

Briefing

What does war in Ukraine mean for UK energy, and how can we limit reliance on Russian oil and gas?

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What role does oil and gas imported from Russia play in the UK economy?

Figures from the Department for Business, Energy and Industrial Strategy (BEIS) show that, over the past five years, [2.3 per cent](#) of the UK's gas supply originated in Russia, and [eight per cent](#) of the UK's oil demand is met by Russian imports. In 2021, the UK's gas imports coming from Russia equated to [34TWh](#) of UK energy. On 8 March 2020, the government announced its intention to phase out imports of Russian oil.

While its direct exposure to Russian oil and gas is lower than other countries, such as Germany, the UK is still exposed to wholesale prices for these commodities.

The price of oil and gas in the UK has risen steeply since the Russian invasion of Ukraine, with UK gas prices hitting record [highs](#) and oil prices back above [\\$100](#) a barrel. This has led to a steep increase in the [cost](#) of petrol and diesel at the pump. While it is too early to say with any certainty what will happen to the consumer energy price cap in October, if gas prices stay at this inflated level through to July, analysts have warned the cap could rise to as much as [£3,000](#), up from its current level of £1,277. Relatedly, fertiliser prices (which tend to track gas prices) have risen by a similar amount, putting a floor under the price of UK grain production.

How could the UK limit its reliance on Russian oil and gas? And how quickly?

The UK has plenty of options for reducing its reliance on imports of Russian oil and 34TWh per year of Russian gas.

The electrification of home heating, combined with building retrofits to cut energy waste, will significantly reduce the UK's gas demand. In residential buildings, 97.6 per cent of gas is used for heating. There is strong evidence that all housing types are [suitable](#) for heat pumps and, by increasing installation rates to 450,000 per year by 2025, home heating gas demand can be reduced by [4TWh/yr](#).

In addition, returning home insulation installation rates to 2014 [levels](#), insulating two million homes per year by 2025, could reduce gas demand by a further [5TWh/yr](#). Roll-out of home insulation is a near term action that reduces both reliance on gas and permanently reduces household bills, and is highly likely to be achievable at scale more quickly than [new North Sea oil and gas](#) (see below), particularly if there is a robust multi-year programme that enables the supply chain to scale up.

Action by households is another powerful tool to immediately reduce reliance on Russian gas. Temporarily reducing thermostat temperatures by [1°C](#) and reducing [boiler flow temperatures](#) can instantly reduce gas demand by up to [38TWh/yr](#). This is more than the 34TWh of Russian gas imported to the UK in 2021.

Alongside consumer action, the UK can reduce reliance on gas through continued and expanded investment in renewable electricity generation sources. In 2021, offshore wind electricity generation in the UK saved [£15.4 billion](#) compared to what the cost would have been if gas generation had been used. A further £1.9 billion could have been saved according to [Carbon Brief](#), if the 2GW per year rate of onshore wind deployment the UK, achieved before onshore wind was effectively banned, had continued through to the present day. Doubling down on new offshore and onshore wind, as well as new solar, is a no regret option that will reduce gas demand within our electricity system. Building 2GW each of onshore wind and solar per year could reduce gas demand by [15TWh](#) by 2025, almost half the amount imported from Russia in 2021.

In the transport sector, reliance on Russian oil can be reduced by accelerating the switch away from internal combustion engines, by doubling down on the transition to electric vehicles and expanding public transport services. Battery electric vehicles are already competitive with petrol and diesel cars on a total cost ownership basis and sales reached 12.5 per cent of all car sales in January 2022. Several vehicle manufacturers have already made ambitious commitments to switch production to electric vehicles, with a number of new UK investments announced over the past year.

Finally, to limit exposure to the increased price of fertilisers, which are manufactured using fossil fuels, farmers can reduce fertiliser use without affecting yields. The most efficient farms have already done so, but the majority of UK farms have scope to improve as they still waste approximately [40 per cent](#) of the fertiliser they use.

Can new oil and gas extraction in the North Sea help?

There isn't much more gas to be had from the North Sea: the reserves and resources are [30 per cent gas](#) and 70 per cent oil, according to the Oil and Gas Authority. Analysis from the Climate Change Committee (CCC) shows that, even if the UK extracted all the gas in those reserves, it would meet just [one per cent of Europe's projected demand](#) to 2050. Furthermore, most of the oil extracted from the North Sea is exported, as it is in the wrong form to be used domestically.

It also takes a long time for new extraction licences to lead to production: on average, it takes [28 years](#) for new fields to begin production after a discovery is made. So newly licensed fields will not produce oil and gas until the 2040s or 2050s. This is too late. Even existing fields looking for development consent take three years on average to begin producing. Crucially, even if there was more production from the North Sea, the UK is connected to international markets and, therefore, subject to volatile prices. As the [CCC](#) and the [secretary of state for BEIS](#) have pointed out, it is not possible to lower prices for UK households through more North Sea drilling.

To protect consumers, it would be quicker and cheaper to move rapidly away from fossil fuels, [build renewables and improve energy efficiency](#). For information on why more extraction in the North Sea is bad economics and bad for the climate, read [our report](#).

What about fracking and nuclear?

It is unlikely that fracking could produce sufficient shale gas to reduce UK gas prices or household bills.

To produce enough shale gas to cover the UK's annual gas demand, approximately 125 wells would need to be drilled every month for 30 years. Each well pad is the size of a football pitch, requiring trucks to bring the equipment and take away the gas. At the end of 30 years, the UK would have 45,000 wells, covering an area bigger than greater Glasgow. A well pad requires three to five months to construct after a successful planning

application and the fracking industry itself, in its optimistic best case scenario, predicts fracking could supply less than [five per cent](#) of the UK's gas needs over the next five years. On top of this, the [CCC](#) and the [National Audit Office](#) have found that shale gas would not lead to a reduction in household bills, given the UK's connection to international gas markets.

Fracking also has [low public support](#) and well known safety concerns. [Earthquakes](#) were reported near fracking sites in Lancashire, leading to a fracking moratorium.

The UK is in the midst of a transitional period for nuclear power generation, with six out of 9GW of installed capacity being retired between 2021 and 2024. It is unclear if there is scope to further extend their lifetimes and the only nuclear reactor under construction, Hinkley C, is currently predicted to come online in 2026. At least in the short term, nuclear power is unlikely to be a solution to reducing reliance on oil and gas.

What should the government do?

The immediate priority is for the government to ensure energy bills are kept low for the most vulnerable consumers. While the chancellor announced a package of emergency measures on 3 February 2022, in response to the high gas prices, the measures [did not effectively target](#) vulnerable, fuel poor households.

Alongside ensuring further, targeted relief for these households, the government [should](#) move green levies off electricity bills and onto general taxation, until gas prices stabilise. It should also introduce a windfall tax on oil and gas company profits, to raise funding for a national building retrofit programme. The government should also consider emergency measures to relieve exposure to oil prices in transport, such as encouraging homeworking, where possible, or reducing fares on public transport.

Furthermore, the UK government should lock in long term reduction in gas and oil demand. It is clear that the previous watering down or ending of policies supporting housing energy efficiency, renewables roll-out and public transport have increased the UK's vulnerability to high oil and gas prices. To shield UK consumers and businesses from future crises, the government should:

- double down on home energy efficiency, addressing the identified [policy gaps](#) and [£2 billion funding shortfall](#) to deliver on its manifesto commitment, and invest a further £4.15 billion over this parliament to ramp up heat pump installations;
- deliver 2035 power sector decarbonisation by expanding investment in 'no regret' renewable electricity sources, such as offshore and onshore wind and solar, to reduce the UK's exposure to volatile fossil fuel prices and reduce household bills;
- move quickly to battery electric vehicles with an [ambitious zero emissions vehicle \(ZEV\) mandate](#), to increase access to electric vehicles and provide incentives for further business investment in clean vehicle supply chains, and expand public transport services to encourage lower levels of car use;
- new agricultural policy schemes in the UK, including the Sustainable Farming Incentive in England, should be used to achieve a goal of 80 per cent nitrogen use efficiency to reduce the waste of artificial nitrogen fertilisers.

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