
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 selected forward-looking considerations, with more to come throughout the year.

Explore the new market monitoring section of the ACER website for additional information about European energy markets.
EU wholesale gas market: 2023 in numbers

-8%
Decrease in gas consumption in 2023

+50 BCM/Y
Additional LNG import capacity

41 EUR/MWh
Average TTF day ahead price

99.9%
Gas storage stock at start of winter 2023

Note: LNG stands for liquified natural gas. TTF stands for Title Transfer Facility, the virtual gas trading point in the Netherlands. Source: ACER based on Eurostat, GIE and ICIS data.
EU wholesale gas market: 2024 so far

- 51% Average utilisation of EU LNG capacity in first quarter of 2024*
- 27 EUR/MWh Average TTF day ahead price in first quarter of 2024*
- 59% Gas storage stock at end winter 2023*

*Note: Data compiled on 15/03/2024. LNG stands for liquified natural gas. TTF stands for Title Transfer Facility, the virtual gas trading point in the Netherlands. Source: ACER based on GIE and ICIS data.
Price developments
Gas prices fell but remained high and volatile in 2023

Quarterly average, maximum and minimum gas wholesale prices, 2016–2023 (TTF’s quarter ahead (QA) contract)

After climbing for nine consecutive quarters (i.e., since mid 2020), average gas forward prices dropped sharply at the end of 2022 and the first half of 2023. However, prices remained at multiples of historical averages and continued to exhibit a high degree of volatility.

Source: ACER based on ICIS Heren.
Note: TTF = Title Transfer Facility (the virtual gas trading point in the Netherlands used as benchmark for EU natural gas prices). QA = quarter-ahead contracts.
Sound market fundamentals counterbalanced perceived geopolitical risk

Low demand (including demand for electricity generation), solid gas storage levels at the end of winter, new LNG import capacity and stable gas supply (including of what has remained of Russian pipeline flows) were the main drivers of declining gas wholesale prices across the year. However, events that risk gas supply such as LNG strike action at Australian LNG facilities, unrest in the Middle-East and outages of gas export infrastructure on the Norwegian continental shelf caused prices to rise in periods of 2023.

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. MA stands for Month-ahead contracts.
New LNG capacity eased congestion, aligning LNG spot and EU hub prices

Since mid-2022, LNG regasification capacity in the EU has expanded by 50 bcm/year, primarily in North-West Europe. This expansion has played a crucial role in facilitating an increase of LNG imports and helped to reduce gas network and LNG terminal congestion. As a result, it helped European gas wholesale prices decrease, and gas hub price convergence improvements.

Source: ACER based on ICIS.
Note: LNG stands for liquefied 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 convergence improved but did not reach previous levels

After a year of unprecedentedly high gas hubs’ spreads, prices began converging again in 2023. New LNG import terminals and additional gas transportation capacity on some borders helped relieve physical network congestion that drove price divergence in 2022 (itself triggered by a reconfiguration of gas flows necessitated by the stop of Russian pipeline flows). However, price convergence did not recover to levels that were the norm previously.

Source: ACER based on ICIS.
Note: LNG stands for liquified natural gas. The listed hubs correspond to Austria, Czech Republic, Hungary, Germany, France, United Kingdom, Spain and Italy Virtual Trading points.
Demand, supply and flow developments
A combination of enhanced LNG supply, new gas infrastructure investments (mostly in LNG regasification) and sharply reduced gas consumption has brought a new supply-demand balance to EU gas markets, enabling the shift away from (the majority) of Russian gas pipeline supply.
In the first full year following the halt of (the majority) of Russian pipeline gas supply to the EU, total imports remained below the levels that were the norm previously. However, with relatively stable pipeline supply throughout the year, only a small year-on-year increase in LNG imports was needed for both storage and consumption demand to be fulfilled at given price levels.
The global LNG market was still tight, but 2023 passed without high price tensions.

The EU pivot away from Russian pipeline supply and towards becoming one of the largest global importers of LNG continued in 2023 (though year on year growth of LNG imports was modest). The increase in European LNG demand has - by far - exceeded growth in global liquefaction capacity resulting in periods of intense price competition for LNG cargoes in 2022 and 2023. European willingness to outbid competitors, a favourable netback for American cargoes heading to Europe, and muted Asian demand have all contributed to significant LNG volumes reaching the EU.

Source: ACER based on Platts.
While rising global LNG production capacity will support price stability

As of February 2024, 19 liquefaction projects globally are under construction, set to boost LNG production by circa 200 million tonnes by 2030 (irrespective of the recent pause by authorities in the United States on granting new export licenses to liquefaction facilities). Such an increase in production capacity represents roughly half of current global traded LNG volumes and stands to reduce LNG market tightness and stabilise prices.
The trend of low gas consumption continued in 2023

Benign weather conditions, stagnant economic activity, and growth in low-carbon electricity generation were some of the main factors that kept EU gas consumption at levels below those observed in 2022 (-8% year on year). The trend of low aggregate gas consumption continued even as prices fell. All three demand sectors — household, industrial, and gas for power generation — experienced year-on-year decreases, ranging from 7 to 10%.

Source: ACER based on Eurostat.
Note: In comparison to the average of 2019-2021 the EU gas demand drop in 2023 reaches circa -20%.
In 2022, efforts to reduce gas consumption for power generation were hampered by low nuclear, wind, and hydro generation. However, in 2023, there was an increase in low-carbon energy generation, such as solar and wind, while nuclear and hydro generation either recovered or improved. This, coupled with ongoing reductions in electricity demand (including improvements in energy efficiency), led to a significant 22% reduction in coal and gas electricity generation.

Source: ACER calculations based on European Network of Transmission System Operators of Electricity data. Note: Hydro does not include hydro-pumped storage. Hydro-pumped storage, biomass and other generation sources were accounted for separately, with other generation sources for which the aggregated variation in generation for 2023 was zero. EEA stands for European Economic Area.
European industrial gas consumption recovered from the lows recorded in the fourth quarter of 2022. However, demand remained below historical averages, even as wholesale gas prices declined. A combination of a stagnant economic activity, energy efficiency investments, electrification, relocation or closure of the most price sensitive industries and conclusion of some gas contracts before prices started to decline are all likely contributors to this outcome.
2023 started and finished with close-to-record levels of gas in storage

Above average gas storage stocks at the start of the year helped to dispel concerns about possible gas shortages in the first quarter of 2023. Furthermore, a relatively modest depletion of stocks during winter months required significantly less injections than in 2022 to fill storages back to EU mandated levels. Finally, throughout the summer injection season there was a strong market signal to store gas, contributing to stocks reaching nominal capacity in November.

Source: ACER based on Gas Infrastructure Europe data.
Note: 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.
Gas trading activity increased in 2023 in comparison to 2022. Growth was concentrated at the Dutch Title Transfer Facility. The rise is associated with a more stable demand-supply outlook and a more favourable gas trading environment (e.g. lower relative and absolute margin requirements). Greater liquidity at gas hubs results in a more competitive and resilient EU gas market.

Decision-makers should consider measures that promote standard trading and reduce uncertainty.

Source: ACER based on REMIT.
Note: TTF stands for Title Transfer Facility, the virtual gas trading point in the Netherlands. VTPs stands for Virtual Trading Points.
Select emerging EU gas market challenges
Future EU LNG supply needs will hinge on attained reductions in demand

LNG supply is expected to provide most of the flexibility to accommodate to the gradually decreasing EU gas demand, while pipeline supplies are expected to remain relatively stable although under a slight declining trend. Flexibility in long-term LNG contracts is hence essential for mitigating demand reduction risks.

Source: ACER based on Platts, European Network of Transmission System Operators Gas and European Commission
Note: Domestic Production includes conventional gas, and projected Biomethane and Hydrogen production developments.
Gas storages will remain a pillar of energy system flexibility and security of supply

Even as the decarbonisation and the electrification of the energy system progress, alternatives to gas storage for the provision of seasonal flexibility have yet to mature and scale. Therefore, in terms of security of supply — and consequently market stability — gas storages play an invaluable role in Europe. The energy crisis showed that gas storage missteps can be extremely costly, highlighting the importance of coordinated, efficient storage regulatory frameworks.

Source: ACER based on Gas Infrastructure Europe and Eurostat data.
Note: Difference between reported send-out from LNG terminals and nominal technical capacity (not corrected for unavailability); Spanish and Portuguese LNG terminals not included.
Persisting EU gas price differentials carry implications

If Europe wants to effectively address the implications of global gas price differentials not least vis-à-vis North America, attention shifts to other EU advantage factors, such as enhanced market integration and resources sharing. This is given continuous subsidisation of energy input factors is likely to prove fiscally extremely challenging. This challenge is compounded by the fact that gas still covers circa twice the energy needs met by electricity across the EU, at lower nominal energy price and transport costs.

Overview of natural gas price international benchmarks, February 2024 (dollar/mmbtu)

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Source: Europeangashub.
Note: See further considerations on the subject in ACER's EU energy markets, future competitiveness & a few energy transition 'truths' presentation to the Eurogroup 15 January 2024.
All the while, current market fragmentation risk is real

German exports flows (aggregate) and gas storage levy evolution, July 2022–January 2024 (GWh/day and EUR/MWh)

The increased EU reliance on LNG will prompt adjustments in cross-border flows, underscoring the need to promote seamless transmission. However, some recently introduced uncoordinated national measures that increase the cost of gas cross-border trade risk disrupting smooth gas flows. These give rise to concerns about certain gas market fragmentation and hub price convergence being hampered. More coordinated approaches hence need to be promoted.

Source: ACER based on BNetzA data.
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 lowering demand evolution since end-2022.
The Ukraine-Russia gas transit agreement is due to expire at the end of 2024, and Ukrainian authorities have referred that they won’t renew it. In 2023, both Ukraine and TurkStream transits delivered each around 14 bcm, while Russian LNG deliveries accounted to circa 20 bcm (a large part, intended for reloads¹). EU Member States are implementing contingency plans to manage potential supply disruptions². Furthermore, Ukraine faces implications if the cessation of Russian transit flows impedes its capacity to procure gas from neighbouring EU Member States through virtual flows. This could impact the use of Ukraine’s extensive storage facilities³. This scenario makes even more pressing the need of coordinated measures not to rise transport costs and endanger transit flows.

Note 1: A substantial part of Russian LNG deliveries to the EU is then reloaded to non-EU countries (30 to 35%, in accordance with some educated guesses).

Note 2: e.g., Slovakia and Austria would be most affected. In Austria suppliers need to demonstrate a gradually increasing share of non-Russian gas. That can be done by procuring it via the AggregateEU joint purchasing platform, as an example.

Note 3: Under the current arrangements, some of the transit volumes to EU companies were injected into storage. If there is no transit, all gas would be physically imported from neighbouring EU countries into Ukraine.
Conclusion
Adapting to build resilience

In 2023, the EU gas system consolidated the notable changes initiated in 2022 to reduce reliance on Russian supply through increased LNG imports and demand reduction.

However, these changes bring 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, which are at risk of being affected by uncoordinated national measures rising cross-border transportation costs. 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’s recent efforts focus on addressing these challenges, with priorities including LNG market monitoring and its impacts on competition and hydrogen market framework enhancement. ACER plans to provide detailed overviews of EU energy market performance in 2023 and 2024, publishing various quarterly reports that highlight the need for adapting to build resilience and enhancing integration to navigate future challenges.

Quarterly Gas reports
Electricity and gas markets dashboards
April: Analysis of the European LNG market
March: Key electricity and gas wholesale developments

September: Energy retail monitoring
October: Security of electricity supply report
October: Progress of EU electricity wholesale market integration
November: Analysis of the European hydrogen market