An Emergency Response to the Energy Crisis

A FIVE-POINT PLAN FOR THE NEW PRIME MINISTER

RESEARCH NOTE

By Ed Birkett

With thanks to Phoebe Bunt and Alex Luke for their contributions to this report

Summary

The UK does not rely directly on gas from Russia, but we are still desperately exposed to the energy crisis that has followed the invasion of Ukraine. The UK is part of the European energy market, which means that UK gas prices are closely linked to those on the continent and that shortages across Europe also affect the UK. The EU typically gets 40% of its gas supplies from Russia. Following Russia's invasion of Ukraine, supplies are down nearly 50% this year, and there are credible scenarios where Russia cuts off all gas supplies this winter. In other words, we need a crisis plan as urgently as Germany, France or Spain.

High gas prices are a sign of severe shortages across the European energy market, of which the UK is part. If these shortages get worse, then governments and grid operators will have to disconnect industrial users from their electricity and gas grids to protect supplies to households, causing considerable economic damage and political pain. In a more extreme scenario, households could be disconnected from the electricity grid.[i] The consequences of inaction could be severe.

Skyrocketing energy prices will therefore define the start of the new Prime Minister's term in office.

The next Government will be immediately consumed by the energy crisis. In all likelihood, it will dominate the last two years of this Parliament. In October, the UK's Energy Price Cap will rise to £3,549 per year for a typical household, around three times higher than last winter. Prices are expected to rise further in the new year, potentially to as high as £5,000 per year.[ii] This is several multiples of what households have been used to in living memory, and could devastate many households' finances.

The Government has already committed to help households with £37 billion of support, including a £400 discount on all household energy bills and one-off payments to certain groups. However, ever-rising energy prices mean that the new Prime Minister will need to do more. If the Government doesn't do enough, then millions will be pushed into poverty and thousands of vulnerable people could die during cold weather.

None of the existing proposals for dealing with the crisis are comprehensive enough.

Labour, the Liberal Democrats and UK energy suppliers have proposed an energy price freeze, which is unaffordable and would exacerbate energy shortages. Based on the latest price forecasts, freezing household energy prices at the current level would cost around £85 billion per year,[iii] more than the entire cost of the Covid furlough scheme.

The taxpayer liability from a price freeze would also be open-ended, putting the taxpayer at the mercy of a volatile energy market: having introduced a price freeze earlier this year, for example, the French Government now admits that prices will have to rise next year.[1] A price freeze also

[i] Known as "rota disconnections".
[ii] Note: Various forecasts suggest that bills could be between £4,000 and £6,000 per year during 2023. These forecasts vary from week to week depending on changing energy market prices Throughout this report, we assume that the average household energy bill in 2023 is £5,000.
[iii] Assuming an average annual household energy bill of £5,000 in 2023. 28 million households * (£5,000 - £1,971) per year = £85bn per year

risks making the crisis worse by discouraging richer households from tightening their "energy belts", putting upwards pressure on energy prices and increasing the risk of blackouts.

Existing proposals have also failed to grapple with wider trade-offs that the next Government will need to make to keep energy supplies flowing this winter. For example, there is an urgent need to reduce energy usage, as countries across Europe have attempted this summer, and to help businesses and industries to temporarily switch from gas to coal and oil where possible to increase diversity of supply. These measures will be controversial because they will make air pollution worse and increase carbon emissions. But the scale of the crisis means that unpalatable choices will ultimately need to be made.

Existing proposals also rely too heavily on windfall taxes on oil and gas companies to fund them. Oil and gas companies are an easy target. However, some electricity generators like wind farms have also made extraordinary unexpected profits from high electricity prices. Despite the poor optics of taxing green energy providers, there is a strong argument to extend windfall taxes to some electricity generators.

Finally, existing proposals do not address the risk posed by the potential failure of the European energy market. Markets are under huge strain from high prices, and nervous governments are exploring risky proposals to cap wholesale electricity prices. If these interventions go wrong or shortages get worse, then governments may suspend their energy markets or suspend energy exports, which could make the situation even worse.

The first priority of the new Prime Minister should be to get households through to Christmas.

The new Energy Price Cap comes into force on 1st October, giving the new Prime Minister just four weeks to put in place an immediate package of financial support. This leaves no time to come up with a new, complex scheme that targets support at the most needy.

The immediate priority should therefore be to help households through to Christmas by accelerating the payment of the planned £400 *Energy Bill Support Scheme*, paying the full amount to households by Christmas, rather than by the end of winter as planned. This will reduce the average energy bill rise for Q4 2022 from £722 to a more manageable £322, compared to the same period last year. Certain at-risk groups will receive additional support through the planned *Cost of Living Payments*. This would not cost taxpayers any more, but would simply bring forward existing spend.

At the same time, the Government should immediately address the inequality in the energy market that means (typically lower-income) households on prepayment meters pay more for their energy. The Government should fund this premium for the duration of the crisis, costing around £266 million per year.[2]

These measures, when combined with the planned *Cost of Living* payments, should be sufficient to get households through to the new year, by which time the new Prime Minister and Chancellor need to have put in place a comprehensive energy plan.

But before long, the new Prime Minister will need a package to help households, raise revenue, diversify supply and reduce demand simultaneously.

The scale of the crisis facing the UK energy market is considerable. It will not be enough simply to subsidise bills for a temporary period. The Government will also need to take steps to reduce energy consumption and diversify energy supply, including working in conjunction with other countries. The sums involved mean that they will also need to consider ways to raise revenue to pay for it. In this paper, we recommend a five-point plan to navigate the coming energy storm:

1. **Targeted financial support for households.**

   Replacing the existing *Cost of Living* support scheme, the Government should put in place a new, expanded support scheme. For the first time, this new scheme should include additional payments to families with children, who face extra energy costs. The 2023 scheme should comprise:

   - £1,000 in support for every household, paid as a credit on their energy bills
   - Plus £1,000 for those, including pensioners, on means-tested benefits
   - Plus £500 per child for those claiming Child Benefit, up to a maximum of two children
   - Plus £500 for people with disabilities.

   These payments should come in six monthly instalments paid during the winter months (January, February, March, and October, November, December 2023). This reflects the fact that energy bills are significantly higher during the winter months. To help those who may need additional support, the Government should add £2 billion to the Local-Authority led *Household Support Fund.* The 2023 scheme would cost an estimated £47.3 billion.

2. **Raising revenue with a windfall tax on "low-cost electricity generators".**

   Many electricity generators have made unexpected and extraordinary profits during the current crisis, including wind, solar, biomass and nuclear generators whose costs have hardly changed. These windfall profits are not the result of market forces or industrial innovation; they merely reflect the fact that electricity prices are linked to wholesale gas prices, boosting the price received by renewables as gas supplies have become constrained.

   We propose a windfall tax on the revenues of some electricity generators, similar to that already levied on oil and gas firms. Our analysis suggests that this tax could raise between £4 billion and £10 billion per year, depending on prevailing prices.

3. **Cutting energy demand.**

   High market prices can only be brought down through a combination of cutting demand and increasing supply. In the short term (0-24 months), there is significantly more potential to cut demand than to increase supply; increasing supply requires new production, transport and storage facilities that take several years to build.

   The Government's energy-saving plan should comprise three elements. Firstly, a national energy-saving campaign for households and small businesses. Secondly, a new "Basic Energy

Efficiency Obligation" on landlords and Housing Associations. And finally, mandatory energy-saving measures for businesses, similar to those implemented across Europe.

4. **Diversifying fuel supplies.**

   One of the only options available to the Government to reduce gas demand quickly is to increase the use of other fuels such as coal and oil (diesel). To promote fuel switching, the Government should explore options to increase the running hours of coal- and diesel-fired generators, including speeding up the issuance of new permits and potentially suspending some air quality rules in an emergency scenario. This will increase local air pollution, but will reduce the risk of blackouts - an unenviable trade-off.

5. **Keeping energy flowing across borders.**

   Pan-European cooperation will be crucial to getting through the current crisis, particularly in the event of energy rationing. International energy trading helps to balance supply and demand, directing supplies to where they are needed most. However, in response to high electricity prices, the EU is exploring risky proposals to cap wholesale prices, which could have a major impact on cross-border electricity flows. In addition, if shortages get worse, then national governments will be tempted to suspend energy exports, as some did with PPE and vaccines during the pandemic.

   To mitigate this risk, the Government should establish a new "European Energy Emergencies Forum", comprising the UK, the EU and Norway. This forum should be used to agree new emergency procedures, including setting clear rules on when governments might suspend exports and how cross-border energy flows could be maintained in the event that one or more national energy markets is suspended during severe shortages.

The new Prime Minister must approach these issues pragmatically.

The recommendations in this report include measures that will be ideologically uncomfortable for whoever becomes the next Prime Minister. But not doing these things could equally become politically untenable very quickly. There will be ways that they can make the package more consistent with their values, but this crisis requires the new Prime Minister to prioritise practicality over ideology.

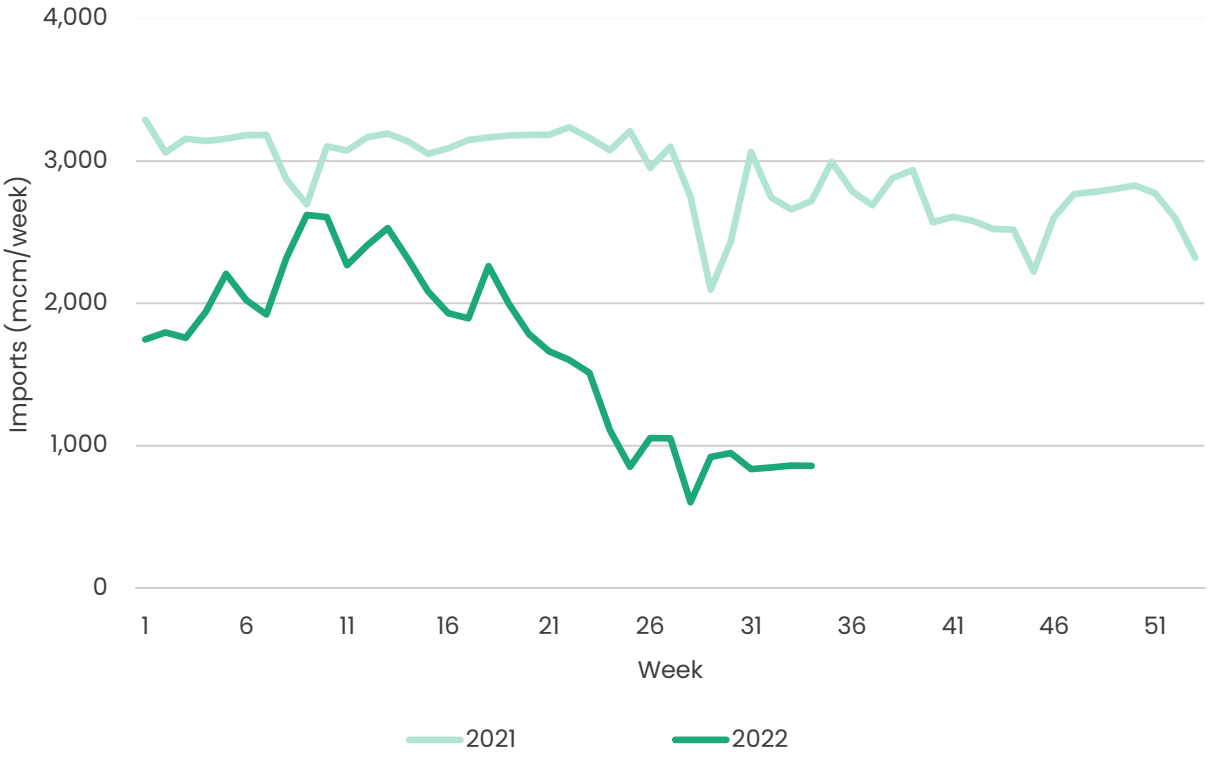
The long-term solution to the energy crisis involves boosting UK energy supplies with new renewables, nuclear and domestic gas production and storage, and by cutting demand through insulation. The new Prime Minister will rightly want to make these investments a top priority. But they will only have the space to do this if they put in place a package that addresses the scale and urgency of the immediate energy crisis.

Causes and Impacts of the Energy Crisis

What is causing the energy crisis?

Over the last decade, Russia has supplied around 40% of the EU's natural gas.[3] So far this year, Russian gas exports to Europe have fallen by 44% (Figure 1). Russian gas flows have fallen further as 2022 has progressed; in the last month of available data, Russian flows were two-thirds lower than during the same period last year.

Figure 1: Weekly EU natural gas imports from Russia (million cubic meters (mcm) per week).
Source: ENTSO-G data via Breuget.[4]



On August 19th, Gazprom announced that the Nord Stream 1 gas pipeline would be taken offline for maintenance between 31st August and 2nd September.[5] On Friday 2nd September, Gazprom stated that the pipeline would not be returning from maintenance due to a "technical issue".[6]

While it is true that the UK doesn't import much Russian gas,[7] the UK is still highly exposed to the *price* and *security* implications of reduced flows of Russian gas into the European gas system.

On prices, UK and European gas prices are generally tightly linked,[8] so the reduction in gas flows from Russia has caused both UK and EU gas prices to soar. With prices at current levels, many UK businesses and households can't afford to pay their energy bills. This means businesses are shutting down,[9] and an increasing number of households are being disconnected (or choosing to self-disconnect) from their electricity and gas supply.[10] UK businesses are already struggling to secure new energy tariffs because of increased credit risks caused by higher and more volatile energy prices.[11]

On security, the UK and the EU are competing for the same cargoes of Liquified Natural Gas (LNG) to replace reduced gas supply from Russia. If Russian supplies stay low, then the UK and the EU will increasingly be competing for the same cargoes. In the event of extreme shortages, even if the UK could continue to outbid the EU, there will be overwhelming pressure on the UK to cooperate with the EU (a big gas importer) and Norway (a big gas exporter) to ration gas supplies in a way that minimises the number of households that are disconnected.

Without cooperation, there would be more deaths from cold weather and bilateral relations could break down. Among other impacts, this could lead to countries unilaterally suspending cross-border flows of electricity and gas, which would harm all European countries, including the UK. The biggest impact on the UK would come if the Norwegian Government suspended gas exports, which appears very unlikely, or if the French Government suspended electricity exports, which is more likely given the current problems with the French fleet of nuclear power stations.[12]

Therefore, the reality is that, if Europe or Asia suffers a very cold winter, or if Russia further restricts gas flows to Europe, the EU and the UK may both have to cut off some businesses and even households from gas and electricity supplies.[13]

Great Britain's Electricity System Operator expects electricity supplies to remain secure this winter, but notes increasing risks.

In July, the Electricity System Operator, *National Grid ESO*, published its "early view" of electricity supplies for this winter.[14] The ESO expects Britain's electricity reserves ("margin") to be similar to previous years, but notes the risk of gas shortages in the EU. In the event of shortages, the ESO expects "knock-on impacts, including very high prices".

The ESO's view is based on an assumption that 5.7 GW of electricity imports will be available when UK electricity supplies are scarce, but notes that problems with the French nuclear fleet could reduce these imports. The outlook for this winter has worsened since the ESO published its report, so it is possible that the risks will be upgraded when the ESO publishes an updated view this autumn.

The ESO is already taking action to mitigate the risk of energy shortages, including keeping old coal-fired power stations online, seeking additional demand response from customers, and coordinating maintenance of electricity networks to reduce concurrent outages.

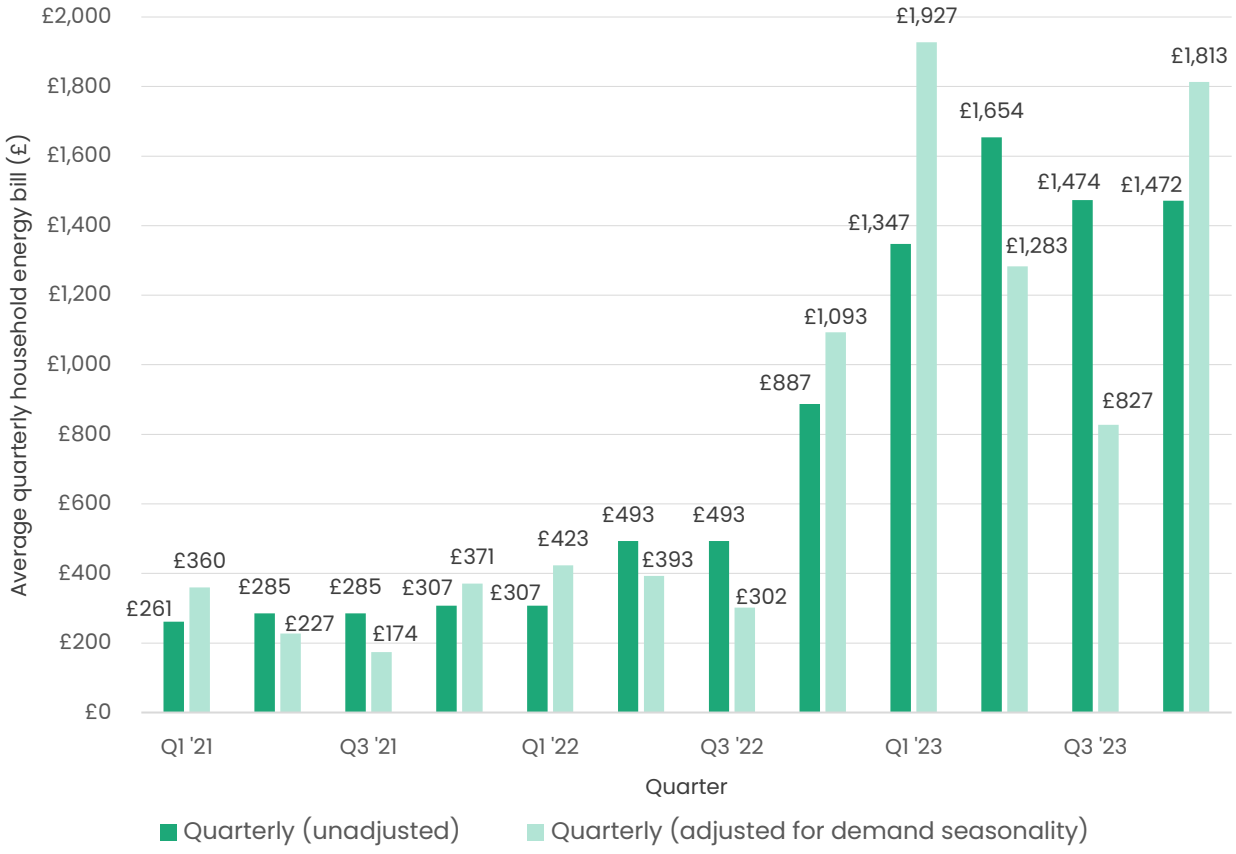
What happens if the UK runs out of gas?

The UK has well-developed plans for rationing gas and electricity in an emergency, known as the *National Emergency Plan: Downstream Gas & Electricity*.[15] The plan calls for increasingly extreme action to keep the gas and electricity systems stable. In the first instance, grid operators would step up monitoring, provide more information to industry, and issue a public warning.

If this is insufficient, industrial gas customers would be disconnected from the gas grid, following a strict prioritisation. This step includes disconnecting gas-fired power stations, which could lead to electricity blackouts for some customers.

If electricity disconnections are needed, then customers will be disconnected following the procedure in the Electricity Emergency Supply Code. Initially, industrial and commercial users will be ordered to reduce consumption, including by activating commercial contracts.[16] If this is insufficient, households will start to be disconnected in three-hour rolling blackouts. Electricity supplies to some "protected sites", including hospitals, will be prioritised. This year, for the first time, National Grid ESO is planning to put in place contracts with energy suppliers that will reward customers for reducing their electricity demand voluntarily during periods of shortages.[17]

Figure 2: Average quarterly household energy bill in Great Britain under the Energy Price Cap. Adjusted for seasonality of domestic electricity and gas demand (light), and unadjusted (dark).
Source: Ofgem (historical).[18] Cornwall Insight (forecast).[19] Onward analysis of BEIS data (seasonality).[20] [21]



To put costs into perspective, household energy bills in 2023 could exceed total UK Government spending on healthcare.[22]

On one metric of fuel poverty, two-thirds of UK households could be in fuel poverty by the start of 2023, with households in Scotland and Northern Ireland particularly affected.[23] This would lead to severe poverty for millions of households, and would likely lead to more people dying this winter during cold weather. Moreover, many people will be unable to reduce their energy consumption this winter without suffering during cold weather. Energy efficiency measures such as insulation take time to plan and install, and many people do not have the money to pay for these measures.

What has been proposed, and what are the issues?

Government action and proposals for further support

It is easy to forget that the UK Government has already given significant financial support to households this year, totalling £37 billion on the Government's preferred metric.[24] These interventions include a £400 energy bill discount for all households and targeted support to certain groups (Table 1). However, further price rises mean that more needs to be done.

Table 1: Selected UK Government policies to mitigate the impact of rising energy prices on households.

Scheme	Status	Description	Cost
Household Support Fund.[25]	Implemented	Discretionary fund for Local Authorities to provide direct support to low-income households. Originally implemented as a £500m fund in Oct 2021 during Covid-19, and expanded to £1bn in March 2022.	£1 billion cost in 2022.
£150 council tax rebate (Band A-D properties)[26].	Implemented	A one-off council tax rebate of £150 for all households living in properties in council tax bands A-D.	£3 billion one-off cost.
Targeted one-off "Cost of Living payments".[27]	Implemented	One-off payments of £650 to those on means-tested benefits, £300 to pensioners, and £150 to those with disabilities.	£8.5 billion one-off cost.
Electricity bill discount of £400.[28]	Planned	£400 energy bill discount to all households, paid in 6 monthly instalments from October 2022 onwards.	£11.7 billion one-off cost.

Substantial further increases in energy prices mean that the Government will need to increase the support available to households. The two Conservative leadership candidates, Opposition Parties, and energy suppliers have proposed policies to mitigate the impact of rising energy prices (Table 2).

Various forecasts suggest that the average household energy bill could be between £4,000 and £6,000 during 2023. These forecasts vary from week to week depending on changing market prices. Throughout this report, all cost estimates are based on an average bill of £5,000 in 2023.

Table 2: Proposed policies to mitigate the impact of further energy price rises.

Note: For comparison, the cost of each policy is estimated for 2023, based on an annual average household energy bill of £5,000 per year. The cost of "green levies" and the "prepayment premium" are based on the October 2022 Energy Price Cap.

Scheme	Proposed by	Description	Cost
Cut "green energy levies".[29]	Liz Truss MP	Take the "green energy levy" off energy bills for one year, saving the average household £129.[iv] These levies represent contractual obligations and so still have to be paid. Under these proposals, the Government would pay the levies rather than customers.	£3.6 billion per year (households only).[v] Approximately £10 billion per year (if also applied to businesses).[30]
Cut VAT on energy bills.[31]	Rishi Sunak MP	Remove 5% VAT from domestic gas and electricity bills, saving the average household £238 per year.	£6.7 billion per year.
Freeze Energy Bills at current prices.[32] [33] [34]	Labour and Liberal Democrats	Freezing the average household energy bill at Summer 2022 prices (£1,971 per year). Labour have proposed a six month freeze, and the Liberal Democrats a one year freeze.	£85 billion per year.[vi] (£42.5 billion for six months).
Tariff Deficit Fund.[35]	Various UK energy suppliers	Commercial banks would provide loans to a state-backed "Tariff Deficit Fund", which would be used to cap bills at Summer 2022 prices. Once market prices fall, the fund would be paid back over 10-15 years through a levy on customer bills and/or via general taxation.	£85 billion per year (same as a price freeze), plus interest costs during repayment period.
Eliminate the "prepayment premium".[36]	Labour Party	Eliminate the gap between the price cap for prepayment customers and those paying by Direct Debit. Affects 4.5m customers paying an additional £59 per year.	£266m per year.[vii]
Freeze prices, nationalise energy suppliers, banker's bonus tax[37]	Gordon Brown	Brown has called for the energy suppliers to absorb price rises, or for the Government to temporarily nationalise them if they are unable to keep prices down. Brown also proposed a windfall tax, a tax on bankers' bonuses, and voluntary reductions in energy demand.	£85 billion per year, plus the cost of nationalising energy suppliers.

[iv] Note: The colloquial term "green energy levy" includes schemes that are not intended to reduce carbon emissions, for example the £1bn per year Warm Home Discount, a bill subsidy scheme for poorer households. Ofgem collectively refers to the cost of these schemes as "policy costs".

[v] £129/household/year * 28 million households = £3.6bn per year

[vi] (£5,000 - £1,971)/household/year * 28.1 million households = £85.1 billion per year

[vii] Based on a prepayment premium of £59, affecting around 4.5m customers. (Ofgem (August 2022), *Ofgem updates price cap and tightens up rules on suppliers*)

Issues with existing proposals

Issue 1: Many proposals are unaffordable, poorly targeted, and short termist.

The growing crisis since May has prompted calls from several quarters for further action. While these plans have varied in their scale and design, they have been mostly focused on cancelling some or all of the immediate price rise for consumers.

This is understandable. But it is necessarily short-termist and narrow in its focus. And the lack of targeting in many of the plans means the costs are astronomical, with substantial deadweight costs and a risk that measures become difficult to unwind when prices fall. At the same time, since these plans were announced, energy price forecasts for 2023 have increased substantially, dramatically increasing the cost of these proposals.

Proposals to freeze energy prices are unaffordable.

Some form of price freeze has been proposed by Labour, the Liberal Democrats, Gordon Brown and energy suppliers. The cost of freezing prices is astronomical and exposes the Government to open-end liability. Recent price rises demonstrate why a price freeze would be irresponsible.

When the Liberal Democrats proposed a one-year price freeze, they estimated that it would cost £39 billion.[38] With bills now forecast to reach around £5,000 for an average household in 2023, this policy is now forecast to cost £85 billion in 2023, double the original estimate.

The same risk applies to proposals from energy suppliers to freeze prices. This plan was expected to cost £100 billion over two years.[39] However, based on current price forecasts, this plan could now cost £85 billion in 2023 alone, suggesting a total cost of around £170 billion if market prices stay at current levels for two years. By comparison the entire Furlough scheme cost £70 billion.

Labour's proposals to freeze prices for six months looks more affordable, but would leave households facing a cliff-edge in April 2023 if it is not extended. Experience from France suggests that this would put the Government in a no-win situation. Either continue to freeze energy prices, requiring more and more money because market prices have gone up, or expose households to huge bill increases.

Since November 2021, the French Government has capped gas prices at October 2021 rates and only allowed electricity prices to increase by 4%.[40] The price cap has already been extended at huge cost to the Government, and has required fully-nationalising France's main energy company, EDF, which was incurring huge losses due to the price cap.[41] The French Government has now admitted that the price cap is increasingly unaffordable, and may need to be removed.[42]

Industry proposals for a "Tariff Deficit Fund" would mean government borrowing in disguise, and may never be paid back by households.

The UK's energy suppliers have called on the Government to introduce a borrowing scheme to allow suppliers to cap energy prices at current levels for the next two years.[43,44] The price freeze would be funded by a "Tariff Deficit Fund", with the money coming from commercial banks; the Government would guarantee the debt. The fund would be repaid over 10 to 15 years by a levy on customers and/or general taxation once prices fall.

Because the fund would be guaranteed by the Government, all borrowing would be a form of government borrowing. In addition, because the funds come from commercial banks rather than the Government, the interest rate is likely to be higher than the rate for UK Government bonds, raising the cost of the scheme.

Potentially the biggest issue with a Tariff Deficit Fund is that it may never be paid back by customers, leaving the Government to pay the money back through general taxation. At current prices, the fund could reach £170bn over two years, or £6,000 per household. Even if no interest was applied, the repayments would be £600 per household per year for 10 years.

If the Government tried to recover this money through a levy on bills, as is proposed, there would be substantial risk of widespread public backlash. This view is backed up by reaction to the Government's proposed £200 "*Energy Bill Discount Scheme*", announced in February this year, under which all households would have received a £200 discount on their energy bills this year, which they would have paid back at a rate of £40 per year over 5 years.[45]

The proposed scheme was widely criticised. Shadow Chancellor Rachel Reeves called it a "buy now, pay later" scheme, and consumer advocate Martin Lewis called on the Chancellor to axe the "loan-not-loan" scheme following polling showing that most customers would opt-out of the scheme if given the choice.[46]

Following this criticism, and following further increases in energy prices, the Government doubled the amount from £200 to £400 in July, and made this a non-repayable grant rather than a loan.[47] It is possible, or even likely, that there would be a similar public backlash against repayments due under a Tariff Deficit Fund, forcing a future Government to pay back the money from general taxation. This makes it more likely that the Treasury and Office for Budget Responsibility scores such a scheme as a permanent cost to taxpayers.

Neither Conservative leadership candidate is yet proposing a package that meets the scale of the challenge.

During the leadership campaign, both candidates, Liz Truss and Rishi Sunak, acknowledged that future interventions would be needed. But both remained vague on the details of their plans.

At the time of writing, Liz Truss has committed to a temporary moratorium on the "Green Energy Levy". Based on the October 2022 price cap, this would save the average household £129 per year at a cost of £3.6 billion per year. Workers earning over £12,576 per year would also benefit from savings from Liz Truss' plans to reverse the recent rise in National Insurance.[48] The Truss campaign has also stated that a Truss-led Government would favour targeted, rather than universal, support to help people with the cost of living.[49]

Rishi Sunak has committed to cut VAT on energy bills.[50] Based on an average bill of £5,000 per year in 2023, this would save the average household around 5% or £238 at a cost of £6.7 billion per year. Rishi Sunak has also committed to an additional £5 billion of direct support to the most vulnerable households.[51]

Both Truss and Sunak's proposals would help a little. But they pale in significance to the enormous rise in energy costs for most households.

Issue 2: Existing proposals rely too heavily on taxing UK oil and gas production to pay for them.

In May, the Government announced a windfall tax on oil and gas produced in the UK.[52] The *Energy (Oil and Gas) Profits Levy Act 2022* increases the headline tax paid by UK oil and gas producers from 40% to 65% from May 2022 onwards.

The windfall tax includes a new 80% investment allowance that will reduce a company's tax bill by 91p for each £1 they invest in new UK oil and gas production. This is intended to boost investment in new UK oil and gas wells, to improve UK energy security. The Government has committed to phase out the tax "if oil and gas prices return to historically more normal levels". In addition, the tax expires at the end of 2025, unless extended by Parliament.

When the measure was announced, the Government expected the tax to raise approximately £5 billion per year. Since May, gas prices have risen significantly, which suggests that the levy is likely to bring in more money than expected. The Office for Budget Responsibility (OBR) will produce an independent forecast of expected revenue the next time it updates its economic forecasts (expected at the Autumn Budget).[53] In addition, higher gas prices mean that the Government will receive more Corporation Tax revenue from UK gas producers.

Labour and the Liberal Democrats want to increase the windfall tax on UK oil and gas production.

The Labour Party has criticised certain elements of the windfall tax, arguing that it should be backdated to January 2022, the date when Labour first called for a windfall tax.[54] They also argue that the investment allowance, which they call "an absurd loophole", should be removed. These measures, plus higher prices than originally forecast, mean that Labour argues they could raise an extra £8 billion from a reformed oil and gas windfall tax.

The investment allowance in the windfall tax is opposed by many climate campaigners on the grounds that additional UK oil and gas production is inconsistent with the UK's Net Zero target.[55] However, the geopolitical fallout from Russia's invasion of Ukraine means that Europe is likely to face a deficit of gas supplies for a number of years, even if countries like the UK go faster on renewables, nuclear and insulation. In this context, higher UK production is replacing expensive imports rather than increasing domestic or global emissions.

Some have argued against UK production because it won't reduce UK gas prices, which are set in relation to prices in international markets.[56] Even if this is true, UK production increases UK tax revenues, which the Government can use to subsidise domestic energy bills.

The challenge for the Government is to ensure that higher domestic oil and gas production doesn't become an excuse to avoid cutting demand for fossil fuels. Given the Government's existing commitments on Net Zero, this risk appears manageable.

The Liberal Democrats also want to raise more revenue from the UK's oil and gas sector. They have argued that an expanded windfall tax could raise £20 billion.[57] The Lib Dems highlight the profits of BP and Shell, two UK-headquartered global oil and gas companies.

It is not clear whether the Liberal Democrats are only calling for the tax on *UK production* to be increased, or if their plan would target profits earned overseas. Any move to tax the international profits of UK-headquartered oil and gas companies could have severe negative consequences, including encouraging them to move their headquarters overseas, reducing UK jobs and tax revenues.

The Government should also target the extraordinary windfall earned by some UK electricity generators, particularly wind farms.

Increasing gas prices have led to corresponding increases in electricity prices. This is in part because 40% of the UK's electricity comes from gas-fired power stations and so the overall cost of producing electricity has increased.[58] In addition, the gas price has an outsized influence on the electricity price because the electricity price is set by the most expensive generator that is generating at any point in time, known as the "marginal generator" (Figure 3).

In the UK, the marginal electricity generator is almost always a gas-fired power station. This means that, when gas prices soar, so do electricity prices.

One outcome of marginal pricing is that generators with lower operating costs (for example wind, solar, nuclear and biomass) are paid based on the price of gas, rather than their own underlying costs. This means that, if gas prices rise, these "low-cost generators" get paid more, even though their underlying costs haven't changed (Figure 4).

Figure 3: Explanation of marginal electricity pricing.

Source: Onward.

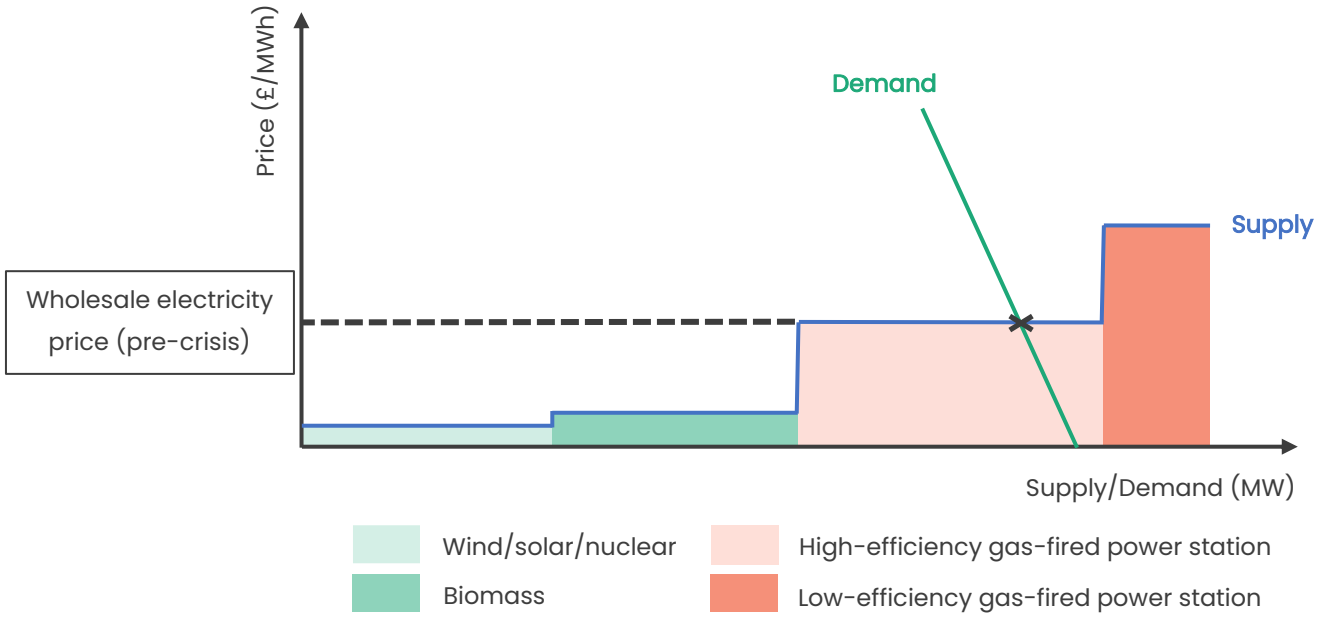
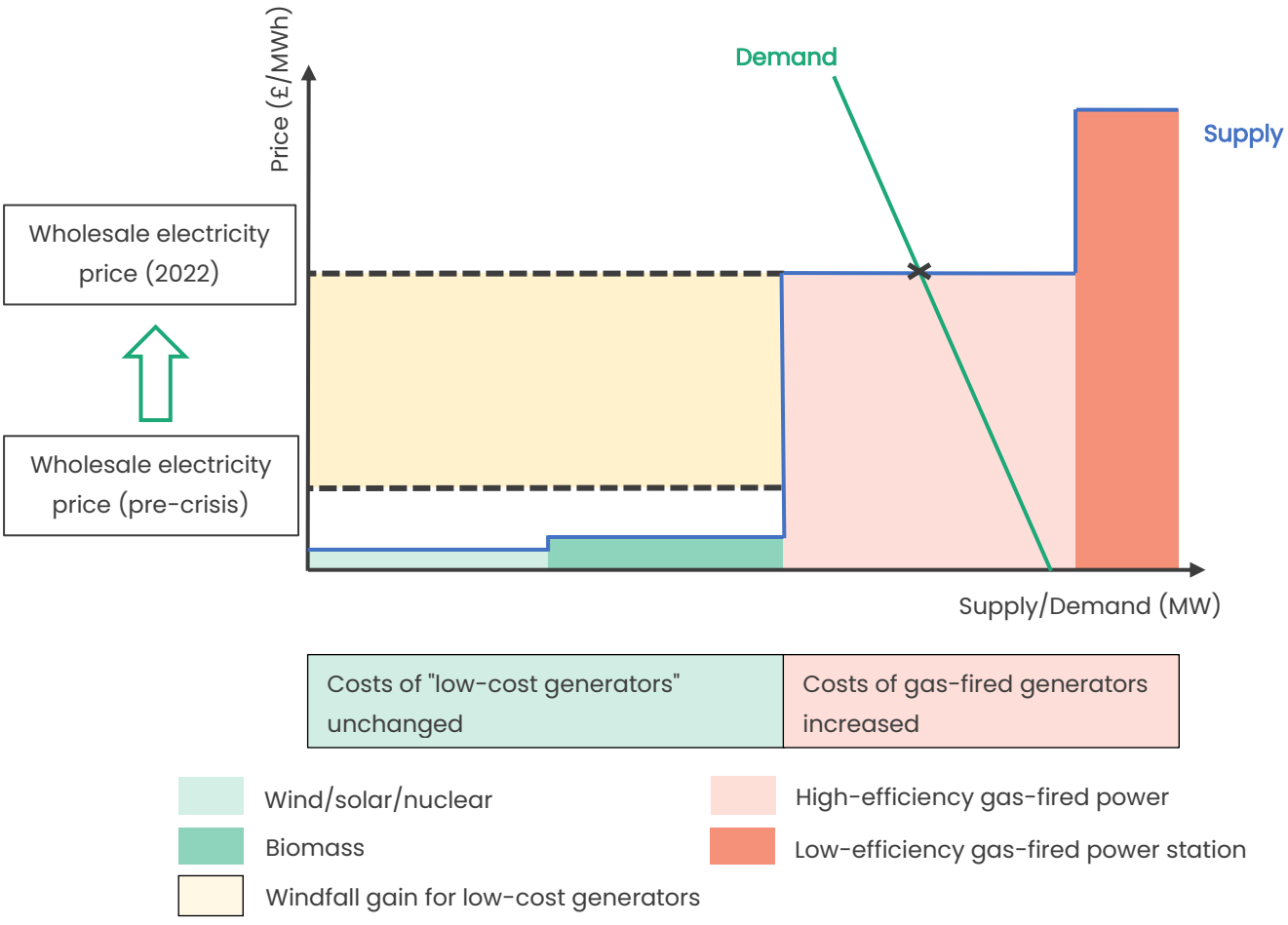


Figure 4: Schematic showing how the profits of low-cost generators can increase when gas prices rise.

Source: Onward.



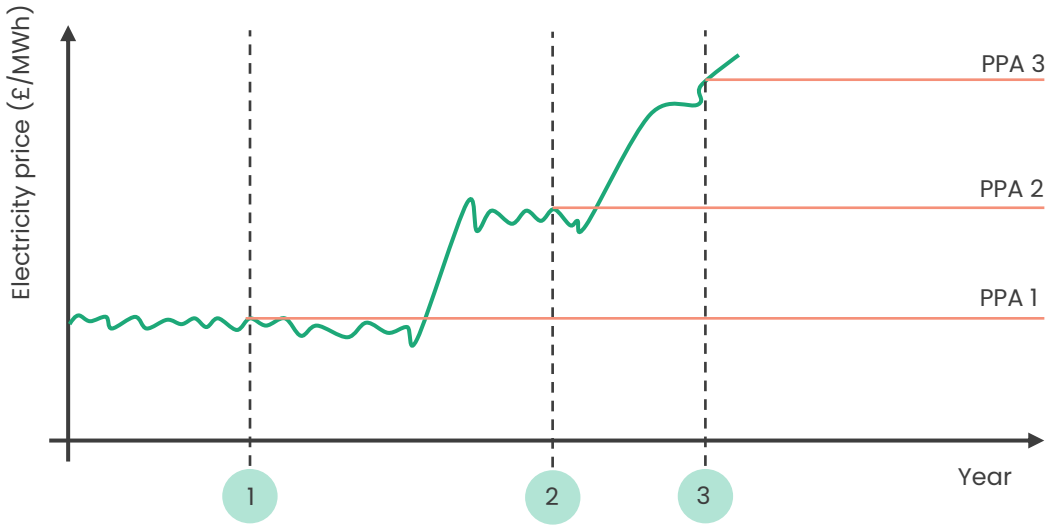
There are alternatives to marginal pricing, as explored in Onward's Research Note, *Powering the Future*, published in July 2022.[59] However, these will all take time to implement, and the Government will need to tread carefully to retain the confidence of investors. Therefore, market reform is not a practical option to reduce energy bills during the current crisis.

In 2021, low-cost generators (wind, solar, nuclear and biomass) generated 55% of UK electricity demand, suggesting the potential for substantial extraordinary profits in the sector.[60] However, many low-cost generators have not received a windfall from current higher prices. There are two reasons for this:

1. Around 6.5% of the UK's electricity (12% of low-cost generation) is produced by generators that have signed long-term, fixed-price contracts with the Government under the "Contracts for Difference" (CfD) regime.[viii]
2. Many low-cost generators sell their electricity to traders and customers through multi-year, fixed-price Power Purchase Agreements (PPAs). The price of these PPAs would have been fixed when real-time ("spot") market prices were much lower. Forward prices are typically closely linked to spot prices, an effect that is shown schematically in Figure 5.

Figure 5: Schematic showing how generators with Power Purchase Agreements (PPAs) may be missing out on current high prices.

Source: Onward analysis.



Earlier this year, the Government stated that it was exploring a windfall tax in the electricity sector, targeting the extraordinary profits of low-cost generators. In May 2022, then-Chancellor Rishi Sunak said that the Government was "*urgently evaluating the scale of these extraordinary profits and the appropriate steps to take*".[61]

In July, following the announcement that Boris Johnson would step down as Prime Minister, the Government stated that it is no longer planning a windfall tax on low-cost electricity generators in part due to the limitations on a government announcing substantial new policies while a

[viii] Data from the LCCC shows that, in 2021, CfD-backed generators generated 21.7 TWh of electricity (Low Carbon Contracts Company (2021), CfD Actuals). UK electricity demand was 334.2 TWh (Vanessa Martin, *Dukes UK Energy Statistics* (2022), *Chapter 5: Electricity*, p.1).

leadership election is ongoing. In addition, as described above, it is difficult to identify which electricity generators have received a windfall.

A windfall tax on electricity generators could harm the confidence of investors in the UK's renewables sector. This sector is due to expand rapidly in the next few years, so any impact on investor confidence could raise costs and delay new projects. But investors would not have expected these extraordinary profits, and the scale of the challenge means that investors will understand the Government's logic in imposing a windfall tax, even if they don't agree with it.

Issue 3: Existing proposals don't focus on cutting energy demand. Without reducing demand, there is a higher risk of energy shortages.

Current proposals focus almost entirely on subsidising energy consumption, and generally ignore measures to reduce demand. High gas prices are sometimes framed as a problem solely of affordability, not of availability. However, prices are high precisely because there is a shortage of supply. This suggests that any further disruptions to energy supply, or a spike in demand due to cold weather, could lead to higher prices or blackouts.

Richer households have significant potential to cut back on their energy demand. By subsidising richer households to consume energy, the measures proposed by opposition parties and energy suppliers would put upwards pressure on energy demand, exacerbating shortages. Targeted measures, as proposed by the *Resolution Foundation*,[62] the *Centre for Social Justice*,[63] and others, would help poorer households to meet their basic needs, whilst encouraging energy saving by those who can.

In energy crises, governments tend to encourage energy saving.

Japan, following the Fukushima nuclear disaster in 2011, closed many of its nuclear power stations resulting in energy shortages. In response, the Government promoted energy saving measures. Energy-saving measures included a public campaign to promote initiatives called "Cool Biz" and "Warm Biz". The "Cool Biz" campaign promoted business-casual attire in the summer so that air conditioning could be used less, saving energy. Similarly, "Warm Biz" encouraged people to wear warmer clothes in homes and offices to reduce the use of heating.[64]

During the current crisis, European countries have already put in place measures to cut energy demand.

At EU level, the bloc has committed to reducing its natural gas consumption by 15% compared to last winter through its "*Safe Gas for a Safe Winter*" plan.[65] The plan also includes a new legal tool that would allow the EU to declare a mandatory demand reduction target in an emergency situation.

In Germany, the Government has put restrictions on the heating of public buildings and may soon ban the heating of private swimming pools[66]. The Government is distributing information on voluntary, small but effective energy-reducing measures, and is offering state subsidies for energy-efficient renovations (e.g. replacing windows). They have temporarily suspended the contractual obligation for tenants to maintain a minimum temperature in rented rooms,[67] and

plan to make it mandatory for landlords to carry out hydraulic adjustment if they have not already done so, and replace inefficient, uncontrolled heat pumps with a central heat supply.[68]

In France, the Government has banned the heating or cooling of outdoor terraces, ordered air-conditioned shops to keep doors shut, and restricted illuminated advertising and air conditioning in Government offices.[69]

Spain is better insulated than many EU countries from disruption of Russian gas supplies. Like the UK, Spain has several import terminals for Liquified Natural Gas (LNG). In addition, the gas pipelines between Spain and France have a relatively low capacity, which means that, like the UK, Spain can only provide limited support to the rest of the EU's gas grid, reducing the risk of shortages in Spain. Nevertheless, the Spanish Government has introduced energy-saving measures, including restrictions on the use of air conditioning, heating and lighting in public buildings, commercial buildings and hospitality venues. The Spanish Government has also urged offices to increase remote working and relax dress codes.[70]

The UK Government should put in place similar energy-saving measures. Without a coordinated programme of energy saving, elevated demand will continue to put upwards pressure on UK energy prices. In the most extreme scenario, the Government will have to ration energy supplies, for example by forcibly disconnecting companies or even households from the gas and electricity networks. This would bring significant hardship to vulnerable groups, especially when compared to the alternative of implementing a coordinated and broad-based programme of energy saving.

Issue 4: Existing proposals don't include concrete proposals to diversify fuel supplies.

Existing proposals mention the need to increase supply, but mainly through projects that will take several years to build, including wind and solar farms, and new nuclear power stations. Therefore, while important, these new projects won't address the current energy crisis.

One of the only options available to the Government this winter is to diversify away from gas, and towards other fuels such as coal and oil (diesel). This will require taking some temporary steps that are uncomfortable in the context of net zero and the need to tackle air pollution, but which are necessary to maintain security of supply during a critical period.

This should not be used as a pretext to reverse commitments to net zero (especially given the crisis reinforces the risks of relying on international gas supplies) but it does require a pragmatic approach that balances short-term security with long-term sustainability.

Other European countries have already started the process of diversification. Germany has passed emergency legislation to reactivate closed oil- and coal-fired power plants as a temporary measure,[71] and delayed the closure of 3 nuclear plants.[72] Similarly, the Netherlands has removed a cap on production from Dutch coal plants.[73]

Issue 5: Existing proposals don't address the risk that governments may cut off energy exports during shortages.

The current crisis poses unprecedented challenges for European energy systems. To date, supplies have been kept secure by markets redirecting energy supplies to where they are needed most. Norway has kept its gas exports flowing, helping countries like Germany to fill up their gas storage facilities before winter. Similarly, countries like the UK and Spain have imported cargoes of Liquified Natural Gas (LNG), exporting some of this to countries in Western Europe that are suffering most from the loss of Russian supplies.

However, if shortages worsen, there is a risk that countries will unilaterally suspend energy exports, as happened during the pandemic at times with PPE and vaccines. This would make the shortages worse.

The main risk to the UK would come from the French Government suspending electricity exports to Great Britain. During times of low wind, the UK typically imports electricity from France, which normally has a surplus due to its large nuclear fleet. However, the French nuclear power fleet is experiencing huge challenges, with over half of French nuclear power plants currently offline for maintenance.[74] While many of these plants are expected to come back online over the winter, outages on some plants have been extended due to corrosion that needs to be repaired.

These risks are not purely hypothetical. During the Brexit negotiations, the French Government threatened to cut off electricity supplies to Jersey.[75] And, during the current crisis, Nordic grid operators have raised concerns about the impact of a potential Norwegian ban on electricity exports if hydro reservoir levels get too low.[76] To address these risks, the UK must engage more with the EU and Norway to develop a clear plan for how energy would be rationed across Europe in the event of shortages.
In addition, in response to high electricity prices the EU is considering emergency reforms to its electricity markets.[77] [78] [79] These reforms could include a price cap on gas-fired power stations, mirroring similar reforms in Spain and Portugal.[80] These reforms would weaken the link between gas prices and electricity prices; however, this plan has major risks, including distorting electricity flows across borders.

To mitigate these risks, governments and grid operators in the UK, the EU and Norway must establish new emergency protocols to keep energy supplies flowing in the event of emergencies. This could include developing proposals to keep supplies flowing even if markets have to be suspended.

A Five-Point Plan for the Energy Crisis

Onward's proposals are grouped into five categories, each addressing one of the issues identified in the previous section:

1. Getting targeted financial support to households
2. Raising revenue with a windfall tax on "low-cost electricity generators"
3. Cutting energy demand
4. Diversifying fuel supplies
5. Keeping energy flowing across borders

These interventions are focused on the short and medium term (between now and the next 24 months). They are intended to be comprehensive, addressing all aspects of the crisis: helping households with bills, raising revenue, reducing energy demand, and diversifying energy supply. They are also pragmatic. The crisis will require policymakers to introduce measures that are uncomfortable or controversial. The scale of the costs that households face demands a serious and considered plan.

This report does not focus on businesses. Numerous organisations have proposed specific measures to support businesses, including reducing VAT on business energy from 20% to 5% to match household energy bills and reforming council tax to avoid high street businesses already affected by online competition being further disadvantaged.[81] These are worthwhile suggestions that we agree the Treasury should explore, but we do not address them in this paper given the urgency of a consumer package.

In the longer term, there is lots that the UK can do to reduce energy bills, including investing in energy efficiency measures, increasing energy supply and storage, and reforming the UK's electricity market. Onward recently published a research note exploring the Government's ongoing *Review of Electricity Market Arrangements*.[82]

1. Getting targeted financial support to households

Higher-than-expected energy prices mean that additional Government support needs to be in place by October, when the new price cap comes into force. This gives the new Prime Minister just four weeks to design and implement an expanded financial package. As discussed above, the sheer scale of the challenge means that this support should be targeted rather than universal. However, the new Prime Minister won't have time to design a new, targeted scheme.

During the pandemic, the Government showed that it could move at pace when it is on an emergency footing, for example when designing and implementing the furlough scheme in just a few weeks. However, those advocating targeted support (including this report) must be realistic about the Government's current ability to target those in need, particularly those who earn just too much to receive means-tested benefits.

Energy suppliers are currently making changes to their systems to deliver a £400 discount to all households through the *Energy Bills Support Scheme* by October 2022. However, targeting

support to a subset of households would add an additional layer of complexity that would take additional time to implement.

Therefore, the incoming Prime Minister should take a two-stage approach to supporting households with rising energy bills:

1. By 1st October, the Government should implement short-term changes to support households between October and December 2022 (Recommendations 1 and 2 below). This will buy the Government time to design a new energy package.

2. By 1st January 2023, the Government should put in place a new, targeted support package (Recommendation 3). This new scheme should be designed to help households with the expected further rise in the price cap from January, and to replace the existing *Cost of Living Support* payments, which will have expired by the new year.[83]

Recommendation 1: Accelerate payment of the planned £400 energy bill discount, paying the full amount by Christmas, rather than the end of winter as planned.

With the price cap increasing in October, the average household faces paying £722 more for energy in Q4 2022 (October - December) compared to the same period in 2021 (Table 3).

Households will be partially compensated for rising energy bills through the *Energy Bills Support Scheme* (EBSS), which will provide all households with a £400 discount on their energy bills. Under current plans, the EBSS will be paid to households in six instalments of £66 between October 2022 and March 2023 inclusive.[84] Once the EBSS is taken into account, the net average bill increase in Q4 2022 is expected to be £522 for the average household compared to the same period in 2021.

Further support will be available for some groups in the form of one-off *Cost of Living Payments*. For example, individuals receiving means-tested benefits will receive a payment of £324 this autumn.[85] Similarly, pensioners are expected to receive a payment of up to £600 before the end of this year. These one-off payments will make higher energy bills in Q4 more affordable for these groups. However, bill increases may still be unaffordable for many people earning just above the threshold for means-tested benefits.

To help those earning too much to receive means-tested benefits, the Government should bring forward the £400 discount paid under the EBSS. Instead of paying the discount over six months, the discount should be paid in three instalments of £133 in October, November and December 2022. This would reduce the expected average increase in household bills to £322 until the end of the year. (Table 3).

Discussions with energy suppliers suggest that there is still time to implement this change in time for the first payment due in October.

Crucially, this policy will buy the new Prime Minister time to introduce a new, targeted support package from January 2023.

Table 3: Average household energy bill in Q4 2022 and 2021 (October - December inclusive), under various scenarios for Government support.

Source: Onward analysis of historical and forecast household energy bills (see Figure 2).

Scenario	No Government support	EBSS as planned (£66/month)	Accelerated EBSS (£133/month)
Average bill Q4 2021 (£)	£371	£371	£371
Average bill Q4 2022 (£)	£1,093	£1,093	£1,093
EBSS discount (£)	-	-£200	-£400
Net bill increase (£)	+£722	+£522	+£322

The new Prime Minister must also ensure that support reaches households in Northern Ireland. With no Northern Ireland Executive currently in place, there are fears that the £400 energy bill rebate may not reach households quickly.[86] The latest reports suggest that there may be a workaround that would allow households to receive the discount as a lump sum before Christmas 2022.[87] The new Prime Minister should ensure that this is delivered, and that any subsequent support package can also be delivered to people in Northern Ireland in a timely manner.

Recommendation 2: Eliminate the "prepayment premium" for customers with prepayment meters, at a cost of £266 million per year.

Under the energy price cap, customers pay a different amount depending on how they pay their energy bill. Customers paying by Direct Debit face the lowest cost, whereas customers on prepayment meters pay a premium of £59 per year.

Ofgem justifies this premium because it costs energy suppliers more to sell energy to these customers, for example due to the cost of metering and higher incidence of bad debt. However, at the current time it is impossible to justify these premiums as fair, especially as Ofgem assesses that prepayment customers are more likely to be vulnerable and in fuel poverty.[88] The Labour Party has already proposed removing the prepayment penalty.[89]

To make the system fairer, the Government should commit to paying, in full, the premium paid by customers on prepayment meters from October 2022 onwards and for the duration of the current crisis. This would cost an estimated £266 million per year.

Given many of these customers are on lower incomes, this additional support will be well targeted. This support could be delivered relatively easily by increasing payments to these customers under the *Energy Bill Support Scheme*, or by subsidising energy suppliers directly.

The Government should also explore measures to reduce or eliminate the premium paid by the 17% of customers who pay by "standard credit" (paying by cash or cheque in arrears). From October, these customers will pay a premium of £215 per year, which Ofgem justifies as the cost of serving these customers is higher.

Any Government action must be well calibrated to avoid encouraging customers to cancel Direct Debits en masse and moving to standard credit arrangements; this could cause major cash flow problems for energy suppliers at a time when they are already under financial strain.

Recommendation 3: From January 2023, the Government should provide additional, targeted financial support, totalling £47.3 billion in 2023.

None of the existing proposals from Opposition Parties or energy suppliers call on the Government to target support at households that need it most. Everyone - from low earners to the richest households, low energy users to people with heated swimming pools - would get the same taxpayer support.

This is in part because it is difficult to target those in need due to imperfect Government data and IT systems. The Government has data on individuals receiving means-tested benefits, pensioners' benefits and those with disabilities, which is why the Government's current support packages target these people. These difficulties are not unique to the UK. The German Government is facing similar challenges trying to identify at-risk groups and distribute support to them.[90]

Higher energy prices mean that the new support package will need to be bigger, and will need to reach those higher up the income scale where possible. The Government should also target additional support to people who are likely to have higher energy bills, including those with children and people with disabilities. However, issues targeting households mean that the new package must include an element of universal support.

This report proposes a support package that is generous but fair:

1. **The Government should pay the first £1,000 of every household's energy bill in 2023.**

   Recommendation 1 calls on the Government to accelerate the payment of the planned universal £400 energy bill discount. In an ideal world, the Government would not repeat universal measures such as this as they are poorly targeted. However, the difficulty targeting low- and middle-income households means that some universal support is needed.

   The Government should provide all households with a £1,000 discount on their energy bills in 2023, added directly to electricity meters. This will cover 20% of the expected average household energy bill in 2023 (£5,000), effectively a taxpayer-funded discount on energy bills. Because this universal payment is so much higher, the Government should not repeat the £300 payment to all pensioners, instead relying on Pension Credit to provide extra support to pensioners with low incomes and low savings.

This payment has disadvantages: it would provide a double benefit to owners of second homes, as they would receive the credit at both properties. This is an unfortunate feature of providing support via energy bills. If the Government wants to claw back some money from second-home owners, then it could potentially do so by capping the discount at 25% of an annual energy bill - this may work because second homes are likely to be used less and therefore have lower energy bills. This approach would be more difficult to implement for customers with non-smart prepayment meters, as suppliers have less control over these meters.

2. **Introduce a temporary £1,000 payment for those receiving means-tested benefits.**

   The 2022 *Cost of Living* package included a payment of £650 for households receiving means-tested benefits, including both working-age benefits and pensioner benefits (Pension Credit). In 2023, these payments should be repeated and expanded to £1,000 per household. This means that a household receiving means-tested benefits would receive £2,000, covering 40% of the expected average energy bill in 2023.

   Some means-tested benefits have poor takeup, particularly Pension Credit which is only claimed by 1.4 million of the 2.35 million people that are estimated to be eligible for the benefit.[91] The Government should run additional advertising to publicise benefits like Pension Credit and should work with third-sector organisations to do the same.

3. **An additional £500 per child for families claiming Child Benefit, up to a maximum of two children.**

   To date, the Government has not given extra support to families with children, despite the fact that households with children use more energy. For example, the *Resolution Foundation* calculates that, this winter, the energy bill rise for a family with one child will be around £200 greater than for a household with no children, and £400 higher for a family with three or more children.[92] Over the course of 2023, families with children will be paying hundreds of pounds more in energy bills than those without.

   By targeting support at families receiving Child Benefit, the money will be targeted towards households where no individual earns over £60,000 per year (net of certain tax reliefs),[93] limiting the funds paid to the richest households.

4. **An additional £500 for people with disabilities.**

   The 2022 *Cost of Living* package included payments of £150 to those with disabilities, recognising the higher energy usage of people with disabilities. In 2023, these payments should be repeated and increased to £500 (10% of the expected average household energy bill).

5. **An additional £2 billion for the *Household Support Fund*.**

   Inevitably, some people will slip through the cracks of Government support, for example because they earn just over the threshold for means-tested benefits or because they have a disability that means they use significantly more energy than the £500 payment included in this package. To address this problem, the Government should commit an additional £2 billion to the Local Authority-led *Household Support Fund*, which was set up during the pandemic.

This package would offer a broad distribution of support but targeted help for the most vulnerable households. This proposed package would provide **all households with £1,000 of support**, equivalent to 20% of the expected energy bill in 2023. **A family with two children and on means-tested benefits would receive £3,000** during 2023. This would cover 60% of the average energy bill and 100% of the average increase; however, families are still likely to see higher bills than last year due to higher-than-average energy usage.

Proposed payment schedule:

The new financial package should target support during the winter months, when energy bills are higher. Customers paying by Direct Debit can smooth their energy costs throughout the year, going into credit in summer and into deficit over the winter. However, prepayment customers do not have this option, which means that it is critical to concentrate support during the winter months when bills are higher.

The support package should be paid in six monthly instalments, aligning with the monthly payment schedule of benefits. These payments should be split between this winter (January, February and March 2023) and next winter (October, November and December 2023), as shown in Table 4.

This package would cost an estimated £47.3 billion in 2023 (Table 5). This a huge Government intervention but 44% cheaper than a universal bill freeze, assuming that average household energy bills are £5,000 in 2023 (Table 6). In addition, because this package does not change the unit price of energy, it maintains greater incentives for households to save energy where possible. It would also be easier to unwind after the crisis than a full bill freeze, which consumers may quickly come to expect.

Table 4: Proposed payments schedule for individuals in different circumstances.

Source: Onward analysis.

Individual	Jan	Feb	Mar	Apr - Sept	Oct	Nov	Dec	Total
Basic payment	£167	£167	£167	-	£167	£167	£167	£1,000
Disability	£250	£250	£250	-	£250	£250	£250	£1,500
Means-tested benefits	£333	£333	£333	-	£333	£333	£333	£2,000
Means-tested benefits + 1 child	£417	£417	£417	-	£417	£417	£417	£2,500
Means-tested benefits + 2 children	£500	£500	£500	-	£500	£500	£500	£3,000

Table 5: Estimated cost of support package versus a bill freeze at the Summer 2022 price cap.

Note: Assumes an average household energy bill of £5,000 in 2023.

Source: Onward analysis.

Category	Payment	No. of Individuals/ Households	Cost per year
Universal support	£1,000 per household	28.1m Households.[94]	£28.1bn
Means-tested benefits	£1,000 per household	8m Households.[95]	£8.0bn
Child Benefit	£500 per child	12.31m children.[96]	£6.2bn
Disability Benefit	£500 per individual	6m individuals.[97]	£3.0bn
Household Support Fund	£2bn	N/A	£2.0bn
Total	-	-	£47.3bn

Table 6: Comparison of proposed package with a bill freeze.

Source: Onward analysis.

Item	Value
Total (bill freeze)	£85.1 billion per year
Total (proposed package)	£47.3 billion per year
Saving (£ billion)	£37.9 billion per year
Saving (%)	44%

Recommendation 4: The Government should explore the feasibility of creating a new "Energy Cost Support" benefit entitlement aimed at those on low- and middle-incomes who do not qualify for Universal Credit.

As discussed above, it is hard for the Government to identify low- and middle-income households that do not qualify for means-tested benefits. This is why the proposed package includes £1,000 for all households.

If the Government could target households on low- and middle-incomes, then it would allow them to phase-out support for those on higher incomes. For example, the Government could replace the £1,000 universal payment with a targeted "Energy Cost Support" benefit paid to all individuals that earn below a threshold (e.g. £40,000 to £50,000 per year) while energy prices remain high.

Universal Credit is the best system that the Government has for targeting people on low-incomes. In theory, the new Energy Cost Support benefit could be implemented as a new system that sits alongside Universal Credit and is based on similar systems.

This would save the Government billions of pounds per year compared to providing universal support, and so should be urgently explored. If feasible, this new system should start from January 2024 (assuming energy prices remain high), when the proposed package expires.

There are also other ways to implement targeted support. For example, the *Resolution Foundation* has proposed energy bill discounts for low- and middle-income households.[98] The additional complexity with this proposal is that it requires energy suppliers to access Government data, which is likely to take additional time to implement. However, the benefit is that it better compensates households for their actual energy use (unlike a lump-sum payment).

2) Raising revenue with a windfall tax on "low-cost electricity generators"

Recommendation 5: The Government should introduce a new windfall tax on "low-cost electricity generators", to raise between £4 billion and £10 billion per year.

To partially fund Onward's proposed package of financial support (Recommendations 1-3), the Government should introduce a windfall tax on electricity generators that have made huge unexpected profits from the rising cost of gas, including wind, solar, nuclear and biomass.

The tax should be structured as a 75% tax on revenue greater than £100 per megawatt-hour (MWh) produced by "low-cost electricity generators"; £100 per MWh is around double the pre-crisis wholesale electricity price. This tax rate is higher than the headline rate applied to oil and gas because it only applies to revenue above a threshold.

To ease the administrative and enforcement burden of this tax on the smallest producers, this tax should apply to all generators greater than 5 megawatts (MW), which has previously been used as a threshold for defining small-scale electricity installations.[99]

As discussed above, many generators will not have received a windfall because they have sold electricity at a fixed price, either to the Government via CfDs or to private companies via a Power Purchase Agreement (PPA).[ix] By structuring this measure as a tax on "revenue above a threshold per MWh", generators will only pay the tax if they have received a windfall.[x]

The main downside of this approach is that generators may try to game the system by shifting revenue to different legal entities. For example, a wind farm could sign a below-market-rate PPA with a connected entity to avoid the tax. The connected entity could then sell the power on the open market for a large profit. To mitigate this risk, the legislation should include anti-avoidance provisions, including for vertically-integrated companies that both own generators and supply customers.

The revenue raised by this new tax will depend on two factors: the wholesale electricity price and the proportion of low-cost generators that have received a windfall.

In the past few months, forward electricity prices have ranged between approximately £300 and £600 per MWh.[100] These figures are used in the two scenarios presented below. Industry experts have suggested to Onward that around 25% of non-CfD-supported generators could be accessing current high wholesale prices, or will be as new contracts are negotiated over the next year. However, it is not possible to estimate this from public data, which makes this assumption highly uncertain.

Using these assumptions, a windfall tax on low-cost electricity generators could raise additional tax revenue of between £4 billion and £10 billion per year, equivalent to funding £146 to £364 of relief per household per year (Table 7).[xi]

[ix] Some older CfD-support generators have a fixed price ("Strike Price") of over £100 per MWh. These generators should also be exempt from the revenue tax.

[x] In addition, the subsidy received by ROC-supported generators should be exempt from the tax calculations. The tax should be based solely on revenues from the wholesale and related markets (e.g. balancing services and constraint payments).

[xi] Onward's calculations are broadly in line with reported internal forecasts from HM Treasury. According to Bloomberg, internal Treasury forecasts show that gas and electricity producers are expected to receive a windfall of £85 billion per year (£170billion over two years). Of this, 40% is reportedly estimated to go to electricity generators (£34 billion per year). (Alex Wickham & Todd Gillespie, *Bloomberg UK* (August 2022), *UK Sees Up to £170 Billion Excess Profits for Energy Firms*)

Onward's calculations suggest an electricity producer windfall of between £9.1billion and £20billion per year. HMT's reported calculation is likely to also include profits made by gas-fired power stations, which are not included in this calculation. Gas-fired power stations will have a relatively small windfall compared to low-cost generators, because the cost of their input fuel has also increased.

Table 7: Estimated revenue from a windfall tax on "low-cost electricity generators"

Source: Onward analysis of BEIS and LCCC data on low-carbon generation in 2021

Item	Units	Scenario 1: Lower price	Scenario 2: Higher price
Generation:			
Renewables (Wind/solar/bio)	TWh/year	121.9	121.9
Nuclear	TWh/year	45.9	45.9
Low-cost generation (RES + Nuc)	TWh/year	167.8	167.8
Exemptions:			
Exempt (CfD)	TWh/year	21.7	21.7
Exempt (PPA)	%	75%	75%
Generation eligible for windfall tax	TWh/year	36.5	36.5
Wholesale electricity price:			
Pre-crisis wholesale price	£/MWh	50	50
Forecast wholesale price	£/MWh	300	600
Producer windfall	£bn/year	9.1	20
Windfall tax parameters:			
Wholesale price threshold	£/MWh	100	100
Tax rate	%	75%	75%
Corporation tax rate	%	19%	19%
Additional tax take	%	56%	56%
Revenue:			
Additional annual tax revenue	£bn/year	4.1	10.2
Households	millions	28.1	28.1
Revenue per household	£/household/year	146	364

Could a windfall tax deter much-needed investment in renewables?

There are some people who would argue that this windfall tax could deter much-needed investment in renewable energy projects such as offshore wind farms. However, this is unlikely for three reasons:

1. **Investors that have received a huge windfall would not have expected it**.

   Very few investors, if any, would have invested in their projects with the expectation that wholesale electricity prices would reach such extreme levels. These extreme prices are clearly a national emergency. In this context, investors are likely to be more understanding of a windfall tax, so long as it is targeted on those producers that have received a windfall.

2. **There is a huge pool of capital available to invest in UK renewable energy projects**.

   This is evidenced by the record investment, at record low prices, in each round of the UK's Contracts for Difference (CfD) auctions for renewables like offshore wind. Therefore, taxing the extraordinary profits of low-cost electricity generators will only have a minor impact on the capital available to invest in UK renewable energy projects. The supply of capital available to invest in UK renewable energy projects will be further boosted by the increasing number of companies and investment funds setting ambitious ESG goals.

3. **Governments across Europe are implementing similar measures.**

   Spain and Portugal have changed the rules in their electricity market to try and limit the profits of low-cost generators,[101] and Ireland is also considering a windfall tax on electricity producers.[102] Therefore, the UK would not be outlier if it introduced a windfall tax, limiting the potential damage to the UK's reputation as a good place to invest in renewable energy projects.

3) Cutting energy demand

Cutting energy demand is critical to reduce the UK's energy costs and to reduce the risk of blackouts. There are several steps that the Government can and should take to reduce energy demand. Some of these measures should be put in place immediately and maintained until the crisis is over. Other, more extreme measures, should be held as contingency measures that could be activated in the case of shortages.

Immediate measures:

Recommendation 6: The Government should launch a national energy-saving campaign for households and small businesses.

This should include guidance for households and small businesses on how to reduce their energy consumption in a controlled manner, including:

- Fixing draughts;
- Reducing boiler flow temperatures;
- Reducing thermostat settings; and
- Setting timers for heating systems, including setting timers on electric boilers.

The Government should also provide guidance for households on energy-efficiency investments with short payback periods, including LED lighting and upgrades to building fabric. Some of this advice will only be useful for higher-income households that can afford the upfront cost of more expensive energy-saving measures.

Extreme energy prices mean that some energy-saving technologies now have an incredibly favourable payback period. For example, with electricity prices at 50p per kWh, replacing a 40W halogen light bulb with a £3 LED bulb (5W) has a payback period of just 170 hours of operation.[xii] Therefore, households switching to LEDs could make savings before the end of this winter.

Households and small businesses could also be rewarded for participating in "demand-side response" schemes run by the operator of Great Britain's electricity grid, *National Grid ESO*. These schemes aim to reduce demand for electricity at peak times, reducing the risk of electricity shortages.[103] The Government should ensure that these schemes are well publicised to ensure the greatest possible takeup.

Finally, the Government should provide funding for Local and Combined Authorities to develop "energy advice" teams. These teams could phone and/or visit low-income households and provide energy-saving advice. Once the current crisis has passed, these teams could be deployed to help coordinate building insulation and other retrofit programmes.

[xii] At 50p/kWh, a 5W bulb will cost 0.005*0.5 = 0.25p per hour to run, while a 40W bulb will cost 0.04*0.5 = 2.00p per hour. Therefore, the 5W bulb will save 1.75p per hour, and will pay back its £3 cost in 171.4 hours.

Recommendation 7: The Government should impose a new "Basic Energy Efficiency Obligation" on landlords and Housing Associations.

One third of English households live in either private-rented or social-rented (Housing Association-owned) accommodation.[104] These households are likely to have a lower income than the national average and spend more of their disposable income, on average, on housing costs.[105] This means that they are more vulnerable to higher energy prices. In addition, tenants are less able to improve the energy efficiency of their property compared to owner-occupiers. Therefore, the Government should require landlords and Housing Associations to undertake a one-off survey of their properties by the end of 2022 to identify inefficiencies. They should then have until April 2023 to ensure that their properties meet a new "Basic Energy Efficiency Obligation".

The Obligation should include:

- Identifying and fixing any obvious draughts, for example around doors and windows;
- Ensuring that all lights are low-energy LEDs; and
- Ensuring that all heating systems are set to operate efficiently (e.g. gas boilers operating in condensing mode), have a working thermostat for space heating, and have a working timer for hot water heating (only applies to properties with hot water tanks).

Landlords and Housing Associations should be required to submit a declaration stating that the property meets the required standard. Local Authorities should confirm this through spot checks and based on reports from tenants. The Obligation should be enforced through fines. Any fines, once collected by the Local Authority, should be distributed to tenants in substandard properties to help them pay for their higher-than-necessary energy bills.

If the Government is concerned about the financial impact of these proposals on landlords and Housing Associations, then it could partially fund these basic measures through two existing schemes. Either the Government could expand the scope of the Local Authority-led element of the Green Homes Grant.[106] Or it could expand the Energy Company Obligation (ECO) scheme, under which energy suppliers are required to deliver energy efficiency improvements in homes.[107]

Recommendation 8: The Government should introduce mandatory and voluntary energy-saving measures for businesses, mirroring measures adopted across Europe.

Many businesses will already use less energy this winter due to higher prices. However, there is still a role for the Government to set expectations and drive up standards. Governments across Europe have recognised this, and have introduced a range of mandatory measures for businesses.

Based on measures implemented across Europe, the Government should introduce the following mandatory measures, enforced by Local Authorities:

- Banning the use of outdoor space heaters (e.g. patio heaters) in all commercial premises.
- Requiring big shops to keep doors closed to reduce demand for air conditioning heating.
- Mandating a reduction in the temperature of communal swimming pools.

In addition, the Government should work with businesses on voluntary measures, including:

- Issuing guidance to businesses to reduce heating and air conditioning use in offices by raising maximum summer temperatures and lowering minimum winter temperatures.
- Working with supermarkets to encourage the installation of doors on open fridges.

Contingency measures:

Recommendation 9: The Government should support Local Authorities and businesses to establish "warm spaces", where people struggling with energy bills could go during cold weather.

Even with government support, some people may still struggle to heat their homes this winter, for example because they live in a very energy-inefficient home. One option to help these people is to provide publicly-accessible spaces where people can keep warm.

Cities in Germany have already announced plans to use spaces such as sports halls to provide residents with free access to a warm space.[108] Similar proposals have been announced by UK councils, including in Birmingham, Bristol, Dundee, Glasgow and Aberdeen.[109]

Given the scale of the current crisis, the Government should embrace these proposals as a contingency measure to be used during periods of cold weather, and to help anyone who falls through any cracks in the Government's new support scheme.

The Government should ask Local Authorities to compile a list of public spaces and businesses that are willing to open their doors during cold weather; for example libraries and sports halls. These spaces should be given some funding now to prepare, with further funding provided to help with additional heating bills and/or loss of revenue in the event that the warm spaces are used.

Recommendation 10: The Government and electricity network operators should develop contingency plans to distribute home batteries to vulnerable people to help them during any electricity disconnections.

People with certain medical conditions are especially vulnerable to being disconnected from the electricity grid; for example people with specialised mattresses, feeding systems or lifting equipment.[xiii] The UK's regional electricity network operators (DNOs), already maintain a list of vulnerable customers, known as the *Priority Services Register*.[110]

Customers on the *Priority Services Register* receive more support from their network operator in the event of an electricity outage. This could include providing heating and cooking facilities if supplies are cut off.

[xiii] In Northern Ireland, this is known as the "Critical Care Register" (Northern Ireland Electricity Networks, (n.d.), *Medical customer care register*)

This winter, there are scenarios where some UK households could be disconnected from the electricity network because of gas shortages leading to electricity shortages. In the event of shortages, the grid operator would start by disconnecting large industrial users from the grid. If this is insufficient, then the grid operator would institute a programme of "rota disconnections", with different areas cut off for three hours at a time. For some people, these disconnections pose an elevated health risk.

One way to reduce the risk to vulnerable customers is to give them a backup power supply in the form of a portable battery. This battery, perhaps around 5 kilowatt hours (kWh) in capacity, would allow vulnerable customers to power safety-critical equipment for several hours in the event of a blackout. This type of system has been trialled in the US State of Vermont, where one utility is installing batteries in the homes of one hundred "low-income customers with significant need for backup power reliability because of health and mobility issues".[111]

To identify the customers most at risk, DNOs should be asked to contact the people who are already on their Priority Services Register to determine whether they might benefit from a portable battery. Portable batteries should be procured now and held in reserve.

If the outlook for this winter deteriorates, then DNOs should be instructed to distribute battery packs to eligible customers and to help set them up. On days when rota disconnections are likely, DNOs should contact customers with portable battery packs, reminding customers to keep their backup battery charged and how to use the battery if they are disconnected from the electricity grid.

4) Diversifying fuel supplies

Recommendation 11: The Government should support businesses to switch some processes from gas to oil and coal where possible.

One of the best short-term options to reduce gas demand is to switch existing processes from running on gas to running on oil or coal, for example to generate electricity or heat.

Some industries are already voluntarily switching away from gas, for example in Germany.[112] In the UK, the operator of the electricity grid, *National Grid ESO*, has already signed contracts with old coal-fired power stations to ensure that they are available to generate electricity this winter, after being asked to do so by the Government.[113]

This policy would increase carbon emissions and local air pollution. Because this policy is short term, its impact on the UK's carbon emissions is likely to be very small. The biggest challenge will be the negative impact on air quality, which already exceeds legal limits in many UK cities. The unenviable judgement for the Government is whether an increase in air pollution, with its associated negative health impacts, is justified to reduce the risk of blackouts.

Recommendation 12: Explore options to increase the running hours of coal and diesel generators, including speeding up the issuance of new permits and taking powers that would allow the Government to temporarily relax air quality regulations in the case of energy shortages.

Current rules limit the operations of coal- and diesel-fired generators. These regulations include the Industrial Emissions Directive (IED) for large generators and the Medium Combustion Plant Directive (MCPD) for smaller generators.[114][115]

Some generators may be able to increase their operating hours under existing rules by installing upgraded pollution control equipment. This may require operators to secure new permits. Onward understands that there are potential bottlenecks in this system that could reduce the number of plants certified before this winter. The Government should investigate this and explore options to speed up the issuance of permits for new and upgraded installations.

In an emergency scenario, the Government may need to consider relaxing some air quality regulations to allow more diesel generators to operate. This would be an extreme step, which means that these derogations should be time-limited, and should only apply in the least-polluted areas. In the most extreme crisis, the Government should retain the power to relax air quality rules even in more-polluted urban areas.

Recommendation 13: Explore options to burn more oil rather than gas in power stations in Northern Ireland and support the Irish Government to do the same.

Gas-fired power stations in both NI and ROI have the capability to run on oil as a backup fuel. By running on oil more frequently, these power stations could reduce gas demand across the UK and Ireland. To make this policy work for generators, the British and Irish Governments may need to compensate power station owners for higher running costs and/or higher maintenance costs associated with running on oil.

5) Keeping energy flowing across borders

Recommendation 14: The UK, the EU and Norway should establish a new "European Energy Emergencies Forum" to keep energy supplies flowing during shortages.

The UK, the EU and Norway are all part of one European gas and electricity system, and each party brings something to the table: Norway brings gas exports, the EU brings gas storage, and the UK brings LNG import terminals and electricity exports at times of high wind. In addition, Ireland, an EU Member State, is 100% reliant on the UK for gas imports,[116] so any shortages in the UK would have a direct impact on an EU member.

The new *European Energy Emergencies Forum* should develop detailed plans for how energy supplies would be rationed in the event of severe shortages. This should include processes for how electricity and gas can continue to flow across borders even if individual markets are suspended by national governments or grid operators, as set out in Table 8 below.

Table 8: Main issues for a new "European Energy Emergencies Forum" to consider.

Parties	Issue	Description
UK, EU, Norway	Will the Parties consider coordinated action to support European energy markets if they cease to function due to high volatility?	The utility company Fortum has warned that high prices have led to "unprecedentedly high collateral requirements" and that "a default of even a smaller market participant would be difficult to manage under the current extreme price levels".[117] It is possible that European governments will need to step in to provide liquidity to market participants in the coming months. This action would be best if it is coordinated across Europe, as the markets are highly integrated.
UK, EU, Norway	The EU is considering emergency changes to electricity market rules. How will the Parties ensure that these changes don't distort cross-border energy flows?	In response to high electricity prices, the EU is considering emergency changes that could include capping wholesale prices, following changes made in Spain and Portugal. These changes risk huge distortions to flows of gas and electricity across Europe, raising the risk of governments unilaterally suspending energy exports. Mitigating measures are therefore likely to be required if the EU proceeds with its plans.
UK, France	What conditions would need to be met before either Party would consider suspending electricity exports?	Grid operators already have the power to suspend electricity exports during shortage conditions. It is imperative that politicians on both sides understand the conditions under which export limitations would be invoked. This will help to build trust and reduce the risk of unilateral political action, which could have a negative impact on both countries' electricity supplies.
UK, EU	To what extent the UK should expect to rely on gas stored in EU storage facilities during times of shortages, if at all?	The UK is currently exporting gas to the EU to help fill its storage facilities. There is an argument that the UK should send more gas now, in return for additional certainty that the UK will be able to access a share of these reserves during severe shortages.
UK, Norway	How should the new electricity interconnector between the two nations be used during shortages?	Recent reports have suggested that the Norwegian Government is concerned that electricity exports to Britain are draining Norway's hydro reservoirs. The parties should develop a framework that ensures that resources are shared to the benefit of both countries during an emergency. For example, the parties could develop a process that ensures that the UK exports electricity to Norway during times of high wind output, allowing Norway to save water in its hydro facilities during these periods.
UK, EU	UK and the EU: Will the Parties prioritise energy supplies to households in each other jurisdiction over supplies to their domestic industry?	Because of Brexit, the UK is no longer part of the EU's "solidarity mechanism" for rationing energy supplies, which states that Member States must prioritise energy supplies to households in other countries over supplies to their domestic industries.[118] The post-Brexit trade deal includes provisions for the UK and the EU to cooperate in the event of an energy emergency.[119] These procedures should be reviewed to ensure that they are fit for purpose, as there are credible scenarios where these procedures will need to be activated this winter.

Annex 1: List of Recommendations

Table 9: List of recommendations.

1) Getting targeted financial support to households	
#1	Accelerate payment of the planned £400 energy bill discount, paying the full amount by Christmas, rather than the end of winter as planned.
#2	Eliminate the "prepayment premium" for customers with prepayment meters, at a cost of £266 million per year.
#3	From January 2023, the Government should provide additional, targeted financial support, totalling £47.3 billion in 2023.
#4	The Government should explore the feasibility of creating a new "Energy Cost Support" benefit entitlement aimed at those on low- and middle-incomes who do not qualify for Universal Credit.
2) Raising revenue with a windfall tax on "low-cost electricity generators"	
#5	The Government should introduce a new windfall tax on "low-cost electricity generators", to raise between £4 billion and £10 billion per year.
3) Cutting Energy Demand	
#6	The Government should launch a national energy-saving campaign for households.
#7	The Government should impose a new "Basic Energy Efficiency Obligation" on landlords and Housing Associations.
#8	The Government should introduce mandatory and voluntary energy-saving measures for businesses, mirroring measures adopted across Europe.
#9	The Government should support Local Authorities and businesses to establish "warm spaces", where people struggling with energy bills could go during cold weather.
#10	The Government and network operators should develop contingency plans to distribute home batteries to vulnerable people to help them during any electricity disconnections.
4) Diversifying fuel supplies	
#11	The Government should support businesses to switch some processes from gas to oil and coal where possible.
#12	Explore options to increase the running hours of coal and diesel generators, including speeding up the issuance of new permits and taking powers that would allow the Government to temporarily relax air quality regulations in the case of energy shortages.
#13	Explore options to burn more oil rather than gas in power stations in Northern Ireland and support the Irish Government to do the same.
5) Keeping energy flowing across borders	
#14	The UK, the EU and Norway should establish a new "European Energy Emergencies Forum" to keep energy supplies flowing during shortages.

Annex 2: What are other countries doing?

Table 10: List of energy-saving interventions in selected European countries and the EU.

Country	Intervention	Status	Description	Energy saving
Germany	Heating and lighting regulations	Implemented 01/09/22	• Public buildings to be heated to a maximum of 19°C and may be completely turned off in foyers and corridors, and water will not be heated. Private offices will also have this maximum temperature but acting on this rule is down to businesses. • Ban on the illumination of public buildings and monuments; private businesses must shut off neon signs 10pm-6am. • Businesses must keep doors closed to stop warm air escaping. • Ban on heating private pools (unlikely to be enforced). • Renters are no longer obliged to uphold contractual minimum temperature in flat during winter. • Gas wholesalers and owners of large residential buildings are now obliged to inform customers/tenants about their expected energy consumption, costs and possible savings by the start of winter.[120]	2-2.5% gas usage
France	Heating and lighting regulations	Implemented	• Shops to keep doors closed or be fined €750.[121] • Ban on heating/cooling outdoor terraces in bars/cafes/restaurants • Nationwide ban on illuminated signs 1am-6am or be fined €1500 • Government offices to only use air conditioning if it is more than 26°C indoors. • Supermarket chains have agreed to turn off all lights when closed and dim some areas when open.	Businesses could be reducing energy usage by 20% through these measures.[122]
Spain	Heating and lighting regulations	Implemented 09/08/22	• Air conditioning must be set below 27°C and heating below 19°C in public buildings, large stores, stations and hospitality venues. • Ban on lights in public buildings and shop windows after 10pm.[123]	Spain has agreed to a 7-8% reduction in gas use across all sectors.
EU	"Safe Gas for a Safe Winter" Plan	Implemented 20/07/22	• Asks member states to voluntarily reduce natural gas consumption by 15% compared to last winter. • In an emergency, can make this mandatory under a new legal tool.	Reduce natural gas consumption by 15%.[124]

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