



Living without Russian gas

What could the government do to manage a possible cut-off of gas from Russia?

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Introduction

Russia is a prominent exporter of energy, producing 17% of the world's natural gas supply and 12% of its oil. It was the largest single supplier of gas to Europe (defined here as the EU and UK) in 2021, delivering more than a third of its gas.

The [sanctions](#) imposed on Russia since its invasion of Ukraine in February have had a devastating impact on its economy. Most severe was the move to reduce the Russian central bank's access to its foreign exchange reserves, which has limited the bank's ability to stabilise the rouble, the value of which has fallen sharply.

But Russia is still able to access a large flow of foreign currency in payment for its energy exports. Most of its energy contracts are denominated in dollars or euros and payments have increased due to the rise in energy prices over recent weeks. As a result, this trade could be providing Russia with as much as \$1 billion in export earnings every day. This flow of foreign currency is being used to fund Russia's imports and has helped stabilise the rouble.

This has led many commentators¹ and politicians² to argue for Europe to cut off energy imports from Russia with immediate effect. This would be an unprecedented escalation of sanctions, though the effect of such a move would also seriously affect the EU and UK economies. Indeed, so severe would the loss of Russian gas be that President Putin has used such a cut-off as a threat to Western powers, most recently in response to President Biden's executive order on 8 March to ban Russian oil imports to the US.

It is possible that, irrespective of what European countries do, Putin goes ahead with an energy embargo. Either scenario would result in major disruption to energy markets, and along with other sanctions would unavoidably affect the UK at a time of already [record energy prices](#).

Although central and eastern EU countries are more reliant on direct imports of Russian gas than those further west (and the UK), the impact from any curtailment of Russian exports would affect the whole bloc and the UK because of the integration of the European energy market. The UK, for example, is responsible for the export and transit of gas to the Republic of Ireland and imports around 30% of its domestic gas supply via pipelines from Norway. UK and EU natural gas prices are almost perfectly correlated: if flows of Russian gas to EU countries (such as Germany) reduced, those countries would increase their demand, and the amount they are willing to pay, for gas from alternative sources (such as Norway) and liquefied natural gas (LNG) imports from the rest of the world. Because those sources also make up around 50% of the UK's supply, the UK would also face higher wholesale prices. And if EU wholesale gas prices were higher than those in the UK, traders would begin exporting gas produced in the UK to the EU, until prices equalised. There is also a risk of physical shortages – while this would most acutely affect EU countries that directly import gas from Russia in the first instance, the impact would be felt in the UK as well.

The role of gas in UK electricity generation – it provided 48% of the UK's electricity in 2020 – and the structure of the electricity market (which is similar in the EU) means that electricity prices have tended to follow gas prices.³ Indeed, despite relatively low costs per unit of production (e.g. for renewables), UK wholesale electricity prices have moved more or less in tandem with gas prices in recent years.

Overall, despite relatively low *direct* imports of energy from Russia, the UK would face similar problems to EU countries if Russia's gas exports were curtailed to any extent. Electricity prices, as well as gas, would rise.

This paper focuses on the impact of a cut-off of Russian natural gas. This is because while a disruption of Russian exports of oil and other fossil fuels would also have severe impact on prices, and likely require some response by government, gas is significant for two key reasons:

- First, gas markets are limited to particular regions (such as the EU and UK) by infrastructure – it is not possible to directly pipe natural gas from the US to Europe, for example. Therefore, prices and supply are set regionally. This means that disruption to gas exports is likely to lead to higher prices in Europe than disruption to oil because it is more difficult to substitute supply. For the same reasons, disruption to Russian gas would lead to the risk of physical shortages in Europe, while the corresponding risk for oil is much less acute.
- Second, gas is also particularly important to the UK and other EU countries for heating and electricity. In the UK, over 80% of homes are fuelled by natural gas boilers and almost 50% of its electricity comes from gas-fired power stations.

To manage the impact of a potential cut-off of Russian gas, governments across Europe need to plan now. Below we set out some of the options the UK government has to mitigate any fallout from such a move – first looking at ways to target the root of the problem, by boosting alternative sources of energy supply or reducing demand, then ways it could step in to protect households and businesses from the effects of higher prices.

Options for boosting energy supply

Non-Russian natural gas pipelines to the EU (from Norway and North Africa) tend to run at a stable level that is at or close to their full capacity. That means that, if Russian supply is curtailed further, Europe will have to turn to other non-pipeline sources including LNG imports, domestic production and storage withdrawals. If European demand is at its usual level this summer then stocks of gas in storage will be depleted and, in the absence of mitigation measures (both boosting supply and reducing demand during the summer), demand for gas in Europe in winter 2022 would have to fall by a significant amount in the winter to avoid shortages.⁴

The UK government is reportedly focused on increasing domestic production of oil and gas from fields in the North Sea as a primary measure to reduce UK reliance on Russian imports.⁵ However, as prices paid for fossil fuels by UK consumers are determined by international markets and expanding North Sea extraction would add very little to overall global supply, this is unlikely to have any material effect on oil and gas prices – something highlighted by the Climate Change Committee (CCC) in February.⁶ Due to the integration between UK and EU energy markets, the main difficulty will be ensuring supply for the European region as a whole to minimise the impact on individual countries, including the UK. In the short term, the European market has several options for replacing Russian imports including an increase in LNG imports, renewable energy projects that can be delivered quickly, increasing non-Russian pipeline imports, and making greater use of coal-fired and nuclear power plants.⁷ If enacted at scale across the region, such measures are likely to make a meaningful – but only partial – contribution to offsetting the impact of a cut-off of Russian exports.

Of these, increasing LNG imports is likely to be most powerful. EU–UK co-operation here will be especially important for two reasons. First, demand for LNG is likely to be intense, so joint procurement will be needed to prevent a bidding war between European countries that would drive prices up still further. Second, because of the UK's relatively large number of LNG terminals, it would likely become a 'land-bridge' to north-west Europe, turning LNG imports back into gas and exporting them to Europe through the pipeline connectors.

The UK government could also increase coal-fired power generation by delaying the planned closure of the UK's three remaining coal-fired power stations. The West Burton facility and one of the four units at Ratcliffe on Soar, both in Nottinghamshire, had been due to cease production in September 2022, while the Kilroot facility in Northern

Ireland was to switch to natural gas this year. However, at 54MW, Kilroot represents less than 10% of the UK's already dwindling capacity for coal power generation – which provided just 3% of the UK's electricity generation in 2020.

There is limited scope to expand renewables generation capacity in the UK in the short term. There are a large number of projects that have received planning consent but are not yet built,⁸ suggesting there may be scope to accelerate the building of these, though that would make negligible difference before winter 2022. The sector has already been experiencing supply constraints and demand for the necessary skills and materials is only likely to intensify as Germany and other EU countries also seek to ramp up their own renewables generation capacity.

While some substitution of supply from other sources is an option, it would be impossible to deliver the amount of gas that Europe consumes in a typical year, at the price it is accustomed to, in time for winter. The government should certainly explore what can be delivered on the supply side over the next year, and because the UK and EU markets are integrated, it should co-ordinate any such actions with the EU as that will be more effective in limiting price rises than unilateral measures. However, in the case of a complete cut-off of Russian gas, supply would fall short of its usual level and demand would have to fall as well.

Options for reducing energy demand

Domestic users accounted for almost a third of total electricity demand in 2020. Consumption by industry represented 25% and commercial 19%. Of the gas that is not used in electricity generation, households consume 54% of the supply (mostly for heating), industry 17% and commercial 8%.

High energy prices make some industrial production unprofitable, meaning firms will cease production or at least sharply reduce it, as happened in late 2021 when several UK firms curtailed the manufacture of products including ammonia/fertiliser and steel.^{9,10} A total cut-off of Russian energy exports has the potential to dwarf the rises experienced in 2021 and would be likely to result in other energy-intensive industries (such as those manufacturing chemicals, ceramics, glass or metals) cutting production as well.

While the likely reduction in demand from the industrial sector would reduce total UK energy consumption somewhat, much of the demand for gas and electricity in the UK and the rest of Europe is 'inelastic' – that is, consumption will stay strong despite high wholesale prices.

This happens for two reasons. First, the price paid by households is regulated – in the UK it is determined by the Ofgem price cap, which is based on historical wholesale energy prices, not today's. So the price UK households face does not perfectly reflect the current wholesale price – and thus available supply – of energy. Instead, retail prices reflect a lagged average of wholesale prices. The same is true elsewhere in Europe.

Second, energy is essential for heating and electricity. When the price of, say, orange juice goes up, households will simply buy less orange juice either because they can do without or there is a good substitute. The same cannot be said for energy: families and businesses cannot do without the heat and power provided by gas, and there is no substitute that can be provided in sufficient quantity in the short term at a lower cost.

This in turn has two consequences. It means prices will rise steeply because demand will stay relatively strong even in the face of reduced supply and, perhaps more importantly, Europe would face the possibility of a shortage of energy that, in the absence of a co-ordinated response by governments, could lead to blackouts. Demand may, therefore, have to be forcibly managed to prevent this from happening.

When the UK was an EU member state it was bound by the 2017 EU Security of Supply Regulation, which aims to ensure a regionally co-ordinated approach to the preparation and management of gas shortages in a crisis.¹¹ That legislation was implemented following gas crises in Europe in 2006¹² and 2009,¹³ both also caused by tensions between Russia and Ukraine. Under this regulation, in a crisis nations are required to work together to ensure an uninterrupted supply of gas to “protected customers” if one member state triggers this process. Protected customers include household customers connected to distribution networks and, if agreed by member states, small and medium-sized enterprises (SMEs).¹⁴

After Brexit and the implementation of the Trade and Cooperation Agreement, the UK is no longer bound by the Security of Supply Regulation. However, given how closely integrated the UK and European gas markets are, in a crisis, there would be benefits to both the UK and EU from co-operation.¹⁵ As noted, the EU relies on the UK to export and transit gas to Ireland, and would likely require the UK’s LNG terminal capacity for regasification and re-export, particularly in the event of physical shortages. Meanwhile, the UK relies on imports of gas from Norway, who will also be under pressure to increase exports to the EU. While co-operation is not guaranteed, it is almost certainly the approach that would deliver the best outcomes for all countries concerned in the event of physical shortages.

If high prices are not enough to reduce demand to match supply and there is the prospect of a physical shortage of gas, there are several options that the UK government and EU can pursue to encourage (or force) a reduction in demand for energy. These include but are not limited to:

- Introducing regulations covering heating temperatures in offices and other commercial buildings.
- Encouraging consumers to temporarily adjust their thermostats. The average temperature for buildings’ heating across the EU is above 22 degrees. The International Energy Agency suggests that public awareness campaigns, and other measures including corporate targets, could encourage changes in behaviour that collectively could reduce demand on a national/Europe-wide level.¹⁶

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- Encouraging households to adopt energy efficiency measures to reduce energy needs. The experience of the Green Homes Grant in 2020 shows that it will be difficult to quickly expand installation of more complex energy efficiency measures because of a lack of qualified installers,¹⁷ but simpler adaptations – such as loft insulation – could be adopted more easily (though still limited by available capacity in the construction industry). The number of homes getting their lofts or cavity walls insulated each year plummeted by 92% and 74% respectively in 2013 following previous government cuts to energy efficiency schemes, and have never recovered.¹⁸
 - Forcibly cutting or rationing supplies of gas to non-critical industries (as the governments of Hungary, Poland and Croatia did in response to the 2009 gas crisis).¹⁹

Options for protecting households from high energy prices

While the UK government, like those in the EU, should explore the options above for addressing the supply of and demand for energy, no measure will be able to insulate households entirely from increasing prices. Petrol and diesel prices have already risen sharply. Analysis by the Resolution Foundation shows that, if gas and electricity prices were to stay at their current elevated levels, the energy price cap would rise by almost £1,000 in October, from £1,971 to around £2,900. That would add two percentage points to already high inflation in the second half of 2022/23, pushing it up to around 8% for the first time since the early 1990s. As a result, households would experience two consecutive years of falling real incomes in 2022/23 and 2023/24.²⁰ Should the war in Ukraine lead to a total cut-off of Russian gas exports the increases, and associated impacts on households, could well be even more severe.

The chancellor has already announced some support for households in response to the rises in energy prices in the second half of 2021. In February, after Ofgem's announcement that it would raise the price cap on 1 April, he announced measures²¹ including a £200 discount on all households' energy bills this year, to be paid back in increments, and a council tax rebate of £150 for 80% of households in England (for more, see our [explainer](#) on this). Other measures that the government could consider to help households deal with the rise in energy prices are: a cut in the rate of VAT charged on fuel (currently 5%); cuts to fuel duties (which would reduce the price of petrol and diesel); removing some of the environmental levies on electricity bills; increases in benefits or other forms of direct payments to households.

In choosing which intervention to make, the government faces a 'policy trilemma' of sorts: it has to choose between the extent of coverage (number of households who benefit), the scale of support offered to the most vulnerable households, and the fiscal cost. Targeting the policy will reduce its coverage but will concentrate any money spent on those who are likely to need it the most.

However, determining the 'most vulnerable' is not easy. There are two groups who may be considered most vulnerable to energy price rises: those on low incomes (who on average spend a larger share of their incomes on energy and have little financial flexibility to accommodate higher energy costs) and those who consume the most energy (who will face the largest cash increase in spending). Measures that cut the price of each unit of energy directly would be effective at targeting those who consume the most. However, since that group also tend to have higher incomes, simply channelling money to those with the highest bills necessarily means that the policy will be regressive – that is, it will benefit high earners more in cash terms than lower earners. Conversely, any measures to give additional payments to low-income households would mean the level of support was unrelated to individuals' actual energy use, meaning that low-income households with the highest energy costs would receive no more help than those with lower energy costs.

The package announced in February favoured broad coverage over targeting and favoured offering uniform support, regardless of households' actual energy consumption. The energy bills rebate applies to every household regardless of income, while the council tax rebate (for bands A-D) will benefit 80% of households.

There are also other trade-offs in policy design that the chancellor will be considering. Politically, it may prove difficult to withdraw the intervention once implemented – as seen with the removal of the 'temporary' £20-a-week uplift to universal credit last September. Then there is the question of how any energy support measures introduced now fit with other policies in this area, not least squaring a move to subsidise the use of gas, a fossil fuel, with the government's wider net zero ambitions.

Any measures to support households would come with a cost. The government could afford to borrow to pay for this. But the CCC has noted that the government could introduce a 'windfall tax' – an additional levy on unusually high oil and gas profits – to help compensate consumers for high prices. The International Energy Agency,²² the Labour Party and climate campaign groups have also called for a windfall tax of this sort, though others counter that such a measure would disincentivise investment in both ramping up supply and greener alternatives.

The European Commission issued a 'toolbox for action and support'²³ for EU countries facing high energy prices in October 2021. Of the measures recommended to support households, most popular have been temporary, targeted reductions in tax rates and levies. Other measures (in order of popularity) include:²⁴

- safeguards to avoid disconnections from the grid if people are unable to pay (very high) heating and electricity bills
- time-limited compensation and direct support to customers, particularly those in or at risk of entering fuel poverty
- temporary deferrals of bill payments.

Options for protecting businesses from high energy prices

For some businesses, typically referred to as energy-intensive industries (EIs), energy makes up a large proportion of input costs, making them most at risk of becoming unprofitable when energy prices rise. As well as supporting households, governments will also need to explore whether there is any justification for government intervention in the corporate sector to mitigate the potential impact of high wholesale energy prices. Business groups are often vocal when calling for support in response to rising prices, but government intervention is not always justified. The case for the government to step in is typically greatest where there are concerns over a loss of competitive advantage or externalities. There may also be a case for supporting other businesses, especially those who may not be able to obtain credit to tide them over during a period of temporarily increased costs or who cannot absorb the cost of temporarily halting production; this may be especially difficult for smaller businesses.

Avoiding loss of competitive advantage

The grounds for government intervention to support EIs are strongest where there are competitiveness concerns – in other words, where the government believes that UK firms risk losing competitive advantage relative to firms in other countries. This could happen either because of a temporary UK-specific shock to input costs or because of a wider global shock that other countries respond to by offering support.

Sectors that both use a lot of energy and are exposed to international competition include steel, paper (and paper products), industrial gases, fertiliser and nitrogen. The UK's most important trading partners for these goods are China, France, Germany and the US.²⁵

Because UK and EU energy markets are integrated, it is expected that any price shock would be felt across sectors within these countries. In the first instance, the UK and EU may lose some competitive advantage to China and the US, but not to one another. However, the EU has already indicated that it plans to implement a “temporary framework, which will allow liquidity support for companies affected by the crisis”²⁶ and the European Commission's ‘toolbox’ includes a recommendation for member states to “take targeted support measures to help industries adapt”.²⁷ If the EU implements support for firms to offset higher energy costs, UK firms will be at a disadvantage relative to all their competitors unless the government steps in.

Mitigating spillovers further down the supply chain

A second justification for support for EIs affected by energy price rises is the negative spillover effects that this could have on other firms further down the supply chain. When energy prices spiked in the second half of 2021, CF Fertilisers stopped production because it was no longer profitable – but the effects were felt far beyond the market for fertilisers. The company also supplied 60% of the UK's carbon dioxide (a by-product of fertiliser production), which is in turn a vital input into the slaughter of animals and packaging of food and drink. As a consequence, there were concerns that supermarkets would run out of products such as meat and beer. The problem

was particularly acute for pig farmers, who faced the possibility of a mass culling of pigs (which would then have had to be disposed of rather than entering the food chain).²⁸ A further rise in energy prices could easily result in similar problems in these or other supply chains, though due to the complexity of global supply chains these are difficult to predict.

What could the government do?

The government has already introduced several long-term measures to support EIs to meet the costs of decarbonisation and remain competitive with trading partners who do not tax carbon to the same extent. The main measure is a series of exemptions and compensation, covering several policies associated with higher electricity costs including the climate change levy, the contracts for difference mechanism, renewables obligations, and feed in tariffs.^{29,30}

In response to price rises in the second half of 2021, the Energy Intensive Users Group called for the UK government to take existing support for EIs much further. They called for 'cost containment' measures on energy prices, discounts on network tariff costs (of the sort offered to competitor industries in the EU), and changes to emergency gas supply procedures.

Since autumn 2021, many EU countries have implemented support for businesses as well as households. Some of these measures include:

- In September, Italy announced that the network costs for small businesses would be set to zero and waived VAT for industrial (as well as household) users for Q4 2021. In December it announced these support measures would be extended. Then in January 2022 more support was announced, specifically targeted at the corporate sector. EIs experiencing a 30% price increase in energy bills (relative to 2019) were awarded a 20% tax credit, partly financed by a windfall profit tax on electricity producers.
- Bulgaria's policy is to compensate businesses for 75% of the electricity price above a threshold (of 95€/MWh), though subject to a limit (of €128/MWh).
- Greece announced an electricity subsidy in September 2021, gradually increasing its size in successive months to €65/MWh for businesses (regardless of size, sector and voltage level) by January 2022.
- The government of the Netherlands reduced the energy tax for households and businesses for 2022.
- The Portuguese national regulatory authority announced it would reduce network tariffs by 94% for industrials.

Conclusion and recommendations

President Putin's invasion of Ukraine shook the world and fundamentally changed economic – as well as diplomatic – relationships between Russia and the West, almost overnight. The US has already stopped importing fossil fuels from Russia and the UK has committed to phase out Russian oil by the end of this year, while the possibility of the EU doing the same, by choice or otherwise, is real. That would have a substantial impact on energy supply and prices in Europe, with prices already having risen sharply. Although the UK does not *directly* import gas from Russia, the integration of UK and EU energy markets means that the impact on prices (and potentially supply) will be felt as much in the UK as in other countries.

To prepare for the possibility of a cut-off of gas supplies from Russia, the UK government needs to make plans in four areas, particularly to reduce problems next winter:

- **Increase other sources of energy supply.** There is scope to extend the lives of existing coal-fired power stations and some scope to increase North Sea oil and gas production and expand renewables generation. These will have only a marginal impact on overall energy supply before next winter but the government should examine what is possible and assess whether there is a case for offering public support to encourage the private sector to invest in this way, given that current high prices may not last. It should also work with other European countries to secure alternative gas supplies, such as LNG, to reduce the chance that European countries compete with each other, bidding up prices unnecessarily.
- **Reduce energy demand.** The government needs to make plans to encourage – and, in the extreme, mandate – lower energy consumption. It could do this by encouraging faster take-up of energy efficiency measures (such as loft insulation) and through public information campaigns to encourage householders and businesses to turn down their thermostats. In preparation for more extreme scenarios, the government needs to develop plans for regulating heating temperatures in offices and other commercial buildings and possibly even forcibly cut supplies of gas to non-critical industries.
- **Protect households from high energy costs.** The chancellor needs to decide whether and when to announce any extra support for households. While £9bn of support was announced in February, prices for petrol, diesel and heating oil have risen sharply since and Ofgem's price cap is likely to rise again at the start of October. In designing any further support, the government faces a trade-off between the extent of coverage, the level of support offered to the most vulnerable, and the fiscal cost. February's package was broad-based but doing the same again risks high fiscal cost, while leaving the poorest households with limited support. The chancellor also needs to decide whether to impose a windfall tax on energy producers, which could help pay for support for other households and businesses.

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- **Protect businesses from high energy costs.** The government needs to have plans in place to help energy-intensive industries. What will be needed will depend in part on what action other European countries take and how these energy-intensive industries fit into wider supply chains – it should liaise with counterparts across Europe on this. The government should be wary of offering blanket support to other businesses but the case for doing so will be strongest where those businesses are not able to access credit to tide them over through temporarily high energy costs and which could not survive a temporary shutdown of activity.

The prime minister has acknowledged that he may need a 'net zero pass' while he prioritises energy security and affordability. It would be easier to assess the impact of what his government proposes if it had already published details of the emissions trajectory that underpinned its October 2021 Net Zero Strategy – though what is clear is that recent price hikes, especially if sustained, make the case to reduce both energy use and dependence on imported fossil fuels. Those are longer-term questions, though Johnson must ensure a short-term pass does not become a long-term abandonment. For now he must work on a plan to protect the UK from the very real prospect of a sudden cut-off of Russian gas.

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