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A (E)U-turn from Nord Stream 2 towards a European Strategic Gas Reserve

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Abstract

The EU does not have an army. It thus cannot defend Ukraine from a Russian invasion, but it can at least put itself in a situation in which it does not depend on gas deliveries from a potential aggressor, a dependence that many argue would only become more severe with the formal opening of the controversial Nord Stream 2 pipeline connecting Russia with Germany.

Diminishing Europe's dependence on Russian gas requires the creation of a credible European Strategic Gas Reserve for emergency situations. This cannot be achieved overnight but some first practical steps can be taken quickly and, importantly, cheaply. Such action, which should be spearheaded at the European level, would send a powerful signal that the EU is indeed willing to act and put its money where its mouth is, namely in the defence of its core values and strategic interests.

¹ Daniel Gros is a CEPS Distinguished Fellow. The author is grateful to Christian Egenhofer and Steven Blockmans for insightful comments and suggestions. This paper is being published simultaneously as a CEPS Policy Brief.

Introduction

As Russia ratchets up its military pressure and rhetoric, the EU has not been able to find a common line on what steps to take if Ukraine is attacked. One key factor in the reluctance of many Member States in considering the whole gamut of economic sanctions is the dependency of Europe on Russian gas. Its importance has been magnified by the recent spike in prices, which in turn is creating serious economic and social problems throughout the EU, with many Europeans now seeing an eye-watering increase in their monthly energy bills.

A politically totemic issue is that of Nord Stream 2. Construction of this pipeline has put both critics and supporters of the project in a 'lose-lose' situation. Past German governments have acted as if this pipeline is a vital national interest and even the new 'traffic light' coalition cannot make up its mind on how valuable or essential the pipeline is. The US, and some of Germany's neighbours, have always argued that it would make Europe over-dependent on Russia.

With Vladimir Putin overtly threatening war, the pipeline has become a liability. If Russia really invades Ukraine, it would be inconceivable for the German government not to pull the plug, at least politically. Formally, the ultimate decision on whether Nord Stream 2 can go into operation will anyway be in the hands of the European Commission². If Putin attacks, the pipeline should be included in the number of possible sanctions that have been aired so many times. Germany should support such a move in the Council.

If Russia does not attack Ukraine, it is clear now that one can no longer trust the country to always deliver gas on purely commercial terms. The [deliberate reduction in gas flows this winter](#), combined with the disturbingly low levels of gas storage replenishment in facilities owned by Gazprom earlier in 2021, shows that Russia is willing to use the 'gas weapon' when it appears opportune.

Right now, the EU is in a very weak position, even regarding the ability to impose wide-ranging sanctions, because it depends on Russian energy supplies. Changing this will take time. But first steps can – and should – already be taken now.

The economics of the (European) gas market

Understanding energy markets, especially the market for natural gas, requires a distinction between the short, medium and long term. Recent events have shown once more that prices react very strongly to short-term developments. Spot prices for gas delivered in Europe have risen recently to unprecedented levels, equal to three to four times the average over the last few years, and they remain highly volatile. This has had a major political impact, especially since many countries have switched to spot pricing in recent years (from the old-style long-term contracts that linked the price of gas to that of oil – which has increased much less).

² This is also the compromise reached in the 'traffic light' government's formal coalition agreement.

These extreme price movements are the result of a [perfect storm in which several factors come together](#) (essentially a limitation in supply simultaneously coupled with a strong rebound in demand). The [reduction of Russian deliveries](#) this winter, combined with [lower storage levels, especially at facilities controlled by Gazprom](#), are not the only reasons, but they have contributed [decisively to the scale and the persistence of the price spike](#)³.

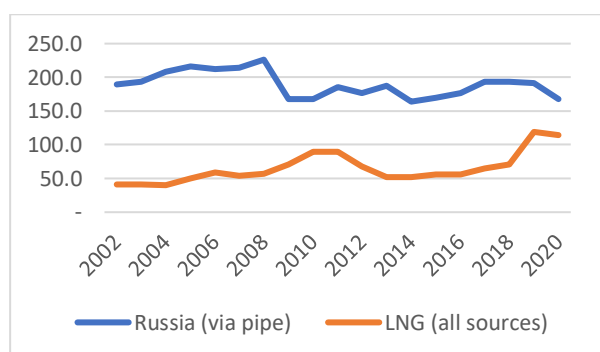
In the medium term (say, several months to a couple of years), existing supplies can be re-routed to where the price is highest. The relative stability of US prices for natural gas suggests that at least a substantial part of the recent increase in price will be temporary. Prices have shown a tendency to converge across the major markets for a while now (as discussed below). This might take some time but seems likely to happen as US supply (and demand) remains quite elastic.

Energy security in the medium to long term

From a longer-term point of view, [Nord Stream 2 is more of a distraction](#) than a key element in European energy security. It does not change Russia's position as the biggest supplier of natural gas, it only provides a somewhat cheaper way to transport Russian gas from the Arctic to Europe (and allows Russia to avoid using existing pipelines through Ukraine)⁴.

This focus on bilateral flows neglects a key development, namely that the importance of pipelines is being eroded by the growth of shipping natural gas via tankers as liquified natural gas (LNG). The LNG market is rapidly expanding and has resulted in a global market for natural gas. The interregional LNG market has grown by 6 % per annum over the last decade, whereas the volumes pumped via pipelines have remained almost constant. In 2020, for the first time, globally more LNG was shipped instead of piped. Figure 1 shows that even for Europe, imports via LNG are now close to the level of those arriving via pipeline.

Figure 1. Source of Europe's gas imports



Source: BP energy statistics (Gas: Inter-regional trade).

³ This is also suggested by the fact that prices in Europe have surpassed those in Asia. The International Energy Agency has provided a good list of the determinants of prices: <https://www.eia.gov/energyexplained/natural-gas/factors-affecting-natural-gas-prices.php>

⁴ The same reasoning applies to Nord Stream 1. The motivations were cost savings and avoiding transit through Ukraine. It remains an open question which one was more important.

The LNG market is global because once the gas has been liquefied and put on a tanker, it does not matter much whether the ship must go a few thousand miles further. The increasing correlation in the prices of LNG for delivery in the three major markets (the US, the EU and Asia) shown in Figure 2 illustrates the effect of this increasing interconnectedness.

This is also the reason why the attention on LNG exports from the US to Europe is misplaced. They constitute just one relatively small part of a larger trend.

LNG shipping costs remain higher than for oil and the liquidity of the market in response to short-term demand shifts is still limited. There can be considerable differences in gas prices between the US, Europe and Asia. But the direction of travel is clear: LNG is a growing alternative to (Russian) piped gas for Europe (see Figure 2 below).

Figure 2. Global LNG prices in the major markets



Russian gas is still cheaper, but the political price has now become unacceptable. Luckily, Europe already has enough [capacity to import LNG to be able to offset a hypothetical loss of Russian gas](#). But this potential could be much more fully used when needed.

Sanctioning Nord Stream 2 (and maybe Nord Stream 1 as well) would of course not diminish the overall dependency of Europe on gas imports, but it would cause Russia to lose some export revenues (unless it is willing to increase the flow through Ukraine).

In strictly economic terms, the underlying issue is thus simply the difference in transport costs: how much less it costs to transport Russian gas from the Yamal peninsula via pipeline as opposed to LNG tankers. These cost savings are important for a single company (and for Gazprom in particular), but they are of the second order in the bigger macroeconomic picture. According to estimates by the International Association for Energy Economics, the cost

of LNG transport is about EUR 25 to 50 per thousand cubic metres of gas. This would imply that Gazprom might lose between EUR 1.25 and 2.5 billion per annum if the pipeline were to be sanctioned instead of being fully used⁵.

Finally, one needs to keep in mind that a pipeline creates a bilateral economic dependency: with Nord Stream 2 Russia will also depend more on the EU remaining a reliable customer, unless it constructs a costly capacity to export LNG from facilities closer to the fields near the Arctic Circle. The bilateral economic link is much more important for Russia because the earnings from gas exports make up a significant fraction of overall Russian export earnings (and the revenues of the Russian government) – but only a tiny fraction of the European economy.

How could Europe strengthen its energy security?

Nord Stream 2 (and Europe's gas imports from Russia) play a key part in the limited arsenal of measures the EU would have at its disposal to react to a Russian attack on Ukraine.

Russia only wants to negotiate with the US. EU representatives might bemoan this, but it is useless to do so if Moscow views the EU as being unable to threaten Russian interests in any significant way.

Attention has so far focused on Germany and Nord Stream 2, but that is a mistake as national gas markets are increasingly integrated at the European level. **In an integrated gas market, action should be taken at the EU level.**

EU energy security measures have so far concentrated diversification on simple aspects, such as more interconnectors and spare LNG capacity. More action is clearly needed today, both to protect Europe from potential Russian blackmail and to put the EU in a position where it could impose sanctions on the gas sector as well.

A first simple step would be [to mandate gas suppliers to top up their storage at the end of summer to a certain predetermined minimum level](#) (e.g. 90 %, or at least three months of sales). This might not be in their commercial interest, but it would be required to ensure a basic social good, namely Europe's security of supply. Particular attention should be paid to storage levels under the control of Gazprom, which were replenished even less than other commercial storage facilities in 2021 – a factor contributing to the tightness of the European gas market this winter.

Still, just making sure that existing commercial storage is fully used is not enough. **Europe needs a European strategic gas reserve (ESGR) to reduce its overall vulnerability and ensure its geopolitical independence.**

⁵ Basis for calculations: to arrive at an upper bound, one can use 'shipping costs from the US to Asia, which can oscillate between USD 0.88 and USD 2.25 per MMBtu, based on the range of LNG tanker day rates that have been experienced in the relatively recent past' (U.S. Natural Gas (LNG) Exports: Opportunities and Challenges). See also www.iaee.org › publications, 'LNG transport costs amount to about 1 – 2 USD per MMBTU'.

The US model of the [Strategic Petroleum Reserve](#) provides a good example, yet the legal and institutional framework for creating a strategic reserve will of course be more complex for the EU than for the US. Yet, there should be no need to change the EU Treaties. It would be sufficient to **create a company, incorporated perhaps in Luxembourg, on the model of the European Stability Mechanism**, which would acquire and manage storage space for gas (and order the gas needed to fill it).

In normal times the ESGR would not be active on the market⁶. **But the ESGR would release its gas if the European Commission declared an emergency disruption to gas supplies** (perhaps subject to approval from the Council, but not requiring unanimity). The EU would then be able to counter any politically motivated threats to European gas supplies, including those coming from Russia.

The US strategic reserve ensures about two months of US supplies, specifically for crude oil. For gas, whose supplies are less flexible, three months might constitute a more prudent benchmark.

Establishing such a reserve involves an initial investment, but this should not be a problem given today's ultra-low interest rates.

A recurrent objection to a strategic gas reserve is that it is much more costly to store gas than oil. However, the difference is not so large as to make gas storage prohibitively expensive. The cost of the *additional*⁷ storage facilities needed for an ESGR with about three months of EU gas imports (or the equivalent of one year of the full capacity of Nord Stream 2 of 55 billion bcm – if it were to go ahead) would amount to **less than EUR 10 billion**⁸, which, amortised over a decade, would mean about a billion euro per year, **or about 0.5 % of the total EU budget**.

Such a reserve cannot be constituted overnight, but in just a handful of years a substantial amount could be accumulated, reducing Europe's vulnerability to short-term disruptions in gas supplies.

Another objection to establishing an ESGR is that natural gas represents only a 'bridge' fuel and will not be needed in the longer-run given the EU's ambitious climate goals. The conventional wisdom is that European gas demand will start declining in about 10 years. The ESGR would thus not be needed forever. But its constitution now would provide a clear signal to Russia

⁶ Filling the reserve would imply *de facto* joint purchases. But the constitution of the reserve is in principle a different issue from [regular joint purchases](#), whose main rationale would be to counter Russia's monopoly power.

⁷ The ESGR would be additional to the existing commercial facilities for gas storage, to ensure it can fulfil its deterrent effect, even at the end of a cold winter when commercial storage is at its minimum.

⁸ Details of calculations for the cost of creating the storage facility: a rule of thumb in the industry is that a depleted reservoir costs between USD 5 million and 6 million per billion cubic feet of working gas capacity. Considering the conversion from cubic feet to cubic metres and a EUR/USD exchange rate of about EUR 0.85/USD 1 yields an upper bound ($6 \cdot 35 \cdot 0.85 \cdot 55$) of EUR 9.8 billion and a lower bound of about EUR 8.2 billion.

The cost of the gas to be stored would be much higher at present prices, but this is not a net cost as the gas would be sold once the green transition has been accomplished and gas is being phased out. See: https://www.researchgate.net/publication/326190746_UNDERGROUND_GAS_STORAGE_IN_EUROPE-ENERGY_SAFETY_AND_ITS_COST

today. Moreover, Europe's dependency on gas imports is unlikely to fall sharply even if the 2030 climate goals are achieved. Europe might then need less gas but as the last coal-fired power stations will then be closing, gas might become even more important to keep the lights on during dark calm periods. The amounts needed for the ESGR might then fall slightly, but the reserve itself would remain essential.

Conclusions

At present Europe is extremely vulnerable to politically motivated supply interruption of natural gas. This cannot be changed overnight, but the process to set up a European Strategic Gas Reserve could immediately give a strong signal to Russia that the EU is waking up.

However, energy security has a price and this price, when looking more closely at the fine detail, seems rather small and ultimately manageable, even given the relatively small size of the overall EU budget. In short, there is no tangible reason why action to create a strategic reserve should be delayed any further, given both the high stakes for the EU in the geopolitical arena and the relatively simple (and crucially, cheap) steps that can be taken today to better ensure Europe's energy security tomorrow.