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AGENDA

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   - 1.3. French nuclear availability
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Energy market report

Third quarter 2023 / July - September

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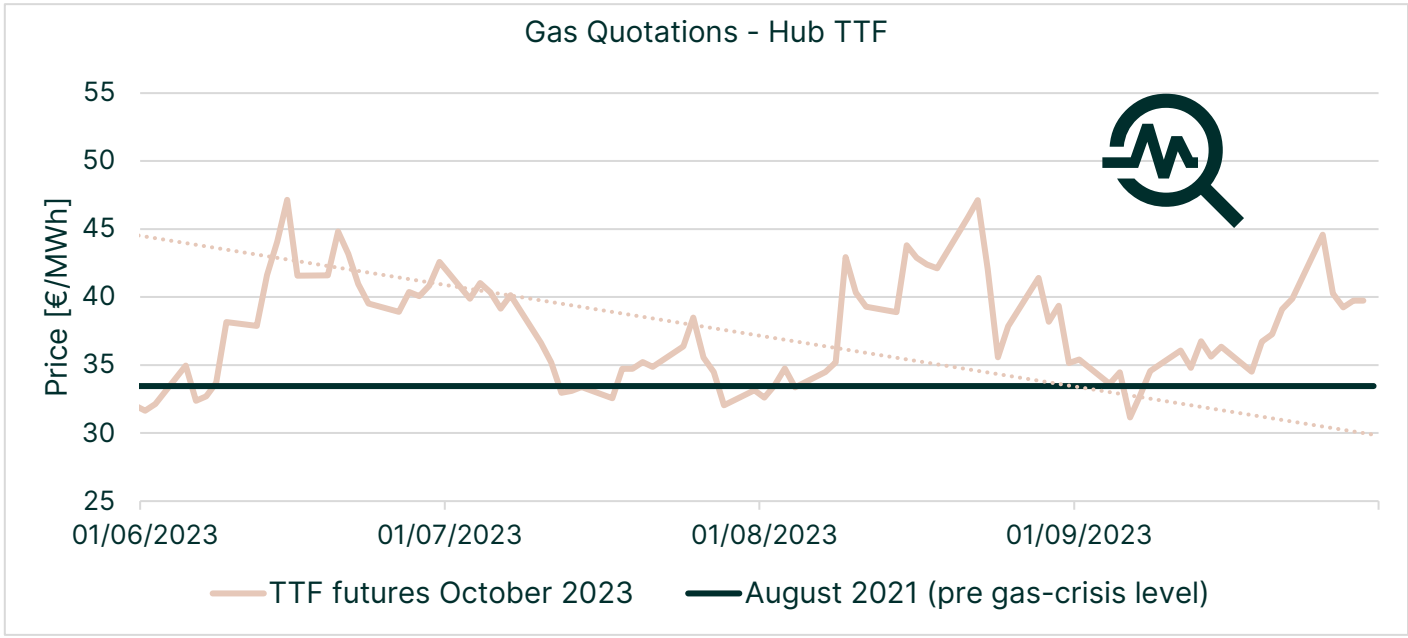
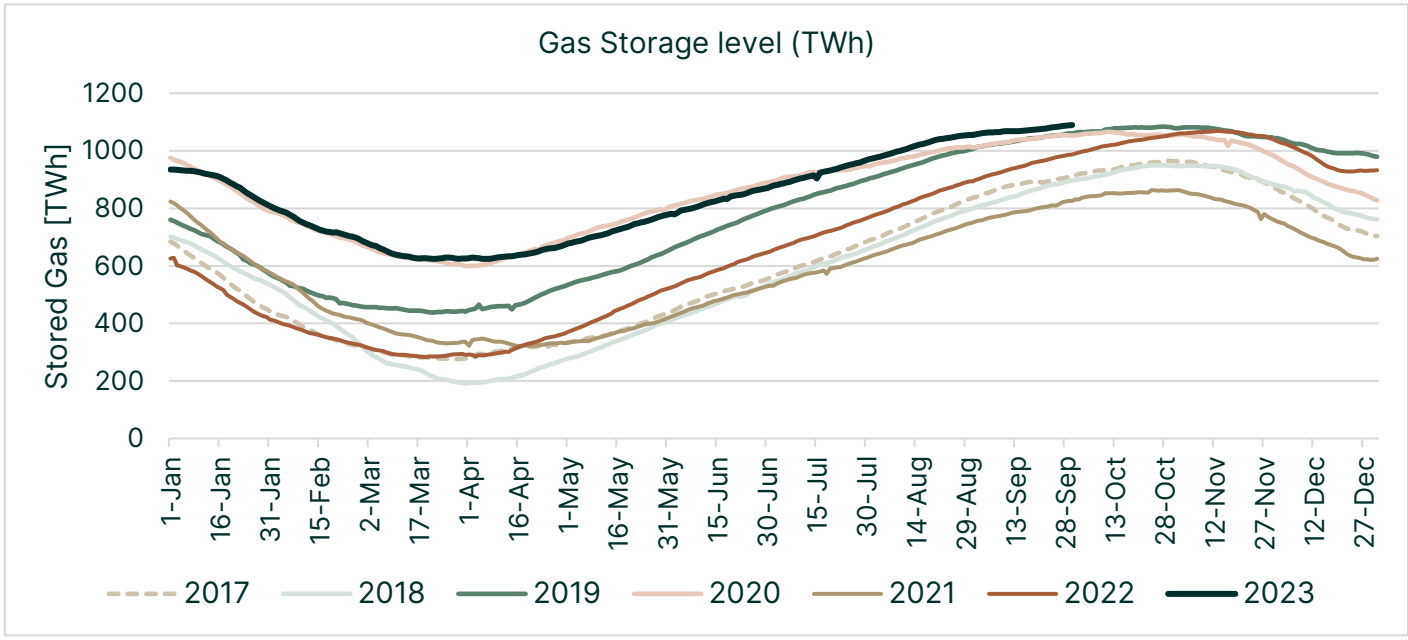
Drivers of European power prices

GAS

- In Q3 2023, gas futures quotations experienced high volatility, swinging many times between 32 €/MWh and 47 €/MWh for October.
- The reason behind this fluctuation is the high sensitivity of TTF* price to news: strikes in important Chevron-owned terminals in Australia have shaken the LNG sector. Prices spiked suddenly before recovering just as quickly, causing market uncertainty. While things aren't quite back to normal, the situation has now calmed down considerably.
- As we can see on the right, gas storage level in Europe is more than encouraging – at 95%, it's the highest value registered at the end of September since 2017.

*Title Transfer Facility (main hub for gas trading in Europe)





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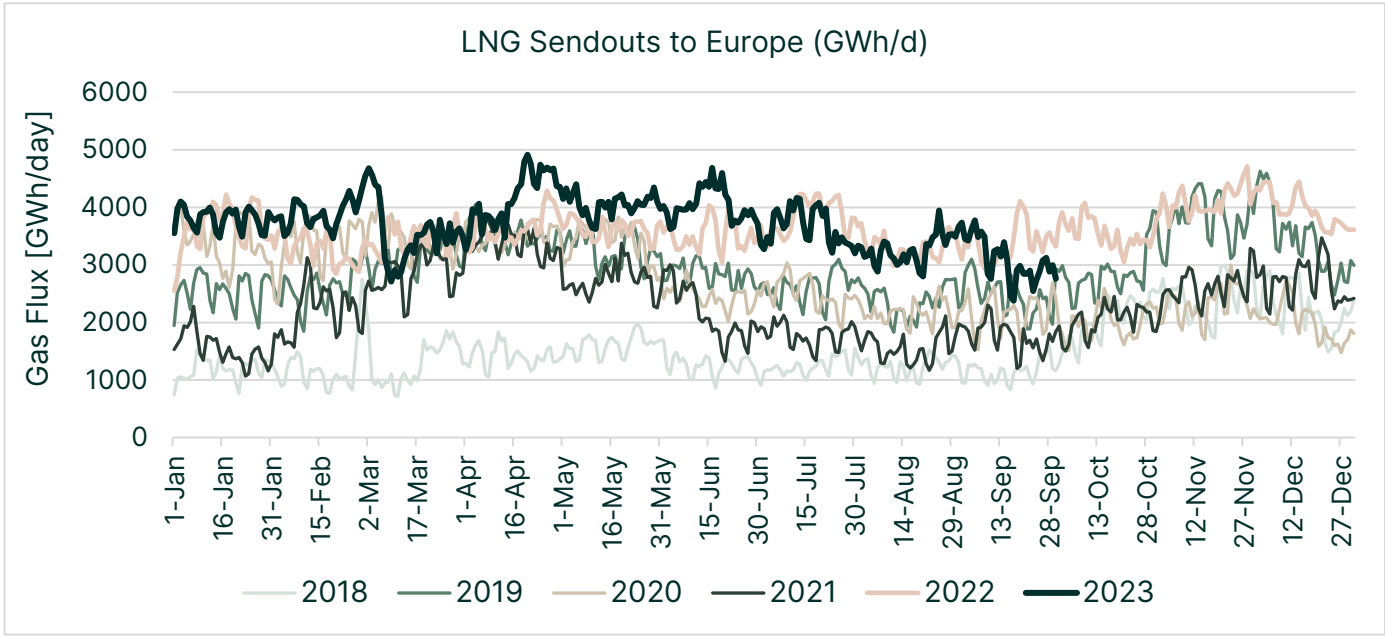
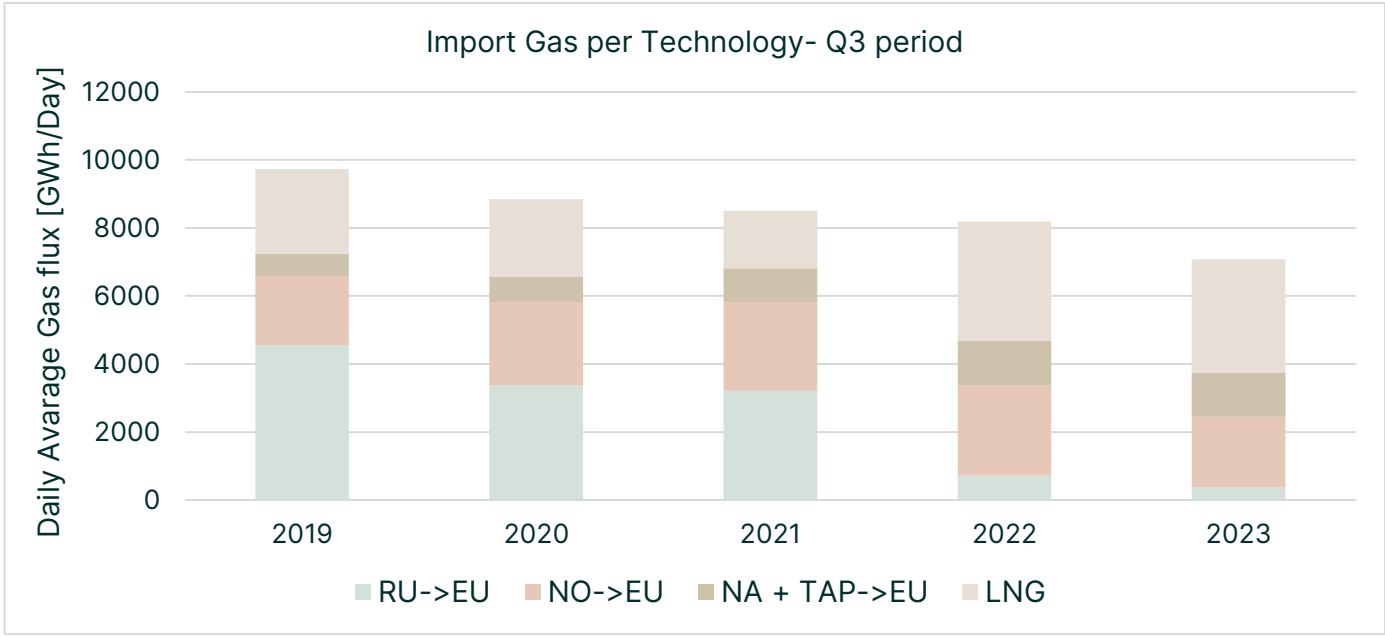
GAS

- LNG* fluxes decreased during September, but their level remains high, as is their weight on the European gas supply, which is close to 50% (see graph below).
- Despite gas fundamentals being bearish, there are no guarantees that this autumn won't be affected by other price tensions – both European and Asian gas demands rely heavily on LNG imports. As a consequence, in case of a rise in Asian gas demand, Europe would compete with China and Japan for gas supply. This would lead to a 'race' for LNG supply, causing rapid price rises.
- Monitoring Asian gas demand will be a key element in the next months to understand the dynamics guiding the gas market.

*Liquefied Natural Gas





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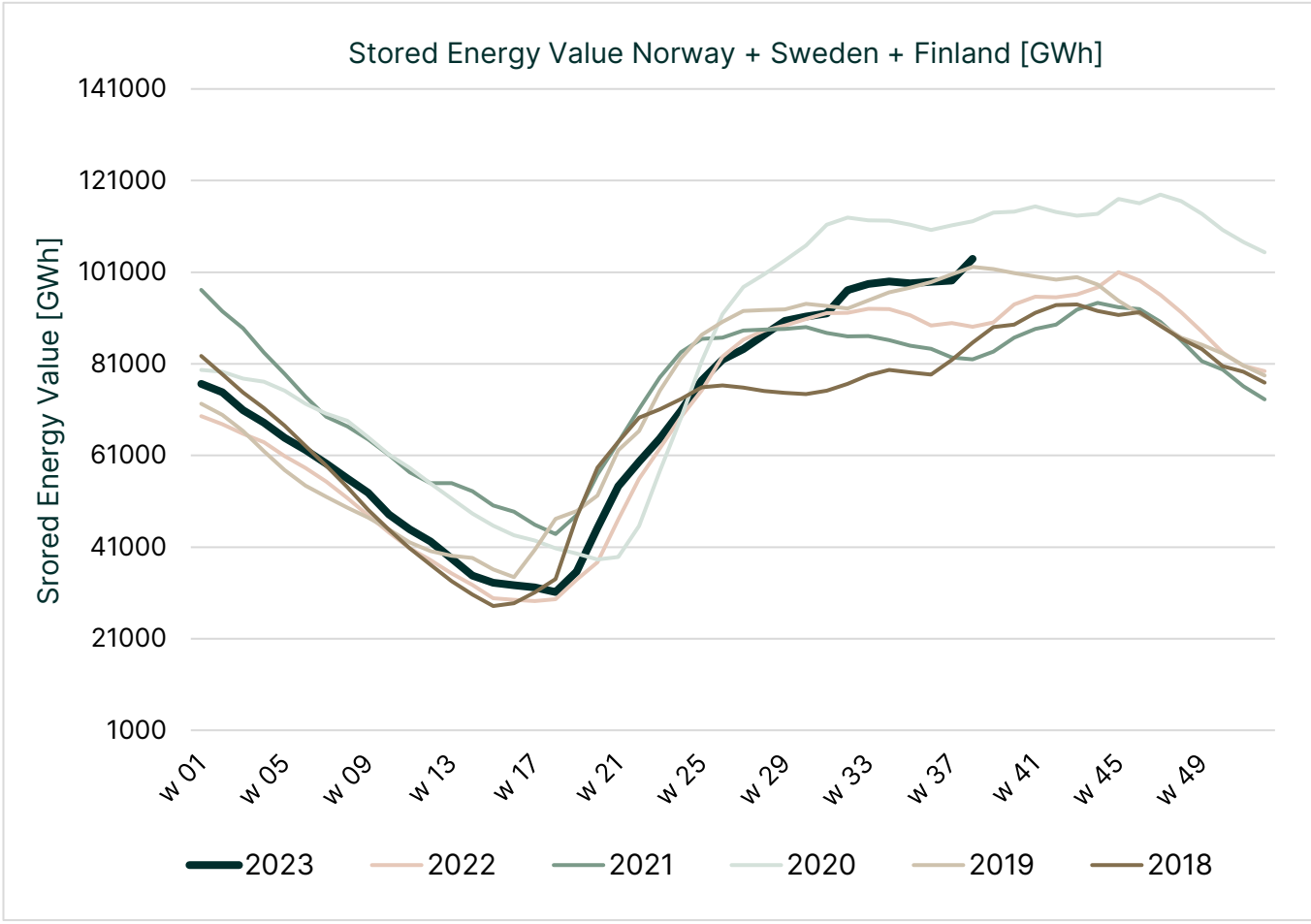
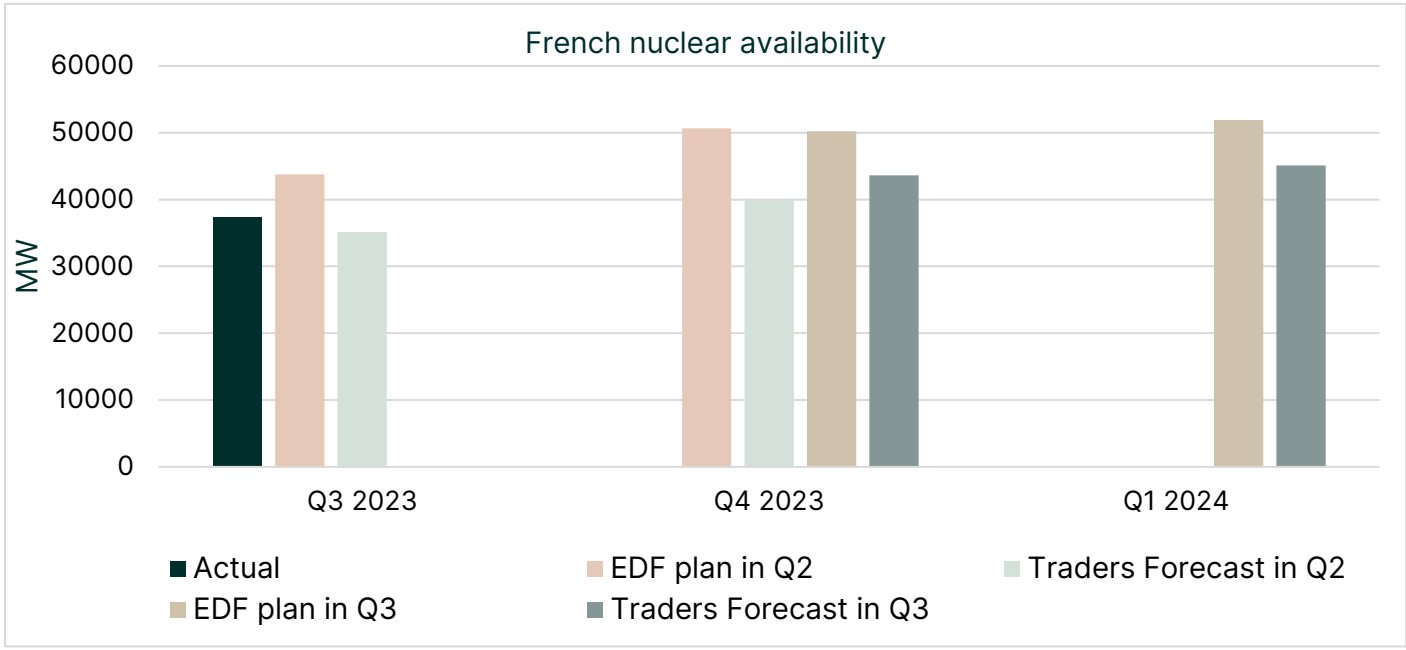
HYDRO LEVEL IN EUROPE

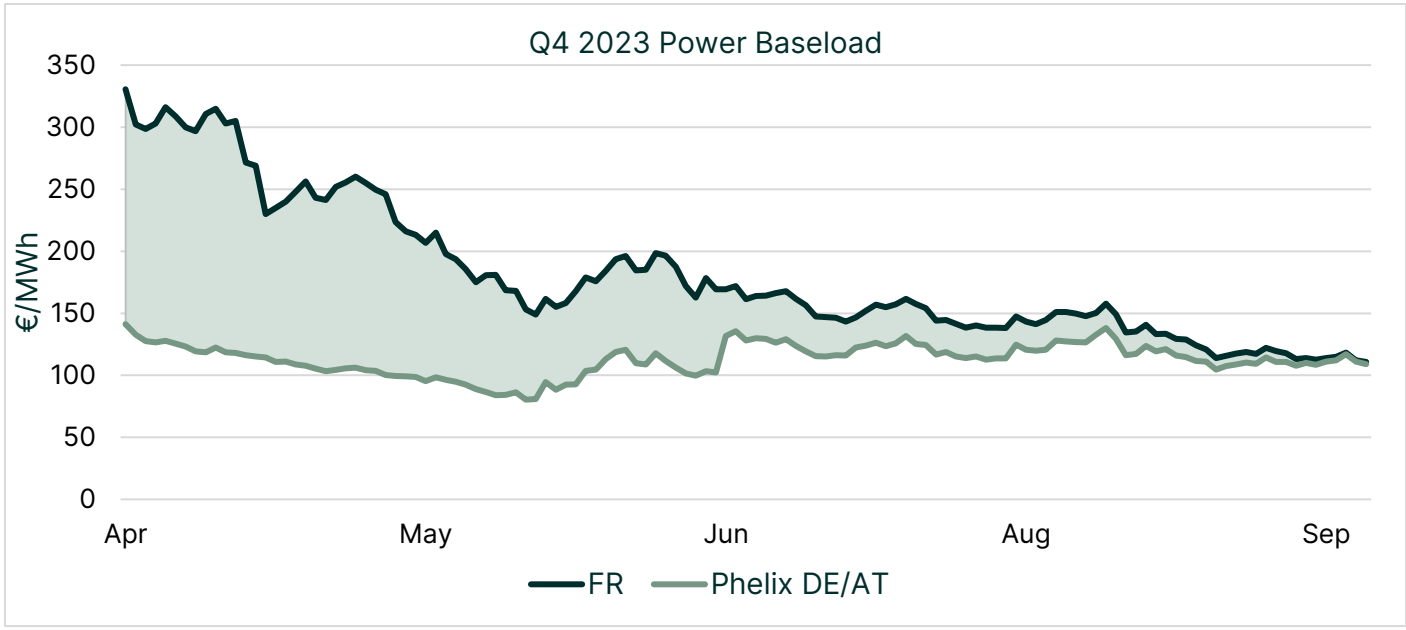
- The hydro power situation in Europe seems to have gone back to more reassuring levels compared to the previous quarter.
- On the right side, we can see the stored energy value for Nordics, which is a good representation of the overall situation in the continent.
- Spring and summer rainfalls have refilled the water reservoir, increasing the water level to values close to those of 2019. This recovery could allow us to enter the winter season with higher water filling levels compared to recent years, thus reducing the filling deficit for next year.
- This trend is going to put a bearish pressure not only on the power market, but also on GOs (Guarantees of Origin) price, which has been losing value since May. A significant share of GO certificates produced at European level is in fact coming from hydro generation from the Nordics.



FRENCH NUCLEAR AVAILABILITY

- In Q3, the French nuclear availability was not as high as EDF was planning (-6GW), but it was still higher than most of the forecasts available on the market (+2GW). As a result, forecasts were readjusted considering more availability for Q4 (+3GW). The difference between the planned availability and the forecast availability is still significant for Q1 2024 (-7GW).
- Consequently, the Q4 FR-DE spread has narrowed from 200 € in April to a few euros currently (4 €/MWh). This is the first winter with a nuclear-free Germany. For this reason, compared to the past, we can expect more days on which the French energy price will be lower than the German one. However, we need to consider the high sensitivity of the French energy price to cold temperatures and the high renewable capacity installed in Germany. Both factors could bring the German price to lower values than the French ones.





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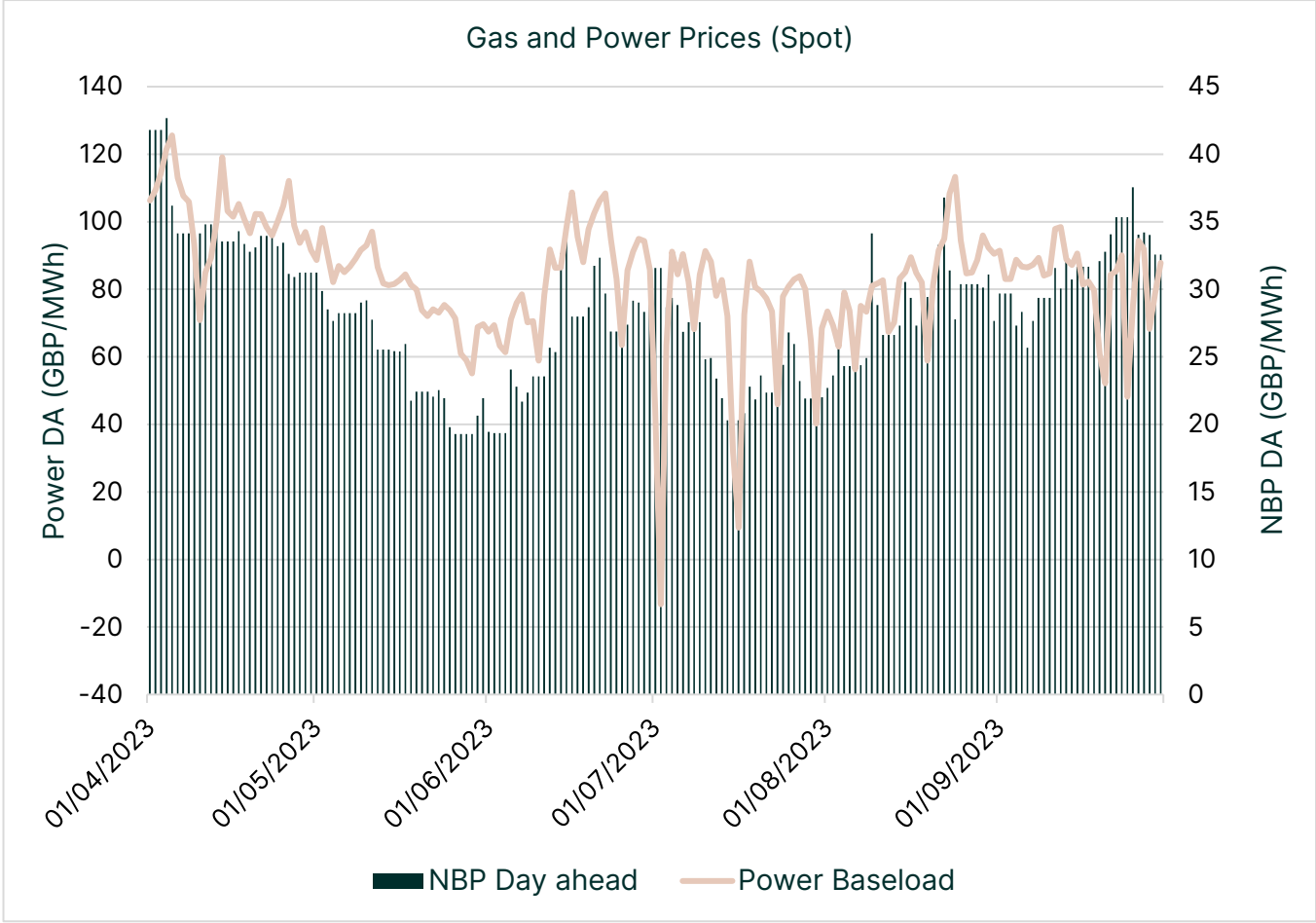
UK market overview

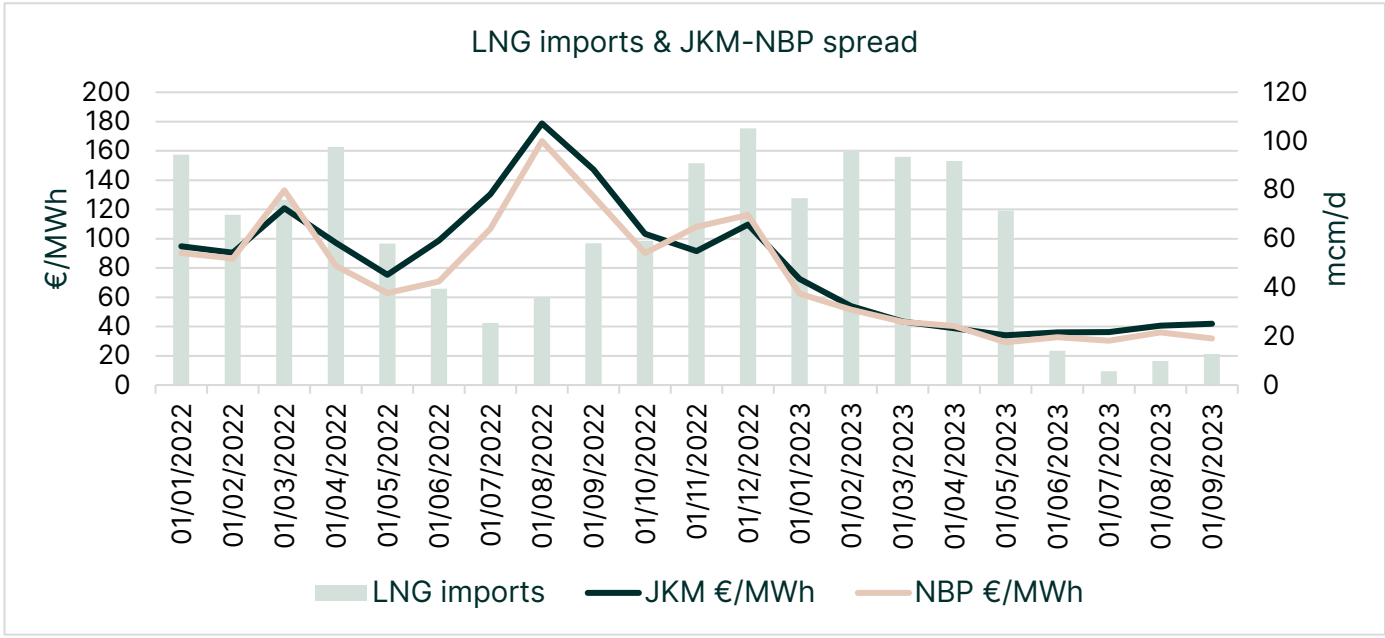
WHOLESALE PRICES

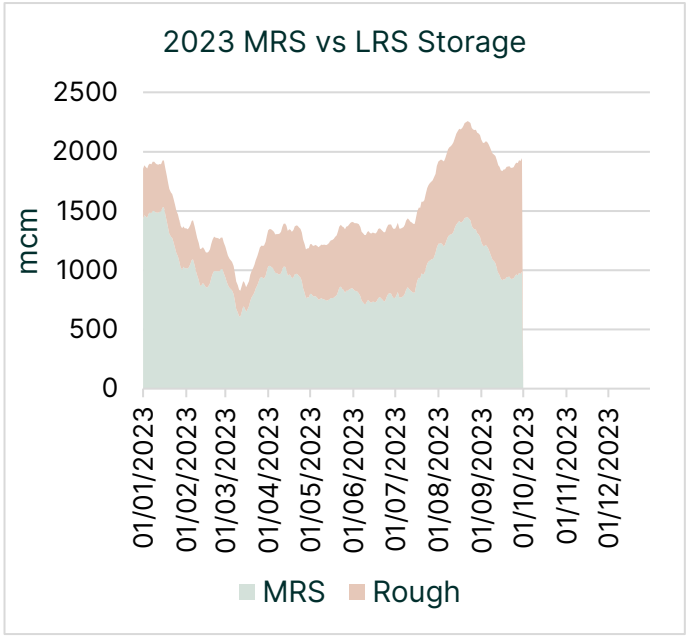
- Power prices increased in Q3, following the gas prices trend. Thankfully, renewables brought a breath of fresh air to the market in the second half of September and helped ease power prices.
- On two occasions (02/07 and 16/07), the 6-hour limit of negative prices was breached for assets under CFD. Generators were not getting remunerated by the CFD and opted to turn off in order not to produce at negative prices. Eventually, they were called by the Grid to produce more for balancing purposes.
- We expect more and more day-on-day volatility due to a higher renewable penetration, coupled with higher thermal demand in the coming quarters.

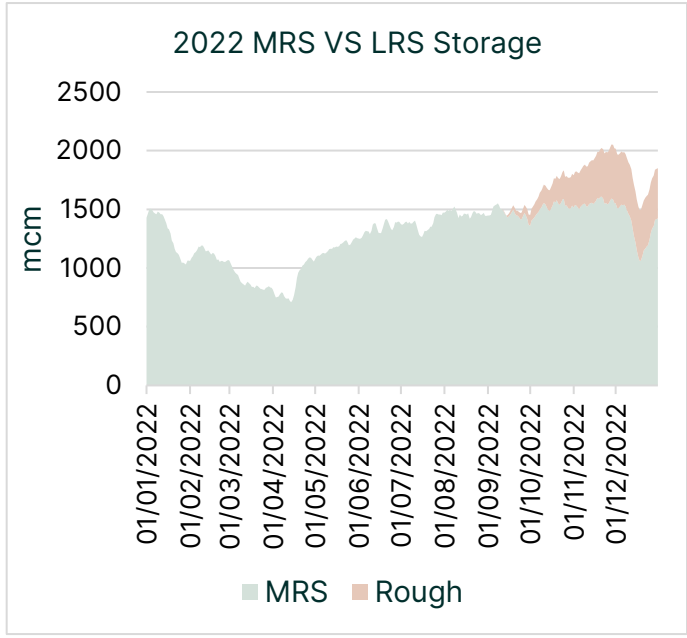


GAS FOCUS

- LNG imports were very low in Q3 (less than 10mcm/day). The reason behind it is a normal seasonal trend, and a very efficient injection in the previous months. At the end of the injection season, the storage levels are too high to justify massive LNG imports.
- In the past years, the UK relied mainly on LNG imports or gas imports from the continent, until the commissioning of Rough, a Long Range Storage, in late 2022. Therefore, this year the UK gas storage is in a healthier situation thanks to more flexibility in Mid Range Storage to store gas during oversupply scenarios and thanks to Rough hedging partially short supply risk in winter.
- A very small spread between TTF and JKM prevented cargo diversion toward Asia. The situation needs to be monitored in the event of a progressive demand recovery in Asia this winter.







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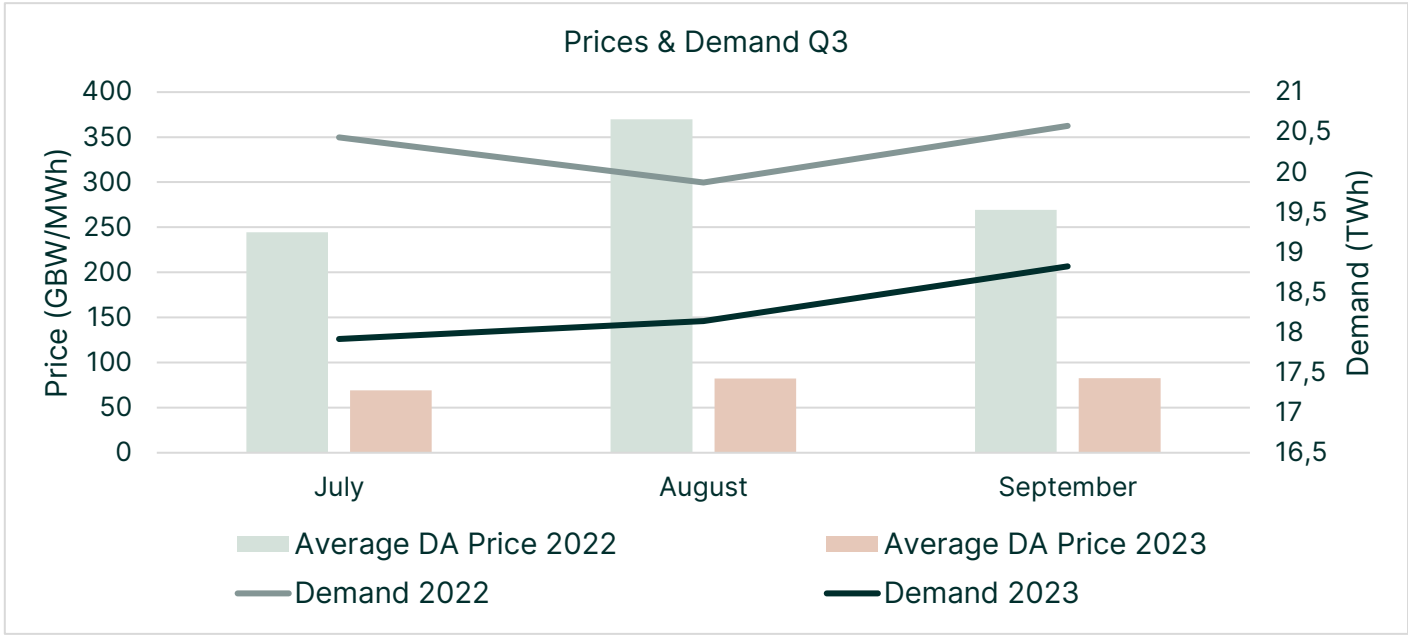
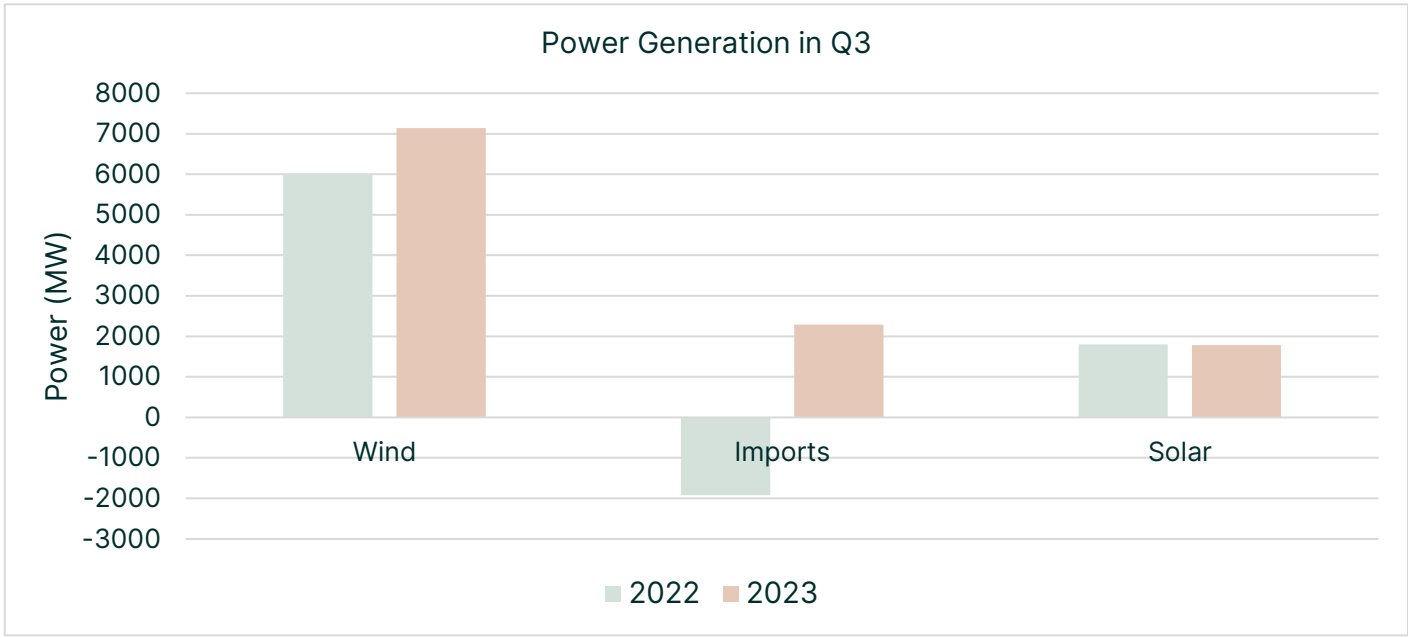
POWER FUNDAMENTALS

- Demand destruction has been important in Q3 and, coupled with high wind energy generation, it has been driving the market towards negative spot prices.
- Demand bounced back very slowly at the end of August, but prices remained consistent throughout the quarter due to a few very windy days and lower gas levels compared to 2022.
- In Q3, 2022 NBP was cheaper than TTF and favoured UK power exports towards Europe. In Q3 2023, TTF and NBP were more coupled, so the UK became a net importer of power.
- Demand recovery will be driving the upcoming months' prices if gas prices and imports remain unchanged. In the shorter term, the demand adjusted to renewables generation is becoming more impactful and is creating more volatility.





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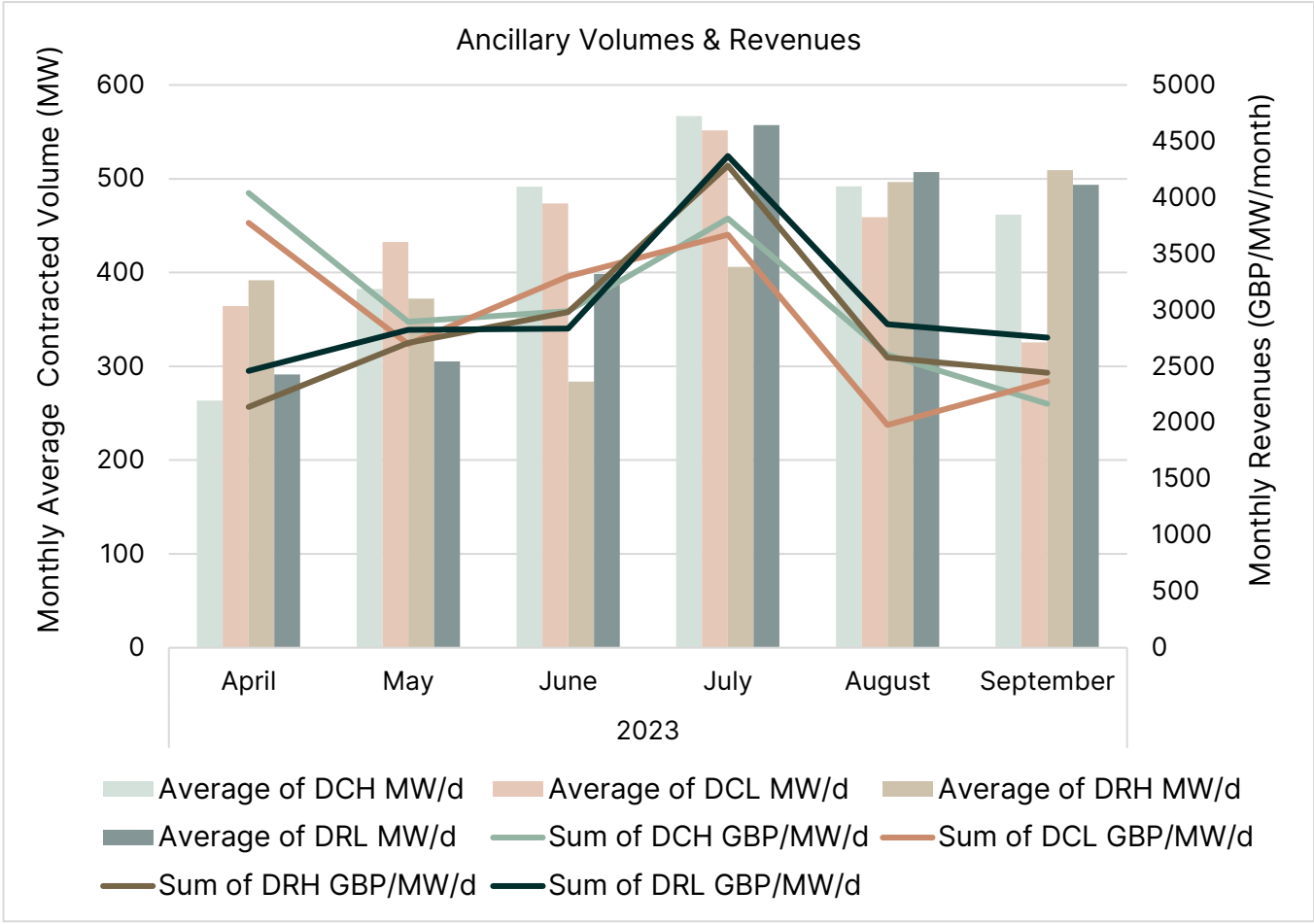
BATTERY STORAGE: ANCILLARY SERVICES

- Better revenues for battery storage were registered in July, although they were still weak compared to July 2022. DCL and DRL* prices spiked at 24 and 43 GBP/MW respectively for one EFA block**. This was mainly due to a sudden volume increase in the requirements of DCL.
- In August, the contracted volumes decreased and reminded everyone how saturated the market is (about 3GW of operational BESS in the UK at the moment).
- What are the other options? On one hand, the Balancing Mechanism (BM) keeps favouring assets with longer dispatch bids. On the other, wholesales volatility is promising, but it also favours higher duration assets.
- Key factors for the success of higher duration assets will be their CAPEX as well as the grid's will to call them in the BM.



*DCL and DRL = Dynamic Containment Low and Dynamic Regulation Low
**EFA (Electricity Forward Agreement) block = standard 2- or 4-hour block into which a 24-hour trading day can be split up.

Conclusions

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- In Europe, gas storage levels have reached 95%. This is a sign of marked stability for the winter, if evaluated together with the constantly low gas demand since the beginning of the year.
- However, LNG's contribution to the satisfaction of European gas demands remains high, and this dynamic could be decisive if Asian demand for LNG increases, putting Europe and Asia in competition for gas supplies by ship.
- European hydroelectric: reserves throughout the continent have generally been more prosperous thanks to rainfalls. A downward pressure on European GOs (Guarantees of Origin) is to be observed.
- In the UK, summer ended with a better balance for gas storage than ever. The risk is now more important on the bullish side in the short term, especially in the light of the Israeli-Palestinian conflict.
- This summer, the UK's power mix was supported by continental imports, strong renewables and low demand. Q4 volatility will determine the space for flexible assets in the near future.

Thanks

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