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Cancellation to curb US LNG exports in June

The pressure of global LNG oversupply and eroding sales margins could mean around 2m tonnes of US LNG offtake has been cancelled, the majority for June loading.

ICIS has learned so far that as many as 14 US offtakers, including global portfolio sellers, European traders and Asian offtakers have cancelled cargoes for June loading or have placed them under serious consideration.

Some sources said that as many as 30 cargoes have been cancelled.

As of 23 April, at least 21 cargoes were identified as cancelled by market sources; four from Freeport LNG and 17 from either Cheniere's Corpus Christi or Sabine Pass projects.

The notice date for June loadings for Cheniere offtakers was 20 April for June.

Some of the contracts have notice periods of 40 to 70 days, Cheniere said previously.

US LNG production has risen sharply in the last year and reached almost 5m tonnes in March, according to LNG Edge.

At Corpus Christi and Sabine Pass Cheniere's trading subsidiary, Cheniere Marketing, could in theory still decide to produce a cancelled cargo and market it themselves or swap with another offtaker. But the sheer number of aggregate cancellations in the month of June alone would make it difficult for Cheniere Marketing to place them into a global market with such dismal price margins and falling demand for June and July. For Freeport LNG, the offtakers have a shorter notice period given that they have the ability to bring in their own feedgas.

There has been less visibility on the decisions at Cameron LNG, where the offtakers are Japanese trading houses Mitsui and Mitsubishi and France's Total, and at Cove Point, where Sumitomo and India's grid operator GAIL have been lifting minimum contractual volumes.

MAY LOADINGS

Some market sources have said as many as 10 cargoes for May loadings also are likely to be cancelled, although this has not been confirmed at source.

Around the time of the cancellation notice



Falling margins cause US cargo cancellations

period on 20 March for the Cheniere contracts, only EDF was heard to have cancelled an 18 May loading from Corpus Christi.

Given Freeport LNG's shorter notice period, it is possible that offtakers could give shorter notice for a May loading, and in which only the operator would be informed.

MARGINS

Margins for US LNG sellers have eroded in recent months.

The ICIS East Asia spot Index for June was at a record low price of \$1.75/MMBtu on 28 April, driven down by low demand and additional spot cargoes offered by tender.

European and Asian gas and LNG price premiums to the US Henry Hub have effectively disappeared in July and August and only begin to make a clear improvement into the fourth quarter.

While US cargo cancellations and production shut-ins are widely seen as one way of balancing the global market, other producers are under close scrutiny. Planned summer maintenance may be extended, with some gas directed more to domestic markets rather than for LNG export.

EU PRICE ANALYSIS

On 21 April, major European gas hubs dipped below the US Henry Hub typically seen as global price floor.

This has sustained throughout week 18 with

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British NBP contracts delivering out to September all below their US equivalent.

The average NBP front-month premium to Henry Hub was \$0.94/MMBtu in March.

The Dutch TTF contract also dipped below the US benchmark for June and July delivery and highlights how weak European gas markets have become. The equivalent TTF May premium to Henry Hub in 2019 was \$2.30/MMBtu and \$4.20/MMBtu in 2018.

Structural price dynamics indicate how European hubs have become increasingly tuned to the North American gas market.

This is reflected in the Henry Hub price movements as Europe moves away from regional supply and gains more gas from across the Atlantic. Supply from North America has become dominant in Europe, often overtaking Qatari LNG supply.

US LNG exports averaged 2.63mt per month in the first quarter, a three-fold growth rate when compared to the same period in 2019.

In the near term the TTF forward curve remains depressed and below the marginal cost of US LNG exports which will result in further curtailments of transatlantic LNG shipments.

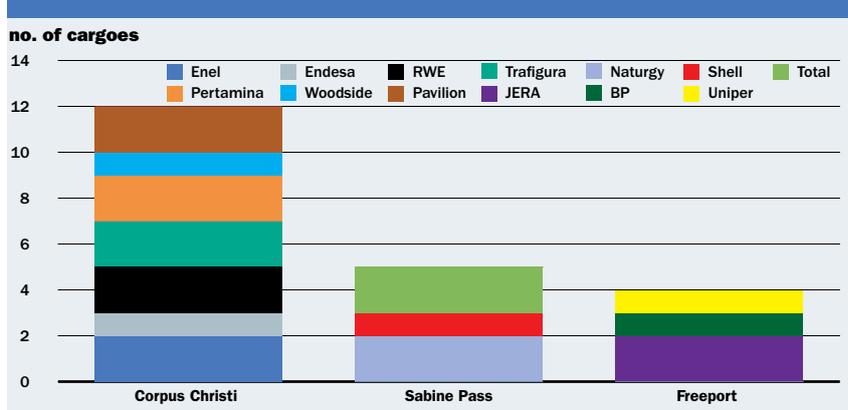
HESITANT PRICE RECOVERY

The structural tightening of the LNG markets in 2021 will likely lead to a price recovery across European gas markets in that year. Gas contracts delivering across 2021 will likely maintain a strong premium over 2020 contracts amid lower supply hitting the market.

However, with the sustained risk of further US LNG cargo cancellations occurring throughout the summer some price strength within this year could be expected. This is combined with delays to LNG project start-up dates which were initially set to come online in 2020.

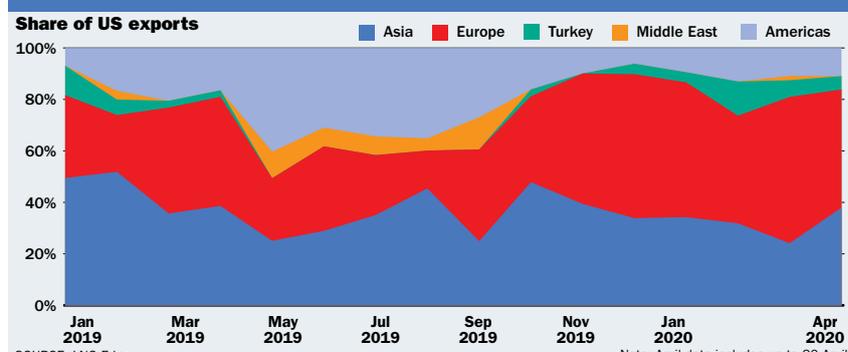
In terms of nameplate there is 8.3mtpa in the pipeline for 2021, which is 34% less than capacity due by the end of 2020, LNG Edge data showed. Of the 12.54mtpa due to be

ESTIMATED JUNE CARGO CANCELLATIONS BY US PLANT



SOURCE: ICIS Note: this list is subject to change due to notice provisions and confirmation of market information.

EUROPE'S ROLE CONTINUES AS KEY US LNG DESTINATION



SOURCE: LNG Edge Note: April data includes up to 20 April.

online by the end of the year 80% of this supply will be provided by North America with Europe continuing to be a primary destination of Atlantic LNG volumes.

This will sustain the downward pressure on European gas contracts, which have broken new grounds recently.

The TTF Q4 '20 was assessed €3.75/MWh above the Q3'20 contract on 29 April which could be the first price indication of some recovery in the market but may just be a

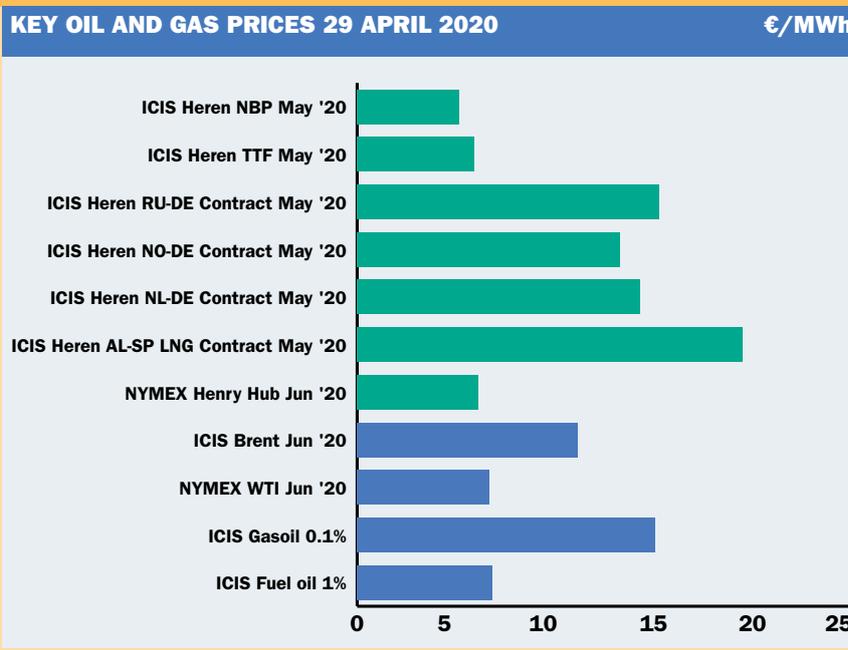
reflection on how cheap the near curve is.

However, the Year 2021 contract was priced at €12.038/MWh on 29 April, €1.25/MWh higher than the Q4 '20 contract which is more suggestive of the Atlantic supply situation.

From the US, an additional 4.5mtpa is expected to be added which is coming from Corpus Christi liquefaction train 3. This is compared to 10.14mtpa that was added from North America in 2020 and 24.28mtpa in 2019. **Ed Cox, Ruth Liao and Arun Toora**

PRICE DATA

KEY OIL AND GAS PRICES 29 APRIL 2020		
Contract	€/MWh	\$/MMBtu
ICIS Heren NBP May '20	5.146	1.638
ICIS Heren TTF May '20	5.900	1.878
ICIS Heren RU-DE Contract May '20	15.277	4.960
ICIS Heren NO-DE Contract May '20	13.283	4.313
ICIS Heren NL-DE Contract May '20	14.294	4.641
ICIS Heren AL-SP LNG Contract May '20	19.513	6.336
NYMEX Henry Hub Jun '20	6.119	1.948
ICIS Brent Jun '20	11.158	3.552
NYMEX WTI Jun '20	6.703	2.134
ICIS Gasoil 0.1%	15.071	4.796
ICIS Fuel oil 1%	6.858	2.183





French nuclear outages to add 14bcm to gas demand in 2020

Europe will require an additional 14 billion cubic metres (bcm) of natural gas for power generation in 2020 to offset reduced French nuclear availability, according to an [ICIS analyst forecast](#).

On 16 April, EDF revised down its French 2020 nuclear output projection from 375-390TWh to just 300TWh, as well as forecasting a range of 330-360TWh for both 2021 and 2022.

The following week grid operator RTE announced a total of 42 outages on EDF's nuclear reactors.

Low gas prices mean there will be an in-

crease in the use of gas-fired plants in France and surrounding countries. There will also be an increase of over 5bcm/year in 2021 and 2022, compared to the expectation before the new EDF outage schedule was announced.

In France, 9.84bcm of gas is expected to be used for electricity production this year, an increase of 3.75bcm from the original forecast.

The impact of the nuclear reduction will be felt across northwest Europe however. In the south of Europe, Spanish and Italian CCGT offtake should increase by 2.8bcm and 2.0bcm respectively. Combined German,

British, Dutch and Belgian gas burn should increase by just under 5bcm.

FRENCH FUEL-MIX

Average French nuclear generation was 46.41GW during the first quarter of the year, down from 51.74GW year on year.

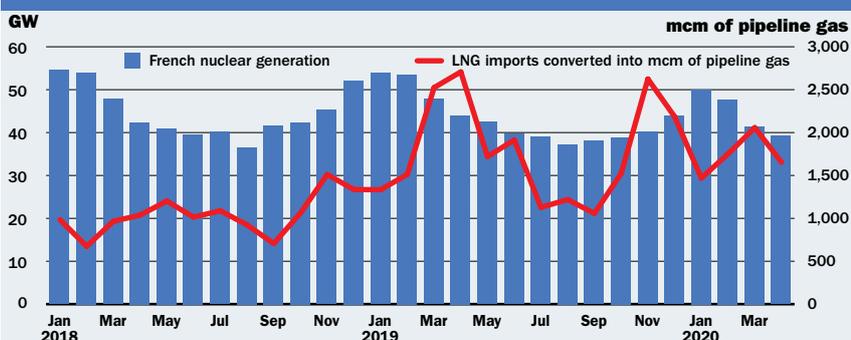
CCGT output dropped by an average of 0.5-5.5GW due to the drop in energy demand due to lockdowns driven by the pandemic.

As total share of the power mix, nuclear has accounted for 67.5% year to 1 April with onshore wind at 9.3% and gas at 8.1%.

During the same period last year, nuclear power output represented 73.2% of the entire French power stack.

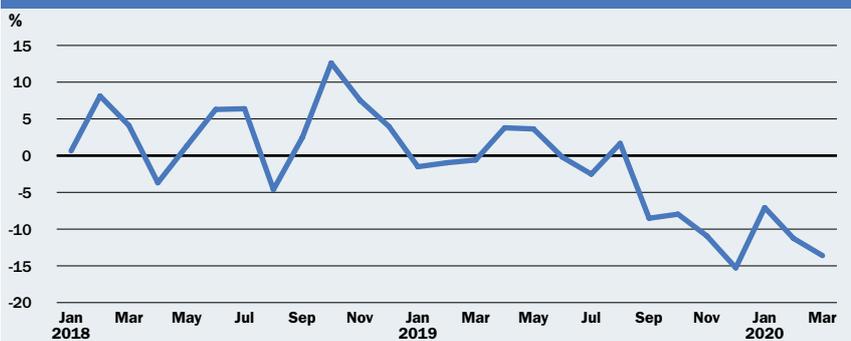
With European countries slowly emerging from lockdown and French nuclear availability set to be curtailed for the remainder of 2020 it is likely that gas power generation as a percentage of the total fuel mix will rise.

AVERAGE FRENCH NUCLEAR GENERATION AND LNG SUPPLY



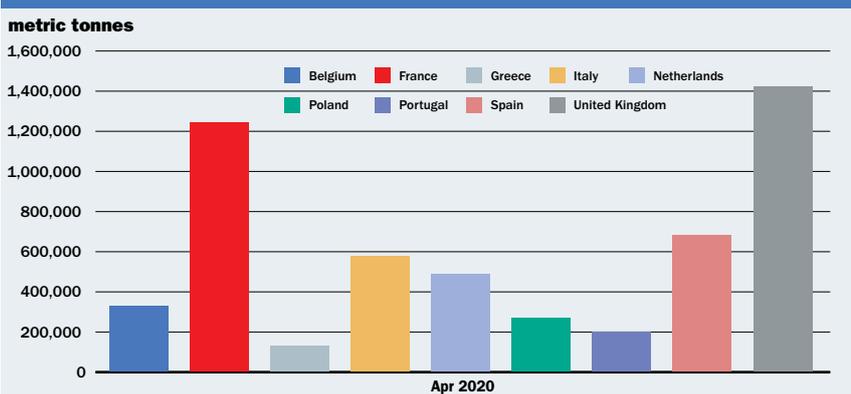
SOURCE: RTE, LNG Edge

FRENCH NUCLEAR CHANGE YEAR ON YEAR



SOURCE: RTE

LEADING EUROPEAN LNG IMPORTERS IN APRIL



SOURCE: LNG Edge

IN DETAIL

- French 2020 nuclear output projection revised down to 300TWh
- The impact of the nuclear reduction will be felt across northwest Europe
- Combined German, British, Dutch and Belgian gas burn should increase by up to 5bcm

GLOBAL SPREADS SQUASHED

Price indications in both the Atlantic and Pacific have entered uncharted territory in recent weeks on the back of intense selling.

Spreads to between Asian, US and European benchmarks have been pressured to near parity and markets such as the Dutch TTF and British NBP have gone below the US Henry Hub - typically seen as the global price floor.

Poor LNG export economics will lead to further US LNG cancellations during the second quarter of the year with June and July carrying the most risk for cargo cancellation.

This could provide some short-term relief in terms of the oversupply in the Atlantic with many expecting the market to rebound sharply beyond the third quarter.

FRENCH STORAGE

France is a major storage holding nation with a capacity of 12.68bcm accounting for around 13% of Europe's injection space.

French storage levels were sitting at 29% at the start of the gas summer, providing ample room for strong gas offtake into the country.

A cheap prompt relative to the curve has encouraged injections at a fast pace with fullness reaching 41.5% by 20 April.

With the French PEG May and June priced around €1/MWh higher than the Q3 '20 contract, shippers will be incentivised to front-load injections towards the start of the summer. This could lead to full storage sites well before the end of the summer.

Laura Mendes & Arun Toora



LNG SPOTLIGHT

Global oversupply pushes LNG to Europe via Britain

Global coronavirus lockdowns have caused more LNG vessels to redirect to Britain, weakening the British gas NBP market and leading to substantial discounts to mainland European hubs.

While prices remain low on account of weakened demand, Britain has little choice but to either inject volumes into storage or export to the continent.

BRITAIN ABSORBS LNG OVERSUPPLY

Between 1 March to 20 April, Britain received 37 laden LNG cargoes.

This represented an increase of 27% versus the same period in 2019 as other countries rejected cargoes due to weak demand that was then exacerbated by measures implemented to slow the coronavirus spread.

On 25 March India, a key LNG demand centre, went into nationwide lockdown pushing more Qatari vessels to Europe.

Of the 10 laden cargoes due to arrive in Britain by 12 May, seven are Qatari, data from LNG Edge showed.

Also in March, two vessels from Yamal transferred cargoes at the Zeebrugge terminal. Rather than reload vessels bound for India or China, low Asian prices and an inability to absorb the LNG meant the volumes went instead to Britain.

On 20 April, high LNG sendout caused the British system to open 28 million cubic metres (mcm) long, forcing network operator National Grid to perform a locational balancing action at Milford Haven where the Dragon and South Hook LNG terminals are situated.

The high level of sendout from the two terminals had caused a bottleneck in the grid.

DEMAND DESTRUCTION

While LNG arrivals have surged, demand has plummeted.

Between 1-20 April, total demand for natural gas in Britain was 4 billion cubic metres (bcm), 17% lower than the five-year average during the same period.

Lockdown measures have forced businesses, airports and schools to close. Demand for natural gas is likely remain below average until these establishments reopen.

STORAGE AS FLEX

In response to low demand and the flood of LNG arrivals, shippers have injected record volumes into storage sites since the start of the gas summer.

Stocks rose from 18% to 50% full between 4-20 April.

If storage sites continue to rise at this rate then stocks could be near-full by the middle of May. In contrast, by 20 April 2019 reserves were 22% full.

EXPORTS TO MAINLAND EUROPE

On 20 April following the bottleneck at Milford Haven, the NBP Day-ahead dropped to 10.413p/th, its lowest settlement figure since October 2009.

This widened the contract's discount to its equivalent on the Zeebrugge hub to 4.225p/th, according to ICIS assessments.

The NBP Day-ahead discount to the Belgian Zeebrugge hub during April had meant that shippers were utilising nearly all firm booked capacity on the IUK, information from EntsoG showed.

The wider discount, however, caused a spike in export nominations from 17mcm on 20 April to 29mcm on 21 April, according to ICIS-collated data, exceeding monthly capacity booked on the IUK pipeline.

Exports should continue throughout the summer months.

On 1 April, the discount between the front-month NBP contract and its Dutch

and Belgian equivalents was 1.54p/th and 0.3p/th respectively.

By 20 April, the NBP May '20 contract was trading at a 2.1p/th discount to the Zeebrugge hub, while the discount to the TTF was almost 3p/th below.

According to EntsoG, 17mcm/day of firm capacity has been booked on the IUK pipeline during May, while in June EntsoG data showed an increase to 19mcm/day.

On the Dutch BBL, 6mcm/day and 11mcm/day of firm capacity has been booked for May and June.

However, total physical flows could be much higher, with volumes to the Netherlands reaching 15mcm/day in April already despite just under 5mcm/day of firm capacity booked across the month.

FUTURE SUPPLY AND DEMAND

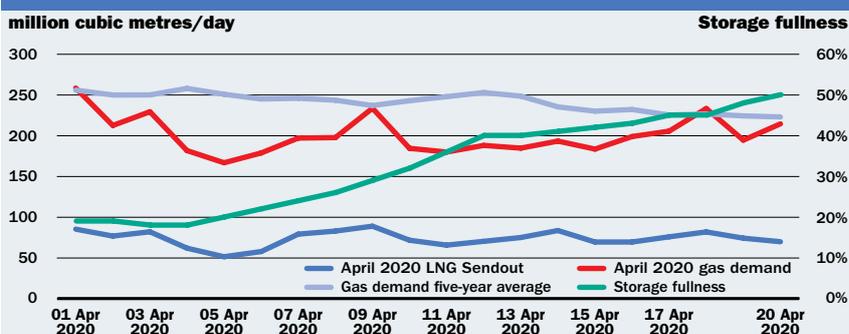
That said, over the next two months, demand could increase in Britain if lockdown measures are eased.

Moreover, if large Asian economies ease lockdowns then Qatari vessels may reroute to the region, easing the oversupply.

On 21 April the NBP front-month dealt at 12.75p/th, around \$1.58/MMBtu, whereas the US Henry Hub equivalent was trading above this figure at \$1.85/MMBtu.

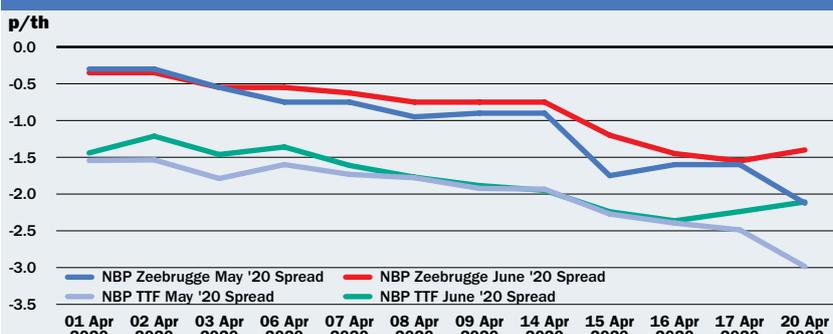
If prices on the NBP remain at a discount to the US, LNG imports from across the Atlantic will be unsustainable. **Jake Stones**

UNRELENTING LNG PRESSURES BRITISH STORAGE INJECTIONS



SOURCE: LNG Edge, ICIS

NBP M+1 AND M+2 DISCOUNT TO MAINLAND EUROPE WILL DRIVE STRONG EXPORTS



SOURCE: ICIS



ALAMY

Trans Siberian Express

Gazprom's supplies to China via the Power of Siberia 2 pipe may still be a decade away but the new route creates opportunities for both parties willing to brave the steppes of Mongolia to find a meeting price point

The new route for Russia's Power of Siberia 2 gas pipeline to China via Mongolia may give exporter Gazprom a strong competitive edge in the long run.

The project aimed at supplying natural gas to China from fields in western Siberia is moving to the [pre-investment stage](#) after Russian President Vladimir Putin gave the green light to the state-owned gas producer on 27 March.

Instead of entering China from the far west, over 3,200km away from Beijing and where central Asian pipeline gas enters China, Russian gas would arrive just 560km away from the capital, in the most populous region where demand is the highest and expected to grow.

In its investor day presentation, Gazprom showed plans to launch the pipeline in 2030, but experts said price talks with China can take years, even decades. Although price negotiation with China is still likely to be tough the stakes are high for all the three countries involved.

Russia's largest reserves are located in west Siberia in the Yamal peninsula and already feed the European Union.

Connecting these giant reserves would not strictly speaking put Gazprom in a position of swing supplier. But it would give the gas giant flexibility to send volumes additional to those already committed to long-term contracts in Europe and China.

Securing its position in Asia may also help the Russian state-owned producer compensate for a potential drop in EU demand – Russia's

primary export market - as the EU strives to become carbon neutral by 2050.

COMPETITIVE ADVANTAGE

Compared to the route crossing the Russian-Chinese western border, the one via Mongolia would be shorter and lead to China's most populated area.

This reduces construction and transportation costs and so price negotiations can start lower.

"The choice of route makes an agreement with CNPC easier to achieve, due to reduced delivery distance inside China. With reduced transportation costs, CNPC might be willing to agree on a slightly higher price," according to Jack Sharples, researcher at the Oxford Institute for Energy Studies (OIES).

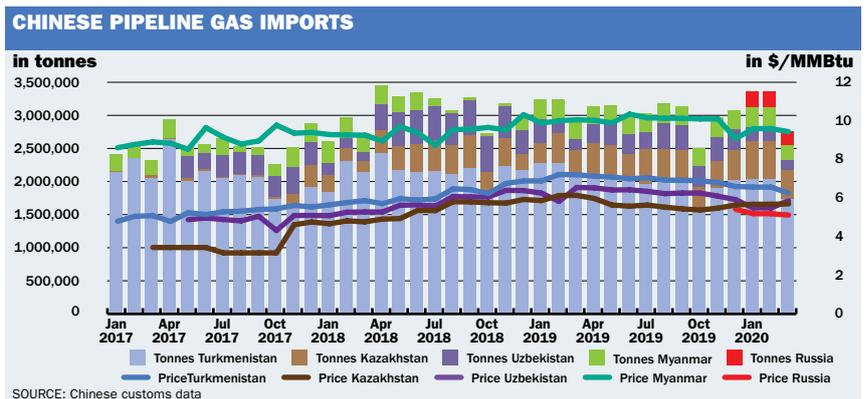
This new route also allows Russian gas to

be more competitive against China's other pipeline supplies.

China's largest pipeline imports currently come from Central Asia. Central Asian pipeline gas sourced in Kazakhstan, Uzbekistan and Turkmenistan cost an average \$6.28/MMBtu in 2019, Chinese customs data showed.

Upstream production costs on Russia's Yamal peninsula are around \$0.50/MMBtu, and this will have gone down somewhat after the recent devaluation of the rouble, according to James Henderson, director of the natural gas research programme at OIES. There is a further \$0.40-50/MMBtu of Mineral Extraction Tax to add.

Russia will also face lower competition from LNG as the vast majority of Chinese import terminals are located over 1,200km south of Beijing. "Chinese buyers have a range of



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oil-indexed LNG contracts. Slope prices to oil vary, with several in a range of 13-14.5%. Given the falling price of oil these contract prices will fall sharply later in the year. At \$60/bbl oil this would mean a price range of above \$8-9/MMBtu with a small constant. At \$25/bbl these prices could fall below \$4/MMBtu," according to Ed Cox, global LNG editor at ICIS.

Gazprom has been bullish regarding its ambition to increase sales in Asia. CEO Alexei Miller told Putin in a recorded conversation published on Gazprom's website that supplies to China via Power of Siberia 2 may total up to 50 billion cubic meters (bcm) per year, almost double the volumes preliminary agreed. Gazprom and China's CNPC agreed in principle on a 30bcm/year contract for this route. A source from CNPC told ICIS in early April that "CNPC will not absorb more gas that is higher than the agreed 30bcm, given the current low market price levels".

Chinese demand is expected to grow in the long term, as its commitment to environmental policies, including [coal-to-gas switch](#) holds firm despite the economic disruption caused by the coronavirus.

Russia may also be counting on creating gas demand in Mongolia, which relies on coal for 90% of its electricity production and where air pollution, particularly in capital Ulaanbaatar, is a significant public health problem.

CHINESE DEMAND

According to the scenarios in the International Energy Agency's (IEA) 2019 World Energy

Outlook, published before the coronavirus outbreak, China is set to consume between 497 and 655bcm by 2040.

"Gas demand more than doubles over the next two decades, rising by 370bcm, more than the rest of developing Asia combined. There is an ongoing strong drive to use gas to reduce residential and industrial coal demand to improve air quality and reduce CO2 emissions.

"Although gas competes with electricity and the direct use of renewables in displacing coal in these sectors, its market share in industry and heat demand for buildings more than doubles over the period to 2040," the report says.

Chinese domestic production could reach 306bcm in 2040, the IEA estimates. The Central Asia-China pipeline will have a total capacity of 85bcm per year when the 30bcm fourth line is built. China can receive another 12bcm per year via its pipeline with Myanmar. Russia's

capacity, there will still be a gap of at least 56bcm and up to 214bcm to be filled. This gap can be met with additional Russian pipeline volumes and LNG.

CHINA EASIER TO CONVINCE

Mongolian transit became a possibility as China grew more confident in its political power.

"Before, China refused the Mongolian route option for fear of becoming dependent on the transit country. But now China is a very powerful force and so it considers it can withstand any attempt from Mongolia to blackmail it with reliable transit," according to Igor Yushkov, expert of the National Energy Security Fund and the Financial University under the Government of the Russian Federation.

In addition, the trade war between the USA and China reinforced the need for Beijing to diversify supply sources and decrease its reliance on potentially unstable and unreliable routes.

The Malacca Strait carries around half of

Gazprom will have flexibility only if it has any spare production and transportation capacity

Power of Siberia pipeline will send 38bcm as per contracted. All this represents 135bcm of pipeline import capacity.

When subtracting Chinese domestic production from the expected demand, we see a gap between 191-349bcm to be filled with imports. Given China's 135bcm pipeline import

the world's trade and is a choke point for energy tankers delivering China and Japan. As such, the shipping route is a regular target for pirates. Three countries share ownership of the strait, which adds to the tensions in the region. Central Asian pipeline gas runs from Turkmenistan to China and the fourth line will

RUSSIAN PIPELINE ROUTES TO CHINA



Source: Gazprom

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cross Tajikistan. Both Turkmenistan and Tajikistan share a border with Afghanistan, which means the risk of regional destabilisation is real, Yushkov said.

China's current energy reform to reduce the share of coal in its energy mix increases demand for gas, but increasing LNG supplies via the Malacca Strait is an undesirable scenario, he added.

"The more China develops, the worse its relations with the USA, as Washington sees in Beijing a global political rival," Yushkov added.

In this context, the supply routes to receive Russian pipeline gas and LNG from the Yamal and Gyda peninsulas in the Arctic are harder to block and a preferable option, Yushkov said. The Arctic route is also much shorter.

"It takes 17-19 days for a Yamal vessel to reach China via the northern sea route, whereas it would take at least a month or even longer if it went via Europe and the Suez Canal," according to Olumide Ajayi, LNG analyst at ICIS.

RUSSIA MORE LIKELY TO COMPROMISE

As the main source fields for the Chinese pipeline have already developed to supply the European market, there is no additional costs for the production part of the project.

There is also already a pipeline network in place between the Yamal peninsula and the Altai region bordering Mongolia, which limits pipeline construction cost.

Russia could also easily build the Mongolian section, since it is more financially capable than Mongolia and has the required engineering expertise. The terrain in the Mongolian regions crossed by the pipeline is relatively flat desert steppes - a less costly than the other routes.

In exchange for building the Mongolian section, Russia would be able to negotiate a lower transit fee, like it did with Poland for the Yamal-Europe pipeline.

Gazprom financed the construction of the Yamal-Europe pipeline and to date Poland has received extremely low payments under a long-term transit contract, Yushkov said. Gazprom also retained a 48% stake in the Yamal-Europe pipeline.

This route creates a connection between Russia's largest reserves in the Yamal peninsula and east Siberia. This offers more flexibility and enhances the reliability of domestic supplies, an objective that has long been in Gazprom's plans, as [Miller and president Vladimir Putin discussed](#) in late March.

That will also allow Gazprom to more efficiently and timely respond to fluctuating key markets – the EU and China, EastWest Institute fellow Danila Bochkarev told ICIS.

The role of gas and decarbonised gases in the bloc's energy transition is highly uncertain. Brussels prefers the electrification of the EU network wherever possible. The European Investment Bank will stop financing fossil fuel projects in 2021. The European Central Bank could align its lending policy with regulation which limits the role of gas in the energy transition.

Higher volumes to China would help Russia diversify its export portfolio, which could potentially ease tensions with the USA and EU member states like Poland and Baltic nations keen to block Russia's attempts to keep or grow its market share.

In 2019, over 95% of Gazprom's exports went to the west and less than 5% to the east, but as the company turns to the east it plans to adjust that balance to 70% west and 30% east, the [company investor day presentation](#) showed.

POTENTIAL MARKET IN MONGOLIA

The Mongolian capital Ulan Bator, home to nearly half of the Mongolian population, ranks among the most polluted cities in the world.

Mongolia was the seventh largest coal exporter in the world in 2018, according to the [IEA 2019 coal report](#).

Gas could help reduce coal use but a is likely to be limited by the weak Mongolian economy and the poverty of its people.

Coal remains the most affordable heating fuel for the part of the population that pollutes the most. Poor suburban districts of Ulan Bator can only afford the most polluting raw coal to heat their yurts, and for those who cannot afford coal they burn tyres and other scraps.

High population density in Ulan Bator would limit costs of building gas infrastructure from scratch because the new network would only be in one city. But the construction of a gas network remains unlikely as local authorities have failed to build even the most basic infrastructure, such as water and sewage pipes in yurt districts. These are the poorest districts and sit around the city centre as more and more nomadic families move from the Gobi steppes to the capital city.

The Mongolian economy grew by 5.1% in 2019, according to the Mongolian National Statistics Office. But the growth is very fragile because it is driven by a major copper and gold mining project, Oyu Tolgoi, according to a source. "It is not a healthy growth of the economy. As the whole mining industry is based on 'boom and bust' cycles - poor management of a sudden wealth and without any savings for rainy days. Mongolia is not in the best shape to face hard times, let alone switching from coal to gas," the source added.

Yet, air pollution remains a pressing problem for the Mongolian authorities.

"Coal-to-gas switch in Mongolia shall not be considered only from the direct cost perspective, but also from other effects such as pollution-related health costs, labour losses and other climate change and environmental issues. So coal-to-gas can be a bridge option towards 100% renewables," according to Enkhbayar Shagdar, senior research fellow at the Economic Research Institute for Northeast Asia (ERINA).

Financing from outside the country may help develop gas infrastructure. Mongolia is one of the partner countries of Japan's Joint Crediting Mechanism (JCM) for greenhouse

gas emissions reductions, which purpose is to facilitate the diffusion of low-carbon technologies and reduce greenhouse gas emissions. Since 2011, 31 projects were initiated via the JCM, nine of them were solar projects, [the JCM website shows](#).

FAITHFUL TO EUROPE

The European market would remain Gazprom's export basis even after the launch of Power of Siberia 2, according to Yushkov from the Moscow-based National Energy Security Fund.

The project does not put Gazprom in a position to dictate price and supply conditions in China and Europe as it will have to compete against other suppliers, Bochkarev from East-West Institute corroborated.

Such big projects like Power of Siberia and Power of Siberia 2 are only developed on the basis of long-term contracts in which volumes are committed, Sharples pointed out. Gazprom also has long-term contractual commitments for its European exports.

"Therefore, Gazprom will have flexibility only to the extent that it has any spare production and transportation capacity, and buyers in Europe or China that are willing to take additional volumes on a short-term basis, to maximise the utilisation of those capacities," Sharples added.

EXPECTED TIMELINE

Although Russia and China are more likely to reach an agreement on this new route compared to the previous options, negotiations between the two neighbours for such projects can be lengthy.

"It took four years to move from a major terms and conditions agreement to a legally-binding gas supply contact for Power of Siberia, and just over five years to move from signing that contract to launching the first deliveries. The progress on Power of Siberia 2 could follow a similar pattern," Sharples said.

According to Yushkov, the project may be launched 3-4 years after Gazprom and CNPC agreed on the price and signed the contract. But as the practice of negotiations with China has shown, price talks can continue not even for years but for decades, he added.

The progress of the project will also depend on the recovery of the global and Chinese economies after the coronavirus, according to Bochkarev. The virus forced many countries to go into quarantine and stop non-essential economic activities, which in turn decreased demand for power and gas and led to mass unemployment. "It will depend on the extent of the global economic crisis in 2020 and the length of the global recovery. Fast economic recovery in China and growing appetite for natural gas might in fact speed up the realization of Power of Siberia 2," according to Bochkarev.

The discussions for this new route are rather active taking into account the current situation with the coronavirus, a source told ICIS. After the pre-investment stage, the next step is the investment stage with a tender for contractors.



German coal exit's effect on gas demand to layer over price competition

The impact of the German coal phase-out on demand for gas from the power sector before 2023 will be overshadowed by other factors supporting gas-fired generation, recent [ICIS modelling](#) showed.

Low gas prices and bullish carbon allowances are both expected to keep the more efficient gas-fired generation plants in Germany above the more inefficient coal and lignite assets in the generation merit order irrespective of the German coal phase-out.

Gas-fired generation is expected to significantly rise in Germany from 2023 onwards due to the completion of a separate phase-out of all nuclear plants as well as further coal and lignite capacity closures.

Bullish carbon price expectations will also ramp up gas-for-power demand in Germany.

COAL EXIT ANALYSIS

ICIS analysts modelled the coal phase-out scenario in line with the current government timeline for coal and lignite capacity closures alongside a scenario in which coal and lignite capacities remained at 2020 levels until 2030.

The results underlined the limited impact of capacity closures before the end of 2022. This is largely due to the expected weak gas price environment as well as strengthening carbon emission allowance prices from 2021.

Growing global LNG oversupply is likely to continue to weigh on European gas prices, with forward contracts suggesting prices are likely to remain low over the next two years.

Bullishness in the carbon market will be driven predominantly by EU regulation in the form of the Market Stability Reserve (MSR) which will [radically tighten](#) the EUA market due to allowance withdrawals from 2021.

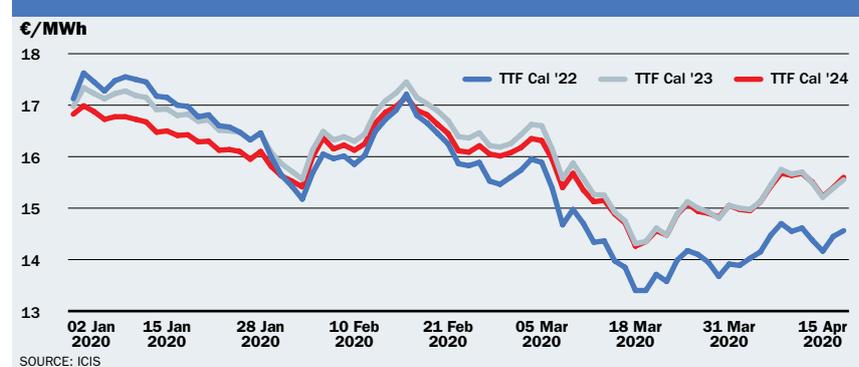
As low efficiency coal-fired units are more likely to be first plants to be phased out, the impact of initial capacity closures over the coming two years is likely to be limited.

GAS-FOR-POWER IMPACT

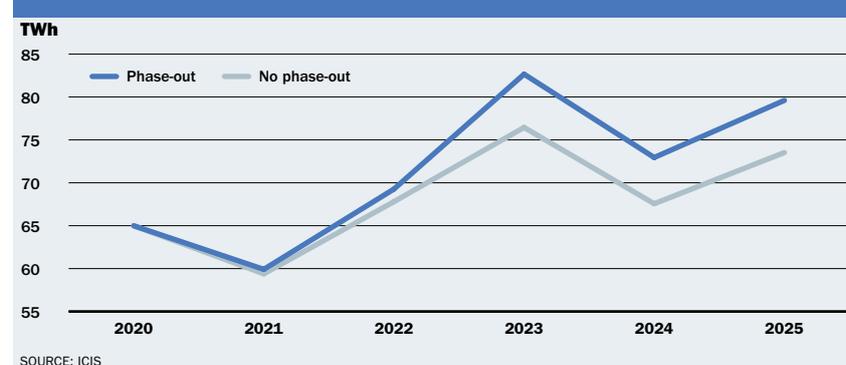
In both the coal phase-out and no coal phase-out modelled scenarios, gas-fired generation in Germany will experience a steep increase from 2021 to 2023 due to expectations of bullish carbon prices in these years.

The difference between the scenarios in terms of gas-fired generation becomes apparent from 2023 onwards when the 9.5GW German nuclear fleet will also have been fully phased out. On a short-run basis, Nuclear plants are the cheapest form of thermal power production in Europe. A similar total of coal and lignite capacity will also have been shut by the end of 2022. From 2023 onwards, gas becomes relatively more important in the generation mix as a result, generating around 6TWh more electricity per year between 2023 and 2028 in the country relative to the sce-

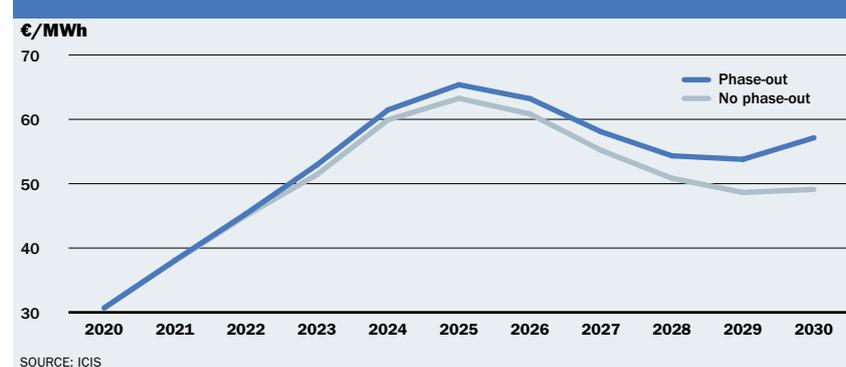
WEAK GAS PRICE PRE 2023 TO MUTE COAL EXIT IMPACT



GERMAN COAL EXIT TO RAMP UP GAS-FIRED GENERATION FROM 2023



COAL PHASE-OUT TO HAVE LIMITED POWER PRICE IMPACT PRE-2023



nario in which coal and lignite plants are not phased out. This rises from less than 1.5TWh in 2022. Imports of power into Germany also substantially increase in the coal phase-out scenario. It is likely that much of this imported power into Germany would be produced by generation assets in neighbouring European countries. Overall, the results showed that a mixture of gas and higher imports will plug the supply gap in Germany from 2023 onwards, with a weak gas-price environment and bullish carbon market set to mute the coal phase-out impact prior to this point.

PRICE IMPACT

The marginal impact before 2023 was re-

flected in the power price impact with the delta between the two scenarios for annual German power prices below €0.30/MWh each year between 2020-2022 compared to the scenario in which capacity remains constant.

The coal phase-out then would have a more significant price impact from 2023 onwards. The impact on gas prices and changes in gas demand from the power sector is likely to be minimal before 2023. From this year, European gas markets may find support from power-related demand increases as Germany ramps up imports of power from neighbouring countries and production from its own gas-fired fleet. **Roy Manuell**



EFET make proposals to improve Germany's balancing system

The European Federation of Energy Traders (EFET) has proposed minor changes to Germany's gas balancing system which could spare shippers from high imbalance charges.

The changes can only be implemented after the [market merger planned for October 2021](#).

The branch of EFET responsible for German energy released a position paper in April on gas balancing reform.

As it stands, distribution system operators (DSOs) must provide two within-day meter load forecasts for industrial consumers (RLM) and one day-ahead forecast for households (SLP).

The latter forecasts do not use metered data and therefore tend to be inaccurate which can lead balancing group managers

(BGMs) active on the German gas markets to incur unnecessarily high end-of-day balancing neutrality costs.

In gas winter 2017, 45% of balancing actions carried out by the NCG were due to SLP account imbalances.

One long-term solution would be to modernise the German metering system, allowing for more accurate, real-time updates – which would “facilitate a subsequent cross-border market area merger [with the Netherlands/Belgium]”, the document said.

But this would take a lot of time, according to a balancing expert from a large utility. “Germany simply has too many DSOs for that,” he said.

EFET has offered two core proposals to resolve these issues in the short and mid-term.

MORE UPDATES

DSOs currently only use one weather forecast to predict the entire following day's household consumption.

The European balancing network code (NC BAL) requires two subsequent updates on the day depending on nearer-term weather forecasts. Germany currently operates on an exception to that rule with no within-day updates.

The association suggests that Germany apply the standard NC BAL regulations by adding at least one, if not two, within-day updates to SLP forecasts.

PERSONAL RESPONSIBILITY

The federation also proposed shippers be given the option to register their household consumers as industrial ones.

This would grant companies more control over intra-day updates as they would be based off metered data.

The BGMs would be able to install and use intelligent metering systems themselves rather than relying on the DSO.

This would partially privatise the process and accelerate the modernisation of the country's metering systems.

The regulatory expert explained that the RLM neutrality charge - the price paid for end-of-day imbalances - is usually lower than SLP, which could provide companies with an incentive to make such investments.

“The BGMs assuming responsibility may also [lead to] higher amounts of balancing energy. Therefore this should only be an option and not an obligation for BGMs,” he added.

OTHER IMPROVEMENTS

EFET also called for market area operators to publish the conversion neutrality charge for the following gas year ahead of the annual capacity auction held in July.

At the moment, the charge is only announced in August.

Conversion neutrality is a charge shippers have to pay every time they flow gas into the market area. Knowing the price ahead of time would allow shippers to efficiently plan their import-export activities for the following year.

NO CHANGES YET

A spokeswoman for the NCG market area operator told ICIS that any change to the balancing system right now could risk potential delays to the market merger, scheduled for October 2021, due to the heavy workload involved in transferring all the current systems to a single market area operator.

“If there should be any need to change the balancing system, this should only be done after the merger,” she said. **Jennifer Sanin**

British low-carbon, hydrogen projects awarded funding

The UK Research and Innovation (UKRI) On 16 April announced the release of crucial funding for vital hydrogen and decarbonisation projects around the UK,

The funding was released to support the first phases of the Industrial Decarbonisation Challenge, a key component to the UK government's Clean Growth Strategy.

The Industrial Decarbonisation Challenge is a programme designed to decarbonise industry around the UK by developing and deploying low-carbon technology, such as carbon capture and storage (CCS) and the production of low-carbon hydrogen.

The programme is funded by £170m from the Industrial Strategy Challenge Fund, which aims to increase productivity and earning power in the UK. The first phase of funding is split into two competitions. The first is the “deployment” competition, which awarded six projects a share of £1m to develop plans for decarbonising an industrial cluster, with the chance to win £131m in phase two.

SIX PROJECTS AWARDED FUNDING

Scotland's Net Zero Infrastructure project will enable CCS at the St Fergus terminal, where in 2019 15 billion cubic metres (bcm) of natural gas landed through pipelines.

The development of St Fergus CCS via the Acorn project will allow emissions from the industrial cluster of Grangemouth to be transported for storage in the North Sea.

The project also seeks to produce low-carbon hydrogen from methane reforming using CCS.

Net Zero Teesside project aims to develop CCS with utilisation of carbon emis-

sions to capture up to 6m tonnes of CO2 per year.

Already half of the UK's hydrogen is produced in the Teesside area, so the introduction of CCS would decarbonise a great deal of UK hydrogen. In 2019, 7.2bcm of natural gas arrived at Teesside.

Humber Industrial Decarbonisation Deployment Project (Humber-DP) looks to bring together businesses and industry in an effort to decarbonise the largest industrial cluster in the UK. The cluster emits 12.4m tonnes of CO2 per year.

HyNet Carbon Capture Utilisation and Storage (CCUS) will bring together numerous industry players in the northwest of England to establish a CCUS and low-carbon hydrogen network.

Following successful development of the project, at least 3TWh/year of low-carbon hydrogen could be produced by 2025.

South Wales Industrial Cluster (SWIC) will identify means of decarbonisation with CCUS.

The successful deployment of CCUS to the south of Wales can provide vast decarbonisation options to the numerous businesses that operate along the M4 corridor - the motorway connecting London to the region. Up to 8.2m tonnes of CO2 are emitted from the SWIC region per year.

Green Hydrogen for Humber is another decarbonisation project located at the Humber region in northeast England.

While other projects explore the utilisation of CCS or CCUS, Green Hydrogen for Humber will lead the production of hydrogen gener-

CONTINUED ON PAGE 10



EMERGING MARKETS

Legislative delays impede Ukraine's liberalisation amid low prices

Ukraine is expecting to postpone the deregulation of its gas market by several months but even more delays may be required beyond the latest deadlines to prepare relevant legislation, the head of the country's gas trading association told ICIS.

The newly appointed energy minister, Olga Buslavets, said in the third week of April the government was looking to delay the removal of the public service obligation (PSO) for households by two months to July and for district heaters to Q2 2021, quoting plummeting consumption and the lack of metering equipment for households.

Speaking to ICIS, Andrew Myzovets, president of the association Gas Traders of Ukraine, said current pricing conditions were favourable to phase out the PSO, a subsidies scheme under which 60% of market volumes are sold at regulated tariffs to households and district heaters.

However, he added the government had not prepared critical legislation, such as the definition of vulnerable consumers or that of suppliers of last resort to ensure that once subsidies are removed consumers are protected against

possible shocks.

"Traders are keen to offer volumes to suppliers of households at market prices," Myzovets said.

"Prices have fallen to record low levels, where it is no longer necessary to subsidise these categories of consumers.

"However, there are still many issues that haven't been solved [internally] such as who will pay for poor vulnerable consumers; what happens if consumers do not find suppliers of last resort; what happens to the debt of district heaters? [The government] needs to solve these problems, otherwise it will be as if we had a car with missing spare parts," he added.

SEVERAL DELAYS

Under the PSO, the incumbent Naftogaz is required to buy natural gas from local producers and sell it on to households, religious establishments and district heating at regulated lower tariffs, which under EU rules, which Ukraine has committed to uphold, would be considered as illegal state aid.

Prices to households and district heaters

had been suppressed as the government had sought to protect vulnerable consumers.

However, in recent months market prices on the domestic virtual traded point (UAVTP) and regulated tariffs have almost converged because the former had been plunging to record lows.

Earlier this year, the government changed the methodology for the calculation of regulated tariffs as it sought to make the transition to full pricing deregulation and a competitive market in May.

Under the latest arrangement approved by the cabinet of ministers on 24 January, the tariff would be calculated based on a hub-linked formula.

Since the beginning of the year, the regulated tariff has been only 3% lower than the ICIS front month UAVTP price.

The removal of the PSO has been a key point in negotiations with the International Monetary Fund (IMF), with which the Ukrainian government reached an agreement in 2018 to gradually increase the level of subsidised gas to these consumers to a level where they would equal that of imported gas.

Myzovets noted the scrapping of the PSO, which has already been postponed several times, may suffer further delays because district heaters were not paying for consumed gas, accruing debt and leading to imbalances on the daily balancing market.

Despite their mounting debt, they had not had their supplies cut off as governments had seen them as vulnerable consumers.

"Who is going to solve the problem of district heaters? This issue is mainly political," he said.

District heating is a system, key to a number of former eastern block states, for distributing heat generated in centralised locations.

Aura Sabadus

British low-carbon, hydrogen projects awarded funding

CONTINUED FROM PAGE 9

ated via renewable, Gigawatt (GW) scale polymer electrolyte membrane (PEM) electrolysis.

A PEM electrolyser would produce zero carbon emissions when powered by renewable electricity, in abundance near the Humberside via offshore wind farms in the North Sea.

IMPORTANT PROGRESS

With economic uncertainty amid the current coronavirus pandemic, releasing funding to support key aspects of decarbonisation to

substantial areas of Britain's industry and businesses is perhaps more important than ever. The majority of these projects will be part of a collective effort to decarbonise gas networks via hydrogen created from methane, utilising the British gas grid. As well as the six projects funded for the deployment competition, a further six were given shares of £1m for the 'roadmaps' competition. These projects will be able to compete for £8m of funding in the second round of the roadmaps competition to further plans for decarbonising industrial clusters in the UK. **Jake Stones**

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Europe

Supply - Russian state-owned gas producer Gazprom revised down its export volumes in 2020 to 166 billion cubic meters (bcm), Alexandre Ivannikov, head of department at Gazprom, said in a conference call on 30 April.

The supplier had initially planned to send around 200bcm per year to Europe, the company [said in February](#).

In 2019, the company sent 199bcm via pipelines to Europe, and 202bcm in 2018. But so far in 2020, demand dropped significantly in Gazprom's main market as the coronavirus outbreak forced European countries to enter a lockdown and stop all non-essential economic activities.

Gazprom aims at selling around 200bcm/year to the European market in the period to 2030, the company showed in its February presentation.

The gas giant has faced challenges to keep its market share in its main export market, with increasing LNG volumes coming to the bloc.

In 2019, Russian gas represented about 35% of EU gas imports, a steady figure from 2018. Meanwhile, LNG imports more than doubled in 2019 compared to 2018, accounting for 21% of EU imports. Among its pipeline export markets, Gazprom now also counts China. The new Power of Siberia pipeline launched in December will allow the Russian producer to send 5bcm to China in 2020.

Regulation - The European Commission favours electrification of the continent's primary energy use in order to meet 2030 targets, according to [a call for stakeholder participation](#).

"There are opportunities to increase the use of renewable and low-carbon electricity via electrification of sectors that currently still rely on fossil fuels," said the statement from the EU's executive branch.

"Fossil-based gases and fuels can be replaced by renewable and decarbonised gases and fuels, especially in hard-to-decarbonise sectors such as air transport or certain industrial processes." The commission said the decarbonisation of the gas sector can be achieved by using green hydrogen from renewable electricity and replacing natural gas with biomethane produced from agricultural waste through supportive market rules. This could sideline natural gas and blue hydrogen produced from gas with carbon capture in the energy transition.

The commission aims to reduce the bloc's CO2 emissions by a minimum of 50% and hopefully closer toward 55% by 2030 compared to 1990 levels, according to [its green deal](#). It will present an impact assessment plan to raise the 2030 target from 40% by September.

Germany

LNG - In late April German energy agency

DENA released a position paper from the country's LNG Taskforce calling for the extension of LNG and compressed natural gas (CNG) trucks to be exempt from highway tolls beyond 2020, after the current programme is due to end.

Since the start of 2019, gas-fuelled trucks in Germany have been exempt from road toll charges to incentivise the growth of non-diesel vehicles.

During that time 17 LNG filling stations have been built in the country, with the total set to exceed 50 by the end of the year.

The paper notes that for the development of diesel-alternative vehicles to continue there needs to be market reassurance.

One confidence-boosting measure for future investors in LNG-fuelled trucks would be to extend the current toll exemption.

The paper proposed an extension for two more years after 2020. In addition, it suggested a toll exemption of 24 months for LNG and CNG vehicles from the moment the vehicle is put into operation. The toll exemption has so far had a positive impact on the German LNG transport fuel market. On 24 April Liqvis, a subsidiary of utility Uniper, announced the opening of another LNG filling station in Germany due to increased demand for the fuel.

Continuing to exempt LNG-fuelled trucks from road toll fees would support the growing market, while also contributing to reduced carbon emissions from transport.

LNG-fuelled trucks emit around 20% less carbon dioxide than diesel vehicles.

Hungary

Transport - Increased incremental natural gas capacity between Slovakia and Hungary is scheduled to be offered at a yearly capacity auction in the summer, with a final investment decision over the project scheduled for the third quarter of 2020.

Slovakia and Hungary's energy ministries both told ICIS auctions would take place in summer 2020, suggesting the timing could slip from the July target.

A draft project proposal, [published in January](#) by grid operators FGSZ and Eustream, scheduled auctions and economic tests in July 2020 as the first milestone for the project.

It added this milestone would only be viable if regulatory authorities published a positive decision on the proposal by 5 May.

The two countries signed a memorandum of understanding in March 2020 committing to increase bidirectional capacity to 5.3bcm/year, from current levels of 4.5bcm/year from Slovakia to Hungary and 1.3bcm/year from Hungary to Slovakia.

A final investment decision is planned for the third quarter of 2020, with targeted commercial start-up planned for October 2024.

Moldova

Supply - Moldova is exploring the possibility of including a hub element in its gas import contract with Russia to take advantage of

more pricing flexibility, regional market sources told ICIS.

Importer Moldovagaz, majority-owned by Russia's Gazprom, already has flexible terms in its import contract and is expecting to offtake volumes at half the current price in the final quarter of the year as a result of recent drops in oil prices. Its current pays around \$160.00-\$170.00/1000 standard cubic metre (kscm) (€14.16/MWh). However, market sources told ICIS the company may be negotiating the inclusion of a hub element in the formula to secure greater pricing flexibility. It is not clear what hub linkage is being discussed, but Germany's NCG or Austria's VTP may be considered. The formula would remain hybrid, including a percentage value of hub indexation, with the remaining linked to crude or oil products. If it succeeds in securing a hub element in its formula during ongoing negotiations, Moldova would follow Bulgaria and Poland as the third European buyer in recent months to clinch a price revision with a hybrid formula. Moldova offtakes an estimated 3 billion cubic metres annually, all from Russia. Moldova has historically consumes around 85% of its gas in the first and last quarters of the year, taking advantage of flexible terms in the oil-indexed contract.

Norway

Supply - The Norwegian Petroleum Directorate (NPD) extended the lifetime of the Troll B facility and granted consent for field operator Equinor until 2030.

This will support further developments on Norway's chief swing gas field, capable of producing up to 120 million cubic metres/day, and consolidate Norway's role as key supply source for northwest European markets.

The Norwegian government sets a production permit total for Troll each gas year - was 36 billion cubic metres for the year starting October 2019.

Troll B came onstream in September 1995 and the current consent by NPD was set to expire at the end of September 2020.

Poland

Arbitration - Russian producer Gazprom has agreed to introduce new price conditions for its supply contract with Poland's gas incumbent PGNiG to comply with recent arbitrage ruling, the Polish company said in a statement on 29 April.

Gazprom has committed to correcting its invoices issued for gas supplies to Poland in March and April this year.

In [a verdict](#) announced by an arbitration tribunal in Stockholm on 30 March, Gazprom was ordered to link the gas price invoiced to PGNiG to a western European hub and apply the new formula retroactively from 1 November 2014.

PGNiG concluded the Yamal contract with Gazprom in 1996. Its take-or-pay obligations, determining the amount of gas PGNiG has to offtake as part of the contract, is expected



» to remain unchanged at 85% - one of the highest levels in Europe. PGNiG must pay for at least 8.7 billion cubic metres (bcm)/year out of the contracted 10.2 bcm/year. Under the terms of the contract, each party may submit a price review request every three years, if it considers that prices may not reflect current market levels. PGNiG requested a price re-opener in 2014 but further filed a claim against Gazprom the Stockholm Arbitration Tribunal in 2016.

Romania

Regulation - The European Federation of Energy Traders (EFET) urged the Romanian regulator ANRE to remove a double obligation for companies to sell gas volumes on centralised markets.

Responding to an ANRE consultation on a proposed gas release programme, EFET said there was an overlap between the requirements the watchdog intends to launch and a centralised market obligation. Under the proposed scheme, producers with an annual output exceeding 1 TWh would be required to offer around 30% of their volume on centralised markets between 1 July 2020 – 31 December 2023. However, under existing legislation, producers would also have to sell some 50% of their volumes on centralised markets. Under both arrangements they would be forced to sell 80% on centralised platforms. In a letter sent to ANRE, EFET said: "We encourage the Romanian authorities to consider replacing the CMOs [centralised market obligation] entirely by the proposed market-based auctions for standard products." EFET urged ANRE to ensure gas release volumes would be sold in small lots under Day-ahead or month-ahead contracts, rather than a multitude of products that would dent liquidity.

Russia

Supply - Companies with a licence to extract gas from Russian fields after 1 January 2013 will be allowed to export LNG following a change in legislation.

Only companies that had received a license to extract gas before 1 January 2013 were allowed to export LNG. But Russia's Law on Export of Gas is being changed to include companies having received their license after the deadline.

Both chambers of the Russian parliament approved this change on 14 and 17 April. The amended law will enter into force after President Vladimir Putin signs it.

So far, only Russia's state-owned gas producer Gazprom and privately-owned Novatek have been able to export LNG, although other Russian companies also obtained licenses for extraction before January 2013. These include state-owned oil giant Rosneft, which also has gas assets, and Russian oil and gas company Surgutneftegaz.

This modification of the law could increase Russian LNG exports by increasing the num-

ber of fields available for export.

With 21.5 million cubic metres exported so far in 2020, Russia is the world's fourth biggest LNG exporter behind Qatar, Australia and the USA, LNG Edge showed on 20 April.

Turkey

Transport - The European Federation of Energy Traders (EFET) urged Turkey's gas grid operator BOTAS to make several changes related to cross-border nominations in order to help fast-track a key interconnection agreement with its Bulgarian counterpart.

In a letter seen by ICIS and sent to Bulgartransgaz as part of a consultations, EFET said the interconnection agreement for the Strandzha-Malkoclar border point between the two countries was of "utmost" importance for the integration of regional markets.

EFET said a number of changes would be needed, in particular from BOTAS. These include the implementation of the Edigas communication protocol, a standard for the comprehensive exchange of data electronically, as well as offering interruptible capacities and renomination cycles using energy units rather than standard cubic metres. BOTAS would also have to redefine the Turkish gas day to facilitate capacity allocation and nominations on the border.

The Strandzha-Malkoclar entry point had been used for the transport of Russian gas via the Trans-Balkan line across Ukraine, Romania and Bulgaria into Turkey. However, when volumes were diverted to the TurkStream pipeline at the beginning of 2020, the border point laid dormant.

Turkish regulator EPDK started offering small capacities for gas imports from the Bulgarian hub into Turkey. In December 2019, EPDK offered a total of 2.9 million cubic metres (mcm)/day, out of which 2mcm/day was offered for Q1 '20 and 0.9mcm/day for each of the three component months. However, no capacity could be allocated because there had been no interconnection protocol between the two countries, creating frustrations among companies which had shown interest.

UK

Demand - The British power grid set a new record for coal-free electricity generation, reaching 18 days on 28 April.

British coal plants switched off late on 9 April prior to the Easter weekend, and have continued to remain offline, passing at 06:30 on 28 April the record set last summer.

The coal-free run has been made possible due to a combination of high renewable generation coinciding with nationwide lockdown measures suppressing energy demand.

Power demand in the UK has dropped by around 18% compared to seasonal averages since lockdown measures were put in place on 23 March. At the same time, renewable generation has been exceptionally high. During the 10-27 April coal-free spell, renewable energy accounted for 30% of electric-

ity generation, with 34% coming from gas, 24% nuclear and the remaining 12% from imports. National Grid confirmed that on 20 April, Britain broke its peak solar generation record, producing 9.68GW around noon due to favourable weather conditions and capacity added. With power demand expected to remain lower than normal through the summer, the current coal-free run could well continue, even as commercial power offtake gradually picks up. Coal has been on a sharp decline since the introduction of the carbon price support in 2013. Coal-fired plants accounted for just 2% of UK electricity generation in 2019, down from 42% at the fuel's peak in 2012. The figure is expected to fall further from 2020 onwards as more capacity is brought offline. In March, Aberthaw B and Fiddlers Ferry both shut down operations, leaving just Uniper's Ratcliffe, EDF's West Burton and EP's Kilroot in Northern Ireland, totalling 4.5GW capacity. Of the three, only Ratcliffe was able to obtain a capacity market contract in the recent T-3 auctions covering the period up until 2023.

Ukraine

Transport - Ukraine and Hungary are to launch the first ever virtual interconnection point (VIP) between a contracting party of the Energy Community and an EU member state.

The new VIP – Berego – will be operational at the start of the gas day on 1 May 2020, according to the Ukrainian transmission system operator GTSO.

Although there is no firm capacity allocated from Hungary to Ukraine because of technical limitations, market participants say GTSO and its Hungarian counterpart FGSZ would continue negotiations with a view to offer such capacity later. Network users looking to book capacity, including daily, monthly, quarterly and yearly from Hungary to Ukraine will be able to do so on the Hungary-based RBP platform from next month.

For now, daily capacity will be allocated implicitly on the Ukrainian side, while monthly, quarterly and annual capacities will be offered based on applications. Ukraine itself also aims to start offering capacity on the RBP platform as early as the new gas year 2020/2021. Ukraine has been attracting significant interest from regional companies which are looking to store gas in its storage facilities. Earlier this year, Ukraine established virtual reverse flows with Poland. May backhaul capacity at the Drozdowicze interconnection point between Ukraine and Poland has been attracting record interest, with six companies bidding in seven rounds by 29 April, the highest level since auctions for Ukrainian backhaul capacity started on the Polish GSA platform. Meanwhile, the Slovak transmission system operator Eustream has also offered a new service that would allow companies booking both entry and exit capacity into Ukraine at the same time to get a 40% discount on the cheaper capacity. **ICIS Staff**



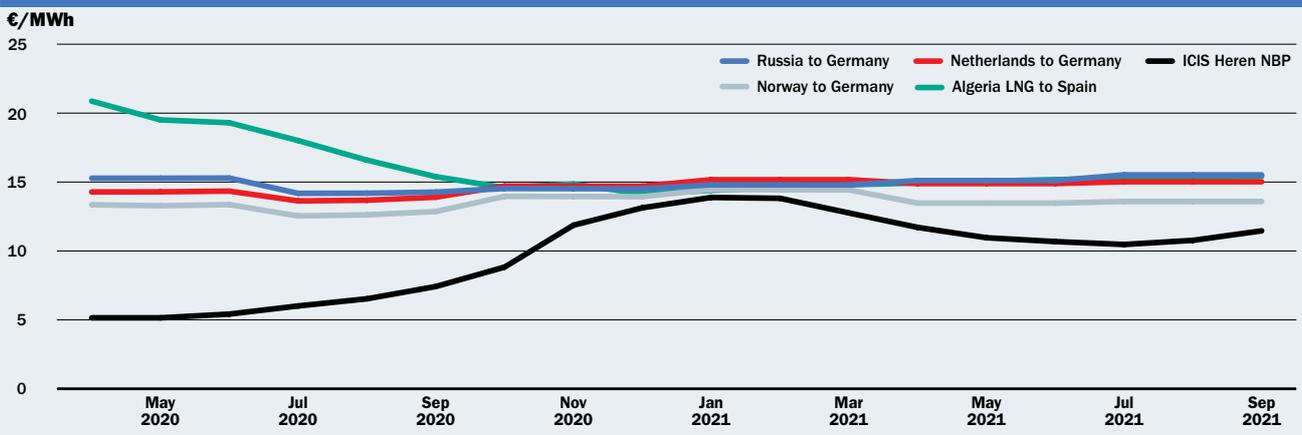
ICIS HEREN FORWARDS ASSESSED LONG TERM CONTRACT VALUES EFFECTIVE 1 APRIL 2020 €/MWh

	German import contracts from			Spanish LNG import contract from
	Russia	Norway	Netherlands	Algeria
Apr '20	15.28	13.35	14.28	20.87
May '20	15.28	13.28	14.29	19.51
Jun '20	15.29	13.36	14.34	19.30
Jul '20	14.18	12.54	13.63	18.01
Aug '20	14.19	12.62	13.68	16.59
Sep '20	14.27	12.86	13.90	15.39
Oct '20	14.53	13.96	14.71	14.59
Nov '20	14.52	13.95	14.70	14.85
Dec '20	14.51	13.94	14.70	14.14
Jan '21	14.80	14.46	15.17	14.39
Feb '21	14.80	14.44	15.17	14.62
Mar '21	14.79	14.43	15.17	14.80
Apr '21	15.11	13.47	14.89	14.93
May '21	15.11	13.47	14.89	15.06
Jun '21	15.11	13.47	14.89	15.18
Jul '21	15.52	13.59	15.02	15.24
Aug '21	15.52	13.59	15.02	15.33
Sep '21	15.52	13.59	15.02	15.42

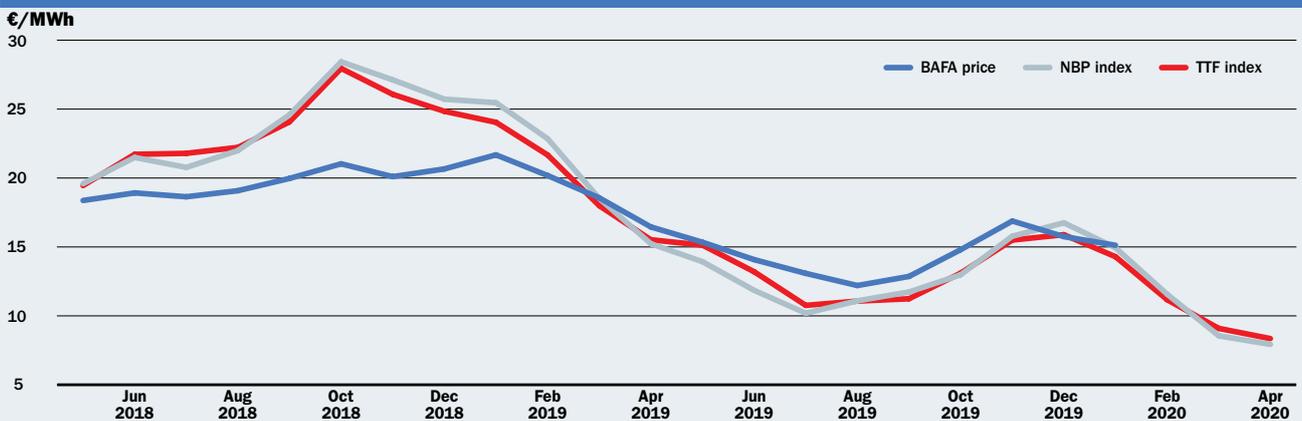
ICIS HEREN FORWARDS ASSESSED LONG TERM CONTRACT VALUES EFFECTIVE 1 APRIL 2020 \$/MMBTu

	German import contracts from			Spanish LNG import contract from
	Russia	Norway	Netherlands	Algeria
Apr '20	4.95	4.33	4.63	6.77
May '20	4.96	4.31	4.64	6.34
Jun '20	4.97	4.34	4.66	6.27
Jul '20	4.62	4.08	4.44	5.86
Aug '20	4.62	4.11	4.46	5.40
Sep '20	4.65	4.19	4.53	5.02
Oct '20	4.74	4.55	4.80	4.76
Nov '20	4.74	4.56	4.80	4.85
Dec '20	4.75	4.56	4.81	4.62
Jan '21	4.85	4.73	4.97	4.71
Feb '21	4.85	4.73	4.97	4.79
Mar '21	4.85	4.73	4.97	4.85
Apr '21	4.96	4.43	4.89	4.91
May '21	4.96	4.43	4.89	4.95
Jun '21	4.96	4.43	4.89	4.99
Jul '21	5.11	4.48	4.95	5.02
Aug '21	5.11	4.48	4.95	5.05
Sep '21	5.11	4.48	4.95	5.08

FORWARD CURVE: BORDER PRICES VS NBP



HISTORICAL BAFA OUT-TURN AGAINST NBP AND TTF OUT-TURN (MONTHLY INDICES)



SOURCE: BAFA/ICIS



MARKET HIGHLIGHT

Ukrainian exports boost German-Austrian flows

Ukrainian and Austrian natural gas storage injections may keep German exports high in coming months.

Ukraine holds 30 billion cubic metres (bcm) of storage capacity, of which around 13bcm is still available, according to GIE data. This may be an attractive option for western European companies with record-high stock levels and low demand. Austrian sites are currently 66% full, with than German storage at 78%.

This may pull gas supply from northwest Europe to central and eastern markets in the coming months. On 17 April Slovak transmission system operator (TSO) Eustream announced a 40% discount for bundled exit-entry booking costs at Budince, making access to Ukrainian

storage via Slovakia more appealing. Austrian transit is one possibility for German volumes to reach Slovakia. The monthly transport cost from the German NCG market area to Austria is €0.73/MWh, according to tariff information from the countries' TSOs. The price spread between the NCG and VTP May '20 and June '20 contracts hit that level after the announcement. It has continued to widen since then, making it more profitable to flow gas from the southwest German market area to Austria in May. According to ENTSOG, around 10 million cubic metres (mcm)/day of virtual reverse capacity is already booked on the Austrian-Slovak Baumgarten border point, of the 22mcm/day technical capability. **Jennifer Sanin**

BRITAIN

NBP monthly contracts slump below US Henry Hub

Strong LNG supply from the Arab Gulf continued to erode value from the British NBP prompt market with the Day-ahead tumbling a further 10% between 14-29 April 2020.

An already weakened front-end succumbed to further selling pressures during the last two weeks of April with ten LNG vessels arriving to the Island.

All but two cargoes originated from Qatar as shipments from the region switched away from the Pacific. This was due to the seasonal shift in LNG demand away from Asia and lockdowns remaining in countries such as India.

Volumes of LNG delivered into Britain totalled 1.74 million tonnes as of 29 April, 6% higher than in April 2019, but fell behind France in terms of most volumes imported in the month.

Spreads between the NBP and mainland European gas markets ballooned as a depressed NBP front end saw its discount widen and exports surge.

The Day-ahead discount to the Belgian Zeebrugge equivalent peaked at 5.05p/th on 21 April and on the following session, 37.2mcm of gas was exported through the interconnector pipeline.

British exports through the bi-directional link to Belgium averaged 18.96mcm/day between 14-29 April, 2.6mcm/day higher than the first half of April as shippers snapped up short-term capacity.

Strong front-month spreads between the two hubs also incentivised further monthly export capacity with 38mcm/day purchased, up from 17mcm/day.

As European gas prices continued to weaken, eroding sales margins forced the cancellation of US LNG cargoes for June delivery.

As of 23 April, at least 21 cargoes were identified as cancelled by market sources; four from Freeport LNG and 17 from either Cheniere's Corpus Christi or Sabine Pass projects. The ICIS supply forecast for June, July and August has now reflected this and has removed 3.9 million tonnes from the North America 2020 LNG production forecast.

NBP monthly contracts delivering out until September fell below the US Henry Hub in week 17. **Arun Toora**

HEREN® MONTHLY CUMULATIVE INDICES MAY 20

NBP, p/th	14.758
Zeebrugge, p/th	16.036
TTF, €/MWh	6.705
NCG, €/MWh	7.064
GASPOOL, €/MWh	6.812
PEG, €/MWh	6.544
VTP, €/MWh	7.874
PSV, €/MWh	8.589

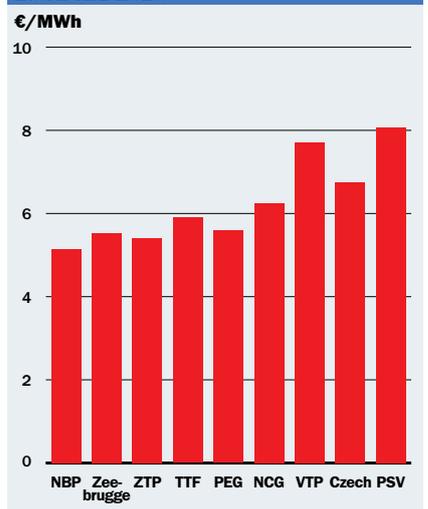
Values represent the weighted average of all month-ahead trades gathered and verified by ICIS Heren for its European Spot Gas Markets (ESGM) publication, from the first working day of the month up to the displayed date.

EUROPEAN SPOT GAS PRICE ASSESSMENT 29 APRIL 2020

Period	Data			
	p/th	€/MWh	used	%chg'
Day-ahead				
NBP	12.725	4.974	B	-14.75
Zeebrugge	13.525	5.287	B	-21.69
ZTP	13.848	5.413	B	-22.40
TTF	14.424	5.638	B	-20.18
NCG	15.991	6.250	B	-17.63
GASPOOL	15.767	6.163	B	-17.56
PEG	14.296	5.588	I	-20.46
VTP	19.733	7.713	B	-7.22
PSV	20.660	8.075	B	-4.72
Czech	17.270	6.750	B	-16.02
Slovak	20.117	7.863	I	-6.40
AOC	16.119	6.300	B	-22.10
Turkish Gas	44.423	17.362	I	-1.46
MGP	21.140	8.263	I	-3.50
May '20				
NBP	13.175	5.146	B	-14.83
Zeebrugge	14.175	5.537	B	-13.42
ZTP	14.432	5.638	B	-14.42
TTF	15.104	5.900	B	-13.24
NCG	16.353	6.388	B	-11.44
GASPOOL	15.776	6.163	B	-11.65
PEG	14.752	5.763	B	-14.47
VTP	19.233	7.513	B	-5.50
PSV	20.545	8.025	B	-7.63
Czech	16.865	6.588	B	-10.37
Slovak	19.681	7.688	I	-6.11
AOC	16.128	6.300	B	-18.58
Winter 20				
NBP	31.688	12.326	B	-2.98
Zeebrugge	30.038	11.685	I	-3.29
ZTP	29.595	11.513	B	-4.66
TTF	29.595	11.513	B	-5.25
NCG	30.848	12.000	B	-4.38
GASPOOL	30.045	11.688	B	-5.08
PEG	29.338	11.413	B	-5.19
VTP	31.008	12.063	B	-5.67
PSV	33.643	13.088	B	-4.99
Czech	30.816	11.988	S	-4.48
Gas Year 20				
NBP	30.050	11.664	I	-3.88
Zeebrugge	29.600	11.490	I	-4.25
TTF	29.337	11.388	I	-5.60
PSV	33.877	13.150	I	-5.14

*In comparison to prices published in previous issue of EGM. Change on €/MWh figure. All values represent the midpoint of the ICIS Heren bid-offer assessment published in European Spot Gas Markets (ESGM) on the displayed date.

MONTH+1 PRICE ASSESSMENTS 29 APRIL 2020





NETHERLANDS

Bears retain control, but rebound prompts floor talks

Dutch gas prices largely remained under bearish pressure in the two weeks to 29 April, but a rebound at the start of week 18 prompted talk of a potential price floor.

Low demand, high LNG supply and low draw on gas for power remained bearish drivers to the market, while an oil crash in the middle of the period prompted further losses.

US WTI prices closed at a negative price for the first time in history on 20 April as traders attempted to close out long positions prior to the contract expiry.

Although gas contracts follow Brent rather than WTI, this unprecedented move fed bearish sentiment to Brent and across commodity markets.

Contracts on the front end, particularly the monthly products, rebounded at the start of

week 18, prompting talk of a price floor.

When prices move below a certain level, it becomes unprofitable for producers to sell gas, resulting in lower supply and a subsequent increase in prices. This creates a price floor.

As well as the impact of low prices on key piped gas suppliers, namely Russia and Norway, Europe is now facing reduced LNG supply on the back of the price crash.

A number of TTF monthly contracts have moved below the US Henry Hub equivalent, prompting LNG offtake cancellations.

However, in light of the current uncertainty and the unprecedented moves on Brent, traders were reluctant to name a price level and said prices could even go negative.

Julie Fisher

GERMANY

Prices dive, liquidity rises amid high LNG, volatile oil

Moves and liquidity on the German natural gas markets were largely directed by global oil prices over the past fortnight.

After the 9 April OPEC+ meeting turned out to be an anti-climax despite record output cuts, with Brent crude futures and gas forwards sinking.

This was only a precursor to the unprecedented WTI oil dive to negative values at the start of week 17. European benchmark Brent crude also experienced heavy losses which filtered through the far end of the German gas curve.

The NCG Year 2021 lost €0.94/MWh from 9-29 April while Year 2022 shed €1.05/MWh.

This brought gas-fired generation into the money over lignite in 2022, prompting utili-

ties to hedge. NCG Year+2 liquidity grew by over 13TWh from April 2019.

Heavy LNG oversupply in the UK made its way to Germany via Belgium that week, causing the NCG prompt to take cues from an overwhelmingly bearish British NBP.

The following week experienced a lull as traders waited for the May contract to expire.

German exports to Italy via Switzerland hit a two-year high of 31mcm on 29 April as regulated storage injections in the Italian PSV attracted northwest European gas.

German stock levels meanwhile continued to rise at a steady pace of 49mcm/day between 14-29 April, bringing them to 79% full.

Jennifer Sanin

ITALY/AUSTRIA

Restrictions boost PSV injections

Restrictions to commercial activities and social interactions introduced by the Italian government continued to keep a lid on gas demand throughout the second part of April.

This added to high flows from Austria and LNG sendout exposed the Italian system to oversupply, with the PSV Day-ahead frequently closing below the front month.

The contango and a long system encouraged capacity holders to maximise injections even after reaching the minimum filling requirements imposed by storage regulation on capacity operated by Stogit.

As a result, Italian storage sites were 40% full as of 30 April, more than 10 percentage points higher year on year.

Restrictions are due to be progressively lifted from 4 May, which prompted shippers to inject risk premium due to potentially higher demand into the front month.

The PSV May'20 premium to the TTF was €2.06/MWh on average in the second part of April, up by €0.26/MWh compared with the first part of the month, ICIS assessments showed.

The widest spread was €1.05/MWh on 27 April but in general it has been much narrower, and on 17 April the VTP product was even assessed at a premium of €0.063 to the PSV Day-ahead. Meanwhile, the VTP Day-ahead's premium over its TTF equivalent has widened over the period, from €1.25/MWh on 14 April to €2.075/MWh on 29 April.

Austrian domestic demand during the fortnight has fallen by 1.5mcm/day compared to the equivalent period in 2019 to an average 18mcm/day. The average Austrian injection rate during the period was 3.6mcm/day, down by 15.6mcm/day on the equivalent period in 2019 due to Austrian tanks already being very full. **Alice Casagni & Ed Martin**

BELGIUM

Shippers snap up short-term IUK capacity

Oversupply and weak demand helped to crush the British NBP prompt which saw its discount to the pound-denominated Zeebrugge hub widen in the two weeks to 29 April.

An LNG glut helped push the NBP Day-ahead discount to the Belgian Zeebrugge

equivalent, which peaked at 5.05p/th on 21 April. This saw shippers snap up short-term capacity along the bi-directional Britain-Belgium Interconnector pipeline, with 37.2mcm/day of exports on 22 April.

Imports from Britain through the link averaged 18.96mcm/day between 14-29

April, 2.6mcm/day higher than the first half of the month.

While British imports increased, LNG offtake at the Zeebrugge terminal fell 57% compared to March. Over the course of April, the terminal received 8 shipments, 6 less than in March. **Chetan Patel**



CENTRAL AND EASTERN EUROPE

Day-aheads lose value while storage levels stay high

Regional Day-ahead contracts shed value over the past fortnight, by €0.500/MWh in Slovakia, €0.263/MWh in Hungary and €1.125/MWh in the Czech Republic.

The average injection rate in the Czech Republic from 14-29 April was 8.5mcm/day, down by 4.9mcm/day on the equivalent period in 2019.

Czech tanks were at 51% of capacity on 29 April with 1,64mcm in store, up by 3.4% on year-ago levels.

In Slovakia, injections have fallen further compared to year-ago levels to an average 4.8mcm/day, a drop of 14.3mcm/day, while Slovakian tanks were at 79% of capacity on 29 April, up by 31% on year-ago levels, with 3,165mcm in stored volumes.

Two gas carriers have made deliveries to Poland's Swinoujscie LNG Terminal during the

period. On 18 April, a 217,000cbm-capacity RasGas-chartered vessel delivered a cargo from Qatar's Ras Laffan, and on 28 April a 210,000cbm-capacity Cheniere-chartered vessel delivered a cargo from Sabine Pass in the US.

Trading activity on the domestic Ukrainian gas market slowed down in the second half of April as prices have been trending lower and producers were holding off selling to the VTP. Nevertheless, there has been significant interest in snapping up cross-border capacity for May as many non-resident companies are looking to inject gas in Ukrainian storages. A record six companies snapped up backhaul capacity on the Polish-Ukrainian border in a seven-round auction held on the Polish GSA platform in the final days of April.

Ed Martin & Aura Sabadus

UAVTP GAS PRICE ASSESSMENT 29 APRIL 2020

Period	p/th	€/MWh	Data used	%change*
May '20	18.905	7.385	B	-24.88

UA-BORDER GAS PRICE ASSESSMENT 29 APRIL 2020

Period	p/th	€/MWh	Data used	%change*
May '20	19.288	7.534	B	-24.27

SPAIN

Rising renewables, stocks pressure near-term products

The Spanish natural gas Day-ahead dropped by €1.79/MWh to €6.30/MWh throughout 14-29 April. Low demand due to the coronavirus lockdown and high renewable production reduced demand for gas.

The ongoing lockdown reduced electricity demand to a daily average of 546GWh, compared to 612GWh during the same fortnight in 2019, grid operator REE showed.

Renewables provided 54% of the country's electricity, compared to 42% during the same period in 2019.

Wind power recovered after being overall below average during the first half of April. At the same time, well-above-normal precipitation helped refill hydro reservoirs, which

were over 65% full as of 28 April, compared to 60% in 2019. Hydropower provided 20% of the country's electricity this past fortnight, compared to 10% in 2019.

This reduced demand for CCGT, which accounted for less than 8% of the Spanish mix, compared to 14% in 2019.

The PVB front month dropped by €1.44/MWh to €6.30/MWh and June '20 fell by €1.05/MWh to €6.70/MWh, in line with upward revisions of LNG stocks.

Stocks were expected to rise to 1.7bcm by the end of May, up from 1bcm in 2019, and 1.9bcm by the end of June against 952mcm in 2019.

Diane Pallardy

FRANCE

PEG front month dips to record low

The French natural gas front-month reached its lowest value ever on 24 April.

Warmer temperatures, abundant LNG and weak demand pressured the front-month contract to reach a new record low value of €5.6375/MWh.

French gas demand averaged 67mcm/day from 15 to 29 April, compared to 85mcm/day from the 1 to 14 April, according to TSO GRTgaz on 15 April, a 18mcm/day drop as the country continues its strict confinement until 11 May.

The French government announced it will gradually lift its lockdown measures from 11 May, opening shops and primary schools first.

The amount of gas held in storage went over 100% of capacity on 29 April, compared to about 78% during the same period in 2019.

Meanwhile, France received 17 LNG cargoes since 15 April, three more cargoes compared to the period from 1-14 April. As of 30 April, around 11 LNG cargoes are anticipated to arrive during May.

A total of 29 LNG vessels arrived in the country during April. Abundant LNG supply has pressured prompt prices as demand has been low due to strict lockdown measures in order to combat the spread of the coronavirus.

Sendout has averaged 84mcm/day from 15 to 29 April, which is 12mcm/day higher the fortnight preceding that. For the same period last year, sendout was 5mcm/day higher.

LNG stock level in the last two weeks of April were an average of 486mcm, 7mcm lower this year compared to the same period in 2019.

The PEG front-month contract spread to TTF increased to an average of a €0.165/MWh discount on 30 April compared to a discount of €0.075/MWh from the 14 April.

The Fos Tonkin LNG terminal regasification reduction of 35% will start on 11 May and end on 23 June.

Nuclear availability is set to be at a daily average of 2GW below the 2015-2019 average for the period of 1-15 May, according to grid operator RTE.

The annual nuclear output reduction announced by EDF will [increase the demand of gas](#) for the rest of 2020. A total of 9.84bcm of gas is expected to be used for electricity production in France this year, an increase of 3.75bcm from the original forecast, according to ICIS analytics. **Laura Mendes**



TRADED RANGES FOR KEY GAS CONTRACT FOR THE PERIOD: 15 APR 2020 TO 29 APR 2020 €/MWh

Markets	Day-ahead		May '20		Winter 20		Summer 21	
	Low	High	Low	High	Low	High	Low	High
NBP	3.088	5.794	4.918	6.415	12.272	13.334	10.923	12.030
Zeebrugge	4.997	6.851	5.373	6.758	n/a	n/a	n/a	n/a
ZTP	5.175	7.275	5.550	6.900	11.610	12.170	n/a	n/a
TTF	5.425	7.125	5.750	7.350	11.500	12.800	11.225	12.400
GASPOOL	5.850	7.400	6.050	7.280	11.680	12.875	11.710	12.655
NCG	6.000	7.550	6.175	7.615	11.975	13.100	11.695	12.830
PEG	5.175	7.000	5.610	6.975	11.415	12.600	11.500	12.200
VTP	7.300	8.500	7.150	8.200	12.175	13.250	12.580	13.350
PSV	7.850	9.100	7.890	9.075	13.100	14.350	13.475	14.250

STORAGE COMMENT

Storage may reach 70% full by end of May

European storage sites could reach 70% fullness by the end of May, should injections keep pace with 2019 rates.

The rate of European gas storage injections more than doubled in the latter half of April compared with the previous fortnight.

Shippers injected a net 5 billion cubic metres (bcm) between 14-28 April, aggregated data from storage operators showed, at an average rate of 334 million cubic metres (mcm)/day.

This is up from 159mcm/day between 30 March-13 April.

However the average injection rate over the period is lower than in each of the previous two years.

Shippers injection about 401mcm/day in 2019 and 376mcm/day in 2018.

However, the injection rate for 1-28 April remains above earlier years, averaging 285mcm/day in 2020, compared with 263mcm/day in 2019.

Storage sites across Europe stood 59% full on 28 April, holding over 58bcm of gas.

This put them more than 15 percentage points above their fullness level on the same day a year before.

Should injections throughout May keep pace with the 2019 rate of 370mcm/day, storage sites would be at 71% of total capacity by the end of the month.

Stores were 57% full at the end of May 2019.

The Day-ahead contract at the benchmark TTF hub flipped between a premium and discount to the front month during the latter part of April. The Day-ahead held a premium of €0.263/MWh on 14 April, while it had dropped to a €0.563/MWh discount by 17 April.

However, the May '20 contract traded an average of €0.15/MWh above the Day-ahead, which encouraged injections.

TTF Winter '20 held a premium of €5.66/MWh above the front month, suggesting injections will continue to boom during the second quarter of 2020. **Gretchen Ransow**

Aggregate Storage Levels

% FULLNESS



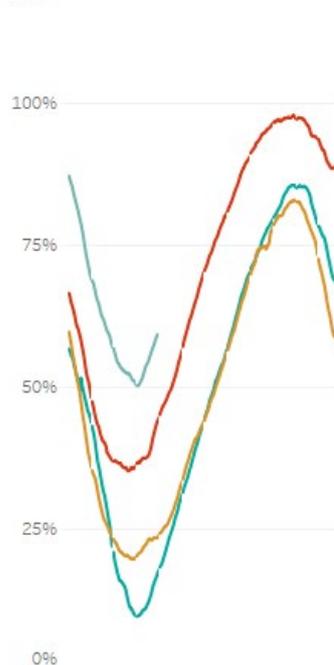
For an interactive version of this chart, click here

2017 2018 2019 2020

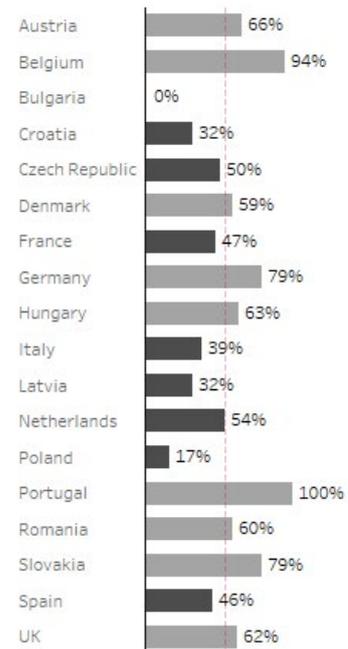
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J F M A M J J A S O N D

| % FULLNESS by Year and Day | All



| Current Week % Full 4/27/2020



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All eyes are on negative prices after the US oil market's crash, structural difference means they are less likely to hit European gas

US oil prices turned negative in April for the first time in their history.

With gas prices around the world at record lows and storage sites likely to fill up later in summer, could European gas markets get to a similar point in which there is no more room to put gas anywhere so sellers have to pay in order to give it away?

One could look at the current restocking rates - around 280 million cubic metres (mcm)/day in April - or historic rates - around 11-12 billion cubic metres (bcm)/month in May-August, and suggest remaining capacity - over 40bcm - will be filled come August.

However, one can also expect some supply and demand responses that these low prices should drive. Many things can and will change and so much about the market at this time is unprecedented. Traders are still struggling to price in the impact of lockdowns and any future path out of them.

Storage in Europe is both governed by market dynamics and regulation depending on country. Britain, Germany and the Netherlands have an entirely merchant-based

rus pandemic has dwarfed that on the gas market, with the former suffering from a near-halt in the aviation industry and marked decline in vehicle usage.

Gas remains an important part of the power mix and certain industrial processes, both of which are continuing to function - albeit at a reduced rate. The costs of storing gas beyond conventional storage - floating supercooled LNG cargoes - are significantly higher than floating crude. EDF's reduction in its French nuclear generation for the rest of 2020 should bring around 14bcm of additional gas demand as a result. Meanwhile significant US LNG cargo cancellations and lower pipeline deliveries should help balance the market, although more will likely be needed than current cuts.

Even though suppliers still compete for market share, large producers like Russia's Gazprom and Norway's Equinor would not be willing to depress prices as to damage the balance sheets of their customers beyond repair.

The chances of negative prices across the continent are low outside of local bottlenecks. If we do see any, it is unlikely to reach beyond the Within-day or Day-ahead contracts. The NBP Within-day briefly turned negative in 2006 but this was largely due to commissioning flows from then-new 72mcm/day Langeled pipeline during a particularly mild October. The British market perhaps remains the most prone to negative prices among northwest European hubs in 2020. If Britain's export capacity fails to keep pace with LNG sendout and the market's relative small fleet of stores cannot fill the gap then negative prices become a possibility.

What happens if supply doesn't readjust? All bets are off; the oldest and least efficient gas plants run as baseload, and LNG floating storage becomes viable. If all else fails maybe we will all get paid to put our heating on?

Thomas Rodgers

“EDF's reduction in its French nuclear generation for the rest of 2020 should bring around 14bcm of gas demand

models, while Italy has strict caps and others like France have regulations around security of supply. But, in general, most of Europe has liberalised to a point in which if the market is in contango, a financial signal drives participants to store the commodity for later.

Dutch TTF contracts get progressively pricier further out from delivery, with the May '20 discount to Q1 '21 in excess of €6/MWh.

The wide margins are driving northwest European shippers to seek storage as far away as Ukraine.

The oil demand shock from the coronavi-



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