



Quarterly Gas Review: Short- and Medium-Term Outlook for Gas Markets

Introduction

In the latest OIES Quarterly Gas Review, the first section focuses on short-term gas pricing developments, discussing the very sharp rise in wholesale gas prices in recent months. With continued strong Asia and Central and South America demand and seemingly constrained supply, the LNG available for Europe was limited, at a time when there were production issues and higher pipeline imports from North Africa and the Caspian regions couldn't offset lower Russian volumes, compared to the pre-Covid year of 2019. Then current very high prices would seem to incorporate a significant "fear" premium of another cold winter and with storage levels in Europe struggling to get back to acceptable levels, the prospect of real gas shortages loom large

In the second and third sections of the report, we take a more detailed look at two specific factors which are impacting the global gas market. Firstly, Katja Yafimava looks at when Nord Stream 2 might be fully approved and gas volumes start to flow, possibly alleviating the supply constraints. Secondly, Ieda Gomes takes a detailed look at the reasons for the rise in LNG imports in Central and South America, which have further tightened the LNG market.

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

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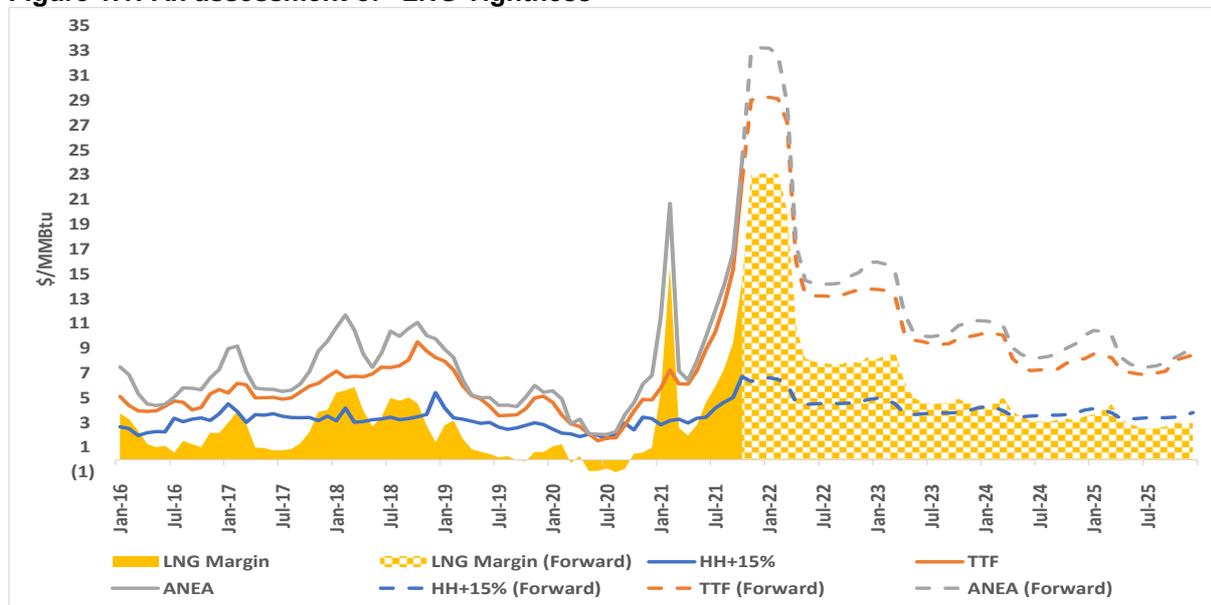
1. Price analysis

In this first section of the quarterly, we include below our regular review of some key pricing trends for global LNG, Europe, and Asia.

1.1 LNG tightness

Firstly, we consider our “LNG Tightness” analysis as an indicator of how profitable existing export projects are and whether there is a need for new FIDs to meet demand in the global market. The graph below is based on data from Argus Media and shows the prices for TTF in the Netherlands, the ANEA spot price in Asia and the Henry Hub price in the US. It then calculates the highest netback from Europe or Asia to the US Gulf Coast plants based on the respective shipping costs. Deducting Henry Hub plus 15 per cent from the highest netback gives the LNG Margin, which provides an indication of whether developers in the US can expect to recover the fixed cost of liquefaction. A margin in excess of 3 USD/MMBtu (the fixed liquefaction cost in the traditional Cheniere contract) – as it was in 2018 - would provide an obvious incentive for new projects while a margin well below this suggests a more oversupplied market.

Figure 1.1: An assessment of “LNG Tightness”



Source: OIES, based on data from Argus Media. Forward curve at 12 October 2021

For the majority of 2020, when the COVID 19 pandemic caused lockdowns in Asia and Europe leading to economic decline and a fall in energy demand, the margin has been negative, implying that US LNG exports were losing money on a cash basis. This led to between 150 and 200 cargoes being shut in, which started to impact the market during the summer months. Since then, however, the picture has changed dramatically. Initially, the impact of the pandemic started to ease and economic recovery brought higher demand and increased prices, pushing the margin back into positive territory in Q3, albeit only to a level that covered cash rather than full costs. At the end of 2020 and in early 2021, the very cold weather and a dramatic rise in prices in Asia (see Figure 1.1) pushed the margin briefly to an extremely high level. The price spike in Asia was discussed in an earlier OIES Comment.¹

Prices fell back quickly after the Asian spike, but the continuing tightness of the global supply demand balance led to firm prices throughout the summer. In August, however, prices started to rise dramatically in both Europe and Asia. The October month-ahead settlement prices were over 22 USD/MMBtu and

¹ Fulwood, Mike, 2021. Asia LNG Price Spike: Perfect Storm or Structural Failure? *OIES Comment*, 17 February. <https://www.oxfordenergy.org/publications/asia-lng-price-spike-perfect-storm-or-structural-failure/>

over 24 USD/MMBtu in Europe and Asia respectively – double the July prices. The forward prices for November through March in both continents are now around 30 USD/MMBtu.

The reasons behind the very high gas prices have been analysed in some detail in a very recent OIES comment.² Prices at these levels certainly seem to incorporate a large “fear” premium, pricing in another cold winter. There have also been reports of some short covering by both LNG traders in Asia supporting the price, and reportedly that some traders have large short open positions on TTF which have resulted in significant margin calls.³ These short positions will need covering by buying on the physical or futures markets, providing short term price support.

As these positions get covered the need to buy gas will ease. In addition, demand, excluding China, may also be easing a little. There is a lot more wind power in Europe in the last week or two and demand has eased back in Japan with more nuclear coming on – Japanese buyers have even been reselling oil-indexed contracted cargoes into China at a tidy profit. Supply, however, remains a concern with lower Russian volumes on the Yamal route through Belarus and Poland.

The LNG margin, therefore, is well over 20 USD/MMBtu, the Henry Hub forward curve being in the high \$5. The margin remains strongly positive going forward, at well over 4 USD/MMBtu through 2024. Clearly, current margins provide an incentive for new FIDs but much lower margins might not. However, it is not just the margin which will be needed for FIDs to be forthcoming. Even if the economics look good, most new LNG developments will still require the backing of long-term contracts and it is not clear that, even with the current very high spot prices, the big Asian buyers are necessarily queuing up to enter into new contracts.

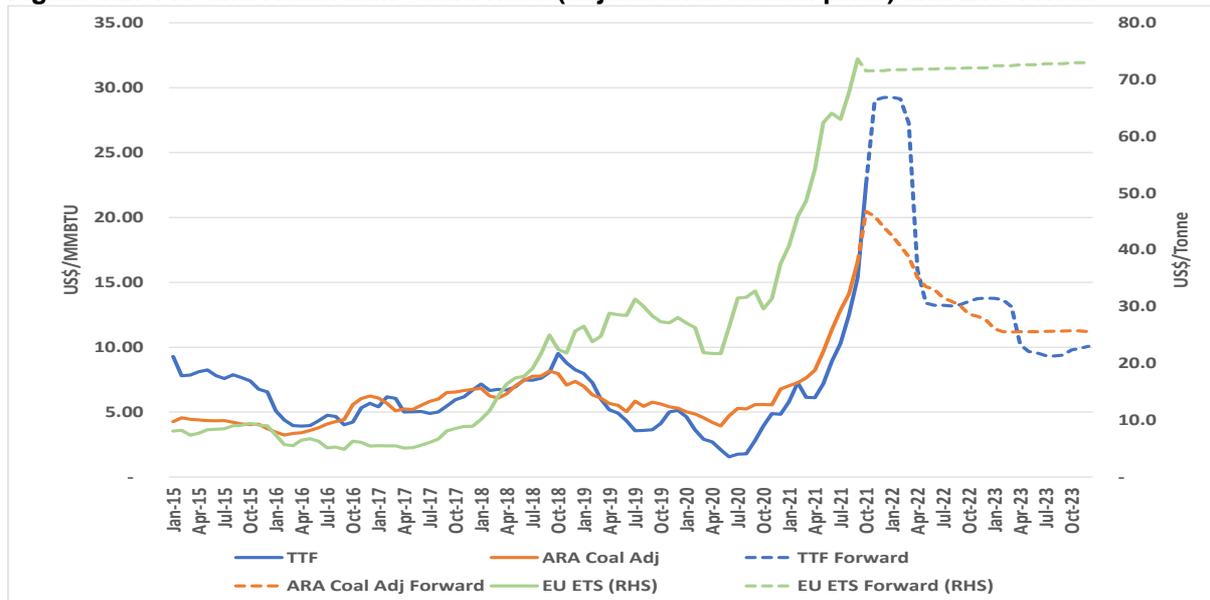
1.2 Carbon prices and inter-fuel competition in Europe

The rising European prices reflecting the tight global supply demand balance, might have been expected to lead to a loss of competitiveness for gas in the power market. The figure below compares TTF prices with the coal and carbon prices. The coal price (ARA – Amsterdam, Rotterdam, and Antwerp) is adjusted for the relative efficiency of gas power plants to coal power plants and the relatively higher carbon costs of coal.

² Fulwood, M., and Sharples, J., 2021. Why are gas prices so high? OIES Comment, 27 September.
<https://www.oxfordenergy.org/publications/why-are-gas-prices-so-high/>

³ Payne, J., and Zhdannikov, D., 2021. Commodity traders face big margin calls as gas prices soar. Nasdaq, 4 October.
<https://www.nasdaq.com/articles/exclusive-commodity-traders-face-big-margin-calls-as-gas-prices-soar-2021-10-04-0>

Figure 1.2: TTF and Rotterdam Coal Prices (adjusted for carbon price) and ETS Prices



Source: Argus Media, ICE. Forward curve at 12 October 2021

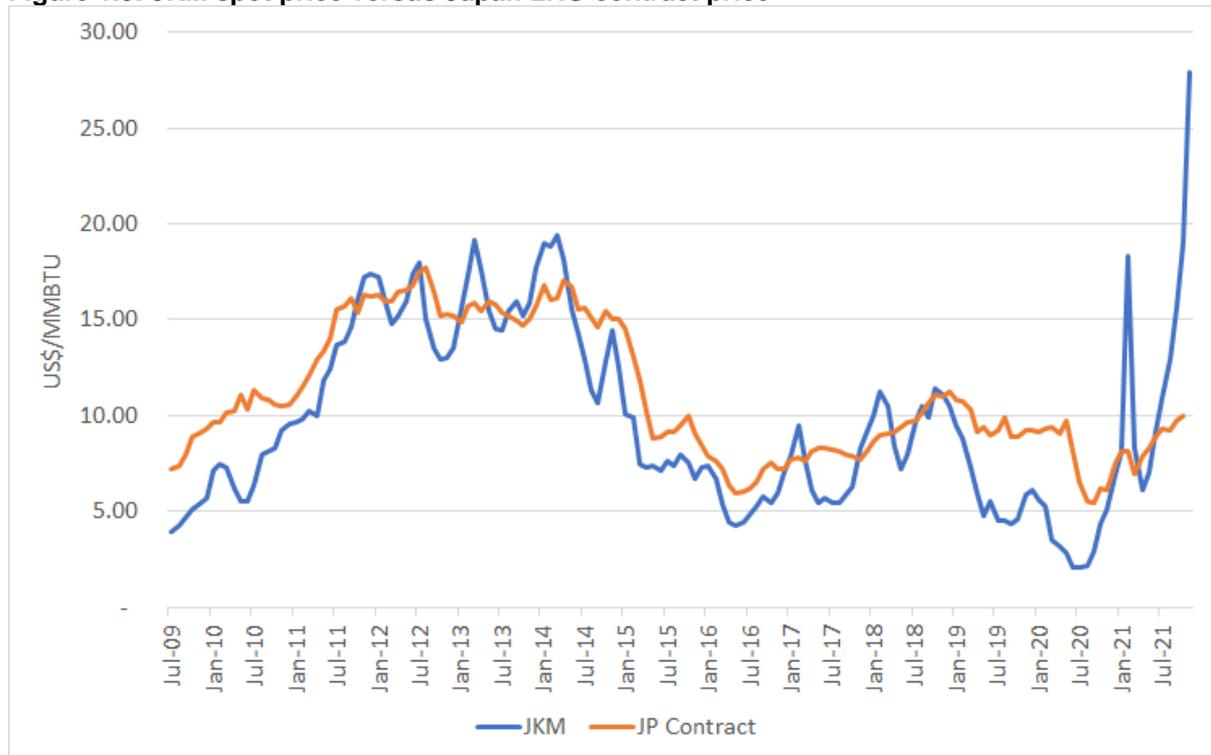
In early 2019, as gas prices declined, we saw them fall well below the adjusted coal price, and this continued in 2020 as the impact of Covid-19 put significant downward pressure on prices. As a result, there was significant coal to gas switching in 2019 and in 2020 even some lignite to gas switching in Germany. The sharp rise in TTF prices last winter which has continued during the summer, might have been expected to lead to a significant loss of competitiveness of gas relative to coal. However, coal prices have also risen sharply, although by less than the TTF price, but the EU ETS price has also risen to provide a further boost to the carbon-adjusted coal price. Gas, therefore, maintained its competitive position until very recently, providing some support to gas demand in Europe.

The recent rise in prices, however, has pushed gas prices well above the adjusted coal price, encouraging a switch to coal. According to the forward curves this is expected to be maintained through the middle of 2022 before gas and adjusted coal prices come together again. Depending on the weather this winter gas could lose market share in the power sector to coal at these relative prices.

1.3 JKM spot price versus LNG contract price in Asia

The relationship between contract and spot prices in Asia continues to be of significant interest. As we have noted at various times, customers tend to seek changes in the formation of prices when their impact causes them to suffer very substantial financial losses. This certainly occurred in Europe when spot and contract prices diverged and customers began to demand a move away from oil-linked pricing to hub-based prices, catalysed by new EU rules on market liberalisation.

Figure 1.3: JKM spot price versus Japan LNG contract price



Source: Platts and Argus data, OIES analysis

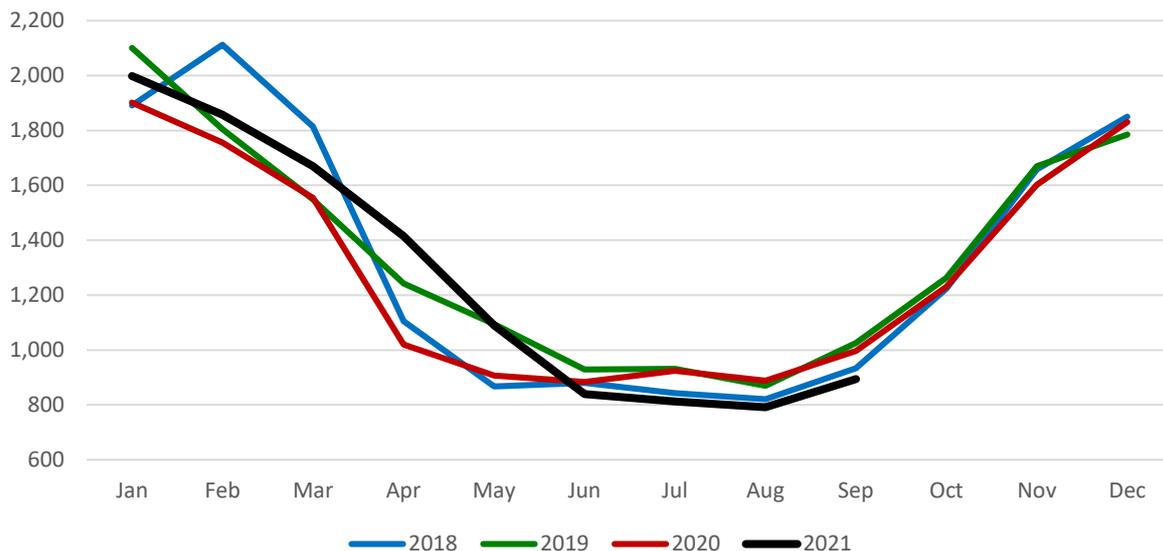
In early 2019, there was a decisive break between the oil-linked contract price and the JKM spot price, as the Figure above shows. Contract prices came down in early 2020 as oil prices had fallen a few months before. The prices began to converge towards the end of last year before we saw the big jump in the JKM spot price in February. The summer rise in spot prices has seen JKM jump back above the contract price, at least briefly. The sharp increase in spot prices has taken them well above oil-indexed contract prices at least for the moment. As noted above, Japanese buyers have been using the high spot prices as a reason to resell unneeded oil-indexed cargoes to buyers in China.

When spot prices were well below contract prices, there was discussion as to whether there would be a real challenge to oil-indexed contracts, if the trend persisted. However, with spot prices well above contract prices, this discussion is on hold for a while. Once spot prices settle down to more balanced levels then maybe this debate will be renewed.

1.4 The European supply-demand balance

In the first five months of 2021, gas demand in Europe (EU-27 plus UK) was generally higher than both 2020 (a year impacted by the COVID-19 pandemic) and 2019 (the last pre-COVID year). Since then, it appears that the rising prices throughout the summer may have dampened demand to a certain extent, bringing it back down to 2018 levels, as illustrated in the Figure below. This is not surprising, given that demand was encouraged by a supply push from the global LNG market in mid-2019, and by a substantial global and regional oversupply in mid-2020, with attendant low prices.

Figure 1.4: Supply to the European market (monthly average mmcm per day)



Source: Data from Gas Infrastructure Europe Aggregated Gas Storage Inventory (AGSI+)

The constraints on supply are clearly visible when the supply to the European market in the period January-September is broken down by source, and compared to the same period in 2019. The comparison with 2019, rather than 2020, is appropriate because the supply-demand balance in 2020 was distorted by the demand-side impact of the COVID-19 pandemic and related lockdowns.

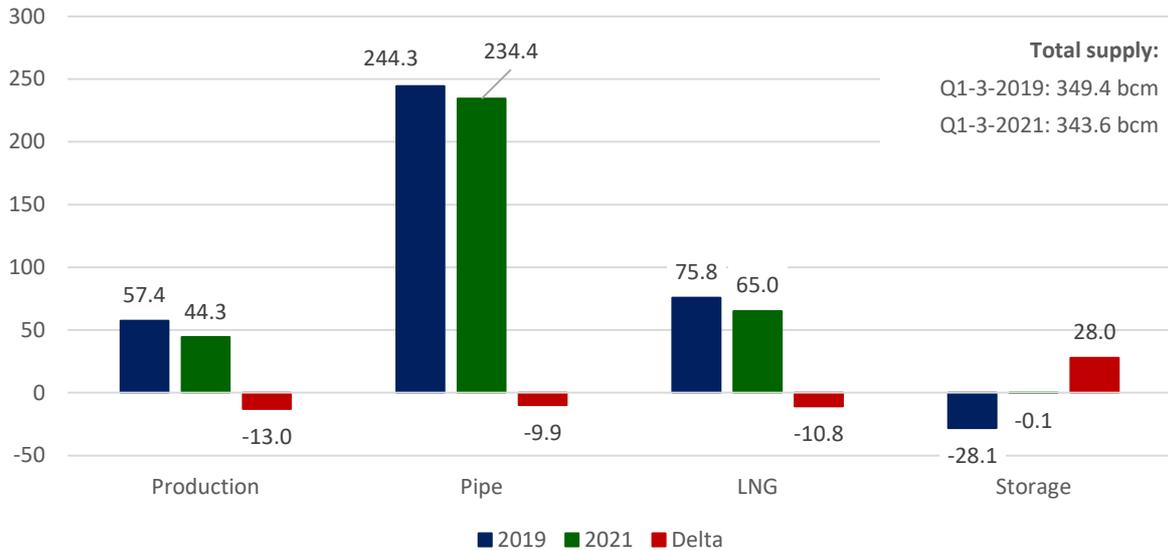
In Q1-3 2021, total supply to the European market was 344 bcm, down from 349 bcm in the same period in 2019. Yet during Q1-3 2021, production, pipeline imports, and LNG imports were all lower than in the same period in 2019. The European market was effectively balanced by storage: both larger withdrawals in Q1-2021 and smaller injections in Q2-3 2021.

While gas consumption in 2019 was boosted by the 'supply push', in 2021 it appears to have been driven by a 'demand pull'. Not only has industrial demand rebounded after the initial impact of lockdowns in 2020, but the particularly cold Q1 contributed to much higher demand for space heating. Meanwhile, gas demand for power generation was supported by lower-than-usual wind power generation, and particularly by the combination of rising coal and carbon prices that kept gas above coal in the power generation merit order for much of the year to date, despite the rising gas prices.

On the supply side, the ongoing decline in European gas production – particularly in the Netherlands, where production at the Groningen field is scheduled to cease in mid-2022 – has been widely reported. The global LNG market tightness means that the decline in European LNG imports – as cargoes are drawn away to Asia – is also to be expected. What was perhaps not expected was the slight decline in pipeline gas imports.

The slight increase in pipeline imports from Norway (+0.8 bcm) and more substantial increases from North Africa (+9.7 bcm) and Azerbaijan (+5.3 bcm – caused by the launch of the Trans-Adriatic Pipeline, TAP, in January 2021) were more than offset by the decline in imports from Russia (-25.6 bcm).

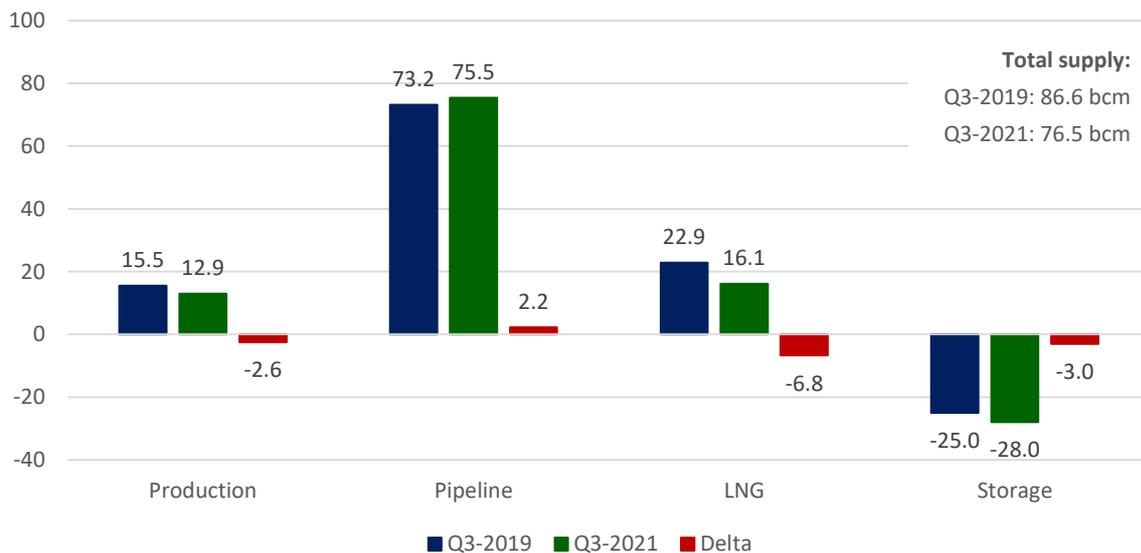
Figure1.5: Supply to the European market in January-September, 2019 vs 2021 (bcm)



Source: Data from ENTSOG, Gas Infrastructure Europe, and Kpler

When we turn our attention to Q3 specifically, the slight decline in production in 2021 compared to 2019 is again expected. Likewise, lower LNG imports as cargoes were pulled away to the Asian market. The higher storage injections in Q3 2021 than in Q3 2019 are explained by the fact that European storage stocks were much higher at the start of Q3 in 2019, and a smaller volume of injections was needed to prepare for winter. For comparison, the volume of European storage stocks at the end of Q3 2021 (77.4 bcm) was reached on the 9th of July 2019.

Figure1.6: Supply to the European market in Q3, 2019 vs 2021 (bcm)



Source: Data from ENTSOG, Gas Infrastructure Europe, and Kpler

In terms of pipeline imports, supplies from Norway in Q3 2021 were 5.7 bcm higher than in Q3-2019, but similar to Q3 in 2017 and 2018. Imports from North Africa were 3.0 bcm higher than Q3 2019, while imports from Azerbaijan were 2.3 bcm. Again, the downside concerned imports from Russia, which were 8.6 bcm lower in Q3 2021 than in Q3 2019.

As speculation mounted recently that Gazprom had purposefully held back volumes from the European market, potentially to ‘strong-arm’ the German regulator and European Commission into approving Nord Stream2, Gazprom has responded by repeatedly stating that it has met all its contractual commitments. Gazprom’s European counterparties have publicly agreed. The cause of Gazprom’s lower physical flows to Europe in 2021 appears to be twofold: Firstly, Gazprom has injected less into its European storage facilities, which were significantly drawn down in Q1-2021, as it has instead prioritised replenishing its domestic Russian storage stocks. Secondly, Gazprom has dramatically scaled back its near-term delivery sales to the European market via its Electronic Sales Platform, despite the opportunity to capture significant windfall profits due to the current bull run of prices, in order to ensure that it can continue meeting its long-term export contract commitments. A related additional call on Gazprom’s gas has been the substantial growth in exports to Turkey in 2021. The latest data (which covers January to July) show Turkey’s pipeline gas imports from Russia fell from 9.2 bcm in 2019 to just 5.5 bcm in 2020, before rebounding to 16.7 bcm in January-July 2021.

Gazprom intends to reach full storage stocks in Russia on the 1st of November, and the achievement of that target could free up significant volumes for export to Europe, as long as the Russian winter does not become too cold too quickly in Q4. Therefore, we shall continue to closely monitor both Russian export flows and ESP sales into November, in anticipation of indicators of Gazprom’s ability to supply more gas to Europe in the coming winter. A key factor in that calculation is whether the Nord Stream 2 pipeline will become operational during the coming winter – That issue is discussed in more detail by our colleague, Dr Katja Yafimava, in section 2 of this review.

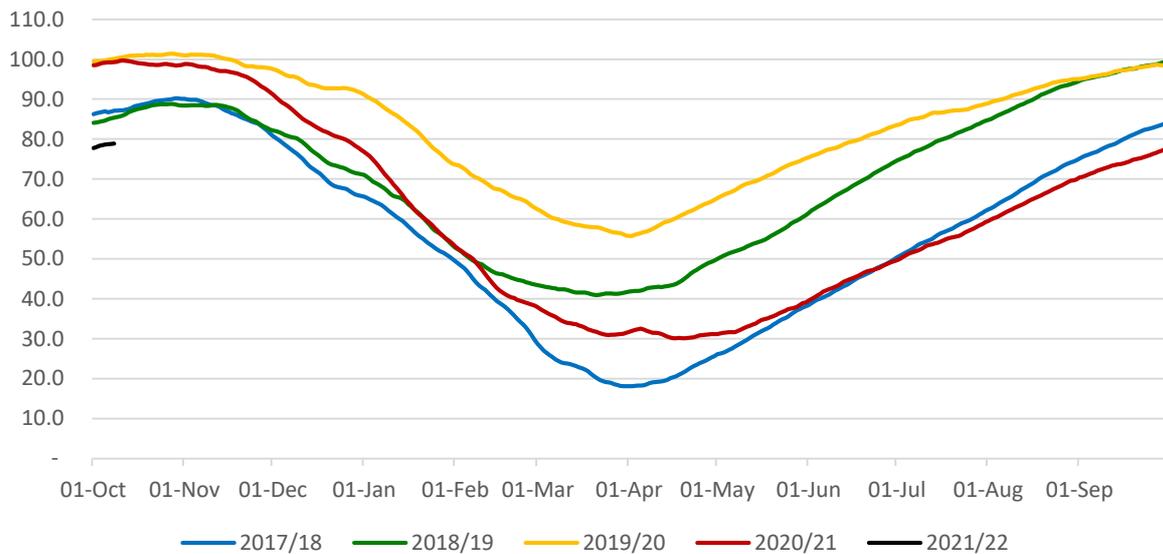
1.5 European gas storage

As Europe enters the winter heating season with stocks around 20 bcm lower than in mid-October 2019 and 2020, the two key questions are: 1) How did we get here? and 2) Will the current stocks be sufficient for the coming winter?

The answer to the first question is relatively straightforward. The winter of 2020/21 overall was both colder than the previous two winters, and Europe saw LNG cargoes being pulled away to Asia in winter 2020/21 to a much greater extent than in the previous two winters. This led to storage withdrawals playing a much greater role in balancing the European market in winter 2020/21. Indeed, the withdrawal from storage, comparing the peak stock level in early winter and the minimum stock level in at the end of winter in 2020/21 was 70 bcm, compared to 46-48 bcm in 2018/19 and 2019/20. In recent years, only the winter of 2017/18, with a withdrawal of 72 bcm, is comparable.

Not only was more withdrawn from European storage in the winter of 2020/21 than in the past two winters, but summer injections between the date of minimum end-of-winter stocks and 1 October were considerably lower in 2021 (47 bcm) than in 2018 (66 bcm) and 2019 (58 bcm). Summer storage injections in 2020 were lower (43 bcm), but only because stocks began the summer at a much higher level. So, storage injections in summer 2021 have been demonstrably slower than in recent comparable years. The rising prices throughout the summer will surely have played a role in traders’ assessment of potential seasonal spreads and the related profitability of storage operations.

Figure 1.6: Stocks held in European storage (bcm)



Source: Gazprom Export, Argus Media, OIES

The question of whether current stocks will be sufficient can be answered in terms of likely storage withdrawals in the coming winter. The especially cold winters of 2017/18 and 2020/21, when storage withdrawals were motivated by both higher European demand and reduced LNG supply, saw full-winter withdrawals of 70-72 bcm. The coming winter would have experience either a dramatic interruption in supply or an equally dramatic surge in demand (most likely weather-related) to see a call on storage substantially greater than in 2017/18 or 2020/21. Given that the coming winter is unlikely to be significantly colder than either of those two winters, a greater call on storage would only be caused by a truly exceptional reduction in supply availability to Europe, associated with LNG cargoes again being pulled away from Europe, and/or possible supply disruptions.

Therefore, Europe already (just about) has the stocks it would need to get through a winter of strong withdrawals in the region of 70-72 bcm. Given that European stocks tend to peak in the last week of October, there are probably another 10 days of injections that could see European stocks rise from 79.8 bcm on 12 October to almost 82 bcm by the final days of October.

If the winter of 2021/22 were to be cold and see a call on storage of 70-72 bcm, the stocks would be sufficient but there would be a highly significant impact on the following summer, given the need to replenish storage stocks that had been drawn down to minimal levels. This would surely support higher European prices through the summer of 2022. For comparison, the lowest stock level in recent years was 18 bcm at the end of March 2018, in the aftermath of the 'Beast from the East', while the summer of 2018 saw robust prices as storage stocks were replenished. If the coming winter does indeed prove cold and with a strong degree of both market tightness and storage drawdown, the impact on summer 2022 could mean that the current crisis unfortunately becomes 'the gift that keeps on giving'.

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

2. Nord Stream 2: when will the gas flows start?

2.1 State of play: construction of both lines has been finalised

Nord Stream 2 AG (NS2 AG) has finalized the construction of the Nord Stream 2 (NS2) pipeline – pipelay of the first line was completed on 4 June and the above water tie-in on 10 June, and pipelay of the second line was completed on 6 September and the above water tie-in on 10 September. While the Trump Administration's adoption of the PEESA legislation in December 2019 and a threat of sanctions against the Swiss pipelaying vessels emanating from it, significantly delayed the construction by necessitating their replacement by the Russian vessels (Fortuna and Akademik Cherskiy), the Biden Administration's decision to waive sanctions from NS2 AG in May 2021 (while keeping the sanctions against the Russian vessels in place) made finalization of construction less challenging.

2.2 Technical and regulatory certification challenges

Technical certification of the pipeline and regulatory certification of its operator are the two key factors, which will determine when NS2 will start flowing gas.

2.2.1 Technical certification

The aim of *technical* certification is to confirm a pipeline's integrity and operational safety. It is normally performed by an independent third party, which issues a certificate of compliance,⁴ in line with the applicable (inter)national standards.⁵ NS2 AG was quoted as saying on 10 June 2021, that pre-commissioning process will start on 11 June 2021 and will be carried out 'with the goal to put the pipeline into operation before the end of this [2021] year'.⁶ NS2 AG had previously stated that it was planning to use a 'dry' pre-commissioning technique and this decision appears to be confirmed by the fact that the above water tie-ins have been performed on both lines. Unlike 'wet' pre-commissioning, 'dry' pre-commissioning does not involve a time-consuming hydrotest⁷ and hence would allow to complete the process in less than 3 months.

There were signs that dry pre-commissioning may have been ongoing over the summer, as suggested by (survey type) vessel activity along the NS2 route, registered by the Marine Traffic website. However, there had been little clarity on its progress until 4 October, when NS2 AG issued a press release, stating that the first line 'underwent pre-commissioning activities to assure pipeline integrity', which included 'the internal inspection by special devices (pipeline inspection gauges), as well as external visual and instrumental surveys of the pipeline'.⁸ NS2 AG has also announced that as of 4 October the gas-in procedure (filling the pipeline with gas) for the first line has also started. It has also stated that the pipeline is 'built and independently certified according to applicable technical and industry standards to ensure reliable and safe operations', while pre-commissioning is ongoing on the second line. On the same day, the Danish Energy Agency (DEA) has confirmed that one line of NS2 'can be put in operation, because Nord Stream 2 AG has fulfilled relevant conditions including conditions concerning certification'.⁹

It is not clear which entities might be involved in pre-commissioning and certification processes. Originally, the Norwegian company DNV GL, was envisaged to be the NS2 AG's main verification and certification contractor, with NS2 to be designed, constructed and operated according to the

⁴ Pre-commissioning is activities carried out before gas filling of the pipeline to confirm the pipeline integrity.

⁵ Some companies, like e.g., DNV GL have their own recognized specifications/standards.

⁶ <https://www.reuters.com/business/nord-stream-2-start-work-filling-first-line-with-gas-friday-2021-06-10/>

⁷ Nord Stream 2, ESPOO Report, April 2017.

⁸ Nord Stream 2, press release, 4 October 2021, <https://www.nord-stream2.com/media-info/news-events/gas-filling-of-the-first-nord-stream-2-string-started-153/>

⁹ Danish Energy Agency, Nord Stream 2 – pipeline B can be put into operation, press release, 4 October 2021, <https://en.press.ens.dk/pressreleases/nord-stream-2-pipeline-b-can-be-put-into-operation-3133391>

internationally recognised certification DNV-OS-F101, which sets the standards for offshore pipelines.¹⁰ DNV GL was set to verify all phases of the project and confirm that the pipeline is successfully pre-commissioned. However, in November 2020 DNV GL was quoted as saying that it decided to suspend its ‘verification activities linked to vessels with equipment serving the Nord Stream 2 project’,¹¹ and in January 2021 – verification activities for the *pipeline* itself, adding that ‘as the situation currently stands’ it ‘cannot issue a certificate upon the completion of the pipeline’,¹² because of the continued threat of PEESCA sanctions. Overall, 16 other companies, specialising in quality assurance, engineering, and insurance, such as Baker Hughes, Bilfinger, AXA Insurance and others have been reported as suspending their participation in the project around the same time.¹³ (The PEESCA envisages *inter alia* sanctioning of ‘foreign persons’ that have ‘provided services for the testing, inspection, or certification necessary or essential for the completion or operation of the Nord Stream 2 pipeline’.) While it is not entirely clear which entities have ultimately carried out pre-commissioning and certification services, the NS2 AG statement confirming the pipeline has been ‘independently certified’ and the DEA statement confirming fulfilment of all ‘conditions concerning certification’ suggest the technical certification challenge has been successfully resolved.

It is now for the German regional authorities of Mecklenburg-Vorpommern – the region where the NS2 pipeline arrives ashore in Germany – to accept the technical certificate, which has already been issued and submitted,¹⁴ thus allowing the pipeline to start flowing gas.¹⁵ Under the German Federal Mining Act, two permits are needed for pipeline construction and operation in EEZ – a permit by the Stralsund Mining Authority in Mecklenburg-Vorpommern (issued January 2018) and a permit from the Federal Maritime and Hydrographic Authority (BSH) in Hamburg (issued March 2018). Under the Decree on High-pressure Natural Gas Pipelines, the Stralsund Authority is also responsible for the technical examination and acceptance of the project prior to start of construction, prior to start of commissioning and after commissioning. Gazprom’s statement of 19 August saying it could supply 5.6 bcm of gas through NS2 before the end of 2021,¹⁶ appears to suggest that it is confident that, from a technical point of view, at least one line of NS2 might be ready to operate. NS2 AG statement of 4 October saying the first line has started to be filled with gas suggests this confidence is justified.

2.2.2 Regulatory certification

In November 2017, the EC had initiated a revision of the Gas Directive to make it applicable to pipelines from the third (i.e., non-EU) countries, aiming particularly at NS2. The amended Directive, which has entered into force on 23 May 2019, requires compliance of the operator of the German section of NS2 with unbundling, TPA and tariff (methodology) transparency provisions. The aim of the *regulatory* certification is to confirm the pipeline operator’s compliance with the Directive’s unbundling requirements (if certification is requested by an EU operator, Art. 10) and, additionally (if certification is requested by ‘a transmission system owner or a transmission system operator which is controlled by a

¹⁰ Nord Stream 2, ESPOO Report, April 2017.

¹¹ Norway-based DNV GL halts Nord Stream 2 vessel work on US sanctions: spokesman, Platts, 26 November 2020, <https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/112620-norway-based-dnv-gl-halts-nord-stream-2-work-on-us-sanctions-spokesman>

¹² Norway-based DNV GL halts Nord Stream 2 certification work on US sanctions, 4 January 2021, <https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/010421-norway-based-dnv-gl-halts-nord-stream-2-certification-work-on-us-sanctions>

¹³ Many other engineering and insurance companies have also left, Exclusive: Baker Hughes, AXA Group, 16 others quit Nord Stream 2 pipeline – US, Reuters, 24 February 2021, <https://www.reuters.com/article/us-usa-nord-stream-2-companies-exclusive-idUSKBN2AO285>

¹⁴ Gas injected into NS2, Danish energy regulator says pipeline can start operations, Gas Matters, 4 October 2021, Gas Matters, 4 October 2021.

¹⁵ Nord Stream 2 eyes operations before year-end as pipelaying completed, Platts, 7 September 2021.

¹⁶ Gazprom could supply 5.6 bcm of gas by Nord Stream 2 pipeline in 2021, Interfax, 19 August 2021, <https://interfax.com/newsroom/top-stories/72505/>

person or persons from a third country or third countries', Art. 11), that granting certification 'will not put at risk the security of energy supply' of the Member State and the EU. The national regulator is also obliged to ensure that in addition to the unbundling requirement, the operator complies with TPA and tariff (methodology) transparency requirements, although this is not part of certification process *per se*.

The national regulator is obliged to open a certification procedure and has the right to do so upon notification by the TSO, upon a reasoned request from the EC, or on its own initiative. On 11 June NS2 AG has submitted its application for certification at the BNetzA's request. On 13 September BNetzA announced that NS2 AG 'has now submitted all necessary documents for inspection' thus setting off a 4-month period from 8 September, within which BNetzA is obliged to produce a draft certification decision.¹⁷ It is understood that it is within this 4-month period that the German Federal Ministry of Economic Affairs would have to provide its assessment of the potential impact of certification on the security of energy supply, to be accounted for in the BNetzA's draft decision. It is also conceivable that the certification decision would have to include an energy solidarity assessment, following the CJEU OPAL exemption judgement of July 2021.¹⁸ This draft decision (which can be explicit or tacit) must then be notified 'without delay' to the EC, which is obliged to issue an opinion on it within 2 months (extendable by further 2 months if the EC decides to seek the ACER's view¹⁹), following which BNetzA has 2 more months for issuing a final certification decision. The certification process can thus take up to 10 months, with the final certification decision made in July 2022 at the latest. Notably, the certification decision only becomes effective once the whole procedure has been concluded.

Could gas flows start before certification is completed?

If the NS2 operator were to start flowing gas while the certification process is ongoing and absent of effective certification decision, this would constitute an administrative offence and the operator would be liable to incurring fines.²⁰ Therefore, normally, the NS2 AG would start flowing gas only after the certification process has been completed and certification has been granted – that is in summer 2022. However, from the gas supply perspective the winter 2021/22 looks anything but normal, and it is conceivable that BNetzA could indicate to the NS2 operator that it could start flowing gas *before* its certification process is completed and continue to do so on a time-limited basis to alleviate a supply shortage in Europe.²¹ This is especially pertinent as there is almost no additional firm capacity that has been offered for booking on other export corridors towards Europe. Alternatively, certification could be 'fast-tracked' with both BNetzA and the EC taking less time for assessment than the maximum period allowed by the *acquis*, followed by a swift start of gas flows – but this scenario appears less likely. Under these two scenarios, NS2 AG could start flowing gas in 2021 ahead of winter. Another scenario, under which no gas would flow via NS2 until summer 2022 when certification is completed, is also possible. Should the latter materialise, it would mean that Russian pipeline gas exports to Europe would be limited by the amount of firm capacity booked (or available for booking) on the existing export routes for as long as NS2 remains uncertified, thus also limiting Russia's potential contribution towards alleviating any European gas supply crunch over the 2021-22 winter period and beyond.

On 4 October – the day when NS2 AG announced it has started filling the pipeline with gas – BNetzA has announced that, since it cannot be ruled out that NS2 AG will put the pipeline into operation in the

¹⁷ Nord Stream 2 AG's application for certification in accordance with sections 4(a), 4(b) and 10 et seq EnWG, 13 September 2021, https://www.bundesnetzagentur.de/DE/Beschlusskammern/1_GZ/BK7-GZ/2021/BK7-21-0056/BK7-21-0056_Antrag.html?nn=361064

¹⁸ The CJEU has ruled that the principle of energy solidarity is justiciable and must be assessed *inter alia* as part of the exemption decision making process. See Yafimava, The OPAL exemption decision: a comment on the Advocate General's Opinion on its annulment and its implications for the Court of Justice's judgement and OPAL regulatory treatment, OIES, March 2021 and Talus, The interpretation of the principle of energy solidarity – a critical comment on the Opinion of the Advocate General in OPAL, OIES, April 2021.

¹⁹ It is understood that to date EC has never sought an ACER's view as part of certification process.

²⁰ Nord Stream 2 eyes operations before year-end as pipelaying completed, Platts, 7 September 2021.

²¹ Fulwood and Sharples, 'Why are gas prices so high?' OIES, September 2021.

near future, it wrote to NS2 AG, requesting it to provide information ‘without delay’ and, ‘if applicable’, to submit evidence that all regulatory requirements for the operation are met, in particular with regard to non-discriminatory network access, while also reserving ‘the right to launch supervisory or abuse proceedings’ immediately, should ‘doubts about its compliance’ not be dispelled.²² Whether this statement is an indication that flows could start prior to certification process completion if NS2 AG were to provide requested information, is an open question.

Could certification be conditioned on continued post-2024 Ukraine transit?

The German government’s position in respect of NS2 has been that some gas transit across Ukraine must be preserved if NS2 is to go ahead. Notably, in April 2018 Chancellor Merkel stated that ‘a Nord Stream 2 project is not possible without clarity on the future transit role of Ukraine’.²³ This clarity was achieved in December 2019 by means of concluding a trilateral Russia-Ukraine-EU transit agreement, which guaranteed preservation of – or payment for – transit across Ukraine during 2020-24 and envisaged a possibility of extension up to 2034. Germany has played an important role in helping to negotiate this agreement. In July 2021, as part of its joint agreement with the US – which was concluded after the US had issued a sanctions waiver for NS2 – Germany has committed to ‘utilize all available leverage to facilitate an extension of up to 10 years to the Ukraine’s gas transit agreement with Russia’.²⁴

Therefore, it is possible that Germany may attempt to condition NS2 certification on continued transit across Ukraine after 2024, when the existing transit agreement expires. Should this attempt fail, it could seriously complicate, if not derail, certification. For this attempt to be successful, Russia would have to see tangible benefits for itself from continued post-2024 transit through Ukraine, such as more flexible transportation conditions and a lower transit tariff, otherwise it may well perceive it as an attempt to obtain the same concession twice. The parties’ ability and willingness to meet each other half-way would certainly make certification more straightforward.

Certification model: ITO or OU?

Nord Stream AG has applied to be certified as an Independent Transmission Operator (ITO)²⁵ – one of the three unbundling models allowed under the amended Gas Directive. The ITO model allows a pipeline operator to remain a part of a vertically integrated undertaking (VIU), provided the applicable safeguards are in place. In 2020, the NS2 AG shares have been transferred from PJSC Gazprom to LLC Gazprom International Projects (a 100% transportation subsidiary of Gazprom).²⁶ This transfer can be interpreted as a step towards fulfilling the Directive’s unbundling requirements under the ITO model. BNetzA could certify NS2 AG as an ITO, subject to inter alia an introduction of rigorous safeguards against any potential conflict of interest between transmission and production/supply activities having a negative impact in the EU.

The ownership unbundling (OU) model, which would require the pipeline to be sold off, would unlikely be politically acceptable to Russia. Furthermore, it could also make an OU operator an easy target for US sanctions. An NDAA 2022 amendment, passed by the House of Representatives of the US

²² Gas injected into NS2, Danish energy regulator says pipeline can start operations, Gas Matters, 4 October 2021, EXCLUSIVE-Germany seems competition assurances over Nord Stream 2 gas link, Reuters, 5 October 2021, <https://www.reuters.com/business/energy/exclusive-germany-seeks-regulatory-assurances-nord-stream-2-cant-rule-out-2021-10-04/>

²³ Merkel says Nord Stream not possible without clarity for Ukraine, Reuters, 10 April 2018, <https://www.reuters.com/article/us-germany-ukraine-idUSKBN1HH1KW>

²⁴ Joint statement of the United States and Germany on support for Ukraine, European energy security, and our climate goals, 21 July 2021, <https://www.state.gov/joint-statement-of-the-united-states-and-germany-on-support-for-ukraine-european-energy-security-and-our-climate-goals/>

²⁵ Nord Stream 2, press release, 24 June 2021, <https://www.nord-stream2.com/media-info/news-events/application-for-precautionary-certification-as-independent-transmission-system-operator-submitted-150/>

²⁶ Gazprom, Financial Report 2020.

Congress in September 2021, has stipulated an imposition of sanctions ‘with respect on any entity responsible for planning, construction, or *operation* of the Nord Stream 2 pipeline or a successor entity’, while also removing the Biden Administration’s right of issuing a sanctions waiver.²⁷ Certification of NS2 AG as an ITO, allowing to preserve the NS2 pipeline ownership within Gazprom, would provide an iron-clad guarantee against sanctions, should this amendment ever enter into force.

2.3 Conclusion

This author’s answer to the question posed in the title of this section is as follows. As the obstacles in respect of technical certification of NS2 appear to have been overcome, the pipelines could start flowing gas to Europe in 2021 under two scenarios (the first of which appears to be more realistic than the second):

- on an *ad hoc* and time-limited basis to alleviate the European gas supply crunch, if cleared by BNetzA, while NS2 AG regulatory certification is pending, or
- on a permanent basis with NS2 AG regulatory certification being ‘fast-tracked’ by BNetzA, the German government and the EC.

The question of guaranteeing continued post-2024 Ukraine transit is likely to become a factor, influencing whether either of these two scenarios will materialize.

Another scenario, under which technical certification is not resolved in 2021 and/or BNetzA, the German government and the EC conduct regulatory certification using the full length of time while indicating that any pre-certification flows would be penalized, would see no flows via NS2 at least until summer 2022. Under this scenario Russia’s pipeline gas exports to Europe (excluding Turkey) would be limited by the amount of *firm* capacity booked (or available for booking) on the existing export routes *for as long as NS2 capacity remains unavailable* – that is ~170-175 bcma (including up to 45.5 bcm via Ukraine²⁸) – thus significantly limiting its contribution towards alleviating any European gas supply crunch in winter 2021/22 and European gas supply in the mid- to long-term.

Dr Katja Yafimava, Senior Research Fellow, OIES

²⁷ US lawmakers make last-ditch effort to reverse Biden’s waiver of Nord Stream 2 sanctions, RFE/RL, 15 September, <https://www.rferl.org/a/nord-stream-sanctions-united-states/31460890.html>

²⁸ 40 bcma booked under 2020-24 Ukraine transit agreement and ~5.5 bcma offered as additional firm capacity.

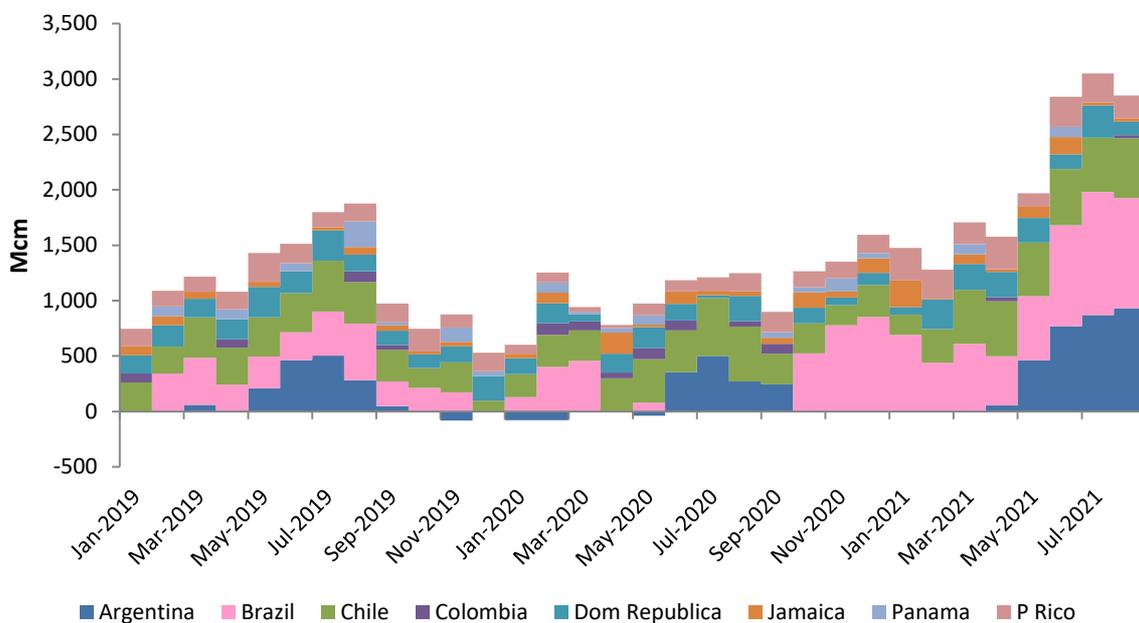
3. LNG demand in Latin America

3.1 Context

After being weak in 2020, as a result of the impact of the pandemic on the economy, LNG imports in Central America, Caribbean and South America have gained strong momentum in 2021, already surpassing imports in 2019.

In the period January-August 2021, LNG imports in the eight importing countries totalled 16.75 BCM, compared to 8.0 BCM and 10.9 BCM in the same period in 2020 and 2019. The increase in imports is driven mainly by Brazil, Argentina, and Chile, whilst Puerto Rico leads the pack in Central America and the Caribbean. (Figure 1). The three southern American countries imported 12.35 BCM versus 4.4 BCM in the other 5 countries.

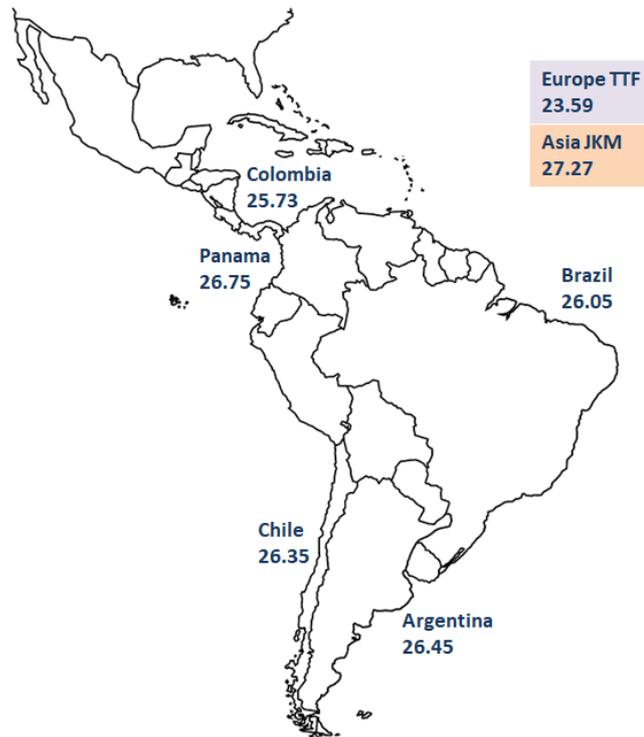
Figure 3.1: Monthly LNG imports in South, Central America & Caribbean (million cubic meters)



Source: IEA database 2021

The USA is supplying a significant part of the regional imports. According to the US Department of Energy, Brazil and Argentina were among the top five countries of destination for US LNG exports, with respectively 1.12 BCM and 0.65 BCM. In the 7 months of 2021 Brazil imported 56 US LNG cargoes, followed by Argentina with 29 and Chile with 22 US cargoes. As a result of the tightness in LNG supplies worldwide, South and Central America have seen spot prices rocketing, in line with recent price spikes in Asia and Europe.

Figure 3.2: LNG DES spot prices in Central & South America – 21 September 2021 (USD/MMBtu)



Source: Adapted from GNL Global

3.2 Brazil

In Brazil, the increase in gas consumption in 2021 has been driven by power generation and, to a smaller extent, industrial consumption. As of September 2021, Brazil installed power generation capacity reached 172.3 GW, of which 108.7 GW is hydro (63%) and 15.3 GW is gas fired capacity. In 2021 Brazil has been affected by the worst drought in 91 years. In early October 2021, the reservoirs levels in the main demand zones (Southeast/Midwest) have shrunk to only 16.6%, therefore the contribution of hydro in the supply mix has fallen to 25.6 GW (average). With the depletion of the reservoirs the operator of the system (ONS) is increasingly calling for gas and oil-fired power plants to meet the supply shortage.

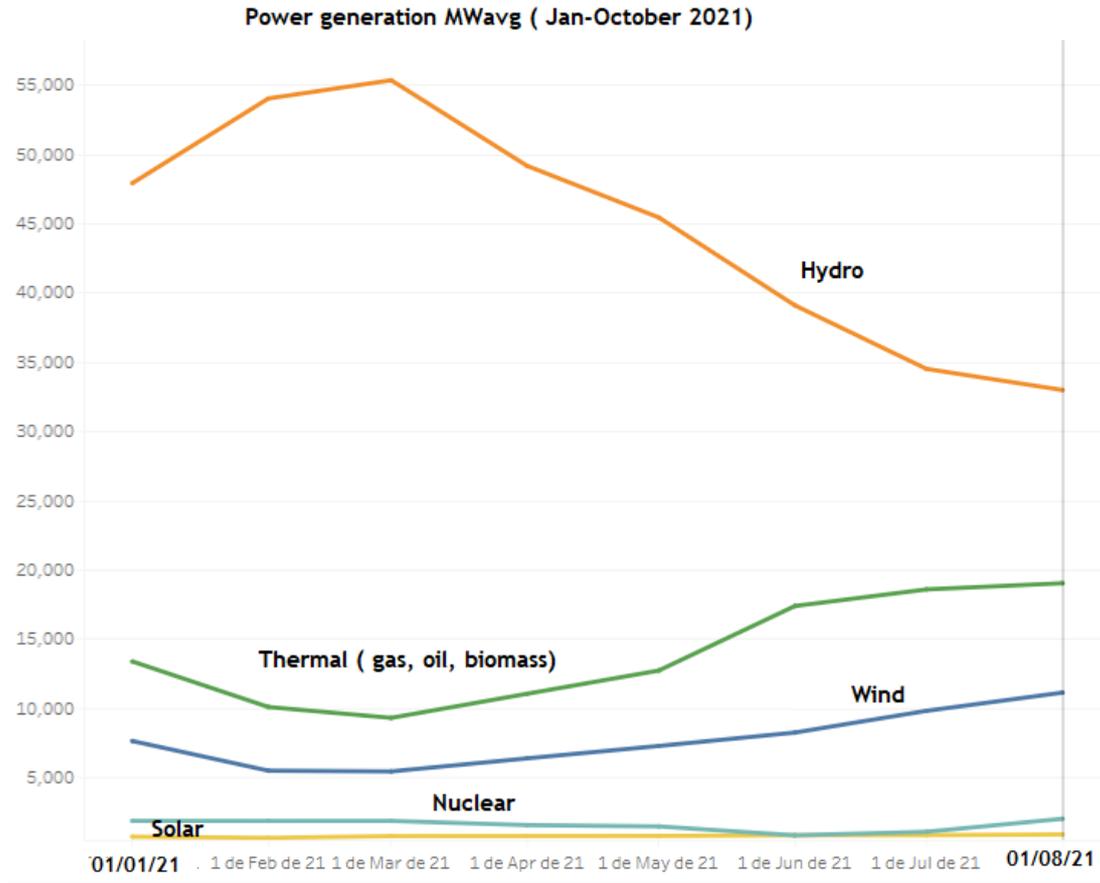
According to the IEA, Brazil imported 5.79 BCM of LNG in the period January-August 2021. This contrasts with 3.06 BCM in the whole year 2019. Although wind and solar power capacity is growing, the output is not sufficient to compensate the drop in hydro generation (see Figure 3 below). In the period August –September 2021 marginal costs have oscillated between USD 149-558/MWh.

As of October 2021, Brazil has 5 LNG terminals in operation, two of which are privately owned, respectively by New Fortress Energy (Sergipe state) and Gas Natural Acu (Rio de Janeiro state), with flexible LNG contracts dedicated to CCGTs. These terminals are not connected to the gas grid. Petrobras owns three grid connected terminals in Rio de Janeiro, Ceara and Bahia, the latter is being leased to Excelerate. Another four LNG terminals are being developed with commissioning planned for 2022-2024.

Brazil imports gas from Bolivia with contractual volumes of 20 MMm³/day, which have been fully drawn in 2021. Domestic gas supplies have been impacted by the maintenance of the Mexilhao platform in Santos basin, affecting the supply of up to 4.5GW of gas fired power capacity. According to Bloomberg, Brazil is expected to import 1.35 BCM of LNG in September, compared to 0.998 BCM in August. Taking into account the situation of the hydro reservoirs LNG imports will continue to be strong until the end of

2021, with the National Operator of the System predicting a supply gap of 2 GW in November, which could be filled by LNG and electricity imports.

Figure 3.3: Brazil power generation output by source Jan-Aug 2021 (MW avg)



Source: Brazil National Operator System (ONS)²⁹

3.3 Argentina

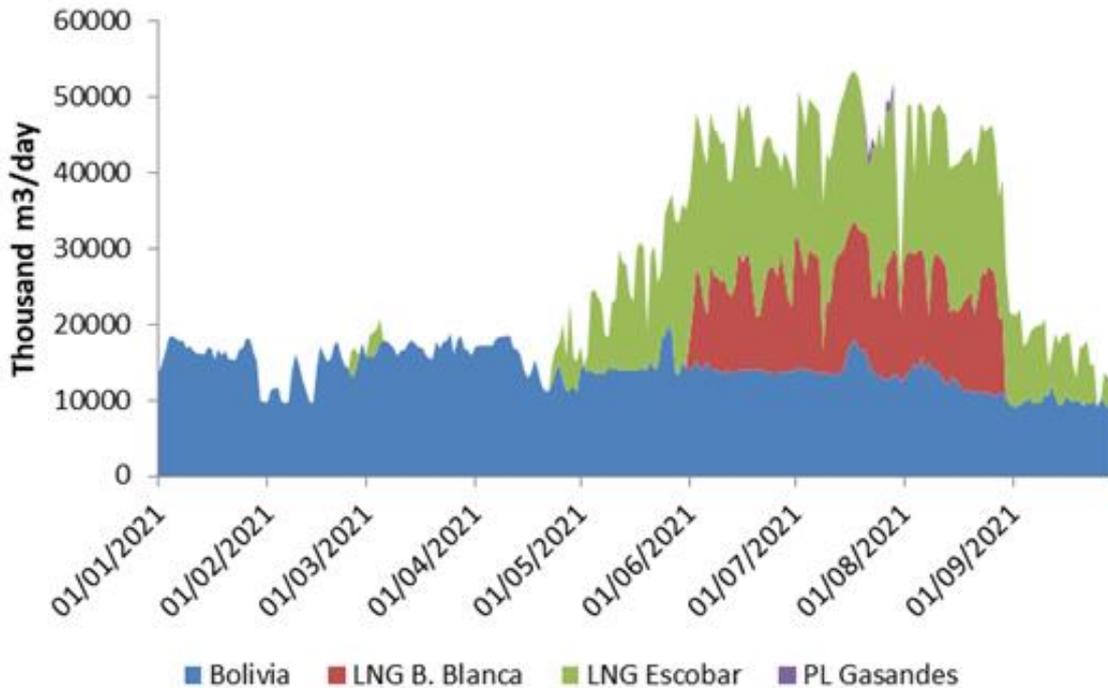
In November 2020, the Government of Argentina launched a new gas plan (Plan Gas.AR) aiming to guarantee supplies to priority sectors (power and captive distribution). Under the Plan provisions domestic gas producers will receive a guaranteed gas price of USD 3.50/MMBtu (USD 3.21 NPV 2021-2024). Despite an increase in fractures in the shale gas fields, production is ramping up slowly. Sales gas production Jan-Jun 2021 averaged 95.14 MMm³/day against 99.5 and 108.2 MMm³/day in 2020 and 2019.³⁰

Therefore, fearing gas and power shortages in the winter season (June-August), the government reactivated the mothballed Bahia Blanca LNG terminal for the period May-August 2021, with a short-term lease with Excelebrate's Exemplar FSRU. As highlighted on Figure 4, Argentina relies on imports from Bolivia during the year, and LNG imports in winter.

²⁹ http://www.ons.org.br/Paginas/resultados-da-operacao/historico-da-operacao/geracao_energia.aspx

³⁰ <https://www.gov.br/mme/pt-br/assuntos/secretarias/petroleo-gas-natural-e-biocombustiveis/publicacoes-1/boletim-mensal-de-acompanhamento-da-industria-de-gas-natural/2021/06-boletim-de-acompanhamento-da-industria-de-gas-natural-junho-de-2021.pdf/view>

Figure 3.4: Argentina gas and LNG imports (Jan-Sept 2021)



Source: ENARGAS (Argentina’s National Gas Regulator)³¹

Argentina’s power generation has also been impacted by the drought in the Parana River, which reduced the output of the hydro power plants Yacireta and Salto Grande. From January to September 2021 the imports of LNG totalled 3.6 BCM, whereas imports from Bolivia totalled 3.85 BCM. According to IEASA, LNG prices ranged from USD 6.35/MMBtu in January 2021 to USD 13.94 in July 2021, a significant increase in relation to 2020. ³² Argentina imported 56 cargoes from the USA, Qatar and Trinidad & Tobago.³³

As domestic demand slows down during the summer months, Argentina has signed interruptible supply agreements with Chile (6MMm3/day until April 2022) and Brazil (2 MMm3/day), the latter to supply the 350 MW Uruguayana power plant near the border Brazil-Argentina. If the drought intensifies in Brazil, Argentina could import additional LNG cargoes via Escobar to produce and export electricity to Brazil.

3.4 Chile

Chile is also suffering the effects of the drought and depends on LNG imports from two terminals (Quintero and Mejillones) coupled to seasonal pipeline supplies from Argentina. In the first half of 2021 Chile imported 29 LNG cargoes (19 in Quintero, 10 in Mejillones), compared to 22 in the first half of 2020. ³⁴ From January to August 2021 Chile imported 3.5 BCM, compared to 2.7 BCM in the same period in 2019.

As of July 2021, there is a significant shortage of precipitation compared to a normal year, with reservoirs showing deficits of 52%-66%. The power system is undergoing a period of stress, due to water scarcity, storm surges that make it difficult to discharge LNG and liquid fuels in the Chilean terminals and high fuel and LNG prices.

³¹ <https://www.enargas.gov.ar/secciones/transporte-y-distribucion/partes-diarios-exp-imp-consulta.php?tipo=importaciones>

³² <https://www.ieasa.com.ar/index.php/detalle-de-cargamentos-gnl-comprados-para-el-2021/>

³³ The Escobar LNG terminal has draft limitations and only takes half load cargoes

³⁴ <http://datos.energiaabierta.cl/dataviews/251635/numero-de-barcos-de-gnl-recibidos/>



As of July 2021, the contribution of hydro plants in the generation output was 15.3% compared to 29% in July 2020. In June 2021, the Chilean Chamber of Representatives voted a Bill prohibiting the operation and construction of coal fired power plants by 2025. The installed capacity of coal plants is 5.0 GW against 5.1 GW of gas fired plants. If the closure of coal plants goes ahead natural gas/LNG /diesel will be required to balance the system in the near term.

3.5 Conclusion

The increase in economic activity following relaxation of the pandemic confinement measures and a severe drought will boost LNG imports in Brazil at least until the end of the 2021. Chile is also impacted by the drought, but it is also facing the incidence of meteorological conditions (swells) which have reduced the availability of the Quintero terminal³⁵. The closure of the coal fired power plants by 2025 will present an opportunity for increased imports, including LNG and pipeline gas from Argentina. Domestic production in Argentina started to pick-up in the second half of 2021 and a new Gas Bill is being proposed to allow for exports of part of the domestic production, allowing producers to receive much needed foreign currency. Overall, in Central America and the Caribbean, Puerto Rico and Dominican Republic have seen an increase in LNG imports, following the completion of a pipeline linking the Andres LNG terminal with circa 750 MW of power capacity in the east of the country.

Ieda Gomes, Senior Visiting Research Fellow, OIES

³⁵ https://www.camport.cl/wp-content/uploads/2021/08/Informe-Marejadas-Camport-agosto-2021.pdf?utm_source=sendinblue&utm_campaign=2021_08_Informe_Marejadas&utm_medium=email&utm_campaign=Informe_marejadas&utm_id=Informe+Marejadas

4. Conclusions

The bull run of European gas prices reached dizzying heights in the third quarter of 2021, with TTF Front-Month prices just about reaching 30 USD/MMBtu (90 EUR/MWh). In this report, we have placed this bull run in the context of both dramatically rising gas prices in Asia and higher prices for both coal and carbon in Europe. While the growth in gas prices in Europe has been supported by a tight supply-demand balance – due to gas demand for space heating, year-on-year industrial growth, and particularly gas demand for power generation in the face of higher carbon-adjusted coal prices and lower year-on-year wind power generation, set against lower production and pipeline imports – it is the exposure to the pricing dynamics of the global LNG market that has provided additional impetus to the European price rally. Even though Europe has effectively helped to balance the global LNG market – where growth in demand has outpaced the static supply – by taking smaller volumes of LNG imports compared to 2019 (the last pre-COVID year), the fact that those LNG cargoes are often the ‘marginal molecule’ in European supply means that the price of those cargoes has a significant impact on European market prices.

While the surge in Asian LNG demand in 2021 has been widely reported, another significant factor has been the growth in LNG demand in South America, as analysed in this Quarterly Review by our colleague, Ieda Gomes. While some of this demand increase is likely to be temporary (such as that driven by lower hydropower generation in Brazil), some of that growth in demand may be more permanent (such as that related to the proposed phase-out of coal in power generation in Chile by 2025).

Bringing the focus back to Europe, in the midst of exceptionally high prices and a tight market, speculation has abounded regarding whether Gazprom has intentionally held back volumes from the European in order to gain leverage and ensure the launch of the Nord Stream 2 pipeline. Our analysis suggests that Gazprom may have been rather constrained by an inability to serve both its domestic customers and long-term contract counterparties in Europe while simultaneously replenishing its storage stocks in both Russia and Europe. This meant it was difficult to continue offering spot volumes for near-term delivery to Europe. However, the achievement of ‘full stocks’ in Russia by 1 November could free up volumes for export to Europe, and the question of how those volumes could be delivered is especially pertinent. It is in this context that our colleague, Dr Katja Yafimava, has assessed the remaining obstacles to the launch of Nord Stream 2. She concludes that while the issue of technical certification (proof that Nord Stream 2 meets applicable technical and safety standards) appears to have been resolved, the question of regulatory certification (the provision of permission to Nord Stream 2 AG to operate the pipeline under a set of given conditions) remains an open question, as we await a decision from the German regulator, the BNetzA.

The trends and issues of the third quarter are set to continue into the fourth quarter: While gas demand for power generation may soften as wind power generation in Europe picks up going into winter, this will surely be more than balanced by gas demand for space heating. If gas-intensive industries are forced to halt their operations because current gas prices are causing them to lose money on a variable cost basis, this load-shedding will also affect the European supply-demand balance. The European gas market may not loosen to any great extent, if we have a “normal” winter and could get even tighter with another cold winter. A key barometer will be the extent of storage withdrawals from now onwards. A slow withdrawal in the fourth quarter would significantly alleviate the pressure, reassuring the market that any cold spells in January and February could be accommodated relatively easily, with the required injections in the summer being much lower than this year. In contrast, significant withdrawals before the end of the year might lead the market to fear that another cold spell could empty storage very quickly and firm prices up long into 2022.

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