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Energy monitor

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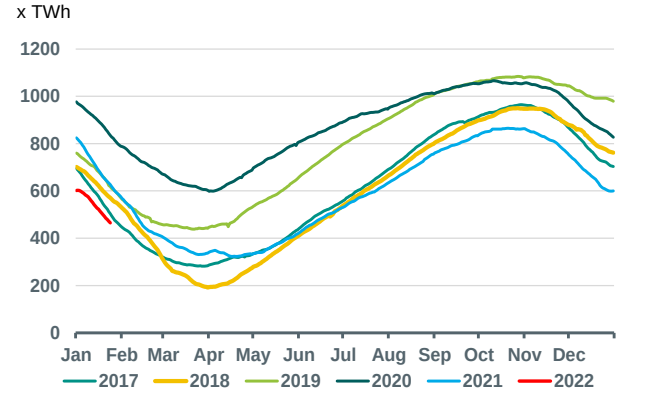
Russia – Ukraine energy impact scenarios

- **Tensions between Russia, on the one hand, and Ukraine and the US and Europe on the other hand, are building**
- **Given Russia's importance as an energy supplier, this has raised questions over how the situation could impact energy markets, especially given tight markets as a starting point**
- **We have identified four different scenarios: from positive to very negative, with the highest confidence level for a status quo scenario**

Tensions are building

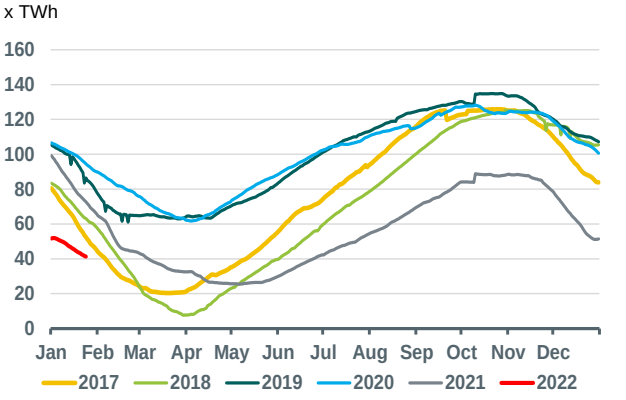
The tensions between Russia on the one hand, and Ukraine and NATO countries on the other, are building. Europe and the US are worried about the rising presence of Russia's military close to the border of Ukraine, which is seen as raising the spectre of an invasion. Meanwhile, Russian leaders are worried that such a key former Soviet state will or could join NATO. While diplomatic talks to deescalate continue, markets have started to price in the risk of an escalation of the situation. To assess the risks of such an escalation, we have made several scenarios, with the most negative assuming a halt of Russian exports of energy products such as natural gas, liquified natural gas (LNG) and/or oil.

Gas inventories in Europe



Source: GIE

Gas inventories in the Netherlands



Source: GIE

Current energy market situation

The starting point for this potential crisis is not favourable, as natural gas markets in Europe are already tight. This is not per se the result of the Russia/Ukraine tensions, but due to a combination of factors, such as:

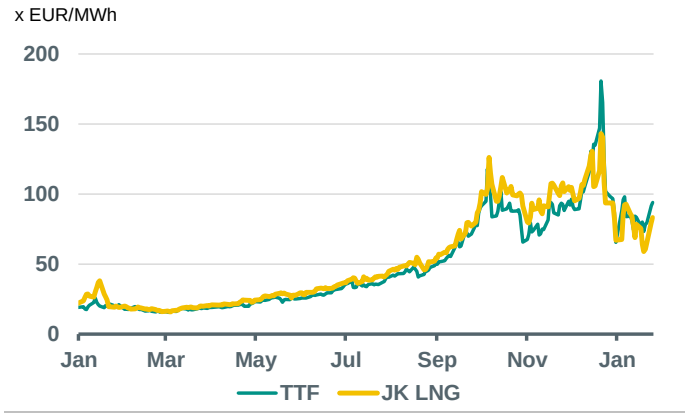
- a relatively harsh winter in 2020-2021 which led to low inventories;

- a late start to inventory building due to a cold spring and thus higher gas consumption;
- low wind revenues, resulting in more usage of gas and coal fired power plants for power generation, which dampened the build-up of gas inventories;
- lower local gas production;
- less long-term natural gas contracts resulting in more dependency on spot market trading;
- Russia not stepping in to meet the demand for gas as it normally would, leaving the European market with shortages

The prices for natural gas jumped to a record high in December before easing somewhat on the back of increased LNG imports. The price of the Title Transfer Facility (TTF) contract has jumped to nearly EUR 185/MWh in December (front month contract). To compare, the average TTF gas price in 2019 was EUR 14.55/MWh. The average price in the whole of 2021 was already up to EUR 47.38/MWh.

It is worth noting that, up to now, Russia has always fulfilled its obligations regarding the contracted gas deliveries towards Europe – even after the annexation of the Crimea and the sanctions imposed on Russia following this. The lower exports towards Europe this year is mainly because some of the long-term contracts have expired and have not been extended or renewed. Europe is increasingly relying on gas on the spot markets, which are mainly related to the liquified natural gas (LNG) markets. With the rise of LNG in the past decade, the gas markets transformed from regional to global markets. As a result, Europe is increasingly competing for the non-contracted available natural gas on the global spot markets. Or in other words, Europe is competing for its gas with Asian consumers. In line with higher gas prices, electricity prices throughout Europe have also risen over the past few months. Many countries are dependent, or even increasingly dependent, on gas fired power plants for their power generation. Due to the increasing interconnection between countries, price developments in Europe show similar patterns, regardless of the local electricity mix.

TTF versus JK LNG prices (month contract)



Source: Bloomberg

Four possible scenarios

With regards to the Russia-Ukraine tensions and its effect on the energy markets, we have identified four possible scenarios: one positive scenario (de-escalation resulting into more gas exports from Russia towards Europe), a status quo scenario (continuation of the current situation), a negative scenario (gas markets affected, and a very negative scenario (also oil markets affected). We describe these scenarios in order of confidence level below.

Scenario 1 – The status quo (75% likelihood)

In this scenario, we expect the situation in the energy markets to remain unchanged. Russia will continue to meet its obligations to export gas in line with existing gas contracts, as they have always done in the past. Even in a situation where tensions either dissipate or where tensions remain and sanctions back and forth are imposed. Nevertheless, in this scenario, natural gas prices stay elevated for a longer period of time as the markets continue to be tight, at least until the spring of 2023, as indicated in our base case TTF gas price forecasts.

In this scenario, with low inventories and a relatively mild winter, Europe should be able though to avoid disruptions in physical gas deliveries towards its consumers (households, SME and large industries). Europe is largely able to fill the supply gap that was created by the fact that a) it has a declining number of long term gas contracts with Russia, and b) Russia is not filling this gap with short term / spot contract gas deliveries. To increase imports of LNG, Europe is competing with Asian consumers for the available LNG on the spot market. Note that the availability is limited as a significant share of the LNG market is already sold via long term contracts.

In the event of a harsh winter, either in Europe or in Asia or both, pressure would increase on the LNG markets. Consumers would be willing to pay even more to secure the availability of natural gas. A period of extreme cold weather would increase the risk of physical shortages of natural gas, and trigger steep price gains. However, these extra price gains will probably disappear as soon as the cold period is over. The gas price projections under our base case are conditioned on an average winter.

Gas price forecasts (base case scenario)

End of period		26-Jan	Mar-22	Jun-22	Sep-22	Dec-22	Mar-23	Jun-23	Sep-23	Dec-23	Mar-24	Jun-24	Dec-24
TTF *	EUR/MWh	*49.60*	50	40	35	35	45	40	30	25	28	26	22
Average		**2021**	**Q1 22**	**Q2 22**	**Q3 22**	**Q4 22**	**2022**	**Q1 23**	**Q2 23**	**Q3 23**	**Q4 23**	**2023**	**2024**
TTF	EUR/MWh	*31.34*	55	45	38	35	43	40	43	35	28	37	26

* TTF: next calendar year

Scenario 2 – A de-escalation leading to normalisation of markets (15% likelihood)

In case of a de-escalation of the current tense situation, energy markets would start to normalise. Some sort of an agreement between Russia, Ukraine, the US and Europe regarding the NATO borders could pave the way for de-escalation. De-escalation will also lead to more gas exports from Russia towards Europe, either via the existing pipelines (including the ones though Ukraine), or opening the NordStream2 pipeline. Either way, there will be enough gas supply available for consumers in Europe in the course of 2022. Natural gas prices would normalize towards the pre-2021 levels of the low EUR 20s/MWh or even lower as soon as the ongoing tight market conditions for this winter are over.

Scenario 3 – Tensions worsen, Russia halts gas exports to Europe (5-10% likelihood)

Due to a further escalation of the situation – like a Russian military operation in (parts of) Ukraine – Europe and the US impose severe sanctions against Russia. Germany and the European Commission would not approve the start of the NordStream2 pipeline. In a retaliation, Russia halts all gas exports to Europe. This would not only include the pipeline exports through Ukraine, but also the exports towards Southern Europe and LNG shipments. We attach a very low probability to this scenario, as it would be unprecedented, and would not support the interests of any of the main protagonists.

In this scenario, Europe would increase efforts to import more LNG or reduce gas demand. Even if all LNG-import terminals were fully operational, it would only replace 2/3rds of contracted? Russian gas imports. And since Europe would compete with other consumers, mainly in Asia, it is plausible that Europe would not reach full import capacity, especially during the winter months. More renewable energy would not be a solution in the near term, as the expansion

is already going very fast and would run into technical limitations. The effects of a further acceleration would take many years to materialise. Other alternatives would be an increase in local (mainly offshore) gas production. However, that would take some years to become fully operational, and would most likely trigger significant local public opposition.

So, with no short-term alternatives to fully replace Russian gas exports towards Europe, energy supply would need to be rationed, in particular for industry. In addition, prices of natural gas would jump significantly higher, and reach new record highs for a large part of the forward curve (i.e. it would include spot markets, monthly contracts as well as annual contracts). The TTF monthly contracts could trade above EUR 200/MWh for an extended period, with peak prices significantly higher. As an indirect effect, prices of electricity would jump higher throughout the whole of Europe. In several countries, the electricity mix is largely dependent on gas fired power plants. In fact, with the phasing out of nuclear and coal, some countries are expanding their dependency of renewable energy in combination with natural gas.

Scenario 4 – An even bigger escalation would also affect oil markets (<5% likelihood)

This last scenario describes a situation with even bigger effects than those of scenario 3, and is even less likely. Besides a stop of Russian gas exports towards Europe, as described in the previous scenario, Russia would also decide to halt oil exports towards Europe. Roughly 50% of the Russian oil and condensate exports are shipped to Europe. The three biggest importers are Germany, the Netherlands and Poland. However, even in case of an export ban towards Europe, we believe the effects will be less hefty than with natural gas. Both the crude and the condensate markets are global markets. This would allow Russia to find other off-takers, most likely in Asia, whilst Europe would be able to import its crude and condensates from other parts of the world. Nevertheless, such a shift in the oil markets would lead to higher oil prices. This would come via both a rise in risk premium and temporary mismatches in the supply and demand sphere. Oil prices would be trading above USD 100/bbl and in case of serious supply worries even head for a new test of the all-time high (USD 149/bbl). Due to tighter market conditions, this situation could hold for the rest of the year.

Table with different scenarios

	Scenario 1 - status quo (75%)	Scenario 2 - Positive (15%)	Scenario 3 - Negative (5-10%)	Scenario 4 - Very negative (<5%)
Sanctions	unchanged, or some more	lifted	increased	increased
Russian gas exports towards Europe	unchanged from current levels	increased	full stop of gas flows from RU -> EU	full stop of gas flows from RU -> EU
Russian oil exports towards Europe	unchanged from current levels	unchanged from current levels	unchanged from current levels	full stop of oil flows from RU -> EU
Gas prices	remain elevated until spring 2023	drop in spring 2022	jump higher and remain high for longer	jump higher and remain high for longer
Electricity prices	remain elevated until spring 2023	drop in spring 2022	jump higher and remain high for longer	jump higher and remain high for longer
Oil prices	unchanged from current levels	unchanged from current levels	somewhat higher due to risk premium	jump higher and remain high for longer