THE NEW STATESMAN

Spotlight

Thought leadership and policy

Energy and Climate

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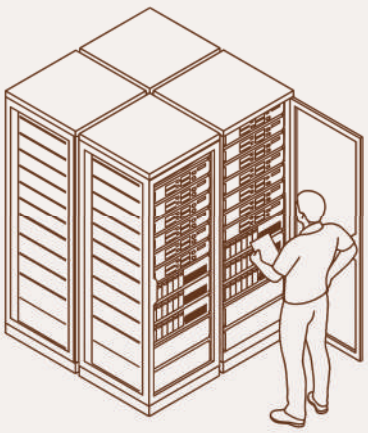
Break the cycle of energy crises. Build a more resilient energy system.

Britain can build a stronger, cleaner and more secure energy system by making use of the heat we already produce. Large-scale heat networks can capture wasted heat from industry, data centres and other local and ambient sources, alongside heat from excess renewable electricity, and deliver it to homes, businesses and public buildings.

This is a practical national infrastructure plan that can cut waste, reduce gas dependence, protect billpayers from global shocks and keep more of Britain's energy value here at home. Britain has made a system-wide energy shift before, when it moved from town gas to natural gas. Denmark and Sweden made the same kind of strategic choice in the 1970s: when fuel shocks hit, they changed course — expanding heat networks, capturing waste heat and building more resilient, integrated energy systems that were less exposed to future crises.

These shocks will keep coming for as long as Britain remains reliant on gas and on prices it cannot control.



By 2035, waste heat from data centres could heat 3.5 to 6.3 million homes - but only if we build the networks to capture and move it to where it is needed.

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Taking back control

Energy has rarely felt so present in our politics. What was once a largely technocratic domain – prices set by markets, infrastructure planned over decades – now sits at the heart of elections, economic strategy, national security and the cost of living. Even areas that once commanded broad consensus – not least the need to move beyond fossil fuels – have become the subject of increasingly fierce debate.

The past three years have reshaped both the tone and the terms of those arguments. Russia's invasion of Ukraine sent wholesale gas prices in Europe to more than ten times their pre-crisis level at their peak, forcing governments, including the UK, into tens of billions of pounds of emergency support. More recent instability in Iran has reinforced just how little control we have over our own energy systems. The IMF has warned that the UK could be the G7 economy most exposed to the fallout from events in the Middle East.

At the same time, the country is attempting to rewire its economy at speed. The transition to net zero demands structural and behavioural changes on a scale that is unprecedented in living memory.

Interestingly, people are increasingly sensing a shift within Labour about how this mission is being articulated. Where energy policy too often seemed to be viewed within the party as a political liability, the message of transition as transformative economic opportunity, a bullish position long pushed by Ed Miliband, is becoming louder. Clean power by 2030 is framed not just as a climate target but as a route to energy independence, lower bills and, ultimately, national economic renewal. It is a case set out in these pages by the Minister for Climate, Katie White.

Whether that argument can be sustained depends on delivery. High prices, slow infrastructure rollout and persistent regional inequalities all risk undermining it. The benefits of the transition will need to be felt, and soon. But the direction of travel is clear. Energy policy is not peripheral to economic debate – it sits at its centre.

This report explores what that means in practice: how the transition is reshaping markets, politics and public expectations, and whether it can deliver on its promise of a more secure, affordable and sustainable energy system for all. We also consider the role of AI, both as a source of rising demand and as a tool to improve how energy systems are managed.

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A view from parliament

Katie White
Labour MP for Leeds North West, Minister for Climate

"Renewables are the one energy source that wars cannot switch off"

One of the surprises of being climate minister is where you find agreement. I didn't expect to be nodding along to Jeremy Clarkson, but here we are. Writing his regular column, he said that solar panels and wind turbines don't really change your life. Your toaster still works, your lights still come on, home still feels like home.

And – make sure you're sitting down here – he even described wind turbines as "quite elegant".

Now, he and I might not agree on much else, but he's right. The best technology is the kind you barely notice, it just works quietly, reliably.

Energy has shifted from something taken for granted to something felt every month. Price spikes after Russia's invasion of Ukraine, market wobbles amid the war in Iran – and what should be ticking along nicely in the background suddenly feels exposed.

But thousands of Brits have had enough of being knocked around by forces they cannot control and are starting to take things into their own hands, shifting away from imported energy and towards power that is generated here, on our own terms.

In the wake of the Iran crisis, Octopus Energy says demand has surged, with solar up 54 per cent, heat pumps up more than 50 per cent, EV chargers up 20 per cent and home battery installations nearly doubling. That builds on the nearly 200,000 homes installing solar panels in the past year alone and tens of thousands more fitting heat pumps.

Those heat pumps replace old boilers and keep homes at a steady temperature, backed by a £7,500 grant that brings the upfront cost down. It's solar panels that shave £50 to £100 off a monthly bill over time and reduce reliance on whatever the going rate happens to be that week.

Electric vehicle chargers at home that turn a weekly petrol stop into something done overnight, often far more cheaply, helped along by grants of around £500.

Taken together, these upgrades do something much bigger because we can't build a stable economy on unstable oil markets.

Renewables change that – they are the one energy source that wars cannot switch off. Foreign governments can't blockade the wind or sanction the sun.

Sadly, Nigel Farage and Kemi Badenoch would happily turn this into another culture war, throw out a few stunts, promise more drilling and keep the old system going a bit longer.

It makes for TikTok clips, but the reality is that the numbers point in the opposite direction. New analysis from Oxford University's Smith School shows a fully renewable UK energy system could save households up to £441 a year, while squeezing more out of the North Sea would deliver as little as £16.

There is now serious backing behind our green transition, with around £15bn being invested to upgrade homes across the country, alongside free upgrades for those who need them most and low-cost loans for others to spread the cost. Banks are offering up to £2,000 back for installing a heat pump, around £1,000 for solar or battery systems, and interest-free loans in the £5,000-£20,000 range to make these changes achievable.

Future-proofing a home means making a few smart decisions that leave it warmer, cheaper to run and far less exposed to whatever comes next. And in a world like this, that isn't a luxury, it is common sense.

MARTA SIGNORI

A view from industry

Andy Hackett
Head of policy,
Centre for Net Zero

Too much energy should not be a problem

In the midst of another global energy crisis, the UK government's bet on clean power looks increasingly prescient. Just as the oil shocks of the Seventies began to reshape fossil-dependent energy systems, today's crises may well lock in an irreversible shift towards electrification and renewable power as insulation from volatile global markets.

The challenge is that the UK system is not set up to use that clean power. Nowhere is this clearer than in the routine waste of surplus renewable generation, with wind curtailment payments costing consumers around £383m last year. Meanwhile, wholesale electricity prices are increasingly falling to near or below zero when renewable generation spikes. Yet households rarely feel the difference.

Electricity markets were built for a world where energy supply followed demand. Renewables invert that logic. Supply now depends on the wind and the sun – and, increasingly, there are periods when it exceeds consumption. At these times, electricity is not just cheap; it can be effectively free or even negative. These prices are not a sign of outright market failure but of a market signal we are failing to respond to.

The system is now scrambling to catch up. The government has announced plans to offer households discounted electricity during periods of high wind, while the National Energy System Operator is preparing to pay consumers and industry to increase demand when solar output surges this summer. These interventions sound counterintuitive, but in a system defined by renewable abundance, the opportunity is often to turn things up, not down.

While these measures may have been catalysed by recent geopolitical events, they are a logical next step in making the most of our energy infrastructure. Using and storing more electricity when it is clean and plentiful can reduce waste, lower system costs and defer or avoid expensive network investment.

Encouragingly, early evidence suggests households are ready to respond. A recent Centre for Net Zero trial involving around 120,000 consumers found that discounting electricity by 50 per cent at times of high renewable generation increased demand by around 15 per cent, while making it free boosted demand by over 30 per cent.

However, outside trials, the reality is that when wholesale electricity prices are near zero or negative, fixed non-commodity costs on retail prices – levies and network charges – make it almost impossible to pass on the benefits of abundant renewable generation. The result is an inefficient system rife with waste. The barrier is not consumer willingness but market design.

This matters because Britain already has some of the highest electricity prices in Europe. In a system where electricity is structurally expensive, the signals to electrify heat and transport remain weak and the benefits of abundant renewables go unrealised. Recent steps to remove levies during "turn-up" events are a welcome start, but they remain short-term workarounds. We need a market that rewards using electricity where and when it is available, which will require a fundamental rethink of how these fixed costs are recovered. Whether by shifting them away from bills or reducing their impact at times of surplus, fewer levies would mean that clean energy savings are felt by the consumer.

Britain has learned some of these lessons the hard way. Since Russia's invasion of Ukraine, successive governments have accelerated renewable deployment and reduced exposure to gas. Record wind and solar generation helped shield the UK from the worst of soaring prices this March, and we are already adding record levels more. The next challenge is to design a system that uses them properly – or wait for the next crisis to learn that lesson.

MARTA SIGNORI

Advertorial

We must confront an unrecyclable truth

A credible plan for a circular economy cannot exclude solutions for waste that is unrecyclable

By Karl Smyth

In association with

enfinium
DECARBONISATION POWERED BY WASTE

We are producing more waste than ever. Since 2000, annual waste generation across OECD countries has risen by over 100 million tonnes. Global waste volumes are projected to increase by over 80 per cent between 2020 and 2050.

Efforts to manage this growing volume are mixed. In some countries, there is a strong culture of waste prevention and reuse, with recycling rates exceeding 50 per cent. In others, there are landfill sites so large they can be seen from space.

In the UK, the government has set several waste reduction targets, including to halve residual waste arisings per person by 2042. This target is being supported by commitments on recycling that are beginning to be delivered through a raft of new policies; changes we are all starting to see on our doorsteps – like "Simpler Recycling", which, from this month mandates all councils to offer separate food waste collections. Next year, the Deposit Return Scheme will see us all pay a small deposit for drink cans and bottles, which we can get back by returning them to a designated recycling point.

Not all waste, however, is recyclable. This ambitious target to halve residual waste – that is, waste which remains after efforts to reuse and recycle – will, if achieved, result in over 21 million tonnes of waste that still needs to be managed in the UK alone.

Even in the most circular of economies, zero waste is impossible. Some materials and products – for example, medical equipment – simply cannot be recycled, and others – like paper – can only be reprocessed a finite number of times.

Putting physics to one side, it is simply not possible for 100 per cent of people to perform perfectly 100 per cent of the time when it comes to creating and managing waste.

The government has made clear its ambitions to move to a more circular economy. To date, policy has rightly focused on reuse and recycling. But too limited a focus risks neglecting this huge challenge of what is left over – like landfill, putting it out of sight, out of mind. What, in 2042, should happen in the UK to the 21 million tonnes of residual waste?

Britain cannot build a credible

enfinium's Ferrybridge facility in West Yorkshire is home to the largest single waste-to-energy site in the UK

circular economy while continuing to treat unrecyclable waste as something to bury, export or ignore. A circular economy is about more than just turning one material or product back into an equivalent other; it means never allowing anything to truly go to waste by recovering maximum value at every opportunity.

That is why, for the waste we cannot prevent, we need a long-term strategy that prioritises solutions which apply circularity as a principle at every stage, including to residual waste. One person's trash really should be considered another's treasure.

So how can this be done? In Japan, it's called 'thermal recycling'. To some, it is simply incineration. For us at enfinium, it is resource recovery. Energy from waste, or waste to energy, the principle is the same – keep waste out of climate-damaging landfill and instead recover the huge value embedded within it. It is effective and it is already happening.

Today, we produce electricity and heat while recovering metals and ash – the latter used as a construction aggregate for things like roads and foundations.

By volume, around a quarter of everything that goes to an energy-from-waste plant in the UK is recovered in such a way, while the sector also accounts for approximately 3.5 per cent of the UK's power production – that is domestically generated, baseload electricity, displacing the need for imported gas on the system. All from material that would otherwise be buried or shipped abroad.

Tomorrow, through the advent of carbon capture, energy-from-waste facilities can offer these same benefits but also recover the carbon contained in the products we all consume. This would result in net carbon removals from the atmosphere due to the organic material in our waste. For every 200,000 tonnes of waste abated in such a way, you would address the emissions of the average gas boiler in around 100,000 homes. The very homes this waste comes from. This is circularity in practice, not theory.

Last year, the UK's energy-from-waste fleet processed over 17 million tonnes of unrecyclable waste, but the UK also exported around 1.5 million tonnes of residual waste to Europe and, worst of all, sent over eight million tonnes of municipal waste to landfill.

Unrecyclable waste is unavoidable. The question is what we decide to do with it. Norway is one of the biggest importers of residual waste from the UK, for use in its waste recovery facilities. At the same time, Norway is the UK's second-largest source of imported electricity via the North Sea Link.

This one example underlines not only the value of residual waste but also the need to embrace the issue when considering what a practical circular economy in the UK should look like.

Karl Smyth is director of external affairs and strategic policy at enfinium

SHUTTERSTOCK

Feature

The public are ahead of their politicians on heat pumps

Industry lobbying attempts against alternatives such as heat pumps are floundering after a second energy shock in five years

By Samir Jeraj

The proposal to "phase out" gas boilers by 2035 was originally made by the then Conservative government under Boris Johnson, who in 2021 promised a "green industrial revolution" while praising the scientific, technological and organisational strength that had delivered a vaccine for Covid that year.

Two years later, prime minister Rishi Sunak announced more funding for heat pumps, but couched his language in cautious terms, responding to the backlash in the UK from right-leaning media outlets and the gas industry, leading him to promise people would never be forced to "rip out their boilers" (which was never a proposal to begin with).

Mainstream politicians were also looking at Germany, where the far-right AfD party had run a successful campaign against similar policies on heat pumps and boiler phase-outs.

One civil servant who was working on net zero at the time said it felt like the mood had turned and the political consensus had been broken. That has since been confirmed by both Kemi Badenoch and Nigel Farage, who have effectively put their parties in fundamental opposition to net zero.

However, a majority of the British public (58 per cent) support all new heating systems being zero carbon by 2035 (16 per cent opposed), with 50 per cent supporting a "phase-out" of fossil fuel boilers by that same date, according to new research produced by the MCS Foundation.

"We've got so much data that shows us that if people have had neighbours or friends who have heat pumps installed, it really does help people get over that feeling that this is going to be a massive change," says Annabel Rice, senior political adviser at the Green Alliance. The charity and innovation agency Nesta runs a "visit a heat pump" scheme, where members of the public can see them in action.

First invented by a council engineer in Norwich in 1945, heat pumps basically move heat from one place to another, warming or cooling a building as needed.

"I started working as a plumber nearly 20 years ago and worked for a heat pump company in 2024. I've been into countless people's homes to speak to them about, and install, heat pumps.

They can seem a bit confusing, but when you have a good chat about how they work, what they do and what they cost, most people can see how big the benefits are," says Hannah Spencer MP.

"Heat pumps really could help people to save money as the price of gas is shooting up, but the government needs to take swift action," said Rice. "Heat pumps physically insulate us from being trapped on gas and trapped on these volatile markets."

However, action has been slow, despite the energy shock in 2022 following the invasion of Ukraine, when gas prices went up 180 per cent in two weeks, prompting governments, including the UK, to intervene to control prices and subsidise household energy costs.

The UK gas industry has come under heavy criticism, with campaigners accusing members of funding campaigns against heat pumps in an effort to undermine efforts to move away from gas.

In February, ClientEarth sent legal letters to ten companies with "evidence suggesting that certain companies joined together to influence the development of the UK home heating market, including by potentially misleading consumers into thinking that heat pumps are not a viable option". If proven, this could be a breach of competition law in the UK.

"The gas networks, they've got a huge market in the UK, with 85 per cent of homes having gas boilers. And it means that they've got billions of pounds worth of assets to protect," says Jess Ralston, head of energy at the Energy and Climate Intelligence Unit. She says there is an "ecosystem of doubt and misinformation" that is holding back heat pumps in the UK.

The question following the conflict between Iran and the US and Israel is whether fossil fuels have become a fundamentally insecure energy source.

Even if the UK were to double-down on the dwindling fossil fuels it could extract from the North Sea, it still would not be able to control the market price and be able to keep consumer costs under control.

Meanwhile, there are few loud advocates in the political space for heat pumps. "I'm not particularly seeing any real champions for this in the political space. And I really think that that is going to be massively important," says Rice.

Campaigners highlight links between global instability and climate change

ALISHIA ABODUNDE/ GETTY IMAGES

Even the Labour government continues to hedge, putting £2.7bn into heat pumps but failing to reinstate a "phase out" of gas boilers. In politics, practice is as important as policy. The Department for Energy Security and Net Zero is planning cuts focused on staff working on heat pumps and net zero buildings, according to insiders in the department. This means that around 300 of the 700 people working on these policies and their delivery are facing redundancy.

The presentation used to confirm this news to staff included one slide entitled "All parts of the group need to work effectively for us to deliver", illustrating how the parts of a combustion engine car work in what can only be described as an inappropriate metaphor.

MCS is calling on Labour to revisit their policy and press ahead with policies to "commit to clean heat, ensuring all new heating systems have zero carbon emissions from 2035" and to remove all the social and environmental levies on bills to reduce the price of electricity for consumers by an estimated £500 a year.

"So many people would love to have a heat pump but they can't afford one. That's why, along with freezing energy price caps, we need the government to increase subsidies and investment in heat pump and retrofitting schemes," says Spencer, emphasising the importance of upfront support to drive wider adoption.

"Even under the last government, we started to see heat pump sales rising and rising," says Ralston. "The incentives that they put in place obviously were working."

The market for heat pumps is growing, albeit slowly, in the UK compared with the rest of Europe. "The question is, could it grow more if there wasn't all of this confusion and misinformation," Ralston says.

To end that confusion, the Labour government would have to show greater leadership than it has done up to this point.

Advertorial

Britain's energy bills are broken. Here's why

Fuel poverty is less about the price of energy than how we choose to pay for the transition

By Bill Bullen

In association with utilita

The moment a new energy price cap is announced, a familiar ritual begins. Campaigners rage. Columnists simmer. Ministers are hauled before cameras to explain themselves. And somewhere in the background, energy suppliers brace for another round of public fury.

It is understandable. Energy bills have become one of the defining anxieties within British households, and when prices rise, people need somewhere to direct their frustration.

Fuel poverty is often treated as a single problem, but it has three distinct drivers: energy prices, household incomes and the efficiency of our homes. Only one of these sits squarely on energy bills themselves – and that is the focus here. Suppliers cannot raise wages or redesign the benefits system, and reducing consumption through energy efficiency is already a shared focus with government.

What remains, and what is too often ignored, is how policy choices made in Whitehall load costs onto bills – and why the way we fund the energy system is quietly deepening fuel poverty.

Britain needs an honest conversation about energy bills. It is time for a real reckoning with what is actually on those bills, who put it there and who has the power to change it.

Ofgem's price cap permits suppliers to achieve a profit margin of around 2.4 per cent. Yet even this allowance is consistently out of reach. Over the past five years, suppliers have achieved just 13 per cent of that target, an actual return of 0.3 per cent. To put it plainly: Britain's energy suppliers are not cashing in on the crisis. They are, in many cases, barely breaking even.

So where does the money go? The answer lies in a breakdown that most bill-payers have never seen. Of every £10 spent on energy, only £3.75 covers the actual wholesale cost of the gas and electricity you use. The next largest slice, £2.84, goes not to your supplier but to the network companies that maintain the pipes and wires that transport energy across the country. A further 89p funds a constellation of government policy schemes, collected through bills rather than general taxation. This includes Renewables Obligation and the Warm Home Discount.

Then there are other miscellaneous costs: running industry bodies, VAT and supplier margins. Suppliers, for their part, are allowed 26p in every £10 – though, as noted above, this is consistently under-recovered.

These are not figures that make for comfortable reading, because they complicate the story we have told ourselves. The energy crisis triggered by Russia's invasion of Ukraine was real, and its impact on wholesale prices was severe. Since then, geopolitical events – including the Iran war – have increased volatility once more, although costs remain far below the 2022 crisis, when prices surged by over 1,000 per cent. What has not stabilised is everything else.

Ofgem itself projects that network upgrades – to deliver a secure, resilient and low-carbon energy system – alone will add £108 to annual bills by 2031.

Geopolitical shocks – a spike in the price of liquefied natural gas shipped from the Gulf, for example – are largely outside Whitehall's control. Costs layered on top of the wholesale price, the costs beyond the gas and electricity, are, to a degree, political choices. They can be changed.

And then there is debt. Domestic energy debt now stands at around £5bn and independent forecasts suggest it could reach £7.5bn by 2027. This already costs every household over £50 a year – and unless addressed, that figure will only rise. There is a misconception that the energy crisis alone created this burden.

In fact, debt has continued to accumulate even as wholesale prices stabilised. Because suppliers collect payments on behalf of the entire energy system, they absorb the debt risk for all of it without the means to adequately address it. That cost does not disappear. It is instead placed on to every bill, paid by customers who are meeting their payments on behalf of those who do not (perhaps because they cannot). Tackling this requires a proper debt relief scheme and improved affordability support, both funded by government, and a framework that stops unmanageable debt from rapidly accumulating in the first place.

UTILITA ENERGY

Bill Bullen: "Our bills aren't broken by suppliers, they're broken by policy choices"

The most urgent reform concerns how we fund the energy transition. Upgrading Britain's electricity network is not optional – it is essential for energy security, for decarbonisation and for the long-term stability of supply. But the question of who pays, and how, matters enormously. At the moment, everyone, through their bills, pays. That approach is neither efficient nor fair.

Instead, the government should issue energy transition bonds. These are long-term instruments that spread infrastructure costs over 70 to 80 years – better matched to the lifespan of the assets being built – rather than loading them onto current bills. This would also open the door to both public and private investors putting their capital behind Britain's energy future. This is not a radical idea. It is how major public infrastructure has been funded throughout the developed world. Applying the same logic to the energy transition would reduce pressure on household bills today and ensure investment flows at the pace the transition demands.

There is also the principle of fairness. Wealthier households with solar panels, heat pumps and home batteries can reduce their consumption and, therefore, their exposure to these costs. Low-income households cannot. They pay in full for the costs of a national infrastructure upgrade whose benefits they are largely unable to access. It is, in the plainest terms, a regressive settlement dressed up as a neutral one.

The same can be said of the Warm Home Discount, which has risen by just £10 in a decade. It does little to address fuel poverty.

Instead, ringfencing VAT revenue could fund a larger social discount and remove Warm Home Discount costs from bills. It could save the most vulnerable households up to £450 annually.

None of this requires us to ignore legitimate concerns about competition and consumer protection. But it does require the government to be straight with the public about where bills come from, what is driving them up and what it would actually take to bring them down. ●

Bill Bullen is the CEO of Utilita Energy

When will clean energy deliver the UK jobs boom?

Net zero promises jobs and regional growth. But is the workforce ready to make that a reality?

By Phin Foster

Labour needs clean energy to do more than decarbonise the grid. At a time of stagnant growth and economic pessimism, the net zero mission is being framed as the government's primary vehicle for establishing new skills and jobs in places long starved of investment and getting the economy moving again.

The government's clean energy jobs plan suggests the transition could support up to 860,000 jobs by 2030, including 400,000 additional roles. But is this happening quickly enough?

Germany has twice as many renewable energy workers per capita as the UK. Denmark and Sweden also outstrip UK workforce capacity. Those gaps reflect years of investment in skills, supply chains and manufacturing. The economy is playing catch-up.

The clean energy workforce is expanding, but from a relatively weak base. The ONS estimates that there were 652,000 people employed in UK green jobs in 2024, an increase of more than a quarter on 2015 levels. Demand for such roles will only accelerate so long as the country remains committed to a net zero pathway, raising the risk that projects move faster than the workforce needed to deliver them.

That gap between ambition and capacity runs through the transition. Workers need to be trained in advance of projects, as well as after they begin. Skills are required where infrastructure is built, not concentrated elsewhere.

Labour's former director of industrial strategy and clean energy, Virginia Sentance, now a partner at Flint Global, argues that the promise can obscure the reality. "There's not this nebulous bucket of green jobs that all we have to do is grab," she told the *New Statesman*'s recent Igniting Growth conference. "In most cases we're talking about transitioning existing people's jobs and lives to meet these changing needs."

Sentance said this spoke to net zero's effects no longer being distant or theoretical. "We're at the point in the transition where people are feeling the impacts," she acknowledged. "We had a period where you could build infrastructure in a slightly abstract way, away from people. Now we're talking about how it actually changes their lives – how they heat their homes, the cars they drive, and often the jobs they perform."

That creates both an economic and political challenge. Policies designed in Whitehall will only succeed if they translate into visible, local benefits – whether through new jobs, lower costs or improved services. People need to start seeing them soon, otherwise, the transition risks appearing imposed rather than participatory, particularly in communities already sceptical of economic change or perceived government overreach.

The transition will create new roles in offshore wind, nuclear, grid expansion and low-carbon heat. And much of this will depend on adapting familiar occupations to new technologies: engineers moving from oil and gas into offshore wind, construction workers delivering retrofit as well as housebuilding, electricians installing heat pumps rather than gas boilers.

The issue is not simply a shortage of workers but a shortage with the right training, in the right places, at the right time. With the clean energy workforce set to grow rapidly, demand will be concentrated in sectors that already face recruitment pressures.

For Luke Murphy, Labour MP and a member of the Treasury Select Committee, that means focusing not just on new entrants but on movement within the workforce. He called for "more proactive support for those retraining, particularly for workers moving from other industries to the clean economy".

Failure risks shortages at the point of delivery, rising costs, missed targets and lost opportunities for people to directly engage with the biggest behavioural and industrial shift in living memory.

The regional dimension sharpens the challenge. Labour's strategy places heavy emphasis on clusters, city regions, local supply chains and the industrial capacity needed to anchor them. Offshore wind in the north-east, carbon capture in industrial regions, nuclear in established sites, electrified heat and transport across towns and cities – clean energy is inherently local.

CHRISTOPHER FURLONG / GETTY IMAGES

Green infrastructure investment does not always equate to local opportunities

But place-based growth does not follow automatically from infrastructure investment. A wind farm off the coast or a new grid connection might bring little tangible benefit to nearby communities if the workforce is imported, supply chains are elsewhere, or training is too limited to connect local people to opportunity.

"Having an Office for Clean Energy Jobs is incredibly important," Murphy said of meeting this challenge, "alongside investing in clusters across the country. The creation of clean energy technical excellence colleges is another important step."

But given the scale of the job at hand, are we prioritising the right metrics for gauging success? Sam Alvis, associate director at IPPR, was sceptical of treating job creation as the primary test of whether net zero is on the right track. Clean energy can generate local growth, he agreed, but "maybe" that should not be the central focus. After all, politicians have "talked about job creation over and over again", yet the public enthusiasm has been muted.

For Alvis, the problem was not just economic but perceptual. Voters tend to judge the transition not by long-term projections of employment but by its immediate effects on their lives. "People aren't marking you on jobs," he said. "They're marking you on their bills."

Even where investment does bring new roles to an area, those benefits are not always attributed to government policy – or even recognised as part of the clean energy transition at all.

That creates a disconnect between the narrative of a jobs-led transition and the lived experience of communities. Government can point to aggregate employment gains, but individuals are more likely to notice whether local industries are expanding, whether family members are in secure work and whether economic change feels stable or disruptive. The risk, Alvis suggested, is that a strategy built around future job creation fails to land politically because its benefits are too diffuse or delayed.

Murphy suggested this will ultimately be the test of the government's approach. While it has got some of the key pieces in place, he said, the outcome will depend on whether those plans translate into real improvements in people's lives. "A large part of this is ensuring jobs in the clean economy are high-quality and high-standard so people want to train or retrain into them."

That is the constraint on Labour's argument. Clean energy may offer a route to long-term growth, but it will only ever be judged in the present.

Will AI accelerate the journey to net zero – or make it harder to achieve?

The AI boom's potential impact on the transition raises questions around risks, opportunities and direction

AI'S PROMISE CAN ONLY BE REALISED THROUGH POLICY

Lord Nicholas Stern
Chair, Grantham Research Institute on Climate Change and the Environment, LSE

Artificial intelligence has great potential to support transitions to net-zero emissions and new clean economic growth across the world. But governments must work closely with the energy sector, infrastructure companies, local authorities, cities, research agencies and tech companies to foster its constructive deployment.

This will include how to manage and design systems, how to discover, how to innovate and how to adapt, as well as how to scale and integrate these approaches effectively over time.

Without active public policy, the commercial incentives to apply AI in socially productive ways may be weak, leading to its use being concentrated in areas that could be environmentally destructive or socially damaging, rather than those that deliver broader public value.

Policies and strategies that help steer applications of AI towards clean growth, discovery, adaptation and resilience can encourage the delivery of real and lasting benefits, while also supporting wider economic and environmental objectives over the longer term.

Leaving its implementation solely to market forces would be risky, including through the use of energy and resources for low-value or, indeed, harmful activity, which could undermine progress towards sustainability and resilience goals.

Government should also consider targets for clean energy investments for tech companies seeking to roll out data centres, as there is a risk of strain on the energy network – something already seen in the US, with growing demand placing additional pressure on existing infrastructure and capacity.

In the UK, Great British Energy should show strong and active leadership in delivering the clean power required for the transition and for the AI that can help drive that transition.

AI ISN'T THE CLIMATE VILLAIN - IT'S THE MISSING PIECE

Devorah West
Senior policy advisor, climate and energy policy, Tony Blair Institute for Global Change

The AI boom is fast becoming the latest climate villain – and not without reason. The International Energy Agency estimates data centre electricity demand could double by 2030. In a country like the UK, where grid capacity is already stretched, that creates real pressure.

But focusing on AI's energy use misses the point. AI isn't just another source of demand – it could be the tool that finally makes net zero achievable at scale.

Today's energy system is inefficient. Power is wasted. Grid delays are mounting. And renewables are held back because the system struggles to manage them. This pushes up costs.

Slowing AI won't fix any of this. But using it properly might, helping address inefficiencies and improving how the system functions overall.

AI can balance grids in real time, improve how we forecast wind and solar, and speed up everything from planning to battery development. The result is simple but powerful: cheaper, more reliable clean energy, delivered more efficiently and at greater scale than today.

And demand isn't just a problem – it can be part of the solution. Large, predictable users like data centres can help unlock investment in clean power and grid infrastructure, if planned strategically and aligned with wider system needs and long-term priorities.

But none of this happens by default. Without changes to how demand is shaped, how the grid is expanded and how the system is run, the UK will struggle to capture these gains.

So will AI accelerate net zero – or make it harder? It depends on the choices we make now.

Get it right and AI becomes an accelerator of the transition.

Get it wrong and it risks becoming just another strain on a system already under pressure.

EFFICIENCY GAINS ALONE WON'T CUT EMISSIONS

Mike Berners-Lee
Professor in practice, Lancaster Environment Centre, and co-founder, Small World Consulting

The trajectory of ICT has been one of rising capability, rising efficiency and, with that, ever faster usage – and, therefore, overall rising impacts, reinforcing a cycle where gains in performance lead to greater overall consumption rather than restraint.

This so-called "Jevons paradox" applies to ICT as a whole in just the same way that it applied to coal in the nineteenth century. The coming of age of AI is the latest manifestation of that dynamic. It is bringing a vast surge in capability, use and impacts of computing.

In the drive to cut emissions, there have over the years been many claims of emissions 'avoided' through ICT-enabled efficiency. However, they have been largely spurious because rebound effects have affected ICT's impact on the global economy in exactly the same way as they have affected ICT's direct impact.

The same applies to AI: it can be used to create carbon efficiencies that enable impact reductions in support of net zero.

However, two realities currently undo this beneficial dynamic. First, efficiency gains are thwarted by rebound effects greater than 100 per cent – backfires – where the proportional usage increase exceeds the proportional efficiency gain, so total impact rises.

Second, AI is also used for things that do not contribute at all to carbon efficiency.

So, what will it take for AI to contribute to net zero? What is needed is a constraint on impacts to fundamentally change the dynamics of AI's growth, allowing it to escape the Jevons paradox.

For example, a carbon price high enough to reduce global emissions would change the role of AI from a carbon problem to one of delivering efficiency improvements that enable a thriving, clean economy. ●

"AI's role will depend on decisions we make now"

THE WARM HOMES PLAN: INSULATION AS THE FOUNDATION OF AFFORDABLE WARMTH

As another energy crisis bites and energy costs strain household budgets, improving home energy efficiency has never been more urgent. One of the most effective and lasting improvements is insulation. Mineral wool insulation, in particular.

High performance mineral wool insulation significantly reduces heat loss through a home's walls, roofs and floors - keeping heat where it belongs: inside the home. And by cutting heating demand for decades, it is also a reliable way to improve comfort and protect households from rising and volatile energy prices for the long-term.

But the benefits go far beyond bill savings. A well-insulated home can improve people's health and well-being. For millions in fuel poverty, it is the difference between a warm, safe home, and one that is cold, damp, and harmful, as poor insulation is linked to respiratory and cardiovascular conditions. Mineral wool is also non-combustible, providing in-built fire protection, and can greatly improve a home's acoustic performance.

It therefore remains essential for the Warm Homes Plan to have high-quality insulation and consumer protection at its core, with three urgent priorities:

1. Help struggling households keep warm

Fuel poverty affects nearly 3 million households in England, and an estimated 9.6 million in the UK are at risk of living in a cold home and unable to contribute financially to insulating it. With insulation rates falling and no national fuel poverty scheme now in place, the poorest continue to face high energy bills and sub-standard living conditions.

Action:
The additional £1.5 billion of capital funding committed to replace ECO must be targeted squarely at improving insulation and living conditions in vulnerable households, enabling those who need it most to get the right help.

2. Cut heating costs reliably

Heating is a major expense, especially for those in inadequately insulated homes. Combining high-quality insulation with clean heating technologies, backed by real-world performance checks and guarantees of energy savings, is the best way to cut costs reliably.

Action:
The Warm Homes Plan should better integrate insulation and clean heat policies and encourage routine performance monitoring and guarantees of energy savings for households.

3. Reduce national energy demand

The cheapest and greenest energy is the energy we do not use. Yet the UK lacks a national heating demand reduction target, despite having supply-side targets. As home heating, transport, data centres and industry all electrify, this policy gap risks increasing household electricity costs.

Action:
Government should set a new national Heating Demand Reduction Target, with support for insulation and clean heating measures designed to meet the target.

At a time when the UK must reduce energy bills and carbon emissions, the Warm Homes Plan offers an opportunity to do both - if it embeds insulation at its foundation and guarantees good outcomes for consumers.

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