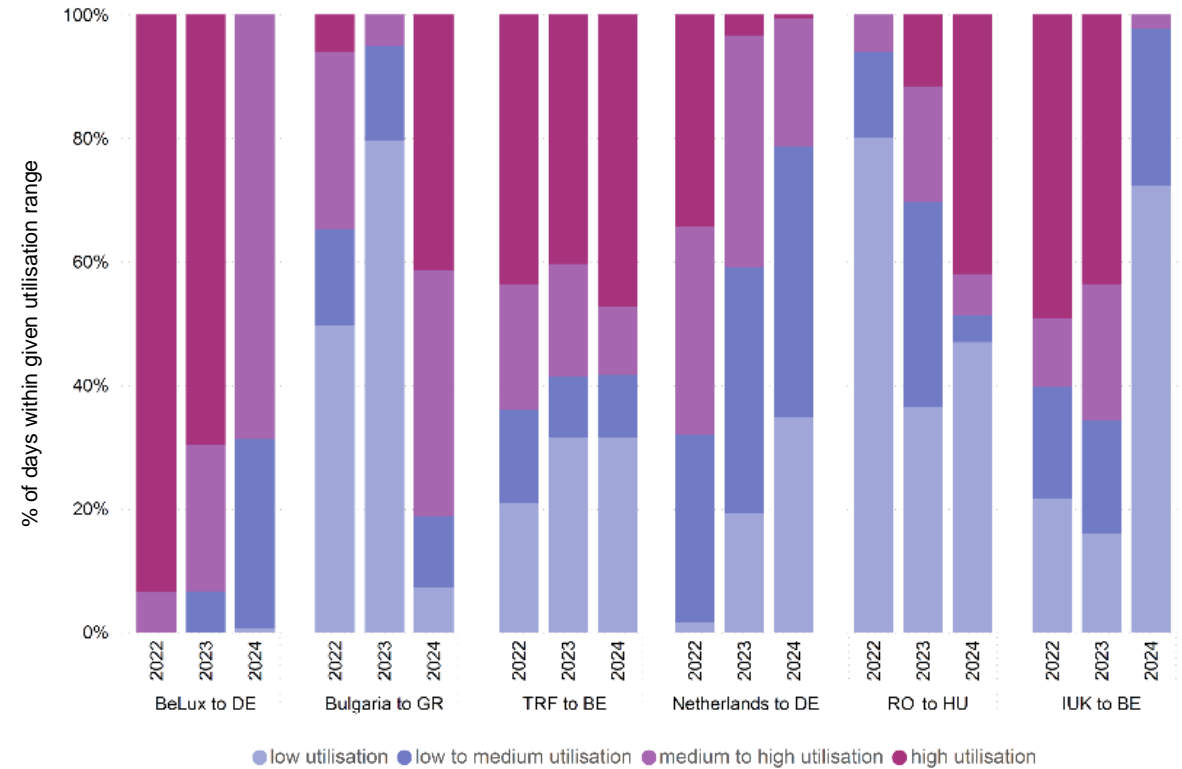
* In Greece and some other gas markets that lack underground storage capacity, LNG terminals are dimensioned to meet peak winter demand.

Congestion eased but new challenges possible

Contractually congested interconnectors, 2022–2023



Selected borders with high utilization of interconnectors, H1 2022-2024



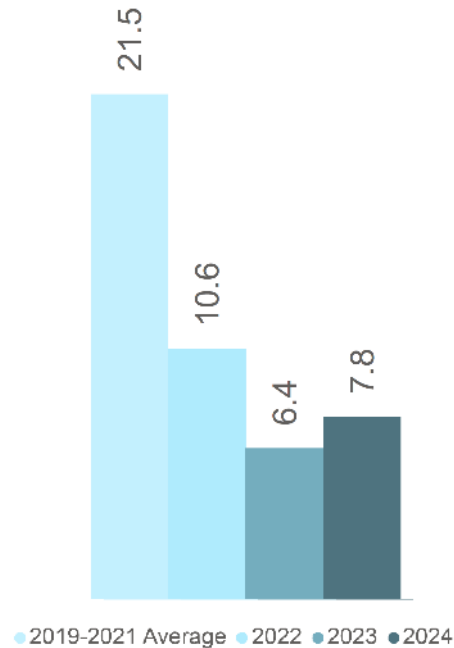
Congestion diminished in 2023 but remains present on key West-East routes that were found congested in 2022. New LNG import capacity removed congestion on entry points from Norway and from the UK. In the first half of 2024, interconnectors between West and Central Europe (e.g., Belgium to Germany) remained highly utilised though flows decreased year-on-year on lower LNG imports. High pipeline supply to South-Eastern Europe resulted in high utilisation of several interconnectors in the region (e.g., Romania to Hungary).

Source: ACER congestion analysis based on data provided by ENTSOG, GSA Platform, PRISMA and RBP.
Note: low utilisation = 0-25%; low to medium utilisation = 25-50%; medium to high utilisation = 50-75%; high utilisation = 75-100%.

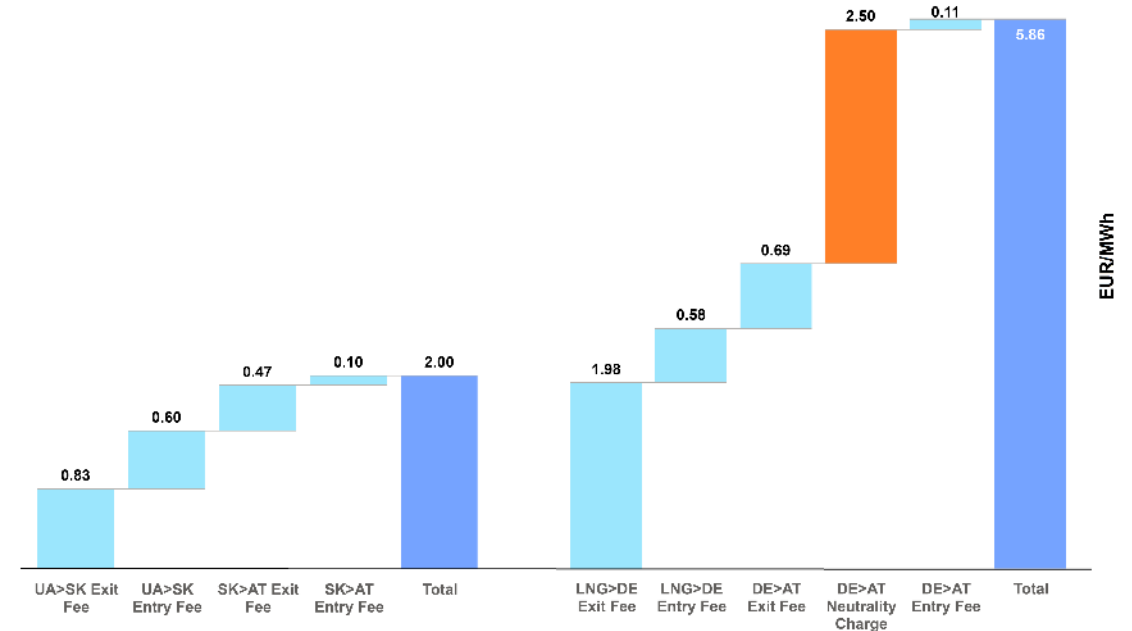
Ukrainian transit flow developments and possible impacts

Ukraine gas transit's expiry could tighten regional markets

Ukrainian gas flows into EU via Slovakia, H1 2019-2024 (bcm)



Comparison of transport costs into Austria and Slovakia from various supply routes, July 2024 (EUR/MWh)



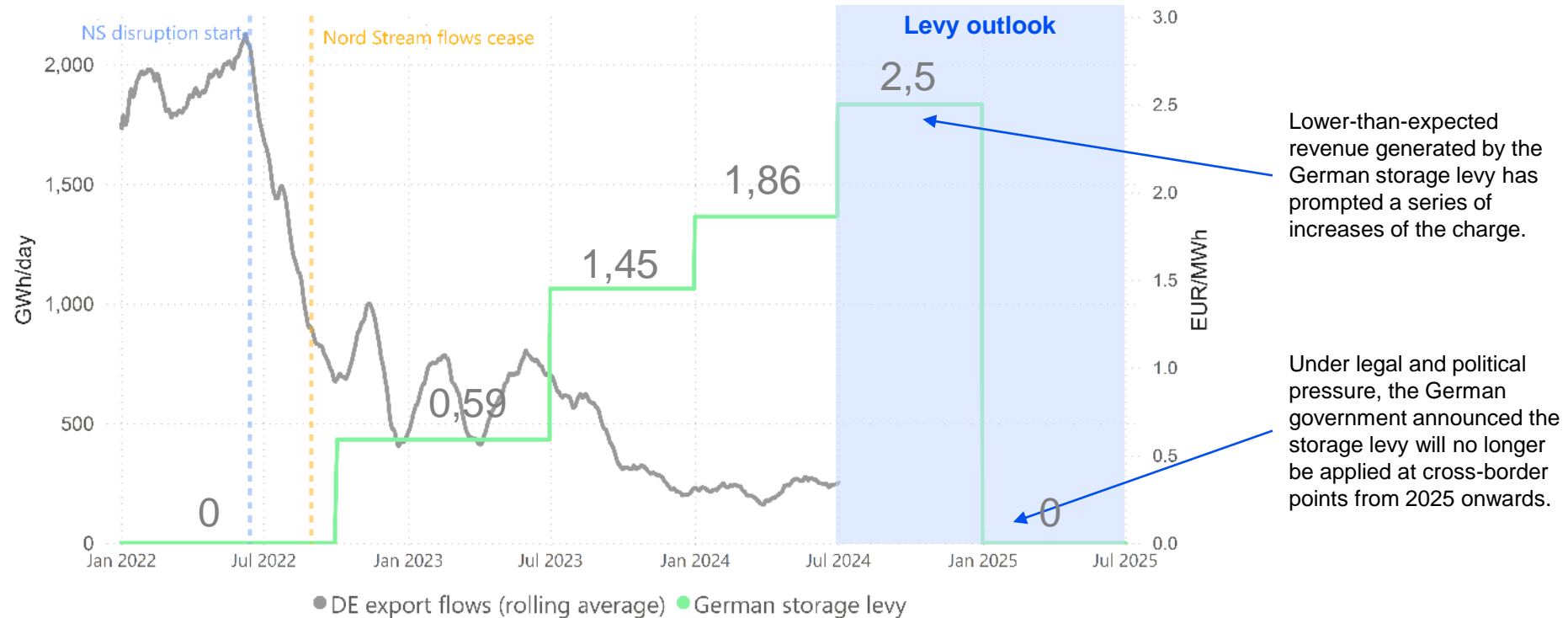
The Ukraine-Russia gas transit agreement expires at the end of 2024. The Ukrainian authorities have indicated they won't renew it. By July 2024, EU imports from Ukraine totalled 7.8 bcm (+14% YoY), primarily serving the Austrian and Slovak markets and possibly neighbouring hubs. Impacted Member States are implementing contingency plans, and security of supply should be guaranteed amid large storage stocks, modest demand, and alternative import options, mainly LNG. However, a full supply disruption would likely tighten Central East markets and push regional prices upwards. Moreover, while additional LNG supplies can offset the potential drop, they are likely to be costlier, incur higher transmission costs, and face some bottlenecks. Finally, specialised media and selected stakeholders have referred to alternatives like European companies booking transit capacity. Yet, they may face technical constraints and seem uncertain.

Source: ACER calculations based on European Network of Transmission System Operators data.

Note: The figure 'Comparison of transport costs' uses yearly (capacity) tariffs, normalized in energy terms based on a 100% capacity load factor. LNG terminal tariffs are estimated from the results of auctioning processes.

Seamless cross-border transmission will be crucial

German exports flows (aggregate) and gas storage levy evolution, January 2022-July 2025 (GWh/day and EUR/MWh)



Lower-than-expected revenue generated by the German storage levy has prompted a series of increases of the charge.

Under legal and political pressure, the German government announced the storage levy will no longer be applied at cross-border points from 2025 onwards.

Increased reliance on LNG is prompting adjustments in cross-border flows, underscoring the need to promote seamless transmission. Smooth and cost-efficient transportation is also important to supply gas from EU Member States into Ukraine after the gas transits will likely expire¹, but also to leverage Ukraine's ample storage capacities. The announcement by the German government that the neutrality charge will no longer be applied to cross-border points from January 2025 is a positive development. It will remove a significant barrier to cross-border flows and lower the risks of gas market fragmentation.

Source: ACER based on BNetzA data. Note 1: Under the current arrangements, some of the transit volumes to EU companies were swapped for delivery into Ukraine or injected into storage. If there is no transit, all gas would be physically imported from neighbouring EU countries into Ukraine. Note clarifying the Figure: The magnitude of the impacts of the neutrality charge over gas export flows cannot be determined precisely, as the evolution of flows is not solely influenced by the levy but also by additional market dynamics, including the better replenished stocks of storage sites and decreasing demand since end-2022.

Modelling possible impacts of the expiry of Ukraine transit

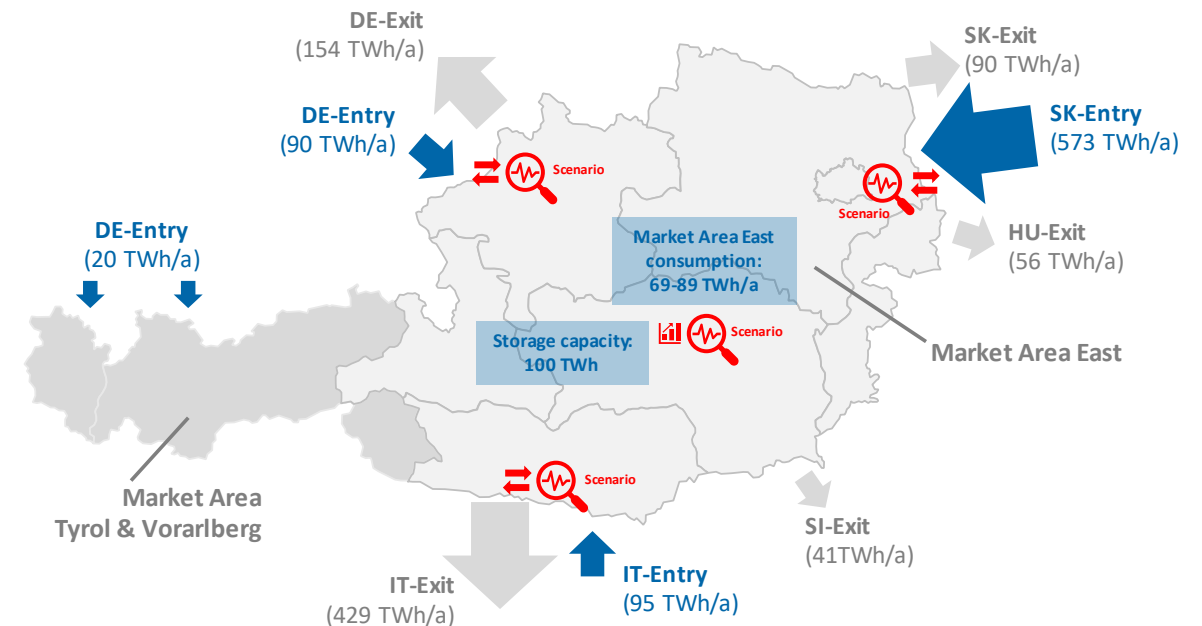
In accordance with a recent analysis done by [E-Control](#), neither shortage, nor strategic gas reserves will be activated, after the expiry of the Ukraine gas transit.

A variety of elements already increase supply security:

- **High storage levels** (currently slightly above 80%).
- **Persistent low demand** (over 20% below the 2018-2022 average).
- **Well-developed supply infrastructure** from Germany and Italy (including the recent capacity expansion at Arnoldstein IP).
- **Advancing diversification of gas supply** from neighbouring Member States.
- **Access to integrated and liquid gas markets** (Austria, Italy, Germany – for the latter, the removal of the neutrality charge is seen as a supportive factor).

Austrian gas infrastructure nominal capacities and demand, 2022 (TWh/year)

Entry capacities exceed domestic demand, even with gas flows only from Germany and Italy



Note: Analysis done for Market Area East. Daily maximum import capacities from Germany and Italy add up to around 500 GWh/d. Austrian UGS provide a total technical withdrawal capacity of around 1.000 GWh/d.

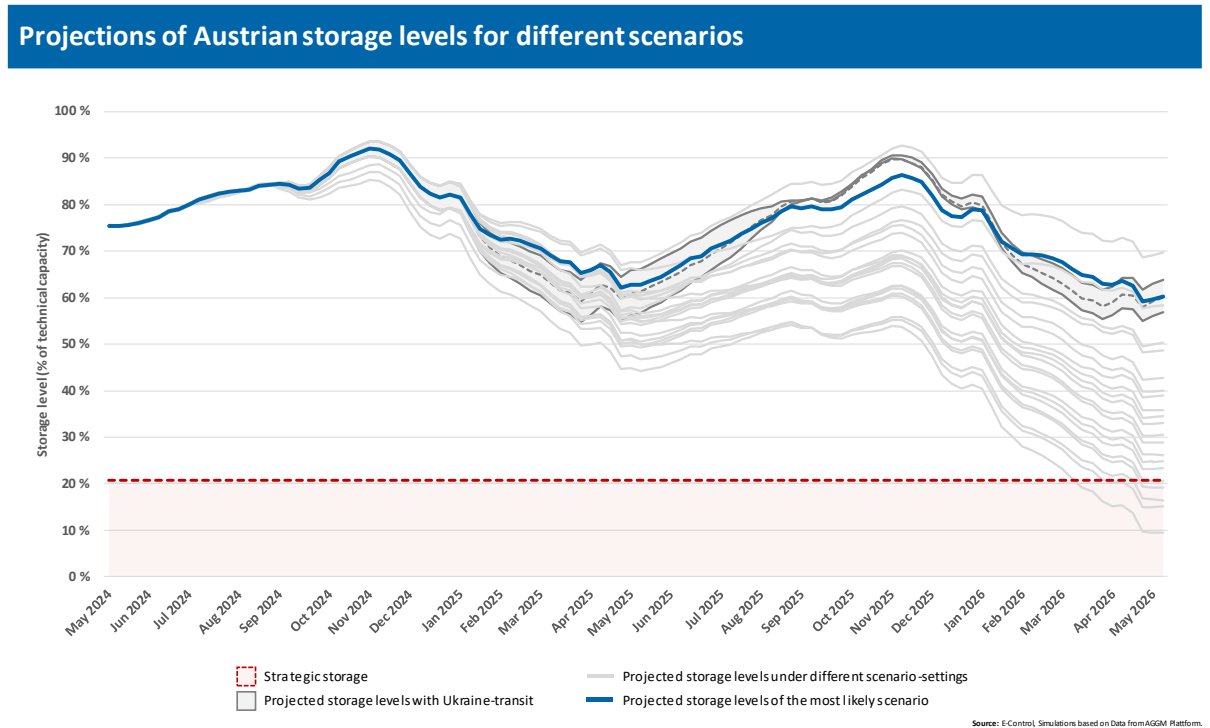
Modelling possible impacts of the expiry of Ukraine transit

E-Control analysis models 20+ scenarios simulating¹:

- gas flow patterns at interconnection points;
- domestic consumption;
- storage levels.

Conclusions:

- In all but the worst-case scenario (high domestic consumption and high transit-flows to eastern neighbours), no gas shortages are expected after the expiry of the Ukraine-transit.
- In half of the scenarios, storage levels reach levels up to 70% or more ahead of the winter 2025/2026.



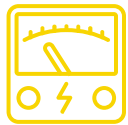
Simulations include 24-month projection period | 3 scenarios for Ukraine-transit | 3 scenarios for domestic demand | various control variables for import and export capacities use.

Conclusions

Recent publications:



Gas congestion report



Capacities for cross-zonal electricity trade



Analysis of the European LNG market

In the first half of 2024, EU gas markets have continued adapting to the new market setting of reduced Russian flows, increased LNG reliance and decreasing demand. This adjustment keeps leading to relatively higher price volatility and more variant infrastructure utilisation rates.

This new market environment brings new challenges and implications for the future, such as the need to safeguard competition as the EU reliance on LNG heightens, and possibly some amplified volatility until new global LNG production stabilizes prices. Additionally, the surge in LNG supply has led to flow reconfigurations, affected in occasions by rising cross-border transportation costs. The expiry of Ukrainian transit flows could push regional prices upwards, even if security of supply should be guaranteed amid large storage stocks, modest demand, and alternative import options. Amidst these changes, the market is evolving to incorporate larger volumes of decarbonized gases, while overall remaining to ensure EU's seasonal energy supply through vast storage capacities.

ACER will continue to closely monitor trends in the European gas markets that could lead to short-term volatility for European energy markets. The next update on the European gas wholesale markets will be published in October 2024.

Upcoming publications:



Energy retail monitoring

September



Security of electricity supply

October



EU electricity wholesale market integration

October



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of Energy Regulators

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