Ukraine, fracking and the green energy revolution

We have all been shocked and saddened by the recent events unfolding in Ukraine, and our thoughts go out to those Ukrainian citizens unwillingly drawn into a conflict that is not of their doing. Russia's widely condemned invasion of a sovereign nation has an array of ramifications, and not just for peace and political stability in Eastern Europe. The conflict has sent shockwaves through the global economy, with the S&P 500 plunging to a 9-month low on news of the invasion (though it has since rebounded). Commodity markets have been particularly volatile – Russia and Ukraine contribute a significant portion of the supply of many key commodities, including wheat, fertiliser and rare-earth metals. Crucially, Russia is also a major energy exporter. Given its reliance on Russian exports, the vulnerabilities in Europe's energy system have been thrown into the spotlight. While Russian oil and gas have escaped the majority of sanctions so far, there is intense pressure for European governments to wean themselves off foreign imports and reduce funding for Putin's war machine.

For years, European's have been perilously dependent on Russian hydrocarbons. From Russian boots hitting Ukrainian soil to the time of writing this article, Europe has purchased over €17 billion worth of Russian hydrocarbons. The situation is particularly acute for natural gas. Germany, Europe's largest economy, relies on Russia for 55% of its gas supply. While pressure to cease all Russian imports (including energy) is increasing, so far, Germany's ministers have refused – to close the taps on Russian gas would create unacceptable suffering at home. The same is true across much of Europe.

In the UK, the situation is a little different – there are no direct pipelines, and Russian gas accounts for less than 4% of total demand. However, the UK is acutely susceptible to price volatility in the wider market, in part due to a lack of storage. In mid-winter, the UK capacity amounts to just 5 days of gas use. The Netherlands has 9 times UK capacity, Germany 16 times. The result? At times of market stress when gas prices spike, the UK cannot rely on a substantial strategic reserve to buffer prices. The government is said to be exploring means to reduce overseas dependency by way of increased domestic production.

Fracking – silver bullet or costly distraction?

What about fracking? A small but increasingly vocal group of Conservative back-benchers have been promoting shale gas as a means to plug the gap left by a ban on Russian natural gas imports. The proposals seem reasonable – kick start domestic on-shore production, reduce reliance on Russia while simultaneously reducing the need for thousands of miles of pipeline – every joint and compressor station another potential leak point. Remember, methane is a potent greenhouse gas (roughly 28 times more effective than CO2).

But the situation isn't so black and white – for starters, the total volume of gas available for extraction has been highly contentious. The British Geological Survey (BGS) does estimate that there are large amounts of shale gas under our feet. The largest formation, the Bowland-Hodder shale in Lancashire, could hold up to 1,300 trillion cubic feet (tcf). However, these very rough estimates are based on total resource, as opposed to those which are commercially viable to extract. In the US, where fracking has transformed the country into a net exporter of gas, estimated recovery rates are typically around 10% (Source: Carbon Brief). The UK uses around 3 tcf (Source: UK Gov) of gas each year. Based on this, and the central estimate from BGS, the UK might have up to 46 years of extractable

shale gas. But estimates from the US Energy Information Administration (EIA) and BGS' own assessment for the UK Department of Energy and Climate Change estimate extractable reserves of 26 and 5.3 tcf, respectively. These estimates are the equivalent of 9 and 2 years of current gas use, respectively. In short, UK reserves could be anywhere from minimal to substantial, and we won't know for sure until many wells have been drilled and the resulting flows analysed over a number of years. One thing is certain – domestic fracking will make no material difference to energy prices in the short-term.

There are other issues to consider. Fracking advocates point to the US, where the technology has turned the US from a net importer to net exporter of hydrocarbons. US natural gas prices were already significantly lower than in Europe prior to recent events which has seen the price of natural gas reach record highs across the continent. However, the US and Europe are very different markets. While the US is geographically isolated from other major economies, in Europe existing infrastructure means gas is readily distributed across the continent. As a result, any gas extracted on-shore in the UK will be sold to the highest bidder across the continent (this already happens to North Sea gas). This may, or may not, be domestic consumers – a revival of UK fracking is no guarantee of lower bills for UK households. The comparison of US and UK also ignores the other geographical differences – the sprawling well fields of East Texas seemingly unfeasible in Lancashire (and other UK shale regions), regions with far higher population densities.

Finally, there's the issue of public opinion. Even in the wake of recent geopolitical uncertainty, support for fracking from the general public remains low. According to a recent survey by the Guardian, only 5 out of 138 MPs in areas targeted for fracking are in favour, a clear signal of public opinion on the street. One of the most vocal supporters of UK fracking is MP Steve Baker. Perhaps tellingly, his constituency is not in an area under consideration for shale gas extraction.

Long-term decline of coal to continue

So, what about other energy sources? The UK imports one third of its coal from Russia, while in the EU imports account for almost 50% of total supply. The price of Australian thermal coal hit an all time high in late February, as countries scrambled to source alternative supplies. While Europe hasn't specifically sanctioned Russian coal exports, the reputational threat is likely to be too great for most companies to maintain operations. For governments keen to wean themselves off Russian gas whilst avoiding the huge cost of importing from elsewhere, a return to coal is likely in the short-term. Germany has already said it will restart several of its mothballed coal-fired power stations. But with tight supply, coal isn't the super-cheap energy source it once was – in the long-run, recent events are likely to tip the scales even further in favour of renewables.

A green energy revolution?

Like fracking, renewables promise energy independence. In Europe, the conflict has given new impetus to the energy transition. The EU's REPowerEU plan aims to make the bloc independent of Russian energy imports well before 2030. Germany has suspended Nord Stream II, and the government is looking to speed up passage of the Renewable Energy Sources Act (EEG). The situation in Germany is particularly acute, given it continues to press ahead with the phase-out of its remaining nuclear reactors. When it passes, the EEG will suspend cuts to rooftop solar subsidies and boost tender volumes for onshore wind. In the Netherlands, too, ministers have announced a doubling of the

offshore wind target, adding 10.7 GW to its North Sea ambition. By 2030, the country will generate 21.7 GW from offshore wind, approximately two thirds of total consumption.

In the UK, Boris Johnson has promised a new energy supply strategy. Kwasi Kwarteng, British Business Secretary, has announced that the UK will phase-out Russian oil imports by the end of 2022. Gas, so far, has escaped specific restrictions, but clearly there is intense political pressure to reduce imports here as well. With fracking thought to be firmly off the government's agenda, onshore wind looks set to be the major beneficiary. The Prime Minister has ordered minsters to double the rate at which wind power is installed across the UK, but the scale of ambition is too great to be met by offshore wind alone. Onshore wind is cheaper and faster to install, but planning disputes led to an effective moratorium back in 2015. Boris Johnson's new strategy includes a review of strict planning rules currently in place.

The recent crisis in Ukraine has thrown the fragility of Europe's energy strategy into the spotlight. In justifying the invasion, Putin frames the conflict as an issue of national security. But in doing so, he has reinvigorated a push for energy independence across the continent – one that threatens the long-term viability of the oil and gas revenues on which his country depends.

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