

Gas Markets in Europe and the Russian-Ukraine Conflict

EU-27 Gas Data (2021)

Gas consumption: 412 bcm
Gas production: 50.6 bcm
Net gas imports: 337.5 bcm
LNG imports: 80 bcm

Following Russia's invasion in Ukraine on February 24, the European Union is facing an unprecedented crisis as a result of its overdependence on Russia's oil and gas imports. Almost 40% in average of European gas imports come from Russia and hence a decoupling from such high exposure is now becoming top priority for Brussels planners but also for most national governments.

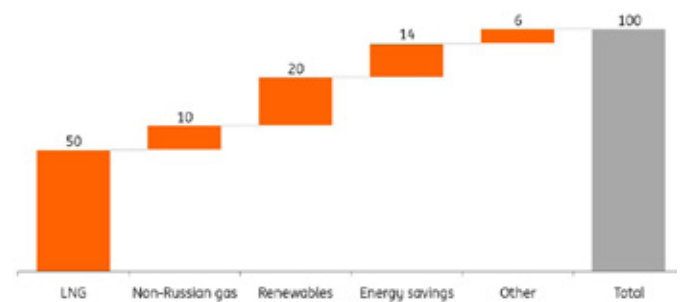
However, Europe is in a weak position to impose gas related sanctions, in order to deprive Russia from sizeable exports, causing a negative impact on its own economy. In this context, the EU has laid out some specific plans aimed at reducing fossil fuel imports from Russia.

On March 8, 2022, the European Commission proposed an outline of a plan, known as REPowerEU, to make Europe independent from Russian fossil fuels well before 2030, starting with gas, in light of Russia's invasion of Ukraine. This plan also outlines a series of measures to respond to rising energy prices in Europe and to replenish gas stocks for next winter. On May 18, 2022, the European Commission presented the **expanded REPowerEU Plan**, its response to the hardships and global energy market disruption caused by Russia's invasion of Ukraine.

Europe has been facing increased energy prices for several months, but now uncertainty on supply is exacerbating the problem. REPowerEU will seek to diversify gas supplies, speed up the roll-out of renewable gases and replace gas in heating and power generation. This can reduce EU demand for Russian gas by two thirds before the end of the year.

Russia is the world's second largest gas producer, after the United States, producing 761 billion cubic meters (bcm) in 2021, or 18% of the global gas output. It is the world's largest gas exporter, with exports amounting to around 250 bcm in 2021, with 210 bcm transiting through pipelines and 40 bcm transported as LNG.

REPowerEU's Targets Aiming to Reduce Gas Consumption by 100 bcm by 2030

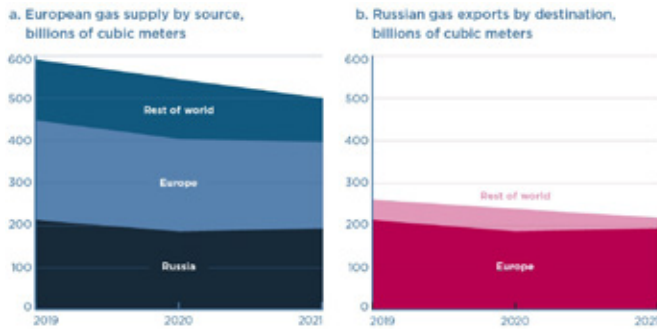


Source: European Commission

In 2021, Russia satisfied 32% of the total gas demand in the European Union and in the United Kingdom, up from 25% in 2009. However, Russian gas exports to Europe were already declining in the months before the invasion of Ukraine. Russia reduced its exports to Europe by 25% in the fourth quarter of 2021 compared with the same period in 2020, despite the exceptionally high market prices for natural gas. This artificial tightness was one of the reasons for rising spot gas prices in Europe. The percentage of Russian pipeline deliveries to Europe passing through Ukraine fell by 25% in 2021 because of the development of alternative routes, such as Nord Stream 1 and TurkStream. Overall, about 9% of the EU and UK's combined natural gas demand passes through Ukraine.

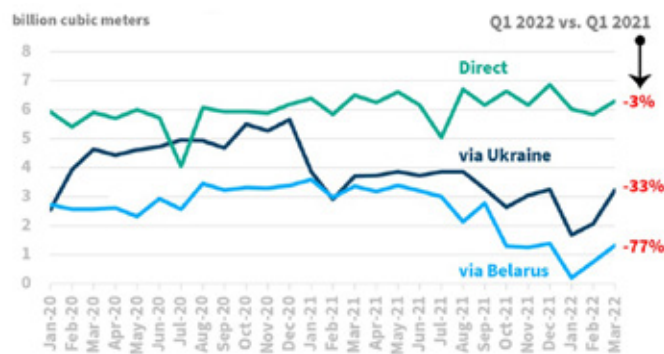
Over the last few weeks, Russia has been reducing its piped gas supplies to the EU market, while it did not fill its underground storage sites in the EU to adequate levels. Pipeline deliveries from Russia declined by 25% year-on-year in Q4 2021. This decrease in Russian pipeline supply to the EU became more pronounced in the first seven weeks of 2022, falling by 37% year-on-year.

Europe's Gas Market Relies on Russian Supply



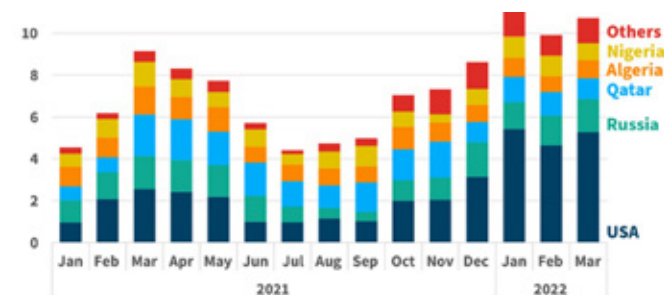
Sources: BP Statistical Review of World Energy 2020 and 2021, Bloomberg, ENTSOG, European Commission, Eurostat, Gazprom, IEA

Russian pipeline gas exports to the European Union



Source: Gazprom, Actual Supplies to the European Union

European LNG imports by source



Source: Kpler LNG Service (data downloaded on April 1, 2022)

European gas production is in long-term decline. The Netherlands accounts for roughly half of EU-27 gas production and gas production in both the Netherlands and the rest of the EU declined at approximately the same rate between 2017 and 2021. As a result, EU-27 gas production declined from 83 bcm in 2017 to 51 bcm in 2021, based on data provided by the European Commission¹. Outside the EU-27, UK net gas production declined slowly from 39 bcm in 2017 to 36 bcm in 2020, followed by a dip to an estimated 29 bcm in 2021 due to maintenance held over from 2020. Although UK production is set to rebound in 2022, the overall picture is of an ongoing decline in both annual production volumes and seasonal "swing"².

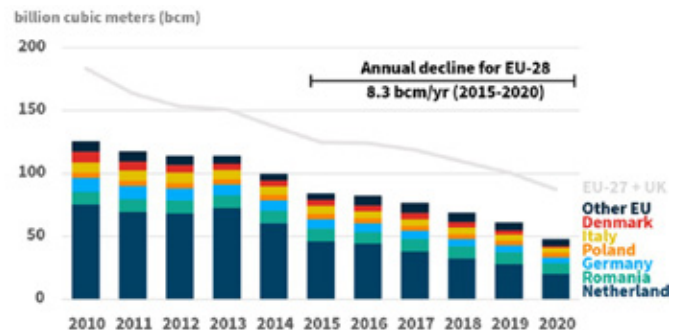
¹ European Commission (2022), "Quarterly report on European gas markets – Q42021"

https://energy.ec.europa.eu/system/files/2022-04/Quarterly%20report%20on%20European%20gas%20markets_Q4%202021.pdf

² The ability to raise production in winter to meet higher demand and lower production in summer, also in line with lower seasonal demand.

This leads to the conclusion that, in the event of a curtailment of Russian pipeline supplies to Europe, production cannot ramp up to any meaningful level to offset the loss of the Russian supplies.

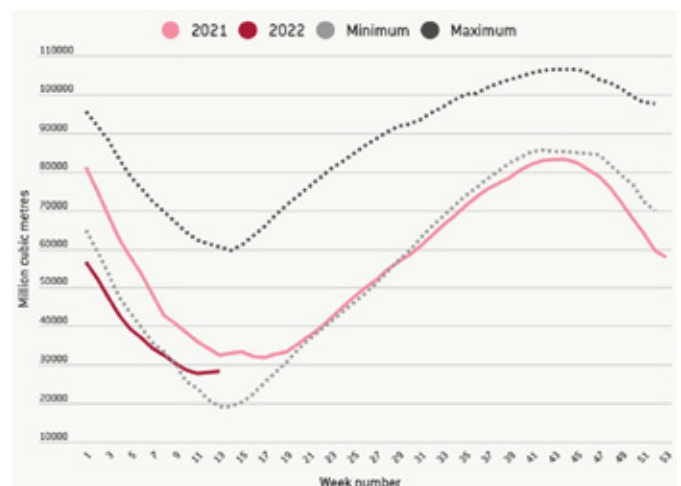
Natural gas production in the European Union



Source: BP Statistical Review of World Energy, July 2021

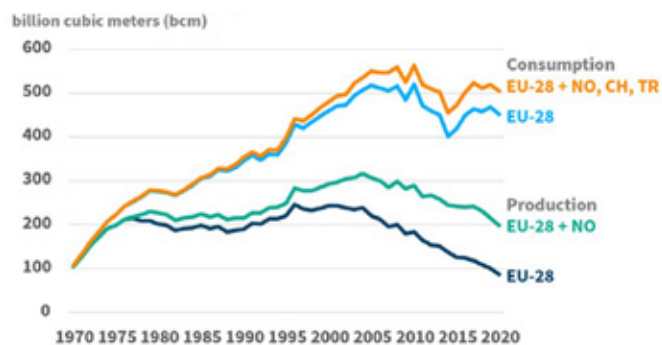
The topic of gas storage has been prominent in discussions of European gas-related energy security. In Europe as a whole, there exists the capacity to hold around 100 bcm of storage stocks, which is equivalent to one-fifth of annual demand. At the start of winter 2021/2022, European storage stocks were around 10% lower than would have been expected in a "normal" year. However, a mild winter and related slower storage withdrawals have meant that European storage stocks on February 28 were similar in volume to those held on February 28 in 2017 and 2018, although still significantly lower than stocks held on February 28 in 2019-2021. As a result, the ability to withstand any curtailment of Russian flows through drawing down on storage is limited.

EU Gas Storage



Europe's gas imports are about 400 bcm each year and Russia supplies around 175-200 bcm. Hence, the basic question remains as to whether Europe can find another 175-200 bcm in alternative gas supplies (both via pipeline and LNG) and/or manage to live with reduced gas use.

Europe's Gas Supply and Demand Balance



Sources: BP Statistical Review of World Energy, July 2021

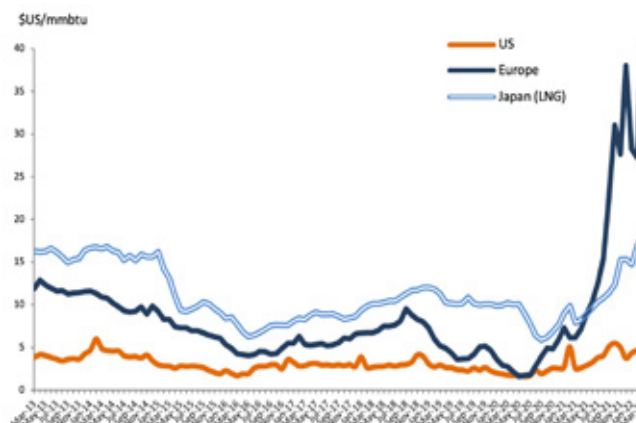
European gas prices were on a rollercoaster in Q4 2021 and the same stands until now. The TTF spot price started the Q4 2021 at €85/MWh, rising to €116/MWh in early October, falling back to €60/MWh by the end of that month, and as of November rebounding, and reaching levels never seen before (€183/MWh on 21 December), to finish the year at €60/MWh. In 2022 so far, this volatility kept on and in early March once the daily average price was above €200/MWh.

Forward contracts also rose significantly, which signalled that the market does not anticipate a quick return to the price levels seen in the previous years. Carbon prices also reached new highs in Q4 2021, rising to €88/tCO₂e in early December, while they reached €96/tCO₂e in February 2022. High gas prices resulted in soaring wholesale electricity prices as well.

Oil prices in Q4 2021 rose to highs last seen in 2014, and in early March 2022 they nearly reached records set in the summer of 2008. High gas prices have impacted the production in energy intensive industries, and resulted in rising consumer bills for citizens as well.

The suspension of the certification of the Nord Stream 2 gas pipeline and rising tensions due to Russia's invasion in Ukraine had much bigger importance than the gas market fundamentals of demand and supply, leading to extreme volatility of gas prices over the last few months.

Natural Gas Prices



Source: World Bank

The SE European Region as defined by IENE



Who are we?

The Institute of Energy for SE Europe (IENE) is a non-profit organization active throughout South East Europe, focusing on energy policy and analysis but also on information dissemination. IENE aims to promote a broader understanding of the major energy and environmental issues in the region. A key objective of the Institute is to contribute towards the implementation of the European Union's sustainable strategy which combines economic and social development, security of supply, environmental protection and climate change mitigation.

Further information on the Institute, its mission and vision and its various activities can be found in www.iene.eu



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