

Natural Gas Price Surge: Implications for International Energy Markets and the Way Forward

Raed Al Mestneer and Fateh Belaïd

Instant Insight

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1. What Are the Reasons Behind the Soaring Gas Prices?

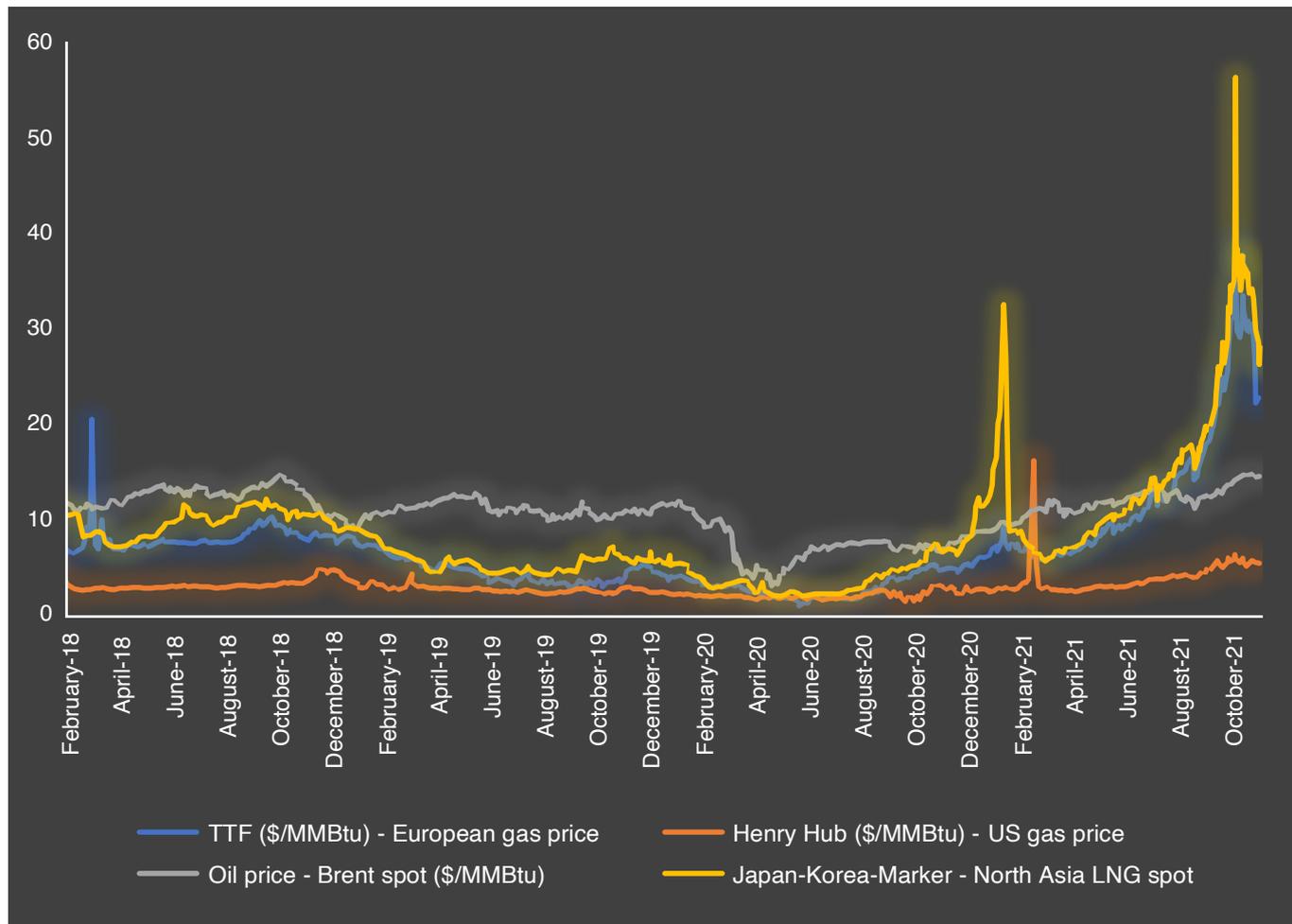
As the Northern Hemisphere has moved into winter, the current worldwide surge in energy prices has raised fears of an energy crisis with serious implications. The focus of this brief Instant Insight is twofold. First, we provide a brief overview of the current energy market. We then discuss the potential short- and long-term implications for users of natural gas, both residential and industrial. The analysis highlights that, although the world debated reducing investment in fossil fuels at COP26 in Glasgow, OPEC (Organization of the Petroleum Exporting Countries) and its partners have had to deal with calls from major energy consumers to increase production to curb the current price trend.

Global energy markets are experiencing an unprecedented confluence of events that are driving up gas prices and adding further complexity to the already uncertain prospects for post-COVID-19 global economy recovery.

The absolute levels of gas demand were reduced in 2020 as a result of the general decline in primary energy demand caused by the COVID-19 pandemic. However, its share of primary energy continued to increase, hitting a record high of 24.7% (BP 2021).

While energy demand experienced a historic decline in 2020 due to the economic disruption caused by the COVID-19 pandemic, the rollout of vaccines supported economic recovery and led to a rebound in energy demand. This exceptional worldwide economic recovery has caused logistical constraints and low inventories, which have sent gas prices soaring to unprecedented levels. Liquefied natural gas (LNG) spot and natural gas prices have reached astronomical levels this year. During the first week of October, they stood at \$56 MMBtu (million British thermal units) in Asia and approximately \$40/MMBtu in Europe (Figure 1). This represents a more than twenty-fold jump in prices over the summer 2020 levels.

Figure 1. Daily prices of natural gas, liquified natural gas (LNG) spot, and crude oil from January 2018 to October 2021. On average, the current gas market crisis has driven prices up by approximately 300% in Europe, 254% in Asia, and 87% in the U.S. compared with last year.



Source: Created by the authors using Bloomberg and S&P Platts data.

The price crunch has spread well beyond the gas sector to other fossil fuels, including oil and coal. Sharp spikes in natural gas prices have pushed major consumers, including the U.S., Asia, and Europe, to substitute coal for natural gas for power generation. Europe and China are also experiencing historically high coal prices. Global coal prices are roughly five times higher than they were in 2020, and power plants in India and China, the two major consumers of coal in the world, have very low inventories (Fernández Alvarez and Molnar 2021).

These peak levels are driven by a combination of exogenous factors, including a strong post-COVID-19 economic recovery, low levels of hydro-electric and wind power in some regions, unprecedented weather conditions that boosted demand for heating and cooling, carbon prices, a vicious commodity cycle that relies on gas, and procurement issues in the coal and gas markets.

2. What Are the Critical Short-term Implications?

The current boom in energy prices around the world has led to renewed talk of a gas-price crisis with far-reaching implications. Natural gas has been in the spotlight because spot gas prices in Asia and Europe have hit unprecedented levels.

Among the factors responsible for the price rise is the overall reduction in investment in gas-related infrastructure and maintenance since the COVID-19 pandemic. This situation is exacerbated by supply constraints. The LNG supply has not been able to keep up with the increase in LNG demand outside of Asia caused by a very cold winter and a strong rebound in industrial activity.

While LNG capacity has increased significantly, particularly in the U.S., maintenance delays caused by COVID-19, unplanned outages, project delays, unplanned repair work, and temporary curtailments have tightened the gas market and limited production in countries like Algeria, Australia, Nigeria, and Norway (Fernández Alvarez and Molnar 2021).

The sharp increases in natural gas prices have caused major markets, including the United States, Asia, and Europe, to substitute coal for natural gas for power generation. This expanded use of coal has led to an increase in the volume of greenhouse gas (GHG) emissions from power generation worldwide. In conjunction with rocketing European carbon prices, the higher prices for gas and coal have caused electricity prices to rise sharply.

The imminent concerns in the short term are the impact of the price spikes for gas and electricity on consumers' energy bills and potential power outages. The record high electricity and gas prices may spill over into the longstanding fuel-poverty phenomenon, which is linked to high energy costs, low incomes, and energy-inefficient housing (Belaïd 2018; Belaïd 2021). In this context, many households are experiencing significant increases in their electricity and gas bills, which is exacerbated by current tariffs in many countries. For example, in France, regulated tariffs contributed to a 29% rise in the average household gas bill in October 2021 compared with January 2019, and a 52% increase compared with January 2021 (CRE 2021).

Over and above the impact on residential consumers, the turbulence in the gas market has implications for the global economy. For instance, many industrial gas users, such as fertilizer producers (e.g., Badische Anilin und Soda Fabrik [BASF] in Germany and Central Farmers industries [CF] in the U.K.), are having to cease or reduce activities. In September, CF Industries ceased operations at two plants in the U.K. The Austrian chemical manufacturer Borealis and the Norwegian company Yara International have also reduced ammonia production (Financial Times 2021). The same goes for China, where some factories have closed due to electricity shortages (Singh and Zhang 2021).

In such conditions, it is appropriate for policymakers in Asia and Europe to take urgent measures, to ease the burden during periods of short-term energy market turbulence, especially for the most vulnerable consumers, such as providing energy vouchers or temporary relief from certain taxes or fees.

3. Possible Long-term Implications

A typical market reaction to supply disruptions is to turn to alternative energy sources. Hence, coal switching has already taken place in Europe, Asia, and the United States. However, the coal market is also dealing with shortages because of the spike in electricity demand combined with supply constraints.

While the shift to oil offers a small way out of the crisis, oil is not largely used in the power generation sector. It accounts for less than 3% of the world's electricity production, roughly half of which is in the Middle East (BP 2021). Nevertheless, when it comes to wind and solar power, there is no silver bullet to increase production according to demand, as wind power depends on wind levels and hydroelectricity relies on precipitation.

Currently, there are two predominant streams of thought regarding the prevailing situation, and these are mirrored in the evolving natural gas debate. The first stream sees this experience as further evidence of the urgent need to accelerate the energy transition and decarbonize the world's power grid. The second school of thought, however, sees in this circumstance concrete evidence that we are not ready for a rapid transition, and additional gas is necessary in the short and medium term to satisfy the world's growing energy demand.

A crucial aspect of the current debate is the affordability and security of supply, particularly in a future context in which there is a higher share of renewable energies. The evidence from the current gas-price crisis is that there is a clear likelihood that significant variations and mismatches in supply and demand will drive tight fossil fuel markets. This will, in turn, result in excessive volatility and surges in prices that will also impact electricity markets.

With a worldwide commitment to switching to a clean energy system, industries and policymakers must rethink the energy demand security approach. It is crystal clear that, while severe weather events intensify energy demand, renewable energy supplies are likely to be lower than targeted. The recent Texas outages caused by extreme cold, which left millions of residents without power, illustrate how extreme weather events can threaten energy systems (Morey 2021). Preparing and anticipating these new risks becomes essential to minimizing energy supply disruptions and future price surges.

4. The Way Forward

This Instant Insight provides a brief perspective on the ongoing natural gas price surge, which is occurring within the context of an economic rebound following the COVID-19 disruption. Its insights are garnered by considering the short- and long-term implications of this surge.

The brief analysis highlights that, even in economies that pledged to pursue a green economic recovery, the current scale and readiness level of alternative energy technologies have proved unreliable in filling the energy security gaps created by the post-pandemic economic recovery.

In a context where electrification and renewables are booming, demand for expanded capacity will remain for the foreseeable future and will very likely be gas-based. Accordingly, this prospective future will continue

to rely on fossil fuels to meet growing demand. Fossil fuels will help ensure supply flexibility by bridging the intermittency of renewables and will, presumably, continue to set power prices.

For hydrocarbon-producing countries like Saudi Arabia, such an energy market disruption offers an opportunity to help countries meet their growing energy demand while speeding up the domestic energy transition.

However, the ongoing turmoil poses the question of whether such volatile episodes of sky-high gas prices will become more frequent in the future. Thanks to its large storage capacity, its ability to shift between coal and gas, and the flexibility of its pipeline providers, Europe was somewhat able to play the role of a balancing market for the LNG world market. Nonetheless, coal-fired production will be reduced in Europe with the growing share of renewable power. This suggests that the European gas market's resilience to global disruptions could be weakened, which would put the continent at greater risk of price volatility.

As climate resilience should be a cornerstone of future energy policy, this constitutes a breakthrough moment for policymakers to consider the actual facts and implications of energy transition. A moment in which they can design a new climate resilience paradigm, considering the potential of the different available options to promote a resilient and sustainable energy system. Energy policymakers should anticipate the emerging risks associated with renewable supply intermittency. Therefore, additional flexibility is sorely needed in the power market, which can be achieved through technologies, including batteries, demand-side management, and eventually nuclear and hydrogen energy. Beyond the current soaring energy prices, however, a revival of interest in energy efficiency and a focus on poorer end-users would help in the implementation of an inclusive energy transition process and ensure a sustainable energy supply.

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