THE OXFORD INSTITUTE FOR ENERGY STUDIES

July 2022

REPowerEU and the Short-Term Outlook for the European Gas Market

OXFORD ENERGY COMMENT

Mr Mike Fulwood, Dr Anouk Honoré, and Dr Jack Sharples, OIES

Introduction

In response to the invasion of Ukraine by Russia, the European Commission published a communication entitled "REPowerEU: Joint European Action for more affordable, secure and sustainable energy" on 8 March 2022.[1] The communication notes that EU gas imports from Russia in 2021 (pipeline and LNG combined) totalled 155 billion cubic metres (bcm), and states that this could be reduced by two-thirds (101.5 bcm) before the end of 2022. The OIES published an Insight shortly afterwards commenting on the practical realities and implications.[2]

On 18 May 2022, the European Commission published another suite of documents, further elaborating on their plans for both the short and longer term.[3] This Comment considers only the short-term aspects as they relate to natural gas. Specifically, our focus is on what has happened so far in 2022, what might happen for the rest of the year, and then a look at the prospects for 2023.

In the documents published on 18 May, it appears that the European Commission has now dropped the ambitious target of reducing EU gas imports from Russia by two-thirds before the end of 2022. In the Staff Working Document (SWD), the short-term measures now refer to 10 bcm of additional pipeline imports, 50 bcm of additional LNG imports, and a 10 bcm reduction in demand from behavioural measures, in particular the reduction of thermostats by 1 degree Celsius, which would come in addition to any price-induced demand reduction. This implies a reduced demand for Russian gas of 70 bcm.[4] [5] In its section on the newly-created EU Energy Platform (for the voluntary common purchase of gas, LNG, and hydrogen), the SWD also states:

"The demand pool will identify and aggregate contestable volumes based on expiring long-term contracts as well as flexible volumes under existing long-term gas contracts which could lead to roughly 30-70 bcm of demand in the short term".[6]

This suggests that 30 bcm is the minimum year-on-year reduction in Russian pipeline gas imports, with 70 bcm as the upper target.

The analysis in this Comment will consider not only the EU but the wider Europe as well, including the UK and Turkey, as they are particularly relevant to achieving any reduction in gas imports from Russia. The Comment reviews the prospects for gas demand in 2022 and 2023, what has been happening to pipeline imports from Russia and elsewhere and developments in the LNG market for this year and the next. Finally, the overall gas balance for Europe is reviewed including the prospects for storage in the context of the EU's target for storage to be 80 per cent full by 1 November 2022.

1 European Commission, 2022. COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS. REPowerEU: Joint European Action for more affordable, secure and sustainable energy. COM/2022/108 final. 8 March. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A108%3AFIN

2 Fulwood, M., Hall, M., Honoré, A., and Sharples, J., 2022. The EU plan to reduce Russian gas imports by two-thirds by the end of 2022: Practical realities and implications. Oxford Energy Insight № 110. Oxford Institute for Energy Studies. 18 March 2022.

3 European Commission, 2022. REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition. Press Release, 18 May. https://ec.europa.eu/commission/presscorner/detail/en/IP_22_3131

4 European Commission, 2022. COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS. REPowerEU Plan. COM/2022/230 final. 18 May 2022. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483

5 For the targets not relating to Russia, see the table in Annex I

6 See section 2: Diversifying energy imports

Demand

In the OIES Insight published in March, we noted that the prospect of the EU reducing gas demand by 38 bcm in 2022, presumably taking 2021 as a base case, seemed possible on paper and could come from the drivers listed in the document: energy savings, improved efficiency, and the deployment of additional wind and solar capacity, but that it would be very challenging and dependent on external events such as winter temperatures. We also noted that it was more than likely that switching to other sources would also be needed, essentially hydro, coal, and/or nuclear.[7]

In the five months to the end of May 2022, first estimates[8] for gas demand in the EU show a decline of 11.3 per cent compared to the same period in 2021. This represents about 23 bcm less gas consumed than last year, and about 60 per cent of the original target of 38 bcm proposed by the EC in March, although the factors driving the decline have been very different from the ones envisaged in the first REPowerEU document.

A mild winter at the beginning of the year compared to 2021 contributed significantly to lower consumption of gas for heating. In addition, a gas demand response seems to be happening in all three main demand sectors: in heating, with some – as yet limited – change in consumer behaviour, in the industrial sector with apparent switching to other fuels, and in the electricity generation sector with some gas-to-coal switching.[9]

In 'wider Europe', a region that includes the UK and Turkey, gas demand was 10.7 per cent lower than a year before (about 29 bcm) with 2022 levels being consistently lower than in 2021 as illustrated in Figure 1.

So far in 2022, coal prices have also risen dramatically. However, gas prices have been so high that there was still a large incentive to switch from gas to coal – where possible – in Q1. In May, lower gas prices, with coal and CO2 prices remaining high, lifted gas generation margins in various countries. Still, for the first five months of the year, electricity generation from gas in Europe was down by 2.3 per cent while generation from coal was up by 10 per cent year on year.[10]

For the rest of the 2022 (and 2023), what happens in the power sector is expected to be a major driver for gas demand. Some possible coal-to-gas switching could take place over the summer, due to higher coal and EUETS prices and the ban on Russian coal imports from 10 August.[11] However, many governments and companies are counting on coal to help balance the system this winter, and gas-to-coal switching is very likely in order to redirect gas to other sectors with less flexibility to switch to alternative options.

7 Fulwood, M., Hall, M., Honoré, A., and Sharples, J., 2022. The EU plan to reduce Russian gas imports by two-thirds by the end of 2022: Practical realities and implications. Oxford Energy Insight № 110. Oxford Institute for Energy Studies. 18 March 2022.

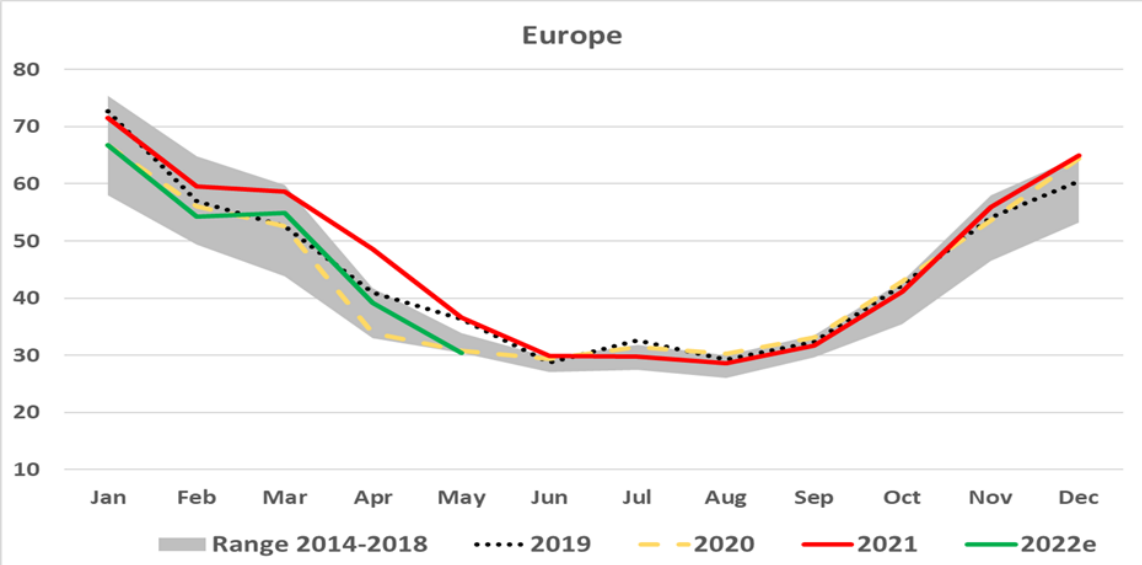
8 Contrary to the supply side, data on gas demand is not always available in a timely way. As a result, a combination of sources has been used, with the author's calculations to harmonise data sets and make assumptions when the data was not available or was unsatisfactory. In addition, most of the gas demand data for May is based on the author's calculations

9 See Honoré A., 2022. Demand response to high gas prices in Europe in 2021 and early 2022. Oxford Energy Insight № 117. Oxford Institute for Energy Studies. June 2022

10 Data for Europe, including the UK and Turkey. Data from ENTSOE transparency platform, Gridwatch, Transelectrica, Epias and author's calculations

11 According to Eurostat data, 46 per cent of the coal imported into the EU27 in 2020 came from Russia. It represented over 45 per cent in Germany and 70 per cent in Poland, the two largest users of coal in electricity generation, potentially creating some additional tensions in their energy systems for the second half of the year.

Figure 1: Monthly gas demand in Europe,[12] 2019-2022 (bcm)



Sources: Data from IEA, Eurostat, Entsog, GRTgaz, Terega, NCG, Gaspool, SNAM, Enagas, NationalGrid, author's calculations

All these factors are likely to increase the call on gas-fired plants in the coming months, especially on low-wind availability days.

A cold winter would also boost gas demand and any signs of colder weather could tighten the market dramatically if it happens when there are low supplies of alternative options for power generation, as seen in Q4 2021 for instance.

The influence of temperatures on gas use can still easily account for plus or minus 20-30 bcm year on year. Demand is very responsive to fluctuations in temperatures, but short-term price elasticity is relatively non-existent, or at best, fairly limited as consumers do not have easy access to alternative options for heating. This is why the EU, the IEA, several governments, and even companies are calling for consumers to change their behaviour, by voluntarily turning down thermostats next winter, for instance.[13]

Finally, the impact of high gas prices on industrial demand is expected to continue. Since Q3 2021, industries have expressed strong concerns about the impact of rising gas (and more generally energy) prices on their activities and demanded financial support from governments to keep production levels steady. In 2022, there have been clear signs that high gas prices have impacted demand for gas in the industrial sector with some important year-on-year reductions and maybe even demand destruction (i.e., demand that will not come back). Interestingly, manufacturing outputs appear to be similar or above 2021 levels in various markets while gas demand shows sharp declines in these countries, suggesting that some switching from gas to other fuels has also been happening.

In the coming months, governmental support measures for end-use consumers and for businesses will be a crucial driver for gas demand, but some further decline is still expected at least for the rest of 2022 and most likely for 2023 as well. If gas supplies are short this winter, mandatory cuts (curtailments) of industrial demand at least, are also a real possibility. With Russian supplies becoming more and more

12 Includes UK and Turkey in addition to EU27 + smaller gas markets of Albania, North Macedonia, Norway, Serbia, and Switzerland.

13 For instance, see https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52022DC0108, https://www.iea.org/reports/a-10-point-plan-to-reduce-the-european-unions-reliance-on-russian-natural-gas, https://www.rferl.org/a/dutch-reduce-russian-gas-campaign/31782700.html

unpredictable,[14] the EU and its member states are taking measures (and considering further options) to reduce their need for Russian gas as soon as possible, and certainly for next winter.

In a speech to the European Parliament on 14 June, the EU's energy commissioner Kadri Simson said that she was focused on providing guidance to member states on potential gas demand reductions as part of preparations for a "challenging" winter to come.[15] On 24 June, the European Commission confirmed that it will be presenting an emergency EU-level gas-demand reduction plan in July.[16]

At the current rate of demand decline in the EU, the original 38 bcm target set out by the European Commission in March looks achievable (although due almost entirely to different drivers than the ones listed in the REPowerEU document) and is even likely to be surpassed. Gas demand in 2021 was strong and remained resilient even in the second half of the year when gas prices started to climb to – for the time - record prices, therefore a continuing decline to last year's levels is likely.

Total gas demand in the EU could decline by 40-50 bcm this year, on the back of high prices, consumer behavioural change, and milder temperatures. Looking ahead to 2023, there are, so far, no factors indicating demand recovery, with coal likely to continue to be used as a backup option when necessary, especially in the power generation sector.

European gas production and non-Russian pipeline imports

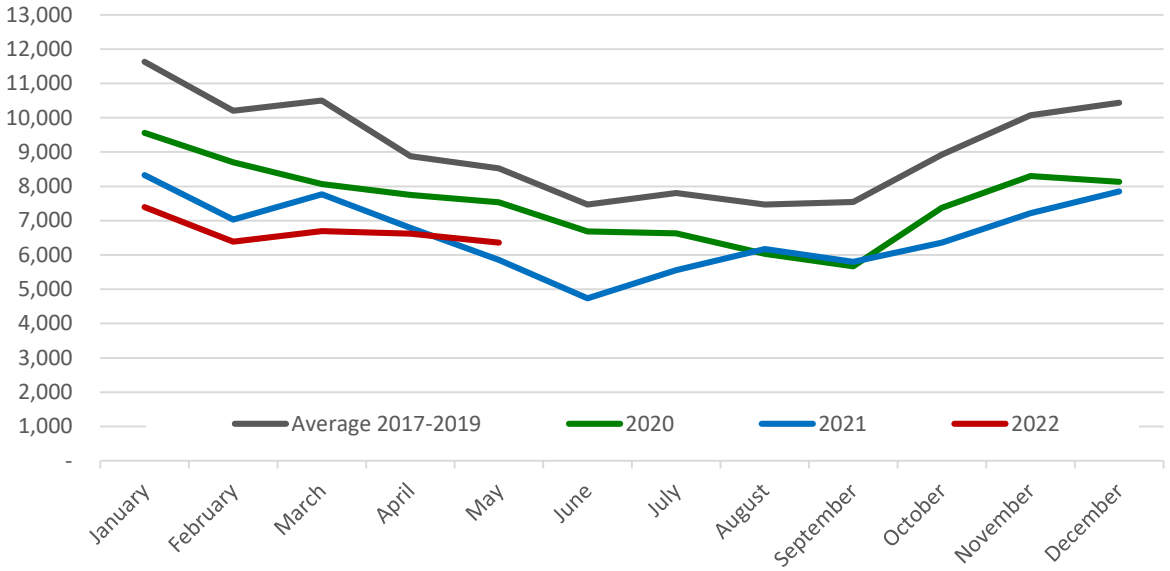
The ongoing story of European gas production and non-Russian pipeline imports is relatively straightforward: both are at close to maximum capacity, with little prospect of substantial upside in the coming 12-18 months.

European gas production

European gas production (in the EU-27 and UK) in the year to date (January to May) peaked in January, as it usually does, and then flattened off in the subsequent months. In the UK, production has recovered from its dip between April and July 2021, caused by maintenance that had been delayed by COVID-19, meaning there is the expectation of a slight year-on-year increase in 2022 over 2021. In the EU outside the Netherlands, production continues its gradual decline, especially in Germany, Italy, and Ireland. A key factor is gas production in the Netherlands, where the ramp-down of the Groningen field was expected to lead to a complete cessation of production in 2022. However, on 20 June it was announced that the Dutch government had triggered an emergency plan to allow production of 2.8 bcm in the gas year 2022/2023, down from 4.5 bcm in the current gas year.[17] Despite this change in policy, the overall outlook for European (EU+UK) production for the rest of 2022 and into 2023 is a slight year-on-year decline, with little prospect of a substantial increase from any productive source.

14 As of mid-June 2022, Russia had cut gas deliveries to several European countries such as Poland, Bulgaria, the Netherlands, and Finland and significantly reduced deliveries to other markets such as Germany, Italy, and France.
15 https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_22_3714
16 https://direct.argusmedia.com/newsandanalysis/article/2344819
17 Reuters, 20 June. Dutch government activates energy crisis plan, to produce 2.8 bcm Groningen gas. Reuters, 20 June. https://www.reuters.com/business/energy/dutch-government-activates-energy-crisis-plan-produce-28-bcm-groningen-gas-2022-06-20/

Figure 2: EU plus UK gas production (mmcm per month)



Source: Data from Eurostat and ENTSOG Transparency Platform. Graph by the author.

European pipeline imports from non-Russian sources

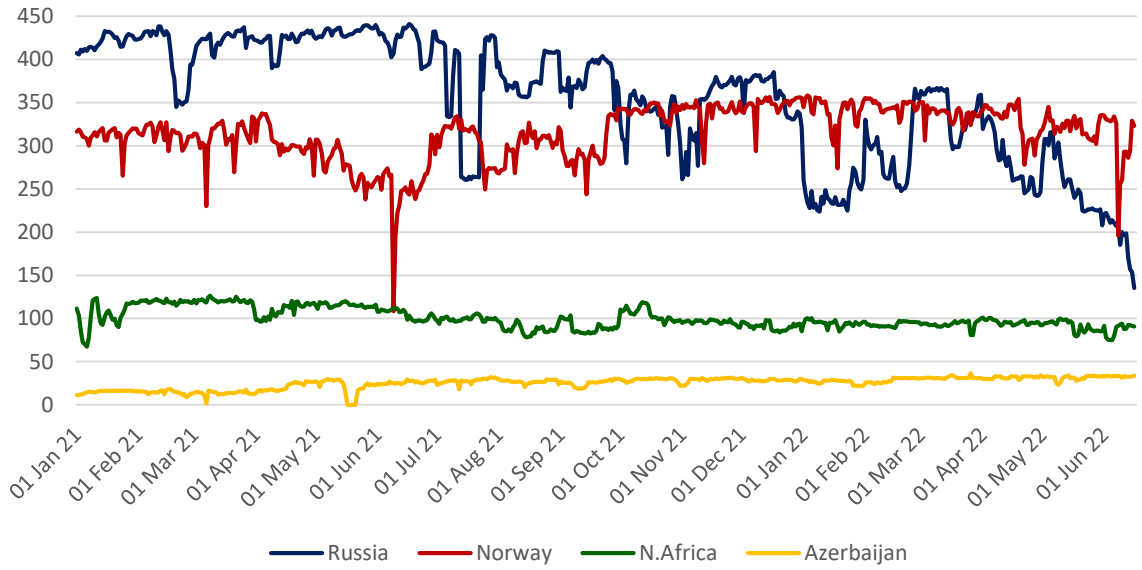
Regarding pipeline imports into Europe from non-Russian sources, the flows from Norway, North Africa (Algeria and Libya combined), and Azerbaijan have been relatively consistent during the winter of 2021/2022 and into Q2 2022. The flows from Azerbaijan along the Trans-Adriatic Pipeline (TAP) have been close to full capacity (around 32 mmcm/d, or 10 bcma). There is, therefore, little scope for any increase in supply for the rest of 2022 or in 2023. Looking further into the future, plans to expand TAP to 20 bcma would require both additional investment and commitments both from the Azeri side that gas production would be available, and from the European side regarding offtake under long-term contracts. According to S&P Global, this remains unlikely before 2025 at the earliest.[18]

Pipeline supplies from North Africa have also remained stable, at around 100 mmcm/d over the past nine months. This means that, in the year to date (January-May), flows are down by 3 bcm year-on-year, while Algeria's LNG exports in the same period are also down by 2.2 bcm year-on-year.[19] This suggests a decline in the volume of gas available for export from both Algeria and Libya. While exports from Libya to Italy via the Green Stream pipeline are down by 0.5 bcm year-on-year, pipeline exports from Algeria to Spain have been impacted by the cessation of gas transit from Algeria to Spain via Morocco since 1 November 2021. However, the fact that the remaining export pipelines to Spain (Medgaz) and Italy (Transmed) are not being used at their full capacity suggests that pipeline deliveries from both Algeria and Libya are being hindered by a lack of supply for export, rather than a lack of export pipeline capacity.

18 Griffin, R., 2022. Azerbaijan discussing gas supplies to new European buyers as war rages in Ukraine. S&P Global, 6 June. https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/electric-power/060622-azerbaijan-discussing-gas-supplies-to-new-european-buyers-as-war-rages-in-ukraine

19 ENTSOG Transparency Platform and Kpler LNG Platform (subscription required)

Figure 3: European daily pipeline gas imports by source (mmcm/d)



Source: Data from ENTSOG Transparency Platform

Lastly, flows from Norway, the largest non-Russian pipeline supplier, remained at around 350 mmcm/d throughout winter 2021/2022, close to the combined capacity of its export pipelines to the UK, France, Belgium, Netherlands, and Germany. At the time of writing, Norway's pipelines to the EU continue to run at full capacity, as they have done throughout the winter, and it is only pipeline supply to the UK that has declined in line with seasonal demand since April.[20] The latest update from the Norwegian Ministry of Petroleum and Energy (18 May 2022) forecasts Norwegian supply to Europe to increase by around 9 bcm year-on-year.[21] This includes the restart of the Hammerfest LNG export terminal, which could add around 3 bcm of supply in H2 2022, meaning that pipeline supplies could increase by 6 bcm year-on-year. Between January-May 2022, pipeline supplies from Norway to Europe were 4.7 bcm higher year-on-year. This suggests that pipeline supplies in the rest of summer (June-September) could be around 1.3 bcm higher, while use of the export pipelines at full capacity in Q4 (as they were during much of Q4 2021) will result in flat year-on-year growth in that quarter.

European pipeline imports from Russia

In 2021, total Russian pipeline supply to Europe (EU+UK) was 3 bcm (2 per cent) lower than in the COVID-afflicted 2020, with a sharp decline in Q4 2021 offsetting year-on-year growth in Q1-3.[22] This decline was underpinned by Gazprom reducing its spot sales via its Electronic Sales Platform (ESP) in St Petersburg, and then halting these sales entirely on 13 October 2021, while also not replenishing its downstream storage stocks in Europe during the summer of 2021.

In the year to date (January-May), Russian pipeline supplies to Europe are down by 21 bcm (32 per cent), year-on-year. This dramatic decline can be attributed to multiple factors: 1) lower nominations by European buyers under long-term contracts, especially in January and February; 2) Gazprom withdrawing participation from its European trading subsidiaries on 1 April, and so withdrawing completely from the European spot market; 3) the fact that between 27 April-31 May, Gazprom ceased

20 Gassco, 2022. Exit nominations – history. https://umm.gassco.no/ch/
21 Government of Norway, 2022. Updated estimate for Norwegian gas deliveries in 2022. Press Release, 18 May. https://www.regjeringen.no/en/aktuelt/oppdatert-anslag-for-norske-gassleveranser-i-2022/id2912000/
22 Data from ENTSOG Transparency Platform

delivering gas under LTCs to companies that refused to pay for their gas in Russian roubles;[23] 4) the effective closure of the Yamal-Europe pipeline for deliveries to Germany via Belarus and Poland, due to Russian government sanctions on EuRoPol Gaz, the operator of the Yamal-Europe pipeline on Polish territory, on 11 May 2022;[24] 5) a reduction in flows via the Nord Stream pipeline since 12 June, which was ostensibly due to a turbine for one of the eight gas compressor units (GCUs) at the Portovaya compressor station (CS) being taken out of Russia for servicing and then not returned due to western sanctions against Russia.[25] [26] [27] [28] Gazprom also blamed the expiration of permitted time between services for GCUs, and malfunctions detected in the engines.[29] However, the German Economy Minister, Robert Habeck, has stated, "Nord Stream 1 could now supply 100 per cent gas. There is an excuse, a technical pretext that is taken".[30]

Flows via Nord Stream had already fallen at the beginning of June, as Gazprom ceased supplying several customers in north-western Europe. However, the decline in daily flows from 140 mmcm/d to 67 mmcm/d between 12-16 June left the pipeline operating at just 40 per cent of capacity. As a result of the decline in flows via Nord Stream, Gazprom's counterparties in Slovakia (SPP), Austria (OMV), Italy (Eni), France (Engie), and Germany (RWE and Uniper) report not receiving the full amounts of gas requested under their long-term contracts.[31] Despite the fact that Slovakia and Austria were traditionally supplied via Ukraine even after the construction of Nord Stream, and the fact that Gazprom holds approximately 35 mmcm/d of unused (pre-paid) capacity on the main pipeline route to central Europe via Ukraine (from Sudzha to Velké Kapušany), Gazprom has not increased supplies to central Europe via Ukraine to offset the loss of Nord Stream flows.[32] Looking ahead, Nord Stream is due to go offline entirely for annual maintenance in the period 11-21 July, and it remains to be seen whether the pipeline will come back online after this date.

23 Bulgargaz (Bulgaria), PGNiG (Poland), Gasum (Finland), GasTerra (Netherlands), Shell Energy Europe (Germany), and Ørsted (Denmark).

24 Reuters, 2022. Russia puts sanctions on Gazprom units in Europe and U.S., part owner of pipeline. Reuters, 11 May. https://www.reuters.com/business/russia-sanctions-gazprom-germania-units-owner-polish-part-yamal-europe-pipeline-2022-05-11/

25 Gazprom, 2022. Nord Stream pipeline. https://proektirovanie.gazprom.ru/press/ehntsiklopediya-proektirovshchika/krupnejshie-proekty/severnyj-potok/

26 Reuters, 2022. Siemens Energy can't deliver turbine to Nord Stream 1 operator. Reuters, 14 June. https://www.reuters.com/article/ukraine-crisis-nordstream-siemens-energ-idUKKBN2NV1EU

27 As a point of clarification, the GCUs were originally manufactured by Rolls-Royce, but Siemens acquired the Rolls-Royce Energy aero-derivative gas turbine and compressor business in 2014. See: Siemens, 2014. Siemens to acquire the Rolls-Royce Energy gas turbine and compressor business and enter into a long-term technology partnership. Press Release, 6 May. https://press.siemens.com/global/en/pressrelease/siemens-acquire-rolls-royce-energy-gas-turbine-and-compressor-business-and-enter-long

28 Reuters, 2022. Canada reports talks with Germany on Siemens-made Nord Stream 1 equipment. Reuters, 16 June. https://www.reuters.com/business/energy/canada-reports-talks-with-germany-siemens-made-nord-stream-1-equipment-2022-06-16/

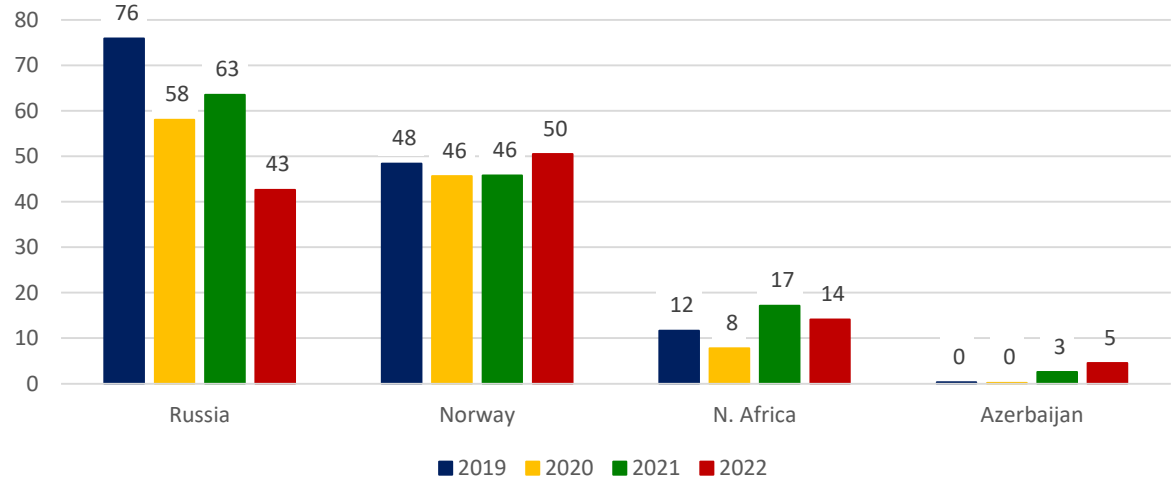
29 Gazprom, 2022. Gazprom Official Twitter. https://twitter.com/GazpromEN See tweets on 14 and 15 June 2022

30 Reuters, 2022. Technical problem with Nord Stream 1 a Russian pretext - German EconMin. Reuters, 30 June. https://www.reuters.com/markets/europe/technical-problem-with-nord-stream-1-russian-pretext-german-econmin-2022-06-30/

31 Upstream Online, 2022. Gazprom tries carrot and stick approach to European customers. Upstream Online, 17 June. https://www.upstreamonline.com/production/gazprom-tries-carrot-and-stick-approach-to-european-customers/2-1-1239972

32 ENTSOG, 2022. Transparency Platform. https://transparency.entsog.eu/#/map

Figure 4: European pipeline gas imports by source in January-May (billion cubic metres)



Source: Data from ENTSOG Transparency Platform. Graph by the author.

Overall, European pipeline supply is very much a tale of contrasting elements: non-Russian supply is arriving at close to full capacity while conversely, there remains significant concern over pipeline imports from Russia, especially via Nord Stream. If, following the end of the Nord Stream maintenance period on 21 July, flows only come back at the lower, mid-June rates for the rest of the year, then the decline in pipe imports from Russia for 2022 as a whole would be some 70 bcm. Coincidentally this is the same level suggested in the REPowerEU documents published on 18 May, but largely due to Gazprom curtailing supplies for the reasons outlined earlier.

LNG supply

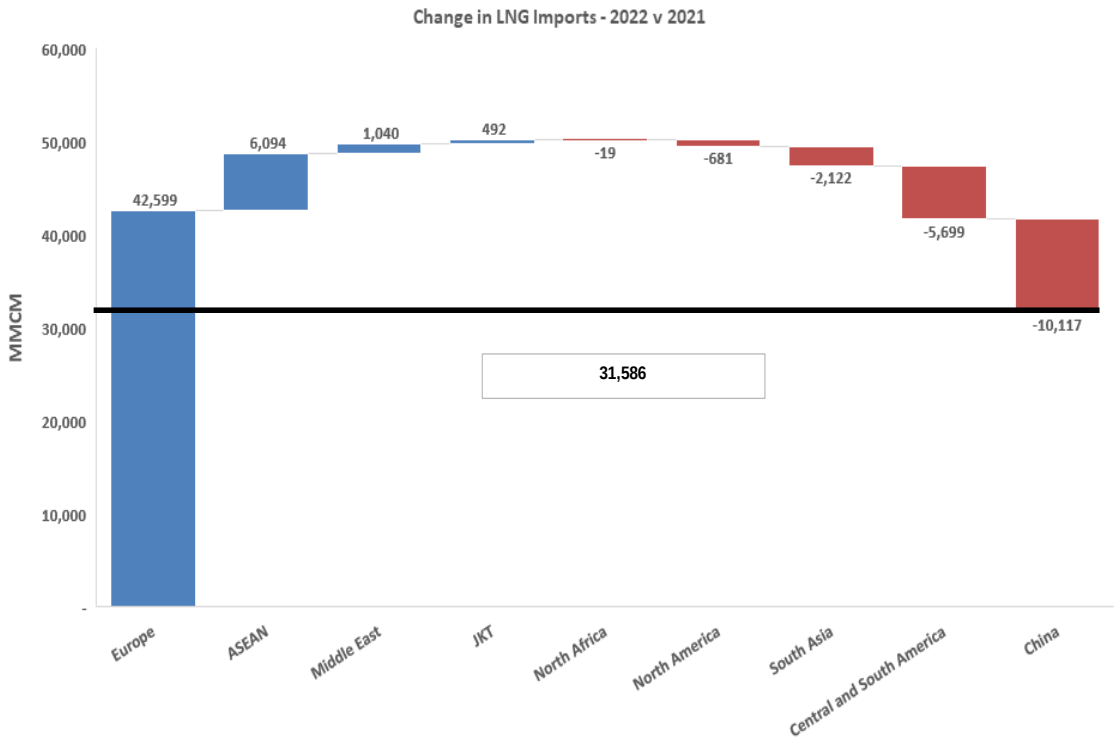
In the Insight published in March, we noted that the prospects of the EU importing an additional 50 bcm of LNG in 2022 were limited by a lack of sufficient regasification capacity in the key Northwest Europe area, but could possibly be achieved if the UK was used as a landbridge to import LNG and then effectively reexport it via the Interconnector and BBL.[33]

In the six months to the end of June this year, LNG imports into the EU and the wider European area have risen sharply. Imports into the EU are up 55 per cent or around 22 bcm, while those into the wider European area (including the UK and Turkey) have risen by 60 per cent (around 28 bcm). Global LNG supply has risen by 6 per cent or around 15.5 bcm, so almost half the rise in European imports has come at the expense of diverting supplies from other regions and countries. This has principally been the result of much lower LNG imports into China, down by 20 per cent or some 11 bcm. LNG imports into Southeast Asia are higher while LNG imports into Latin America are lower reflecting increased hydroelectric generation, particularly in Brazil.

At the current rate of increase for LNG imports into Europe, the 50 bcm target set out by the European Commission looks achievable. However, while imports last summer were relatively low, in Q4, LNG imports into Europe were very strong so the possibility of exceeding last year's levels as we enter winter may be too challenging. The figure below shows the OIES projection of the 2022 increase in LNG imports by region.

33 Fulwood, M., Hall, M., Honoré, A., and Sharples, J., 2022. The EU plan to reduce Russian gas imports by two-thirds by the end of 2022: Practical realities and implications. Oxford Energy Insight № 110. Oxford Institute for Energy Studies. 18 March 2022.

Figure 5: Change in LNG Imports: 2022 v 2021



Source: Data from Kpler LNG Platform (subscription required)

Total LNG imports are projected to be up by some 32 bcm for 2022 as a whole. Total supply has already risen by over 15 bcm in the first half of the year and a more rapid increase in supply is expected in the second half of the year. The Norwegian Hammerfest plant is now operational, Prelude FLNG back online, Sabine Pass T6 and Calcasieu Pass in the US are ramping up to full capacity, and, together with the continued higher availability from the numerous export plants which were constrained through technical, maintenance, and feedgas issues last year, the prospects look promising. However, the recent fire at the Freeport terminal in the US, with full operational capability being delayed to the end of this year could take around 9 bcm of available supply off the market until the end of Q4. Overall available LNG supply, therefore, may only rise by between 25 and 30 bcm, but using the little remaining spare capacity leads to the slightly higher increase in total LNG imports shown in Figure 5 above.

Figure 5 suggests that total LNG imports into Europe could rise by almost 43 bcm this year, on the back of rising supply, but this still implies diversions from other regions. China is key to this and its continued weak economic performance suggests that, for the rest of the year, its LNG imports may, at best, only match last year's total, creating space for Europe to import more. The situation is also helped by weaker imports into Central and South America and India, Pakistan, and Bangladesh. Only the ASEAN countries are expected to see continuing growth.

This strong performance of LNG imports into Europe, however, is contingent on no more unexpected supply losses and China not recovering to any great extent. Stronger demand growth outside Europe and/or unexpected supply constraints could impact Europe's ability to import more, especially in the last quarter of the year.

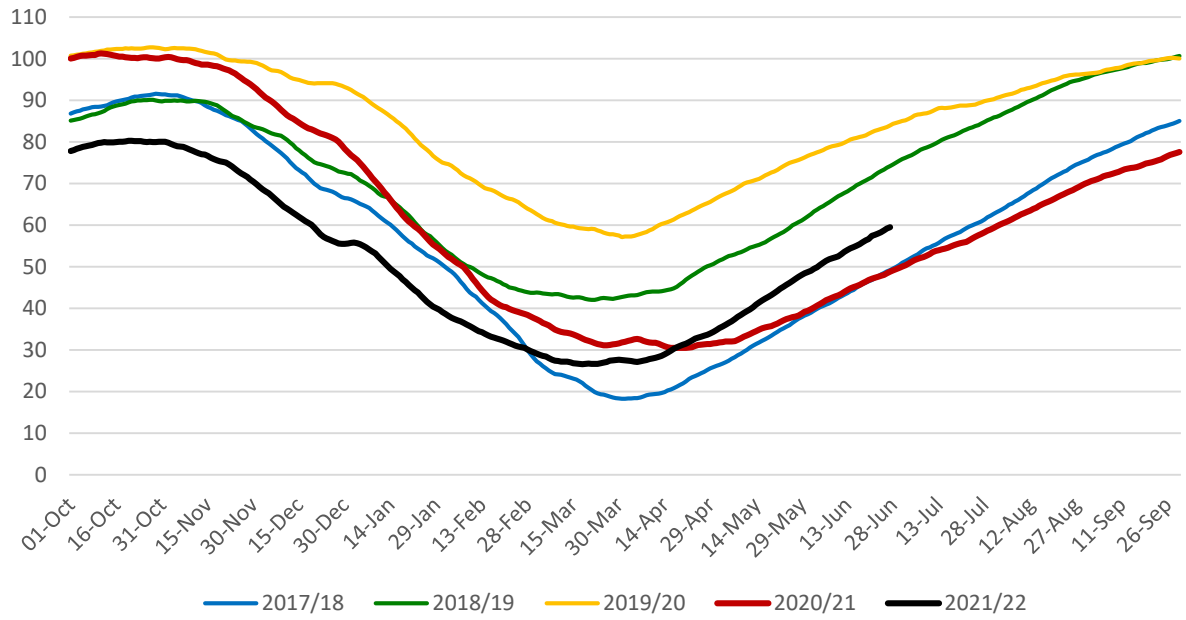
Looking ahead to 2023, Europe is likely to require even more LNG with pipeline imports from Russia overall anticipated to be lower than in 2022. On the positive side, LNG supply growth is expected to continue with new capacity coming onstream in Indonesia (Tangguh T3) and Mozambique (Coral FLNG), together with full year capacity available from the new and returning projects in 2022, better feedgas prospects in Trinidad and Nigeria, and the return of the Freeport terminal to full operational capacity. Overall, LNG export capacity growth could be very strong in 2023, adding possibly up to 50

bcm to available supply. This is good news for Europe, although in order for the region to import more additional regasification capacity will be required, especially in Northwest Europe. However, there is likely to be stronger competition next year from demand growth in Asia, with a particularly strong rebound expected in China, more growth in the ASEAN countries (with Vietnam and the Philippines adding to demand) along with India, Pakistan, and Bangladesh. Europe is likely to need an additional 15-20 bcm or more of LNG next year, on top of the 43 bcm increase in 2022. If some parts of Asia (especially China) are growing strongly, this may only be achievable with lower demand coming from Japan, Korea, and Taiwan (the traditional importers) and Central and South America. In 2023 the global supply-demand for natural gas could be even more precariously balanced than in 2022.

European Gas Storage

Europe began the current gas year (from 1 October 2021) with storage stocks at their lowest levels on that date since 2013. However, a mild winter with limited withdrawals, plentiful LNG imports, and record storage injections since 1 April mean that stocks on 27 June (59.5 bcm) are now only slightly below the average for the past five years (61.5 bcm) and above the average for the past ten years (56.6 bcm).

Figure 6: European gas storage stocks (bcm)



Source: Gas Infrastructure Europe. Graph by the author.[34]

The lack of substantial upside in the near-term supply-side outlook could inhibit European storage injections, although some national governments are preparing measures to ensure that storage stocks are fully replenished ahead of the coming winter. For example, the Italian government has announced plans to purchase coal to maximise the use of coal-fired power stations in order to preserve gas for storage injections.[35] Reports suggest that the German government is preparing measures to boost coal-fired power generation, incentivise industrial consumers to use less gas, and even provide credit lines to Trading Hub Europe (THE), Germany's gas hub operator, to buy gas for injection into storage.[36] The

34 Gas Infrastructure Europe, 2022. Aggregated Gas Storage Inventory (AGSI+). https://agsi.gie.eu/#/
35 Fonte, G., and Landini, F., Italy unveils measures to boost gas storage after drop in Russian flows. Reuters, 21 June. https://www.reuters.com/business/energy/italy-needs-speed-up-efforts-refill-gas-storage-says-minister-2022-06-21/
36 Steitz, C., and Rinke, A., 2022. Germany announces steps to boost gas storage as Russia cuts supply. Reuters, 19 June. https://www.reuters.com/markets/commodities/germany-announces-fresh-measures-cut-gas-consumption-2022-06-19/

storage target to fill 80 per cent of storage capacity by 1 November remains just about achievable, but depends on the demand prospects for the rest of the year and the continuation of a strong flow of LNG imports into Europe.

European Gas Balance for 2022

The significant changes in the European market this year have been described in the previous sections. Here we attempt to estimate what this means for the year as a whole. The figure below summarises the key changes in flows estimated for the whole year. Any column in blue is an addition to supply or a reduction in demand (the market loosens) while any column in red is a reduction in supply or an increase in demand, meaning the market tightens.

The Europe referred to is the wider Europe including the UK and Turkey and all non-EU countries. Norwegian production is also included in the EUR production number.

Total European demand is assumed to decline by 45 bcm (40 bcm in EU and 5 bcm in non-EU), as discussed above, requiring further declines in demand (year-on-year) for the second half of the year. European production overall is up some 7 bcm, principally in Norway. However, with pipe imports from Russia projected to be down a massive 70 bcm – assuming flows along Nord Stream resume after 21 July at 40 per cent of capacity for the rest of the year – and pipe imports from elsewhere are largely unchanged (lower from North Africa and more from Azerbaijan), then the European market overall "tightens" by some 20 bcm.

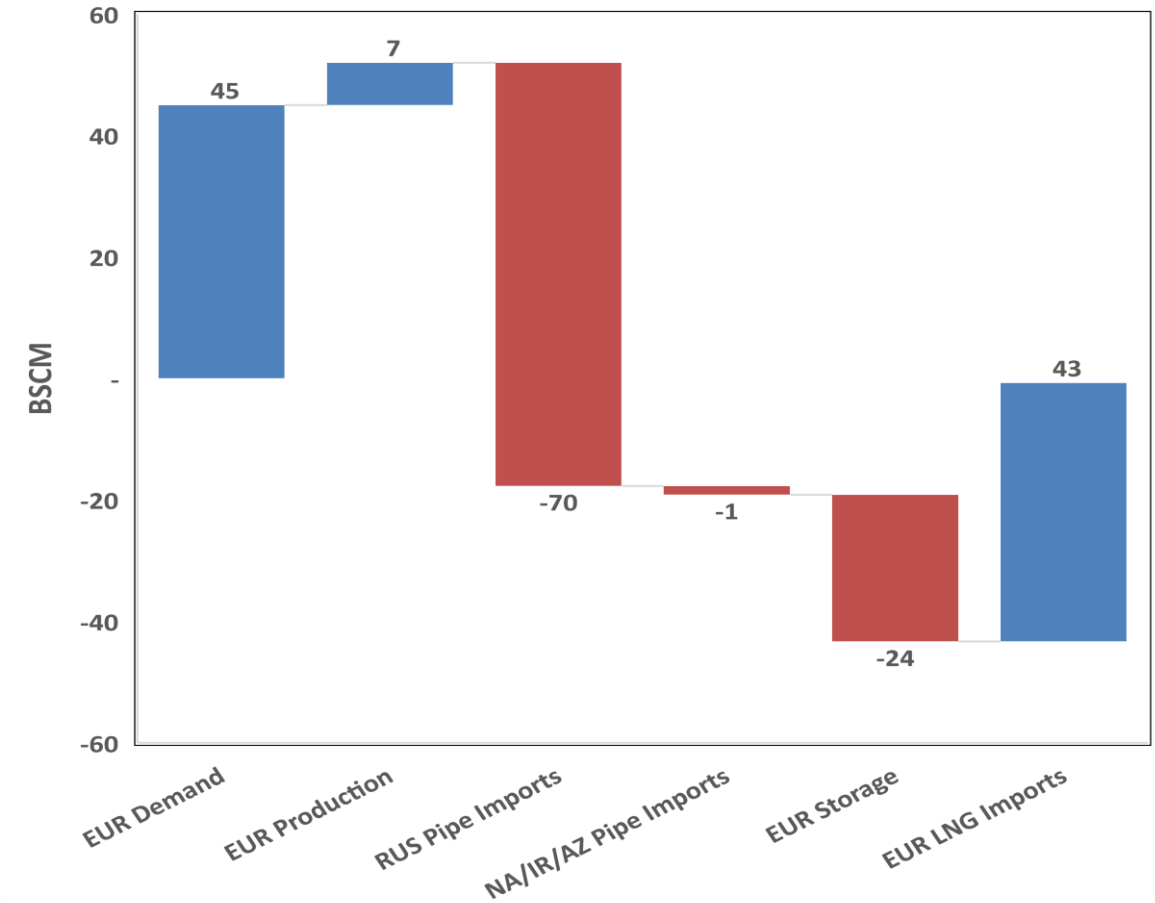
A further effective tightening comes from the need to turn the storage situation around from 2021. In 2021, there was a large net withdrawal from storage of some 21 bcm as Asia pulled LNG away from Europe, which balanced the market by taking gas out of storage which had been plentiful at the end of 2020. In 2022, in order to reach the 80 per cent target by November 1 and assuming the same withdrawal rate after that as last year, then an additional 3 bcm needs to be in storage by the end of 2022. This leads to a turnaround of some 24 bcm in storage (not taking 21 bcm out but putting 3 bcm in).[37]

This storage turnaround can be achieved, however, by the large increase in LNG imports of some 43 bcm, which looks achievable based on our earlier analysis.[38] Figure 7 suggests that the European market may just about be able to balance, even with the large decline in imports from Russia, albeit at very high prices. The balancing is dependent, however, on further declines in demand this year, induced by the high gas prices, and assuming a mild winter and LNG continuing to come into Europe at a very high rate, fully utilising capacity at the Northwest Europe terminals especially, and continuing use of the UK as a landbridge for LNG. Any further issues with LNG supply, such as another Freeport, and/or a now unexpected resurgence in Chinese LNG demand, would jeopardise the balance, leaving a choice between reducing demand further or not filling storage. Additionally, any further reduction in pipe imports from Russia, would similarly jeopardise the tight balance.

37 The amount of gas in storage is a stock of gas. All other items – demand, production, and imports – are flows. In the supply – demand balance, therefore, the supply flows (production plus net imports) need to match demand plus the net change in the stock of gas in storage. When comparing year on year changes, it is the change in supply and demand flows and the change in the net change of gas in storage.

38 Pipeline exports from Europe, principally to Ukraine and technically to Kaliningrad, should also be taken into account but the effective change in these between 2021 and 2022 look to be minimal.

Figure 7: European Gas Balance Changes 2022 v 2021 (bcm)



Source: Gas Infrastructure Europe, Kpler, OIES estimates

Looking ahead to 2023, the situation for Europe does not look any more promising. Even if Nord Stream were to get back to full capacity sometime in early 2023, overall pipe imports from Russia are still likely to be down year on year. If pipe imports from North Africa and Azerbaijan could be slightly raised, if Algeria could add some production and if demand remained at a similar level to 2022 with a mild winter and high prices, then storage levels could just about be maintained with a further growth in LNG imports. This would need additional regasification capacity to come on early in 2023, especially in Northwest Europe, growth in LNG supply (which is expected) and no strong rebound in Asian LNG demand growth.

Conclusions

Coming back to the European Commission Staff Working Document (SWD) published on 18 May, where does Europe stand in relation to the targets of a 70 bcm reduction in imports from Russia, 10 bcm reduction in demand, 10 bcm of additional non-Russian pipeline imports, 50 bcm of additional LNG imports, and storage stocks of 80 per cent (83 bcm) by 1 November?

Demand in the wider Europe is already down by some 30 bcm in the first five months of the year (23 bcm in the EU alone), reflecting a mild winter and losses due to high prices. Assuming another mild winter and further price-induced losses in the second half of the year, then a decline of 45 bcm (for Europe in total) for the year as a whole looks possible. This is well in excess of the SWD total but that number implicitly was in addition to any mild winter or price-induced impacts.

Pipeline imports from Russia are already 20 bcm lower year-on-year, and that decline appears highly likely to deepen, given the curtailment of flows via Nord Stream and cut-offs to six European companies

in April and May. Given imports from Russia totalled 79 bcm in June-December 2021, to reach the target of a 70 bcm reduction for 2022 as a whole would require a 50 bcm (63 per cent) year-on-year reduction in June-December 2022. This would be a substantial curtailment of supply to the European market, but if Nord Stream flows remain at 40 per cent of capacity, once operations resume after the maintenance period, and flows via Ukraine remain weak, then this sharp reduction would be well within reach

Pipeline imports from other suppliers are up by a total of 3 bcm year-on-year in January-May (Norway +4 bcm, North Africa -3 bcm, and Azerbaijan +2 bcm). As discussed earlier, Europe is likely to see a year-on-year increase throughout the rest of summer (to September), but given the high rate of non-Russian pipeline imports in Q4 2021, it appears probable that the year-on-year growth in non-Russian pipeline imports in Q4 2022 will be modest. A year-on-year increase of maybe 7-8 bcm appears realistic, almost all from Norway, but a 10 bcm year-on-year increase would appear to be ambitious.

In the six months to the end of June this year, LNG imports into the EU and the wider European area have risen sharply. Imports into the EU are up 55 per cent or around 22 bcm, while those to the wider European area (including the UK and Turkey) have risen by 60 per cent or some 28 bcm. At the current rate of the increase for LNG imports into Europe, the 50 bcm target set out by the European Commission looks achievable. However, while imports last summer were relatively low, in the last quarter LNG imports into Europe were very strong, so to exceed last year's levels as we enter winter may be too challenging. Total LNG imports into Europe could rise by almost 43 bcm this year, on the back of rising supply, but this still relies on diversions from other regions. China is key to this, and the country's continued weak economic performance suggests that, for the rest of the year, LNG imports may, at best, only match last year's levels, creating space for Europe to import more. The situation is is also helped by weaker imports into Central and South America and India, Pakistan, and Bangladesh. Only in the ASEAN countries is import growth forecast to continue.

With the large drop in gas demand expected, at least partly compensating for the expected dramatic fall in pipeline imports from Russia, the large rise in LNG imports means that Europe may well reach the 80 per cent storage target by 1 November. However, any LNG supply issues, a rebound in Chinese LNG demand and/or any further reduction in pipe imports from Russia, would jeopardise the ability to meet the storage target, unless demand is severely curtailed.

The situation for Europe in 2023 does not look any more promising. Even if Nord Stream were to get back to full capacity sometime in early 2023, Overall pipe imports from Russia are still likely to be down year-on-year, even of Nordstream flows pick up again. Storage levels could just about be maintained with a further growth in LNG imports, but this would need additional regasification capacity to come on early in 2023, especially in Northwest Europe, growth in LNG supply (which is expected) and the lack of a very strong rebound in Asian LNG demand growth.

From now through to 2023 at least, the market remains tightly balanced. A few weeks ago, we were standing on the edge of a precipice, but now we seem to be clinging on with the fingers of one hand. Any further shocks to the system - even lower Russia pipe imports, LNG supply issues, or stronger Asian demand for LNG - could tip the market completely over the edge.