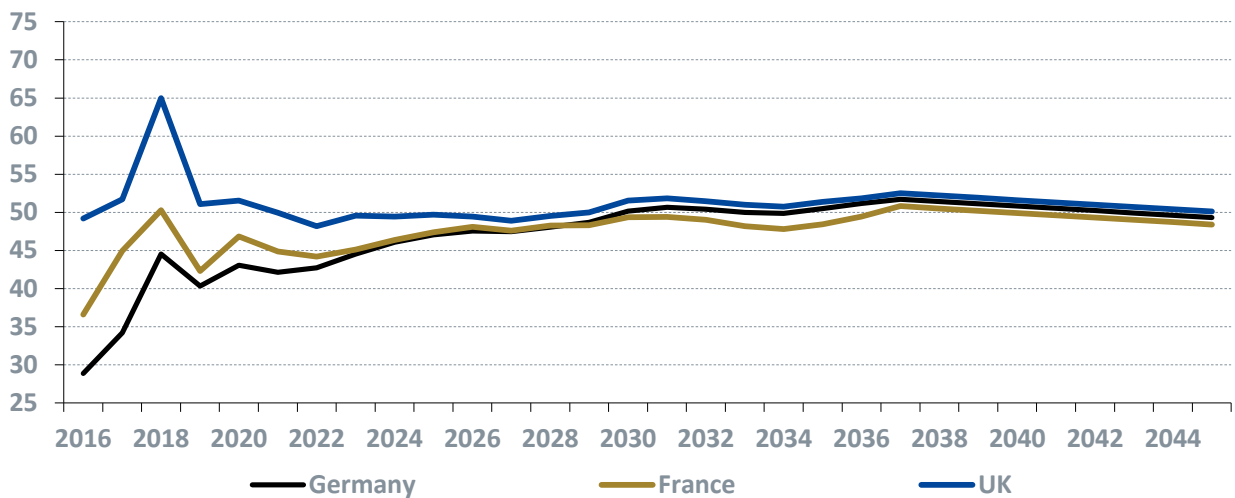


Base scenario of forecasted spot price of base load power in Europe, in real 2019 euros

€ (2019)/MWh



**Major findings of Long Term Price Forecast for Electric Power in Central Europe 2019-2045**

In this study, all cost and price components are expressed in real € 2019. The area subject to our simulations are the countries Germany, France, UK, Belgium, Netherlands, Spain, Portugal, Austria and Switzerland. This area is simulated for the 2019-2037 period. By extrapolations, we get 2038-2045 price prognoses. A detailed hour-by-hour price modeling tool, which takes into account transmission constraints between the subsystems/countries, is applied to carry out the price simulations.

We have for many quarters expected weak industrial development in Europe, and over the last couple of quarters, this has materialized (the worst examples appear to be in European paper manufacturing). The quite weak output has impacted power consumption across Central Europe substantially.

Despite the Market Stability Reserve having come into effect back in January 2019, we have expectations of EUA prices falling substantially from levels observed during this summer. This is much due to reduced output and industrial efficiency that will arise given the very high carbon and electricity costs industry players will be exposed to under the recent market prices. Apart from that, our emission forecasts towards 2030 have also been revised somewhat further down due to inevitably low industrial performance in the front years and further revised expectation to coal plant closures across Europe. Strict new limits on flue gas emissions and national coal exit plans have in many cases the last half year induced announcements of premature coal station closures.

We forecast 20 €/t average EUA price over 2020-2040 to be sufficient to bring balance between available EUA supply and demand, hence we expect current market prices to eventually fall from recent levels. These are the EUA prices we have applied for our long term price simulations.

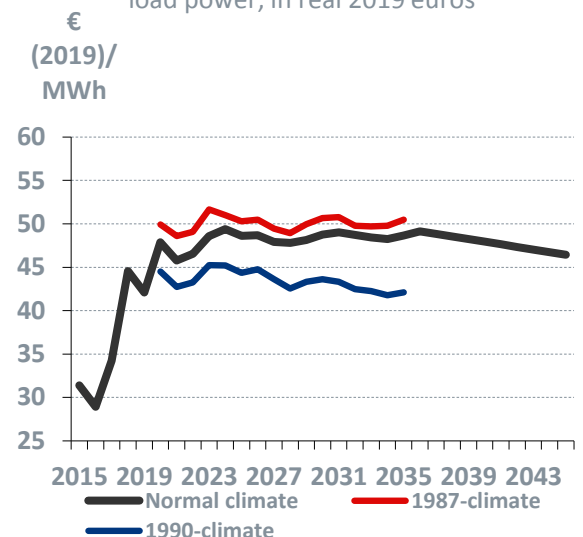
We assume natural gas prices during 2022-2029 to increase from 17 to 22 €/MWh, for staying there throughout the forecast

horizon. Our assumptions are based on findings from major recognised institutes, where we perceive strong gas demand from Asia to pull up prices in the long term. Assumed SRMC for Continental gas-fired generation is at 56 €/MWh from 2029 and thereafter.

For coal prices, we assume that the Chinese government will continue to implement more regulations on the domestic coal production and coal demand, and have applied long term coal prices in our simulations of 71-75 \$/t over 2022-2035, and expect SRMC coal in the 43-45 €/MWh range over that horizon.

Of central assumptions of this report is that we assume EU's 2030 climate and energy targets (40% GHG reduction, 32% renewable energy share of energy consumption and 32.5% energy efficiency) will be complied with. We assume the annual inflow of renewable electricity to 50 TWh/year to feed the renewables target. Some major national targets of GHG reductions and renewables growth are assumed to become abandoned. For example, the report assumes the German -55% GHG target in 2030 to become abandoned, and the recommendations from the German 'Coal Commission' will only

Forecasted German spot price of base load power, in real 2019 euros



partially be fulfilled, partly due to security of supply concerns.

Looking at major power balance elements for Europe expected in the report:

- Germany will phase out nuclear by 2022
- Germany will halve its hard coal/lignite fleet by 2030
- Belgium will phase out nuclear by 2025
- France will close 14 reactors by 2035, all of them of 900 MW
- The UK/France/Belgium area is almost coal free already by end 2021
- UK will strengthen its import capacity from 4 GW to 15 GW over the coming decade
- Ambitious national renewables targets will induce strong growth in renewable electricity; expecting offshore wind to be boosted. We forecast total wind power output in Germany to rise from 107 TWh in 2018 to 184 TWh in 2030. For UK we expect 2018 output of 52 TWh to rise to 115 TWh by 2030.

We expect net power exports to go from East to West, where Germany's and France' net exports reach approx 50 TWh and 73 TWh by 2030, respectively. Power price differences will decrease, along with more interconnections and higher gas dependency for all countries.

For Germany, we simulate power prices of 42-45 €/MWh in the early twenties. Moving towards 2029, we forecast further increases of German power price, climbing to 49 €/MWh, related to increasing gas price expectations and to decommissioning of more lignite-/ coal-fired plants. German power prices are simulated at a nearly flat development from 2030 to 2037, close to the price level of 50-52 €/MWh.