

Argus White Paper: Dutch gas winter outlook 2019-20



The Netherlands' high-calorie demand will rise this winter regardless of the weather, as stronger quality conversion allows for further cuts to production from the Groningen field, especially in January-March. And a further decline in offtake from the country's small fields will increase the need for high-calorie supply from sources other than domestic production.

Groningen will again provide much of the response to changes in Dutch heating demand, making the Netherlands' need for storage withdrawals and imports less dependent on the weather than elsewhere in Europe.

Quicker storage withdrawals can comfortably offset weaker domestic production, although this results in lower stocks being carried into the summer than this year.

LNG deliveries are strong again throughout the winter, bolstering supply. And pipeline imports stay brisk, although some uncertainty remains with regard to Russian deliveries to Europe in the second half of the winter, with an extension of Russian state-controlled Gazprom's transit contract with Ukraine beyond the end of 2019 yet to be reached by the end of the summer.

Ample supply — helped by high inventories across much of northwest Europe — allows for gas to remain competitive with coal at least in the first half of the winter.

Dutch production falls

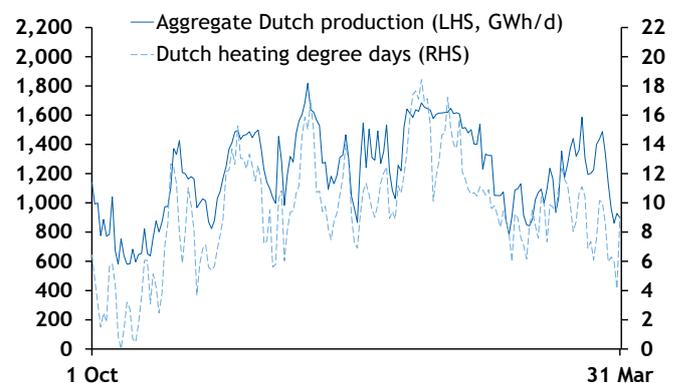
Weaker Dutch production will require a substantially larger share of aggregate demand to be met by sources other than domestic offtake.

Groningen production will have to remain considerably lower than last winter — especially in January-March when there is most scope to increase quality conversion — barring much colder weather. Offtake from the field will be substituted by more high-calorie gas being converted into low-calorie supply.

Groningen production for sale — which takes into account Norg stock movements — will again provide much of the response to changes in Dutch heating demand and low-calorie consumption elsewhere in northwest Europe, similar to last winter, as field offtake is to be minimised as much as possible.

The Dutch government aims for Groningen production to be brought down to 11.8bn m³ in the 2019-20 gas year — assuming the number of heating degree days is in line with an average year — to help minimise seismic risk in the region. This will be down substantially from the 2018-19 gas year, when offtake was on track to climb above 17.5bn m³, despite below-average degree days.

Dutch output responds to weather last winter



Quality conversion rises

Lower weather-adjusted production will be enabled by a range of measures, including more extensive use of quality conversion sites and increased nitrogen supply at the facilities from the start of 2020.

Dutch system operator GTS aims to operate its quality conversion sites at an average 100pc of baseload capacity that is scheduled to be available in the 2019-20 gas year, up from the target of 92.5pc for 2018-19. And maximum nitrogen supply at its baseload facilities will be raised to 10.58mn m³/d at the start of 2020 from 8.66mn m³/d previously.

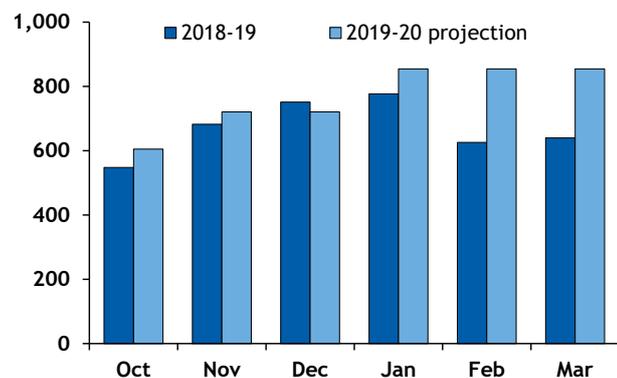
The increase in nitrogen supply at the start of next year means there will be much more scope for quality conversion to rise in January-March than in October-December.

It may be possible to convert 854 GWh/d of high-calorie gas in January-March if average nitrogen use is at 10.58mn m³/d. This is based on the ratio between nitrogen use and converted supply last winter, while taking into account the efficiency of conversion site falls as aggregate converted supply increases. Stronger overall conversion requires more high-calorie supply with a higher Wobbe value to be converted, which needs more nitrogen to be added to turn it into low-calorie gas.

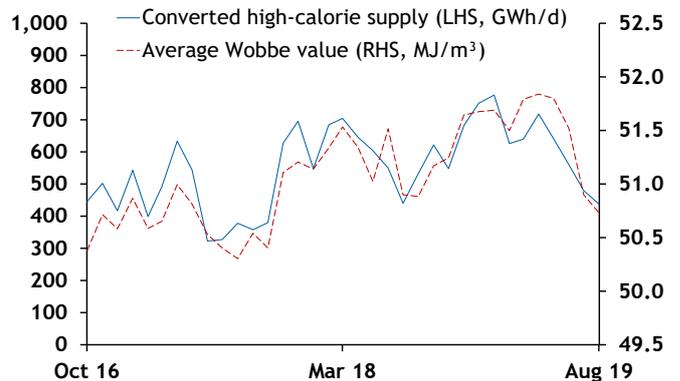
Assuming 854 GWh/d can be converted in the first quarter, this would be up from the average of 681 GWh/d a year earlier. The increase would be most pronounced in February when 626 GWh/d was converted this year.

There will be much less scope for conversion to rise in the fourth quarter before nitrogen supply is increased. GTS assumes baseload nitrogen availability of 7.1mn m³/d in October – when there is typically some planned maintenance – and of 8.66mn m³/d in November-December. Assuming sites are run at 100pc of baseload capacity, this could allow for an average 682 GWh/d to be converted over the quarter, up from 661 GWh/d a year earlier. While conversion would rise from a year earlier in October-November, it would be lower in

Converted supply last winter vs projection GWh/d



Average Wobbe rises with stronger conversion



December, when nitrogen use was above available baseload supply in 2018.

Aggregate converted supply could increase by 18.3TWh in October 2019-March 2020 from a year earlier, to 140.5TWh from 122.2TWh.

Blending falls

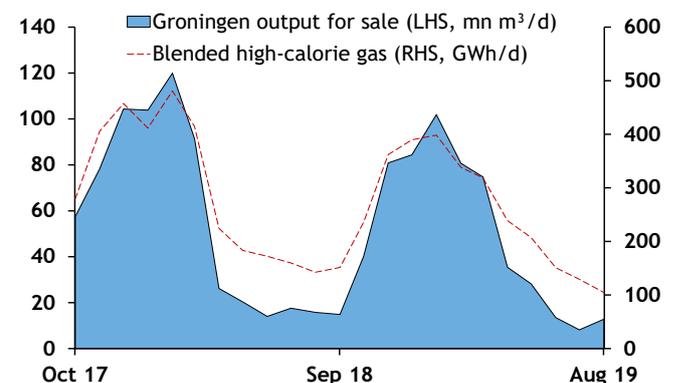
The rise in quality conversion through nitrogen ballasting will be partly offset by less high-calorie gas being used for blending with low-calorie supply as less Groningen output enters the grid, unless the weather is much colder.

High-calorie supply used for blending accounted for around 32pc of combined Groningen output for sale and blended gas last winter.

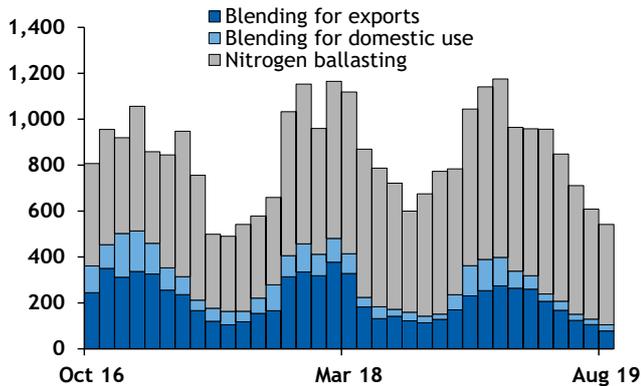
Based on this ratio, the 18.3TWh of additional converted high-calorie supply would replace around 12.4TWh of Groningen supply and 5.9TWh of high-calorie gas for blending.

This results in an increase in high-calorie demand of 12.4TWh to offset weaker Groningen production for sale, assuming overall low-calorie demand is stable from a year earlier.

Groningen output for sale determines blending



High-calorie supply used for blending and QC GWh/d



But while Groningen output for sale will provide much of the response to differences in low-calorie demand, any changes to production for sale because of colder or milder weather also have an effect on how much high-calorie gas could be used for blending.

Even weaker heating demand than last winter — when heating degree days were well below the long-term average — could allow for Groningen production for sale to be turned down further in excess of the cuts enabled by stronger conversion. And even less Groningen gas entering the grid would curb the scope for blending further, offsetting more of the increase in conversion.

In contrast, weather more in line with or colder than average would require Groningen output for sale to be ramped up, consequently also lifting the scope for blending.

Small fields continue decline

Production from the Netherlands' small fields will continue its decline this winter, further increasing the country's demand for supply from other sources.

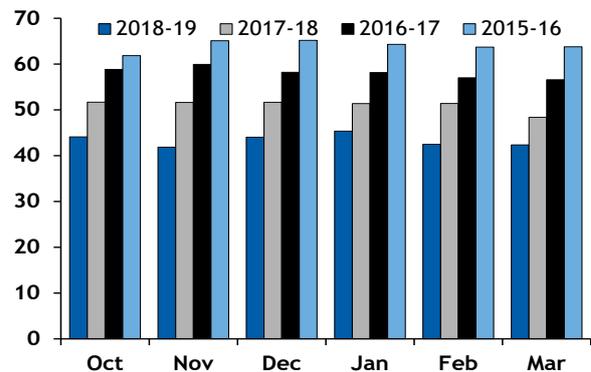
Small field output fell by around 12pc on the year in the past three winters, with the decrease accelerating recently and reaching 15pc in the 2018-19 winter. New fields coming on stream have been insufficient to offset a quicker decline in offtake from maturing fields.

But output from the Q10-A field — which came on line in February and produced more gas in July than any other Dutch field aside from Groningen — may help slow the decline.

A 12pc decrease this winter will result in small field production slipping to 38.2mn standard m³/d from 43.4mn m³/d a year earlier.

And this will lift Dutch demand for supply from other sources by a cumulative 9.3TWh over the winter.

Small field output in decline mn m³/d



Storage withdrawals ramp up

Dutch storage withdrawals could rise this winter from a year earlier to help offset weaker domestic production, resulting in a smaller storage overhang being carried into next summer, unless imports step up considerably.

Little or no storage space left to fill in October will curb Dutch demand early in the winter. There were typically still net injections in October in recent years, but stocks at Dutch sites — except for Norg and the fast-cycling Zuidwending facility — entered this winter at maximum capacity.

And quicker withdrawals from the Bergermeer and Grijskerk storage sites later in the winter could more than offset stronger aggregate high-calorie demand for quality conversion and weaker small field offtake, even as there is little scope for inventories at the start of November to be higher than a year earlier.

Grijskerk was completely filled at the start of November 2018, while Bergermeer stocks of 43.5TWh were not far off the site's maximum capacity of 45.7TWh.

But both sites did not even come close to emptying, providing ample scope for quicker withdrawals this year.

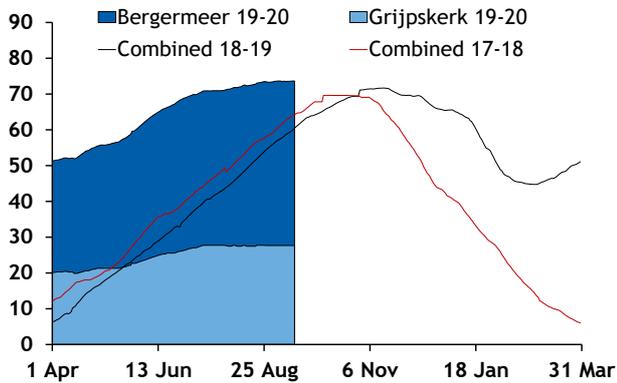
Stronger supply, largely driven by a sharp rise in LNG receipts to northwest Europe, curbed the Dutch temperature-adjusted stockdraw last winter compared with previous years, even as domestic production fell.

And Grijskerk still held 19.9TWh at the start of April, with inventories at 72pc of capacity, while Bergermeer stocks of 31.2TWh were at 68pc of capacity.

Even if an extra 21.7TWh is withdrawn from the two sites this winter — sufficient to offset stronger quality conversion and weaker small field output, assuming demand and supply from other sources are in line with a year earlier — this would leave combined inventories of 29.4TWh by 1 April.

Bergermeer and Grijskerk stocks

TWh



And this would still be considerably higher than the 1 April average of 17.2TWh in 2016-18 when inventories were much lower than this year.

There would be ample scope for withdrawals to rise further in case cold weather lifts required Groningen production and consequently blending, power sector gas demand is stronger, or supply from other sources slows from a year earlier, without running the risk of sites being emptied early.

Alkmaar withdrawals rise

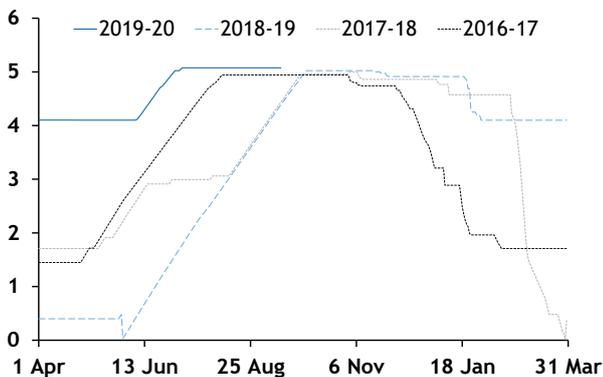
Withdrawals from the low-calorie Alkmaar site will rise this winter, which will curb demand for Groningen output for sale relative to temperatures.

This could reduce the amount of high-calorie gas used for blending next winter, since Alkmaar is filled in the summer with converted supply rather than Groningen gas and supply from the site can consequently not be enriched further.

Alkmaar has a capacity of 5TWh and was already completely filled by the start of July this year. The facility was also completely filled by 3 October last year, but less than 1TWh was subsequently pulled from the site before the end of March, leaving it with stocks of 4.1TWh at the start of this summer.

Alkmaar inventories

TWh



This leaves ample scope for quicker withdrawals this winter. And GTS has recommended completely emptying Alkmaar in the winter months. This could allow further reductions to Groningen output as Alkmaar can then be refilled in the summer months when quality conversion sites are typically not fully utilised because of weak low-calorie demand.

Dutch LNG, pipeline supply to stay brisk

The Netherlands' LNG and net high-calorie pipeline imports will be brisk again this winter, curbing the need for storage withdrawals at least in excess of what is required to offset stronger quality conversion and weaker small field output.

Dutch LNG receipts climbed sharply last winter from previous years as higher global liquefaction capacity and weak northeast Asian demand freed up ample supply for Europe.

Gate sendout rose to 235 GWh/d in October 2018-March 2019 from an average of just 10 GWh/d in the previous three winters.

And global liquefaction has increased further since the end of last winter, largely because of new US projects coming on line. Further additions are expected in the coming months, such as at the Freeport, Cameron and Elba Island projects.

This could boost deliveries into Europe, although this would partly depend on demand in traditional global premium markets, especially northeast Asia.

Assuming Gate sendout is consistently in line with the quickest for any month last winter — the 286 GWh/d in March — it would rise by around 9.3TWh, alone sufficient to offset the expected decrease in small field production.

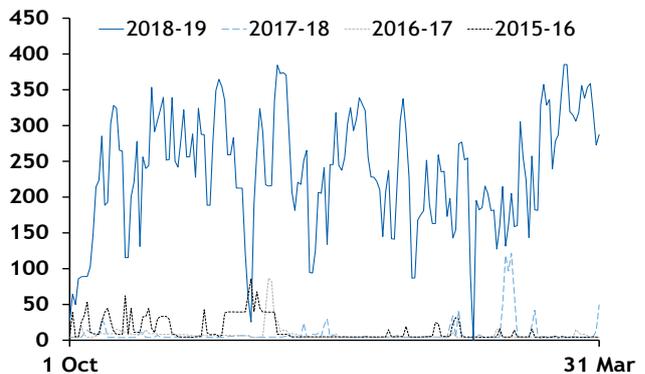
A substantial rise in LNG deliveries could consequently help reduce the draw on storage, at least if supply from other sources stays quick.

LNG could limit demand for Norwegian imports

Aggregate Norwegian pipeline exports could edge up slightly

Gate sendout jumps last winter

GWh/d



this winter from a year earlier, but this may not bolster deliveries to the Netherlands, as a larger share of supply could be sent elsewhere.

The Aasta Hansteen field producing at plateau capacity for much of the winter could more than offset weaker output from Norway's older fields. Aasta Hansteen started up in mid-December 2018 and came close to the 23mn m³/d maximum Norway's Equinor said was possible only in March, while the field's daily plateau may have since been revised up closer to 25mn m³/d. And the Snefrid Nord field — which is tied back to Aasta Hansteen — produced first gas only at the start of September, while another new field, Utgard, came on stream in mid-September.

Stronger production from the flexible Oseberg field could also lift Norwegian exports. Oseberg has climbed considerably so far in 2019 from a year earlier. Stronger offtake may be driven by a drop in gas injections, which are used to improve oil recovery.

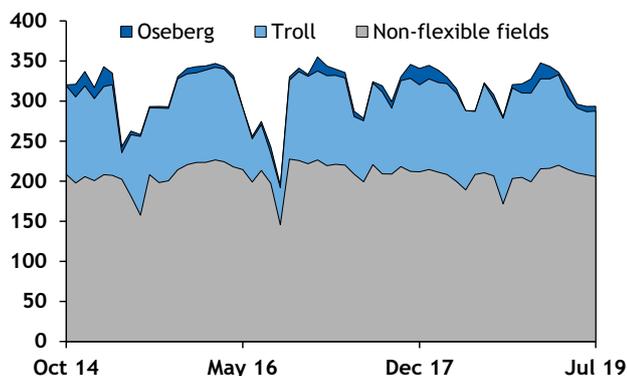
But Norwegian production remained weak in early October as Equinor may have continued to limit Troll production. Prompt prices at northwest European hubs were at a wide discount to the front-summer market in early October, which could encourage deferring production, similar to earlier in the summer.

In any event, a larger share of Norwegian supply may have to be sent to the UK this winter if the weather is more in line with the seasonal norm, unless LNG deliveries climb further.

Norwegian deliveries to the German beach were strong last winter as quick LNG receipts and mild weather cut into UK demand for supply from the country.

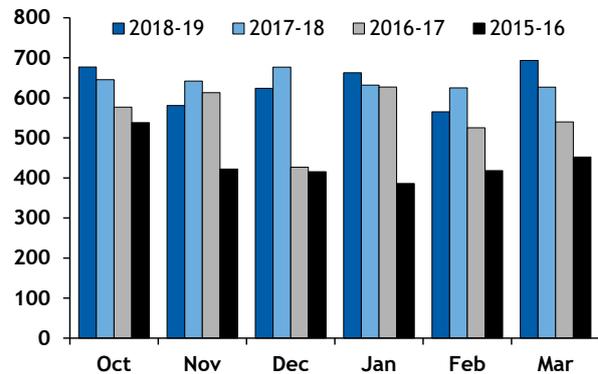
But flows into the Dutch system at Emden edged lower in the 2018-19 winter from a year earlier as a larger share of supply was directed into Germany.

Norwegian production mn m³/d



Dutch receipts at Emden

GWh/d



TTF prompt prices mostly held a substantial discount to NCG and Gaspool — as strong LNG supply weighed on the Dutch hub relative to markets further east — encouraging brisk flows into the German grids. And while TTF contracts for delivery in the fourth quarter were at a premium to Gaspool late in the summer, they still held below the NCG. The Dutch first-quarter 2020 market was at a discount to both German hubs.

Lower variable fees for entering the German system could encourage deliveries into Germany ahead of the Netherlands even when NCG and Gaspool prompt prices are only at a tight premium to the TTF. NCG no longer applies a conversion neutrality charge on gas entering its grid in the 2019-20 gas year, after it levied €0.15/MWh in 2018-19, while Gaspool has reduced its fee to €0.005/MWh from €0.075/MWh.

Russian uncertainty

There remains some uncertainty over Russian pipeline deliveries to Europe in the second half of the winter.

Gazprom's transit contract with Ukraine is to expire at the end of this year and an extension of the deal was yet to be agreed by early September. And the firm's two new pipelines that would bypass Ukraine — the 55bn m³/yr Nord Stream 2 route to Germany and the continuation of the 15.75bn m³/yr second leg of the Turkish Stream project — are facing delays.

Gazprom would need deliveries through Nord Stream 2 and Turkish Stream as well as more supply from European storage to offset a complete halt to flows through Ukraine. But Turkish Stream's onshore continuation in Bulgaria will not be completed before the end of 2020, while Gazprom was yet to receive approval for the construction of Nord Stream 2 in Danish territorial waters.

Failure to reach an agreement before the start of January could consequently lead to slower sales to Europe, including the Netherlands and bolster storage withdrawals or the need for imports from other sources. The next round of EU-brokered talks between Russia and Ukraine is to take place in October.

Uncertainty over Russian deliveries persisting could encourage capacity holders, including Gazprom itself, to minimise the stockdraw in the fourth quarter, in favour of carrying higher stocks into the second half of the winter. This could curb the stockdraw especially at Bergermeer, where Gazprom holds almost half of the aggregate capacity, in November-December.

Strong LNG receipts curb demand for exports

A repeat of last winter's strong LNG receipts across much of northwest Europe, and especially an increase in deliveries, could again limit demand for Dutch high-calorie exports.

High-calorie exports to Belgium — some of which are delivered on to France — slipped last winter compared with previous years as stronger LNG deliveries, high French stocks and mild weather curbed demand in these markets.

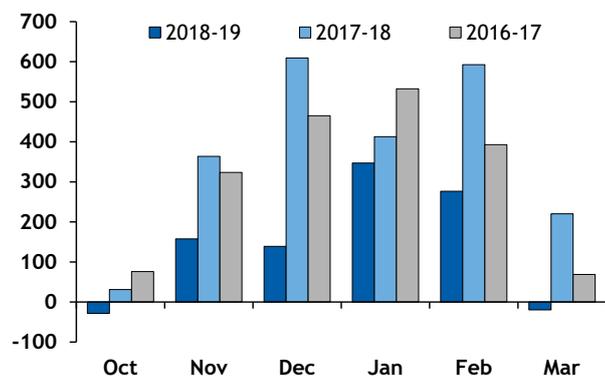
Weather more in line with the seasonal norm could increase French and Belgium demand for pipeline imports, barring a further increase in LNG deliveries.

But France would also have ample flexibility for a quicker stockdraw than last winter. French booked capacity was completely filled by the start of the winter. Provided stocks remain at capacity of 127.9TWh until the start of November, this would be some 4TWh higher than a year earlier. And similar to Dutch sites, French facilities did not even come close to entering last winter because of weak demand and strong supply, with stocks of 36.9TWh left at the start of this summer.

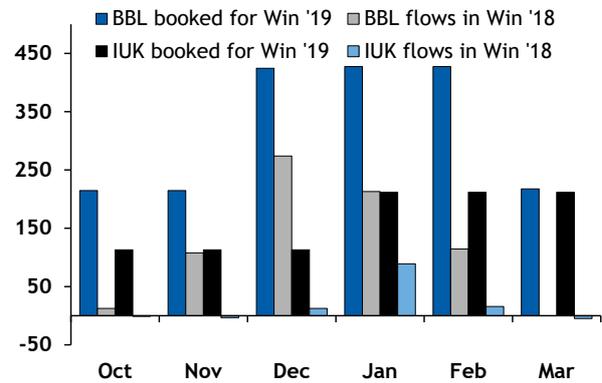
And a repeat of last winter's quick LNG deliveries could limit demand for northwest European deliveries to Italy, although this would also depend on the country's receipts from Algeria and Russia.

Algerian deliveries to Italy slipped last winter from the previous two years and dropped further this summer. Slower receipts from the country may have been at least partly driven by some long-term supply contracts lapsing. And while at

Net exports to Belgium slow last winter GWh/d



BBL and IUK capacity and flows towards the UK GWh/d



least a large share of long-term contracts that were set to expire at the end of this year may have been renegotiated, Italian firms may have pushed for lower contractual obligations, which could result in Algerian deliveries staying slow.

But there could be ample scope for Russian deliveries to Italy to rise from a year earlier, at least for much of the winter and assuming there are no disruptions to supply from the country.

And high stocks in much of central and eastern Europe could also curb the region's demand for imports from markets further west.

BBL to run ahead of Interconnector

Quick LNG deliveries could again curb the UK's need for imports from the continent but Dutch exports through the BBL will ramp up in periods when demand is strong, as the pipeline will run ahead of the Interconnector.

BBL capacity booked for deliveries from the Netherlands to the UK in the core heating season was by late summer not far off the pipeline's maximum capacity of 494 GWh/d and well above long-term subscriptions of 215 GWh/d. Some 424 GWh/d was booked for December and 427 GWh/d for January-February. Bookings for October-November were in line with long-term subscriptions, while 218 GWh/d was allocated for March.

Booked capacity towards the UK on the Interconnector was much lower at 113 GWh/d in the fourth quarter and 212 GWh/d in the second half of the winter, after most long-term bookings on the link expired at the start of October 2018.

And variable costs for sending gas to the UK through the BBL are expected to be much lower than for deliveries through the Interconnector, while TTF contracts for delivery in the winter were mostly at a discount to Zeebrugge by mid-September. This suggests BBL deliveries will ramp up first when the UK requires supply from the continent, similar to last winter.

UK demand for continental supply was considerably lower than in previous years for much of last winter because of mild weather and quick LNG receipts. But BBL flows to the UK climbed as high as 273 GWh/d in December, while Interconnector flows did not exceed 89 GWh/d — reached in January — for any month.

Gas continues to displace coal

LNG and pipeline imports remaining brisk and ample flexibility for quicker withdrawals allows for Dutch gas to remain competitive with coal early in the winter, although there may be less scope for fuel-switching in the second half of the winter.

Strong power sector gas burn could help the Netherlands absorb some additional supply in October when there will be little or no injection demand. And there could be scope for gas to continue to displace some coal from the generation mix later in the quarter, at least unless unseasonably cold weather boosts heating demand.

The TTF November contract held below emissions-adjusted fuel-switching prices — at which a 54pc-efficient gas-fired plant would be competitive with a 40pc-efficient coal-fired unit — in early October.

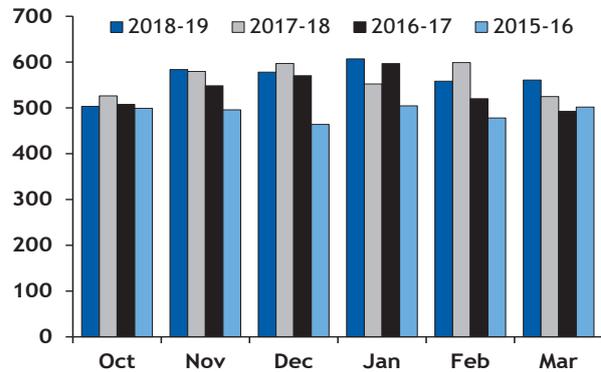
TTF December and first-quarter 2020 contracts still held above these fuel-switching prices in early September. But sustained periods of mild weather may allow for gas to displace some coal from the generation mix later in the winter as well.

And even if gas remains largely uncompetitive with coal in the second half of the winter, the need for gas-fired generation could be bolstered by the closure of the 650MW Hemweg 8 coal-fired plant at the start of January.

Gas displacing coal from the generation mix would be in contrast to much of last winter when continued injection demand early in the winter limited supply available to be burnt by the power sector. The Netherlands' 54pc-efficient gas-fired plants last winter only became competitive with 40pc-

Industrial demand strong last winter

GWh/d



efficient coal-fired units in late February-March, when the high inventories pushed prompt prices into fuel-switching territory.

But the scope for power sector gas consumption to add substantial extra demand this winter compared with a year earlier may be limited.

Dutch industrial demand, including power sector consumption, of 565 GWh/d last winter was already the highest in the past seven years. It had last been higher in the 2010-11 winter at 592 GWh/d.

While gas was almost entirely uncompetitive with coal for much of the winter, power sector demand was lifted by prolonged outages at Belgian nuclear units, which boosted the need for generation from other sources across much of the region.

But provided industrial gas burn is consistently in line with the highest for any month last winter — the 607 GWh/d in January — this would add around 42 GWh/d of demand, equivalent to a cumulative 7.7TWh.

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