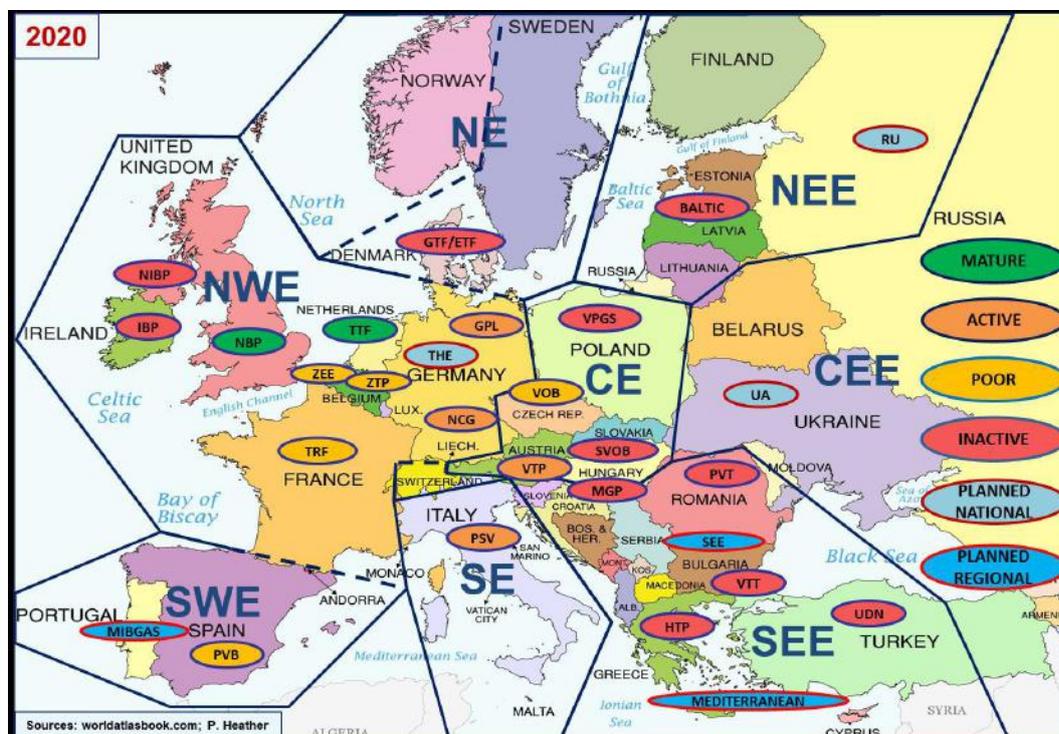


Introduction to European natural gas hubs

What are gas hubs and how do they work?

There are several natural gas markets or “hubs” in Europe that are used as benchmarks for closing deals in wholesale gas markets. These cover the purchase and delivery of natural gas in different parts of the European continent and are identified by geographical area, although they do not have to refer to a specific place.

Normally, natural gas hubs are found at the heart of gas infrastructure networks, such as gas pipelines and/or Liquefied Natural Gas (“LNG”) regasification terminals. The hub is used as a central pricing point for natural gas on the network. In many cases, the price of a financial derivative contract is also determined from the gas delivered at this point, which facilitates the development of a derivatives market (such as futures), which helps participants to manage market risk. .



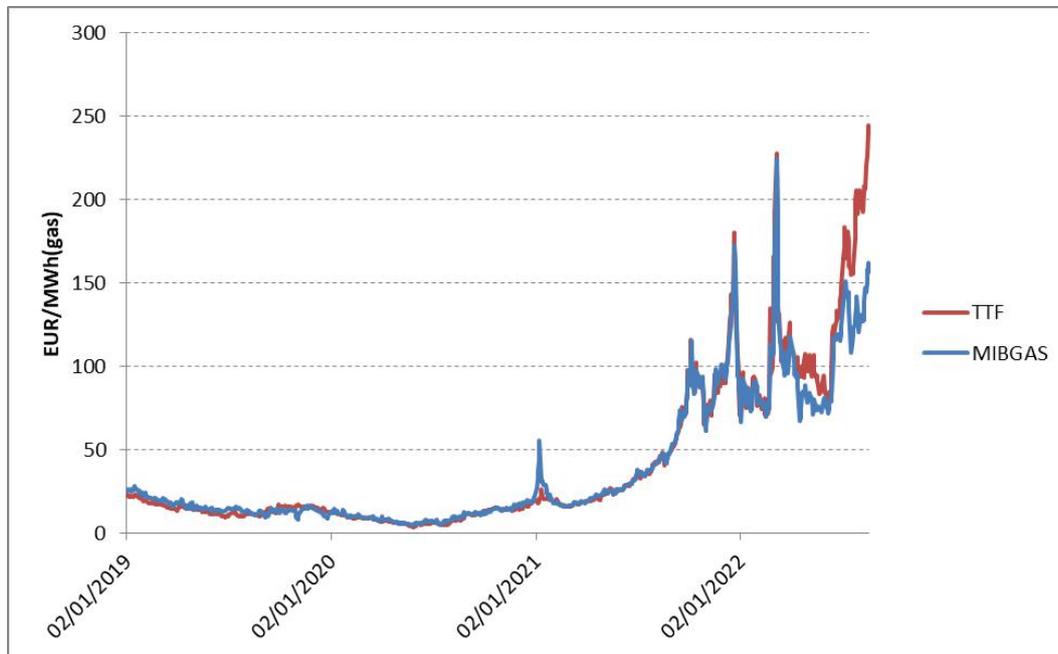
Source: <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2021/07/European-Traded-Gas-Hubs-NG-170.pdf>. Note: Gaspool (“GPL”) and NetConnect Germany (“NCG”) in Germany have since been replaced by the Trading Hub Europe (“THE”).

The liquidity of each hub depends on certain factors. In Europe, the National Balancing Point (“NBP”) in Great Britain, and the Dutch Title Transfer Facility (“TTF”), are the main European hubs. The NBP was the first major hub in Europe which, like its US counterpart, the Henry Hub (“HH”), benefited from open market regulation, significant domestic production in the North Sea, and high gas consumption. Britain also takes gas by pipeline from Norway and imports LNG. The Dutch TTF benefited from the huge Groningen gas field, which sits at the heart of continental Europe's vast pipeline network, and has LNG import capacity. Priced in €, TTF is mainland Europe's main hub and benchmark for gas prices. The liquidity of other hubs is much lower.

There is a simple way to identify the liquidity of each hub: for the most liquid hubs, futures platforms (such as EEX, ICE, CME, OMIP or MIBGAS) offer longer contracts, e.g. TTF (in CME) until 2032, while Spanish PVB (in MIBGAS) only covers until 2024.

Why has the MIBGAS in Spain cheaper than other European markets?

As shown in the chart below, prices in MIBGAS (PVB) are below the TTF prices, something that had not occurred since MIBGAS started up in 2015. This can be explained by the war in Ukraine and reflects a difference in the dynamics between supply and demand.



Source: Investing.com and MIBGAS. Data to 19 August 2022.

Spain and Portugal are insulated from the problems caused by Russian natural gas supply cuts, something that affects many members of the European Union, such as Germany, who are paying a premium to cover their current needs and fill their deposits for meet winter demand. Iberia has excess capacity of LNG regasification plants. But the rise in prices in the rest of the European continent affects us, since those who supply LNG would find it profitable to divert the methane tankers and unload in other ports in northern Europe. If this arbitrage were perfect, the MIBGAS and TTF prices would be the same, but they are not. This indicates a lack of regasification capacity in the rest of Europe and a limit on the capacity to export natural gas from Spain to France, two things that can be confirmed independently.

How does this affect the electricity market?

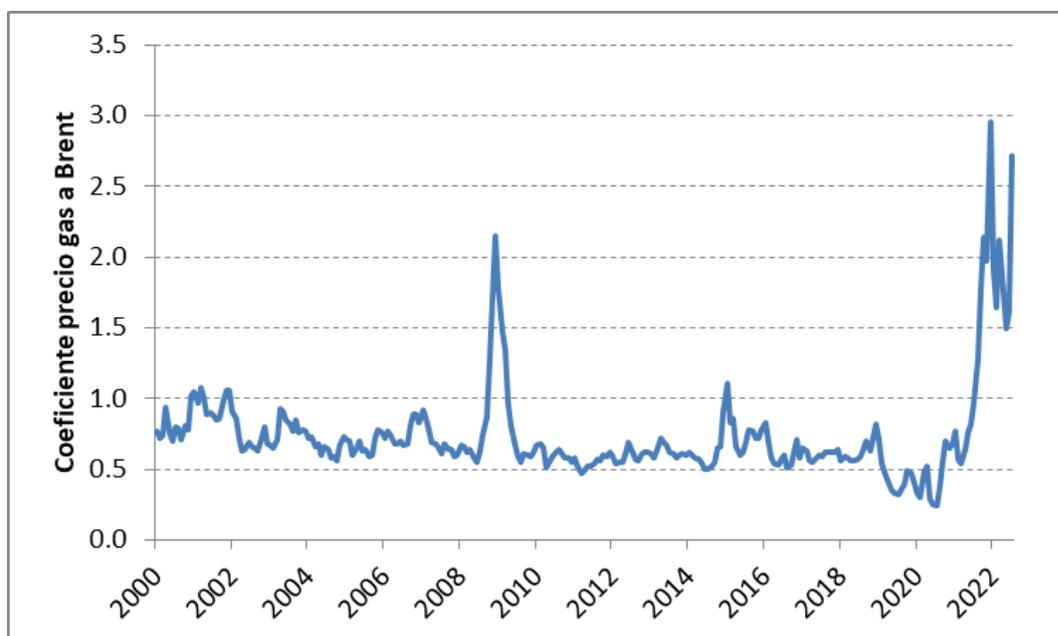
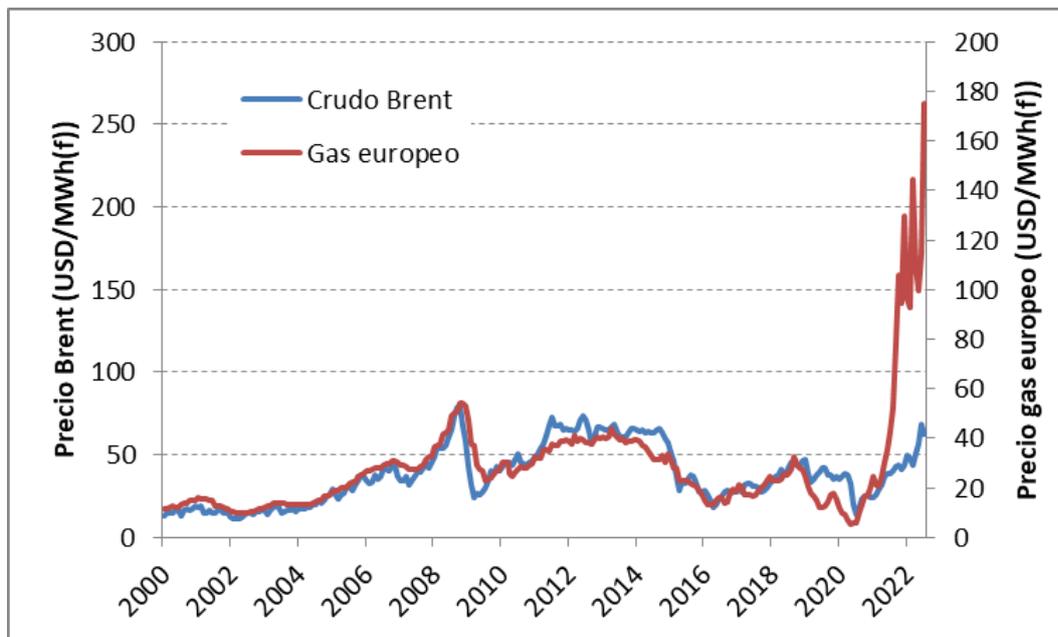
The MIBGAS price reflects the opportunity cost for those generators that use natural gas to generate electricity in Spain. Even those who have natural gas supply contracts at a better price know that they could sell it on the MIBGAS secondary market at a higher price, so the reference price is still that of MIBGAS. The marginal fuel cost of a combined cycle is about twice the price of gas: if gas cost 200 EUR/MWh(g), at 50% efficiency, two units of gas would be needed to generate one unit of electricity, then the minimum cost to cover the cost of gas for the cycle would be 400 EUR/MWh(e).

But since Spain’s Royal Decree-Law (“RDL”) 10/2022 grants them a subsidy equivalent to the difference between the MIBGAS price and the regulated gas price (which is now 40 EUR/MWh(g)) divided by 0.55, the marginal cost of fuel is reduced to 109 EUR/MWh(e) (=400-(200-40)/0.55).

What does EKON forecast for gas prices in the coming years?

It is difficult to determine where the price of natural gas will go during the next few years, since it is difficult to establish a clear forecast of supply and demand. Reactions to the war in Ukraine, Putin's behaviour, the entry of new sources of LNG and the evolution of demand, among other factors, affect the price of gas.

What we think is that, when the crisis in Ukraine passes, after a period of adjustment, Europe will return to something like the “historical norm”. The charts below show the monthly relationship between the price of European gas and Brent crude since 2000. We would define the historical norm as a price of natural gas at $\sim\frac{2}{3}$ of the price of crude oil in terms of energy. To put this into perspective, today’s futures price of Brent for 2025 on CME is nearly 77USD/bbl. With parity between USD and €, this would translate to 30€/MWh(f), which is well below today’s price levels and even TTF futures for 2025 which are trading just over 80€/MWh(f). In fact, you’d have to go out to 2027 before TTF prices dropped to 40€/MWh(f). Conclusion? Markets think the period of adjustment is going to be long...



Source: World Bank and EKON calcs. Monthly data January 2000 to July 2022.