April 9, 2024

Market Price Report - 2023

Momentum in Supply & Demand and Prices

The situation on European gas markets largely stabilized in 2023, compared with the second half of 2021 and especially 2022. The price trend was largely downward, with abundant LNG supplies replacing Russian gas delivered by pipeline, and supply requirements down by 14% according to GRTgaz. Engie's analysis (*EnergyScan*) shows that the share of LNG in European supply rose from 33% in 2022 to 38% in 2023, while Russian pipeline gas supplies dropped from 14% to 7%. The downward trend in supply is explained by a fall in European demand (-7.2% according to Eurostat figures) and a need for injection into storage that will be high in 2022 and low in 2023.

According to IEA[1] *(Gas Report - Q1 2024*), global natural gas consumption increased by around 0.5% in 2023, which was not enough to offset the losses incurred in 2022, when demand fell by 1.5%. While natural gas consumption rose in North America (+1%), the Middle East (+2%), Asia-Pacific (+2.5%, which includes 7% growth in Chinese demand) and Africa (+3%), it declined marginally in Central and South America and dropped sharply in Europe.

In Europe, consumption in 2023 fell by 7.2% due to the combined effect of demand destruction, mild winters, gas-saving measures and the rise of renewable energies. Power generation from natural gas decreased by 15%, with a drop in electricity demand (-3%), an increase in renewable production (+8%) and improved availability of the French nuclear fleet. The residential sector fell by 7%, largely thanks to efficiency gains, cost-saving measures, the deployment of heat pumps, changes in behavior and higher prices. The industrial sector, on the other hand, increased its consumption by 10%, as the ongoing fall in natural gas prices led to a moderate recovery in demand.

European import volumes have been cut thanks to falling demand (-7.2%) and reduced storage replenishment requirements (-6.6% of total imports). Thus, compared with 2022, Engie's analysis (*EnergyScan)* shows that not only have Russian gas pipeline imports been reduced by 58%, but also volumes from Norway (-7.3%), Great Britain (-10.8%), the Netherlands (-27.8%), North Africa (-3.4%) and Azerbaijan (-4.1%). LNG supplies remained virtually stable (-1.8%). Production at the huge Groningen gas field in the Netherlands is gradually being scaled back. It was completely and officially shut down on October 1st, 2023. The site will close definitively in 2024, after which it will be dismantled.

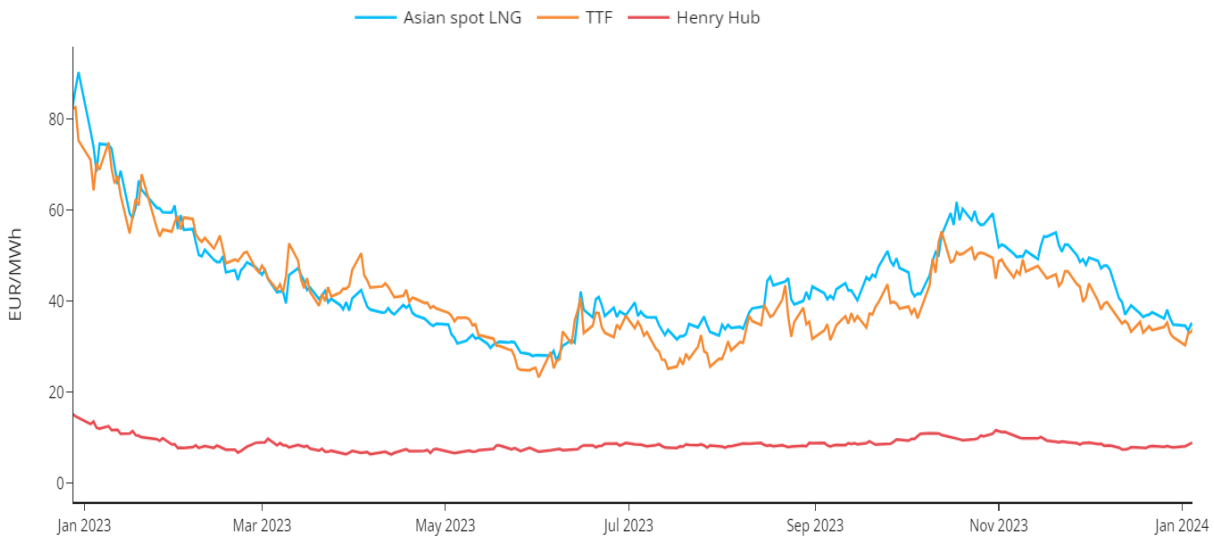
According to Cedigaz ("*LNG 2023 - Global LNG Trade Update* (*Full year 2023 & Q4 2023*"), significant changes have taken place in Europe, with a redistribution of LNG from Atlantic-oriented countries (such as the UK, France and Spain) to other European importers such as the Netherlands and Germany, with the construction of new LNG import capacity, mainly in Germany and the Netherlands. Increased regasification capacity now enables Europe to receive the LNG needed to replace the Russian volumes delivered by pipeline

[1] IEA: International Energy Agency

before the war in Ukraine and the decommissioning of Nord Stream 1 and 2. By 2023, Europe's regasification capacity was only 62% utilized. 47% of LNG imported by Europe came from the USA (versus 44% in 2022), 13% from Qatar (16% in 2022), 12% from Russia (unchanged), 10% from Algeria (8% in 2022) and 5% from Nigeria (7% in 2022). Eventually, the European gas industry was able to adapt surprisingly quickly to its dependence on Russian gas imports. However, Europe's dependence on US LNG has become even more pronounced, as the US share of European LNG imports has risen still further. Europe, in turn, as a destination market, accounted for 67% of US LNG supplies (rising to 69% by 2022).

This led to moderate market volatility, down sharply on 2022, but higher than in the period preceding the war in Ukraine and its aftermath. Price trends were largely downward. For example, the spot price at the TTF, the European benchmark for spot gas prices, was €76.4/MWh at the beginning of January, then closed at €30.9/MWh in the last days of 2023. Average spot LNG prices in Asia started the year at 77.3 €/MWh and ended it at 34.8 €/MWh. Consistently higher than European prices, they showed the extent to which the situation in Europe eased in the second half of 2023.

Gas price trend 2023 for delivery the following month (*Month ahead*)



Source: EnergyScan, Engie

In Q1 2023, TTF spot prices averaged €53.35/MWh, 17% lower than in Q1 2022 (€64.4/MWh). In three months, prices have almost halved, falling from €76.4/MWh at the start of the year to €46.3/MWh at the end of February. Q1 2023 saw very mild temperatures, with massive supplies from Norway and by LNG tankers. In Asia, spot prices in Q1 2023 averaged €52/MWh, 45% lower than in the same quarter of the previous year (€94.8/MWh). In the United States, the Henry Hub average was 37% lower in Q1 2023 (€8.82/MWh) than in the same period of the previous year (€13.95/MWh), returning to a level comparable to that prevailing before the war in Ukraine.

Gas demand in Western Europe in Q1 2023 was 13.1% lower than in Q1 2022, with industrial demand down 14%, residential demand down 11.4% and gas demand for power generation down 16.3%.

Russian exports to Western Europe fell by 81% in Q1 2023 compared with Q1 2022. Gas flows in the Nord Stream 1 pipeline were completely interrupted from September 1, 2022, and the entire Nord Stream complex was subsequently damaged by explosions. Imports from Norway fell by 1% YoY, and imports from North Africa declined by 8.5% YoY. Shipments from LNG terminals rose by 10.3%.

Storage withdrawals reached 309 TWh in Q1 2023, compared with 307 TWh in the same period of 2022, i.e. virtually unchanged. However, European storage facilities were 55.6% full at March 31st, 2023, compared with 26.3% the previous year. Combined with particularly mild temperatures, this explains the fall in prices during Q1 2023.

In Q2 2023, TTF spot prices averaged €35.0/MWh, down 34% on the previous quarter. Prices continued to fall, reaching €23.2/MWh on June 1st. They then rebounded to close at €36.7/MWh on June 30, buoyed by lower supplies from Norway following unplanned maintenance. Henry Hub prices averaged €7.26/MWh in Q2 2023, compared with €24.1/MWh in the same period of 2022, a YoY drop of 70%. Asian market prices have followed the decline in European prices against a backdrop of abundant global LNG supply.

In Q2 2023, gas demand in Western Europe fell by 9.8% compared with Q2 2022, with industrial demand down by 14%, residential demand down by 5.3% and gas demand for power generation down by 15.6% YoY. Russian exports to Western Europe fell by 72% in Q2 2022 compared with the same period last year. Norwegian volumes were also down (-14.3%), while liquefied gas supplies rose by 10.3%. Finally, injection requirements for European storage facilities were lower, limiting supply needs on the Continent.

In Q3 2023, the European benchmark TTF price showed a high degree of volatility, rising slightly as a result of the risk of strikes in Australia and tensions in the Middle East, despite the high level of gas storage for this time of year (95.6% at September 30). TTF spot prices averaged €33.2/MWh. This represents a six-fold reduction on the average spot price for Q3 2022 (€199.14/MWh). Against a backdrop of abundant LNG supply, but also nervousness about supplies, the average Asian LNG spot price was €39.5/MWh, 75% below the average price for the same period in 2022. Henry Hub prices averaged €8.3/MWh for Q3 2023, 70% below the average price for Q3 2022 (€26.9/MWh).

In Europe, Russian gas deliveries were still down (-18% in Q3 2023 compared with the same period in 2022). Norwegian and LNG deliveries were also in decline (-14.3% and -14%), compared with exceptionally high levels in summer 2022. However, lower injection requirements into European storage facilities limited Europe's supply needs.

Gas demand in Western Europe kept on declining in Q3 2023 (-5.3% versus Q3 2022), with industrial demand down 3.8%, residential demand down 8.6% YoY, and gas demand for power generation down 19%.

In Q4 2023, the average TTF price was €40.65/MWh, 56% lower than the average price for the same period in 2023 (€94.24/MWh). Mild temperatures across Europe, very high seasonal storage levels and high availability of renewables catalyzed low spot prices on average during Q4 2023. Cooler temperatures in October and November lifted consumption, and gas prices reached almost €55/MWh before being confronted with very mild temperatures and low consumption in the last month of the year. On December 29th, the TTF spot price closed the year at €30.9/MWh. Henry Hub prices averaged €7.29/MWh in Q4 2023, compared with €20.41/MWh in 2022 for the same period, a YoY drop of 64%. Spot LNG prices in Asia averaged €48.4/MWh, down from €113.2/MWh a year earlier. TTF prices during Q4 were almost systematically 5-10 €/MWh below Asian prices, showing how much the situation had eased in Europe compared with the first half of 2023: European buyers no longer needed to offer a premium to bring LNG carriers to European ports. However, markets remained nervous, reacting to developments in the geopolitical situation in the Middle East and the Houthi attacks from Yemen against cargo ships passing through the Bab-el-Mandeb Strait, forcing LNG tankers to go around Africa via the Cape of Good Hope.

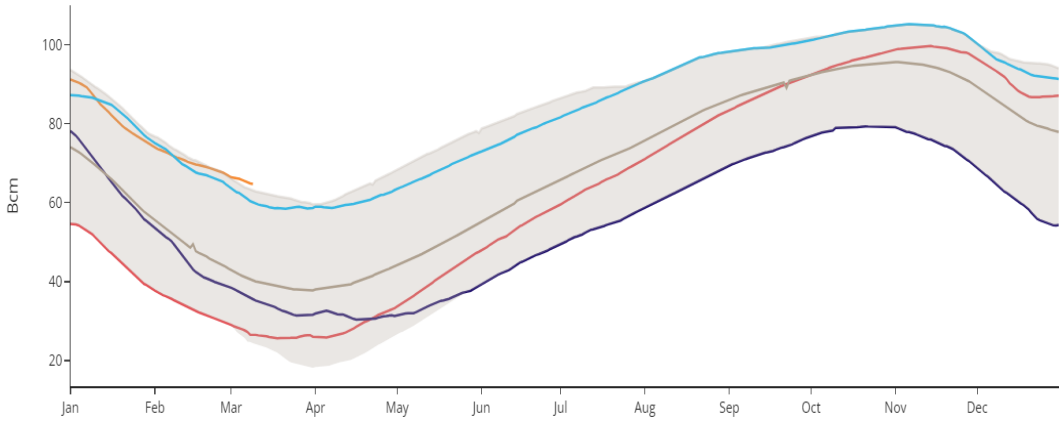
Russian exports to Western Europe rose by 18% in Q4 2023 compared with the same quarter of the previous year. The remaining quantities of Russian gas are very small, and are transported to Europe via Turk Stream 2 and Ukraine since the Nord Stream 1 pipeline was completely shut down on September 1st, 2022, and the entire Nord Stream complex was damaged by explosions. Imports from Norway rose by 2.4% YoY. Imports from North Africa fell by 5.3% YoY, and Dutch production fell to close to 0, with the huge Groningen gas field in the Netherlands being progressively reduced and full closure taking place in Q4 2023. Taking into account Russian LNG exports to Europe, Russian gas still accounts for 10-15% of the European gas mix.

LNG emissions (i.e. LNG volumes injected into the grid after regasification) fell by 10.5% in Q4 2023 compared with Q4 2022. However, LNG remains the largest contributor to the European supply stack, with the United States providing the lion's share at 50.2% in Q4 2023, compared with 45% in Q3 2023. The high share of US LNG results from a substantial price differential between Henry Hub and European prices. Qatar has reduced its exports to Europe from 17% of European LNG shipments in Q4 2022 to 10% of European LNG in Q4 2023.

European gas demand in Q4 2023 was stable (-0.4%) compared with the same period in 2022. However, industrial and residential demand increased by 3.6% and 4.1% respectively YoY. Gas demand for electricity fell by 16.8%. The quarter as a whole was characterized by robust renewable generation, average temperatures and improved availability of French nuclear power generation.

European storage stocks were 96% full on October 1st, 2023, compared with 89% the previous year. On December 31st, they were still 86.4% full (83.4% at the end of 2022). These high stock levels and the particularly mild temperatures in December 2023 explain the downward trend in prices until the end of the year.

European Gas Storage Stocks



Source: EnergyScan (Engie), Data from GIE - Aggregated Gas Storage Inventory

Medium-Term Outlook for Natural Gas, Biomethane and LNG

According to IEA, global gas consumption is set to increase by 2.5% in 2024, with the Asia-Pacific region alone accounting for 40% of the additional demand. Demand in Europe is expected to remain stable in 2024.

Cedigaz' figures indicate that 15% of the gas consumed in Europe will be renewable by 2030. The REPowerEU plan calls for the production of 35 billion cubic meters of biomethane by 2030, or 8% of consumption by that date. Since the plan was published, significant progress has been made towards the 35 billion cubic meter target. Gas and energy companies, energy majors and financial investors are investing massively in the sector. European production will reach 3.4 billion cubic meters in 2021. It was estimated by Cedigaz (April 2023) at 4.2 billion cubic meters in 2022, representing just 1% of EU gas demand, but in some countries this share has already reached 30 to 40%.

From today's perspective, Europe's LNG supply seems assured with new liquefaction capacity coming on stream over the next few years, mainly in the USA (even though the US government recently decided to stop issuing permits for new liquefaction terminal projects) and Qatar, which will increase global production capacity by around 5% in 2024, 13% in 2026 and 41% in 2030 (*EnergyScan*, Engie - May 2023). Regasification capacity on European coasts could grow by 5-10% a year until 2027, further adding to the current overcapacity situation.

However, the geopolitical situation in Europe and the Middle East maintains a high level of uncertainty. Added to this are operational risks on liquefaction, regasification and gas transport infrastructures, the slim probability of a renewal of the contract between Gazprom and the Ukrainian network operator at the end of 2024, uncertainty regarding the availability of LNG now essential for balancing supply and demand in Europe, and possible sanctions on Russian LNG imports. In the event of an exceptionally cold winter combined with the materialization of one or more of the risks listed above, supply could become strained. However, it should be possible to tackle the coming winter with high levels of storage in the autumn, since storage replenishment requirements will be low this summer.

Sources: EnergyScan (Engie), Eurostat (Statistical Office of the European Union), Gas Report Q1 2024 (IEA), LNG 2023 - Global LNG Trade Update -full year 2023 & Q4 2023- (Cedigaz), Bilan gaz 2023 & Transition gazière (GRTgaz)