

Winter 2021 outlook



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This outlook report details some of the possible market scenarios that could develop over the coming winter. Please note that these scenarios represent the individual views of E.ON Portfolio Solution's Portfolio Managers, and should not be taken as advice.

Summer 2021 review

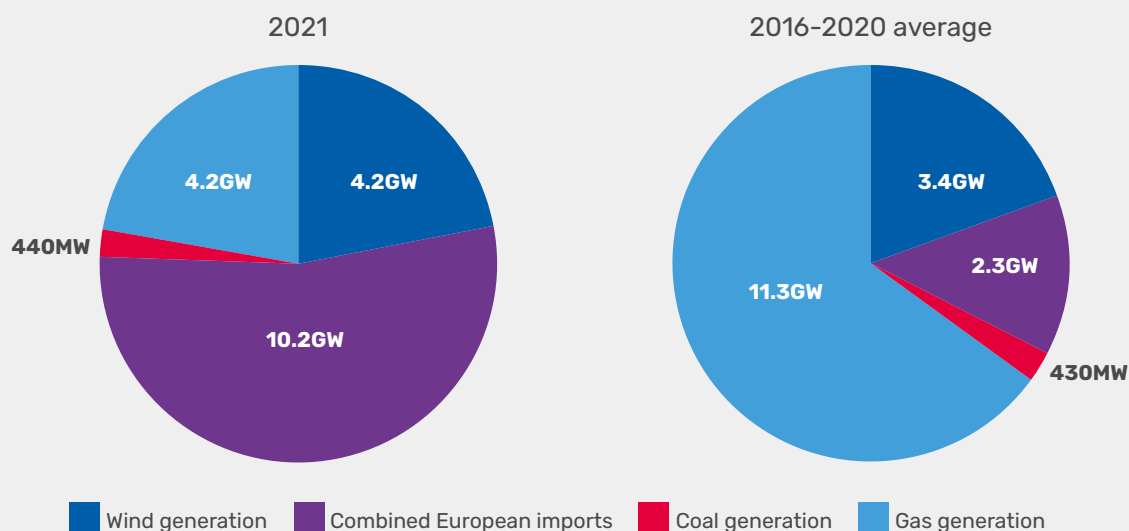
UK gas and power prices continued to trend higher throughout the summer months. Dwindling European storage was 20% below year-on-year levels and uncertainty over Russian flows continued to push National Balancing Point (NBP) and UK power contracts to record highs. What's more, the winter 2021 baseload power contract jumped from £65/MWh at the start of April, to just below £140/MWh by the first week of September.

UK power winter baseload 2021



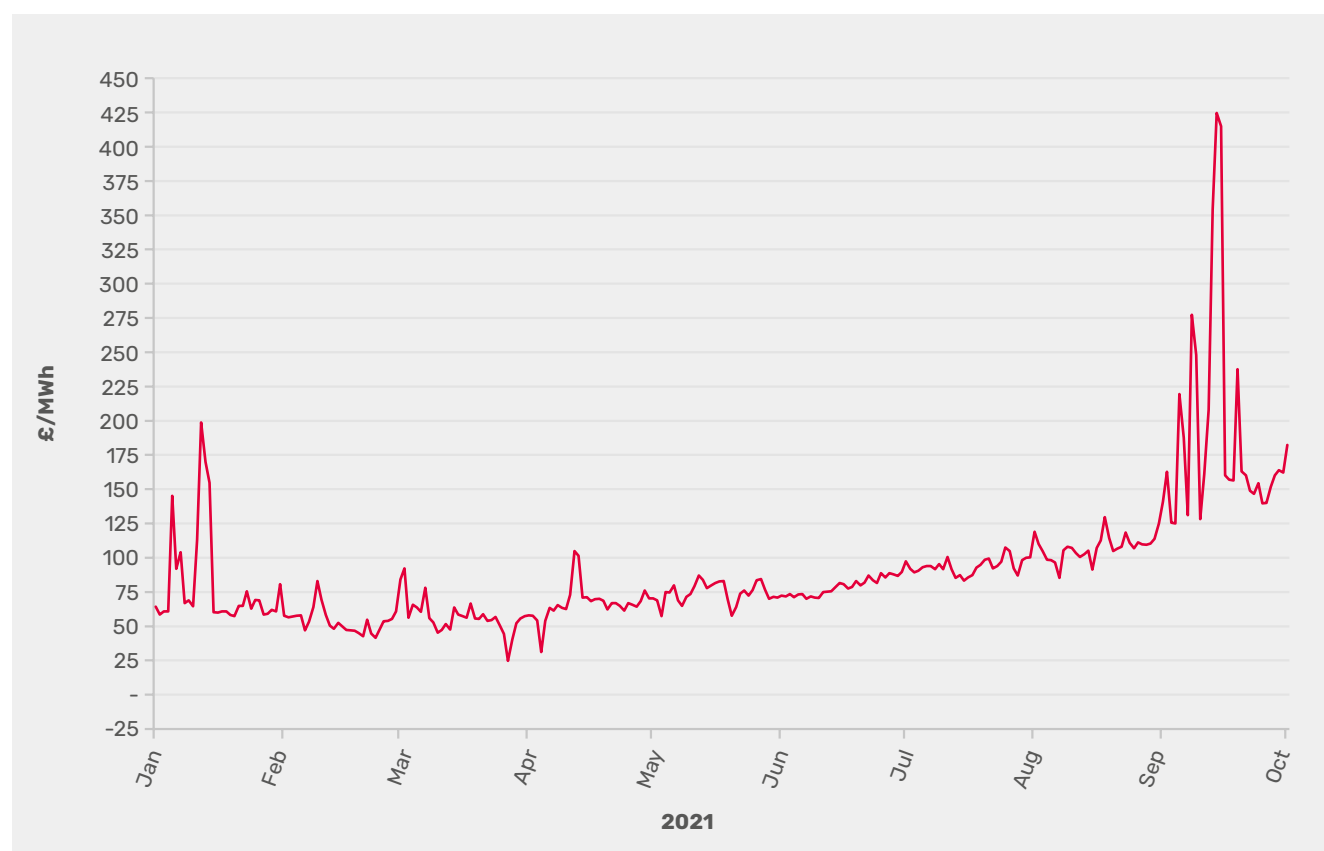
Prices have risen as UK power margins have tightened, so much so that power imports to the UK from the continent almost doubled year-on-year in August. Imports to the UK are averaging 4.2GW, and Independent Commodity Intelligence Services (ICIS) reports this as more than 60% above the five year average.

UK power imports surge in August 2021



Source: Elexon

The UK's heavy reliance on imports through its power interconnectors has been reflected in the within day and day ahead markets, which had already been strong for the majority of the summer, with the daily N2EX price consistently out-turning above £80/MWh from July onwards. But, for the second year in a row, it has been the early weeks of September which have brought exceptionally high within day prices, as a drop in renewable generation coincided with another heavy maintenance schedule and a significant drop in available capacity through the Interconnexion France-Angleterre (IFA) interconnector, which was reduced through to 17 September. This subsequently saw the daily N2EX price jump to £277/MWh on Thursday 9 September, peaking at £856.74 between 5:00pm to 6:00pm.



The high prices have seen units at EDF's West Burton A coal-fired plant accepted into the balancing mechanism, with offers of up to £3,950/MWh, while Uniper's Grain 6 combined heat and power (CHP) plant also cleared at £4,950/MWh. West Burton A's start-up brought coal-fired generation to above 1.5GW on 6 September - the first time since March.

Coal to gas fuel switching

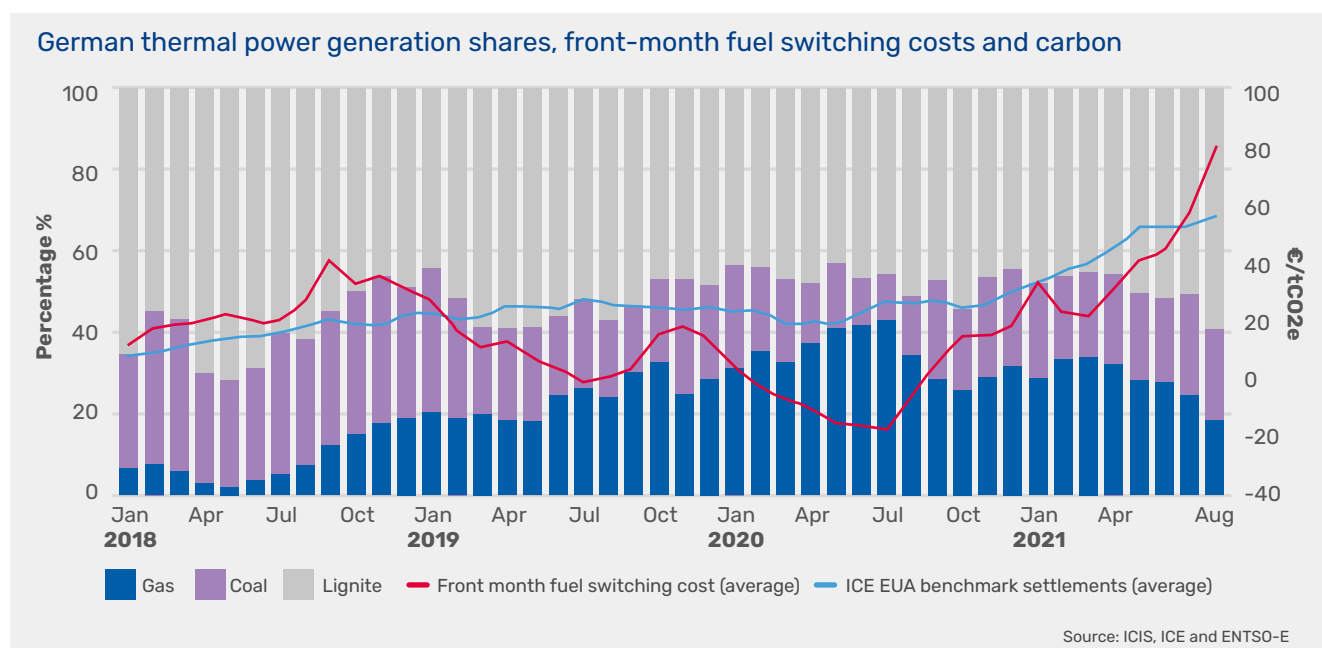
The record high gas prices have caused another phenomenon this summer, leading to a resurgence in coal-fired generation both in the UK and on the continent. The bullish trend in gas prices threatens the competitiveness of gas-fired electricity generation, and undermines coal-to-gas fuel switching, despite the record high coal and carbon prices.

Power from the continent, as previously stated, has filled the void left by reduced gas and wind generation, but interestingly coal has moved deep into the money for Quarter 4 (Q4) 2021, with generation currently at its highest level since 2017, averaging 436MW in August. The clean dark spread is currently trading at £14.894/MWh versus the clean spark price of only £8.702. The table below illustrates just how expensive gas has become, with the summer 2023 baseload spread currently out of the money for gas-fired generation.

UK Spark Spreads		16:30 UK	
Standard	Clean		
Oct 21	33.368	Oct 21	6.003
Nov 21	34.993	Nov 21	7.628
Q4 21	36.097	Q4 21	8.702
W 21	34.391	W 21	7.026
S 22	29.839	S 22	2.161
W 22	31.470	W 22	3.792
S 23	25.938	S 23	-2.122

UK Dark Spreads		16:30 UK	
Standard	Clean		
Oct 21	77.424	Oct 21	8.564
Nov 21	83.402	Nov 21	14.542
Q4 21	83.755	Q4 21	14.894

A report by ICIS illustrates just how substantial the change in the energy mix has been in Germany. Its analysts calculated that a theoretical European Emission Allowance (EUA) price of €81.14/MWh would be required to trigger a switch from coal to gas, given current price levels. This is in marked contrast to August last year, where the German front-month fuel switching cost was minus €4.85/MWh, meaning that the fuel cost alone was enough to incentivise the switch.



As shown above, German coal and lignite accounted for an ~82% share of the country's total thermal generation - its highest share since May 2019 - with gas falling to 18%, its lowest value in nearly three years.

Nord Stream 2

Uncertainty surrounding Russian gas flows has played a significant part in the volatility we have seen in the UK gas market this summer. Traders have keenly watched capacity auctions along key Russian transit routes, in a bid to gauge Gazprom's long-term strategy and a date of when Nord Stream 2 would be brought into operation.

The Russian supplier has continually shunned booking additional capacity via Ukraine, TurkStream and Yamal. The Ukrainian border has been of particular interest, as any additional capacity taken by Gazprom would have indicated that the pipeline was unlikely to be completed soon.

The week commencing 16 August was particularly volatile and driven almost entirely by Gazprom. Prices initially moved higher as Russian gas coming into the Mallnow entry point remained subdued, and questions were raised about how much spare capacity Gazprom had to increase production, as it was directing large volumes of gas into Russian storage. It then only booked a mere 0.65 million cubic metres (mcm) of extra Ukrainian transit capacity, far below the 15mcm in previous auctions.

However, there was to be a severe shock to the downside, as it looked as though gas was already flowing through Nord Stream 2. This turned out to be erroneous data on the gas transporter's system, but it did not stop prices from tumbling. There was then a statement that it expects to flow 5.6 billion cubic metres (bcm) through Nord Stream 2 during the remainder of 2021 – a strong delivery commitment.

Prices have since shifted higher as uncertainty over flows persists, but latest reports suggest Gazprom is now expected to reroute gas volumes shipped via Ukraine to Nord Stream 2 from 1 October.



Winter 2021 – what is in store?

This leads us to what is in store for gas and power prices as we move into winter. There is obviously a lot of concern for gas and power supply for the colder months, with current prices not triggering a supply reaction just yet. The following section will look at this in more detail including what might happen in different scenarios, and will then focus on three subsections that have been identified as key price drivers.

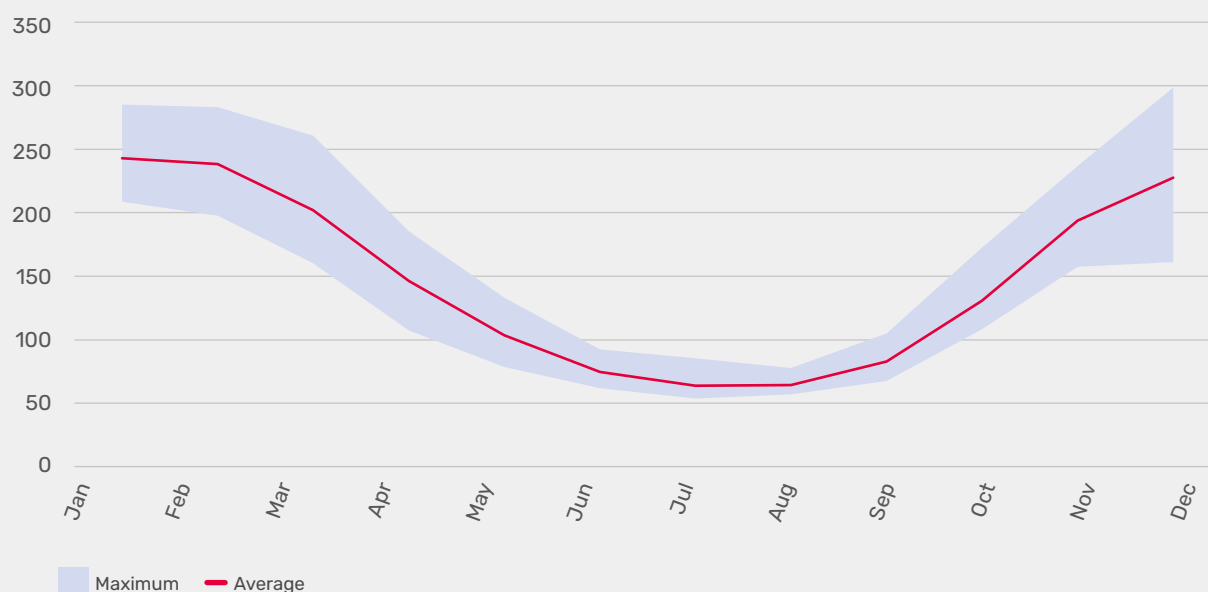
An ‘armchair analyst’ might point towards a natural recovery in the economy following the Covid-19 pandemic, and therefore energy prices. This is not necessarily incorrect, but there is likely far more to it.

Gas demand

The first thing to discuss is gas demand for the winter, and how it can vary greatly depending on weather and residential demand. A cold or extended winter, like we saw earlier this year, encourages far greater demand for gas through the UK and the majority of Europe. This is most noticeable for the traditionally colder months of December, January, and February where the variance is at its greatest.

Below you can see the possible variance in demand in the UK. Extrapolate this out across the whole of Europe and you get a huge variance in gas that may or may not be needed, so all eyes will be on weather forecasts this winter, from both the bears and the bulls.

UK Local Distribution Zone (LDZ) average weekly gas demand

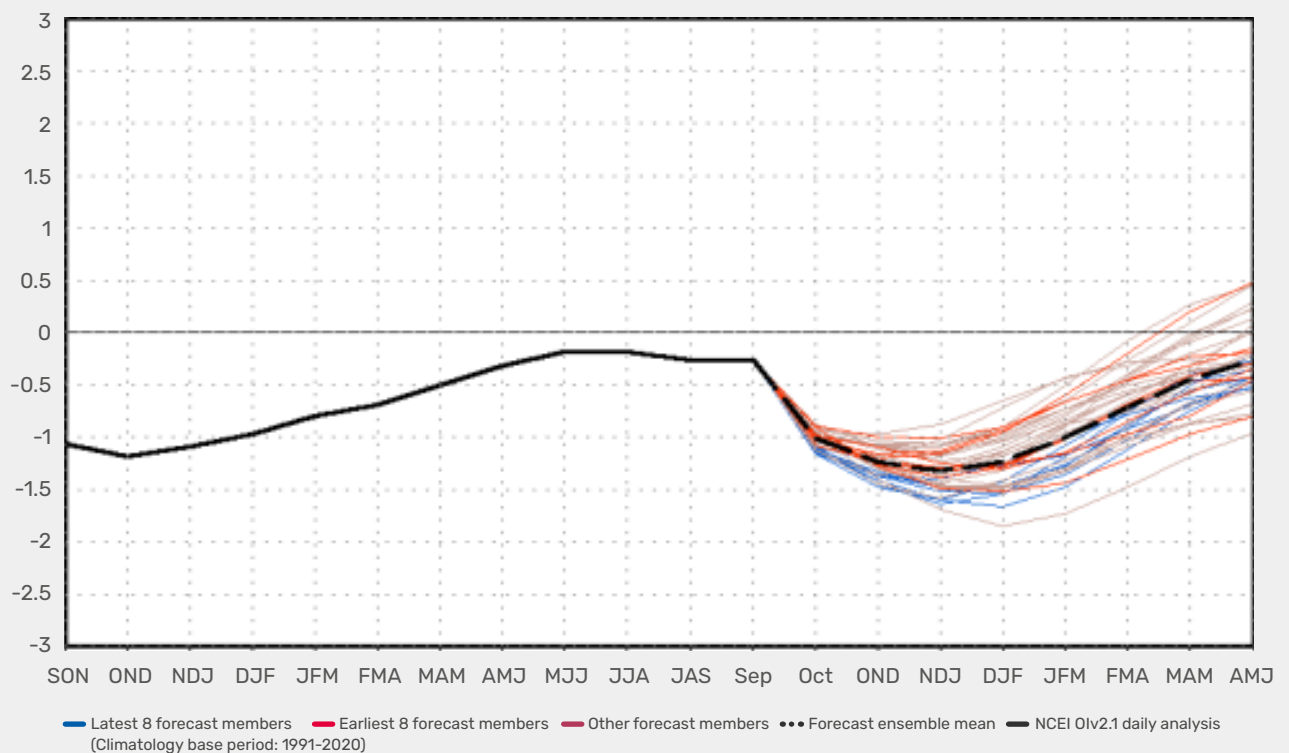


It is challenging enough to predict temperatures for two weeks' time, and even harder for wind, let alone trying to determine how the weather might out-turn months ahead for the winter. We, and the rest of the market, can start to look at some long-term weather teleconnections, with one of the most important being the El Nino/La Nina, which can ultimately result in shifts in the Atlantic Jet Stream – a narrow variable band of very strong predominantly westerly air currents encircling the globe several miles above the earth – and can have a large impact on temperatures across the UK and Europe. Arctic Sea Ice and the Quasi Biennial Oscillation (QBO) are also teleconnections worth watching, as they can have a significant impact on weather for Europe.

Weather

La Nina – the latest that we have seen is an intensifying signal for a La Nina scenario, up to a 70-80% chance of a reasonably strong event, allowing cold weather conditions to become more prevalent in the UK during autumn and early winter. Later on in the winter, this can then shift to milder, more unsettled conditions, which could mean a greater chance of stronger winds. A La Nina winter could also affect temperatures in the USA and Asia quite significantly, bringing in colder weather. The risk here is that demand for liquified natural gas (LNG) in the Far East stays high, limiting deliveries into Europe.

CFSv2 forecast Nino 3.4 SST anomalies (K) (PDF corrected)

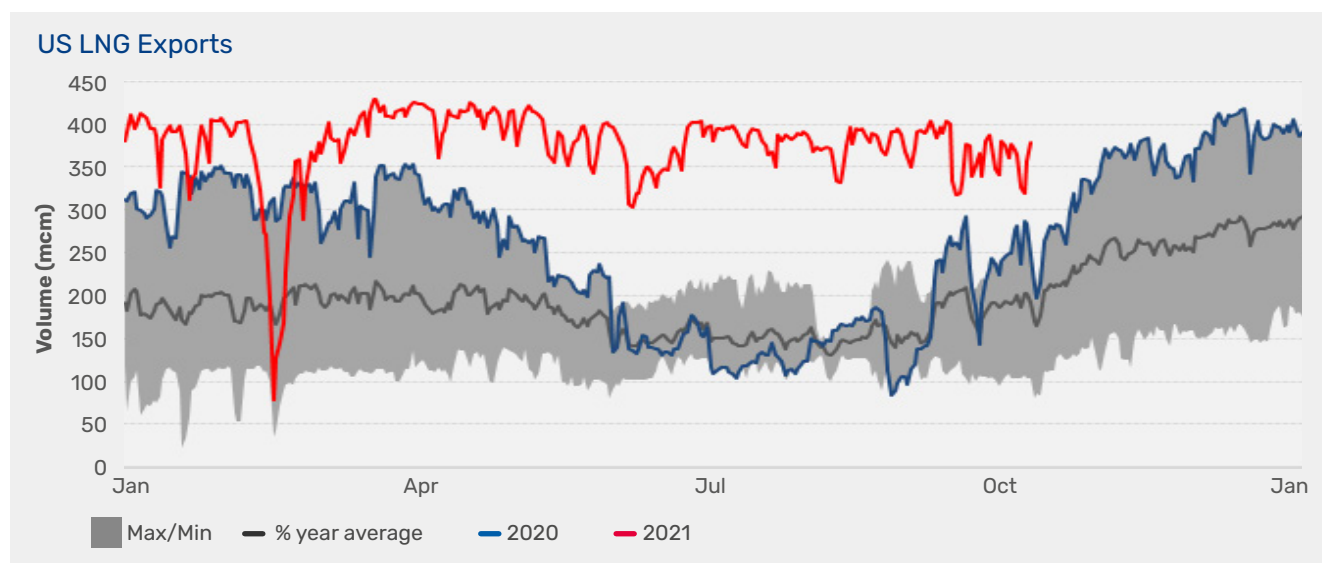


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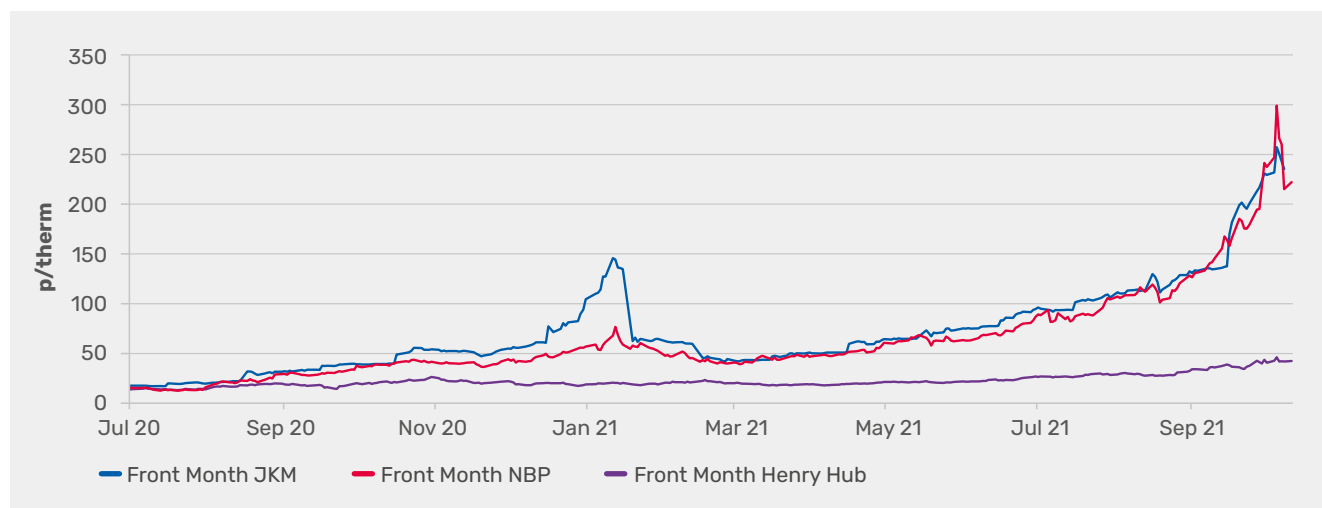
LNG

This summer held the promise of an abundance of LNG finding its way to Europe but, once again, events in other parts of the world meant that deliveries to Europe were rather disappointing.

The long-awaited start-up of several new USA facilities, which finally happened in 2019, meant that last year there was supposed to be a surfeit of LNG on the market. The year started with Europe receiving record amounts of LNG. However, as global demand for gas slumped during Covid-19 lockdowns, LNG exports dried up with offtakers preferring to pay deferment charges to not take deliveries, rather than have gas which they would make a loss on upon delivery.



As countries emerged from lockdowns, demand and prices rose, meaning that LNG exports ramped up to new highs. However, a severe cold spell in Asia towards the end of the year meant that most cargoes headed towards the world's three biggest LNG consumers, leaving Europe with slim volumes. Japan, China and South Korea accounted for 54% of LNG demand, and this caused a spike in Japan Korean Marker (JKM) prices (the benchmark price for LNG in Asia). Once the cold spell passed and JKM prices retreated, it allowed for a ramp up in LNG deliveries to Europe.



Through the winter, we had an indication of what USA export capabilities really were, and so expectations for a surfeit of LNG for this summer were high, allowing for strong deliveries to Europe. Exports from the USA have indeed been high and global LNG production is at a record level - 42.8 bcm on a 12-month annualised basis and 2.4 bcm up year-on-year. However, European receipts have again been disappointing, falling a total of 5.8 bcm from April to September compared to 2020.

So where did the surplus go? A significant amount went to Asia, especially China, as a result of above seasonal temperatures raising cooling demand and the continued recovery in economic activity with the reduction in Covid-19 lockdowns. Demand from Japan and South Korea was more moderate but there was also an increase in the amount of gas taken by India, Pakistan and Bangladesh, an average of 1.4 bcm/month. Meanwhile, South America increased its imports by 1.3 bcm/month. South American demand for LNG has dropped in recent years with new domestic gas production coming online. However, low hydro stocks pushed them back to requiring higher gas imports again.

What does this mean for this winter? Current price levels indicate that LNG exports will remain strong, so how much comes to Europe will depend on Asian weather. Asia relies on LNG for the majority of its gas, and most Asian offtakers have long-term supply contracts in place, meaning they will be first in the queue for deliveries and, when necessary, are willing to pay extremely high prices to get spot cargoes. Unless European gas forward prices go above the JKM and remain there, the signals will be lacking to bring any swing supply to Northwest Europe.

Russian flow and Nord Stream 2

As mentioned earlier, Nord Stream 2 and Russian flow will be key for this winter. What we know at this point is that the pipeline is physically completed, and has received technical certification for the first link from Danish authorities, so Gazprom has started filling this part of the pipeline (an interesting sign that it has the gas to do this). The link that runs through German water has not yet received technical certification from German authorities, and could take another couple of months.

There is also the legal issue of unbundling the ownership of the pipeline and the gas being transported through it, but Gazprom may be able to challenge the initial ruling on this. With gas prices so high, some analysts believe this favours Gazprom, as Europe will be eager for increased supply from Russia to help alleviate the current high prices. However, some European countries still stand opposed to the controversial pipeline, but Germany has satisfied the USA's reservations and as long as a certain amount of gas flows through Ukraine, other objections may be placated.

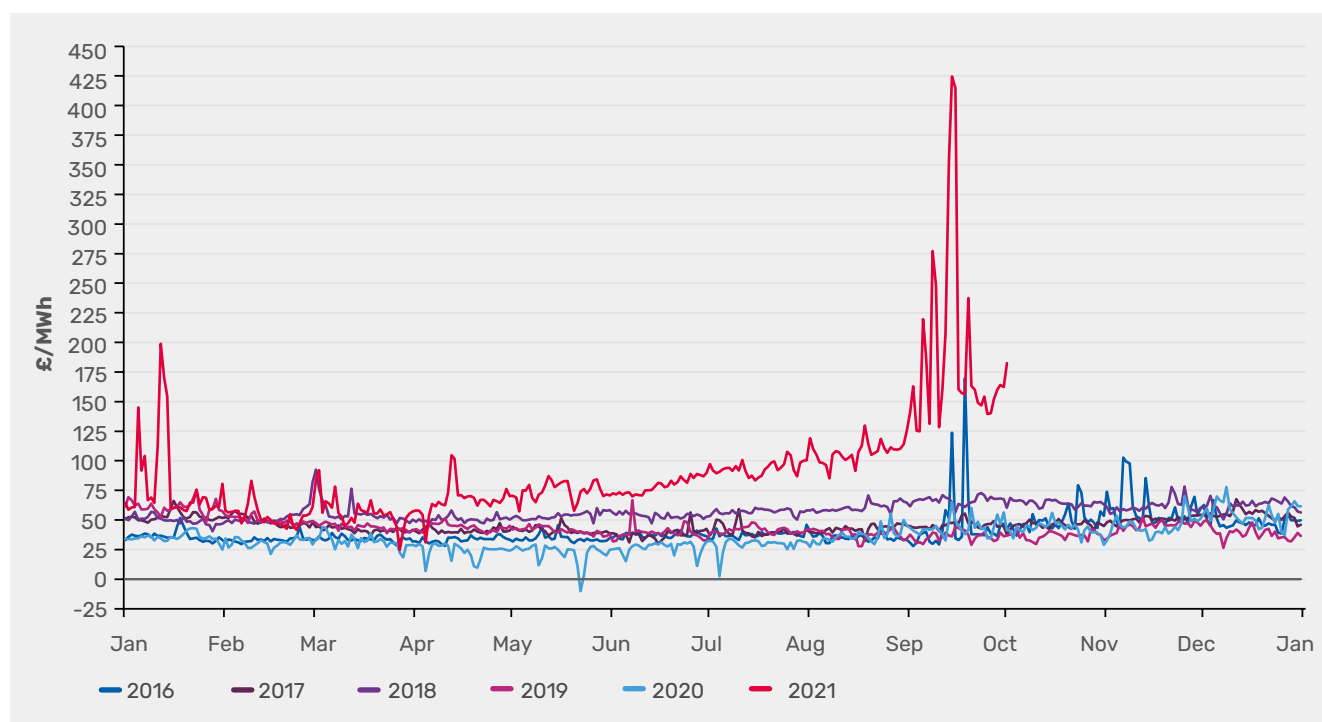
Shortly before completing this outlook report, on a day of extreme volatility in the Title Transfer Facility (TTF) and NBP gas markets, Russian President Vladimir Putin announced that Russia would flow extra gas to help the European gas situation. This could be done through Nord Stream 2, but if not approved we could see extra transit capacity booked through Poland and Ukraine (as mentioned earlier, this is something Gazprom has avoided so far this summer). Putin's comments are very promising, and triggered a strong downwards move for winter related contracts, but caution is strongly advised as volatility and fear are still very much in play.

Power outlook

So far we have only focused on gas, as it is a key primary driver for the power market in the UK, plus gas prices are at record highs. This has therefore supported the power market in turn, but power prices have another challenge this winter.

On top of expensive fuels (gas and coal) and expensive emissions certificates (carbon), power supply margins could be limited, especially if the wind does not blow. Some of this could be due to delayed maintenance on nuclear and gas-fired power plants as a result of lockdowns last year. The UK nuclear fleet has been relatively unreliable so far this year. This is not so much of a problem when wind output is high (for example >8GW in the winter), as this helps meet demand at peak times (4:00pm to 8:00pm). However, if the wind is not blowing particularly hard, which can often be associated with a drop in temperatures, then we need more thermal generation, and this requires more gas/coal, and the less efficient gas/coal power plants emit more CO₂, and the bullish cycle continues.

Below you can see a day ahead power price chart tracked year-on-year from 2016. The red line relating to 2021 has seen strong spikes at several points this year, but you can also see the effect of the elevated day ahead gas prices through the summer, before getting to the record day ahead prices in September. The main concern for the winter is that if these prices are possible on a relatively mild day in autumn, what happens on a freezing day in January if a high pressure blocking pattern limits wind output for days/weeks at a time?

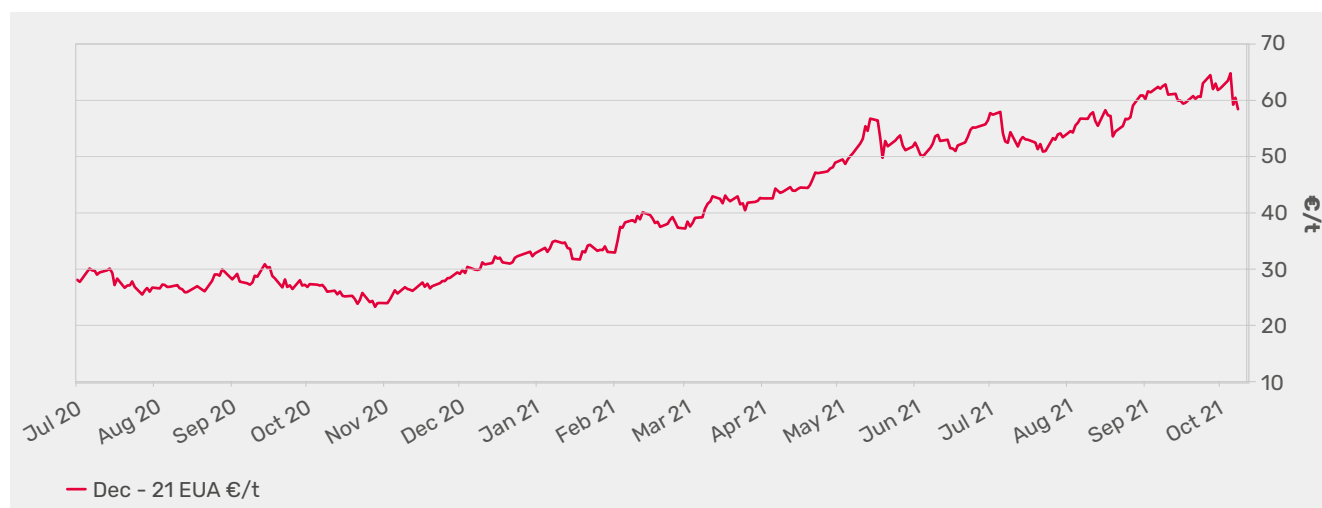


Carbon outlook

This year we have seen carbon prices rally relentlessly, starting the year around the €30/tCO₂e mark, exploding towards and above €60/tCO₂e, and currently trading at €61.8/tCO₂e. Undoubtedly the EUA market has outperformed all expectations and predictions made in January, with many analysts revising forecasts as early as March this year.

Market participants blamed low liquidity in the UK power market on the anticipated arrival of the UK Allowance (UKA) scheme, and a lot of uncertainty existed as to how European and UK carbon markets would relate. A few months on, and we still have uncertainties going into the winter, and a clear price discrepancy has been established between the two schemes, with a healthy premium price paid for the UKA permits.

The price development for EUAs can be seen below, from January 2021 to present.



Power and gas markets have surged effortlessly higher throughout the year, as power and gas margins have been touted to be tight over the winter months, whilst any clear bearish fundamental news seems to be short lived or even non-existent. This has seen the price to emit carbon soar, and as we enter the winter, fundamentals remain strong.

Whilst we have seen a strong correlation to gas prices for much of the year, there has been a decoupling as we have moved into the winter trading period. The strong gas moves have been hard to keep up with, particularly with an array of interventionist measures available to governments, including the cost containment mechanism (CCM) which has the ability to cap price rises for EUAs or UKAs.

Going forwards, we see stronger carbon prices. Profitability of coal generators has improved throughout the year with 'clean dark spreads' very much in the money. The clean dark spread - essentially the profitability of coal plants once allowing for emission taxes and permits - is currently trading at £82.241/MWh for Q4 2021. In comparison, the 'clean spark' spread - essentially the profitability of gas power plants - is trading at £40.937/MWh for the same period. Coal burn is a dirtier way of producing power, and demand for permits will be bolstered by the profitability of coal plants heading into Q4.

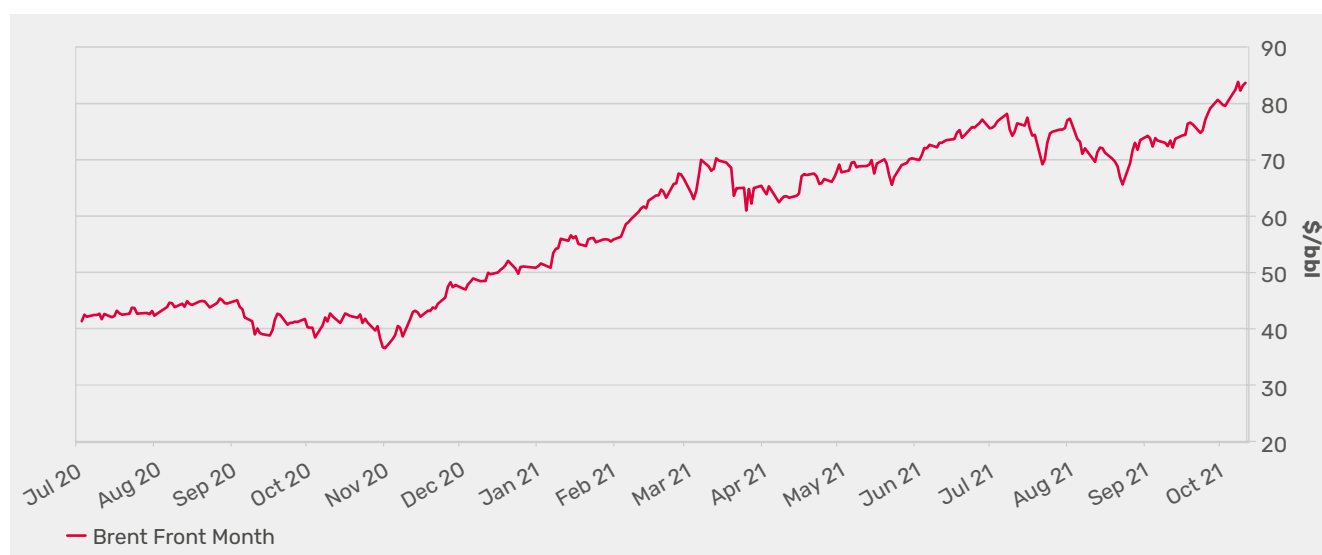
Along with increased profitability of coal powered generators, power margins remain particularly tight going into the winter. The loss of full capacity of the IFA due to a fire in September, and the increased maintenance schedule for Hartlepool 2, are both bad news for an already stressed system, and coal and gas burn may be sought after to plug this gap, particularly if the winds are low.

Whilst the cost of permits is already high, analysts' views for the carbon market is bullish. A mild and windy winter remains the best chance for permits to fall, however, placing any faith in a warm British winter is likely futile.

Oil market outlook

Despite encountering some headwinds caused by the continued concerns surrounding Covid-19's impact on demand, the last few months have seen the oil markets start to gain some traction. For example, in July this summer, stockpiles at America's largest storage hub in Cushing, Oklahoma dropped to their lowest inventory levels since March 2020, as demand post Covid-19 began to increase.

Energy Information Administration (EIA) weekly data has since shown a consistently tighter picture, regularly reporting draws, and hurricane season has also provided some support, with Gulf of Mexico production slow to recover in the aftermath of Hurricane Ida. Prices in September for Brent Crude rallied towards the \$80/barrel (bbl) handle, amid reports that Organization of the Petroleum Exporting Countries (OPEC) members had failed to reach their planned output levels, citing delays in maintenance as the cause.



Looking ahead to this winter, many analysts continue to remain bullish. Tightening supply appears to be the catalyst, with Morgan Stanley reporting that the average daily draw in September was 3 million barrels per day versus only 1.9 million barrels in the months prior. Oil demand has also increased in recent weeks, spurred on by soaring natural gas prices and coal, with OPEC now expecting demand to surpass pre-covid levels in 2022, as the global economy emerges from the Covid-19 pandemic.

However, rising oil prices are adding further inflationary pressures, and central bankers have so far held off interest rate hikes, which are expected to come next year and could weigh on dollar denominated commodities. Inflation may pose the greatest risk to oil importers such as India and China, and with 'Delta' variant cases still rising in these countries, oil prices above \$80/bbl pose a significant risk to their economic recovery.

OPEC will likely increase production by 400,000 barrels per day for November, but it remains cautious as the rate of Covid-19 cases continue to rise in Asia. Some analysts have cited \$90/bbl as a ceiling for Brent Crude this winter and it seems a stretch that prices could jump much higher given the inflationary risk that soaring oil poses to economic recovery at present. We therefore expect oil to remain strong over the coming winter months.

Winter's political headwinds

The influence of the political landscape on the energy market has continued to grow in recent years; bolstered by the global pandemic, Brexit and cross-border relations.

We all hope to see the back of Covid-19 as soon as possible, but certainly ahead of this winter the risk continues to linger. The effect it has had on global markets is unprecedented, and we have seen disruption to supply and fluctuation in demand help push gas and power prices to record levels this year, not to mention the other commodities. Unfortunately, it looks like these impacts are here to stay, certainly for the short term.

Russian and European relations have been neutral at best recently. This is most evident in the politics surrounding Nord Stream 2, which has already been discussed earlier in this outlook. Quite simply there is nothing on the horizon that is likely to improve these political relations.

With the recent surge in prices, some of the smaller energy companies in the UK have begun to fall by the wayside. In fact, we are now seeing some of the larger businesses come into trouble with more closures possible in the coming months. This result is a combination of high prices, poor hedging strategies and the price cap. The aim to increase competition in the marketplace allowed new businesses to pop up with relatively low start-up costs, then price aggressively to win customers with a view that market prices would continue to slide as we become more renewable. However, a greener market does not necessarily mean a cheaper market and as prices surged (largely due to pandemic influences) beyond the price cap, these firms have been unable to cope. What this means for the rest of the market is essentially more cost. Market mutualisation means that the cost of this is spread between the bigger suppliers. This then needs to be re-hedged and with market prices well over £300/MWh and 300p/t for front month power and gas respectively, costs increase. It also creates more sudden demand in the forwards market, which continues to drive prices. For the short term this can only really be bullish for the market. However, we will likely see the government step in at some point, but it is unclear how it might do so.

Amongst all the bullish political drivers there are the odd glimmers of bearishness. In the carbon market, the European Parliament has suggested that intervention is needed. When we have seen this sentiment feed through to the market, carbon does tend to shed some value and, with gas and power prices where they are, a restriction in this marketplace might just be the trigger for some downside that many need. However, another trend we have seen recently is the decoupling of carbon from the gas and power market, so downside here might not be as significant as in previous winters.

As we head into winter there remains a huge amount of uncertainty, both fundamentally and politically. Uncertainty breeds volatility, which in turn mostly supports prices. We may see governments across Europe attempt to intervene or influence the markets this winter. However, how much of an effect it will have on the snowballing bullishness is yet to be seen.

Summary

To summarise, the risk is still on for this winter, but with Putin saying Russia will flow more gas to Europe, some of the risk has dissipated. We will need to see exactly what happens at the start of November (which is when Gazprom has said that Russian domestic storages should be nearly full) to see whether physical flow increases into Europe. It seems unlikely that Asian demand will subside any time soon, so moving forwards LNG could be fairly limited to the UK. This means all eyes will be on piped flow from Norway and Russia, especially with the Dutch site Groningen ceasing operations next year.

Prices are very high, and at these levels we have seen large movements as market participants scramble to cover positions, but if we get to December with relatively mild weather, and see increased flow, we could potentially see a lot of risk priced out. However, with the increased likelihood of a La Nina weather scenario, and lower amounts of LNG coming to Northwest Europe, the market is still in a bullish position, especially if we do not see the extra Russian flow.





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