THE USE OF GAS AS A STOPGAP FOR A TOO SLOW GREEN TRANSFORMATION IS RESPONSIBLE FOR THE CURRENT CRISIS NOT THE OTHER WAY ROUND

Energy prices are skyrocketing across Europe, putting high pressure on households, industry and even on central banks by driving up inflation rates. This has inevitably brought the EU's climate policy under renewed scrutiny. EU energy ministers discuss joint action, including reactions promoting a faster expansion of renewable energies.

Renewables already offer the cheapest source of energy generation but the build out is clearly too low. An expansion that does not keep up with the reduction of fossil capacities as well as the only sluggish expansion of electrification in further sectors – such as heating of buildings – result in dependence on natural gas. The European Union´s decarbonisation strategy stipulates significant growth in the renewables sector, but also a significant contribution of gas generation – currently considered as a bridging technology – to support the EU-wide energy transition. This is due to, in some aspects gas has an advantage over other fossil fuels; highly efficient CCGT (combined cycle gas turbines) units emit up to 70% less CO2 per MWh generated than coal-fired power plants[1], and offer higher flexibility to alleviate grid bottlenecks in times of low to none renewable generation. Across all EU markets, gas units are typically the last generating units needed to meet demand, thus they effectively 'set the price' on these markets.

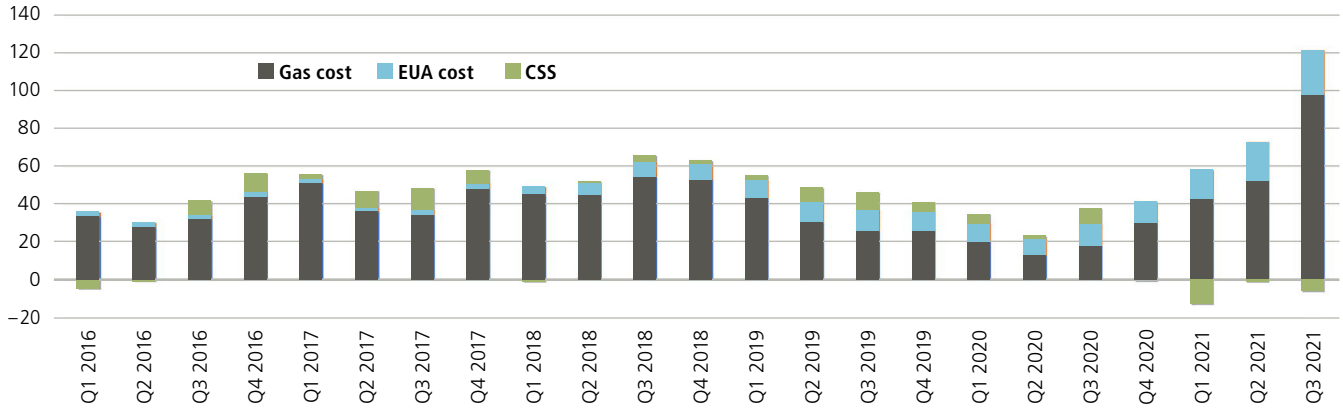
The above factors link very strongly to the bullish rally of power prices in 2021. This bullish trend was caused principally by the impact of rising fuel and EU Emission Allowances (EUA) prices as gas presently remains a 'backbone' of the electricity systems across most EU countries accounting for a share of 25% in electricity generation[2]. The skyrocketing gas prices put pressure on households and the economy, especially regarding the upcoming winter season. However, various government measures such as the reduction of energy taxes in Spain or a state subsidy to weaker households in France will not provide a long-term solution.

The convergence of many factors that influence the price of gas leads to a perfect storm.

- colder and longer than expected winter 2020 led to higher energy demand for heating
- spring 2021, after success in vaccination campaign business activity began to intensify rapidly. This left Europe competing with Asia for the same LNG cargoes coming from other parts of the world (mainly Middle East and North America) after a cold winter that left storages depleted
- EUAs reached record levels and put an additional burden on marginal costs
- dry summer in the Nordics kept storages at deficit to previous years
- heavier than usual outages/maintenance on Norwegian pipelines and lower-than-expected Russian supplies in 2021, further pronounced by the uncertainty around NordStream 2 commissioning

If we get a particularly cold winter again this year, that's going to be a tough period and prices will continue to rise taking into account a 70% probability that La Niña will strike this winter causing an extended cold spell.

Chart 1: Fuel costs and profitability (Clean spark spread – CSS) of CCGT plants[3]



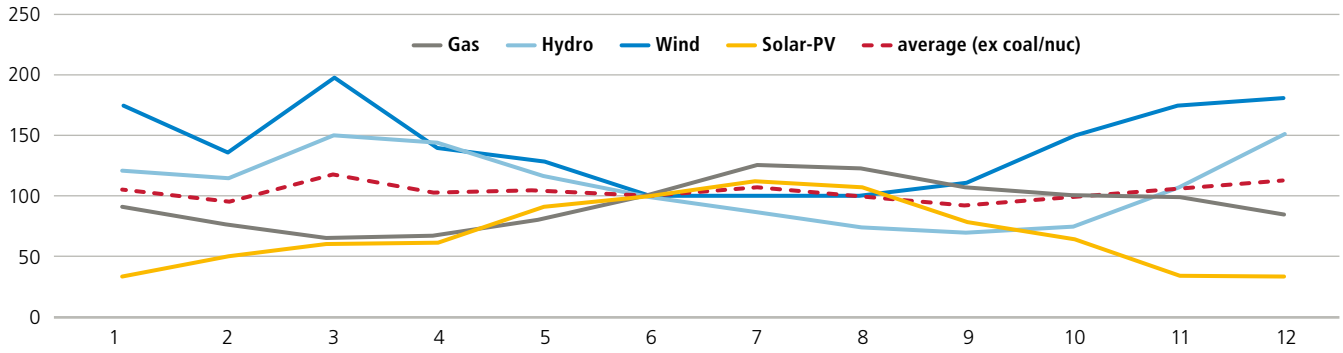
[1] https://www.volker-quaschning.de/datserv/CO2-spez/index_e.php: „For example, if lignite from "Lausitz"-region is burned in a power plant with an efficiency of 35%, 1,17 kg of carbon dioxide is produced per kilowatt hour of electrical energy (kWhel). In a natural gas combined cycle power plant with an efficiency of 60%, as another example, only 0,33 kg of carbon dioxide is emitted per kWhel. Replacing lignite-fired electricity with electricity from natural gas can therefore save over 70% of the direct carbon dioxide emissions.
[2] BNEF (2021)
[3] Bloomberg, Reuters and ENTSO-E (2021)

Chart 1 clearly shows the development of fuel costs and EUA prices, which are directly reflected in the electricity price. Nevertheless, the margins of CCGTs fell into negative territory in 2021, as their utilisation was reduced by increasing feed-in of solar-PV generated energy.

The fact that gas prices uncharacteristically rise so drastically in the summer can be attributed to the needs all around the globe to replenish storages and a lack of renewable energies. While wind and hydropower plants, are responsible for about a quarter of electricity production within the EU, particularly the share of solar PV, is only around 4% across Europe.[4]

The example of the Iberian Peninsula can be used to explain the connection very well. According to the production profiles of renewable technologies, a well-diversified generation mix offers the possibility to stabilise the fluctuating generation of renewable sources.

Chart 2: Indexed production profiles by month in Spain (mean 2018, 2019, 2020)[5]



Wind and hydropower plants benefit especially from high precipitation and windy conditions in autumn and winter. The lower utilisation in spring and summer, on the other hand, can be compensated by solar PV plants. However, analogous to the rest of Europe, the renewable generation mix in Iberia - which has particularly positive conditions for solar generation - is dominated by wind and hydropower.

An examination shows that electricity generation from gas is clearly positively correlated with the production profile of solar PV plants. However, the negative correlation with wind and hydropower production is far more significant. These correlations impressively show that gas-fired power plants only produce when the supply from cheap renewable generation sources declines.

Political decision-makers are also becoming increasingly aware of this linkage. In this context Frans Timmermans, the Commission's Vice-President in charge of the European Green Deal, concluded to the European Parliament: "The irony is if we had had the green deal five years earlier we would not be in this position because then we would have less dependency on fossil fuel natural gas".

Conclusion:
A diversified expansion of renewable technologies, supplemented by an acceleration of electrification, an increased focus on storage technologies and grid expansion would significantly reduce the EU's dependence on imports. Instead of relying on the bridge technology of gas-fired power plants, a massive and accelerated expansion of renewable energies is necessary to guarantee supply stability, to preserve sovereignty vis-à-vis exporting countries and to ensure affordable and competitive electricity prices.

[4] BNEF (2021)
[5] Aquila Capital Research, based on data from ENTSO-E (2021)

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