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Commission

Quarterly report

On European
gas markets



Market Observatory for Energy
DG Energy

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Energy

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Directorate-General for Energy, Unit A.4, Chief Economist - Market Observatory for Energy, 2023

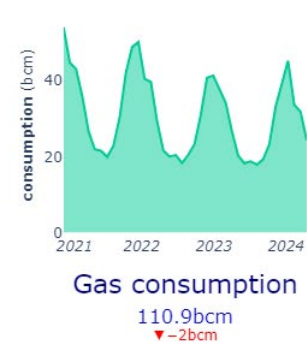
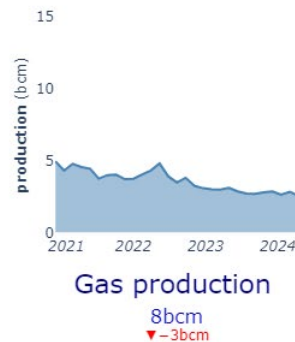
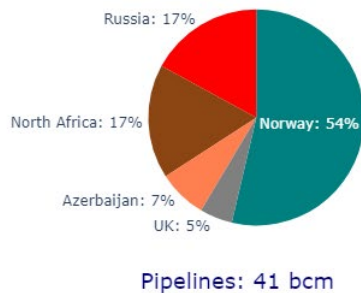
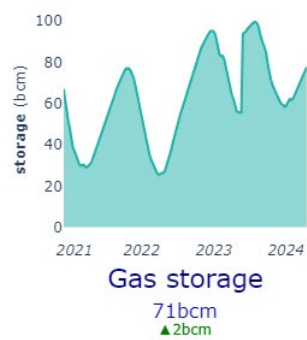
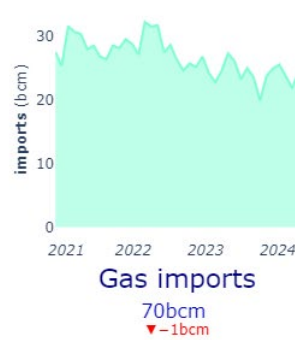
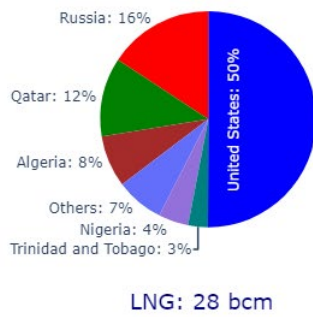
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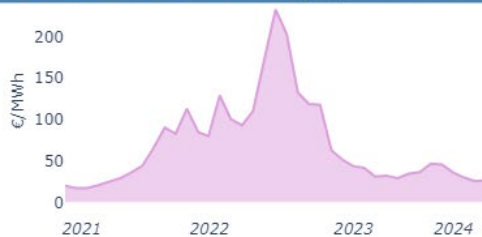
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Key insights: Q1 2024 Gas Trends and Comparative Analysis with Q4 2023

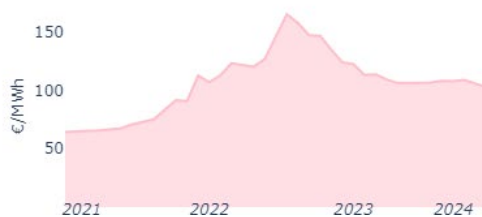


Prices: Evaluating prices in Q1 2024 and year-on-year comparison



Wholesale prices
27.5 €/MWh
▼ -26€/MWh

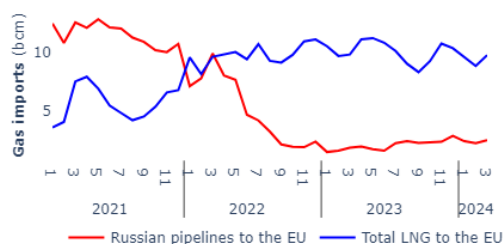
y-o-y change
-48%



Retail prices
106 €/MWh
▼ -27€/MWh

y-o-y change
20%

Focus of the Quarter: Imports of Russian Pipelines and US LNG



LNG share of EU imports

41%
▼ -1%

US share in LNG imports

50%
▲ 7%

Pipelines share of EU imports

59%
▲ 1%

Russian share in pipelines imports

18%
▲ 6%

Source: ENTSO-G, LSEG, Vasaett, EUROSTAT, AGSI

HIGHLIGHTS OF THE 1st Quarter of 2024

EU gas consumption, production and storage in Q1 2024

- **EU gas consumption** was **111 bcm**, a **decrease of 2 % year-on-year** and **16 % increase quarter-on-quarter**, reflecting the usual higher winter demand¹.
- **EU domestic gas production** remained stable with **8 bcm quarterly production**, almost the same as in the previous quarter, but **declined by 26% compared to the last year**. The **Netherlands** remained the **largest producer** accounting for one-third of EU production (2.7 bcm, 33%), **followed by Romania** (2.4 bcm, 29%) and **Germany** (1 bcm, 1%).
- **EU gas storage level decreased** by 29% from 95% to 68% as a quarterly average reflecting the winter season's higher consumption withdrawals. On a **year-on-year** basis, the **storage filling rate was 1 percentage point higher** than in the same period of the previous year (67%), reflecting continued above average storage filling rates compared to historic levels.

EU gas imports in Q1 2024

- **EU gas imports** amounted to **70 bcm**, a **5% decrease quarter-on-quarter** and **1% decrease year-on-year**. **Pipeline gas** constituted **59% of imports (41 bcm)** and **LNG was 41% (29 bcm)**.
- **EU pipelines imports decreased by 5% compared to the previous quarter** and **remained stable compared to the previous year**. **Norway** remained the **EU's biggest pipeline gas exporter** with a **share of 54%**, followed by **North-Africa** (18%), **Russia** (17%) and **Azerbaijan** (7%).
- **EU's total gross LNG import decreased by 5% quarter-on-quarter** and **by 6% year-on-year**. Compared to 2021, the EU's LNG imports was up 91%. **France** was the **largest EU importer** accounting for almost a quarter (22%) of total volumes, followed by Spain (18%) and the Netherlands (14%). The **United States** remained the **biggest EU LNG supplier** accounting for half of the EU LNG imports, followed by Russia (20%) and Qatar (10%).
- **Russian gas represented 19% of EU's total gas imports**, which is a 2 percentage points increase compared to the previous quarter and 4 percentage point increase compared to the first quarter of the previous year. Compared to the first quarter of 2021 (pre-war level), the share of Russian gas recorded a 30 percentage points decrease (from 49%).

EU wholesale gas prices and markets in Q1 2024

- European **wholesale gas prices averaged 27.3 EUR/MWh in the first quarter of 2024**, a **decrease of 33% compared to the previous quarter** and **49% lower year-on-year**. February 2024 registered the lowest wholesale price (25.7 EUR/MWh) since the energy crisis started, and comparable to the price level last seen in the second quarter of 2021.
- **Asian prices** were 6% or 1.7 €/MWh **higher than European prices** as a quarterly average and remained higher throughout the quarter. **The Henry Hub in the United States** recorded an **average price of 6.6 EUR/MWh** with a **difference of 20.8 EUR/MWh** with Europe's TTF, which signalled a **narrowing gap** compared to the previous quarter (33.1€/MWh) and an even more significant reduction in **the price difference** from 44.2 EUR/MWh (quarterly average) experienced one year ago.

EU retail gas prices in Q1 2024

- **Retail gas prices fell** in the first quarter of 2024, **decreasing by 20% compared to the first quarter of 2023** and by **3% compared to the previous quarter**, with an **average price of 106 EUR/MWh**. March 2024 registered the lowest retail price (102.6 EUR/MWh) since the start of the energy crisis in 2022.
- **Retail prices continued to diverge** across the EU and **ranged between 26 €/MWh (Hungary)** and **311 €/MWh (Sweden)**. Compared to the previous year, prices declined in most of the Member States.

Methodological Note: The rapid changes in gas and electricity markets happening through the energy transition as well as the significant restructuring of the EU's energy supply following the energy crisis, call for reviewing the Quarterly Reports of the European Electricity and Gas Markets so as to make them best fit for purpose. The aim is to ensure a timelier publication, modernise presentation, increase data transparency and an easier access to the data used to produce the reports. All this should increase usability for readers. The process of the review is planned to be carried out gradually attending the feedback we receive on it. As the Commission advances with its review, the quarterly reports will progressively reflect the methodological, technical, and editing changes as well as the comments received from stakeholders.

¹ Values (volumes and percentages) are rounded to the nearest integer or, when needed for the purposes of clarity, to the nearest one or two decimals in the Highlights. Due to the rounding of partial amounts, their addition may result in totals that are higher or lower than 100%.

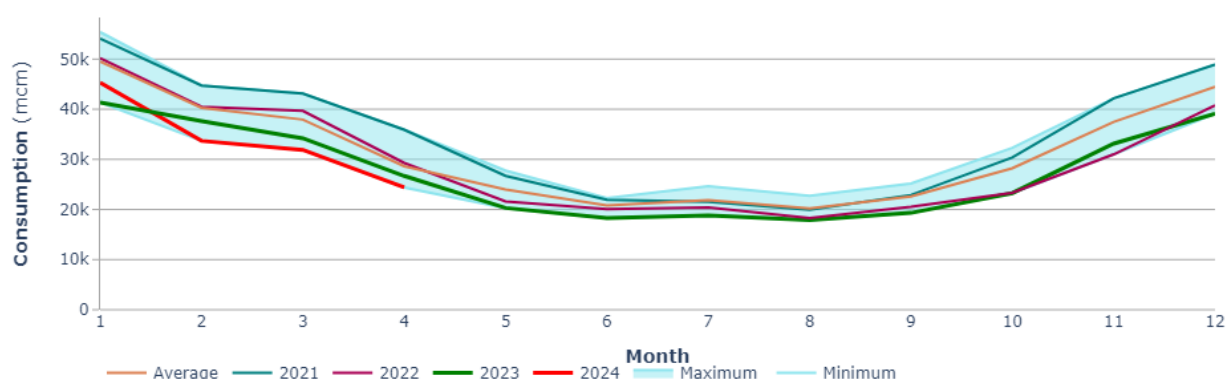
1. Gas market fundamentals

1.1 Consumption

Gas consumption in the EU and year-on-year comparison

- Q1 2024**
111 bcm
▼-2%
- Q1 2023**
113 bcm
▼-13%
- Q1 2022**
130 bcm
▼-8%
- EU gas consumption² in the first quarter of 2024 was 111 bcm, an increase of 16% (+15.4 bcm) quarter-on-quarter reflecting the winter peak consumption period. Year-on-year, quarterly consumption decreased by 2% (-2.4 bcm) indicating a continued contraction of EU gas consumption compared to historical levels.

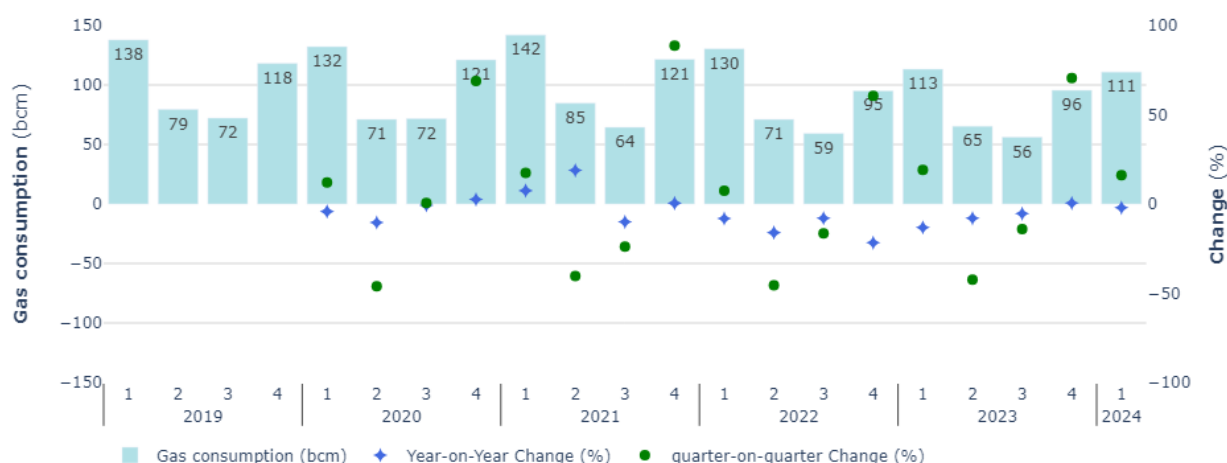
Figure 1 - EU gas consumption



Source: Eurostat.

- Figure 2 shows the change in EU's gas consumption year-on-year and quarter-on-quarter change in each quarter. Regarding year-on-year changes, in the first quarter of 2024, the continuous year-on-year decline in the consumption of each first quarter experienced since 2021 continued although the decline has moderated after the large drops in 2023 and 2022.
- Regarding the quarter-on-quarter variations in the EU's gas consumption, in the first quarter of 2024, the EU consumed 16% (+15.4 bcm) more natural gas than in the fourth quarter of 2023 in line with the high heating demand in the January-March period of the year, which usually surpasses the consumption in the October-December period of year, as demonstrated by Figure 2.

Figure 2 – Gas volumes and change (year-on-year, quarter-on-quarter) of EU gas consumption

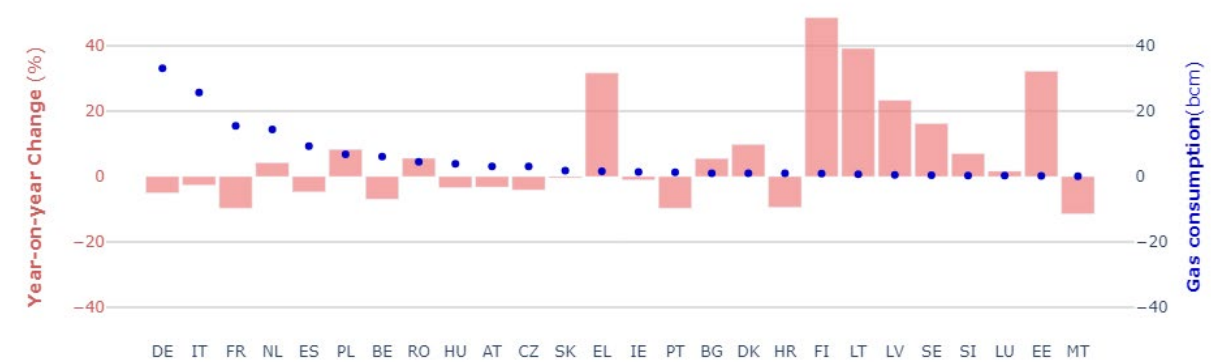


Source: Eurostat.

² EU aggregates, unless otherwise indicated, refer to EU-27, and in order to ensure comparability over time, values of earlier periods and year-on-year comparison indices also refer to EU aggregates without the United Kingdom. Therefore, in comparison to earlier editions, total EU aggregate numbers might differ in the current report.

- In a quarter-on-quarter comparison, gas consumption increased in all but two Member States. The largest quarter-on-quarter increase was observed in Latvia (+41%), while the smallest increase was in Malta (+4%). On the decrease side, Lithuania reduced its consumption by 1% and Croatia by 5% compared to the previous quarter³.
- As shown in Figure 3, year-on-year consumption was higher in thirteen Member States by between 2% and 49%, the highest increase being registered in Finland (+49%) and the smallest in Luxembourg (+2%), while in equally thirteen Member States gas consumption declined by between 0.4% (Slovakia) and 11.4% (Malta). The biggest, double digits increases were seen in Finland (+41%), Lithuania (39%), Estonia (+32%-, Greece (+32%), Latvia (+23%), Sweden (+16%) and Denmark (+10%). The biggest declines were registered in Malta (-11%), Portugal (-10%) and France (-10%).
- As Figure 3 equally shows, the five biggest EU gas consumers in the first quarter of 2024 were Germany (27 bcm), Italy (20 bcm), France (12 bcm), the Netherlands (11 bcm) and Spain (8 bcm).

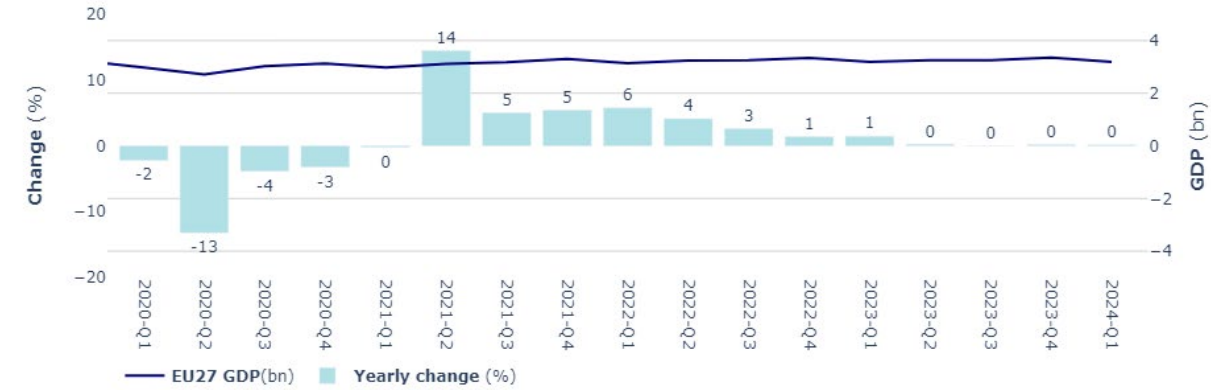
Figure 3 - Year-on-year change in Member States' gas consumption in the first quarter of 2024



Source: Eurostat.

- EU registered a modest increase in real GDP which amounted to 0.29% quarter-on-quarter and 0.46% year-on-year. The overall EU GDP amounted to 3.27 trillion EUR in Q1 2024 compared to 3.265 trillion EUR in Q4 of 2023 and 3.259 trillion EUR in Q1 2024⁴.

Figure 4– Change in EU27 real GDP in year-on-year comparison

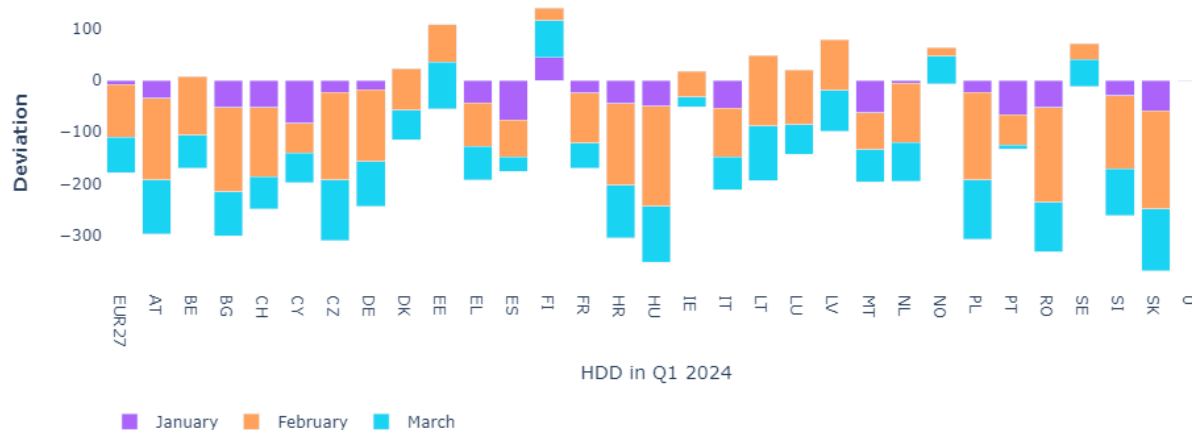


Source: Eurostat.

- Figure 5 illustrates the monthly deviation of actual Heating Degree Days (HDDs) from the long-term average (a period between 1979 and the last calendar year completed) in the first quarter of 2024. In most of Europe, milder than usual temperatures resulted in less HDDs during Q1 2024 continuing the prevailing trend of recent years.

³ Cyprus currently does not have statistically reported gas consumption.
⁴ Chain linked volumes (2010) in million euro, seasonally and calendar adjusted gross domestic product at market prices.

Figure 5 – Deviation of actual Heating Degree Day (HDD) from the long-term average in Q1 of 2024



Source: JRC.

1.2 Production

Gas production in the EU and year-on-year comparison

Q1 2024

8 bcm

▼ -26%

Q1 2023

11 bcm

▼ -13%

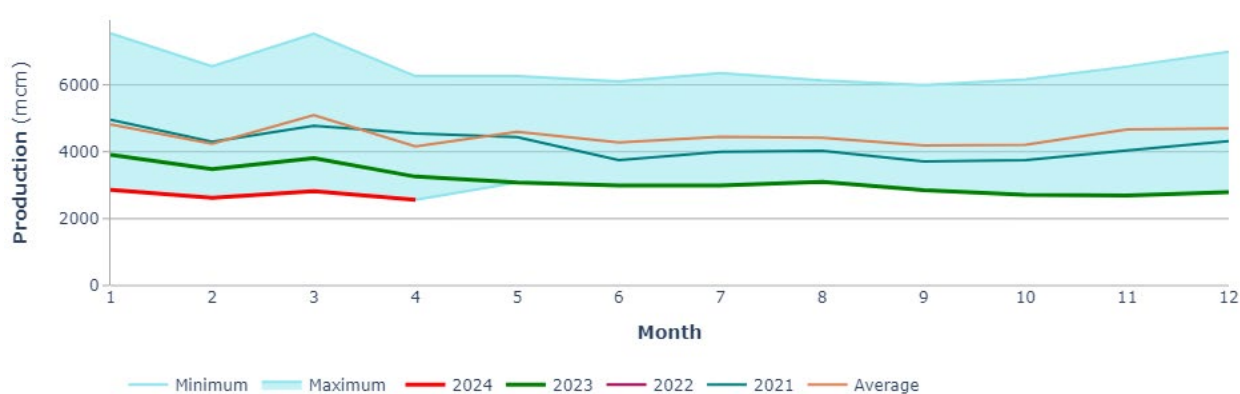
Q1 2022

13 bcm

▼ -9%

- The **EU's domestic gas production** was 8.3 bcm, an increase of 1.4% compared to the previous quarter (8.2 bcm) and a 26% decline year-on-year (from 11.2 bcm)⁵. Average monthly production was 2.77 bcm, 1.4% increase compared to the previous quarter (2.73 bcm), and 26% less than in the same quarter of 2022 (when the monthly average was 3.73 bcm).
- The EU's domestic production in the first quarter of 2024 covered 7% of the EU's consumption down from 10% in the first quarter of 2023 and 10% in first quarter of 2022.

Figure 6 - Monthly domestic gas production in the EU



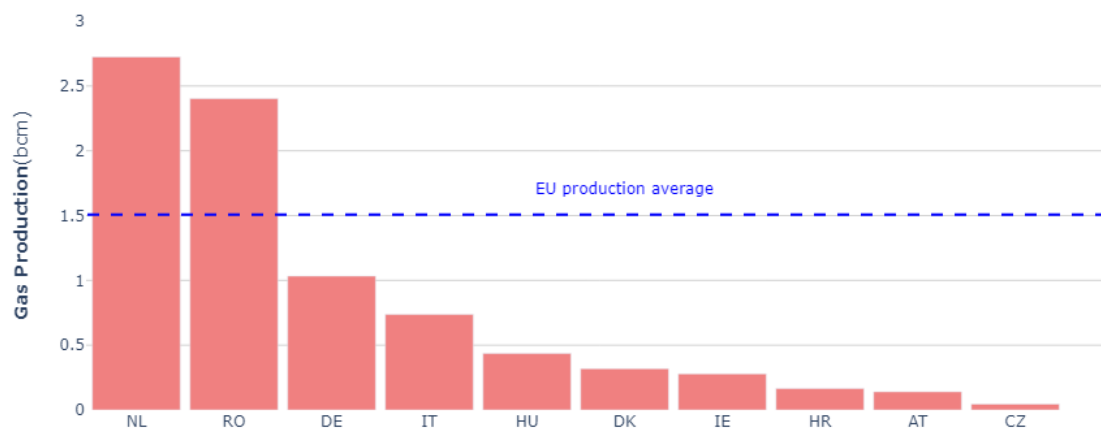
Source: Eurostat.

- In the EU, 18 Member States have gas production, while nine Member States (Finland, Estonia, Latvia, Lithuania, Luxembourg, Malta, Portugal, Sweden, Cyprus) do not produce gas in their territories.

⁵ Domestic gas production in Poland is not included in Eurostat statistics since September 2023.

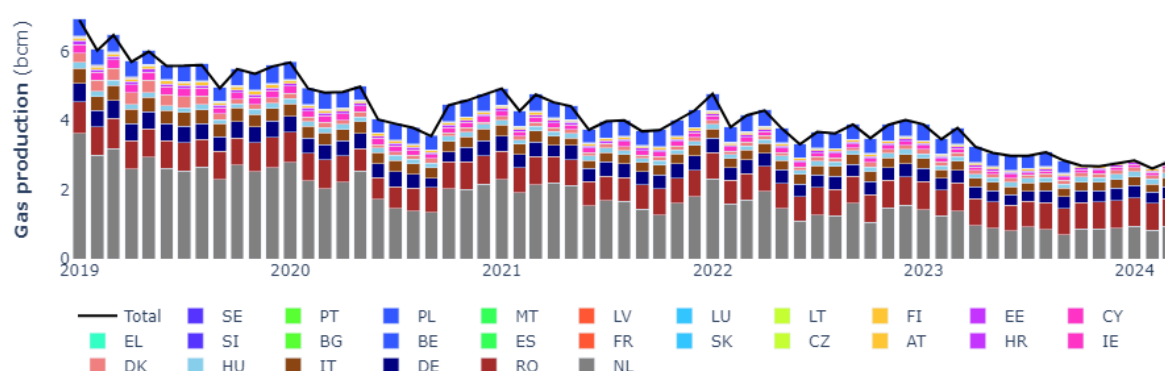
- The biggest EU gas producer in the first quarter of 2024 remained the Netherlands with a total quarterly production of 2.7 bcm, a increase of 4% since the last quarter and a decrease of 33% year-on-year. Romania kept its second place (2.4 bcm) followed by Germany (1.0 bcm). Italy was the fourth largest producer (0.74 bcm) and Hungary the fifth largest producer (0.44 bcm).
- In a year-on-year comparison, production increased in four Member States (Greece: + 414%, Belgium: +9%, Hungary: +8%, Romania: +1%), while decreased in the rest of the Member States by between 4% (Austria) and 44% (Spain). Compared to the previous quarter, production grew in eight Member States (CZ BG, BE, NL, SL, RO, IT, DE) between 0.2% (DE) and 31% (CZ), while in nine Member States there was a decline of between -1% (AT) and -53% (Spain)⁶.

Figure 7 - Quarterly gas production in EU Member States in Q1 of 2024



Source: Eurostat.

Figure 8 - Monthly gas production in the EU

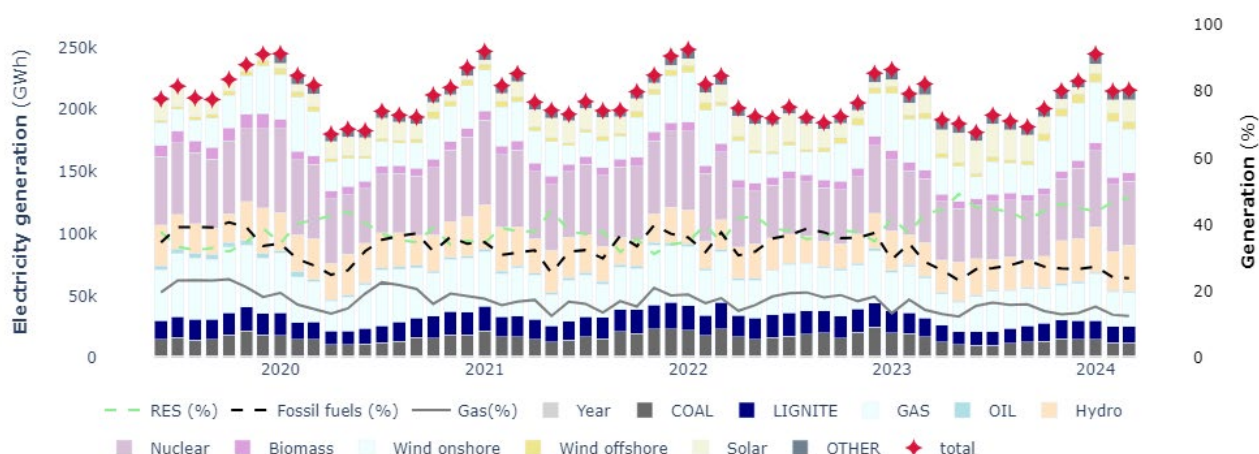


Source: Eurostat.

Electricity generation from natural gas amounted to 93 TWh or 14% of the EU's electricity generation in the first quarter of 2024, an increase of 6 % compared to the previous quarter (87.6 TWh). Electricity generation from natural gas constituted 14% of total electricity generation in the quarter, compared to 16% in the previous quarter and 15% compared to Q1 of 2023.

⁶ Statistical data on domestic gas production is available for 17 Member States as Poland no longer makes such data available via Eurostat.

Figure 9- Monthly electricity generation in the EU



Source: ENTSO-E.

1.3 Imports

- According to Eurostat, total gas import in the EU amounted to 113 bcm in the first quarter of 2024, a 6% (-7.6 bcm) decrease compared to the previous quarter and an equally 6% (-7.6 bcm) decrease year-on-year. Net imports⁷ amounted to 73 bcm reflecting 40 bcm exports⁸. Net imports decreased by 6% (-4 bcm) compared to the previous quarter and increased by 3% (+2 bcm) year-on-year. Figure 10 - EU gas imports (gross and net) by quarters

Figure 10 - EU imports of natural gas (gross and net)



Source: Eurostat.

1.3.1. Total EU imports

Total EU imports and year-on-year comparison

Q1 2024	Q1 2023	Q1 2022
70 bcm	71 bcm	87 bcm
▼-2%	▼-19%	▲9%

According to ENTSO-G, which tracks all gas flows into and out of the EU, **total gas imports by EU Member States** amounted to 70 bcm in the first quarter of 2024. This represents a 4% decrease compared to the previous quarter and a 2% decrease compared to the first quarter of 2023.

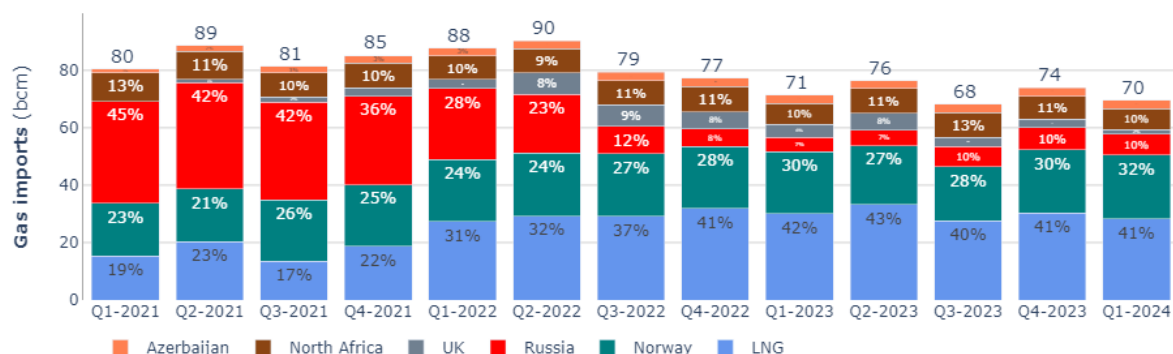
⁷ Net imports equal imports minus exports and do not account for stock changes.

⁸ Intra-EU exports of gas between Member States represent transport of gas from EU gas entry points at the EU borders for pipelines and LNG terminals on the EU maritime costs, as well as commercial and other cross-border exchanges of gas in the EU highly integrated gas networks.

⁹ Net imports

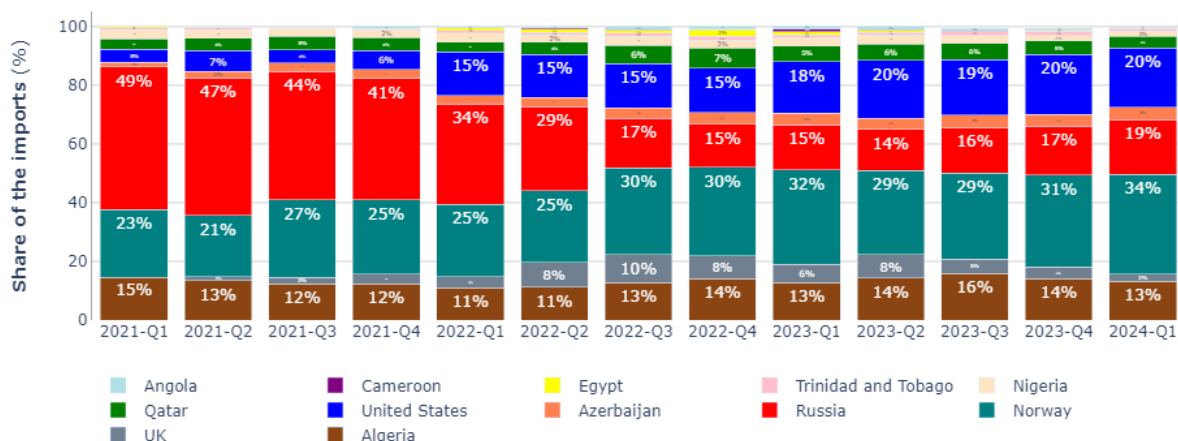
- In the first quarter of 2024, **the share of the LNG** in the total gas imports slightly decreased by 1 percentage point compared to the previous year, from 42% to 41%, and remained stable compared to the previous quarter. Half of the EU's LNG imports came from the US, and a bit more than half of the pipeline imports (54 %) came from Norway. Consequently, Norway was the biggest gas supplier to the EU (34 %), followed by the US (20 %), Russia (19 %), and North Africa (13 %). This ranking has remained relatively stable compared to the first quarter of 2023, with an increase in the shares of Russia (+ 4 pourcentage points), the US (+ 1 percentage points) and Norway (+2 percentage points) and a decrease in the share of the UK (-4 percentage points), Qatar (- 1 percentage point), Nigeria (- 1 percentage point) or Egypt (- 1 percentage point).

Figure 11 – EU imports of natural gas (share of pipeline imports by country and share of LNG)



Source: ENTSO-G.

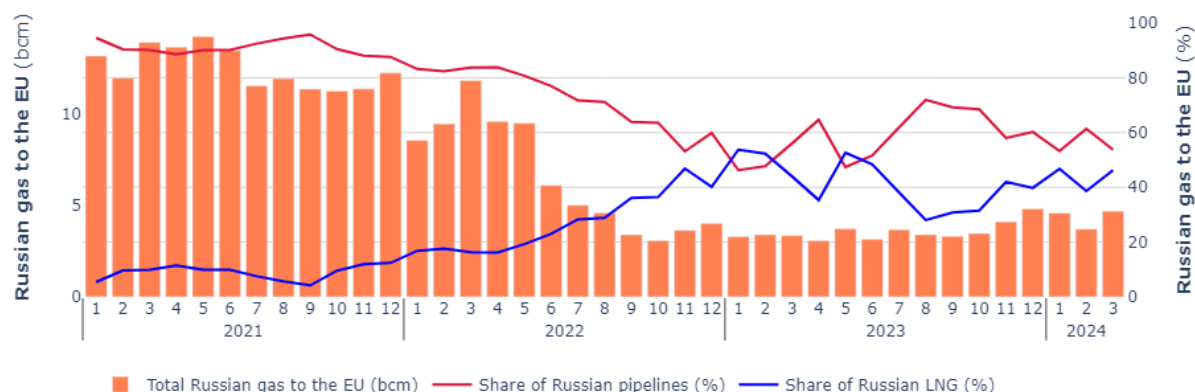
Figure 12 – Quarterly share of gas imports within the total, combining both pipeline and LNG imports



Source: Commission calculation based on ENTSO-G and LSEG

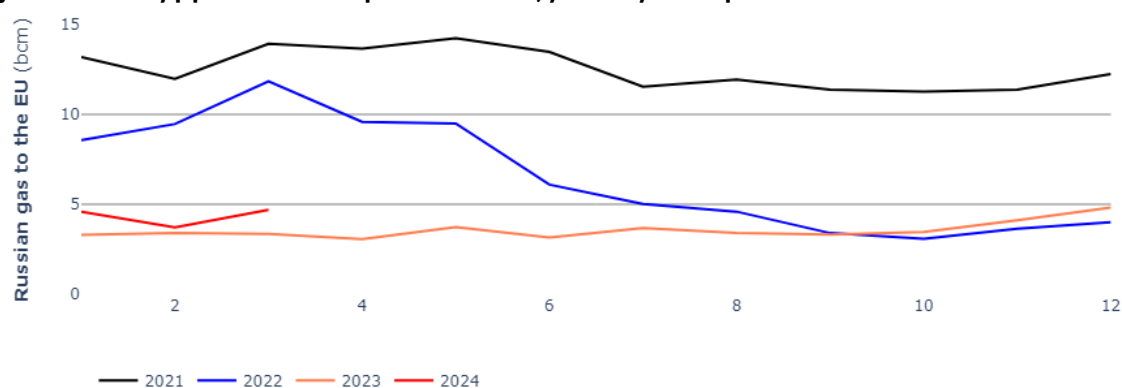
- In the first quarter of 2024, **the EU imports of Russian gas through pipelines** amounted to 7 bcm, 10 % of total EU gas imports, a slight 6% decrease (-0,5 bcm) compared to the previous quarter, but similar to the first quarter of 2023.
- Total Russian gas imports**, combining pipeline and LNG, was 13 bcm, a 5 % increase compared to the previous quarter (+0.6 bcm) and a 30 % increase (+2.8 bcm) year-on-year. Compared to the first quarter of 2021, total Russian gas imports were down by 67% (-26 bcm). Within the overall Russian exports, **the share of Russian pipeline gas** was 56% on a quarterly basis, from 92 % in the first quarter of 2021. Despite fluctuations, the importance of LNG in overall Russian exports has increased compared to the historic Russian gas export structure to the EU.

Figure 13 – Monthly pipeline and LNG imports from Russia



Source: Commission calculation based on ENTSO-G and LSEG (Refinitiv).

Figure 14 – Monthly pipeline and LNG imports from Russia, year and year comparisons



Source: Commission calculation based on ENTSO-G and LSEG (Refinitiv).

1.3.2 Pipeline imports

EU pipelines imports and year-on-year comparison

Q1 2024
41 bcm

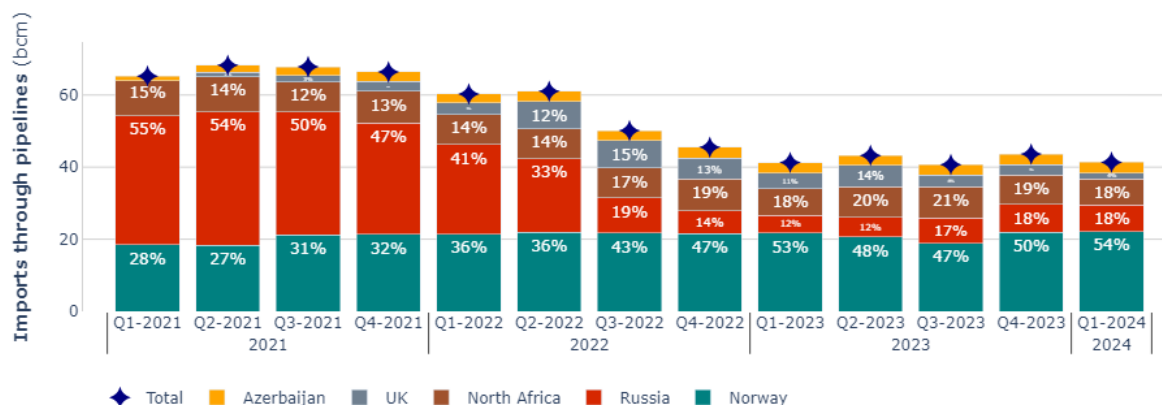
Q1 2023
41 bcm
▼ -32%

Q1 2022
60 bcm
▼ -8%

- In the first quarter of 2024, **EU pipelines import** remained stable compared to the previous year (41 bcm) and decrease by 5% compared to the previous quarter (-2.3 bcm). Compared to the first quarter of 2021, EU pipelines imports decreased by 37% (-24 bcm) driven by a 81% decrease in Russian pipeline imports (-29 bcm). This decrease has been partially offset by a 21% increase (+4 bcm) in Norwegian imports since the first quarter of 2021.
- Norway remained the **EU's biggest pipeline gas exporter**, representing 54% of the EU's pipeline imports (22 bcm), gaining 4 percentage points from the previous quarter and 1 percentage point from the first quarter of 2023 and holding their historical highest share of EU pipeline gas imports. North

Africa was the second largest gas pipeline exporter with an 18% share (7.3 bcm), followed by Russia, also with an 18% share (7.2 bcm). Azerbaijan

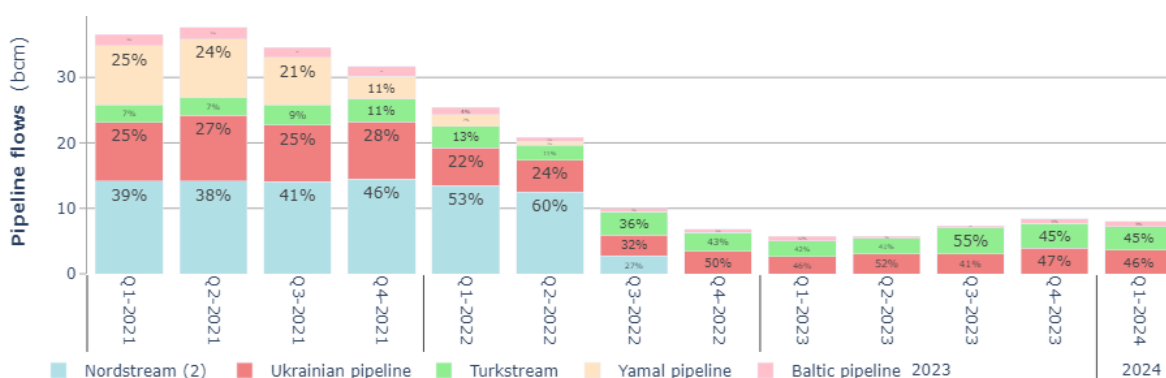
Figure 15 – Quarterly EU imports of natural gas from pipelines



Source: Based on data from the ENTSO-G Transparency Platform.

- In the first quarter of 2024, the two main remaining transit routes for Russian pipeline gas exports through Ukraine and Turkey transported 46% and 45% of the Russian gas volumes, respectively, followed then by the Baltic pipeline. Flows on the other main Russian pipeline routes coming to Europe (*Nordstream*, and *Yamal*) remained at zero.

Figure 16 – Monthly and Quarterly EU imports of natural gas from Russia by supply route



Source: Based on data from the ENTSO-G Transparency Platform

1.3.3 LNG imports

EU LNG imports and year-on-year comparison

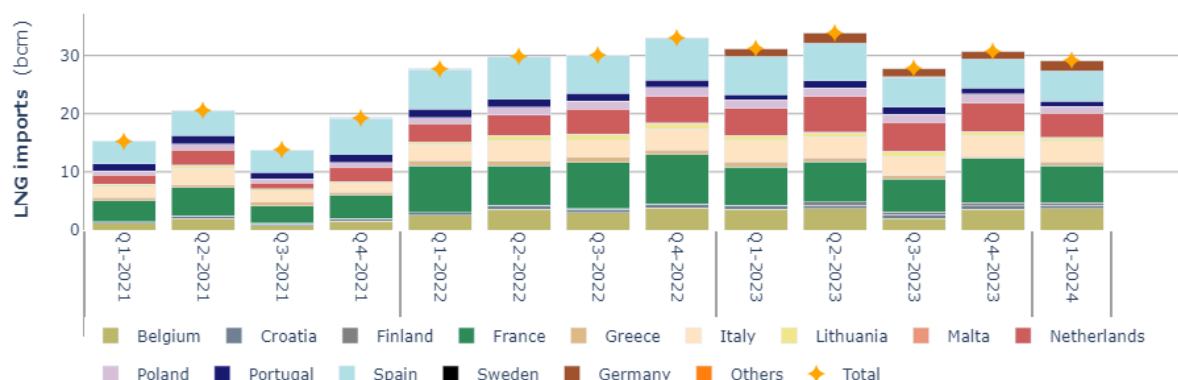
Q1 2024 28 bcm ▼-6%	Q1 2023 30 bcm ▲10%	Q1 2022 27 bcm ▲80%
---------------------------	---------------------------	---------------------------

- In the first quarter of 2024, **total EU LNG import** was **28 bcm**, a decrease of 5% (-1.5 bcm) compared to the previous quarter and a decrease of 6% (-2 bcm) year-on-year. Compared to 2021, the EU's LNG imports in the first quarter of 2021 almost has doubled (+91%, +14 bcm).

France kept and strengthened its number one **EU LNG importer position** by importing 22 % (6.4 bcm) of the EU's LNG, which is respectively 5 and 1 percentage points less than during the previous quarter and the previous year. The second largest EU LNG importer was Spain (18%, -3 pp y-o-y comparison), followed by the Netherlands (14 %), Belgium (12.5 %) and Italy (12 %).

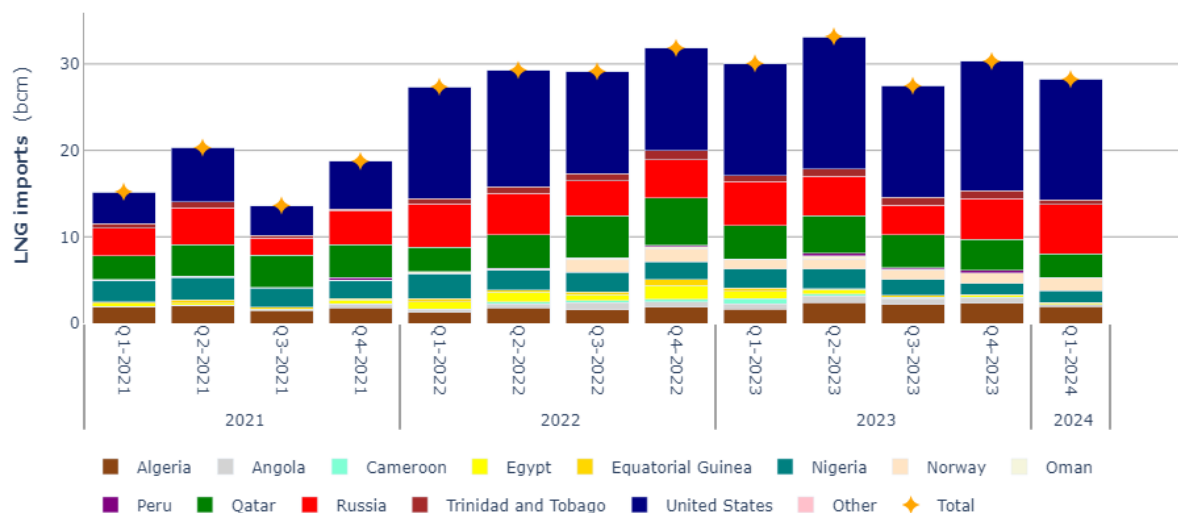
- In the first quarter of 2024, the **United States** remained the **largest supplier of LNG to the EU**, accounting for 50% of EU LNG imports (14 bcm). This represents a 7 percentage point increase from the same period last year (+1 bcm) and is consistent with the share from the previous quarter. In terms of volume, the US exported slightly less than in the previous quarter (-7%, -1 bcm) but slightly more than one year ago (+7%, +1 bcm) and
- **Russia is the second largest EU LNG supplier with a share of 20%** of the EU LNG imports. Compared to the previous quarter, Russia exports to the EU increased by 1 bcm.
- Qatar's share decreased by 3 percentage points, to reach 10 % (2.8 bcm), and Nigeria's by 2 percentage points (+ 0.7 bcm). Egypt, which exported 0.8 bcm to the EU in the first quarter of 2023, did not export any LNG to the EU in the first quarter of 2024, mainly due to the current tensions in the Red Sea.

Figure 17 - LNG imports to the EU by Member States



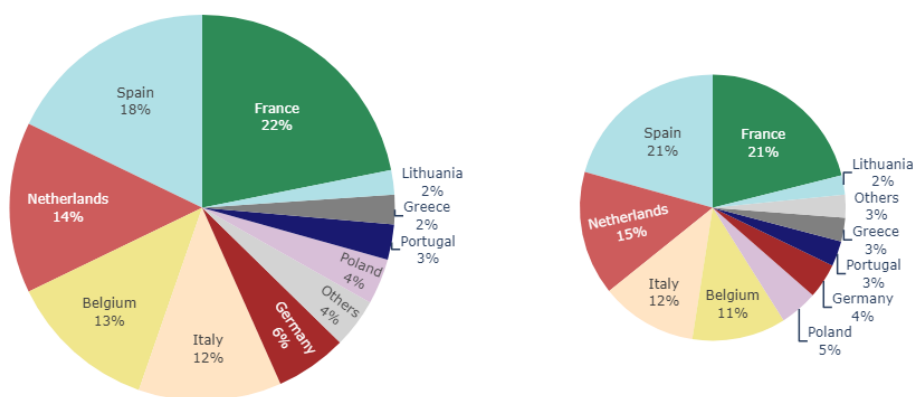
Source: European Commission calculation based on LSEG (Refinitiv) and ENTSO-G.

Figure 18 - LNG imports to the EU by supplier countries



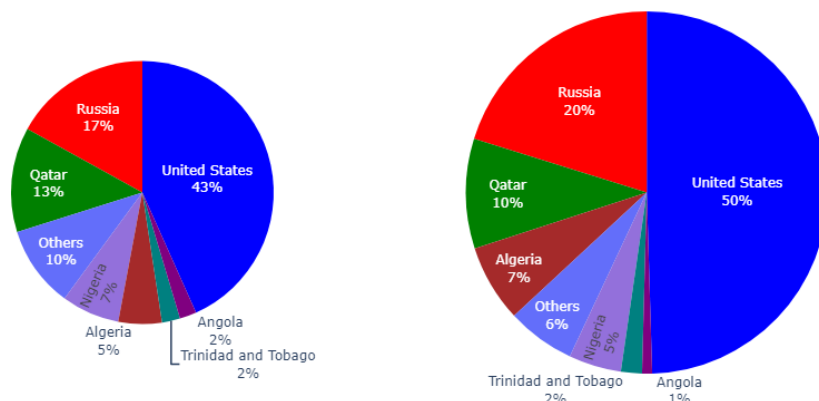
Source: European Commission calculation based on LSEG (Refinitiv) and ENTSO-G.

Figure 19 – Share of Member States in EU LNG imports in Q1 2024 (left) and Q1 2023 (right)



Source: Commission calculation based on LSEG (Refinitiv) and ENTSO-G. 'Others' includes Croatia, Finland, Malta and Sweden.

Figure 20 – Share of exporters in EU LNG imports in Q1 2024 (right) and Q1 2023 (left)

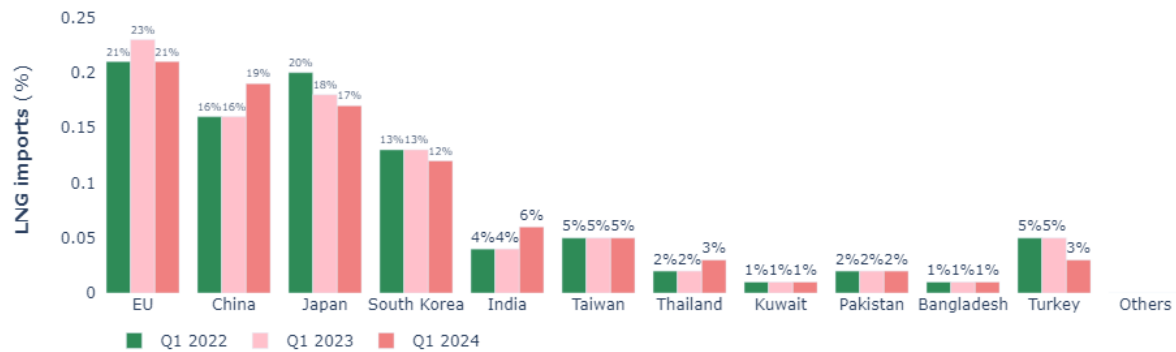


Source: Commission calculation based on LSEG (Refinitiv) and ENTSO-G.

2. Global LNG Trade

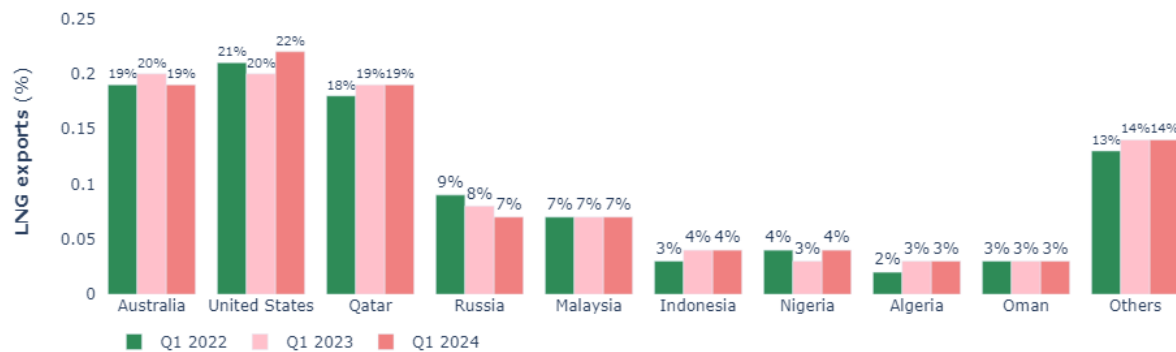
- In the first quarter of 2024, the **EU** continued to be **the world's largest importer of LNG** with a **21% share in global imports**, ahead of China (19%), Japan (17%), and South Korea (12%). Japan imported 1 percentage point less LNG in the first quarter of 2024 than in 2023, while China increased its LNG imports by 3 percentage points.
- In the first quarter of 2024, **global LNG exports amounted to 136 bcm**, a 3 % increase compared to the previous year and 9 % increase compared to the previous quarter.
- The **biggest LNG exporter** remained the **United States by 22% share**, followed by Australia (19%) and Qatar (19%). These three countries together supplied close to three-quarters (60%) of the world's LNG demand.
- Far behind the leading trio, Russia (7%), Malaysia (7%) and Indonesia (4%) secured the fourth, fifth and sixth position, respectively.

Figure 21 – Main global LNG importers in Q1 2024



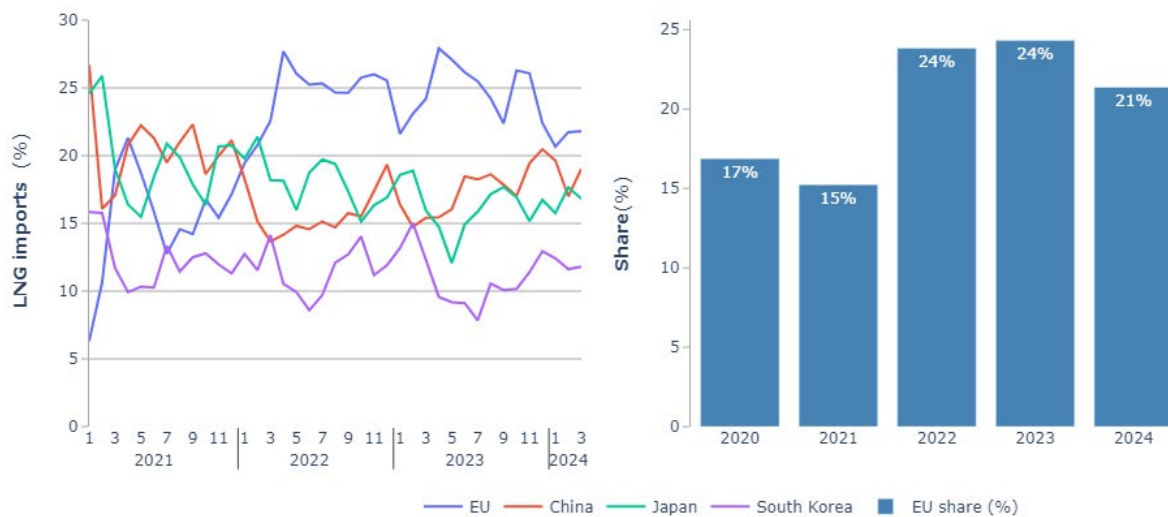
Source: European Commission calculation based on LSEG (Refinitiv) and ENTSO-G.

Figure 22 – Main global LNG exporters in Q1 2024



Source: European Commission calculation based on LSEG (Refinitiv) and ENTSO-G.

Figure 23 – The most important global LNG importers and evolution of the EU's annual LNG imports share



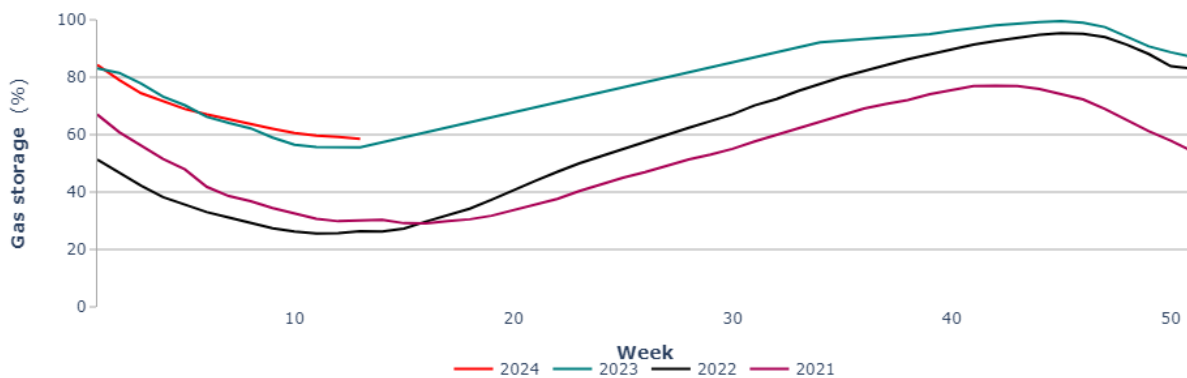
Source: European Commission calculation based on LSEG (Refinitiv) and ENTSO-G.

3. Storage and LNG terminals

3.1 Storage

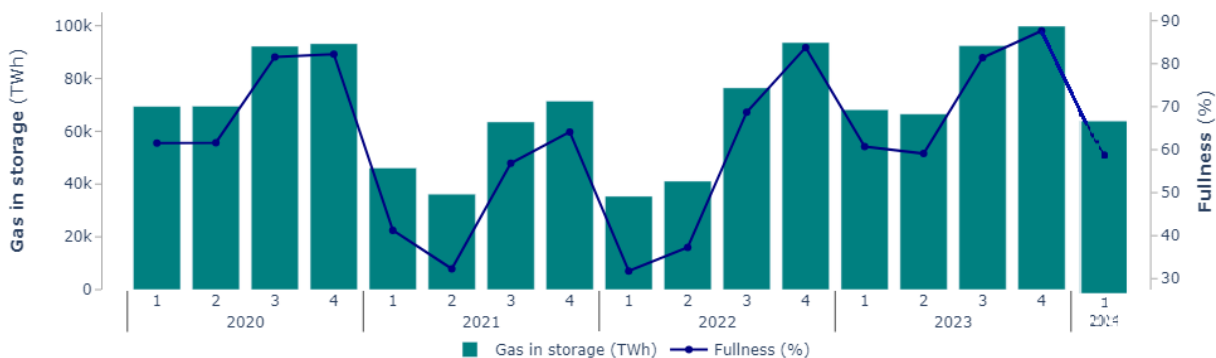
- The EU's maximum technical gas storage capacity is 1133 TWh (116 bcm) corresponding to more than one third of the European Union's total gas consumption in 2023.¹⁰
- Gas storage levels in the first quarter of 2024 reached a new high compared to any previous first quarter in the last fourteen year (since the tracking of EU storage levels begun) and stood at 68% (776 TWh), 1% higher than in Q1 of 2023. Compared to the previous quarter, storage was down 29% (from 95% average filling rate, 1085 TWh average volume for Q4 of 2023), reflecting the usual seasonal drawdowns during the winter heating season.
- The monthly averages were 78%, 66% and 60% for January, February and March 2024, respectively, surpassing the monthly averages reached in February (65.9%, 740 TWh) and March (56.8%, 639 TWh) in 2023, and being slightly below the monthly average filling rate in January (79.6%, 892 TWh) 2023.

Figure 24 - Gas storage levels



Source: Gas Storage Europe AGSI+ Aggregated Gas Storage Inventory. See explanations on data coverage at <https://agsi.gie.eu/#faq>.

Figure 25 - Gas storage levels



Source: Gas Storage Europe AGSI+ Aggregated Gas Storage Inventory. See explanations on data coverage at <https://agsi.gie.eu/#faq>.

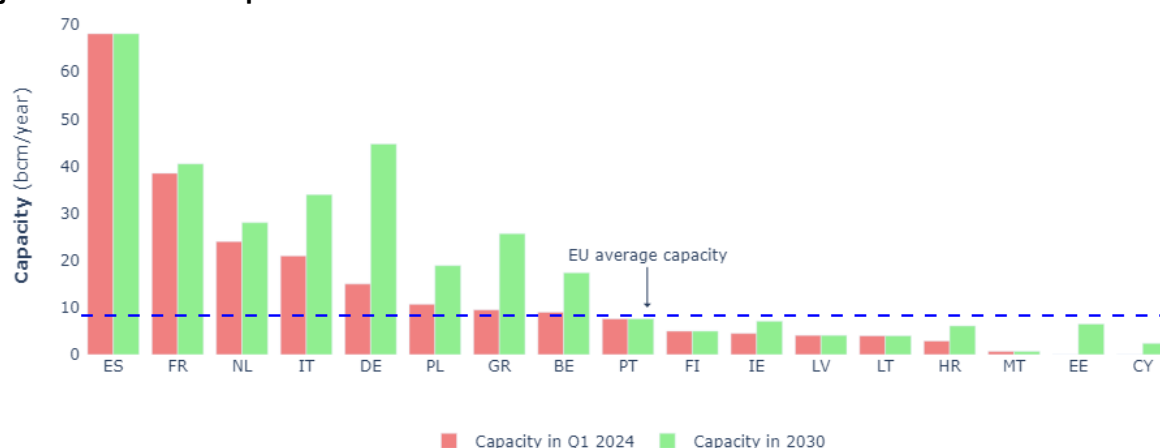
3.2 LNG Terminals

- In Q1 2024, the EU had a total terminal capacity of nearly 225 bcm, with Spain, France, the Netherlands, and Italy having the largest LNG terminal capacities, with 68, 28, 24, and 21 bcm per year, respectively.

¹⁰ Gas Infrastructure Europe - AGSI (gie.eu) - data published under the Storage Transparency Platform, shows 1133 TWh (116 bcm) of technical working capacity as of 17 July 2024. This technical storage capacity is equivalent with 35% of the EU's 2023 annual consumption (330 bcm) and 32.5% of the EU's 2022 consumption (357 bcm).

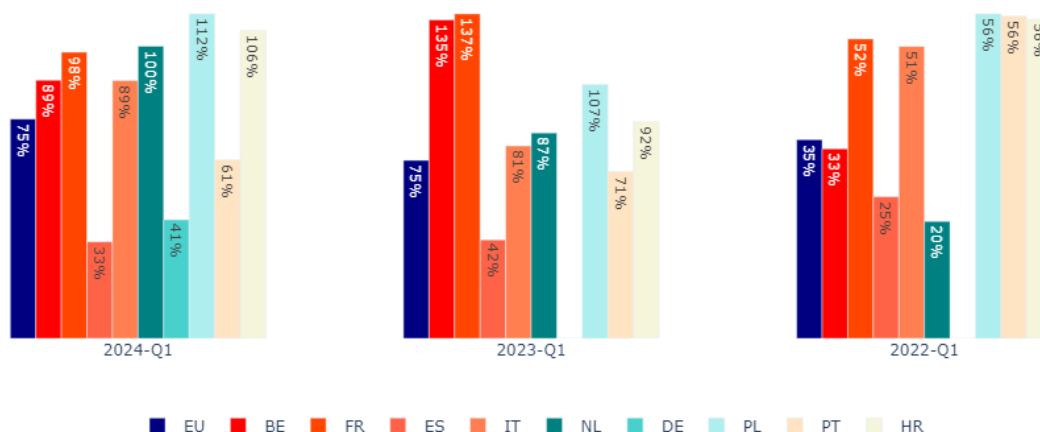
- LNG terminals' utilisations rates for regasification continued to show a wide variety across Europe during the quarter. The highest utilisation rate (112%), was recorded in Poland, followed by Croatia (106%), the Netherlands (100%) and France (98%). Belgium in lead during most of 2023 came to the fifth place and Italy moved to the sixth place (89%). The reduced intensity of regasification rate in many of the large Euro²pean LNG terminals, which played a leading role in supplying Europe during 2023 correlated well the reduced LNG import volumes in the first quarter of 2024.
- Most LNG terminals in the EU's main LNG importers, e.g., France, the Netherlands, Belgium and Italy, operated above nameplate capacity with the exception of Spain, which had one of the lowest utilisation rates (45%) in the quarter, likely reversely correlating with the magnitude of its available regasification capacity, currently the largest in Europe, almost twice as large as the second largest capacity in Europe, that of France. In Germany, LNG terminals started operating only in 2023 and the aggregate utilisation rate of the country was 55% in the fourth quarter of 2023. Regasification capacity utilisation rates were below nameplate capacity in Lithuania (84%), Portugal (72%), Malta (64%), Germany (55%), Sweden (54%), Spain (45%), Greece (45%) and Finland (42%).
- Quarter-on-quarter, utilisation rates increased in all LNG importing Member States with the exception of Greece. The largest increase occurred in Finland (390%) from a very low base (9% in Q3 2023), followed by Malta (64%), Germany (38%), Portugal (36%) and the Netherlands (33%). In the other Member States, utilisation rates increased by between 1% (Italy) and 12% (Croatia), while in Greece there was a decrease of 19%.

• **Figure 26 – LNG terminal capacities in the EU**



Source: IEEFA

Figure 27 - Regasification capacity utilisation rates in Q1 2024, 2023 and 2022



Source: LSEG (Refinitiv).

3.3 Hydrogen market developments

- The chart shows estimated production costs for hydrogen using four main technologies: water-based (alkaline water electrolysis (AWE) and polymer electrolyte membrane (PEM)) and gas-based (steam methane reforming (SMR) and autothermal reforming (ATR)). For renewable hydrogen, AWE and PEM must use renewable electricity, time- and geo-correlated with production. ATR and SMR must use renewable gas or carbon capture and storage (CCS) to qualify as green hydrogen. The chart includes ATR costs with CCS and SMR without CCS for comparison. Analysis of SMR with CCS is also provided in this chapter.

- Whereas AWE and PEM electrolysis technology costs predominantly depend on the electricity price, the costs of SMR and ATR technology are driven by natural gas costs used for producing hydrogen. AWE and PEM are related to renewable power, whereas costs of SMR and ATR hydrogen generation is based on costs of natural gas. CCS costs is added to the ATR production cost and to low-carbon hydrogen produced from SMR with CCS.
- In the first quarter of 2024, the prices of all technologies decreased compared to the previous quarter. The biggest decrease was 30% for PEM, followed by 29% for AWE, 28% for ATR, and 27% for SMR. PEM had the highest average price in Q1 2024 at 159 €/MWh, closely followed by AWE at 137 €/MWh. The gas price-based ATR costs were significantly lower, averaging 71 €/MWh, while the costs of SMR averaged 70 €/MWh.

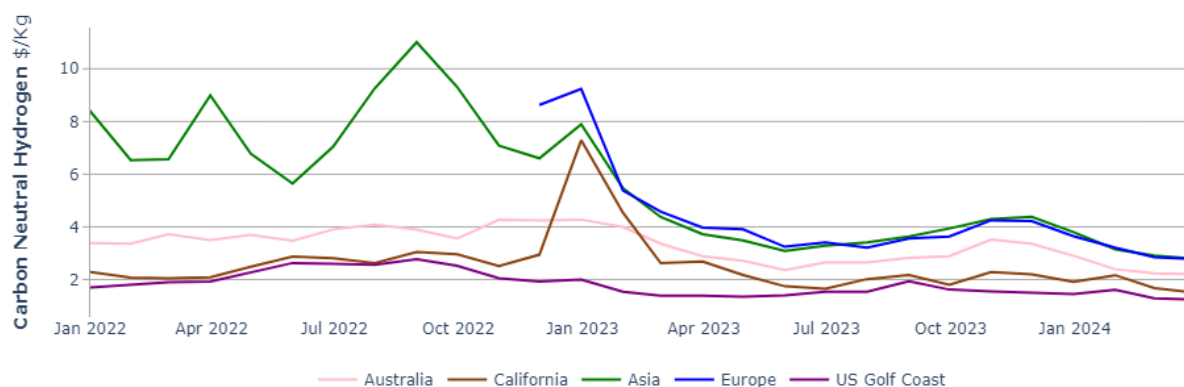
Figure 28 – Production cost-based hydrogen price assessment for different technologies (including CCS)



Source: S&P Global (Platts).

- The next chart shows the price assessments for carbon-neutral hydrogen¹¹ in different regions of the world: Australia, Far East Asia, Northwestern Europe, California, and the US Gulf Coast. Compared to the previous quarter, all the prices decreased. The highest decrease was registered in Australia (-30 %), followed by Far East Asia (-29 %), Northwestern Europe (-27%), California (-17%) and the US (-8%).
- Far East Asia and Northwestern Europe both had the highest hydrogen prices at \$2.9/kg, mostly driven by high production costs and import reliance. Australia followed at a relative quarterly average high price of \$2.3/kg due to substantial investments in renewable hydrogen, which are offset by high production and transportation costs. California's price was \$2.1/kg, influenced by high living costs and infrastructure. The US Gulf Coast had the lowest price at \$1.4/kg, benefiting from lower energy costs and established industrial infrastructure.

Figure 29– Carbon-neutral hydrogen prices in different regions of the world



Source: S&P Global (Platts).

¹¹ The definition of carbon neutral hydrogen by Platts is significantly broader than the definition of renewable hydrogen under the EU Renewable Energy Directive (RED). Platts' definition covers but is not limited to renewable hydrogen as defined under the RED, which – for hydrogen produced via electrolysis – requires the use of renewable electricity off-grid (dedicated renewable power production for the electrolysis) or, if on-grid, to meet certain criteria regarding origin of electricity combined with temporal and geographical correlations of the electricity production with the electrolysis. Platts definition reflects "the value of hydrogen as it leaves the production facility" and includes the following factors: "the market value of hydrogen in which emissions have been, in order of priority: avoided where possible through the use of low emissions generation, removed through the use of carbon capture and storage, and offset through the use of carbon credits or equivalent instruments. In addition to spot market activity, power-purchase agreements and hydrogen offtake agreements may be considered for assessment purposes, but normalised for terms, periods, and other factors. Platts also considers cost of production factors, which provide baseline inputs in the absence of market activity. These costs incorporate renewable power prices and carbon capture and storage costs with any remaining accounted emissions offset using relevant carbon instruments."

4. Wholesale Gas Prices

4.1. Wholesale gas prices at the EU level

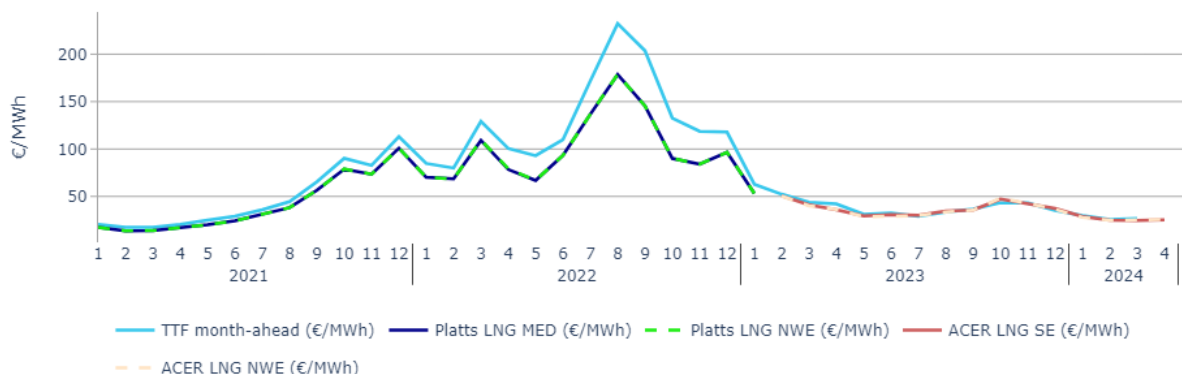
- In the first quarter of 2024, European spot prices (TTF day-ahead) fell sharply compared to the previous quarter and compared to the first quarter of 2023. The quarterly average price was 27.3 €/MWh, a drop of 33% quarter-on-quarter and a 49% decline year-on-year. This was the lowest price level since the third quarter of 2021, when it was 48.4 and similar to the second quarter of 2021, when it was 25.2 €/MWh. Within the quarter; February 2023 had the lowest average monthly price with 25.7€/MWh, and the lowest price point was recorded on 22 February 2024. In March prices started to rise again and reached 26.8 €/MWh, while the average monthly price was 29.9 €/MWh in January 2024.
- Forward contracts indicated stable prices ahead, with the month-ahead and quarter-ahead prices merely 1% higher than the spot price, while the two-quarter ahead price indicated a 3% price rise, and the year ahead price a 9% rise. The two-year ahead contract sold at a 5% premium and the three-year ahead contract at a merely 2% premium compared to the quarterly average spot price of Q1 2024.
- The ACER LNG Northwestern Europe (NWE) and ACER Southern Europe (SE) prices were 6% and 4% cheaper, respectively, compared to the Dutch TTF benchmark, while the Platts LNG Northwestern Europe and Platts Mediterranean (MED)^[1] benchmarks were 7% cheaper each. The spread between ACER NWE and ACER SE narrowed further in the first quarter of 2024 to an average of 0.3 €/MWh with Southern Europe being slightly more expensive; the difference was 0.5 €/MWh ACER SE being cheaper in the previous quarter^[2]. The difference between Platts LNG NWE price and the Platts LNG MED price was also remarkably close with a premium of 0.1 €/MWh registered in favour of the LNG NWE benchmark; they were of the same price in the previous quarter (41.7 €/MWh) and the first quarter of 2023 (47.7 €/MWh).
- The ACER EU price reflecting prices in all EU27 prices areas was 5% cheaper on average than the Dutch TTF month-ahead contract in the first quarter of 2024, a difference unchanged compared to the previous quarter. In a quarter-on-quarter comparison, ACER NWE and SE LNG benchmarks fell by 37% and 36%, respectively, while the EU price benchmark declined by 36%. Platts LNG NWE and MED benchmarks also declined by 38% each compared to the previous quarter and 46% year-on-year.
- ^[1] As of September 2019, Platts renamed the Southwest European Marker (SWE) to Mediterranean Marker (MED). This change has been reflected in the price quotation codes.
- ^[2] ACER LNG price quotation started only on 19 January (Northwest Europe) and 20 January (Southern Europe); therefore, the first full quarterly ACER price assessment data series starts in Q2 2023.

Figure 30 – TTF day-ahead prices compared with TTF quarter-ahead, two quarters-ahead and year-ahead prices



Source: S&P Global (Platts).

Figure 31 – LNG NWE and SWE benchmarks compared with the Dutch TTF and ACER NWE and SWE (SE) benchmarks (monthly values)

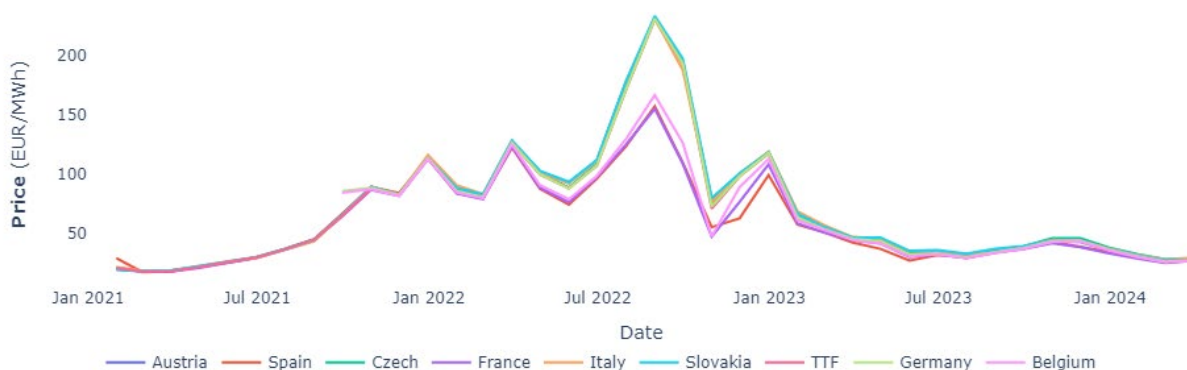


Sources: Global S&P (Platts), ACER.

4.2 European hubs

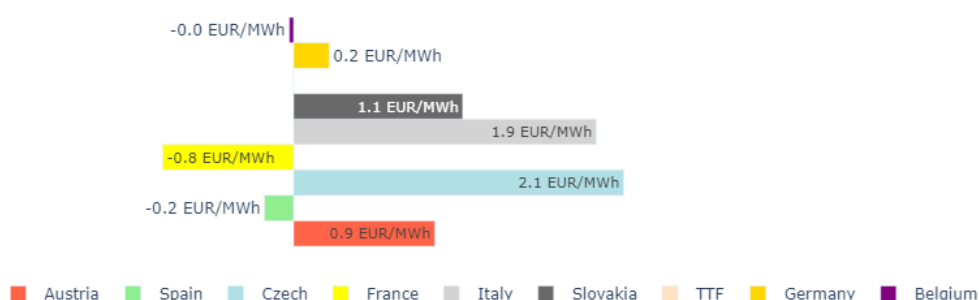
- In the first quarter of 2024, all European gas hubs saw a significant decrease in prices both on a quarter-on-quarter and year-on-year basis. Compared to the previous quarter, prices fell by between 30% and 35%, while compared to the first quarter of 2023, prices declined by between 46% and 49%.
- The largest quarter-on-quarter decrease was observed in Spain (-35%), followed by the German THE and Dutch TTF (-33% each), while the Belgian ZTP and the Czech VTP have seen a 32% decline. France's PEG and Italy's PSB registered the lowest decline with 30%, while prices on Slovakia's VTP decreased by 31%.
- The largest year-on-year decreases were recorded in Austria, Germany and Slovakia with a 49% decline, while France's PEG, the Dutch TTF, Italy's PSV and Belgium's ZTP have seen price drops of 48%. The smallest year-on-year declines were observed in Spain's PVB and the Czech VTP with 47% and 46% price drops, respectively.
- The highest prices were at the Czech hub (29.4€/MWh), closely followed by the Italian hub (€29.3€/MWh), the Slovak VTP (28.4€/MWh), and the Austrian CEGH hub (28.2 €/MWh). The lowest prices were observed in France (26.5€/MWh), Spain (26.6€/MWh), the Belgian ZTP (27.3€/MWh) and the Dutch TTF (27.22 €/MWh) and Germany (27.5€/MWh).
- The price difference between the highest and lowest priced hub narrowed to 2.9€/MWh from 5.5€/MWh in the previous quarter, and 6.4€/MWh in Q1 2023. Compared to the Dutch TTF, the biggest divergence was recorded in the Czech VTP, where the average quarterly price level was 2.1€/MWh higher, while France's PEG displayed the largest discount of -0.8€/MWh compared to the TTF. The Belgian ZTP quarterly average price was almost identical with Dutch TTF.

Figure 32 - Price developments in some of the major European gas hubs



Source: Global S&P (Platts).

Figure 33 – Price differentials of EU gas hubs compared to the benchmark Dutch TTF in the first quarter of 2024

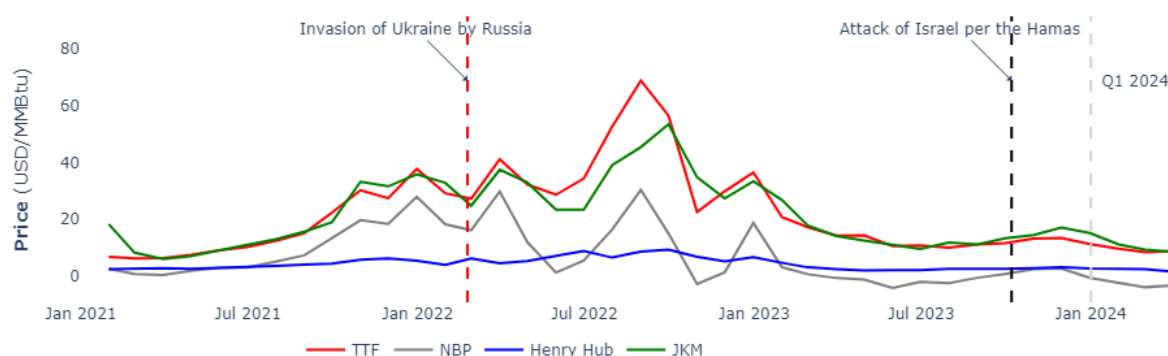


Source: S&P Global (Platts).

4.3. Wholesale gas prices at international level

- In the first quarter of 2024, the price increase of 11%-28% experienced in the previous quarter reversed and there was a significant decline of prices in all international trading hubs. Prices declined the most, on the Asian Japan Korean Marker (JKM) by 40%, followed by a 36% decline on the Dutch Title Transfer Facility (TTF), a 35% decline on the UK National Balancing Point (NBP) and a 32% drop on the US Henry Hub (HH).
- In a year-on-year comparison, prices displayed a considerable decline in all global benchmarks. The largest decline occurred on the Dutch TTF, where prices fell by 48%; however, followed by a similar decline of 47% on the UK NBP and a 45% decline on JKM. Prices on HH declined by 25%.
- In the fourth quarter, Asian LNG prices were the highest, 13% higher than those on the Dutch TTF and 14% higher than prices on the UK NBP. The cheapest hub by far remained the US Henry Hub, which was 77% less expensive than the Dutch TTF and the UK NBP in Europe, and 80% cheaper than the Asian JKM. In the fourth quarter of 2023, prices on the Dutch TTF and UK NBP displayed close price convergence in Q4 of 2023 (just as in Q3 of 2023), the UK hub being slightly cheaper, by 0.5€/MWh as a quarterly average, than the Dutch TTF.
- The average quarterly price was 27.5 €/MWh on the Dutch TTF, 27.3 €/MWh, 29.2 €/MWh on the JKM and 6.6 €/MWh on the US Henry Hub.

Figure 34– Comparison of monthly average prices on the Dutch TTF, UK NBP, the US Henry Hub and the Asian JKM



Source: S&P Global (Platts).

- In the first quarter of 2024, Asia continued to display higher prices than Europe, albeit the quarterly average price differential has narrowed from 5.4 €/MWh to 1.7€/MWh. The higher Asian prices are depicted as positive price differentials between the European TTF benchmark and the Asian JKM benchmark in the chart below.
- The price differentials remained positive, meaning prices on the Dutch TTF in Europe were lower than those on the Asian JKM during the entire quarter. On a monthly basis, the Asian mark-up was 1.2€/MWh in January, 2€/MWh in February and 1.9€/MWh in March 2024.

Figure 1 is a line chart titled "JKM (day-ahead)-TTF (month-ahead) spread". The vertical axis (y-axis) is labeled "€/MWh" and ranges from -50 to 50. The horizontal axis (x-axis) shows dates from 1/1/2021 to 1/1/2024. The chart displays a single data series representing the spread. The spread starts at approximately 50 €/MWh in early 2021, drops sharply to near 0 by mid-2021, and then fluctuates between -25 and 25 €/MWh for the rest of the period, with a notable dip to -50 €/MWh in late 2022.

Figure 36 – Prices differences between the Asian JKM and the Dutch TTF (EUR/MWh) benchmarks – last 18 months

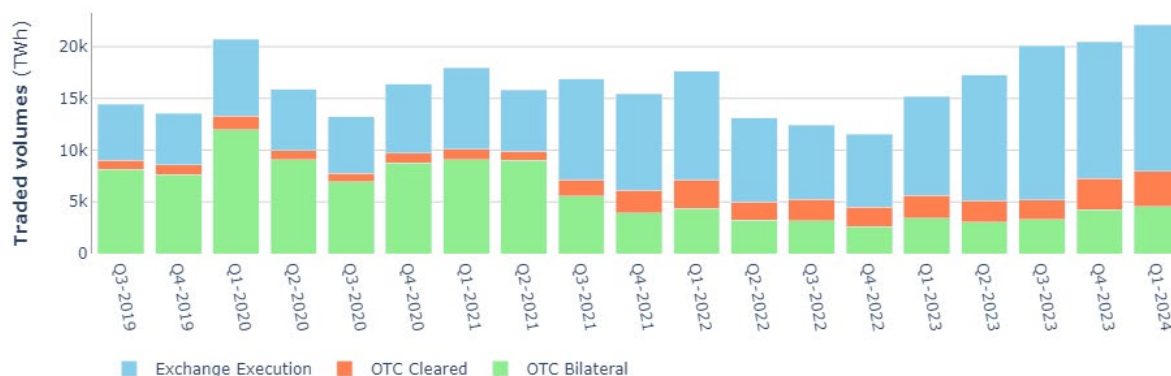
The chart displays the difference between JKM (day ahead) and TTF (month ahead) prices in EUR/MWh. The y-axis ranges from -5 to 10 EUR/MWh. The x-axis shows the timeline from May 2023 to March 2024. The difference starts around -3 EUR/MWh in May 2023, dips to -6 EUR/MWh in June, then rises to a peak of approximately 9.5 EUR/MWh in late October 2023. It then fluctuates, ending around 2.5 EUR/MWh in March 2024.

Month	JKM (day ahead) - TTF (month ahead) (EUR/MWh)
May 2023	-3.0
Jun 2023	-6.0
Jul 2023	3.0
Aug 2023	6.0
Sep 2023	5.0
Oct 2023	8.0
Nov 2023	9.5
Dec 2023	7.0
Jan 2024	3.0
Feb 2024	1.0
Mar 2024	2.5

4.4 Gas trade on the EU hubs

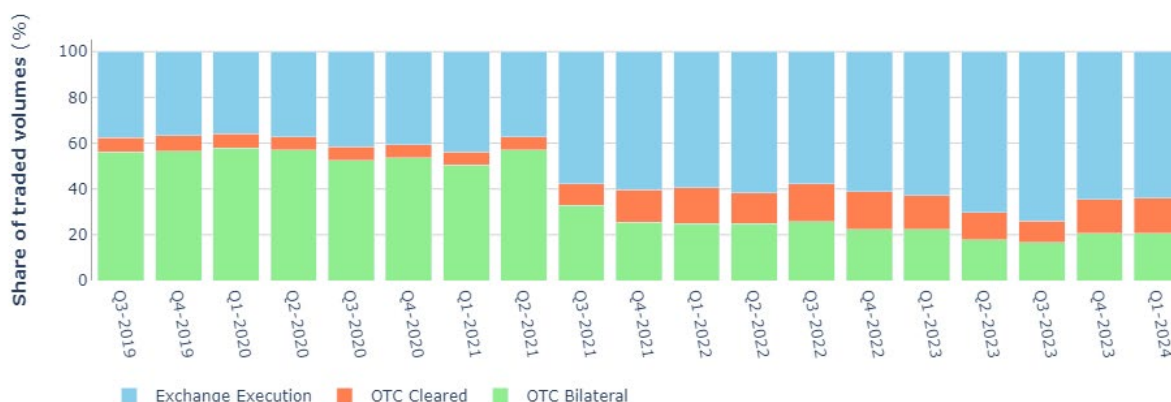
- In the first quarter of 2024, total traded volumes increased by 8% quarter-on-quarter and by 45% year-on-year continuing an overall growth trend prevailing since the first quarter of 2023. Exchange executed trade constituted 64% of the transactions, same as in the fourth quarter of 2023 stabilising the share of exchange trade at levels experienced during most of 2023 and 2022. The share of the over-the-counter (OTC) bilateral transactions and OTC cleared trade also remained unchanged at 21% and 15%, respectively.
- Compared to the previous quarter, the volume of exchange executed trade increased by 7%, while the volume of OTC bilateral trade increased by 8% and OTC cleared transactions jumped by 11%. Year-on-year, all three types of organised trade increased significantly. OTC cleared transactions by 50%; exchange executed trade by 48% and OTC bilateral trade by 34%.
- The Dutch Title Transfer Facility (TTF) kept its leading market share by 79% (17542 TWh) of the trading volumes and the British National Balancing Point (NBP) maintained its second place with 10% (2153 TWh). Almost half of the remaining 11% (2410 TWh) trades was conducted on the German Trading Hub of Europe (THE) (45%), followed by Italy's PSV (19%), France's PEG (19%) and Austria VTP (9%).

Figure 37 – Over-the-counter (OTC, bilateral and cleared) and exchange executed trade on European gas hubs



Sources: Trayport Commodities Report, LEBA Monthly Energy Volume Report and Analysis.

Figure 38 – Share of OTC and exchange executed trade on European gas hubs



Sources: Trayport Commodities Report, LEBA Monthly Energy Volume Report and Analysis.

The chart covers the following trading hubs: Netherlands: TTF (Title Transfer Facility); Germany: THE (Trading Hub Europe); France: PEG (Point d'Exchange de Gas); Italy: PSV (Punto di Scambio Virtuale); Spain: PVB (Virtual Balancing Point); Austria: Virtual Trading Point (VTP); Belgium: ZTE (Zeebrugge Trading Point) (which merged with the Belgian Zeebrugge Beach Trading Point in June 2023). UK: NBP (National Balancing Point)

5. Retail gas prices

EU retail prices and year-on-year comparison

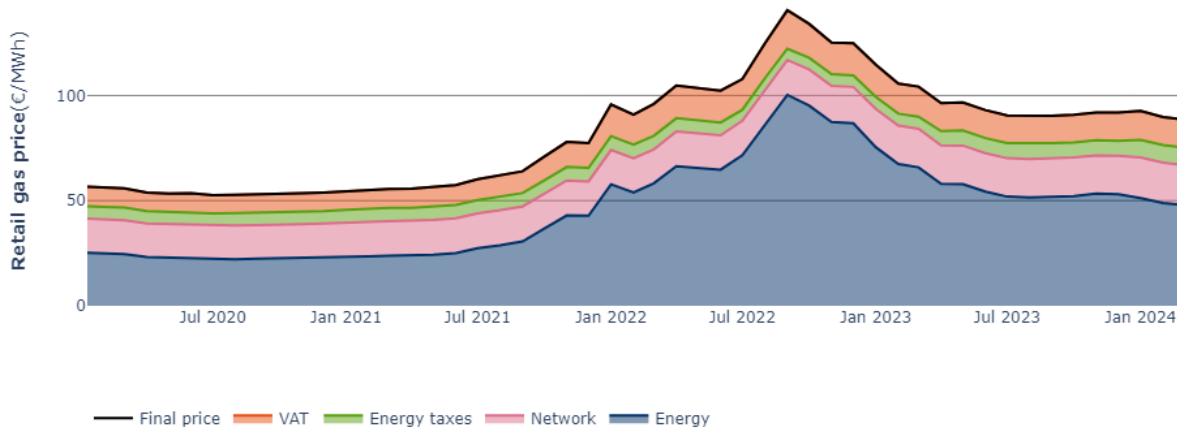


- In the first quarter of 2024, average quarterly gas retail price for household consumers decreased by 3 % to 106¹² €/MWh from 110 €/MWh in the previous quarter. Year-on-year, the quarterly average EU retail prices was 20% lower than in Q1 of 2023, 8% lower than in Q1 2022, but 61% higher than in the Q1 of 2021 (pre-crisis period).

¹² Translated from 10.6 eurocents/kWh to make it comparable with the wholesale price. Retail prices quoted in this section are translated from eurocents/kWh and rounded for the sake of easier comparison with wholesale prices. The non-rounded quarterly decrease was 3.3% to 106.0255 €/MWh quarterly average EU27 retail gas price from 109.634 €/MWh quarterly average retail EU27 retail gas price.

- The energy component amounted to 58 €/MWh, constituting 55% of the retail prices compared to 56% during the previous quarter. However, the share is significantly lower than in Q4 2022 where it reached 69%. Network costs constituted 21% (22 €/MWh) of the total end user price, energy taxes are 9% (10 €/MWh), and value added tax (VAT) is 15% (16 €/MWh).

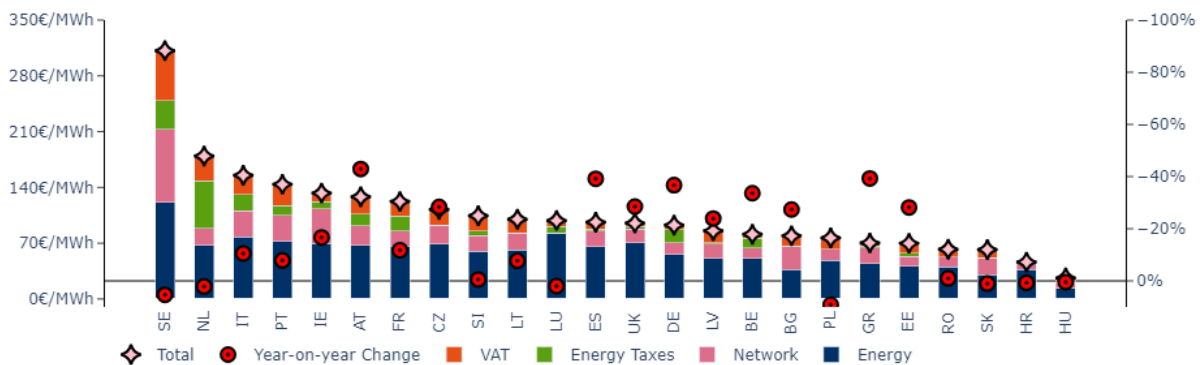
Figure 39 – Monthly average gas price in the EU paid by typical household customers (in EUR/MWh)



Source: VaasaETT. EU average represents an aggregate average of prices in the EU Member States' capital cities.

- Year-on-year, retail price drops were registered in 14 Member States and in the UK. The biggest drop were registered in Austria (-43%), Spain (-39%), Greece (-39%) and Germany (-37%). However some countries saw their retail prices slightly increased compared to the first quarter of 2023, among them Sweden (+5%), Poland (+9%) and the Netherlands (+2%).

Figure 40– Breakdown of gas price paid by households in European capitals and annual change in prices, Q1 2024



Source: VaasaETT.

6. Appendix – charts providing further details on market developments

Figure 1 – Quarterly gas consumption per Member States

Source: Eurostat.

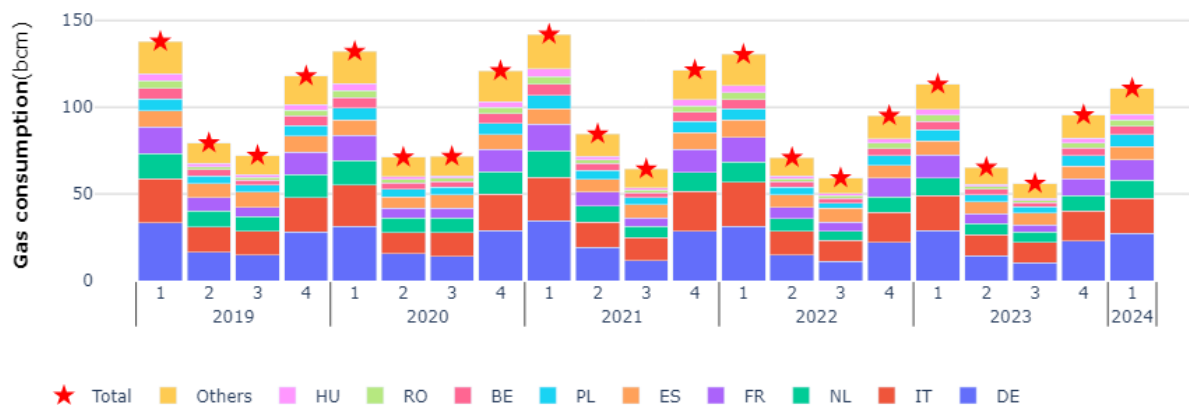
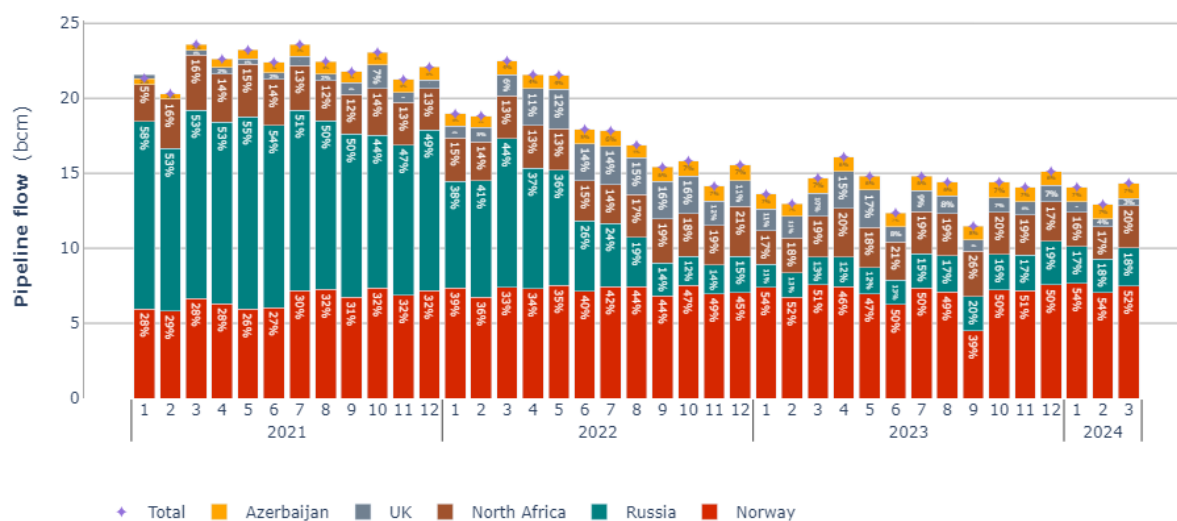
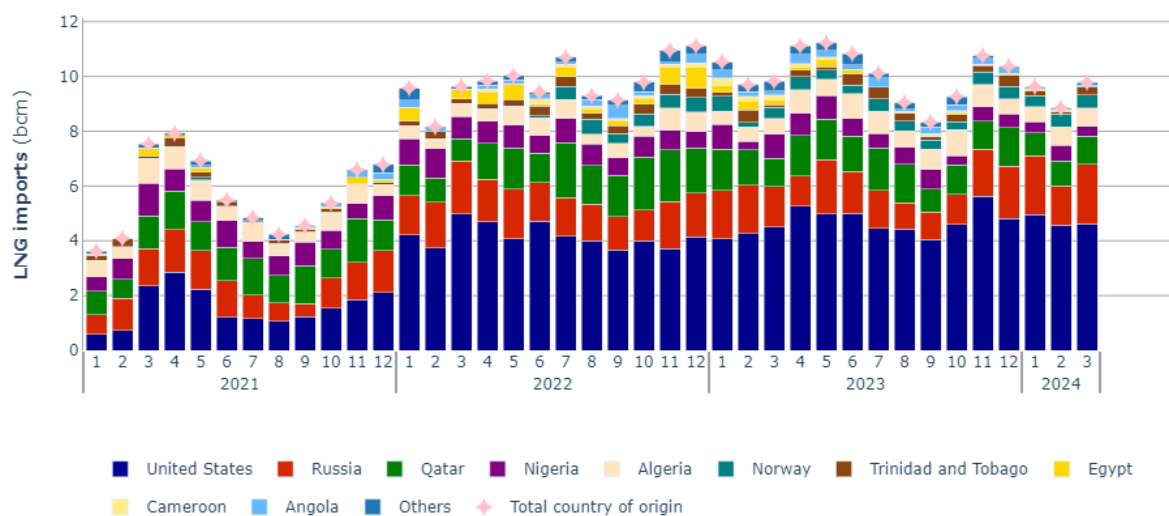


Figure 2 – Monthly EU imports of natural gas from pipelines



Source: European Commission calculation based on LSEG (Refinitiv) and ENTSO-G.

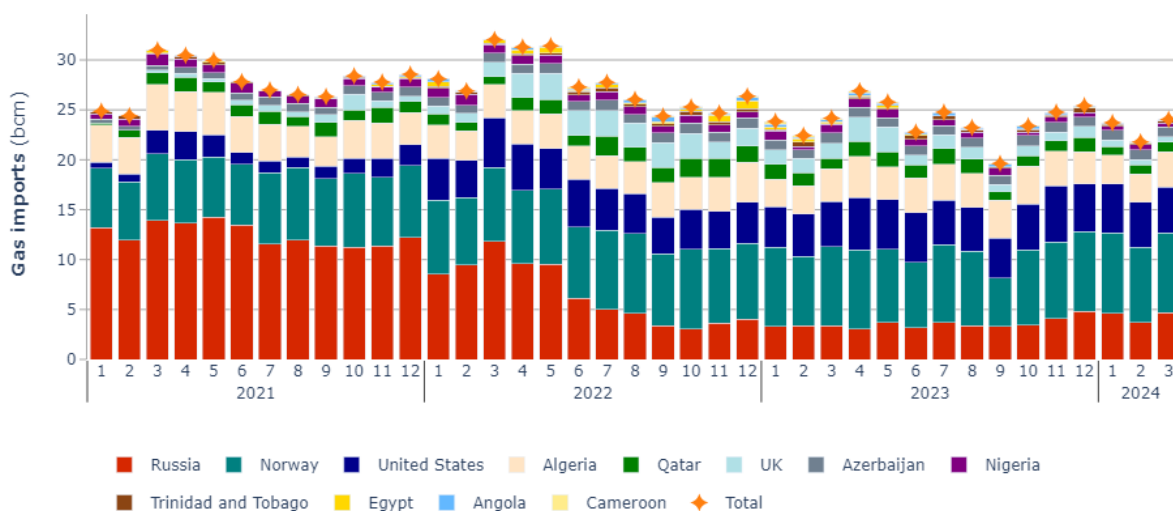
Figure 3 – Monthly gross LNG imports to the EU per suppliers



European Commission calculation based on LSEG (Refinitiv) and ENTSO-G.

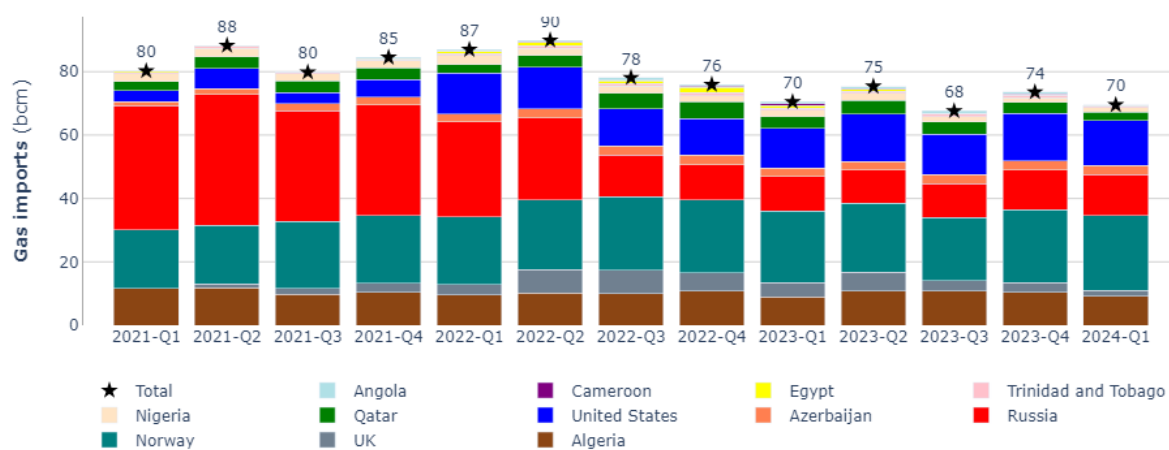
ource:

Figure 4 – Monthly gas (pipe and/or LNG) imports to the EU per suppliers



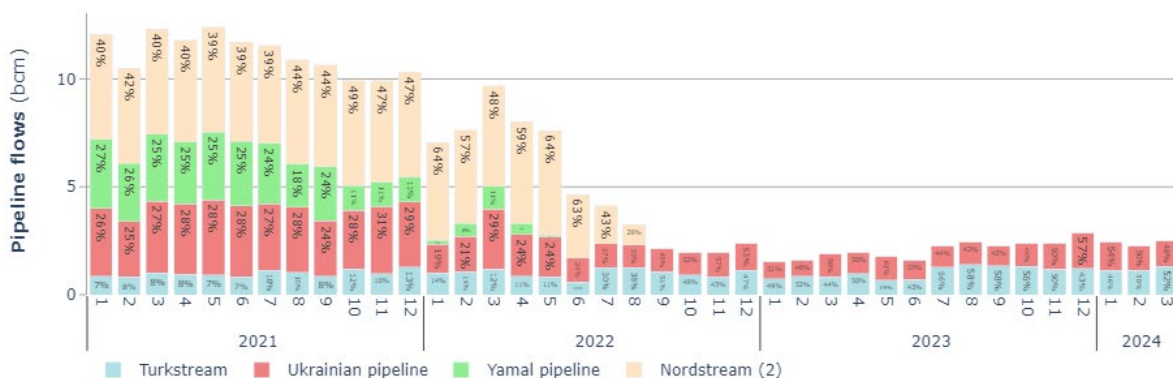
Source: European Commission calculation based on LSEG (Refinitiv) and ENTSO-G.

Figure 5 – Quarterly EU gas imports (pipeline and LNG) per suppliers



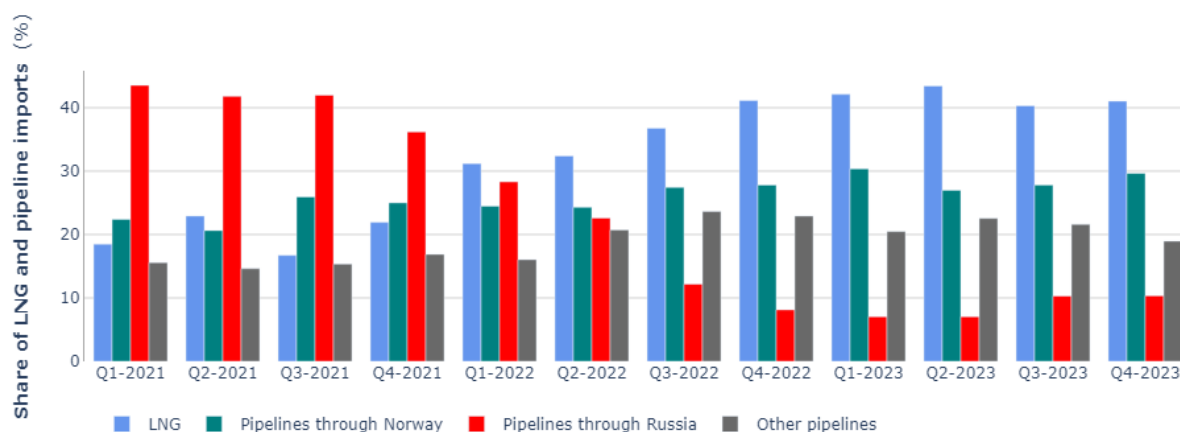
Source: European Commission calculation based on LSEG (Refinitiv) and ENTSO-G.

Figure 6 – Monthly EU imports of natural gas from Russia by pipeline route



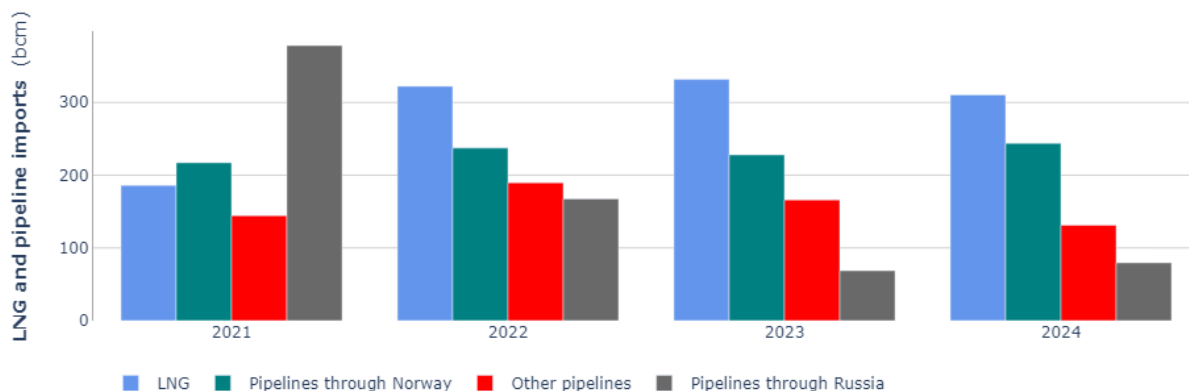
Source: Based on data from the ENTSO-G Transparency Platform.

Figure 7 – Pipeline and LNG shares in the EU gas imports by quarters



Source: Based on data from the ENTSO-G Transparency Platform.

Figure 8 – Yearly pipeline and LNG imports from the EU main gas import sources



Source: Based on data from the ENTSO-G Transparency Platform.

Figure 9 – LNG NWE and SWE benchmarks compared with the Dutch TTF and ACER NWE and SWE (SE) benchmarks (daily values)



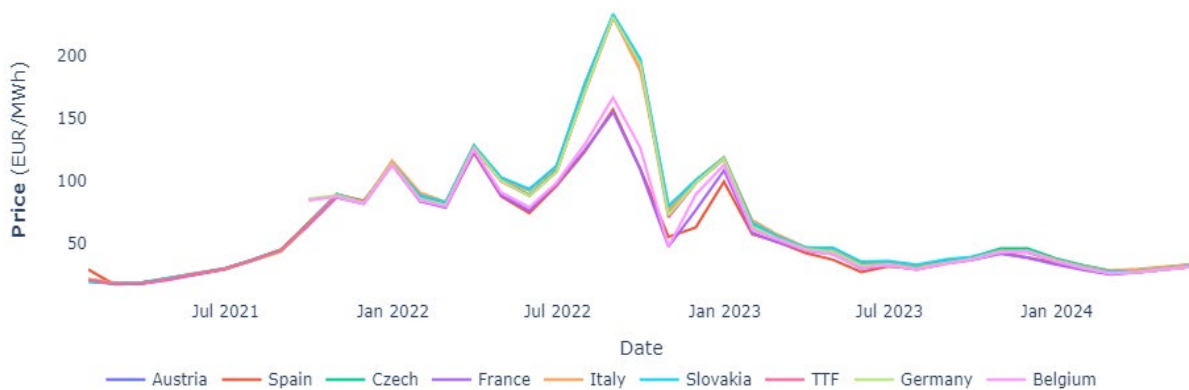
Sources: Global S&P (Platts), ACER.

Figure 10 – Comparison of TTF month-ahead, day-ahead and year-ahead prices (daily values)



Source: S&P Global (Platts).

Figure 11 – Price development in some of the major EU gas hubs (monthly averages)



Source: S&P Global (Platts).