

### Box I.2.1: European gas market: recent developments and outlook

Security of supply and affordability of natural gas are crucial for the EU economy. Gas represents 21% of EU's primary energy consumption and is an essential source of energy for households and industry (both 32% of final energy consumption in 2020). Natural gas is also an important driver of electricity prices across the EU, as it acts as the marginal production source of power. Whilst to meet the decarbonisation targets the EU aims to shift to low-carbon gases and reduce its total gas consumption, natural gas will continue to play an important role in the energy mix in the coming decade and beyond. For these reasons, the security of supply and affordability of gas remains a key priority for the EU. Last winter, the EU was able to weather the energy crisis thanks to an effective diversification of energy supply and a sharp fall in gas consumption, as well as by taking measures to support the functioning and transparency of price formation in gas markets. The EU is therefore now in a much better position in terms of its gas supply ahead of the next winter.

The EU diversified its energy supply and tackled bottlenecks in the delivery of LNG gas. While total gas imports from Russia decreased by 80 billion cubic meters (bcm), and thereby almost halved in 2022 year-on-year, the EU stepped up its cooperation with other countries to boost gas imports. In particular, LNG imports from the US more than doubled, to around 50 bcm in 2022. New floating LNG terminals were made operational in Finland, Germany and the Netherlands. Furthermore, a record number of more than 56 Giga Watt (GW) wind and solar capacity was installed in the EU in 2022, potentially leading to a reduction of up to 11 bcm of natural gas demand in the power sector.

Gas demand reduction also played a fundamental role. Between August 2022 and March 2023, households and corporations reduced gas consumption by 18% (or 53 bcm), compared to the 2017-21 average. This exceeded the objective of the emergency Council Regulation (EU) 2022/1369 setting a voluntary gas demand reduction target of 15% (or 45 bcm) between August 2022 and March 2023.

The exceptionally high gas prices have been a decisive factor of demand restraint. Wholesale natural gas prices in the EU peaked in August 2022, briefly reaching levels above 300 €/MWh, compared to pre-pandemic levels of around 10-20 €/MWh. These very high prices reflected the synchronised surge in demand from Member States in order to refill depleted gas storages ahead of the winter season, amid fears of shortages in the market due to the unprecedented reduction in Russian supplies and limited physical capacity to import LNG into the EU.<sup>(1)</sup> The available empirical analysis suggests that gas demand is relatively inelastic to prices.<sup>(2)</sup> Historically, however, fluctuations in prices have been limited, and changes in consumers' and producers' responses may become non-linear in the presence of very large price increases, like the ones experienced in 2022. Therefore, part of the gas demand reduction can be attributed to the price signal.

Industry (excl. power generation) contributed about half of the reduction in gas consumption, partly through output cuts<sup>(3)</sup>. In the summer months, the overall gas demand reduction was mostly driven by industry, as manufacturing companies were first to reduce their gas consumption. Gas demand reductions can be driven by savings (behavioural changes and energy efficiency), fuel-switching to carbon-intensive and/or clean fuels, and production curtailment. Over the period 2017-22, total manufacturing output was at its highest level in 2022, showing that high energy prices have not come at the cost of lower overall production. Still, the output of some energy-intensive sectors, such as basic metals, chemicals, non-metallic minerals and paper products started to decrease in the second half of 2022. As gas prices are expected to stabilise at a level significantly below the peak prices of 2022, one can expect gas demand from energy-intensive industries that reduced

<sup>(1)</sup> The analysis builds on European Commission (2023). "Analysis of coordinated demand reduction measures for gas." *Staff Working Document SWD(2023) 63 final*.

<sup>(2)</sup> Labandeira, X., J. M. Labeaga, and X. López-Otero (2017). "A meta-analysis on the price elasticity of energy demand." *Energy policy*, 102, 549-568.

<sup>(3)</sup> Eurostat currently only reports the sectoral detail in terms of gas consumption annually, with a delay of about one year, which makes a detailed breakdown between sectors challenging. However, to this end, the JRC analysed gas consumption in seven Member States between Aug-Dec 2022. The reported figure is therefore based on estimates by the Commission. The figure is derived from an extrapolation of BE, DE, ES, FR, IT, NL, and RO, representing 78% of consumed gas in the EU. The International Energy Agency and Bruegel derived similar conclusions.

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production or switched to more carbon-intensive fuels (rather than structural energy efficient investments) to bounce back.

The residential and commercial sectors are estimated to have contributed about half of the gas demand reduction in the EU, also thanks to milder temperatures. Heating of space represents, on average, around 63% of the final energy consumed by households in the EU <sup>(4)</sup>; lowering heating is, thus, an impactful way for households to reduce their energy consumption. As the time span between August and December 2022 had around 8.3% fewer heating degree days (HDD) compared to the 2017-21 average, the Commission estimates that of the total gas demand reduction, around one-sixth was induced by milder weather (i.e. gas demand was 5 bcm or 3.0-3.2% lower) <sup>(5)</sup>. This contribution was concentrated in October and November.

The marginal decrease in gas consumption in the power sector masks important cross-country differences. Whereas some Member States switched away from gas (e.g. to coal) for electricity generation, others saw their gas consumption in the power sector increase significantly. For example, in Spain, gas-fired electricity generation increased significantly due to a combination of factors, including the Iberian price cap. The cap specifically limited the price increase of gas used by power plants and increased export of electricity to France, as France needed to compensate for the lower availability of nuclear capacity and lower hydro production caused by the drought that hit Europe in summer 2022.

Initiatives to reduce demand and ensure supply were supported by measures to improve the functioning and transparency of price formation in the EU gas market. This included the establishment of a daily LNG price assessment for deliveries to the EU and the market correction mechanism that sets a temporary price ceiling on derivatives when the TTF month-ahead price spikes above 180 €/MWh and diverges considerably from international prices. Regarding the LNG price assessment, it further provides transparency to the market on the price of the actual physical deliveries of LNG in Europe.

#### Outlook

Gas storage filling levels reached 61% by early May 2023, significantly above 2022 levels (37%) and above multi-year average (2016-20 average at 43%). In the summer months of 2022, the gas storage levels caught up with the 2017-21 average and continued increasing thereafter. With a peak at 95% in November 2022, storage levels exceeded the mandatory filling target of 80% for 2022 <sup>(6)</sup>. Since then, the reduction in storage levels during the winter months remained moderate, when the drop in storage, especially in January, was small compared to previous years. Moving towards the winter 2023/24, this should facilitate reaching the 90% gas storage target by 1 November 2023 <sup>(7)</sup>.

The EU recently agreed to extend the voluntary 15% gas demand reduction target by another year (until 31 March 2024) <sup>(8)</sup>. Compliance with the regulation should support the filling of gas storages, keeping prices down and securing enough energy supplies. If the observed gas demand reduction is sustained, the Commission baseline scenario estimates that storage levels reach 95 bcm by the end of October 2023, and thereby will be above the 90% storage target, and 43 bcm by the end of March 2024, leaving a comfortable level of spare gas left coming out of next winter <sup>(9)</sup>. If,

<sup>(4)</sup> Eurostat [nrg\_d\_hhq].

<sup>(5)</sup> European Commission SWD(2023) 63 final. IEA (2023) estimated that gas demand was 18bcm lower due to the weather in 2022 versus 2021.

<sup>(6)</sup> Regulation (EU) 2022/1032.

<sup>(7)</sup> Implementing Regulation (EU) 2022/2301.

<sup>(8)</sup> Council Regulation (EU) 2023/0087.

<sup>(9)</sup> European Commission SWD (2023) 63 final. Assumptions:

Storage levels as of 7 March 2023 (58.5 bcm at the end of 5 March).

Non-Russian pipeline supply equal to the average of the last seven months of 2022.

LNG supply equal to the average of the last seven months of 2022, plus 15 bcm/a (1.25 bcm/month) from Apr. 2023.

No gas from Russia via pipeline.

Average demand of the 2017-2021 period, applying percentage reductions as stated.

Exports to Switzerland as in 2021 (latest data available; 2.2 bcm/a, of which 1/3 in summer and 2/3 in winter).

Exports to Ukraine and Moldova of 0.5 bcm/month.

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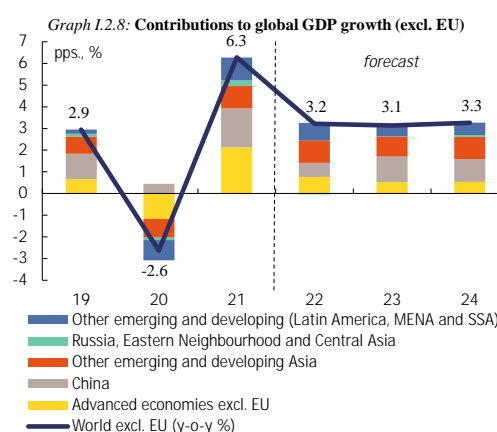
however, the EU does not keep the 15% gas demand reduction over the next year (compared to the 2017-21 period), storage levels could decline to rather low levels at the end of winter 2024.

The threat of outright shortages has significantly abated, but the evolution of prices remains highly uncertain. High gas storage levels and supply diversification have reduced the risk of renewed stress in European gas markets. Market expectations<sup>(10)</sup> until the end of winter 2023/24 foresee wholesale gas prices stabilising just above 50€/MWh, about one-sixth of the peak in 2022, though still more than twice the pre-crisis levels. Increased demand could, however, reignite price pressures. This may be triggered by a combination of e.g. a cold winter or hot summer increasing demand for heating or cooling respectively; lower prices reducing incentives to gas savings and reversing the gas-to-coal switch in power generation that occurred last year in some countries; China's increased demand for LNG; and the need to increase gas-fired electricity generation due to low availability of nuclear capacity and hydropower generation. At the same time, benign weather conditions and increases in renewable power generation capacity could result in downward pressure on gas prices, below levels currently suggested by futures contracts.

<sup>(10)</sup> ICE Index (2023). Dutch TTF Natural Gas Futures.

Prospects for emerging markets other than China remain rather muted, with slower growth expected in 2023, and only a modest pick-up in 2024. The recent falls in commodity prices will ease pressures in some (commodity importing) EMEs and low-income economies but worsen prospects for commodity exporters. Provided that the problems in the US (and Swiss) banking sectors prove to be isolated and idiosyncratic cases, spillovers to EMEs are likely to be limited. Growth in India is expected to moderate in 2023, from nearly 7% in 2022, with rising borrowing costs affecting both manufacturing and consumption. In emerging Asia (excluding China), the late-2022 downturn in the technology and manufacturing cycle appears to have extended into early 2023, but the outlook for the rest of the year looks brighter as China reopens. Growth in Central Asian economies is set to slightly pick up compared to 2022, when it was negatively affected by spillovers from Russia. In South Africa, recurrent and increasingly larger electricity supply problems are constraining growth. A combination of high inflation, sharp monetary policy tightening and lower commodity prices are set to dampen activity in Brazil, Argentina, and Mexico.

Global growth (including the EU) is expected to slow from 3.3% in 2022 to 2.8% in 2023, before rising to 3% in 2024. This is still somewhat below the average global growth rate over the period 2010-19 (3.5%). Excluding the EU, global growth is projected to fall from 3.2% in 2022 to 3.1% in 2023, then rise back to 3.3% in 2024 (see Table I.2.1 and Graph I.2.8). Compared to the Winter interim Forecast, these projections are slightly higher for 2023 but marginally lower for 2024. The advanced economies are expected to see growth slow from 2.6% in 2022 to 1.3% in 2023, and then grow by 1.5% in 2024. Growth in EMEs outside of China is also forecast to slow, from around 4.3% in 2022 to 3.4% in 2023, before picking up to close to 4% in 2024. The key outlier among emerging markets is China, with somewhat faster growth expected in 2023 than in 2022, partially offsetting the slower growth in advanced economies and elsewhere.



The outlook for global trade is equally subdued, with a sharp slowdown expected in 2023 and some recovery in 2024. Global merchandise trade will continue to be influenced by