



Quarterly Gas Review: Gas Markets in 2023

Tracking Key Metrics

Introduction

In the previous edition of the Gas Quarterly, we set out a series of signposts that we would follow throughout 2023 as we continue to monitor the implications of the Russian invasion of Ukraine. These were the level of Russian gas supply into Europe, which has fallen sharply over the past 12 months and continues to be at risk in Europe; the development of global LNG supply both as a replacement in Europe but also to supply other importing regions; the pace of demand in growth in Asia, as the major consumer of LNG in the world; total gas supply into the European market as a proxy for demand; the level of storage in Europe as a measurement of preparedness for increased gas demand in winter; and the level of prices that emerge from these supply and demand issues.

As we review the first quarter of 2023 against these signposts the overarching theme is that the outturn for Europe has been much more benign than could have been expected at the start of winter. A combination of warm weather, aggressive demand response to high gas prices and changing consumer behaviour, as well as the increased availability of LNG to Europe, have led to a situation where the market seems well balanced. However, although prices have fallen sharply from their 2022 highs, they still remain well above the 5-year average level, underlining the point that although the outlook for 2023 looks relatively calm it would not take much of a shift in supply or demand to cause a sharp rebound.

One of the big questions has been how the unwinding of the COVID lockdown in China would impact energy markets. With the economy now fully re-opened, it is expected that growth will resume and with it energy demand growth, including demand for pipeline gas and LNG imports. Michal Meidan, the Head of the OIES China Research Programme, has contributed an article on this topic in which she describes the underlying complexities of the future of gas in China in the short and long-term. Much depends on what route to growth the Chinese leadership decides to take, and also on the policy concerning energy security, which tends to favour gas over coal. In addition, the drive to increase domestic gas production and to optimise imports via pipeline means that the need for spot LNG purchases could be minimal in 2023, albeit that LNG supply under long-term contracts is set to grow. As a result, a low level of competition with Europe over spare LNG cargoes again points to a benign scenario for gas prices this year.

Having said all this, in their analysis Mike Fulwood and Jack Sharples point out that a relatively small rebound in demand in Europe or Asia on the back of low prices, or a cold winter, or a supply disruption such as the one seen at the Freeport LNG terminal in 2022, could easily disturb the current equilibrium. In addition, there is of course the risk of a further reduction in exports from Russia, either because the route through Ukraine is disrupted or because Europe takes stronger action against imports of Russian LNG. As a result, it is too soon to be confident that our signposts necessarily point in a benign direction for the whole of 2023.

If you would like to discuss any of these issues further then please contact Mike Fulwood (mike.fulwood@oxfordenergy.org), Jack Sharples (jack.sharples@oxfordenergy.org), or Michal Meidan (michal.meidan@oxfordenergy.org).

James Henderson
Head of Gas Research
Oxford Institute of Energy Studies

1. Revisiting our signposts for 2023

In this first section of the Quarterly Gas Review, we include our regular analysis of some key pricing trends for global LNG, Europe, and Asia.

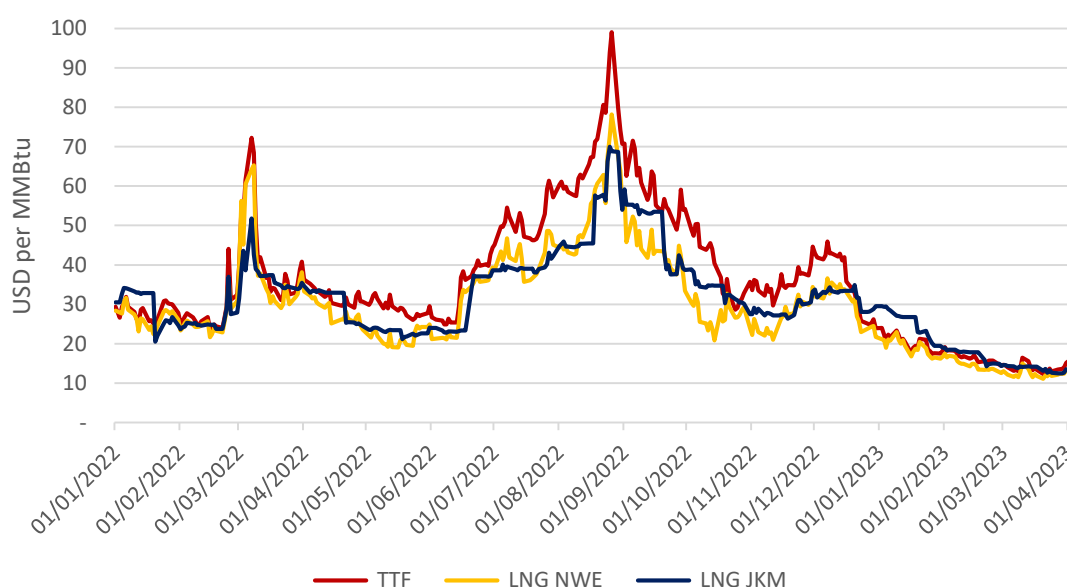
Gas prices

In the last Quarterly Review, the path of wholesale gas prices during 2022 was discussed. The sharp rise in prices resulting from Russia's invasion of Ukraine quickly dissipated as pipeline flows continued from Russia. These flows declined steadily putting further upward pressure on prices, but prices fell back between late August and the beginning of November, as LNG continued to surge into Europe, while demand was down because of the mild weather and high prices curtailing industrial gas demand. After a rebound between mid-November and mid-December, the decline in prices resumed and continued in 2023, to below 15 USD/MMBtu, with the mild weather returning, weakening European demand, and lack of LNG demand in Asia. These trends are discussed in more detail below.

The other much-discussed trend was a widening of the gap between TTF and Northwest Europe LNG prices from early April 2022. This reflected the congestion in the Northwest Europe LNG import terminals – not that the TTF market was somehow broken as many EU politicians claimed – with too much LNG trying to get into the market through a constrained system. A similar discount opened up between TTF and NBP as the UK began exporting at maximum along the Interconnector and BBL, again as a result of the congestion on the pipelines.

As Figure 1.1 shows, the discount of LNG NWE from TTF disappeared in late December, as the congestion issues were resolved with new terminals coming on in the Netherlands and Germany. Figure 1.1 also shows that the LNG NWE price and the Japan-Korea Marker (JKM) largely tracked each other through 2022, with the LNG NWE price generally at a level which attracted LNG cargoes to Europe.

Figure 1.1: Benchmark Gas Prices (TTF, Argus LNG North-West Europe, and S&P Global JKM for North-East Asia), Front-Month, USD/MMBtu

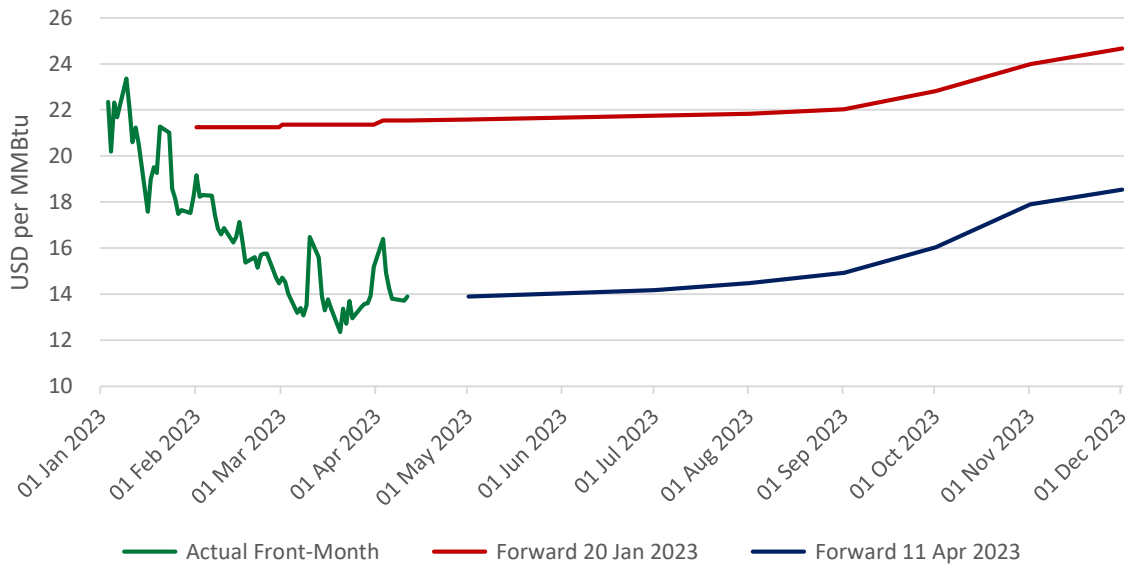


Source: Argus Media (LNG North-West Europe)¹ and Refinitiv / S&P Global (TTF and JKM)²

¹ Argus Direct (subscription required). <https://direct.argusmedia.com/>

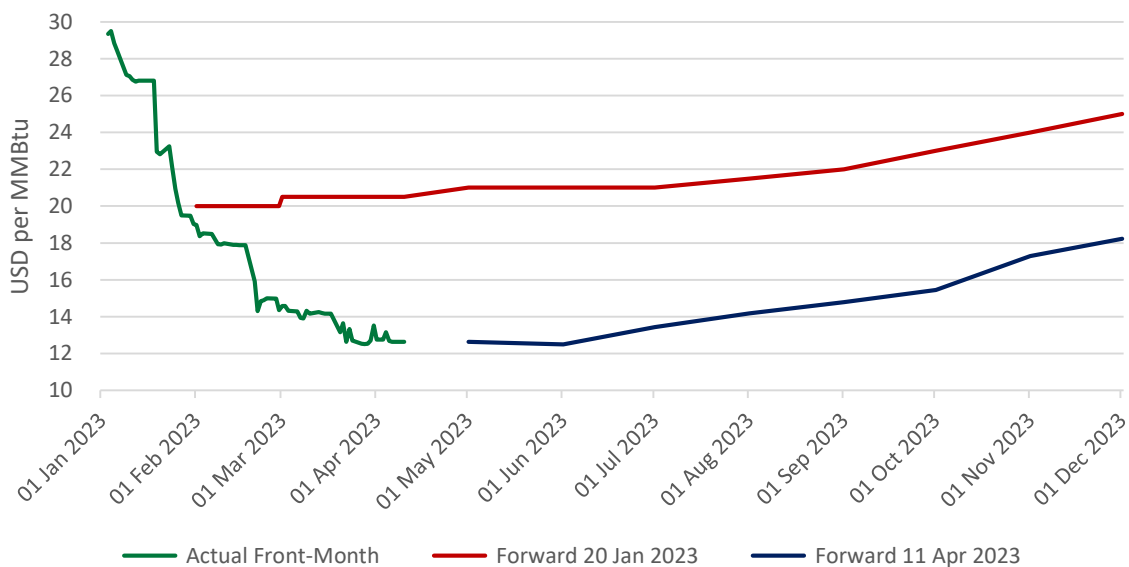
² S&P Global / Refinitiv (subscription required).

Figure 1.2: TTF Actual Front-Month Prices (to 10 April 2023) and Forward Prices as at 20 January 2023 and 12 April 2023



Source: Data from Refinitiv (S&P Global). Graph by the author.

Figure 1.3: S&P Global Japan-Korea Marker (JKM) Actual Front-Month Prices (to 10 April 2023) and Forward Prices as at 20 January 2023 and 12 April 2023



Source: Data from Refinitiv (S&P Global). Graph by the author.

In order to highlight the shift in market outlook since the publication of the previous edition of the Quarterly Gas Review on 30 January 2023, it is instructive to compare the year to date average and rest of year forward curve average prices on 20 January 2023 (as noted in the previous Quarterly Gas Review) and 12 April 2023 (the current time of writing) – Figures 1.2 and 1.3.

On 20 January, the front-month TTF price was 21.28 USD/MMBtu and the year-to-date average was 20.89 USD/MMBtu. The average of the forward prices for the rest of 2023 was 22.23 USD/MMBtu, implying a full-year average price of 22.12 USD/MMBtu. As Figure 1.2 illustrates, this average is influenced by the forward curve rising gradually to around 22 USD/MMBtu for delivery in September 2023 and then more steeply to just under 25 USD/MMBtu for delivery in December 2023.

On 10 April, the front-month TTF price was 13.72 USD/MMBtu and the year-to-date average was 16.57 USD/MMBtu. The average of the forward prices for the rest of 2023 was 15.50 USD/MMBtu, implying a full-year average price of 15.75 USD/MMBtu. Compared to the forward curve as it stood on 20 January, the rise in Q4 is steeper, but the winter peak is lower, with the forward curve as of 12 April showing a December 2023 delivered price of just over 18 USD/MMBtu, up from 14.00-14.50 USD/MMBtu for much of summer 2023.

In Asia, the JKM front-month price on 20 January was 22.82 USD/MMBtu and the year-to-date average was 27.09 USD/MMBtu. The average of the forward prices for the rest of 2023 was 21.77 USD/MMBtu, implying a full-year average price of 22.22 USD/MMBtu. The forward curve held at around 21-22 USD/MMBtu before rising to around 25 USD/MMBtu by the end of the year.

On 10 April, the JKM front-month price was 12.63 USD/MMBtu and the year-to-date average was 17.98 USD/MMBtu. The average of the forward prices for the rest of 2023 was 14.81 USD/MMBtu, implying a full-year average price of 16.73 USD/MMBtu. Unlike the forward curve on 20 January, the more recent forward curve rises from June 2023 onwards, albeit with a steeper rise in Q4 2023.

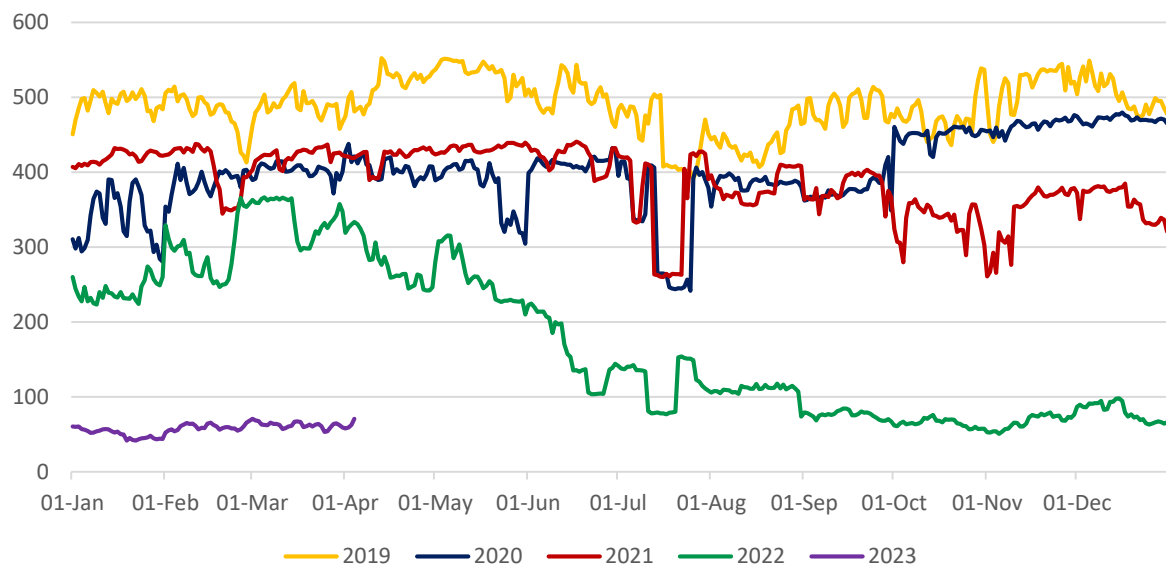
The outlook at the beginning of the year was described by OIES as being benign, with the market seemingly pricing in all the good news on the supply and demand balance, with subdued European gas demand, Russia continuing to send pipeline gas via Ukraine, and only a modest recovery in Asian LNG demand, especially in China. It was also noted, however, that any one or more of a sudden cold snap, industrial gas demand recovering in Europe, an interruption or cessation of gas flows through Ukraine, and/or a much stronger than expected recovery in gas demand in Asia, could easily lead to a sharp upward correction in wholesale gas prices, wiping out much of the decline since December 2022.

At the beginning of April, the forward curves suggest an even more benign outlook, with the implied full-year average TTF front-month price dropping by around one-third, from around 22 USD/MMBtu (20 January 2023) to just over 15 USD/MMBtu (10 April 2023). The implied full year average JKM front-month price also drops by 5 USD/MMBtu (23 per cent) from 22 USD/MMBtu to just under 17 USD/MMBtu. The reasons for this more favourable outlook are discussed in more detail below, but reflect a combination of substantial volumes in European storage, European gas consumption remaining lower year-on-year, continued growth in global LNG supply, and a year-on-year decline in quarterly LNG imports in other markets.

Russian pipeline supply to Europe

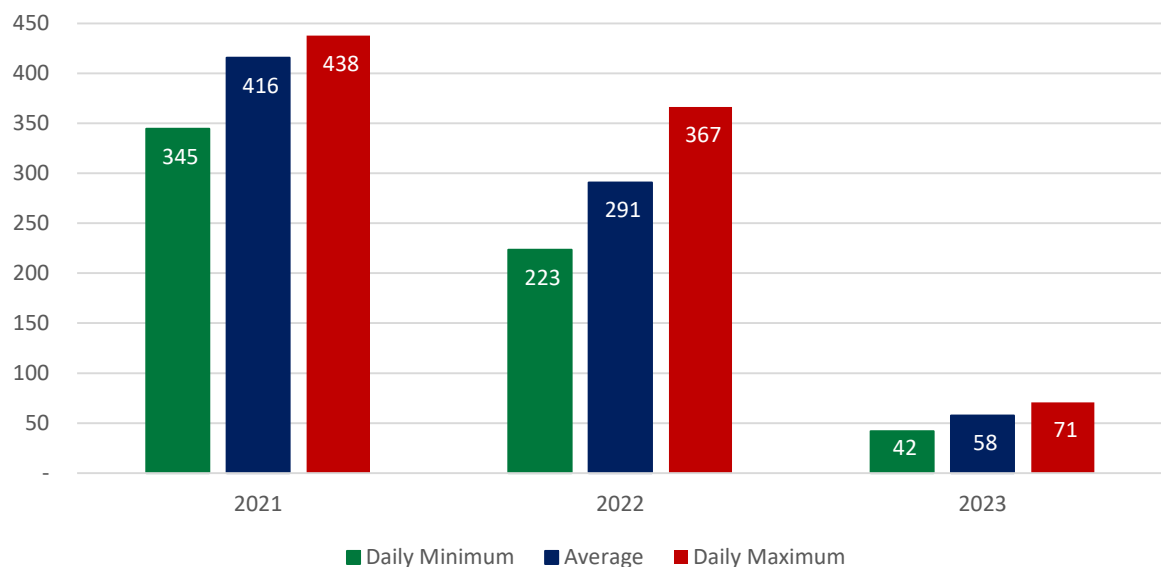
The second benchmark that we continue to follow is the physical flow of Russian pipeline gas to Europe (excluding Turkey). In Q1 2023, this flow continued the dynamic established since 1 September 2022. Gas continues to flow via Ukraine and via the TurkStream pipeline to South-East Europe, while Nord Stream remains closed and flows via Belarus to Poland and Germany also remain at zero.

Figure 1.4: Russian Pipeline Supply to Europe (MMcm/d)



Source: Data from ENTSOG.³ Graph by the author.

Figure 1.5: Daily flows of Russian pipeline gas to Europe in Q1, 2021-2023 (MMcm/d)



Source: Data from ENTSOG.⁴ Graph by the author.

³ ENTSOG (2022). *Transparency Platform*. <https://transparency.entsog.eu/#/map>

⁴ ENTSOG (2022). *Transparency Platform*. <https://transparency.entsog.eu/#/map>

As Figures 1.4 and 1.5 illustrate, the daily flows of Russian pipeline gas to Europe in Q1 2023 were substantially lower than in the previous two years. In Q1 2023, daily flows ranged between 42 - 71 MMcm/d, averaging 58 MMcm/d. A year earlier, daily flows ranged between 223 - 367 MMcm/d, at an average of 289 MMcm/d. The daily flows in Q1 2023 also represent a decline on a quarter-by-quarter basis: in Q4 2022, daily flows ranged between 51 - 98 MMcm/d, averaging 71 MMcm/d.

With Gazprom continuing its current policy of not selling additional volumes outside its existing long-term contracts, the daily flow of Russian pipeline gas to Europe is now being driven by the daily nominations submitted by Gazprom's European long-term contract counterparties. The status of those contracts is therefore a key factor in the volume of Russian pipeline gas flowing to Europe.

In the case of PGNiG (Poland), Bulgargaz (Bulgaria), and GasTerra (Netherlands), their long-term contract supplies were suspended in April/May 2022, due to their refusal to pay in rubles, and those contracts subsequently expired by the end of 2022. Geoplin (Slovenia) and ČEZ (Czech Republic) also held contracts with Gazprom that were valid until the end of 2022, but suffered shortfalls in supply due to the closure of Nord Stream. In the Baltic region, no Estonian or Lithuanian entities hold long-term contracts with Gazprom, while in Latvia, the government banned the import of Russian gas from 1 January 2023, despite the long-term contract between Latvijas Gāze and Gazprom being valid until 2030. None of these Russian volumes are likely to return.

Contracts for Gazprom supply to Ørsted (Denmark), Gasum (Finland), and Shell Energy Europe (Germany) do not expire until 2030/2031, but supplies are suspended due to a refusal to pay in rubles. Conversely, contracts held by ENGIE (France), Eni (Italy), VNG, RWE, Uniper, and WIEH (Wintershall) (Germany) mostly do not expire until 2030-2035, but supplies have been halted by the closure of Nord Stream and several of these companies are now pursuing arbitration claims against Gazprom. The resurrection of these contracts depends upon the retraction of the demand for payment in rubles, the repair of Nord Stream, and the resumption of gas transit to Germany via Belarus and Poland.

This leaves a group of ten European companies that hold long-term contracts with Gazprom, have proven willing to pay in rubles, and continue to receive their supplies: OMV (Austria), PPD (Croatia), SPP (Slovakia), MVM (Hungary), DEPA, Mytilineos and PPC (Greece), Makpetrol (North Macedonia), Srbijagas (Serbia), and Energoinvest (Bosnia & Herzegovina).

In this context, it appears likely that the current fluctuations in daily volumes of Russian pipeline gas deliveries to Europe represent the upper and lower boundaries of offtake flexibility in contracts held by these ten entities. With the Annual Contractual Quantities (ACQ) for these contracts totalling approximately 24.5 bcma (equivalent to 67 MMcm/d), a 60 per cent take-or-pay level would reduce this daily offtake to a minimum of 14.7 bcma (40 MMcm/d), while maximum supply up to 105 per cent of the ACQ would increase the annual volume to 25.8 bcma (71 MMcm/d). The daily volumes of pipeline supply from Russia in Q1 2023 in the range of 42-71 MMcm/d appear to fit reasonably well with the 60-105 per cent of the ACQ range of contracts currently in force, with physical flows in a range of 40-71 MMcm/d.⁵

These calculations matter, because they provide a range of expectation for daily Russian pipeline gas flows to Europe for the near-term future, until contributing factors (such as the demand for payment in rubles and the status of the Nord Stream and Yamal-Europe pipelines) change.

Considering the flows by route, the transit via Ukraine is directed mostly to Slovakia, and only a small proportion to Moldova. In effect, the transit of Russian gas via Ukraine to Hungary, Poland, and Romania across Ukraine's western border fell to zero, or very close to zero, in Q1 2023.⁶ From the Ukraine-

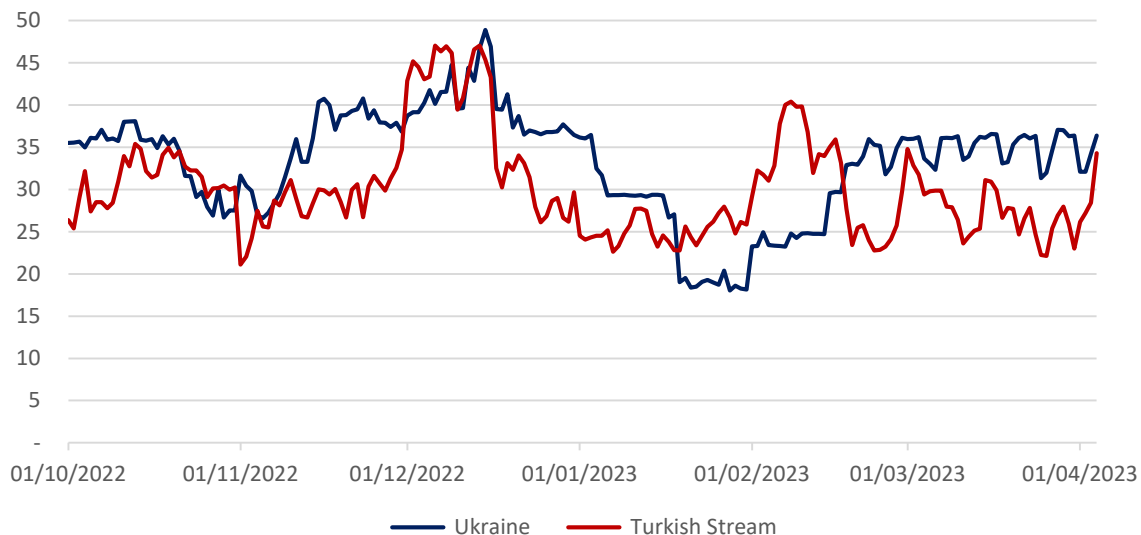
⁵ It should be noted that not every contract has the same take-or-pay level, so the lower boundary of 60 per cent represents an approximation of the contracts taken as a collective.

⁶ GTSOU, 2023. *Transparency Platform*. <https://tsoua.com/en/transparency/test-transparency-platform/>

Slovakia border, the onward flows are to Slovakia, Austria, Hungary (via Austria), and Croatia (via Austria and Slovenia).

With supplies to Bulgaria now suspended, volumes delivered via TurkStream cross the border from Turkey to Bulgaria, and are delivered onwards to Greece, North Macedonia, Serbia, Bosnia & Herzegovina (via Serbia), and Hungary. Hungary is 'the end of the line' for Russian gas delivered via TurkStream, given that Hungary is a net importer of gas from five of its six neighbours (Romania, Serbia, Croatia, Austria, and Slovakia), although in Q1 2023 it was a net exporter to Ukraine.

Figure 1.6: Russian pipeline supply to Europe by route (MMcm/d)



Source: Data from ENTSOG.⁷ Graph by the author.

Looking ahead, it seems unlikely that the Nord Stream pipeline will be repaired any time soon. At the beginning of March 2023, it was reported that the pipeline will be 'mothballed', pending a long-term decision on its future, namely whether to repair or dismantle it.⁸ Restarting Nord Stream would also require a resolution of the issues pertaining to turbines at the Portovaya compressor station in Russia, which caused the initial drop in Nord Stream capacity between June and August 2022. Elsewhere, the transit of gas via Poland would require the removal of Polish and Russian sanctions and counter-sanctions, which appears unlikely in the near term. Aside from physical constraints, the demand for payment in rubles is likely to keep several Gazprom long-term contracts for supply to Europe suspended.

Therefore, the fluctuations in Russian pipeline supply to Europe are likely to continue within the present corridor of approximately 40-70 MMcm/d. This implies a substantial year-on-year decline in Russian pipeline supply to Europe in both Q2 and Q3 2023. The range of 42-71 MMcm/d implies that between 3.9 – 6.5 Bcm of Russian pipeline gas will be delivered to Europe in both Q2 and Q3 2023. For comparison, supply was 21.3 Bcm in Q2 2022 and 9.4 Bcm in Q3 2022.

In Q1 2023, the year-on-year decline in Russian pipeline supply to Europe was 21 Bcm, with supply declining from 26.2 Bcm in Q1 2022 to 5.2 Bcm in Q1 2023. Assuming Russian pipeline supply of 5.2 Bcm in both Q2 and Q3 2023, the total year-on-year decline in Russian pipeline supply to Europe in the period Q1-3 2023 is likely to be roughly 41.3 Bcm (declining from 56.9 Bcm in 2022 to 15.6 Bcm in

⁷ ENTSOG (2022). *Transparency Platform*. <https://transparency.entsog.eu/#/map>

⁸ Soldatkin, V., Astakhova, O., and Steitz, Ch., 2023. Exclusive: Russia set to mothball damaged Nord Stream gas pipelines – sources. *Reuters*, 3 March. <https://www.reuters.com/business/energy/russia-set-mothball-damaged-nord-stream-gas-pipelines-sources-2023-03-03/>

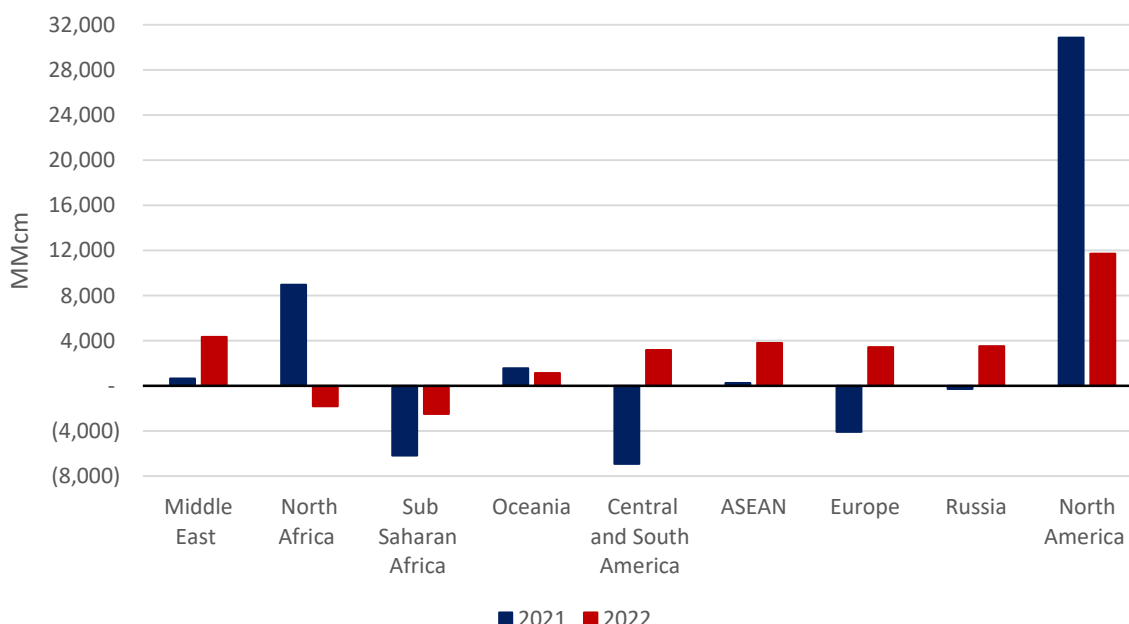
2023). As will be discussed later in this Quarterly Review, the major balancing item that will compensate for this decline will be lower storage injections in summer 2023, made possible by the fact that Europe begins the summer injection season with record stock levels.

Global LNG supply

In the last Quarterly Review, it was noted that global LNG trade increased by some 28 bcm in 2022, slightly higher than the 25 bcm rise in 2021. In 2022, global LNG export capacity increased by some 22 bcm, due to both the unwinding of many of the technical issues that constrained available supply in 2021, and the arrival of new supply, especially in the US (Sabine Pass Train 6 and Calcasieu Pass). The increase was despite the loss of some 10 bcm of output from Freeport in the US, where cargo loadings were suspended from 6 June 2022 to 10 February 2023. With actual LNG output in 2022 increasing by some 28 bcm, the global utilisation rate of liquefaction facilities increased to 98 per cent.

Despite the loss of Freeport output in the second half of 2022, US output still increased by some 12 bcm in 2022, which helped to offset declines elsewhere despite being well below the 30 bcm year-on-year increase seen in 2021. There were also small increases in most other exporting countries, apart from Algeria and Nigeria where output declined because of continuing feedgas issues. Qatar also saw an increase in output following extended maintenance in 2021. The year-on-year changes in total global annual LNG supply in both 2021 and 2022 are illustrated in Figure 1.7.

Figure 1.7: Year-on-Year change in global LNG supply by source in 2021 and 2022 (MMcm)



Source: Data from Kpler.⁹ Graph by the author.

The last Quarterly Review also looked at the LNG supply outlook in 2023. It was noted that there are not many brand-new projects coming on stream this year, but despite that, another robust year for supply growth was expected. The only new start-ups are expected to be in Congo, Senegal/Mauritania (Tortue) and in Indonesia (Tangguh Train 3), and these seem likely to be towards the end of the year.

Overall, LNG export capacity was projected to rise by some 29 bcm this year, with some 13 bcm coming from the ramping up of plants which came on in 2022 – Sabine Pass Train 6, Calcasieu Pass, Coral FLNG (Mozambique), and Portovaya (Russia). An additional 6 bcm could also come from Freeport

⁹ Kpler LNG Platform (subscription required). <https://lng.kpler.com/>

resuming production and reaching full output in Q2. A full year of production can also be expected from Norway and fewer feedgas issues in Trinidad (where output is already climbing higher) and Nigeria.

As we progress through 2023, we will continue to monitor global LNG supply volumes. In 2022, the average monthly supply was some 44.5 bcm, against average available capacity of 45.6 bcm. In 2023, average available capacity is projected at some 48 bcm – an increase of some 2.4 bcm a month. However, the increase in capacity is weighted towards the second half of the year. If the increases in capacity translated exactly into an increase in actual supply (with the utilisation rate of global LNG production facilities remaining at 98 per cent), with the same profiling of LNG flow through the year, then the average monthly supply by quarter in 2023, in bcm, would be:

Q1 - 47.4, Q2 - 45.2, Q3 - 45.2, Q4 - 49.1

Figure 1.8 compares the projected increase in supply with the actual output in 2023 and the levels from 2022.

Figure 1.8: Average monthly LNG supply (Bcm per month)



Source: NexantECA World Gas Model, OIES Estimates, Kpler

Average monthly supply in Q1 2023 was some 46.4 bcm against a target of 47.4 bcm and a Q1 2022 figure of 46 bcm. Therefore, supply in Q1 2023 increased slightly (0.4 Bcm per month, or 1.2 Bcm across the quarter as a whole) over Q1 last year, but was below the expected increase (1.4 Bcm per month, or 4.2 Bcm across the quarter as a whole). Output from Sub-Saharan Africa (mainly Nigeria), the US, and the UAE has been somewhat lower than anticipated and Russian supply has also been lower.

However, it should be noted that LNG supply is measured as the cargoes arrive at the importing terminals – the imports basis from Kpler. If supply was measured as the volumes leaving the exporting terminals – the exports basis – then the measured growth in supply would be much bigger. The increase in monthly supply (exports basis) between Q1 2023 and Q1 2022 was some 2.1 bcm per month, compared to a measured rise of only 0.4 bcm (imports basis). Depending on the destination of the LNG exports, the voyage time can be anything from a few days or a week to between 4 and 6 weeks. LNG leaving an exporting terminal, therefore, could easily take a month to arrive at the importing terminal, which is what we are measuring here. The much higher growth in the export-basis measure of supply, therefore, might be expected to impact the import-basis measure of supply with a time lag (even allowing for boil off). Q2 of 2023, therefore, might well see higher growth in LNG imports than expected.

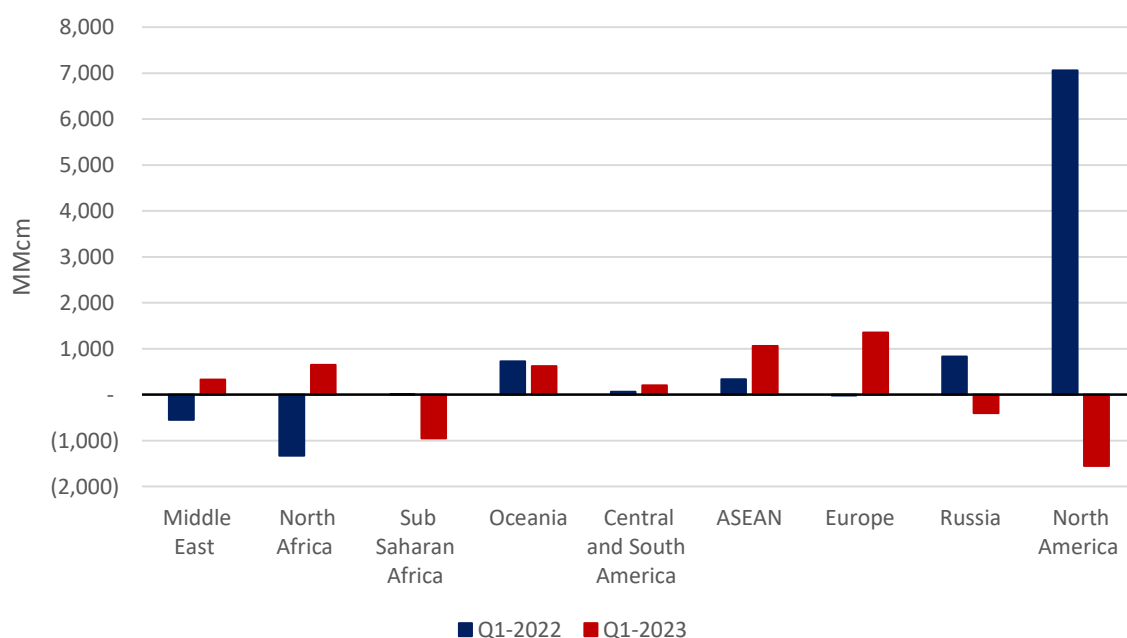
Finally, breaking down the year-on-year shifts in LNG supply by source region highlights exactly where the shortfall is occurring, as illustrated in Figure 1.9. The largest increase in supply was from Europe, where Norwegian LNG exports benefitted from the return of Snøhvit (4.2 mtpa capacity) at the start of June 2022. The second-largest increase was in the ASEAN region,¹⁰ where both Indonesia and Malaysia recorded increases in LNG exports, while supply from Brunei was flat year-on-year.

Similar-sized year-on-year increases in supply (around 0.65 Bcm) were recorded in Oceania¹¹ and North Africa,¹² where Australia, Algeria, and Egypt all recorded growth in exports. In addition, ‘supply’ from North Asia¹³ (not recorded in the following figure) doubled from 0.5 Bcm to 1.0 Bcm, consisting of the re-sale and re-export of cargoes that were initially delivered to the region under long-term contracts with destination restrictions.

Smaller increases were recorded in the Middle East¹⁴ and Central/South America.¹⁵ In the former, growth in exports from Qatar and Oman were partially offset by lower exports from the UAE. In the latter, a modest decline in supply from Peru was more than offset by growth from Trinidad & Tobago.

On the downside, exports from the US fell by just over 1.5 Bcm, negatively impacted by the absence of supply from Freeport LNG (capacity 15 mtpa) between 6 June 2022 and 10 February 2023. The decline in supply from Sub-Saharan Africa¹⁶ can be almost entirely attributed to Nigeria, where quarterly exports declined by 1.6 Bcm, in addition to a more modest decline in supply from Equatorial Guinea (-0.3 Bcm), while the rest of the region combined saw exports grow by almost 1.0 Bcm.

Figure 1.9: Year-on-Year change in global LNG supply in Q1 2022 and Q1 2023 (MMcm)



Source: Data from Kpler.¹⁷ Graph by the author.

¹⁰ Brunei, Indonesia, Malaysia

¹¹ Australia, Papua New Guinea

¹² Algeria, Egypt, Libya

¹³ Bangladesh, China, India, Japan, Pakistan, South Korea, Taiwan

¹⁴ Oman, Qatar, United Arab Emirates, Yemen

¹⁵ Peru, Trinidad, and Tobago

¹⁶ Angola, Cameroon, Equatorial Guinea, Mozambique, Nigeria

¹⁷ Kpler LNG Platform (subscription required). <https://lng.kpler.com/>

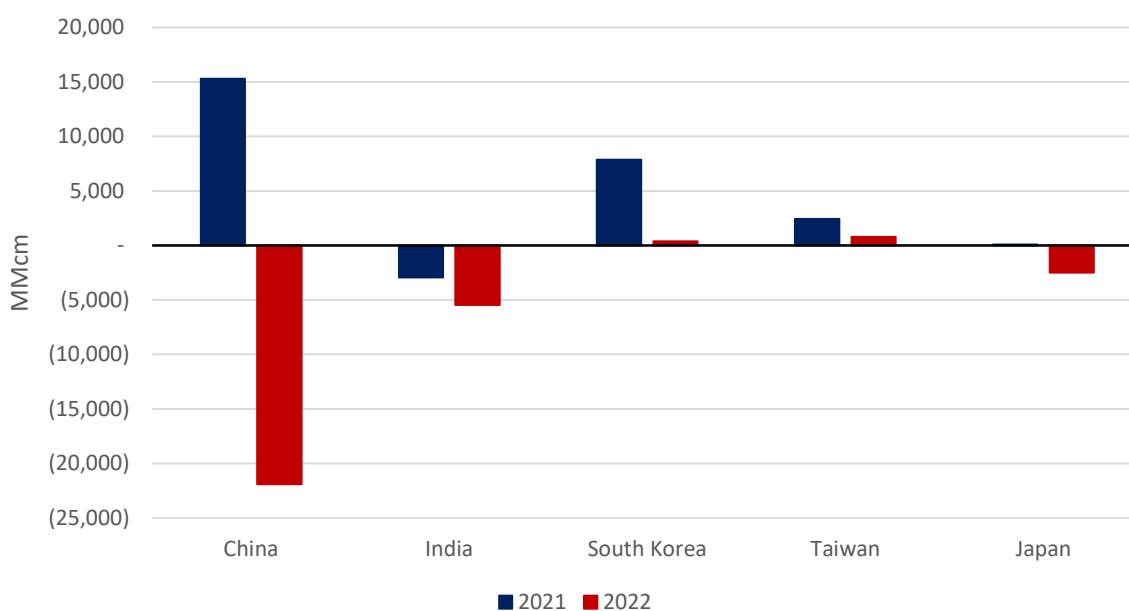
Asian LNG demand

The last Quarterly Review noted that what happens to Asian LNG demand is key in the development of the global LNG market. Figures 1.10 and 1.11 show the contrasting fortunes for Asia LNG demand in 2021 and 2022. In 2021, Asian LNG demand grew by some 27 bcm, driven by China and South Korea as the global economy recovered from Covid-19. There was growth largely across the board apart from India – reacting to rising prices – and Malaysia and Singapore.

The picture in 2022 was dramatically different with Asian LNG demand falling by 25 bcm largely driven by China, as flat domestic demand combined with rising production and pipeline imports. India, Pakistan, and Bangladesh also saw declines as demand was hit by rising prices and, in some cases, sellers opting not to deliver under contracts. Japanese demand continued the downward trend it has been following over the last five years or so, and LNG imports are now lower than before the 2011 Fukushima incident. There were some growth areas though, especially the Southeast Asian countries, which were less exposed to the very high spot prices.

2022 was a seminal year. It is the first year that total Asian LNG imports declined. China LNG imports were only just above 2019 levels, losing almost two years of growth. India's imports were back to 2017 levels and Pakistan back to 2018 levels.

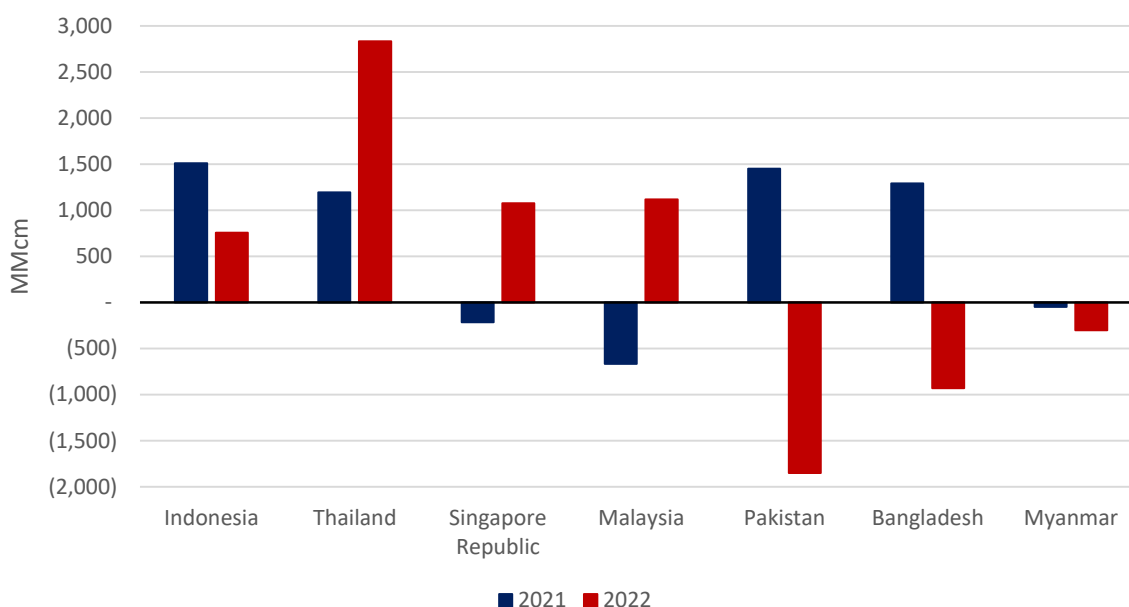
Figure 1.10: Year-on-Year change in Asian LNG demand (major importers) in 2021 and 2022



Source: Data from Kpler.¹⁸ Graph by the author.

¹⁸ Kpler LNG Platform (subscription required). <https://lng.kpler.com/>

Figure 1.11: Year-on-Year change in Asian LNG demand (smaller importers) in 2021 and 2022



Source: Data from Kpler.¹⁹ Graph by the author.²⁰

With LNG demand in Asia being a key element in the global supply-demand balance, the last Quarterly Review considered what might happen in Asia in 2023. It considered that China was likely to be the key to the resumption of Asian LNG demand growth. While overall Chinese gas demand seems likely to grow, domestic Chinese gas production growth remains robust and additional pipeline imports are expected from Russia along the Power of Siberia pipeline. This may limit the growth potential for Chinese LNG imports.

Elsewhere, if prices remain high then the prospect of any meaningful recovery in India, Pakistan, and Bangladesh may be limited. South Korea and Taiwan have maintained demand, and this seems likely to continue but, along with Japan, may not see much growth. The most likely region for more robust growth remains the ASEAN countries where the need for LNG is increasing the most. With the potential for some recovery in LNG imports in Central and South America, total Asian LNG imports may not need to grow by much more than 10 to 15 bcm in order for the global gas market to balance in 2023, and if growth exceeds this then it could cause a lot more pressure on prices. If Asian LNG demand were to be 1 bcm a month higher in 2023 than in 2022, then the average monthly demand by quarter, in bcm would be:

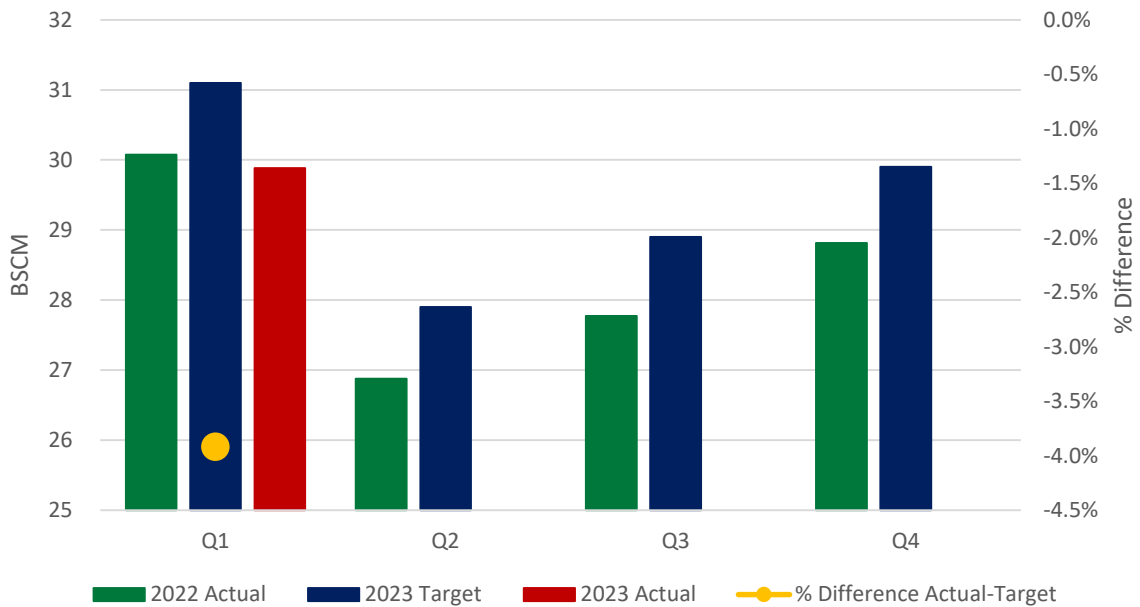
Q1 – 31.1, Q2 - 27.9, Q3 - 28.9, Q4 - 29.9

Figure 1.12 compares the projected increase in Asia LNG demand with the actual outturn in 2023 and the levels from 2022.

¹⁹ Kpler LNG Platform (subscription required). <https://lng.kpler.com/>

²⁰ Note that Indonesia and Malaysia are net LNG exporters, but still import LNG.

Figure 1.12: Average monthly Asian LNG demand (Bcm per month)

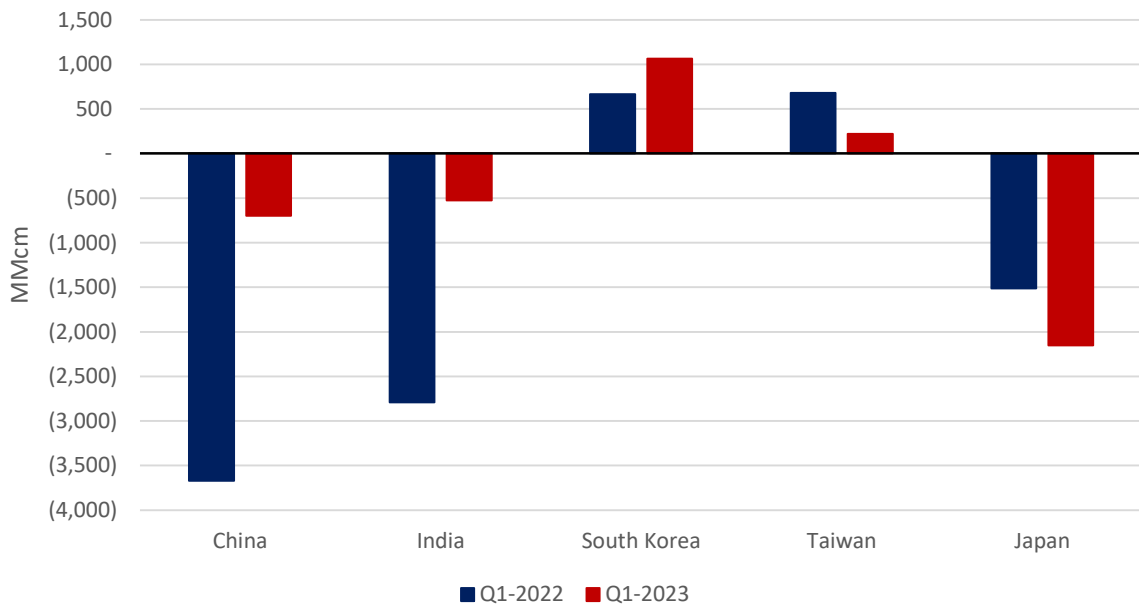


Source: NexantECA World Gas Model, OIES Estimates, Kpler

Asian LNG imports in Q1 2023 were not only below the target 1 bcm a month increase, but were actually below Q1 2022 levels. The target was average monthly demand of some 31.13 bcm and the actual in Q1 2023 was 29.9 bcm, a shortfall of 1.2 bcm. This is one of the key elements driving the weakness of prices described in the first section of this Review.

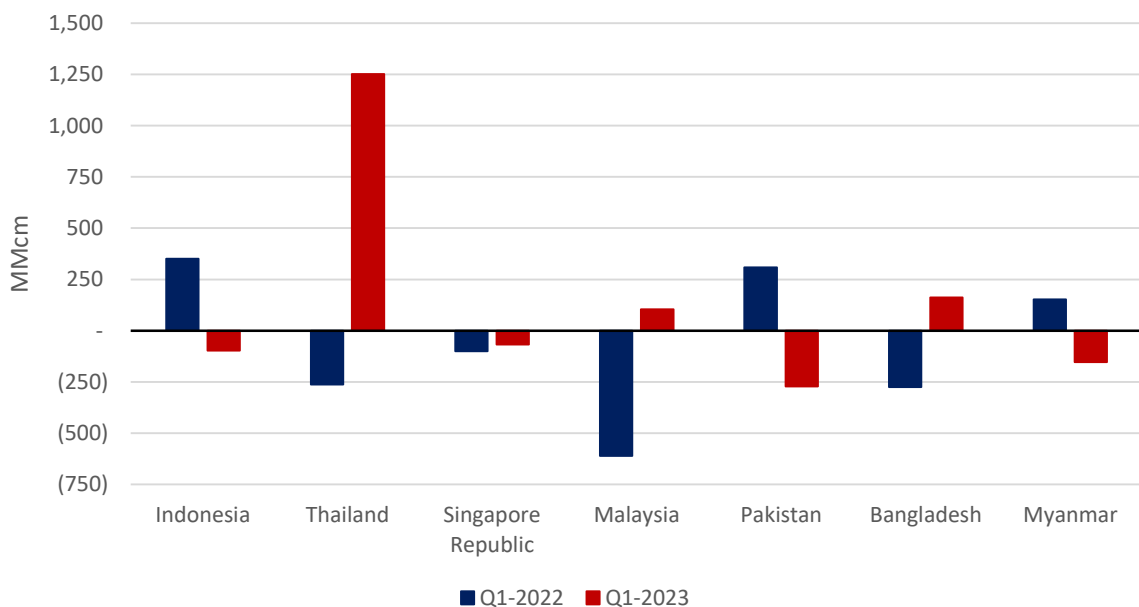
As illustrated in the graphs below, combined growth of 2.8 Bcm in South Korea, Taiwan, Thailand, and Bangladesh was more than offset by a total decline of 4.0 Bcm in China, India, Japan, Indonesia, Singapore, Pakistan, and Myanmar. In both India and Bangladesh, LNG imports in March were higher than in both January and February, perhaps suggesting that as prices continue to decline, Indian LNG demand could return to growth while in Bangladesh the ongoing growth could continue. In Pakistan, a dip in imports in February relative to both January and March lowered the overall figure for Q1 2023.

Figure 1.13: Year-on-Year change in Asian LNG demand (major importers) in Q1 2022 & Q1 2023



Source: Data from Kpler.²¹ Graph by the author.

Figure 1.14: Year-on-Year change in Asian LNG demand (smaller importers) in Q1 2022 & Q1 2023



Source: Data from Kpler.²² Graph by the author.²³

²¹ Kpler LNG Platform (subscription required). <https://lng.kpler.com/>

²² Kpler LNG Platform (subscription required). <https://lng.kpler.com/>

²³ Note that Indonesia and Malaysia are net LNG exporters, but still import LNG.

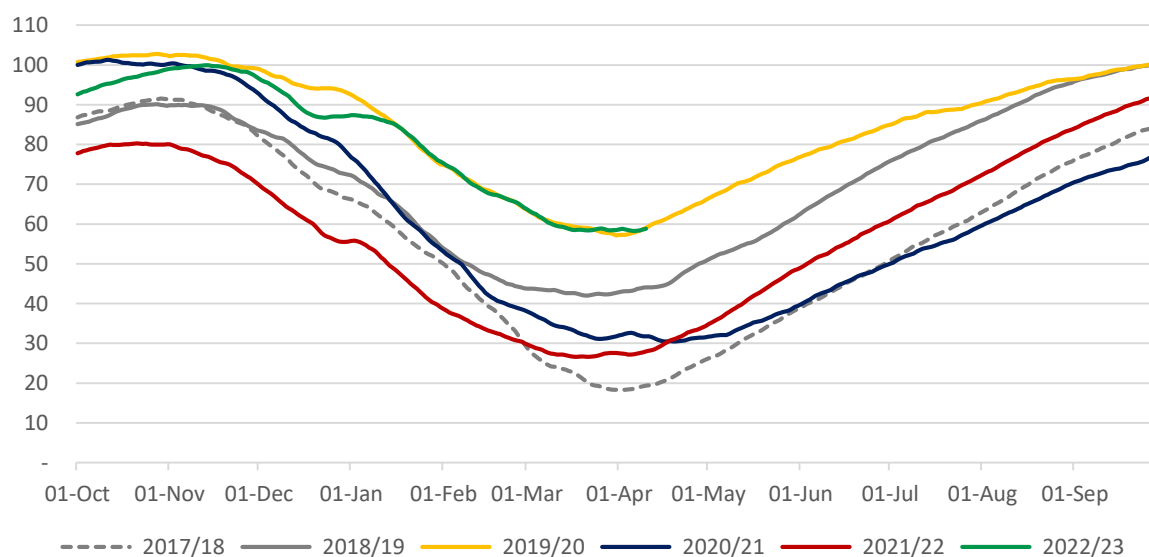
European gas storage

During the summer of 2022, the accumulation of gas storage stocks was perceived to be a vital element in ensuring that Europe could pass through the winter of 2022/23 without significant physical gas shortages. By 1 October 2022, European stocks exceeded 90 Bcm, and Q4 2022 saw net storage injections continue through to mid-November. Even in the second half of November, net withdrawals remained relatively slow, so that stocks remained at 97 Bcm at the end of November. Finally, as noted in the previous Quarterly Review, net injections were made through to the end of December, so that as late as 8 January 2023, stocks were higher than they had been on 24 December 2022.

In the early part of Q1 2023, net storage withdrawals remained lower than in recent years. In the period 1-21 January 2023, the net withdrawal of 5.3 Bcm was roughly half the net withdrawals of 10.7-10.9 Bcm seen in 2017-2020 and 2022, and one-third of the 16.5 Bcm net withdrawal seen in the same period in 2021.

In the period 21 January to 31 March 2023, the net withdrawal of 23.5 Bcm was 6.2 Bcm higher year-on-year. In the same period, the range of net withdrawals between 2017 and 2022 ranged from low in 2019 and 2022 (17-19 Bcm) to high in 2018 (37 Bcm), with the net withdrawals in 2020 (24.5 Bcm) and 2021 (28.5 Bcm) somewhere in between, and not dissimilar to the 2023 figure. Therefore, net storage withdrawals in much of Q1 2023 may be characterised as 'normal'.

Figure 1.15: European gas storage stocks (Bcm)



Source: Data from Gas Infrastructure Europe (GIE) Aggregated Gas Storage Inventory.²⁴ Graph by the author

Taking Q1 as a whole, net storage withdrawals in 2023 amounted to 28.9 Bcm, similar to the Q1 net withdrawals in 2019 (29.5 Bcm) and 2022 (28.1 Bcm), but far lower than the net withdrawals in 2018 (47.9 Bcm) and 2021 (45.0 Bcm), and also lower than in 2020 (35.4 Bcm).

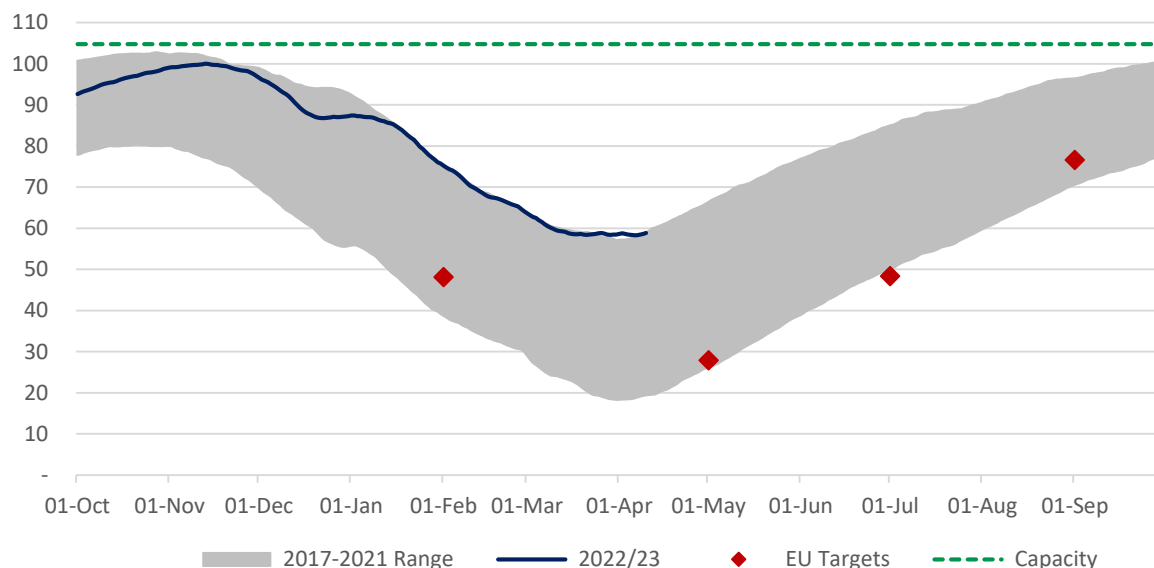
In each of those cases (2018-2023), the weather and market circumstances played determining roles in the size of net storage withdrawals, from the cold European weather known as 'The Beast from the East' in late February/early March 2018, the cold weather in North-East Asia that pulled LNG cargoes away from Europe and prompted storage stock drawdowns in 2021, to the mild winters of Q1 2019 and 2022. The large scale of storage withdrawals during cold winters in recent years illustrates the importance of accumulating stocks during summer, especially in a tight market.

²⁴ GIE (2022). *Aggregated Gas Storage Inventory*. <https://agsi.gie.eu/data-overview/eu>

The benign circumstances of winter 2022/23 meant that Europe ended Q1 2023 with stocks of 58.5 Bcm – a record for the end of Q1 and 31.1 Bcm higher year-on-year. This means that net injections of 41.4 Bcm between 1 April and 30 September would be sufficient to bring stocks back to 100 Bcm (close to the full capacity of 104.7 Bcm). For comparison, net injections in the period 1 April to 30 September in the years 2017-2022 ranged from 42.8 Bcm to 66.7 Bcm. Therefore, even record low summer injections in 2023 will be sufficient to bring stocks back to close to full capacity.

Europe has a favourable base from which to begin its efforts to reach the European Commission target of filling storage to 90 per cent of capacity (94.2 Bcm) by 1 November 2023.²⁵ In terms of the intermediate storage filling targets set by the European Commission, stocks on 1 April 2023 already surpassed the Commission targets for 1 May and 1 July 2023, while the 76.6 Bcm target for 1 September 2023 could be reached by early June, based on storage refill rates in recent years.²⁶

Figure 1.16: European storage capacity, historic stocks, and EU storage targets (Bcm)



Source: Data from Gas Infrastructure Europe (GIE) Aggregated Gas Storage Inventory.²⁷ Targets published by European Commission on 24 November 2022. Graph by the author

If there is one factor that should temper any thoughts that refilling storage in summer 2023 is a foregone conclusion, it is the prospect of a substantial year-on-year decline in pipeline gas supply from Russia. As noted earlier, pipeline supply from Russia in Q2 and Q3 2022 combined was 30.7 Bcm, and is likely to be around 11 Bcm in Q2-3 2023 – a drop of 20 Bcm. Compensating for that drop will account for two-thirds of the ‘windfall’ that Europe has by starting the summer season with storage stocks roughly 30 Bcm higher year-on-year.

With this in mind, and with non-Russian pipeline supply (and indeed domestic European gas production) unlikely to be higher year-on-year in summer 2023, Europe’s ability to refill storage in summer 2023 will

²⁵ European Commission (2022). Commission sets trajectories for filling gas storage in 2023. *Press Release*, 24 November. https://commission.europa.eu/news/commission-sets-trajectories-filling-gas-storage-2023-2022-11-24-0_en

²⁶ Commission Implementing Regulation (EU) 2022/2301 of 23 November 2022 setting the filling trajectory with intermediary targets for 2023 for each Member State with underground gas storage facilities on its territory and directly interconnected to its market area, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022R2301&qid=1669911511115>

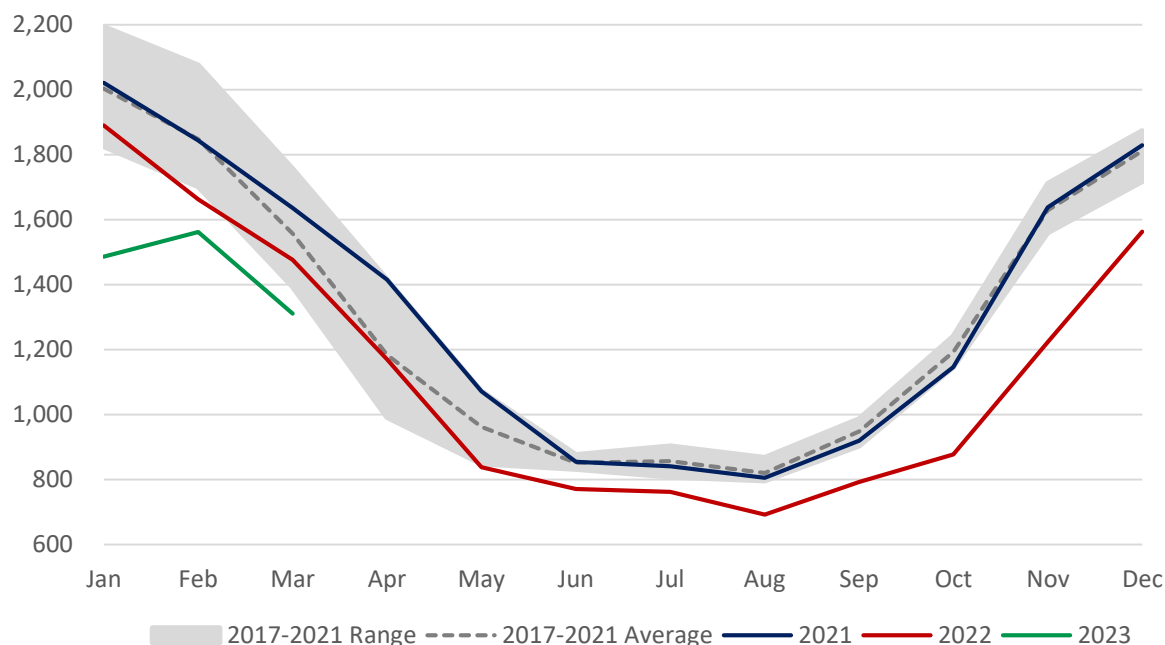
²⁷ GIE (2022). *Aggregated Gas Storage Inventory*. <https://agsi.gie.eu/data-overview/eu>

remain dependent on continued substantial LNG imports (as discussed earlier) and European gas consumption remaining lower year-on-year.

Total supply to Europe (implied consumption)

By collating data for European production, pipeline imports, LNG imports, and net storage withdrawals, it is possible to calculate Europe's 'implied gas consumption'. This overall total supply (implied consumption) is presented in Figure 1.17.

Figure 1.17: Total supply to Europe²⁸ (MMcm/d)



Source: Data from ENTSOG,²⁹ Eurostat³⁰, Kpler,³¹ and Gas Infrastructure Europe.³² Graph by the author.

Note that 'Total Supply' refers to production plus pipeline imports plus LNG sendout plus net storage withdrawals.

In the previous edition of the Quarterly Gas Review (published on 30 January 2023), it was noted that the substantial year-on-year decline in total European gas supply (implied consumption) would be unlikely to be maintained in the rest of Q1, as it was attributed to unusually mild weather and, by extension, lower gas demand for space heating.

That proved to be the case, with implied consumption in February and March returning to the usual seasonal pattern. In January, implied consumption was 21 per cent below the implied consumption in January 2022, and 26.5 per cent below the 2021 level. In February, 2023 implied consumption was 6 per cent below the 2022 level and 15 per cent below the 2021 level. In March, 2023 implied consumption was 11 per cent below the 2022 level and 20 per cent below the 2021 level. Although the year-on-year decline in European gas consumption in March 2023 was not as large as the decline seen in January, it was larger than the year-on-year decline seen in February. This suggests that European demand

²⁸ Europe is defined as the EU, UK, Switzerland, and non-EU Balkan states. It excludes Turkey and treats Norway as an external supplier to that European market.

²⁹ ENTSOG (2022). *Transparency Platform*. <https://transparency.entsog.eu/#/map>

³⁰ Eurostat (2022). *Supply, transformation, and consumption of gas - monthly data*. https://ec.europa.eu/eurostat/databrowser/view/nrg_cb_gasm/default/table?lang=en

³¹ Kpler LNG Platform (subscription required). <https://lng.kpler.com/>

³² GIE (2022). *Aggregated Gas Storage Inventory*. <https://agsi.gie.eu/data-overview/eu>

remains structurally lower year on year, rather than the decline being a temporary phenomenon that is wholly attributable to mild weather during the winter heating season.

Indeed, as we move into the summer season, and gas demand for space heating accounts for a much smaller share of overall demand (especially in northern Europe), gas demand for power generation and in industry will grow in relative importance. In particular, the impact of declining prices on industrial gas demand, and the performance of non-gas power generation assets will be key factors in European gas demand in the coming months. This will illustrate the extent to which European gas demand remains lower year-on-year in relation to non-seasonal factors.

On the supply side, there is little to suggest that European gas production or non-Russian pipeline supply will be higher year-on-year. Indeed, a slight decline is to be expected, with some maintenance likely deferred during the high-price summer of 2022 and the possibility of the decline in the use of gas to enhance oil extraction in Norway and Algeria being reversed. Furthermore, Norwegian production could also be lowered as flexibility in gas production licences is utilised to hold production over from summer 2023 to summer 2024, given the higher forward prices for summer 2024.³³ This is reflected in forecasts from the relevant authorities: in the UK, the North Sea Transition Authority forecasts gas production to decline by 2 Bcm year-on-year in 2023.³⁴ In Norway, the Norwegian Petroleum Directorate forecasts gas production to be roughly 5 MMcm/d higher year-in-year in April 2023, but then 25-30 MMcm/d lower in May, June, and August, set against 5 MMcm/d and 16 MMcm/d increases in July and September, before reverting to stable year-on-year production in Q4.³⁵ Instead, any increase in European supply will come from additional LNG imports, taking advantage of the year-on-year increase in LNG regasification capacity in Germany, the Netherlands, and Finland in the early part of the year, and possibly in France (Le Havre FSRU) and Italy (Piombino) in the latter part of the year, in addition to the additional FSRUs planned for Germany by the end of 2023.

Conclusions

Since our analysis at the beginning of the year, the average TTF and JKM prices (actual and forward) for 2023, have fallen by around 33 per cent and almost 25 per cent, respectively. The reason for this weakness in prices has been analysed in this review. A key element was demand³⁶ in Europe in Q1 2023 falling by some 20 bcm (13 per cent) compared to Q1 2022.

Global LNG supply (measured on an import basis) in Q1 2023 has risen slightly compared to 2022, although it is below the rise we expected at the beginning of the year. However, the volume of LNG leaving export terminals is increasing sharply and in Q2 2023 the measured LNG supply may well get back to our target level. Asian LNG demand is significantly below not only our target Q1 level but also marginally below Q1 2022. With demand in Central and South America also being down – Brazil in particular is much lower as a result of more hydro power – and the Middle East as well, there has been enough LNG available for even more to come to Europe. With the much weaker demand in Europe, stable non-Russian pipeline gas supply, and Europe ending the winter with storage stocks at record levels, the reason for the one-third decline in European prices since January is clearly apparent.

Looking ahead, the benign outlook implied by the decline between January and April in European and Asian forward prices for the rest of 2023 is based on expected robust supply, consisting of relatively

³³ Frost, R., 2023. Norway's gas production to fall this summer. *Argus Direct*, 10 March. <https://direct.argusmedia.com/newsandanalysis/article/2428115>

³⁴ NSTA, 2023. *Projections of UK oil and gas production and expenditure - February 2023*. <https://www.nstauthority.co.uk/data-centre/data-downloads-and-publications/production-projections/>

³⁵ NPD, 2023. *Gas Production 2023*. <https://www.npd.no/en/>

³⁶ Implied gas consumption based on adding up all sources of supply – production, pipe imports, LNG imports and net storage withdrawals.

stable pipeline imports into Europe, continued global LNG supply growth and potentially slower than expected LNG demand growth outside Europe, especially in Asian markets.

However, the market remains finely balanced. A rebound in prices in both Europe and Asia above current levels of around 13-15 USD/MMBtu is possible, catalysed by a constraint on European pipeline gas supply (for example, an interruption in Russian gas flowing via Ukraine), a constraint on global LNG supply, as happened at Freeport, a surge in non-European LNG demand, or a rise in European gas demand. At the other end of the scale, continued weak European gas demand, growing LNG supply and weak Asian LNG demand could well see European gas storage filling as early as late August. In such a scenario, the possibility of single digit gas prices in Europe and Asia – below 10 USD/MMBtu (or 30 EUR/MWh) – should not be ruled out.

Dr Jack Sharples, Senior Research Fellow, and Mr Mike Fulwood, Senior Research Fellow, OIES

2. China's gas demand: the road to recovery

With the reversal of China's zero-COVID policy and efforts to shore up economic activity this year, China's gas demand is set to recover from its 2022 doldrums. But how strong will the rebound be? And will the increase in domestic and pipeline flows be sufficient to meet incremental demand? The strength of Chinese demand and its appetite for spot LNG this year is critical for the availability and price of LNG for Europe. China's gas use depends on a number of factors beyond the strength of the economic rebound, including government policies on gas and coal use and the availability of coal and hydropower. Overall, given the government's desire to support economic activity we expect gas demand to grow by a strong 20-25 Bcm y/y. But 20 Bcm of that increment is set to come from domestic output and pipeline flows while new and existing LNG SPAs will limit China's appetite for spot volumes. China will likely be in a position to re-sell cargoes to Europe but in the peak summer months or ahead of winter, short spikes in spot demand cannot be ruled out.

It's the economy, stupid!

The Chinese government's sharp U-turn on its zero-COVID policy and on its crackdown on the real estate sector point to a renewed focus on economic growth for 2023. But while the need to support economic expansion has been emphasized repeatedly in government work documents, the GDP growth target for the year was set at "around 5 per cent" a slightly more conservative goal than markets were expecting,³⁷ likely reflecting concerns about weak external demand, low business confidence, and fiscally stretched local governments.

The government in its macro goals for 2023 also hinted at a limited appetite for a large fiscal stimulus. It set the budget deficit at 3 per cent for 2023, slightly higher than last year (2.8 per cent) but lower than 2020 (3.6 per cent) and 2021 (3.2 per cent). Importantly, the issuance of local government special-purpose bonds (which are used to finance infrastructure spending) is targeted at RMB 3.8 trillion, which is only moderately higher than the average RMB 3.7 trillion for the period 2020 to 2022. Land sales - a major source of local government revenue - are also expected to stagnate. Finally, in terms of monetary policy, the government stated that money supply and total social financing will be consistent with nominal economic growth, suggesting that a credit binge is not on the cards either. The message (or hope) seems to be that undoing zero-COVID, and softening the crackdowns on real estate and tech should be enough to generate growth, without the government needing to implement extraordinary support measures.

Furthermore, the government, in keeping with its desire to rebalance the economy away from infrastructure spending toward domestic consumption, has also issued an employment target of 12 million. This is higher than in previous years (when 11 million was the target) in an effort to encourage people in China, who have been cautious about spending as personal income growth has slowed, to increase expenditure. Interestingly the new target is in line with actual job creation in 2022 and so would appear achievable.

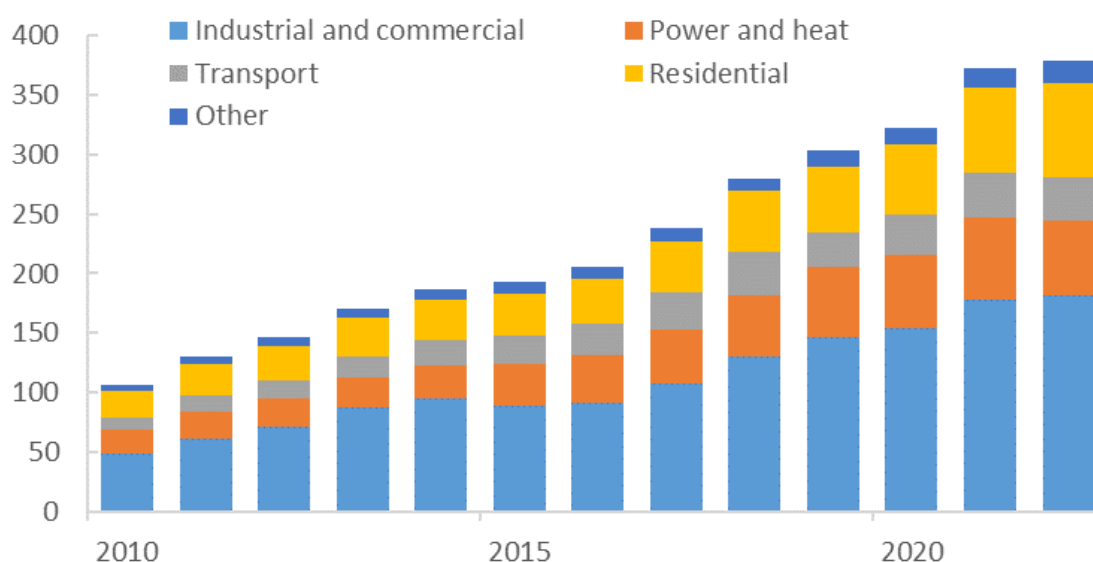
Both the strength and the nature of economic expansion matter for gas consumption. While Beijing may not overshoot its GDP target this year, it will still represent an increase from 2022 levels, when GDP grew by 3 per cent. Strong economic activity will therefore underpin energy demand growth. The China Electricity Council (CEC) expects power consumption to increase by around 6 per cent in 2023³⁸ but the research arm of CNPC, China's largest state-owned oil and gas company, forecasts a 5 per cent y/y increase in gas demand this year, or around 19 Bcm. Based on the Nexant World Gas Model, OIES expects a 20-25 Bcm y/y increase in China's gas demand. Critically, though, it remains unclear how much economic growth will come from mobility and consumption and how much will be derived from

³⁷ Kevin Yao: "Exclusive: China increasingly ambitious with 2023 growth target, may aim for up to 6%", Reuters, 2 March 2023, https://www.reuters.com/world/china/china-increasingly-ambitious-with-2023-growth-target-may-aim-up-6-sources-2023-03-02/?mc_cid=c3e21ff00d&mc_eid=4912bc2dc4

³⁸ <https://cec.org.cn/detail/index.html?3-317477>

infrastructure development. As the industrial and commercial sectors are the biggest gas consumers in China (Figure 2.1), the nature of the economic recovery will determine the strength of gas demand growth.

Figure 2.1: China's gas demand by sector, Bcm



Source: NBS, OIES

A refined outlook

The makeup of industrial gas demand is therefore significant for understanding this year's growth potential. In 2020, roughly half of the industrial gas demand came from oil and gas extraction and more significantly, refining and chemicals (Figure 2.2). In 2022, China's refinery runs were down by 4 per cent y/y (compared to an average growth rate of close to 5 per cent over the previous decade), while Sinopec, China's largest refiner reported a fall in chemicals sales.³⁹ Activity is expected to rebound strongly this year with increases in oil product demand - and therefore refining activity⁴⁰ - and the start of new petrochemical crackers in China. Demand in Southern China for gas for petrochemicals is already reportedly picking up.⁴¹

However, other sources of industrial gas consumption, including smelting of ferrous and non-ferrous metals are more closely linked to infrastructure spend and construction activity. With the government's cautious stance on infrastructure spending and a slow recovery in the real estate sector, these could take time to recover. Meanwhile lighter industrial uses such as textiles and food, which are set to increase as consumer activity recovers, also tend to be more price sensitive. Textile mills and ceramic factories are currently reportedly seeing limited new orders and are grappling with high stocks of manufactured products. If government efforts to restore consumer confidence and activity are successful, and depending on external demand for consumer goods, gas demand in these sectors

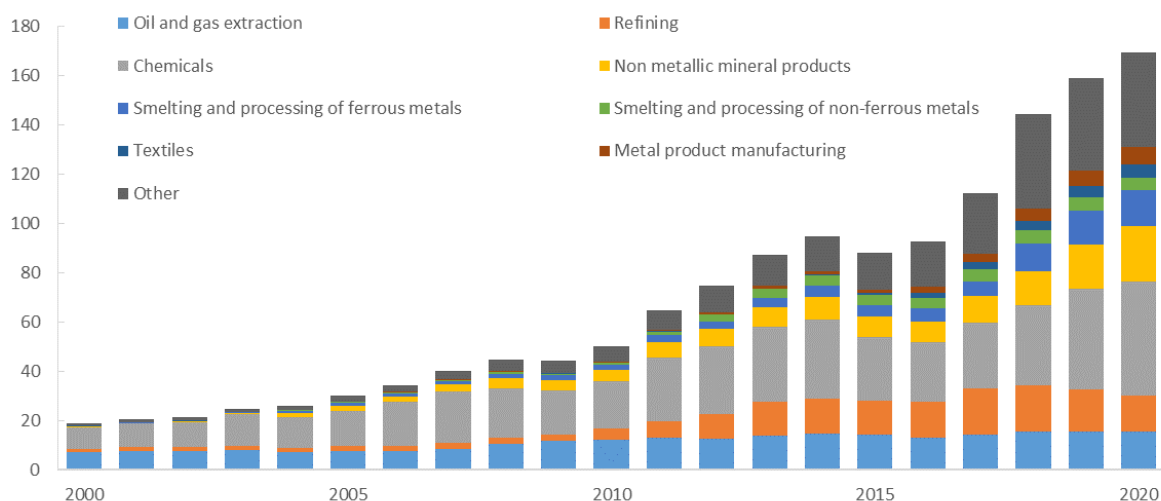
³⁹ Sinopec's 2022 net profit falls 6.9% as COVID curbs hit fuel, chemicals demand, Reuters, 27 March 2023, <https://www.reuters.com/business/energy/sinopecs-2022-net-profit-falls-69-covid-curbs-hit-fuel-chemicals-demand-2023-03-26/>

⁴⁰ China 2023 oil refinery output forecast to rise 8% on demand recovery, Reuters, 27 March 2023, <https://www.reuters.com/business/energy/china-2023-oil-refinery-output-forecast-rise-8-demand-recovery-2023-03-27/>

⁴¹ China's economic recovery to drive gas growth, Argus, 23 March 2023, <https://direct.argusmedia.com/newsandanalysis/article/2432313>

could rise quite strongly, likely in the latter half of the year. In sum, the extent of consumption growth ultimately depends on the government's ability to spur consumer activity and local officials' appetite for new infrastructure spending.⁴²

Figure 2.2: Industrial gas demand by sector, Bcm



Source: NBS, OIES

Gas demand in industry will overwhelmingly depend on the pace of economic recovery and to a certain degree on prices rather than on new coal-to-gas switching as the government's work report, issued in March 2023, issued a mandate to limit new coal-to-gas switching projects in order to ensure supply security. At the same time, coal production is rising rapidly, as is renewable power generation.

Powering up

The other question is what the economic recovery and supply security mandate means for coal consumption. Chinese consultancy Mysteel expects a very modest increase in coal consumption in 2023 as it forecasts little upside for heavy industry and expects increases in low-carbon energy to cover most of the growth in China's electricity demand. Still, economic growth and stability are key, so reliable energy supplies are critical. The NDRC work report mentions "energy security" seven times, compared to two mentions in 2022 and is noteworthy in its multiple reference to coal (38 to be precise, up from 24 in 2022 and 5 in 2021). The government work report calls for China to "give full play to coal's role as the main energy source"⁴³ and omits last year's calls to "orderly reduce and replace coal". While the government and NDRC work reports emphasize coal, they also note the need to advance wind and solar capacity, and develop energy storage industries. For gas in power to increase substantially, therefore, it will have to be priced competitively, or rise in provinces that already rely on gas for peak shaving. Guangdong province, in Southern China, for instance, accounts for roughly one-third of the country's installed gas-fired capacity. CNOOC's local pipeline subsidiary reports sending 4 Bcm of gas this winter (from November to March), an 8 per cent y/y increase, to downstream consumers, including

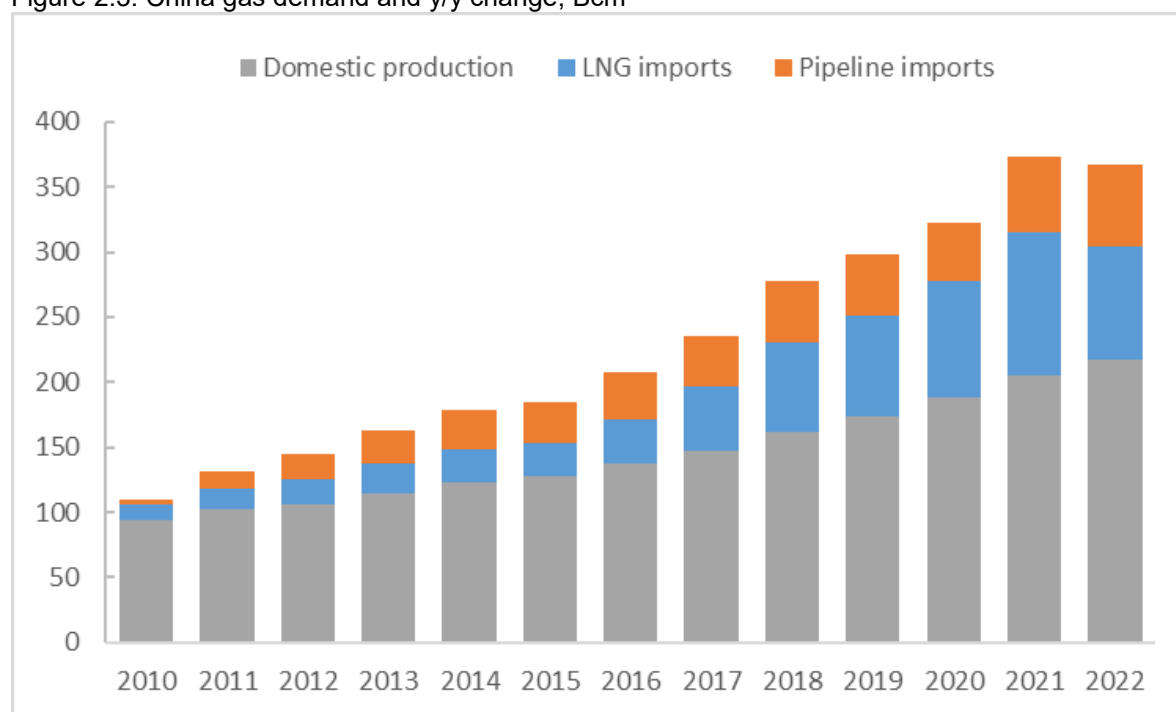
⁴² China's economic recovery to drive gas growth, Argus, 23 March 2023, <https://direct.argusmedia.com/newsandanalysis/article/2432313>

⁴³ The phrase used in Chinese is "发挥煤炭主体能源作用."

eleven local gas-fired power plants, five city gas firms and other industrial gas users.⁴⁴ Rising power use, as manufacturing in China's export powerhouse increases, could lead to greater gas demand as hydropower levels in both Yunnan and Sichuan - which typically export hydro to Guangdong - are constrained by lower precipitation.⁴⁵ During the summer months in particular, if energy demand surges and alternative supplies are limited, spot LNG purchases could pick up.

Overall though, China's gas demand is likely to grow at a more moderate pace than the breakneck growth seen in 2021. With residential demand recording average increases of close to 10 per cent for the last decade, it will remain one of the biggest drivers of gas consumption this year and going forward. Growth will then be followed by industrial use and the power sector, although increases in demand are more closely linked to economic activity and affordability, suggesting a range of 20-25 Bcm of incremental demand. That said, if industrial activity picks up more dramatically (which we do not expect currently), then gas demand could rise even further.

Figure 2.3: China gas demand and y/y change, Bcm



Source: NBS, China Customs, NDRC, OIES

Limited demand for spot LNG

China's contracted imports of pipeline gas and LNG plus rising domestic gas supplies should be enough to meet rising demand. CNPC anticipates a 12 Bcm increase in domestic supplies, while an additional 7 Bcm is scheduled to flow through the Power of Siberia Pipeline from Russia. Offsetting this, the 5 bcma supply contract between China and Kazakhstan is set to end this winter, but it remains unclear when exactly and also whether the contract will be extended.

The balance of increased demand should be covered by an increase in new contracted LNG volumes of around 4mt (5.4 Bcm) and some rollover from contracts signed in 2022 but not consumed due to the COVID lockdown, suggesting that any need for spot cargoes will be limited, unless Kazakh flows decline

⁴⁴ CNOOC's Guangdong grid quickens deliveries this winter, Argus, 16 March 2023, <https://direct.argusmedia.com/newsandanalysis/article/2429984>

⁴⁵ Prolonged drought in China's Yunnan province likely to worsen hydropower shortage, S&P global, 27 February 2023

or domestic production disappoints. Having said this, if global LNG prices fall there is scope for Chinese buyers to increase imports in preparation for winter and as they look to replenish depleted stocks. In the winter of 2022-2023, they have reportedly withdrawn 9.4 Bcm, compared to 8.3 Bcm last winter. Moreover, between now and 2025, they will need to find new storage capacity and fill it to align with the 14th Five Year Plan mandate for storage to reach 55-60 Bcm (up from 26 Bcm in 2022). To be sure, these are not binding targets and to date there is little to suggest buyers are rushing to build stocks, but should LNG prices fall, China could step in and buy more. The base case, however, remains that China's gas demand growth will be filled overwhelmingly by domestic and already contracted supplies. Chinese traders may also find opportunities to re-sell cargoes too, but sudden shortfalls could arise during the summer or ahead of winter, leading to short lived spot LNG purchases.

Dr Michal Meidan, Head of China Research, OIES