

Spotlight

Thought leadership and policy

Energy and Climate Change: Solutions for a dual crisis

Lord Deben | Iryna Stavchuk
Clare Moriarty



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Truss's false economies

The summer is well and truly over and Liz Truss's government is settling in for a long winter of public discontent. Less than a month since we were all spared the excesses of the Tory leadership contest, the Truss government has announced measures to cope with spiralling prices – from an energy plan to Chancellor Kwasi Kwarteng's mini budget, which was unveiled as this issue went to press.

The focus of Truss's energy plan, released in early September, was the immediate cost-of-living crisis. Criticised for its short-termism, it was labelled by some "an expensive sticking plaster" and an abdication of the UK's target, enshrined in law, to reach net zero carbon emissions by 2050.

Central to the energy plan was that, from October, an Energy Price Guarantee will limit what suppliers can charge per unit of energy. A windfall tax on the record-breaking profits of energy

companies was conspicuous by its absence. Also absent were words like insulation, retrofitting and efficiency. Despite the overwhelming consensus from experts that upgrading buildings will cut costs and help reach net zero, the government did not take this opportunity to incorporate such a necessary step into its plan for lowering fuel bills.

The government has committed some funds to improving efficiency, as Kwarteng, in his former job as secretary of state for Business, Energy and Industrial Strategy, outlined in April's Energy Security Strategy. But with the UK having among the worst-insulated housing stock in Europe, this falls far short of what is needed. According to data from the Institute for Public Policy and Research (IPPR), at current rates the UK installs only 9 per cent of the cavity wall insulation and 6 per cent of the heat pumps needed to keep pace with 2030 targets for net zero (see pages 16-17).

But the government cannot delay on efficiency. It is, after all, also part of the solution to the immediate cost-of-living crisis. As climate think tank E3G recently estimated, two-thirds of people in the UK live in "energy-inefficient" homes. The result? They pay an "inefficiency penalty of £1,000 more a year". As *Spotlight* argued earlier this year, the government would do well to remember that climate security and energy security are interlinked. ●

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Spotlight

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Insulating homes will add £7bn a year to the economy

Greenpeace has urged the Chancellor of the Exchequer, Kwasi Kwarteng, to devote £7bn to home insulation over the next two years, after research by Cambridge Econometrics found that energy-saving measures, such as home insulation and heat pump installation, could add £7bn a year to the UK economy and lift many out of fuel poverty.

The analysis, commissioned by Greenpeace, found that these measures could also create 140,000 new jobs by 2030, but their uptake depends heavily on the government's will.

As it stands, ministers have little planned to encourage households to take advantage of insulation, with such

measures costing anywhere between £7,000 and £15,000 for the average homeowner. Last year, insulation rates fell by 50 per cent and the Green Homes Grant was scrapped in March 2021.

Jon Stenning, the head of environment at Cambridge Econometrics, said that "switching to low-carbon heating technologies" could deliver "greater economic growth and substantial carbon-saving emissions" while reducing household bills "immediately".

Doug Parr, chief scientist at Greenpeace, said that "green home upgrades offer a viable way out of this mess", and that the government's lack of action in this area is "truly baffling". ●

Ex-chief scientific adviser slams UK's net zero approach

David King, who was chief scientific adviser to the government in the early 2000s, has criticised its approach to net zero targets, calling the lifted ban on fracking in the North Sea "extremely alarming".

Talking to the *Independent*, King said the plans were "completely at odds" with the unfolding environmental crisis, showing "that the leadership in the government does not understand the nature of the climate crisis".

Jacob Rees-Mogg, the new Energy Secretary, announced just two days into office that the government was going to lift the moratorium on fracking, stating that "we will extract every ounce of oil and gas from the North Sea" as a means of dealing with the energy shortage.

King, alongside other experts, has suggested that a better solution would be to build more renewable energy sources and help households better insulate their homes. Think tank the Energy and Climate Intelligence Unit found that action taken to help homeowners now would have a rapid impact, with investment of £1,000 per home breaking even for the Treasury by around the next election, as well as saving over £600 per household.

Meanwhile, the International Energy Agency (IEA), International Renewable Energy Agency and the UN recently authored the *Breakthrough Agenda Report*, warning leaders around the world about failure to meet global environmental targets.

For its launch, Fatih Birol, executive director of the IEA, spoke about the need for domestic focus and global collaboration: "Only by speeding up the transition to clean sustainable energy can we achieve lasting energy security... Through international collaboration we can make the transition quicker, cheaper and easier for everyone." ●

Cop27 aims to turn “pledges into programmes”

The 27th Conference of the Parties of the UN Framework Convention on Climate Change (Cop27) will take place in Sharm el-Sheikh, Egypt, on 6-18 November 2022.

Building on the progress made at Cop26 in Glasgow last year, the summit aims to develop plans on climate mitigation, adaptation and finance. Countries’ nationally determined

contributions (NDCs) will be reviewed and the Global Goal on Adaptation, established at Cop26, will be further developed.

Climate finance discussions will focus on delivery of the delayed \$100bn annual fund for developing countries.

Cop27 aims to turn “agreements and pledges” into “projects and programmes”, say the organisers. ●

UK’s first urban wind farm wound down

The UK’s first onshore urban wind farm was dismantled this month as the company responsible for its installation went into liquidation.

Wind turbines in Priory Park in Hull were built to create a potential mini grid that would provide local businesses with energy as well as exporting excess power to the National Grid. Quiet Revolution, the company behind the construction, saw the move as a test bed for future small-scale urban wind farms.

The government’s decision in 2015 to remove subsidies for onshore wind and halt planning permission for new sites – a move designed to placate Conservative MPs in rural constituencies – put the future of urban wind farms in serious doubt. Treasury subsidies were transferred to offshore wind provision despite developers facing considerable logistical difficulties, and therefore added costs, installing turbines far out at sea. Onshore wind provision collapsed following the government’s decision.

In June, Kwasi Kwarteng, then business secretary, now Chancellor, doubled down on government opposition to new onshore wind sites. Local consent was needed, he said, because “we’re not in China”, and infrastructure can’t be built in the face of opposition from local residents. ●



1.7 million

The number of homes destroyed in the flooding in Pakistan

140,000

The number of new jobs a home insulation drive could create by 2030

43%

The decrease in UK greenhouse gas emissions from fossil fuels since 1990

Pakistan estimates floods will cost country \$40bn

This year’s floods in Pakistan, which killed more than 1,500 people and destroyed 1.7 million homes, may have cost the country up to \$40bn, according to government assessments.

Triggered by heavy monsoon rains, 33 million people were affected, with homes, roads, railways, crops and livestock washed away. The flooding also resulted in rising cases of diseases like malaria and dengue. An estimated 800,000 cattle were lost, as well as roughly 70 per cent of the country’s onion harvest.

The floods have put further pressure on Pakistan’s struggling economy. Maleeha Lodhi, former Pakistan ambassador to the UN and the UK, said that Pakistan is already dealing with rising debt and soaring inflation, and that the economy risks “tanking” if the country does not get debt relief.

Meanwhile, new analysis by Imperial College London found that climate change likely increased the rainfall that hit vulnerable populations in Pakistan. “The fingerprints of global warming are evident,” said climate lecturer Friederike Otto. ●

The view from the Lords



John Gummer, Lord Deben
Chairman of the Climate
Change Committee

“To delay action on the climate is to deny the scale of the crisis. Getting to net zero is a necessity”

The deniers have largely shut up. Instead, many have become delayers – querying not the science, but the pace and urgency of the changes that science demands. Of course, that means that they aren't really convinced – you can't counsel delay once you grasp the frightening reality that human beings are on course to change our climate to such an extent that life, as it has been lived at any time in the past, must change fundamentally. To delay is therefore to deny. Getting to global net zero is not an aspiration but a necessity.

The government of Theresa May asked the key questions. What do we have to do to meet our Paris commitments? Can we do it? And how much will it cost? We can do it – conservatively, net zero by 2050 will cost us less than 1 per cent of our GDP; at current, high fossil fuel prices it would save the economy 0.5 per cent of GDP or more. Boris Johnson's government made that the base of its chairmanship of Cop26 and it is now the commitment of the core group of major economies, with China and India bringing up the rear with the later dates of 2060 and 2070, respectively. The world's direction of travel is therefore clear, but its speed is woefully slow and the gap between promise and performance challengingly wide. Only by unwavering concentration on delivery can we reach our goal – that necessary goal of net zero.

Yet, the siren voices of the denying delayers counsel caution. The cost-of-living crisis means we should pause. The high price of gas demands that we frack. Russian imperialism gives us more urgent priorities. All these arguments derive, not from a calm assessment of the realities, but from the knee-jerk reaction of those who have never accepted the real and present threat of global heating. In fact, they should be demanding the very action we need to combat climate change. The cost of energy is the central driver of the cost-of-living crisis. We should therefore be seeking to reduce that cost by increasing our use of the cheapest means of generation: wind and solar. That happens also to meet the energy security priority that the Ukrainian invasion has made ever more urgent. It's our wind and our solar.

Suggesting that the same argument applies to our gas may be a security argument but it won't lower the price. The gas price is international and what comes out of the North Sea will be sold at the price paid by the rest of Europe – not some lower figure fixed by the UK. Nevertheless, it is proper for government to consider whether Russia's actions mean we should prefer national energy security over the signal it gives to a world that needs no new sources of oil and gas. But in that case, we must at least insist that UK gas is produced in the most sustainable way and the failure of the likes of Shell, BP and Harbour Energy to meet the minimum standards the UK's Climate Change Committee (CCC) has recommended is simply unacceptable.

So too, fracking can only be allowed if it meets the environmental requirements that the CCC laid down in answer to the government's request for advice. Otherwise, it would further exacerbate climate change without reducing the price of gas or delivering it in time to assuage present energy security concerns. Neither fracking nor further production from the North Sea will do anything for the cost-of-living crisis. That demands a real

dash for renewables and a proper programme for energy efficiency – both of which are essential elements in reaching net zero.

The refusal to produce an effective programme to reduce the amount of energy people need to heat their homes is the biggest gap in the delivery programme for net zero, but it is also the biggest gap in the present policy to meet the cost-of-living crisis. Local authorities have been very successful in using the money they were given to help the poorest, but they need more and they must also be centrally involved in an effective scheme to help the better off with the capital investment necessary to make their homes more efficient. A government scheme, part of which channels finance from the private sector to this purpose, is vital. Nothing would more directly and more permanently help with the current crisis than this. When direct support for bills has finished, energy-efficiency measures continue to reduce bills and ensure warm homes.

It is that realisation that has led so many to investigate what they can do to cut their energy use. Large numbers of people want to do the right thing both for the climate and for their pocket. They need help in picking the right solutions, avoiding the cowboys, and covering the cost. There is a crying need for an effective information system, giving locally applicable advice that harnesses this goodwill and enables us all to turn intention into action.

These measures to put our own house in order should be a first priority. Our leadership in the world depends upon others seeing that we are delivering on our commitments. But it also depends on their belief that we will provide our part of the cost for poorer nations to meet their obligations. This is a global issue and ours is but a part of the global response. That's why our cut in overseas aid was so wrong and damaging. Against that background we now have to convince others that we will keep our word in terms of climate finance and capacity building. That will be our key contribution to a successful Cop27. Both this and the previous government were right to keep Alok Sharma and a full team till the end of the UK Cop presidency. Prime Minister Liz Truss must now give him the means to make a difference in Cairo.

In the past two years there has been a growing global realisation of the urgency of the action demanded by climate change. It has changed the attitude of the giants of finance, of investors, and of industry. They need and demand the transparency of statutory reporting and effective regulation. Governments that make much of being business-friendly need to realise that they have to provide an environment that encourages the best and speeds the laggards. On that we must insist – and on that this government will be judged. ●

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How industry is key for net zero

Firms are leading in reducing emissions and embracing renewables

By Ed Stainton

In association with



The latest findings of the United Nations' Intergovernmental Panel on Climate Change are stark. Its flagship report released earlier this year warned that the world faces a “now or never” moment for us to act to limit warming to 1.5°C. Exceeding this threshold – the level agreed in the 2015 Paris Agreement – would exacerbate extreme climate events, would risk sea levels rising to unsustainable levels, and would create drought and disruption on a drastic scale.

Limiting our emissions and, crucially, ensuring that the UK reaches its own ambitious target of net zero by 2050, is central to achieving the UN's broader climate goals.

But government can't do this alone. Government can create incentives, provide investment, direct strategy, outline its vision, and give us the tools we need to make things happen. But this needs to be a joint effort by individuals, organisations, institutions, and by both the public and private sectors working in partnership. New social value measures being taken into account in public procurement are one way the government can encourage and steer businesses towards meeting shared targets, whether it's through investment in environmental projects, climate mitigation strategies or upskilling disadvantaged communities and workforces. But these new social value measures don't always necessarily take into account the range of positive actions companies are taking as a whole.

Across a range of sectors, we're currently seeing an unparalleled effort by British industry to do its bit in combating global warming and reducing its carbon footprint. In tandem with the public and with the British government, now more than ever companies are recognising the immediacy of the task at hand. Now is the time for national champions to lead the way.

BT is ambitious and we want to make a difference. We see ourselves as a national champion and as a major telecommunications and technology company, contributing £24bn in gross value added to the UK economy, with major operations, investment and employment spread across regions all over the UK. Our customer base of 30 million households and one million businesses, from SMEs through to major

corporates, the public sector and other communication providers, puts us in a unique and privileged position to lead a conversation on climate change and on the individual actions customers can take to reduce their emissions.

As one of the biggest companies in the UK, we want to step forward as a national champion that's ready to help tackle the big problems. This isn't because we're chasing higher returns but because we want to step up in areas where we can make a genuine difference. That's why we have brought forward our zero-carbon target by 15 years, from 2045 to 2030. That's just for our own operational emissions. For our supply chain and customer emissions, our target is to reach net zero by 2040.

Given the urgency of the climate crisis, it is essential that the private sector embraces its responsibility to play its crucial role in the UK's zero-carbon journey. That's why BT has been trying to lead on climate action and reductions in greenhouse gases for a number of years. It doesn't take long to see real, tangible results. Since 2016 we've reduced the carbon intensity of our operations by 55 per cent. We have also made conscious efforts to help build a circular economy, recovering and recycling over 99 per cent of our operational waste in the UK. As well as being good for the environment, these reductions also make sense from a business point of view, particularly given the current situation in the energy markets.

We have already moved to using 100 per cent renewable electricity for our own operations. We've made a conscious effort to make sure our own offices and headquarters are ultra-modern and energy-efficient. The next big task – and this is absolutely key to us getting to our net zero target – is for us to move our fleet of cars from petrol and diesel to electric. After Royal Mail, BT Group has the second-largest vehicle fleet in the UK, made up of 33,000 cars and vans. Moving to electric is a major project but we've already replaced 1,000 diesel vehicles with electric vehicles (EVs). The problem at the moment is that many of our engineers and employees at Openreach – the subsidiary that runs the nation's broadband network – often have to



make multiple, back-to-back, long journeys to remote areas of the country, meaning that the current state of EV and charging technology just isn't in the place it needs to be for us to make an overnight transition. That's where government comes in: us making the positive change we need will require a more widespread roll-out of charging infrastructure. And as EV technology

progresses over the coming years with advances in battery power and capability, along with the roll-out of charging services, we'll see our transport transition accelerate.

In so many ways, economically, socially, politically and, of course, environmentally, we are facing a crucial period for our planet – a series of “now or never” moments. As the UK progresses on its journey to net zero, industry needs to act as a partner in making environmental sustainability a reality. BT is leading the way in this journey, and is ready to work together with government and our customers to achieve a climate-friendly future. ●

Government can't get the UK to net zero alone

Ed Stainton is director of Major Government, BT's Enterprise unit

How close are we to carbon-free renewables?

Simply moving to clean energy will not guarantee net zero

By Nick Ferris

Amid a barrage of warnings that we are not doing enough to tackle climate change, one area that offers a glimmer of hope is the global renewables industry, which continues to go from strength to strength. Major projects on the way include the Dogger Bank Offshore Wind Farm – set to be the world’s largest – that will eventually provide the power for six million British homes from its position 130km off the north-east coast.

The heatwave experienced in Europe over the summer, meanwhile, led to a record 12 per cent of EU electricity coming from solar power between May and August 2022, and helped to avoid up to €29bn in natural gas imports.

Last year saw more renewable capacity installed worldwide than ever before, while 2022 is set to break the record yet again. And with more than 90 per cent of the world’s economy now committed to net zero, policymakers everywhere are planning to continue rolling out renewables at breakneck speed. The UK’s net zero plans, for example, involve it moving from 55 per cent low-carbon power today to 95 per cent low-carbon power by 2030.

But simply transitioning to renewables does not guarantee “net zero”. Embodied carbon in renewables – which are emissions produced during transport and manufacturing – mean that renewables retain modest carbon footprints. Indeed, wind power typically produces 10g of CO₂ per kilowatt-hour (gCO₂/kWh) of electricity, while for solar it is 30gCO₂/kWh, according to data from the Intergovernmental Panel on Climate Change (IPCC).

Renewables are much cleaner than fossil fuels – natural gas, the cleanest fossil fuel, produces 380gCO₂/kWh. But they are not completely free of carbon emissions. This must be tackled if we are to reach net zero.

Solar panels produce the highest level of emissions among mainstream renewables, and this is largely due to their manufacturing process. High-quality silicon in solar cells is manufactured through an energy-intensive method called the “Siemens process”, which involves heating trichlorosilane gas to more than 1,100°C. The efficiency of this process has improved: the energy required to produce 1Wp (“watt-peak” – a standard measure of solar power capacity) has ▶



fallen drastically, from 16 kilowatt-hours (kWh) in the mid-1990s to 3kWh in 2020. But this remains significant, equivalent to around a tenth of the standard lifetime electricity output of a 1Wp solar cell, which is 30kWh.

When it comes to wind, rapid technological innovation has seen turbines grow both larger and more efficient over time, giving them much lower lifetime emissions. Manufacturing once again has the biggest impact: analysts at Bernstein Research have calculated that the production of steel and aluminium accounts for most of the emissions from offshore wind, at 62 per cent and 19 per cent, respectively.

Modelling by BloombergNEF, meanwhile, has shown that building enough wind turbines to reach net zero by 2050 will involve 1.7 billion tonnes of steel. This is a figure just under the entire planet's annual steel output, which was 1.8 billion tonnes in 2020, according to the World Steel Association.

So what are the solutions? Big carbon savings can continue to be made through energy efficiency and technological improvements, such as manufacturing solar cells out of thinner pieces of silicon. Industrial processes need to also be powered not from coal, but from clean energy sources like green hydrogen, which is produced from water using renewable electricity.

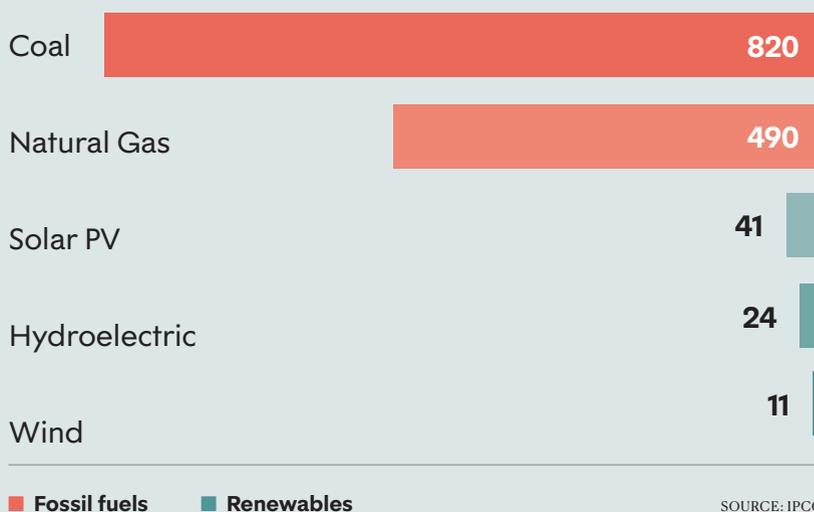
Swedish steelmaker SSAB AB is leading the way in the production of green steel, made from hydrogen, with the company aiming to commercially sell the world's first fossil-free steel by 2026. Growing confidence in the technology is demonstrated by the number of steelmakers now committing to net zero, including giants like ArcelorMittal and Nippon Steel Corp.

Energy-intensive industrial processes can also be avoided if more materials are recycled. "The low-carbon transition needs to be designed with a material focus, with everything designed with a closed-loop mindset as it is installed," explains Patrick Schröder, from UK think tank Chatham House. "Initially it was important to simply promote renewables over coal and other fossil fuels, but now that the transition is happening and unavoidable, we need to think more about the circular economy."

Solar and wind technologies tend to

Renewable energy is low carbon, not zero carbon

Electricity sources by lifetime carbon emissions (gCO₂/kWh)



have a 20 to 30-year lifespan. This means there will likely be a glut of old wind turbines and panels after 2030. It is hard to quantify how much waste this represents: in 2016, the International Energy Agency (IEA) estimated that 78 million tonnes of solar panel waste would be created if 4,500 gigawatts (GW) were installed by 2050. We also now know that we will likely see far more than 4,500GW of solar by 2050: the IEA forecasts that solar will actually grow to more than 20,000GW in its net zero 2050 pathway. Avoiding all the resultant panels going to landfill will be vital if we are to truly meet our climate targets.

Fortunately for the wind industry, around 90 per cent of material from modern turbines – including steel, cement and copper wire – is already regularly recycled. The tricky part is the blades, which are made from a composite fibre material designed to make them light and durable. Currently, the main commercial route to recycling a blade is to grind it down to produce a substitute material for sand in cement production.

But the wind industry is innovating hard to find a solution where materials can be reused. Leading manufacturer Siemens Gamesa, for example, unveiled its first fully recyclable product in September 2021: 81m-long blades designed to allow recyclers to separate component materials more easily at end-of-life. Germany's RWE became the

first power generation company to install the new technology, doing so just ten months after the launch in August 2022. Siemens is aiming to only produce fully recyclable turbines by the year 2040.

Solar panels are also difficult to recycle, due to the way minerals including lead, silver and silicon are combined to form the solar cell. But in the EU, unlike with wind turbines, solar panel manufacturers are already required to ensure all solar panels are recycled.

They tend to be processed at traditional recycling plants where glass and metals like copper and aluminium can be extracted in a "rudimentary process" that does not capture the elements of highest value, says Meng Tao, a sustainable solar expert at Arizona State University.

Technological improvements mean nearly 100 per cent of the solar panel can now technically be recycled, with a large share of high-value elements retained. Tao owns a start-up, TG Companies LLC, which he says can extract "nearly 100 per cent" of the high-quality lead, silicon, silver, tin and copper.

However, Tao says his method has been difficult to commercialise, largely due to volatile mineral prices making it hard to plan for a consistent financial return. A more favourable policy environment that rewards recyclers for mineral retention would help entrepreneurs like Tao develop viable businesses, which would in turn boost our chances of truly reaching net zero. ●

Comment



Iryna Stavchuk
Ukraine's deputy environment
minister from 2019-2022

“As a Ukrainian, I am calling for an embargo on Russian fossil fuels”

Two actions are paramount to achieve progress on the climate crisis. The first is to reduce dependence on fossil fuels, Russian fossil fuels in particular, as a way of tackling rising temperatures and Russia's invasion of Ukraine. The second is to support the global rule of law, which Russia is so desperately trying to undermine. Both need to happen now, as Cop27 nears.

This year, the topic of climate has been blown aside by the war in Ukraine. The fighting has had a tremendous impact on climate action. Nevertheless, concrete steps are still possible – and needed.

There are three pillars for concrete climate action: mitigation, adaptation and finance. When it comes to the first, we need more action from countries that have not yet submitted more ambitious nationally determined contributions (NDCs) – climate action plans to which any country party to the Paris Agreement is required to commit.

Despite suffering Russian military aggression since 2014, and despite being far from wealthy, Ukraine has prioritised its NDC. Ukraine's updated national plan was approved in 2021, when I was deputy environment minister. It set a

goal of reaching carbon neutrality by 2060.

Ukraine's government was focused on contributing fairly to global mitigation efforts, but we also saw energy independence as a matter of national security. And the best instrument for reaching energy security globally is to develop renewables and ensure energy efficiency.

When it comes to adaptation, the second pillar, more has to be agreed at Cop27. Last year, Cop26 provided a foundation to build on, including progress on the Global Goal on Adaptation (GGA), a key part of the Paris Agreement that aims to strengthen climate resilience, and the establishment of the Glasgow-Sharm el-Sheikh Work Programme.

But we need to eliminate any additional pressure on countries most vulnerable to climate change. Russia created a global food crisis by blocking Ukrainian ports and targeting weapons at grain storages. Africa, already vulnerable to climate impacts, is particularly affected.

When it comes to the third pillar, finance, there has been a major failure: developed countries promised to contribute \$100bn annually for climate change mitigation and adaptation, but they broke that pledge. The current war makes this even more difficult to achieve as many have boosted spending on defence and tackling the economic crisis.

Russia spends an estimated up to \$200m daily on the war. By comparison, Moscow has contributed \$13m to the Green Climate Fund, as part of two contribution agreements it made in 2018 and 2020. Its NDC is ranked by Climate Action Tracker as critically insufficient. Russia formally submitted a new 2030 emissions target to the UN Framework Convention on Climate Change (UNFCCC) in 2020. The update did not strengthen the country's 2030 target in any real sense, as it is higher than its own 2030 emissions projections.

Moreover, satellite data shows very high methane emissions from fossil fuel production in Russia, which might not be fully accounted for. With such unprecedented levels of environmental damage, the world bears a heavy toll for dependence on Russian fossil fuels.

All these factors are only more arguments for governments around the world to unite and do everything in their power to reduce dependence on fossil fuels, streamline energy efficiency and boost renewables. As a Ukrainian, I am calling on all countries to establish an effective embargo on Russian fossil fuels, as revenues from their sales largely contribute to the war and deaths in Ukraine.

At the Bonn climate conference in June 2022, Russia announced that it had left the Umbrella negotiation group, a coalition of countries that formed after the adoption of the Kyoto Protocol. It is now time for the rest of the world to unite and bring back stability and peace. We must stand up against aggressors and ensure that no one will be able to leverage disruptions in energy and food supplies as a weapon against other nations. ●

Flooding is a major risk for our homes

Climate change means we need to adapt for extreme weather

In association with



This summer has seen some of the most extreme weather events in the UK for the past 40 years.

Witnessing the transition from barren droughts to flash floods in a matter of hours serves as a reminder that the UK is still underprepared for the worst effects of climate change.

Flooding is often associated with storms and heavy rainfall in the winter months, leading to burst riverbanks. However, there has been an increase in summer downpours following lengthy periods of dryness, which together cause surface water flooding almost anywhere. Data from the Department for Environment, Food and Rural Affairs shows that this is actually the most prevalent form of flooding in England, affecting approximately 3.2 million properties, and is now the greatest natural disaster risk in the UK.

We have seen the disastrous effects this can cause with current rainfall patterns, but recent reports have shown that this is likely to increase, with predictions of rainfall totals for extreme storms potentially rising by 25 per cent in the 2050s compared to now.

During our droughts, focus has been on the UK's water resilience and the need for long-term plans to ensure the right infrastructure is in place to meet future demand. This includes flooding. The government is committed to spending £5.2bn over the next six years on the nation's flood defences. The Environment Agency has already better protected 314,000 homes through a six-year programme of improvements to flood and coastal defences.

Unlike water shortages, which are universal in their outcome, some homes are at much higher risk of flooding. However, properties can be protected by installing flood-resilience measures tailored to individual properties and homeowners' needs. This, in partnership with the national infrastructure programmes, is the approach required to create an appropriately resilient housing stock.

The summer heatwaves have helped focus minds. Recent research from Flood Re – a joint initiative between the insurance industry and government – has shown that almost a quarter (22 per cent) of homeowners surveyed are now actively considering the installation of climate-related adaptations to their current property.



More homes are at risk of flooding, but measures can be taken to protect them

Earlier this year, Flood Re launched a pioneering new scheme, Build Back Better, designed to reduce the cost and impact of future floods by speeding up the roll-out and widening of access to property flood resilience (PFR) adaptations. Build Back Better allows Flood Re to pay for additional improvements to homes, above the cost of initial flood damage to a property, with the aim to make it resilient to future floods.

We have seen the transformation that simple, low-cost PFR improvements, such as airbrick covers, raised electrical sockets and sealing brickwork, can have on a home and its owner. Where properties once would have been significantly damaged by a flood, leading to owners being displaced for months, PFR has reduced this to simply small puddles, allowing owners to return home within a matter of hours. Reducing the severity of the damage also leads to reduction in the cost and frequency of flood insurance claims. This means reduced costs for insurers and lower premiums for households.

Fitting homes with measures retrospectively is just the first step in creating resilient housing. With the urgent need for new homes, more and more are being built in areas at risk of flooding. The government recently announced welcome new guidance for local authorities to ensure that consideration is given to flood risk when approving new developments. This provides reassurance that more homes will be built in lower-risk areas with sustainable drainage and moves us a step closer to protecting the next generation of communities.

The recent Flood Re survey, of 2,000 UK adults, revealed that three in four people looking to move house say climate-related adaptations have become more important to them when considering a new property. However, there must be reassurances for homeowners that homes are properly and effectively adapted to climate change. To achieve this, homes of the future should be issued with climate performance certificates, similar to

energy performance ratings, to give homeowners full transparency of the resilience of their property, both in terms of performance and quality of the measures installed.

We at Flood Re take our mission to ensure the UK's flood resilience extremely seriously. Set up in 2016, Flood Re's purpose is to create a more resilient market within 25 years of our creation and leave a long-lasting legacy for future generations beyond our 2039 exit date. It is important that our legacy leaves not only a resilient market but also a resilient nation of homes.

However, success will be a collective effort, requiring positive action from the public, insurers, developers and government. Motivated by the reality of our 2039 deadline, we will not cease in our commitment to ensure that the UK, despite the increase in extreme weather events, is always able to manage its present and future flood risk. ●

Flood Re is a joint flood insurance initiative between insurers and government

England's regions are not equally insulated for the winter

By Nick Ferris

Exorbitant energy prices mean that having a well-insulated house is more valuable than ever. As the price of gas – which heats 85 per cent of UK residential buildings – increases, so too will savings from measures like double glazing.

But data from the Department for Levelling Up, Housing and Communities reveals a major regional inequality: in London, 46 per cent of houses have the highest Energy Performance Certificate (EPC) ratings of band C, B or A, with the lowest rating being G. But in Yorkshire and the Humber the figure is just 35 per cent.

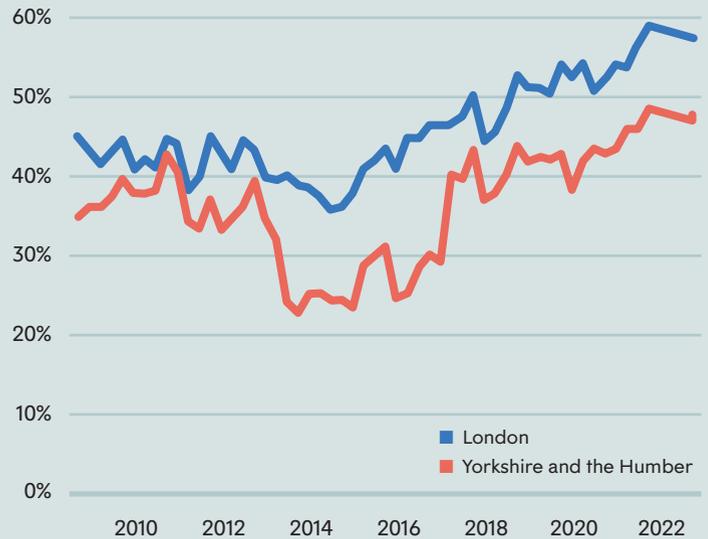
New houses tend to have higher EPC rankings. But many new EPC submissions continue to fall below par: in the first two quarters of 2022, fewer than 50 per cent of houses in Yorkshire and the Humber had EPC rankings of B and C or above. In London the figure was just under 60 per cent, according to the Office for National Statistics.

EPC band C is the minimum energy efficiency rating that all new homes must have from 31 December 2025, as part of the government's Net Zero 2050 strategy. A "typical" terraced house built since 1990, with reasonably efficient heating, loft and cavity wall insulation and double glazing, will achieve band C. Most UK houses date back to before the 1990s. Around a quarter of the UK's total greenhouse gas emissions come from the energy we use in buildings, according to the UK's Climate Change Committee.

Annually, however, as per analysis from the Institute for Public Policy Research (IPPR) think tank, the UK installs only 9 per cent of the cavity wall insulation, 6 per cent of the heat pumps, and 2 per cent of the solid-wall insulation needed by 2028 to keep pace with net zero ambitions. ●

Yorkshire's housing stock is less energy efficient than London's

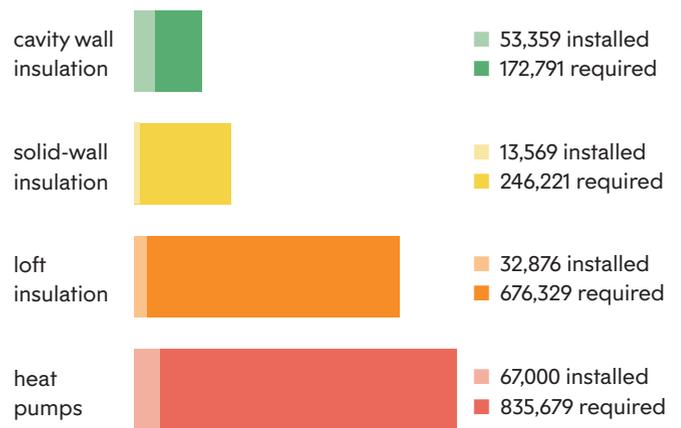
Share of Energy Performance Certificates (EPCs) ranked C on the government's national EPC register 2008-2022 (%)



Home insulation in England falls short of meeting net zero targets

ENERGY EFFICIENCY MEASURES

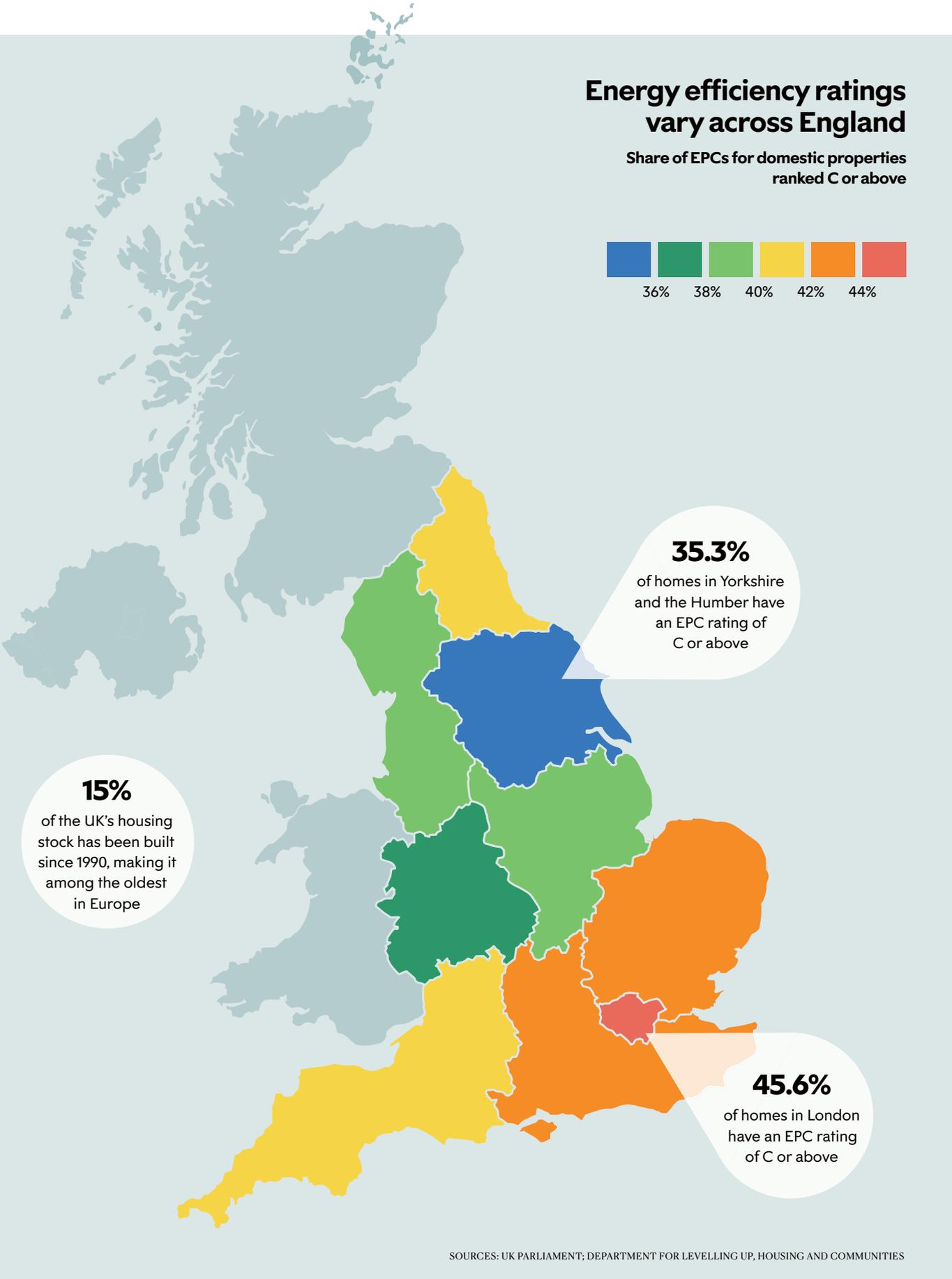
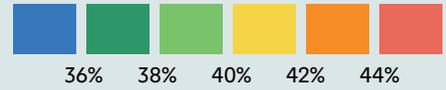
Annual installations in 2020 compared to the rate required to keep pace with 2030 net zero targets



SOURCES: UK PARLIAMENT; INSTITUTE FOR PUBLIC POLICY RESEARCH

Energy efficiency ratings vary across England

Share of EPCs for domestic properties ranked C or above



15%
of the UK's housing stock has been built since 1990, making it among the oldest in Europe

SOURCES: UK PARLIAMENT; DEPARTMENT FOR LEVELLING UP, HOUSING AND COMMUNITIES

From the frontline of net zero

In 2019, the UK became the first country to enshrine in law its emissions reductions target – reaching net zero by 2050. *Spotlight* spoke to people in the sector who are seeing the transformation up close

By Samir Jeraj



The farmer: William Wyness has installed a wind turbine to future-proof his business

Farming has been in William Wyness's family for generations. The 49-year-old was born on the farm he now runs in Aberdeenshire, Scotland, which is both located in the community where he went to school and near to Aberdeen University, where he studied.

"First and foremost, I'm a farmer who has very, very deep ties to this area," he tells *Spotlight*.

But there is a problem facing Wyness and others like him. "There's no money in farming," he explains. "I don't mean that there's no living, there's no quality of life – that's not true at all – but there's no slack, there's no profit, there's no money to be set aside



William Wyness's farm in Aberdeenshire, Scotland

that can be used for reinvestment. It's very tight."

The knock-on impact for the community is evident to him. The bus route he took to school used to serve 13 families with children, but now there are only two. Rural areas nearby are punctuated by shops and pubs that have closed and homes turned into short and holiday lets. "We needed an injection of something," he says.

It was while he was working away from Aberdeenshire as a banker that Wyness saw the growing interest farmers had in renewables, particularly as the government was subsidising its growth through the feed-in tariff.

"Agriculture is always looking for something else. It's always looking for another income stream," he says.

Putting his experience of finance together with his knowledge of agriculture, Wyness saw the potential for that much-needed investment in his

home community. He was also at a crossroads in his life; would he stay in banking and finance, or was he going to return to his roots and focus on the family business?

"I decided to go down the road of coming home to concentrate on my own thing," he says.

Around 40 per cent of farmers in the UK generate some form of renewable or low-carbon energy via, for example, solar, wind, farm by-products and energy crops like maize, says the National Farmers' Union (NFU).

The energy they generate meets around 10 per cent of the UK's energy needs, according to a 2019 report by the NFU. Farmers own or host around 1,200 solar farms with 70 per cent of the UK's solar panels.

But Wyness's plan to make a wind turbine a reality was a bigger challenge than he expected. The planning system was a major block, according to

Wyness, with the system unable to handle the type of applications coming in for renewables and the sheer volume of them. People like Wyness, who want to put in a small number of turbines in a small area with minimal impact, are lumped in with large-scale onshore wind farms, he says. It was a confusing and costly process, with a lot of duplication.

There were a lot of complaints about his application, Wyness recalls. "The countryside is divided, because there were those who are against them and then there were those that really didn't mind. And the resentment was a big problem," he says.

Enercon, which supplied the turbine, installed it on his land. The income he makes "is dependent upon wind, but bearing in mind the massive upfront, development and running costs, income takes a long time to service the investment", he says.

When asked about his role in the transition to a net zero economy, Wyness says: "I'd like to say that we're doing our best." With energy, he feels like they are managing to produce "a commodity that people want".

Within his lifetime, Wyness has seen parts of Scotland, including Aberdeen, transformed by money from North Sea oil, which was still worth £3.1bn in taxes in 2020/2021. "We saw a lot of companies in Aberdeen, and certainly in my generation, where people have started out from very humble beginnings and have done very well for themselves," he says.

But "getting involved in renewables is not for the faint-hearted," he reflects. "It's a lot of money, it's a lot of work, it's a lot of very unpleasant meetings with people." Still, for Wyness and other farmers, generating energy on their land is a way of ensuring that agriculture, and by extension their communities, have a long-term future. "Bolting on" renewables provides farms with a steady and reliable income, enabling them to invest in the future of farming.

To keep it alive, the area needs homes, schools and health services, and underpinning that is a viable rural economy. "We've been producing energy for the last seven years, maybe," says Wyness. "And we're beginning to see the benefits of what we've done."

The apprentices: Jade Kimpton and Josh Mimms are training with the National Grid

Jade Kimpton first learned about energy from her father, who worked on substations and overhead lines. “For me, growing up, seeing the work that he did and hearing him talk about it at dinner, I found that really inspiring,” she says.

So after doing her A-Levels, Kimpton decided to do an apprenticeship. “I actually found it on the government website and that was where I applied for it,” she tells *Spotlight*. It was early 2020 and Covid-19 meant all her interviews were online. “I was quite surprised about how long and intense the interview process was; it was quite difficult to get the job,” she recalls.

Today, the 21-year-old is one of 164 apprentices at the National Grid. She mainly works on substations, just like her dad did. Substations facilitate the flow of energy, and increasingly that includes generation of renewables. Many sources of renewable energy are variable, she explains. When the wind stops blowing, for example, so does the supply of electricity powered by wind. Inconsistent supply leads to variation in voltage levels and power flow. Substations help smooth these peaks and troughs.

Kimpton’s days still include a lot of on-the-job learning, sometimes at a training centre, where she studies the theory and practice of engineering, and sometimes on-site, which, she admits is “probably my favourite part”. There is maintenance to do, commissioning in new equipment, and connecting in new renewable generation. In Norfolk, where she is based, the numbers of solar and wind farms are increasing.

The National Grid estimates that the UK needs to create around 400,000 green jobs to transition to a net zero economy by 2050, which the UK is committed to by law. “The main thing that I love about my job is knowing that I am playing my part in meeting net zero and tackling climate change,” she says. Kimpton would ultimately like to become a commissioning engineer, working on the substations with a focus



Jade Kimpton working on-site

on bringing in new equipment and putting it into service.

“I’d say this to anyone who’s thinking about getting into the industry: now is the time, it’s a really exciting time to join,” says Kimpton, who is keen to get more women into what is still a male-dominated sector.

“I think that does tend to put some women and girls off,” she says. But Kimpton has found her workplace to be supportive and welcoming: “I think a lot of people on site view me as like a daughter or a sister, and they’re all incredibly helpful. I’ve never had any problems. I think it’s important that we do have a diverse workforce because I think that will ultimately help us to tackle climate change.”

Fellow apprentice, Joshua Mimms, 20, has been working and studying project management at the National Grid for the past ten months. “I always wanted to be hands-on, and proactive,” he says. Unfortunately, towards the end of his time at college, Covid-19 hit. Mimms was looking around for an apprenticeship as a third lockdown loomed.

“I said to myself, ‘I have to get myself out there, I need to get myself into an apprenticeship’, and that’s when I saw National Grid’s application form,” he recalls. It was a lengthy application process, but he landed the role.

Formerly a retail worker, now he is about to start working as part of the team delivering a huge infrastructure project: London Power Tunnels, a £1bn National Grid project that is helping to replace the electricity transmission infrastructure across the whole of the capital. North London was completed in phase one in 2018, and now south London is being upgraded in phase two, with a new network of cables running underground for 32km expected to be completed by 2026.

“To be part of this, at the age of 20, is quite surreal for me. It’s quite incredible when I speak to my mates and I tell them what I’m up to, and they’re just stunned when I say what the project is,” says Mimms.

Aside from site safety walks, audits and inspections, Mimms also has training and shadowing opportunities where he can learn from experienced colleagues.

“I’ve completed all my training and I can now go on to site completely by myself, but I still do like to be shadowing just for the feedback aspect because I always feel like there are things to learn,” he says.

And, Mimms adds, he loves “being part of the renewable energy team – and going for that goal of net zero”. ●

Comment



Carla Denyer
Co-leader of the Green Party
of England and Wales

“The experiment in privatised energy has failed to deliver affordable, clean energy for all”

We can all see the terrifying situation we’re heading into this winter. Energy bills have risen at a rate that will see two-thirds of households trapped in fuel poverty by January, according to research by the University of York.

The writing has been on the wall for some time. Last October, The Green Party called for urgent action: a £320 payment to provide everybody with immediate financial support alongside the rollout of a mass insulation and renewables scheme to move beyond our reliance on fossil fuels as soon as possible.

Belatedly, the government offered some financial help to households. However, even with the Prime Minister Liz Truss’s recent intervention, the support so far has been paltry compared to what is required. Inflation continues to rise and investment in renewables and insulation is still lacklustre.

MARTA SIGNORI

It is clear that the experiment in privatised energy has failed. It may have made money for a tiny few, but it has not delivered the essential service of affordable, clean energy for everyone.

The Green Party has proposed rolling back the price cap to the rate it was in October 2021. This would help households facing the cost-of-living crisis and would also help to calm inflation.

To achieve this we would bring the big five energy retailers into public ownership. Truss has introduced the Energy Price Guarantee, capping how much suppliers can charge per unit of energy for the next two years. Labour and the Liberal Democrats also propose to freeze the price cap (rather than reduce it) and subsidise the private energy retail companies to prevent their bankruptcy. This is because the retailers still have to buy wholesale energy at record high rates that capped bills will not cover.

But the primary responsibility of these energy companies is to deliver profits to their shareholders. Paying dividends takes precedence over offering good value to customers. And Truss’s plan doesn’t even include a windfall tax so that those profits can go to helping the most vulnerable.

The alternative, bringing the suppliers into public ownership, would allow the government to align energy companies with the imperative to reach net zero and phase out fossil fuels while reducing energy costs.

Recent polling from Survation has found that two-thirds of people in Britain think energy should be run in the public sector. This will cost money, but not as much as you think. We estimate that returning the energy price cap to last October’s rate for this winter will cost somewhere in the region of £37bn. This is the same amount as the government spent on its failed Test and Trace system. Beyond that, the Trades Union Congress calculates that nationalising the big five will cost around £2.8bn – for context, the government has already spent £2.2bn in its bailout of the failed energy company Bulb. The cost for Truss’s plan has been estimated to run to more than £100bn of taxpayers’ money.

We know that much of the cost to fund our proposal can be found by removing loopholes in the former chancellor Rishi Sunak’s windfall tax, which incentivises more oil and gas production, and clawing back profits made in the first half of the year.

Bringing the big five energy retail companies into public ownership, setting the price of energy at an affordable rate and absorbing global price rises through subsidies means the government could make sure everybody can afford to get through this crisis.

At the same time, it would mean this public service would be run in the public interest. That is how we build the greener, fairer future that so many people crave, a future that is essential for the well-being of people and the planet. ●

Clare Moriarty: “Renters have fewer options for lowering energy bills”



The CEO of Citizens Advice on her time as permanent secretary of Defra, the cost-of-living crisis, and William Beveridge

How do you start your working day?

In my mind, I start it as I did during the long months of working from home: walking our Lakeland terrier in the beautiful beech woods, the Ashford Hangers. I still manage that some days, but mostly it's more prosaically on an early train, going through emails and thinking about the day ahead.

What has been your career high?

Leading Defra (the Department for the Environment, Food and Rural Affairs) stands out. The department was hugely affected by Brexit – we had loads of legislation to unpick and systems to replace. I also put a real focus on inclusion, encouraging people to bring themselves to work.

What has been the most challenging moment of your career?

At a professional level, managing crises is intensely challenging. I've had my share of those, from BSE to the collapse of the West Coast Mainline franchise competition. At a personal level, closing down the Department for Exiting the EU was particularly difficult. I felt responsible for people and wanted to ensure they were looked after, but time and the political climate were against us.

Which political figure inspires you?

William Beveridge's 1942 report on *Social Insurance and Allied Services*, with its focus on the “five giants” of idleness, ignorance, disease, squalor and want, created the blueprint for social policy in post-war Britain. Beveridge clearly had his flaws and contradictions, but I can't fail to be inspired by his commitment to social justice and the principle of a minimum standard of living “below which no one should be allowed to fall”.

What UK policy or fund is the government getting right?

Universal Credit, after a long and painful development, is now working reasonably well as a delivery system. There are still

big flaws with payments, entitlements and wait times. And people struggle if their circumstances are unusual. Benefits are still the biggest reason why people come to Citizens Advice. But we now have a digital and fairly responsive system for a core welfare benefit, which is often easier for people to navigate than what came before.

And what policy should the UK government ditch?

I'm a firm believer in levelling up but I don't think the government's policy of that name is doing what it says on the tin. Local Citizens Advice offices are at the heart of their communities and our advisers see every day how genuine economic and social regeneration is needed in areas that policymakers have left behind. That's what levelling up should be about – investing in people and communities, not just flagship infrastructure projects.

What upcoming UK policy or law are you most looking forward to?

The government pledged to end “no-fault” evictions in its 2019 manifesto. Renters are so often left out of policymakers' thinking; they couldn't benefit from a payment holiday during the pandemic, like mortgage holders. They're now bearing the brunt of the cost-of-living crisis, with fewer options for lowering their energy bills. It's a relief to see that at least they will be protected from unfair evictions.

What piece of international policy could the UK learn from?

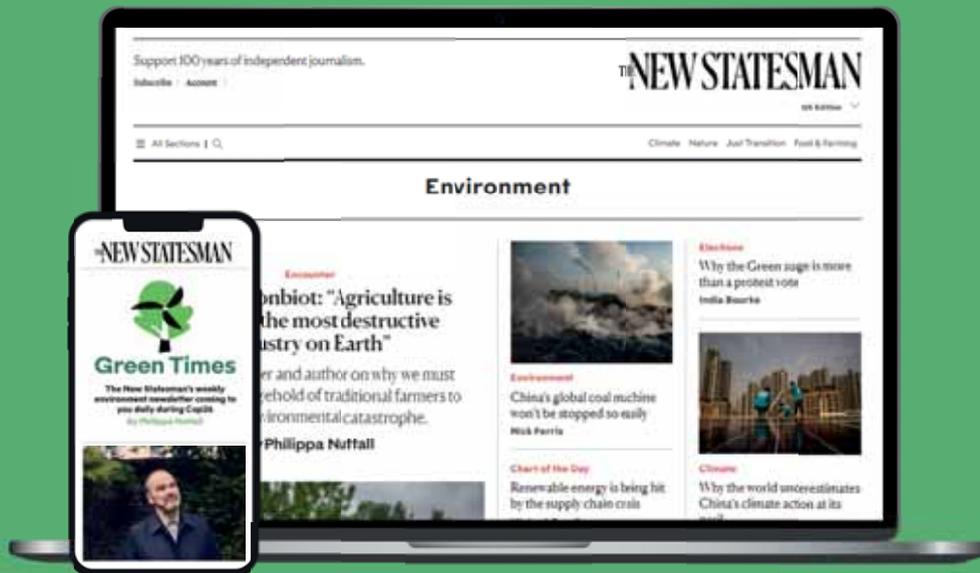
We could learn a lot from other countries' early years policies. In New Zealand, high-quality early years education is provided by staff qualified to degree level, made affordable for parents through subsidy, and continues to age six or seven so that children are ready when they move into school education.

If you could pass one law this year, what would it be?

A watchdog on employment rights. This is something that Citizens Advice has been campaigning on for 20 years. The government was planning to include a new body in its Employment Bill, then dropped this much-needed legislation – but we'll continue pushing for action on this. ●

Green Times

The *New Statesman's* weekly environment newsletter



The politics, business and culture of the climate and nature crises

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Flood Re is a joint initiative between the Government and insurers. Its aim is to make the flood cover part of household insurance policies more affordable.

Our new **Build Back Better** scheme is designed to reduce the cost and impact of future floods by including property resilience measures as part of flood repairs.

In the aftermath of their first flood, Paul and his family spent 15 months living in temporary accommodation. The stress of the flood, along with living in a two bedroom flat with his wife and four teenage children was extremely challenging.

In response, the couple installed a flood door, extra pumps, raised sockets, hardwood skirting boards, and porcelain tiles in their home, among other measures designed to make it more resilient.

They were so well prepared for the next flood in February 2022 that they did not need to leave their home and were back watching the TV in the lounge 48 hours later.



Paul protected his home from future flooding



Photo by Flood Control International

✓ Build Back Better

- Having little/no insurance claim or lasting flood damage
- After Build Back Better be back home within days or even hours
- Peace of mind and protected against future floods

✗ Build Back Better

- Average insurance claim over £30k to repair flood damage
- Out of home for months
- Anxiety and stress about the future