



European energy crunch and its impact on energy markets

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Since the invasion of Ukraine in February 2022, Russia's aim has been to make gas supply to Europe as unpredictable as possible and thus undermine economic confidence and EU resolve on sanctions. At the end of July, 2022, Russia reduced gas flows to Europe via the Nord Stream 1 pipeline to 20% capacity. Further restrictions in supply are likely (e.g. transporting gas via Ukraine to Europe), injecting great uncertainty into the outlook of the region. Efforts to replace Russian gas with other pipelines and liquefied natural gas (LNG) have yielded some results, but cannot go much further in the short term given the limited availability of global LNG supplies and regional regasification terminals. Europe's surging pursuit of LNG to phase out Russian pipeline supply and limited global LNG export capacity additions raise the risk of prolonged tight market (IEA, 2022)¹. Definitely this winter gas season opens with extreme natural gas price levels and volatility, caused by unprecedented uncertainty of supply as Russia steeply curtails its pipeline deliveries to Europe. The result is considerable market tension in alternative sources of supply. Security of supply has become a top priority in Europe and other importing regions as a total cut-off in Russian flows to Europe cannot be ruled out. This in turn creates further tensions and demand destruction for all competing LNG importers.

Based on the International Energy Agency's (IEA) quarterly gas market short and medium-term forecast, natural gas demand is expected to decline in 2022 and remain subdued up to 2025. Europe's gas needs will be suppressed both by the EU's plan to cut demand by 15% and by the impact on consumers of much higher prices. Energy efficiency measures, more rapid deployment of renewables, heat pumps and behavioral change can further reduce gas use in the residential and commercial sectors by 37 billion cubic meters (bcm) by 2030 according the REPowerEU Plan². Most of the remaining demand for Russian gas would be concentrated in the landlocked Central and Eastern European countries (especially Hungary, the Czech Republic and Slovakia), which have historically been the most dependent on Russian gas. Central European countries will be the worst hit as they will not only face gas shortages this winter, but also suffer from the effects of gas rationing in the German industrial sector, given their integration into German supply chains. Hungary, the Czech Republic and Slovakia have historically relied on Russia for almost all of

their gas supply needs, and do not have access to LNG terminals given their landlocked position. Alternative supplies would have to come via countries that are also set to run short of gas (Germany, Italy and Austria). As a result, it can be expected that some countries are unable to meet their gas needs this winter, with Germany in particular forced to implement industrial rationing.

The skyrocketing electricity prices across Europe are intrinsically linked to the high price of gas, which increases the price of electricity due to the role of gas-fired power-plants in covering demand and setting price. Prices started rising last summer when the world economy picked up after COVID-19 restrictions were lifted. Subsequently, Russia's invasion of Ukraine and its weaponization of gas supply have exacerbated the situation with electricity retail prices having increased by almost 50% year-on-year from July 2021 (European Commission, 2022)³. The use of energy as leverage has already massively disrupted energy markets – from trade flows to state intervention – and threatens to derail the global economy recovery. The emerging new post-Ukraine war global energy architecture also has profound implications for the energy transition, accelerating it in some places, pressing the pause button in others.

Normally, a larger market might reduce the price for consumers. Natural gas is so in demand now that it is expensive as it has not been in years. In Europe, these high gas prices have been exacerbated by Russia's somewhat petulant decision not to send more gas through its pipelines into Ukraine and the rest of the continent. Oil is primarily used for transportation, but it is important too for some industrial processes. It is also a swing fuel, generating electricity. Oil is both supply-constrained and under high demand: EU consumer spending has returned to its pre-pandemic levels. High natural gas prices have caused some grids to switch to oil production. This gas-to-oil switching was using more oil than Organization of the Petroleum Exporting Countries (OPEC's) planned increase. Despite the increased demand, OPEC announced that it would not increase oil production above its previous target. Renewables are so far mostly exempt for this – except in Europe. In most of the world, renewables are filling in the gap that natural gas has left. The one exception is in Europe, which now uses wind power for 13 per cent of its electricity generation. Its energy crunch has been intensified by a lack of strong offshore wind this season, worsening its need for natural gas. Thus, the current crisis can be a turning point for clean energy, highlighting the way in which policy actions of major economies – such as the Inflation Reduction Act in the USA and the Fit for 55 package in the European Union – are turbocharging the growth prospects for key low-emissions technologies like electric cars and accelerating the emergence of the new global energy economy.

Definitely, the current problem of high prices is not caused by the dysfunctioning of electricity markets, but by the exceptional trend in gas prices. In order to decrease electricity prices, it is necessary to decouple power prices from natural gas prices. That is why, a deep and comprehensive reform of the electricity market is being carried out. Although before re-designing electricity market we will lose the benefits of the current design, one being the reliable profits that renewables can make that incentivize further investment. On the other hand, decoupling gas and power is easier said than done. Several proposals have been put forward in the past few months. To mention, just a few, Greece had long proposed a mechanism to split power exchanges between low- and high- marginal cost generators. On the other hand, Spain and Portugal have already adopted a mechanism with similar goals and which has been provisionally approved by the European Commission. The EU Commission itself put out proposal for a Regulation which, among other things, aims to cap the revenues of infra-marginal electricity generating technologies (Energy Post, 2022)⁴.

Market interventions are already in full flow, and appear to be having a domino effect. For example, the push for a price cap on Russian oil exports largely emerged to blunt the price impact of EU embargoes on Russian crude and products coming into force in December 2022 and February 2023 respectively. This move could pose financial and technical difficulties for Russia but it would also deprive the world of 1-2% of its global supply as inflation is on the rise and an economic recession looms. While secondary US sanctions on producers like Iran and Venezuela have become standard, the Group of Seven (G7) price cap⁵, if implemented would mark the broadest and most complex (consumer-side) intervention in oil markets ever, with hardly predictable side effects. As a result of the above-mentioned price cap, it can be expected that some ships are changing their countries of origin and trading entities being moved beyond the G7 to evade the plan. Russia would incur costs from having to conduct longer voyages and being relegated to subpar insurance and financing.

Energy subsidies are also emerging as a major fiscal drain on governments' budgets, and risk blurring market signals. A recent study by the OECD and international Energy Agency of 51 countries shows government support for fossil fuels almost doubling to 697 billion USD in 2021 compared to the previous year (Energy Intelligence, 2022)⁶. The European Union in particular is discussing unprecedented proposals to ease consumers and businesses' price pain, ensure energy companies' survival and reform its electricity market. Broadly, what policymakers are doing is starting "to step away from the competitive and liberalized market that has taken the Europeans 30 years to create".

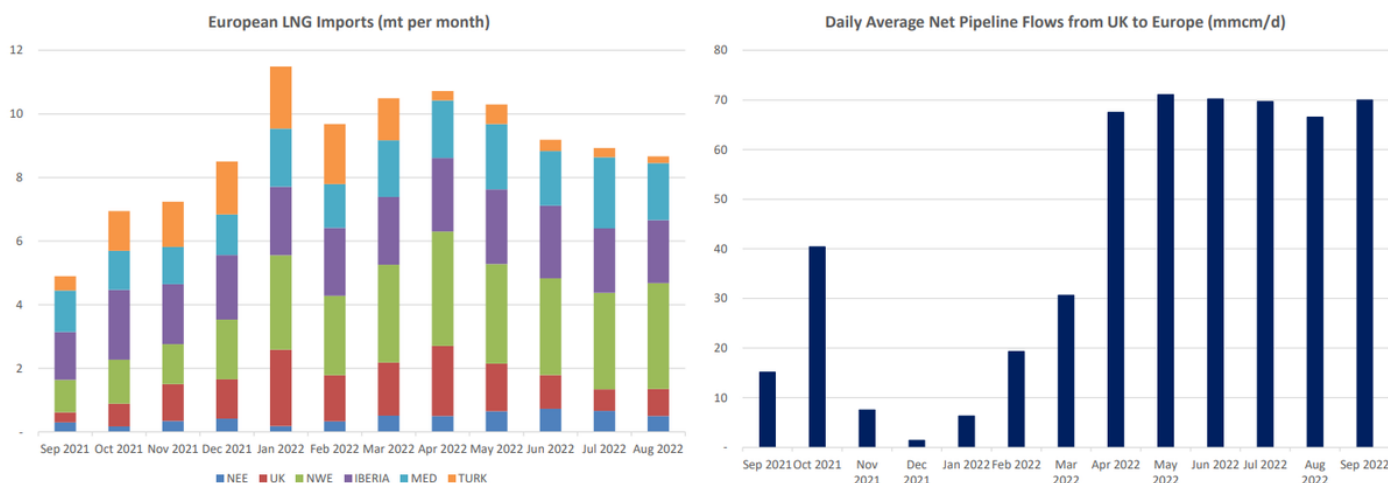
While an oil crisis might influence people's ability to travel and commute, if gas were to run out, the consequences would be catastrophic. From heating homes to powering industrial production, the dependence on natural gas at this point in time is staggering. The oil market is also different because it is global, that is why it is easy to substitute imports. Although natural gas and oil share many characteristics (both are hydrocarbons, both are found and produced using similar methods and equipment, and both are often produced simultaneously), they contrast in the way they are sold and priced. Oil is sold by volume or weight, typically in units of barrels or tons. Different grades and sources of crude oil have different prices that are determined by the amount refiners are willing to pay for the crude oil. Global oil markets are very liquid, relatively transparent, and involve numerous intermediaries and open exchanges.

By contrast, natural gas is sold by units of energy. Common energy units include British thermal unit (Btu), Thermes, and Joules. Natural gas produced from a subsurface reservoir, contains a majority of methane plus various other heavier hydrocarbons and, undesirably, some impurities. The relative proportion of heavier hydrocarbons versus methane would determine the energy content of the gas when combusted and, thus, its ultimate value to a customer. In turn, customers pay for energy derived from gas, not for a specific volume of gas. In the past few years, countries have started to liquefy natural gas and trade it more readily across oceans – and not just through the point-to-point pipelines that were previously used. Besides to pipeline natural gas, there is one alternative, LNG, gas which is cooled to liquid form and can thus be exported in huge gas tankers. When ships reach their destination, the liquid can be turned back into gas⁷ and transported using the existing pipeline network.

The gas crisis triggered by Russia's invasion of Ukraine in February 2022 has caused a series of market adjustments. European buyers have strongly increased their LNG procurement, resulting in market tightening and demand destruction in various importing regions. This has also had a visible impact on LNG contracting behaviors, with a return to more traditional features such as fixed destination and long duration contracts. Many traditional LNG buyers will neither procure spot gas or LNG nor renew or sign additional LNG contracts with Russian sellers. Spot prices have also been high and volatile, pushing many buyers towards long-term contracts. Additionally, some buyers are returning to long-term contracting on behalf of governments to protect national energy security. The European Union, whose member states are directly exposed to the threat of further supply cuts, has adopted a number of measures to enhance security of supply and market resilience ahead of the coming winter (IEA, 2022)⁸.

European natural gas prices and Asian spot LNG prices spiked to record highs in the third quarter of 2022. This reduced gas demand and incentivized switching to other fuels such as coal and oil for power generation. As LNG trade and markets become increasingly global, the impact of developments in one region can ripple through others with greater influence than before. European demand for LNG sets off global competition for supplies, even as demand tumbles in Europe and Asian growth stalls. For the first time in history, something approaching a truly global market in natural gas, in much the same way that a global oil market exists.

Figure 1: European LNG imports



Source: Global LNG hub, 2022

Aside from the rising prices of LNG, the IEA reports that the ramped-up production of American energy firms may not be enough to bail out Europe should Russia stop their supply. This in real life has already happened after the incidents with the Nord Stream 1 and Nord Stream 2 pipelines explosions that took place recently. In the short term, LNG would not be able to fully compensate for any natural gas shortfall from Russia, citing a lack of short-term capacity among exporters like the USA and Qatar. The scale and long-term impact of the changes are still up to debate. Based on the forecast of the International Energy Agency (IEA)⁹, it can be seen that the energy crisis in Europe will probably last well into 2023 given stagnant global supply and the likelihood of increasing competition for LNG from a recovering China and other importers.

Figure 2: Main gas pipelines in Europe



Source: W3Ask.com

Liquidity crunch and the prospects of energy sector's nationalization potential

Europe's problems in sourcing oil and gas this winter after a dispute with Russia may be exacerbated by a new crisis in the market where prices are already high: a liquidity crunch that could send them spiraling higher (Payne & Zhdannikov, 2022)¹⁰. Energy markets around the world are undergoing rapid deregulation, leading to more competition, increased volatility in energy prices, and exposing participants to potentially much greater risks.

As electricity production and demand must be in balance at all times, a trading platform is needed where supply and demand – electricity producers and electricity consumers – meet. This trading platform is called a power exchange. There are two types of power exchanges. Firstly, the power exchanges specialized in physical trading, where the electricity producers and consumers trade with the aim of the physical delivery of electricity from a producer to the consumer within a span of 24 hours (e.g. the Nord Pool power exchange in the Nordic-Baltic region). Secondly,

there are derivatives exchange trades on future output of electricity. Companies use a derivatives exchange to hedge electricity price-related risks. The trading focuses on the coming months and years. Although, it is true that traded derivatives¹¹ are a relatively new concept in the energy markets, the structure have been around for centuries and contracts with derivative characteristics have existed in energy markets for decades. According to many analysts, at present, we have a dysfunctional futures market, which creates problems for the physical market and leads to higher prices, higher inflation. Energy companies are facing solvency issues due to the rising amount of “margin” or cash they must post at clearing houses in case of default on their future sales contracts.

The problem first came up to light in March 2022 when an association of top traders, utilities, oil majors, and bankers sent a letter to regulators calling for contingency plans. This was triggered by market players rushing to cover their financial exposure to increasing prices through derivatives, hedging against future price spikes in the physical market, where a product is delivered, by taking a “short” position. Any such drop in the number of players reduces market liquidity, which can in turn lead to even more volatility and sharper spikes in prices that can hurt even major players. Some particularly smaller companies, have been hurt so badly they have been forced to exit trading altogether as energy prices increased after Russia’s invasion in Ukraine in February 2022, which made a general shortage worse.

At the same time European governments have only belatedly decided to offer financial support to power providers on the brink of collapse, in an effort to ease pressure on a market whose smooth operation is vital to keep people warm. Since late August, 2022, European Union governments have stepped in to help utilities such as Germany’s Uniper. Germany has considered plans to nationalize the country’s three largest natural gas companies – Uniper, VNG and Securing Energy for Europe (formerly Gazprom Germany) to shore up the country’s faltering energy market. Among these, Uniper, with an equity infusion from the government, also made clear admission that it could acquire managerial control of the company.

Uniper is Germany’s largest importer of Russian natural gas. After Russia cut supplies to Germany because of the Ukraine war and subsequent sanctions, the company had to compensate by buying expensive gas on the open market. The company, which imports approximately 50% of its gas from Russia, announced that reduced deliveries led to a 12 billion euro loss in the first half of 2022. Uniper announced lately that the German government will acquire a 99% stake in the company, having bought a 30% holding in July a part of a 15 billion euro bailout. In July, 15 billion euros so-called stabilization package was signed between Fortum, the German government and Uniper to rescue the company, whose losses were

mounting due to gas supply cuts from Russia. The latest deal between the German Government and Uniper will also involve a capital rise that aims to provide a further 8 billion euros in cash for the company. Uniper has been struggling since Russia crimped gas supply to Europe in response to Western sanctions imposed after Russia invaded Ukraine. European natural gas prices have increased 300% this year, with Dutch TTF futures¹². Nationalizing Germany's largest importer of Russian gas is the second move by the government to take control of an energy utility and is part of a wider European response to the winter crisis, including France taking over EDF¹³. The plan is also a sign that European governments may increasingly be forced to protect their energy companies from the turmoil Russia's war has caused.

The announced deal with Uniper means that Germany buy state-owned Finnish Utility Fortum's stake in Uniper for about 500 million euros and Fortum will also be repaid a 4 billion loan to Uniper. At present, the state-owned (51%) Finnish utility is the majority owner of Uniper (78%), its share will soon be diluted down to 56%. The news about the details of the bailout deal in Finland was received quite negatively (Euractiv, 2022)¹⁴. According to the Minister for European Affairs and Ownership Steering called Fortum's adventure and its end "regrettable". In hindsight, purchasing Uniper (with 7 billion euros) was a mistake and the decision back then was made without properly consulting the majority owner, the Finnish State.

The bailout also entails certain risks. Germany can risk being left holding 2.2 billion euros of unsellable Russian energy assets when it takes over Uniper SE at the end of the year. Namely, the Dusseldorf-based utility has so far failed to find a potential buyer for its Russian subsidiary Unipro since putting it up for sale in March 2022. The odds of a deal are vanishingly small amid Europe's energy conflict with Russia, which escalated lately after a key natural gas pipeline was damaged in what Germany called an act of sabotage. Uniper, one of the biggest casualties of the energy crisis, has to get rid of its Russian plants before its nationalization in the country's largest corporate bailout in at least a decade. Otherwise, the government risks becoming an owner of five coal and gas power plants that supply about 5% of Russia's total energy needs. Germany may have no choice but to give up the assets. Even if a sale were possible, President Vladimir Putin made it almost impossible for international energy companies to secure big financial gains when they exit Russia. Early this month, Shell Plc left from a liquefied natural gas project with nothing, while Equinor ASA posted a 1 billion USD impairment on its balance sheet as a result of leaving its Russian interests (Bloomberg, 2022)¹⁵.

To sum it up, apparently this bailout is not the last of its kind but could be just the start of nationalizations across the continent. This is part of a bigger trend, heavy

state intervention into energy markets that can be seen in near future. In some cases, it is bailing out politically sensitive or economically vital companies like Uniper, and others it is redesigning markets, price caps, interventions and to a capacity prices.

The energy crisis has shown the weakness of the current privatized model. A nationalized sector could and should aim at improving the resilience of the energy sector without forcing privately held firms to take an excessive risk in the future. Proponents of nationalization argue that private companies hike up prices and focus on profit over people. Utilities often create natural monopolies and consumers cannot choose to stop consuming water, gas, or electricity, therefore, the logic of the free market starts to break down. Although, it should be added that the impacts of nationalization are unpredictable. In no way does nationalization signal the abandonment of market pricing mechanisms. Instead, it aims to resolve the impasse of who maintains storage and redundant power generation, which is necessary as renewables' share of generation rises. Relying on the state's existing authority to impose a price ceiling with the capacity to invest in future would give us more stability over the next 5 years.

The stakes could not be higher – now and in the future. Natural gas is not just used by households but for a wide range of goods. Fertilizer plants shut down when prices rise too much, threatening food security. Natural gas also feeds into input costs for metallurgical firms, food and beverage makers, automotive manufacture, and more. High bills increase costs, compounding the risks of greater unemployment in the event of recession. A nationalized energy sector would allow the state to build up reserves that could be used for intermittent injections into the grid at rates not deemed ruinous to socially and strategically crucial industries. Just as importantly, it allows the state to contain the spillover effects of spikes in natural gas prices or declines in power generation in neighboring economies, and therefore smooth out the effects of external shocks to energy markets.

The degree to which today's energy crisis will drive huge swathes of public into poverty and weigh on countries' growth prospects cannot be understated. Thus, nationalization is not a move towards central planning. It is a means to save the market from itself in the face of systematic shocks that will last far beyond this winter.

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