Europe would face a desperate scramble to replace Russian gas

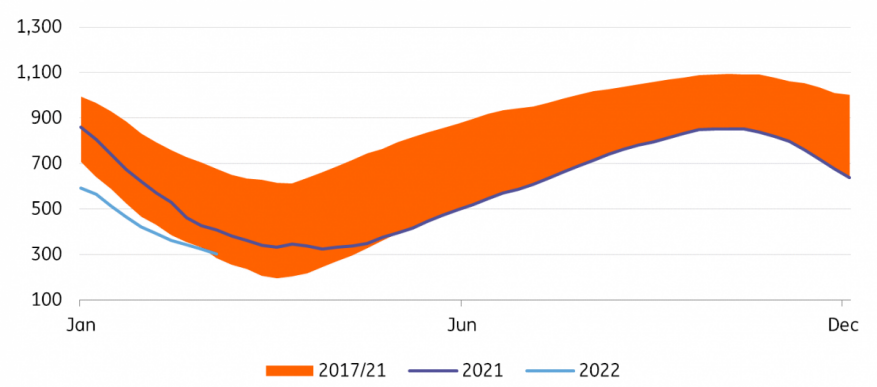
Europe's dependency on Russian energy has been a longstanding concern within the region, particularly for natural gas. These worries have only grown. Given the current Russia-Ukraine war and the resulting sanctions, there are worries that Russian gas flows could stop. And that would be seriously tough for Europe

A gas extraction plant in the north of the Netherlands

Price action reflects deep concerns over supply shortfalls

The price action in the European gas market over almost the last year has reflected a significant tightening. This was largely a result of reduced Russian gas flows into Europe, which saw the region enter the heating season with record-low inventories. More recently, uncertainty over how Russia may react to European sanctions and the suspension of the approval of the Nord Stream 2 pipeline has raised concerns over gas supply going into next winter. As a result, Dutch hub prices, TTF, have rallied to record levels of EUR345/MWh recently, and prices were up more than 400% at one stage this year.

Low European inventories in uncertain times leaves the market more vulnerable (TWh)



Source: GIE, ING Research

European supply & demand overview

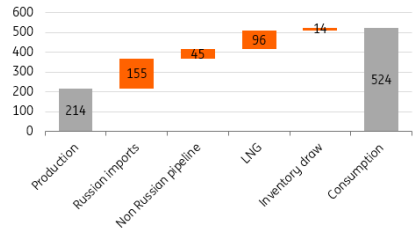
European gas production has fallen over the years, driven by a reduction in the production cap at the Groningen gas field in the Netherlands. The Dutch government implemented a production cap which has been reduced over the year with the idea to do so until the field shuts. The production cap this year was 3.9bcm, although this will potentially be lifted to 7.6bcm. The current gas year is expected to be the last operating year of the field. Total European output, including Norway and the UK, totalled around 214bcm in 2021.

Falling domestic output over the years has meant that Europe relies increasingly on imports to meet domestic demand. European gas demand is estimated to total around 524bcm in 2021, leaving a domestic deficit of 310bcm. This means that almost 60% of European demand must be met by imports.

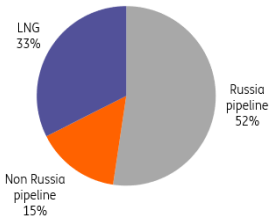
In 2021, European gas imports totalled around 296bcm (Norway is included in European production), of which Russia was the largest contributor, making up 52% of this number. LNG imports made up around 32% of total imports, whilst the remaining 16% includes supply from North Africa and Azerbaijan.

European gas balance & imports

2021 European gas balance (bcm)



European gas imports (%)



Source: Rystad, IEA, Eurostat, GIE, ING Research

Limited growth in domestic production

There is the potential to increase domestic European output over the course of the year. Between Norway, the UK and the Netherlands, we assume that output could be increased by 14bcm. There are some new gas fields in the North Sea ramping up, whilst the Netherlands will potentially increase its production cap for the Groningen gas field. This is probably where the most uncertainty lies when it comes to domestic production.

Groningen could theoretically scale up production by more meaningful volumes. However, politically this will be a difficult decision, given that the production cap has been gradually reduced due to seismic activity in the region and in fact, the field was set to enter a stand-by position from next year. Although clearly there is the potential for this to be delayed. The Dutch government has indicated that it will give more clarity on Groningen production levels before 1st April.

Marginal increases in non-Russian pipeline flows to Europe

Looking outside of Europe there is limited room for an increase in pipeline flows. We assume potential increases of around 2bcm from both Algeria and Azerbaijan. Although the increase in supply from Algeria is questionable due to growing domestic demand.

LNG will need to do most the work

It is clear that marginal increases in domestic production and limited increases in pipeline imports will fall well short of making up for Russian gas flows. Therefore, Europe will rely heavily on the LNG market to try to reduce a potential shortfall from a halt in Russian gas flows.

At first glance, there does appear to be a fair amount of spare LNG capacity globally. We estimate that spare capacity sits at around 125bcm and this includes export terminals which are set to ramp up over the course of this year. However, it is safe to assume that not all this spare capacity is available. Firstly, in the current price environment, if capacity were available operators would certainly be maxing out. This suggests that some of these countries which are sitting on spare export capacity are either facing disruptions or there are issues with the availability of feed gas. Therefore, actual spare capacity is likely more limited than this number suggests.

> *We can't assume that all necessary LNG supply can be diverted to Europe to meet any shortfall*

Furthermore, we cannot just assume that all necessary LNG supply can be diverted to Europe to meet any shortfall. Ignoring import capacity constraints for now, the European market will need to compete aggressively with Asia for LNG supply. This competition will be even more aggressive given the limited spare capacity in the market.

Russia is also a large LNG supplier to Europe, making up around 20% of total LNG imports. It is the third-largest supplier to Europe after the US and Qatar. If Russian pipeline flows were to be halted, it is likely that Russian LNG would also not make its way to Europe.

In addition, around 70% of LNG trade is done under long term contracts, with a large part of these

having strict destination clauses. As a result, this does significantly reduce the amount of available LNG that could make its way into Europe. This leaves around 30% of trade that is done on spot or short-term contracts. One would expect that where there is flexibility, we are already seeing these flows directed to Europe, given the premium the market is trading to Asia. Therefore, this suggests that there is limited upside to the record LNG imports seen in January 2022 of around 12.9bcm (9.5mt) according to data from ICIS LNG Edge.

US LNG supply is key

The US has already played a key role in increasing supply to Europe in recent months. The country's LNG exports have been on the rise since the end of last year, climbing to 7.4mt (10 bcm) in January 2022. Meanwhile, the percentage of US LNG cargoes heading to Europe jumped to almost 75% in January, eating up exports that had previously been delivered to Asia. This reflects how Europe's premium gas market has attracted more flexible LNG supply.

The US is likely to continue to increase exports to Europe

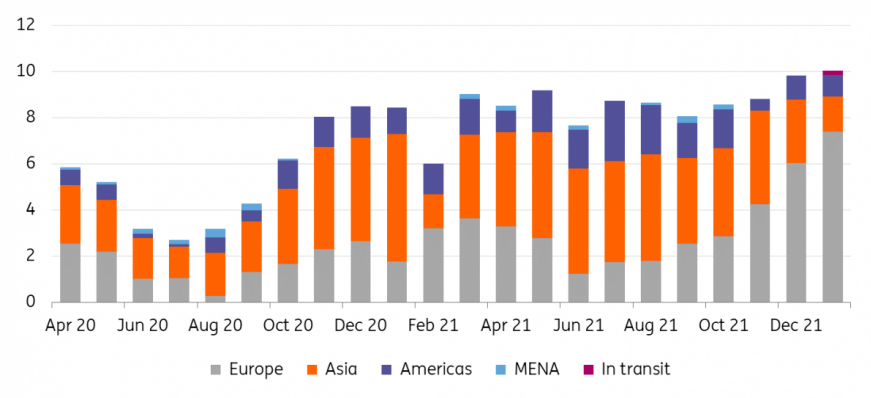
The US is likely to continue to increase exports to Europe in the current environment as new capacity ramps up. The US is on track to have the world's largest LNG capacity of 118.1 bcm by the end of 2022, as Sabine Pass Train 6 and Calcasieu Pass' 18 trains are expected to start full commercial operation this year and together add 19.4 bcm of capacity. Looking beyond 2022, another 21.2 bcm of US liquefaction capacity will come online by 2025. This will not help with the gas shortage in Europe this year but will contribute to the region's future LNG import prospects when more regasification facilities are built.

Existing US LNG facilities, despite running near capacity, can also redirect more of their LNG exports to Europe thanks to the flexible terms under US LNG contracts. The majority of these contracts feature free on board (FOB) delivery, where the buyer can in most cases decide where to ship the cargoes. This is in contrast to delivery ex-ship (DES) contracts, where a specific delivery destination port is identified.

According to Bloomberg New Energy Finance's estimates, the US will have 12.2 Mt (16.6 bcm) from FOB contracts to portfolio buyers, 7.4 Mt (10 bcm) of spot and excess supply, and 12 Mt (16.3bcm) of FOB contracts to Asian buyers between April and September—this means that roughly 65 Mt (88bcm) of US LNG supply will, in theory, be flexible to be redirected for the whole of 2022.

Such flexibility should help maintain a relatively high percentage of US LNG exports to Europe should gas prices in Europe stay favourable. But as discussed above, competition from alternative buyers could substantially cut the ultimate number of cargoes flowing to Europe. For instance, given the current energy crisis, Asian LNG buyers from countries like South Korea and Japan may be reluctant to give up their contracted excess supply. Concerns over gas supply shortfalls could also send Asia's LNG prices higher, narrowing or even eliminating the observed price difference between Asia and Europe.

US LNG exports by destination (bcm)



Source: BNEF, ING Research

European import capacity is a bigger problem

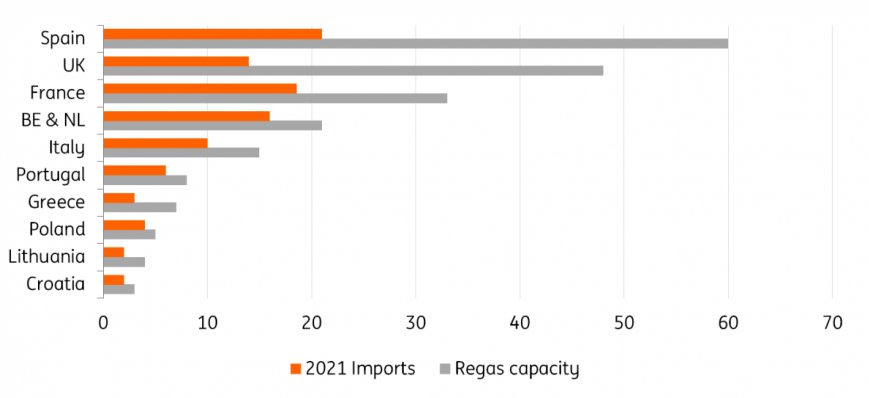
The bigger issue for Europe is the limited amount of regasification capacity. So regardless of whether there is enough export capacity, Europe will struggle to completely offset Russian gas due to capacity constraints on the import side. Annual regasification capacity in Europe stands at 204bcm (excluding Turkey). Over 2021 utilisation rates at regasification plants stood at around 47%. However, in more recent months this would have increased nearer capacity due to stronger prices in Europe leading to robust imports. Therefore, there is limited spare capacity to allow for increased imports from current levels.

In addition, the bulk of spare capacity sits in Spain, and the issue is that Spain is not well connected to pipeline infrastructure in the rest of Europe. Spain's spare capacity will, therefore, do little to help ease the shortfall elsewhere in Europe. In 2021 Spain imported around 21bcm, well below its regasification capacity of around 60bcm.

If we exclude Spain from the amount of spare regasification capacity in Europe, this leaves the region with around 68bcm of available capacity. Therefore, this suggests that under the best-case scenario Europe would be able to increase LNG imports by a similar number. However, this still falls far short of the 155bcm imports of Russian gas we saw in 2021. Also, it is worth highlighting again that Europe will need to compete aggressively for these volumes.

We will see more investment in regasification infrastructure in Europe as the region tries to diversify away from Russian gas. Germany recently announced plans to build two LNG import terminals, however, these will take some time and so will not be able to help in the event of any shortfalls in Russian pipeline flows this year.

European regasification capacity vs. 2021 imports (bcm)

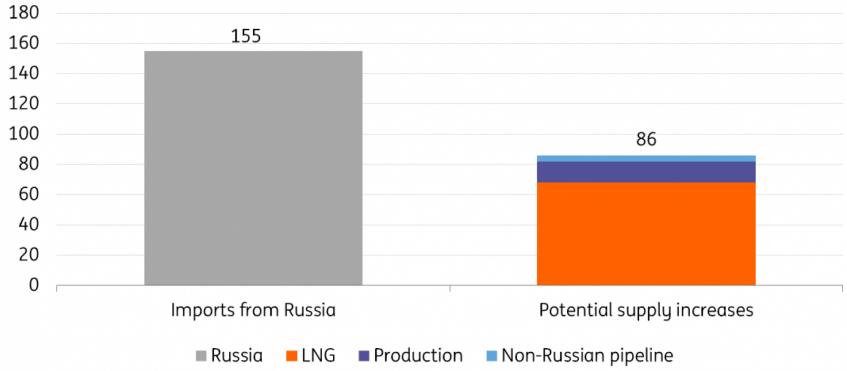


Source: GIE, Government data, Various reports, ING Research

Europe will be left short if Russian flows stop completely

While there is some flexibility in LNG supply, the key constraint for Europe at the moment is the limited amount of regasification capacity. We estimate that under a best-case scenario Europe could increase LNG imports by around 68bcm from 2021 levels. This is still far short of the 155bcm which was imported from Russia last year.

Increasing supply from elsewhere is still not enough to offset a loss in Russian gas imports (bcm)



Source: Rystad, IEA, Eurostat, GIE, ING Research

When we take into consideration domestic production increasing by 14bcm from Norway, the Netherlands and the UK, along with increased pipeline flows from non-Russian sources of 4bcm, Europe will only be able to meet around 55% of Russian pipeline flows. Therefore, we would need to see fuel switching when it comes to power generation, along with the potential for demand destruction from other users in order to ensure adequate supply.

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