



No 394 | AUGUST-SEPTEMBER 2023

SEE ENERGY BRIEF

Monthly Analysis

Gas Price Volatility in Europe and the Key Role of LNG



Introduction

In early August 2023, the price of natural gas in Europe spiked by as much as 40% on the news that gas platform workers in Australia may launch industrial action (1). The strike could have affected a tenth of global LNG, which would send prices higher. Indeed, the very threat of a strike sent prices higher, and once again highlighted Europe's precarious energy security position.

More specifically, European natural gas jumped by the most since March 2022 and benchmark futures settled 28% higher on a day of extreme volatility that saw the contract top €40 for the first time since June 2023. Prices soared as much as 40% intraday. The daily increase was the biggest percentage gain since the early weeks of Russia's war in Ukraine. Traders are concerned about a long-lasting strike, with analysts at Citigroup Inc. predicting it could cause European gas and Asian LNG contracts for January to double. (2)

This Monthly Analysis attempts to shed light on the key factors that affect the fundamentals of European gas market, which in turn affect natural gas prices.

State of Play of the European Gas Market

Since Russian supply cuts started in the summer of 2021, the European gas market has been at the epicentre of energy market radar screens. European demand for incremental LNG to replace Russian gas has sparked a global wave of investment in new supply. European gas market flexibility is also playing a key role clearing the global gas market and driving LNG prices.

Big swings in gas prices in 2023 are feeding directly into price moves across European power markets. Gas fired generation as the dominant price setting fuel is driving both the level of power prices (important for RES and nuclear asset returns) and the level of power price volatility (important for the returns on flexible assets such as batteries, hydro and interconnectors). About 1 year after the peak of Europe's energy crisis late last summer, the current market set up could not be more different from expectations a year ago.

1. A Gas Curve in Two Parts

Last August marked the one-year anniversary of Europe's benchmark TTF price smashing all records, as prices hit a high of €345/MWh. Since then, they have fallen about 86% to just over €50/MWh, while power prices have fallen proportionally. Figure 1 shows the evolution of TTF spot prices and the forward curve across 2023.

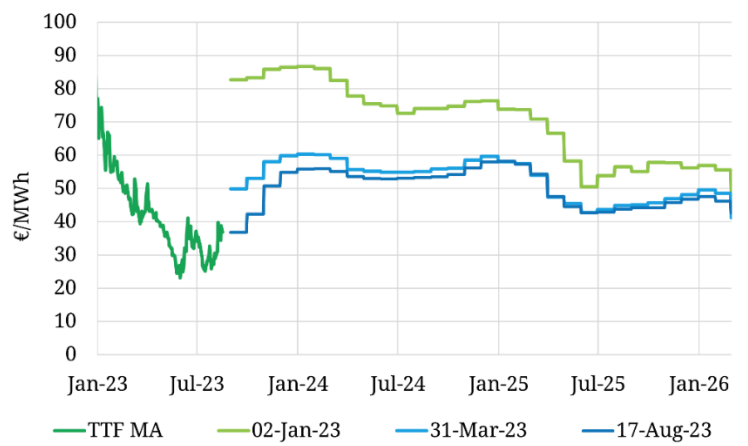
(3)

Figure 1: Dutch TTF Natural Gas Futures over the Last 2 Years



Source: ICE

Figure 2: TTF Forward Curve Evolution Across 2023



Sources: Timera Energy, ICE

Before mentioning the drivers behind the price movements, it is high time to summarise what happened to them in 2023 (until now):

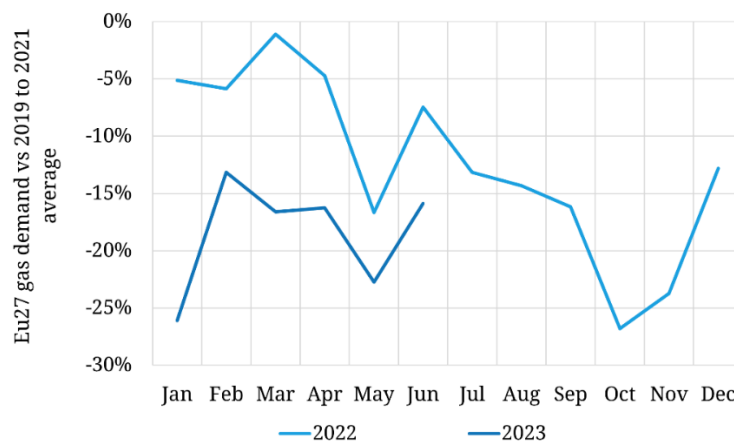
1. Gas prices were already falling sharply as we entered 2023
2. The whole curve continued to fall across Q1 2023 as the crisis eased (mild winter, soft demand, high LNG imports) – see green line to dark blue curve shift in Figure 2
3. In Q2 and Q3 2023, prices at the front of the TTF curve (Summer 2023) have fallen sharply; despite this, prices for Winter 2023-2024 out to 2025 have been relatively resilient – see dark blue to light blue curve shift
4. The Summer 2023 price fall has driven a record contango (rising curve steepness) into winter; e.g. September vs November prices
5. Price volatility in the front of the forward curve has been increasing across the last couple of months, particularly across the remainder of 2023 – this has fed through into big swings in power prices.

2. European Demand Down ~20% vs Pre-Crisis

The energy crisis has precipitated a substantial and rapid decline in European gas demand, beyond all expectations last year. Figure 3 shows the evolution of European gas demand across 2022 and 2023, relative to the average of the 3 years preceding the crisis (2019-2021). Relative demand moves are notoriously difficult to measure, but it appears that total gas demand is running at around 20% below pre-crisis levels. Demand reductions have occurred across all sectors, i.e. industrial, residential and power sector.

Very high prices in 2021-2022 appear to have caused structural industrial demand destruction and offshoring. There have been some signs of recovery in industrial demand across Q2-Q3 2023 as prices have eased. Lag effects are in play in terms of demand response to price, so it is difficult to define the exact extent of permanent vs price sensitive demand loss. Power sector’s gas demand in 2023 has been relatively weak, despite lower gas prices which have pushed deeper into the coal-gas switching range. Ongoing growth of RES output in most European countries and healthier hydro balances this year are other important factors. This rapid reduction in gas demand has played a key role in Europe weathering the gas crisis storm.

Figure 3: Evolution of European Gas Demand Relative to Pre-Crisis Average



Sources: Bruegel, Timera Energy

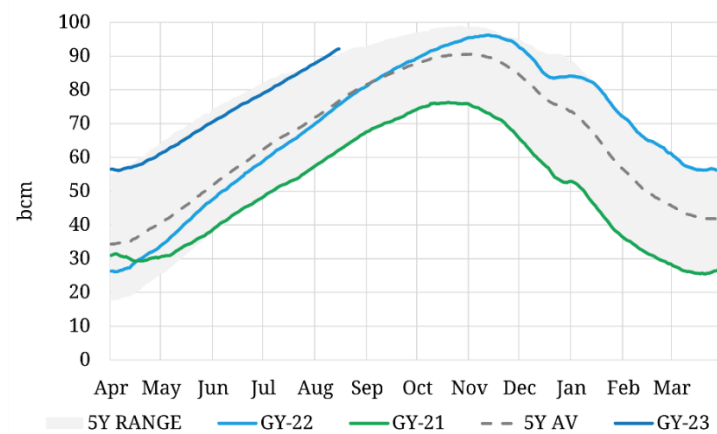
3. 2023 Storage Inventory Overhang Dampening Prices

Europe storage injection has historically been an important driver of gas demand across summers. Figure 4 shows how Europe entered this summer with record inventory levels, with a risk that storage may hit ‘tank tops’ by late summer. Storage normally plays a key flex provision role in the European market. The unusually high level of inventories means that storage demand flex is much more constrained than normal. Underground storage injection constraints are bringing alternative forms of storage into focus:

- Ukrainian storage which has more headroom but is typically more expensive and slower cycle (+carries associated war risks)
- Floating LNG storage incentivised by the very steep November vs September curve contango; this has a knock-on impact of pushing up charter rates in the LNG market.

The knock-on effect of storage constraints is that European gas demand is less price responsive (more inelastic) than normal. This is a key contributing factor to lower summer price levels as the market needed to induce price response from other sources of flex (e.g. power sector and LNG cargo diversions). This price inelasticity is also contributing to a rise in price volatility this summer.

Figure 4: EU Underground Gas Storage Levels



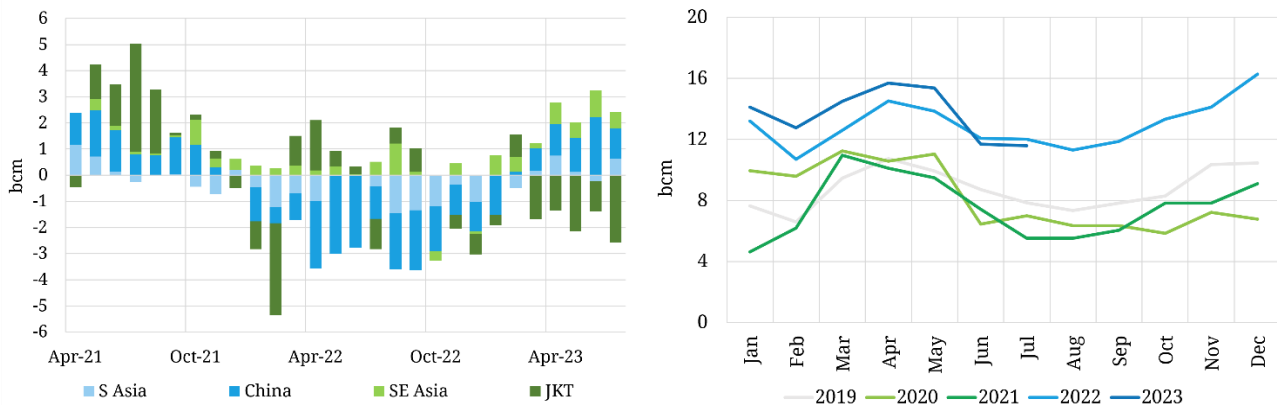
Sources: Timera, GIE

4. Asian LNG Demand Has Failed to Rebound So Far in 2023

With Asian economies (most importantly China) coming out of strict lockdowns, market expectations were that Asian LNG demand would rebound in 2023. The left hand side of Figure 5 shows that this recovery has not occurred as expected, while its right hand side shows the knock-on implication of high European LNG import volumes.

The left hand side of Figure 5 does show a gradual recovery in Asian LNG demand across China and other developing Asian markets (South and South East Asia). However, this has been offset by weaker demand across Japan, Korea & Taiwan (JKT), driven e.g. by the restart of Japanese nuclear reactors. The right hand side shows how weaker Asian demand has continued to drive a strong flow of LNG to Europe in 2023. However, as this summer has progressed, weaker European demand and storage constraints have seen price signals adjusting to divert gas away from Europe.

Figure 5: Asian LNG Import Changes y-o-y (LHS) and European LNG Imports (RHS)



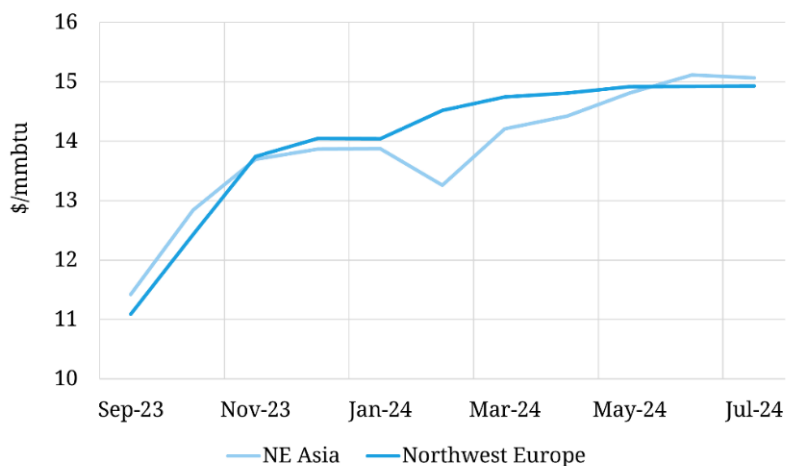
Sources: Timera, LNG Unlimited; note European imports exclude Turkey

5. Weaker European Gas Demand Sees Asia Return as Premium Market

A year after peak crisis, Europe and Asia are not in the fierce bidding competition for cargoes that the market anticipated. In fact, the opposite is occurring – summer TTF prices have been falling to induce LNG cargo diversion to Asia. This is reflected in the relative levels of the 2 key price signals that drive LNG cargo flows across the Atlantic and Pacific Basins:

- TTF has fallen to a discount to JKM
- The TTF premium to DES NW Europe LNG prices (a feature of the crisis) has narrowed substantially on the prompt, briefly flipping to a discount earlier in the month

Figure 6: US FOB Gulf Coast Netback Forward Curve



Sources: Spark Commodities, Timera

The impact on US FOB Gulf Coast netbacks is shown in Figure 6. Europe being a premium market for the large volumes of flexible US LNG has been feature of the Russian supply cut driven energy crisis through 2021-2022. But in 2023 as the crisis has eased, North Asia has moved to offer more attractive netback pricing for US exporters across the next few months.

The Importance of LNG

Last year, the EU celebrated the success of its efforts to reduce its dependence on pipeline Russian gas. Indeed, that dependence was greatly reduced, not without the help of Gazprom itself, which significantly reduced the flow of gas to Europe, prompting buyers there to look for alternatives. The celebrations did not take very long to turn into complaints. Accustomed to cheap pipeline gas, European buyers were finding out that the LNG spot market had very different rules, which ultimately resulted in higher, much higher, prices when a new buyer as big as the EU appeared on the stage.

By the end of the year, politicians in Europe were complaining about having to pay through the nose for natural gas on the spot market, and some were already closing long-term deals with Qatar and the United States, much to the dismay of environmental groups, which have been pressing for a complete ban of gas imports. Even Germany, a staunch opponent of continued reliance on gas, gave up and signed long-term deals and decided to build several permanent LNG import terminals. (4)

What this did was cement the continent's now almost complete dependence on LNG. Bar some pipeline imports from Norway and Azerbaijan, most of the European Union's gas in the years to come will be sourced from the international LNG market. And this means higher prices for longer. And even higher prices and the constant threat of a price shock in case of supply disruption, as evidenced by the Australian strikes news. "The potential for strike action at LNG export plants in Australia once again highlights the fact that we are now clearly in a globalised gas market", ICIS analyst Tom Marzec-Manser told the Financial Times (5). "Europe has understandably backfilled Russian pipeline supply with versatile LNG. But that versatility leads to increased price volatility".

Currently, European gas stocks are at a record high for this time of the year. In fact, days before the news broke that Australian LNG workers are considering a strike, Reuters's John Kemp reported that this record-high level of gas stocks was keeping a lid on prices. All it took for the cover to blow off was the news of a potential strike in one of the world's biggest LNG producers (6). There are already warnings that the energy crisis in Europe is not over. Indeed, these warnings began as early as last year amid the celebrations of switching from pipeline gas to LNG and how independent that made Europe.

Figure 7: European Gas Price Surges



Sources: Refinitiv, Financial Times

At the time, few were in the mood to listen to warnings that the show was only beginning, not ending. Now, almost a year after, things are changing. Winter is once again on the way, as far as it may seem in September. This means there is a spike in demand for LNG on the horizon and a spike in demand means a spike in prices, inevitably. “The crisis is not over yet”, the chief executive of E.ON, one of Germany’s biggest utilities, said in August. “We must continue to work on the issue of austerity. This is the best way to ensure affordability for customers and also to achieve competitiveness of our society and our economy”. (7)

If the CEO of E.ON is talking about austerity, then the situation must be serious. It suggests there is no great chance of abundant LNG supply and weak competition from Asia that would make the commodity cheaper. That leaves lowering demand as the only choice. Indeed, austerity is already in place. The exorbitant prices last year made it a natural choice to curb consumption. Indeed, Reuters reported recently, based on EU figures, that since last year, Europe’s gas consumption has fallen by 16% compared to the previous decade. The decline is particularly marked among industrial consumers.

Consumption remained lower even as gas prices calmed down. That is no wonder since even calmer prices have been 35% higher this year than the average for 2018 to 2021. These higher prices have hit especially hard industries that make the backbone of the EU’s manufacturing sector, including steel and cement making, fertilizers and petrochemicals.

In 2022, LNG made up 34% of the European Union’s gas imports, the FT reports. This year, this is expected to rise to 40%. That would be virtually the same market share Russian pipeline gas had in the European Union prior to the February 2022 invasion of Ukraine. That means that the EU, for all its self-congratulations on

achieving energy independence, has simply replaced one form of dependency for another. This new form goes hand in hand with austerity and loss of competitiveness for some of the most important industries on the continent. All this suggests some unpleasant facts about the very source of that competitiveness and the EU's economic and social wealth - the era of abundance that Emmanuel Macron bid farewell to last year.

The LNG import increase has made European countries vulnerable to volatility in that market - particularly as 70% of these imports are bought at short notice rather than using the long-term oil indexed contracts that prevail in Asia. To synchronise demand for LNG, the European Commission has introduced initiatives like the EU Energy Platform, an IT platform that makes it easier for supplier companies in member states to jointly buy the fuel. However, it is uncertain what level of supplies can be channelled through this instrument as it remains untested. Additionally, the industry fears this kind of state intervention could backfire and undermine the functioning of the market.

Discussion

The European gas market is still tight, but new LNG import capacity has been added, storage filling was already over 80 bcm at the end of August 2023 and overall gas (and electricity) demand has gone down with limited prospects of a rapid recovery this year. Nonetheless, Europe must remain vigilant.

The supply-and-demand gas balance in Europe remains precarious. Only extremely weak industrial demand balances the system. Plentiful inventories help, but even with those, Europe wouldn't make it through the winter if all the industrial gas demand returned to pre-crisis levels. As such, the price of avoiding the energy crisis is a deep recession in the manufacturing sector, and a long-term loss of economic growth. An analysis published by the International Monetary Fund last month says Germany is likely to lose just over 1% of potential output. Gas demand is driven by a combination of multiple factors. It is difficult to disentangle all the different drivers that influence it, but the power sector and the residential and commercial sector appear to concentrate most of the uncertainties for the next six to nine months in Europe.

According to the Oxford Institute of Energy Studies (8), gas demand fundamentals seem to point towards lower gas demand in Europe in 2023 even if gas prices fall further. Marginal growth in the second half of the year (+0.5% y-o-y) is anticipated driven by a small decline in the power sector due to the gradual return of French nuclear power and continued depressed electricity demand, a muted demand recovery in the industrial sector and an anticipated colder winter in October-December with higher gas use for heating compared to 2022. If this scenario materialises, it would bring the total gas decline for 2023 to -6% y-o-y.

References

1. Slav, I (2023), “European Gas Price Spike Highlights Painful Exposure To Global Markets”, <https://oilprice.com/Energy/Natural-Gas/European-Gas-Price-Spike-Highlights-Painful-Exposure-To-Global-Markets.html>
2. Mazneva, E. and Shiryaevskaya, A. (2023), “European Gas Jumps Most Since March 2022 on LNG Strike Vote”, <https://www.bloomberg.com/news/articles/2023-08-09/european-gas-extends-gains-as-eon-warns-crisis-not-over-yet#xj4y7vzkg>
3. Timera Energy (2023), “Gas market ‘state of play’ in 5 charts”, <https://timera-energy.com/gas-market-state-of-play-in-5-charts/>
4. Williams, C. (2023), “Venture Global LNG signs 20-year contract with German energy firm”, <https://www.reuters.com/business/energy/venture-global-lng-signs-20-year-contract-with-german-energy-firm-2023-06-22/>
5. Tani, S. (2023), “Gas price spike underscores Europe’s vulnerability to global energy shocks”, <https://www.ft.com/content/452f2664-fd70-4f91-b8a2-1a208f72c4e4>
6. Kemp, J. (2023), “Europe’s record gas inventories cap prices”, <https://www.reuters.com/markets/commodities/europes-record-gas-inventories-cap-prices-2023-08-08/>
7. Steitz, C. and Käckenhoff, T. (2023), “E.ON CEO: energy crisis has eased, not ended”, <https://www.reuters.com/business/energy/eon-flags-market-recovery-after-energy-crisis-2023-08-09/>
8. Honoré, A. (2023), “European gas demand fundamentals – H1 2023 review and short-term outlook”, <https://www.oxfordenergy.org/publications/european-gas-demand-fundamentals-h1-2023-review-and-short-term-outlook/>

IENE SEE ENERGY BRIEF MONTHLY ANALYSIS - Issue No. 394 – ISSN:179-9163

Prepared by IENE’s Research Team

Monthly Analysis is published by the INSTITUTE OF ENERGY FOR SOUTH-EAST EUROPE (IENE)

3, Alex. Soutsou st. 106 71 Athens, Greece, T: +30-210 3628457, 3640278, F: +30 210 3646144, marketing@iene.gr, www.iene.eu

© 2023 Institute of Energy for South East Europe All rights reserved. No part of this publication may be reproduced, scanned into an electronic retrieval system, or transmitted in any form or by any means, including photocopying and recording, without the written permission of the publisher.