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European gas demand: Key factors to keep an eye on in 2023

European gas demand collapsed in 2022 on the back of mild temperatures, high gas prices, and changes in consumer behaviour (Figure). However, despite a strong decline in 2022, additional gas demand reduction will be needed in 2023 in preparation for winter 2023/2024 and even potentially for winter 2024/2025.

Gas demand drivers are complex and specific, but there are a few key factors to keep an eye on during 2023. To begin with, the industrial sector has been the main source of gas demand flexibility in 2022, and it is expected to continue playing this role through voluntary reduction and demand response. For most manufacturing production (the chemical sector being a clear exception), strong output in 2022 suggested that record prices have not had as dramatic an impact as one could have expected (yet?) with significant switching to alternative energy sources and improved operational efficiency. However, after over a year of high prices, most of the 'low hanging fruit' is likely to have been harvested by now, so it is unclear how easy it might be to further reduce gas use without reducing production. In addition, it seems likely that most of the decline has come from reduction measures (as opposed to major demand destruction), which means that when gas/electricity prices go down, be it as a result of the market rebalancing or as a result of support measures from governments, a significant proportion of gas demand in the industrial sector (which seems to have gone down by about 15-20 per cent in 2022) could come back within a few weeks, as seen in October when gas prices reached their lowest levels in months and fertilizer producers restarted production in Europe.

Secondly, warm weather at the beginning of the year and similarly at the beginning of the winter season 2022/23, limited the need for gas use in space heating in 2022. Mild temperatures and continued high gas prices seem to have also facilitated an important demand response from small residential and commercial consumers, a usually rather inelastic sector in the short term, in the form of lower production and fuel switching in small businesses and lower energy use in the buildings sector. Continued participation of consumers in demand saving measures in buildings is going to be essential throughout 2023. There are two main uncertainties: first, government intervention in subsidizing energy bills and campaigns to save energy will need to send the right signals in order to keep consumption low; and second, temperatures: cold weather may erode consumers' willingness to reduce their energy for heating (and possibly increase gas demand by up to 15-20 bcma).

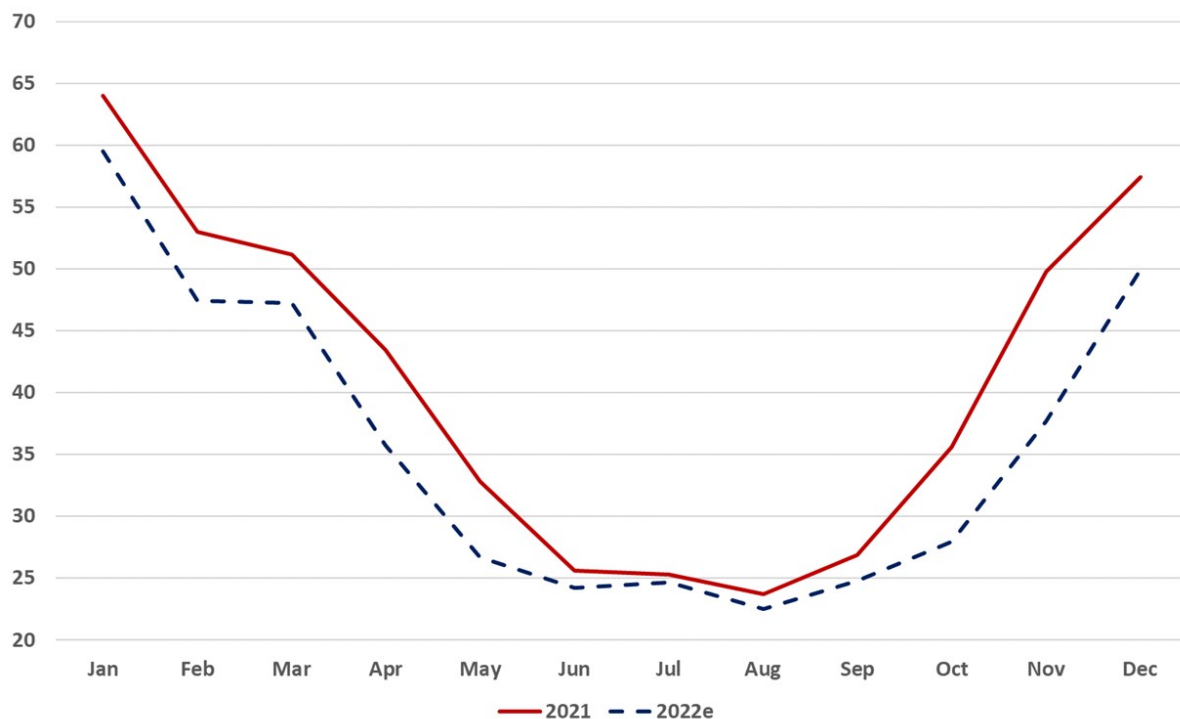
Finally, in contrast to the trends observed in the industrial and heating sectors, gas used for electricity generation increased year-on-year in 2022. Three main elements influenced the need to use more gas

in the power sector (despite aims to reduce consumption): continued high electricity demand in the first eight months of the year, before energy-saving measures and economic slowdown finally started to have an impact from September onwards, and the low availability of both nuclear and hydropower.

French nuclear generation typically covers as much as 15 per cent of European electricity needs, but in 2022, the French utility EDF faced a wave of repairs following the discovery of corrosion issues and also delays to its scheduled 10-year maintenance due to the COVID pandemic (as well as strikes in France in October). This forced a record number of reactors offline for most of the year. EDF is racing against the clock to put as many reactors as possible back in service as soon as possible. By late December the company had confirmed its expectations for 300-330 TWh of nuclear generation in 2023, which would still be relatively low for the French nuclear fleet but around 18 - 19 per cent higher than 2022 levels. However, uncertainties remain as the company revised its predictions for nuclear generation downwards four times in 2022.

In conclusion, the key issues to keep an eye on in 2023 will be the pace of return of French nuclear reactors, the willingness and ability of large and small consumers to continue adapting their usual behavior in order to use less energy (especially during cold days in the winter), and last but not least, the depth of a looming economic recession. And while the main drivers are largely similar across Europe, the evolution of gas consumption will continue to be diverse, which can be explained by a number of country-specific factors including the role of gas in the energy mix, access to alternative fuels and the levels, and extent, of support measures from governments to shield their national consumers from the worst impacts of high energy and gas prices.

Figure 2: Monthly gas demand in EU27 + UK, 2019-2022 (Bcm)



Source: Data from Eurostat, IEA, EntsoG, GRTgaz, Terega, THE, SNAM, Enagas, NationalGrid and Fluxys. Calculations and graph by the author

Anouk Honoré (<mailto:anouk.honore@oxfordenergy.org>)