



Cheaper Power 2030, Net Zero 2050: Resetting the UK's Electricity Strategy for the Future

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Executive Summary

Energy is prosperity. It powers innovation, drives economic growth and secures national interests. It keeps our homes warm, our lights on and our lives connected. In other words, the future of Britain relies on access to plentiful, low-cost energy.

For centuries, the United Kingdom has turned energy into national strength. Coal and steam powered the Industrial Revolution. Britain pioneered nuclear power and hosted the world's first nuclear-power station. North Sea oil and gas delivered prosperity in the late 20th century. And more recently, the UK has helped make offshore wind a globally competitive energy solution.

Today, however, energy has shifted from being a national advantage to a growing constraint. Electricity prices are among the highest in the developed world. Electrification, essential for both energy security and decarbonisation, is proceeding too slowly and remains politically fraught. The North Sea oil and gas production is in decline, with the lost tax revenue and energy security that comes along with this. And continued reliance on global fossil-fuel markets is leaving the UK exposed to price shocks and geopolitical risk. These are not problems of the current government's making, but they are problems the country must now solve.

At the same time, the global context is changing. Addressing climate change is an increasingly pressing imperative, as extreme weather is felt more and more around the world. The efforts of the global community to curb emissions have been substantial but insufficient. Technological progress offers hope of easing this transition, but we are reaching a stage where further reduction of emissions carries a higher and higher economic and political cost.

Simultaneously, energy security, cost stability and economic resilience are gaining increasing focus in national strategies. Increasing geopolitical tensions are making energy interdependence less attractive. Large

economic shifts such as the artificial-intelligence revolution are ramping up energy demand, dampening the effect of energy-efficiency efforts elsewhere.

Around the world, countries are prioritising energy strategies over climate strategies. The United States is leveraging domestic fossil-fuel resources for energy dominance. China is pursuing a long-term path towards energy independence through electrifying its economy, while expanding both renewables and nuclear, but also coal capacity, domestically. Brazil, the host of this year's COP, is increasing oil and gas extraction alongside investment in renewables.

In this context, the UK's direction must be clear. Clean electricity is the future of UK energy – for the climate, for national security and for long-term economic strength.

Those arguing otherwise are proposing a path that is more costly, less secure and not grounded in physical realities. But the UK's current energy strategy risks getting the balance wrong. If the transition continues in a way that raises costs, weakens reliability and undermines growth, it will fail both politically and practically. That failure would erode public support at home, damage Britain's credibility abroad and hand momentum to opponents of climate action.

The government must therefore focus on what matters most – for growth, for consumers and for the climate: reducing the cost of electricity in a renewables-based system and creating the conditions for the full electrification of the economy. The immediate task is not squeezing out the final emissions in the power sector but delivering electricity that is both cheap and clean, so it becomes the obvious alternative to fossil fuels for households, transport and industry alike.

Doing so requires reform of the Clean Power 2030 mission. Launched in the middle of the gas crisis and in a low-interest environment, it was right for its time, but circumstances have changed. The UK now needs more than a decarbonisation plan. It needs a full-spectrum energy strategy built on

growth, resilience and abundant clean electricity. This means prioritising cost, flexibility and long-term stability – the real building blocks of electrification – not just short-term emissions cuts.

If Britain gets this right, the prize is enormous – both for the climate and the economy. Cheaper, clean electricity would cut emissions while lowering bills in the middle of a cost-of-living crisis. It would attract new industries, such as AI data centres, to locate in Britain. It would accelerate electrification across households, transport and industry, raising efficiency and boosting productivity. And by proving that decarbonisation can be done affordably, Britain could lead abroad as well as at home – exporting not only clean technologies but also a model for others to follow.

Unless the foundations are fixed, however, the risks are clear: higher costs, weaker reliability, lost public confidence and a growing backlash against climate action.

To focus minds across government, the Clean Power 2030 mission should therefore be reframed as Cheaper Power 2030, Net Zero 2050.

The UK's commitment to net zero remains firm. Britain led the world in enshrining the Climate Change Act, and that legal duty stands. While some have suggested walking back the country's commitment to the Climate Change Act or to achieving net zero by 2050, that choice would amount to rolling back progress. The question is no longer whether to decarbonise, but how – how to deliver clean power affordably, securely and with public support.

This paper sets out how to make that commitment work: a new strategy focused on cheaper, abundant electricity as the foundation for growth and energy security. Delivering this requires politicians to face up to an important reality: Britain's high electricity costs are not accidental. They have been built into the system by decades of policy decisions. Reversing them won't happen overnight, but unless the foundations are fixed now, higher prices will be locked in for a generation.

The recommendations in this report are not exhaustive. As a part of a reframed mission the government should work with the energy sector to identify the full suite of actions that can be taken to reduce costs over the short, medium and long term. But a recalibrated strategy, focused on cheaper, abundant electricity, will require some key changes:

1. Recalibrating the UK's clean-power plan for least-cost pathways:

Achieving clean power must remain the objective, but it must be delivered in a way that is cost-effective and commands public support. Pushing the system too quickly risks driving up costs and undermining confidence. The Department for Energy Security and Net Zero (DESNZ) should instruct the National Energy System Operator (NESO) to conduct annual reviews of system progress and recalibrate the pace of the transition where necessary, ensuring affordability, resilience and transparency about trade-offs.

2. Fixing market design and investment signals: A low-cost electricity system will not come from onerous central planning, but from a well-functioning energy market. The UK needs an electricity market that supports effective, decentralised investment, with costs that reflect the economic and physical realities of the system. This means accelerating the process towards introducing more localised and temporal market signals and considering reforms to the Contracts for Difference system to reduce costs and put risk back into the hands of energy suppliers rather than consumers.

3. Implementing radical planning reform: For too long, the country has pressed ahead with ambitious decarbonisation plans without removing the structural barriers that make delivery slow and expensive. The government must urgently implement even more radical reform to the planning regime than currently envisaged, by centralising decision-making on key projects and further reducing environmental burdens. Accelerated planning is one of the most effective ways to reduce system costs and enable the net-zero transition.

4. Accelerating technology, data and system innovation: A modern grid is more complex, but AI can help unlock new efficiencies and smarter ways of managing existing assets. NESO should be upgraded with AI

capabilities to improve system operation, while all energy data must be released consistently to support innovation. National Grid should be allowed to invest in new digital and operational technologies. At the same time, DESNZ must make it easier for consumers to adopt low-carbon technologies and participate in flexibility markets, unlocking the demand-side potential of a smarter energy system.

5. **Developing a low-cost generation mix that works for now and the future:** The UK needs a generation mix optimised for cost and reliability, not just speed. NESO should use its Cheaper Power remit to identify the most affordable balance of renewables, nuclear and flexible capacity. Offshore wind will remain central, but rising costs and grid limits demand a stronger focus on value for money. Nuclear can provide stable, low-carbon baseload if regulatory reform cuts costs and build times. Support for high-cost options such as power-sector carbon capture and storage and biomass should be phased out, with investment redirected towards storage, flexibility and industrial decarbonisation to deliver genuinely cheaper power.
6. **Making gas cheaper:** Carbon pricing has played its role in the UK electricity system: it successfully removed coal from generation. Today its main effect is to raise bills, since gas sets the wholesale price most of the time. With renewables already cheaper than gas and with coal gone, suspending some of the carbon taxes on gas until 2030 would not undermine decarbonisation but would deliver immediate savings and ensure gas remains available when renewables are scarce. Beyond 2030, carbon pricing can be reintroduced to provide long-term investment signals.

The political debate over clean energy is increasingly polarised between those who ignore the challenges and those who deny its potential altogether. But a more pragmatic path is possible – one rooted in system efficiency, economic realism and national interest. Cheaper Power 2030, Net Zero 2050 is not a retreat from net zero, it's a commitment to delivering it: affordably, securely, and in a way that supports growth and ensures public trust.

Delivering Emissions Reductions

The UK was the birthplace of the Industrial Revolution and therefore, until the early 1800s, was responsible for the majority of global carbon emissions from fossil fuels and industry. Over time, however, the UK's share has steadily diminished. By the end of the second world war, it had fallen to 10.5 per cent; by 1970, to 4.4 per cent; and by 1990, when the first report by the Intergovernmental Panel on Climate Change (IPCC) was released, to 2.65 per cent. By 2023, the UK accounted for just 0.81 per cent of global emissions – a figure that continues to shrink as UK emissions decline and other economies industrialise.

This trajectory underlines a central truth: while further UK decarbonisation remains important, its direct impact on the global climate will be marginal. The larger challenge lies in supporting the rest of the world's transition.

At home, there is also debate about the most effective route to accelerate decarbonisation. Electricity made up just 21 per cent of the UK's total final energy consumption in 2023. This means that reductions in power-sector emissions alone cannot deliver economy-wide decarbonisation. With the UK grid already relatively clean, the priority must shift toward driving electrification of transport, heating and industry. Lowering electricity bills will be crucial to that effort, since affordability is a key determinant of uptake.

For these reasons, there is limited climate rationale for racing towards a 95 per cent clean electricity system in the near term. While the eventual full decarbonisation of UK power is essential, this can be achieved over a longer horizon as technology and innovation catch up with policy ambition. In the meantime, the UK can maximise its climate contribution by supporting global decarbonisation abroad and accelerating electrification at home.



Understanding British Energy in Recent Decades

To chart the future of the UK's energy system, we must first understand how it arrived at this point – a system that is decarbonising but increasingly costly, inflexible and politically contested. The key trends of recent decades help explain the current constraints, and why simply accelerating the current model will not deliver the outcomes Britain now needs.

Broadly speaking, there are three major trends that have characterised the UK energy system over recent decades:

1. The UK's shift from net energy exporter to net importer
2. A long-term reduction in energy consumption across the economy
3. The rapid decarbonisation of electricity supply alongside rising energy costs

Trend 1: From Net Exporter to Net Importer

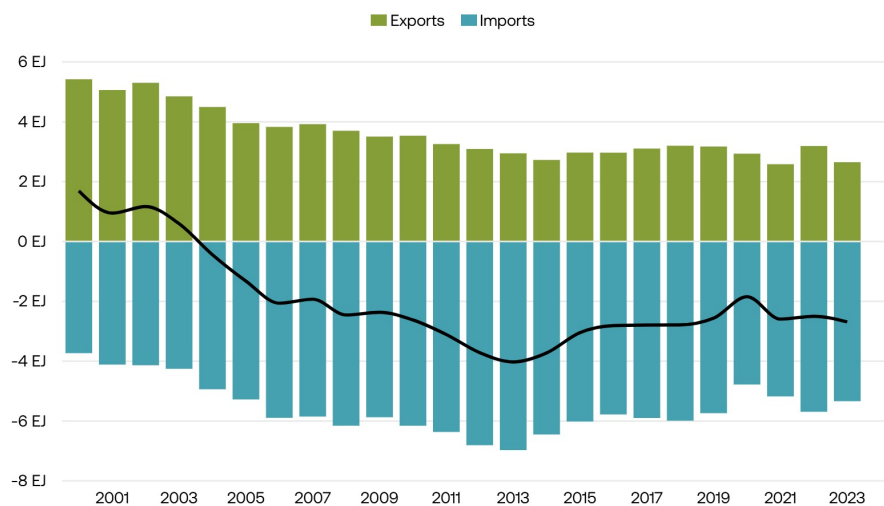
The first key trend that has shaped UK energy over recent decades is the move from the country being a net energy exporter to becoming increasingly reliant on energy imports.

For much of recent history, the UK has been an energy powerhouse. It dominated global coal exports in the 19th century and leveraged North Sea oil and gas for economic benefits in the 20th century.

Yet, in the early 2000s, the tide began to turn. After being a net energy exporter for most of the past century, the UK became a net importer in 2004.¹ By 2017, net imports constituted 36 per cent of the UK's energy needs, with imports nearly double the exports.² By 2024, 43 per cent of its energy needs were met by imports.³

FIGURE 1

The UK has been a net importer of energy since 2004



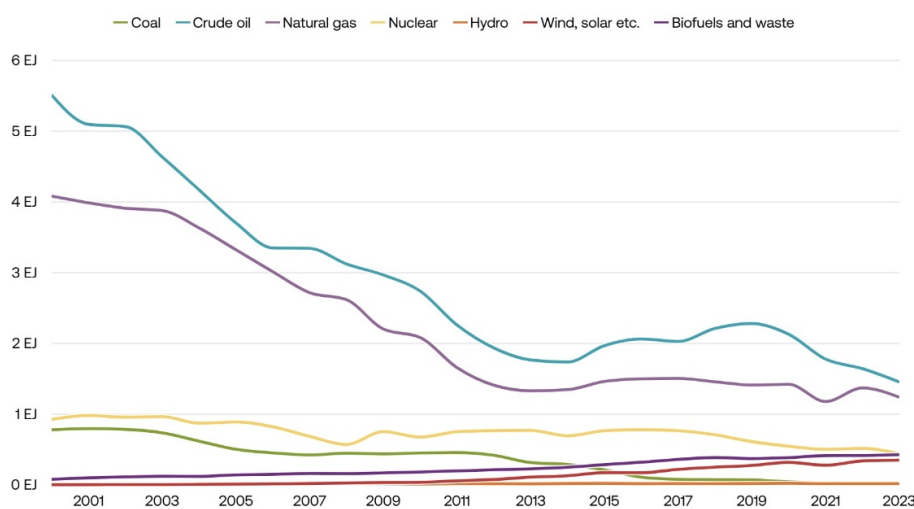
Source: IEA

Note: EJ = exajoules

This reversal is largely due to natural decline in fossil-fuel reserves. North Sea production peaked in 1999⁴ and has since fallen by 68 per cent.⁵ Since 2020, the decline in production was an average of 9 per cent per year.⁶ Data from the North Sea Transition Authority (NSTA) shows that in 2022, the UK only replaced 3 per cent of production with new reserves.⁷ While industry projects that around 7.5 billion barrels of oil and gas remain,⁸ production is slowing and investment is declining.⁹

FIGURE 2

UK oil and gas production has declined significantly in the decades since 2000



Source: IEA

Note: EJ = exajoules

While this trend is primarily driven by natural decline, policy has also played a role. The Energy Profits Levy raised the effective tax rate on oil and gas producers to 78 per cent, and even higher for many operators, among the highest globally.¹⁰ Coupled with a pause on new licences, this has driven capital out of the basin. Fracking, while theoretically a supplement, is likely unviable at scale due to planning and land constraints.

This import dependency has real costs. In 2023, the UK spent £117 billion on energy imports, double the 2021 figure,¹¹ while tax revenues from oil and gas extraction are declining rapidly. To supplement lower domestic production, and in particular after the removal of Russian pipeline gas to the European continent, liquefied natural gas (LNG) imports have grown by 171 per cent between 2018 and 2023.¹² An increased reliance on LNG has increased the cost of gas and exposure to volatile markets, making the UK less energy secure and vulnerable to higher prices.

Import dependency has left the UK exposed to price volatility and geopolitical risk – and the failure to build a domestic alternative based on abundant, low-cost electricity is now the country's central energy challenge.

Trend 2: Reduced Consumption

The second important trend in the energy system over recent decades has been the move from energy-consumption growth to energy-consumption decline.

Following centuries of energy demand increasing alongside economic development, over recent decades total UK energy demand has been in steady decline. Final energy consumption in the UK peaked in 2001¹³ and has declined almost every year since, reaching a near-record low in 2023. Looking at electricity alone, demand peaked in 2005, declining by about 25 per cent by 2024.¹⁴

This reduction has taken place despite continued population growth and a steadily expanding economy. In fact, per-capita energy use has fallen by 37 per cent since 2000,¹⁵ with electricity demand per person dropping by more than 30 per cent over the same period.¹⁶ Meanwhile, energy consumption per unit of GDP has fallen by more than two-thirds since 1970.¹⁷ In other words, the UK has, to a certain extent, “decoupled” growth from energy use – a pattern mirrored across advanced economies.¹⁸ For instance, in the EU, energy consumption per capita decreased by 16.4 per cent between 1990 and 2024.¹⁹ In Japan, final power consumption dropped to its lowest level in 28 years in 2024.²⁰

Much of the UK's demand reduction reflects energy-efficiency improvements: better insulation, more efficient appliances, and a shift from coal to gas and renewables. This shift has also reduced the UK's primary energy consumption, a measure of the total raw energy inputs used before conversion into electricity, heat or motion. Because cleaner technologies tend to waste less energy during conversion, less primary energy is now needed to deliver the same energy services. This is a positive sign of system efficiency and decarbonisation.

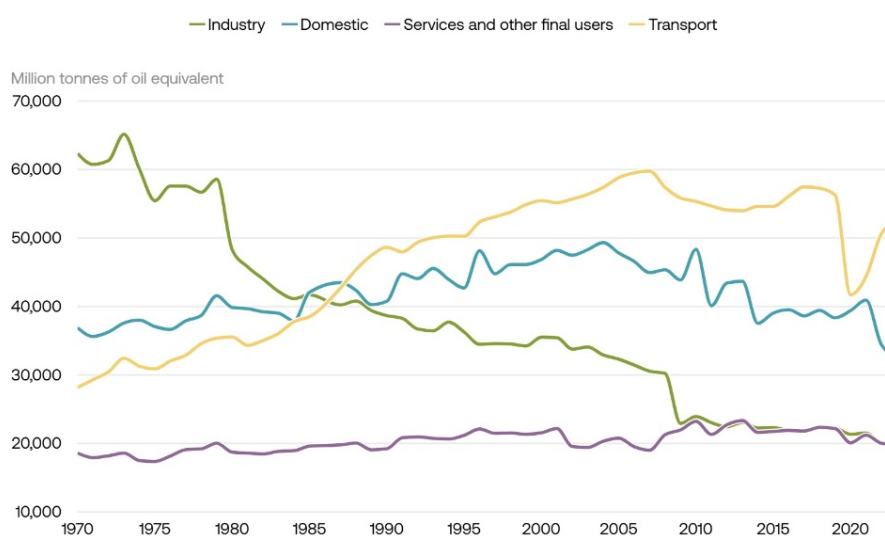
But structural economic change has also played a major role. Industrial energy use has declined by two-thirds since 1970 and the country has seen the long-term decline of many energy-intensive industrial sectors, such as steel and chemicals.²¹ Between 1990 and 2023, the share of the economy represented by manufacturing fell from 17 to 9 per cent, while the share of services rose from 70 to 80 per cent.²²

The long-term decline of UK industry reflects a complex mix of globalisation, automation and policy choices – including deindustrialisation policies of the 1980s. These shifts led to a structural move away from energy-intensive manufacturing. This trend pre-dates the current challenges of higher energy costs, and cannot be blamed on decarbonisation, but today's high electricity prices are now a major barrier to industrial renewal – especially in areas where competitive energy costs remain a key factor in investment decisions.

Germany, South Korea and Japan are among the countries that have maintained stronger manufacturing bases – often by actively subsidising or regulating industrial electricity prices. The UK has taken a different approach, exposing industry to more of the system's rising costs. Since 2021, the Office for National Statistics has confirmed that high electricity prices have been a key factor in declining output from UK energy-intensive sectors.²³ This highlights how cost pressures are now actively limiting the UK's ability to rebuild industrial capacity.

FIGURE 3

There has been a long-term decline in UK industrial energy consumption and domestic demand



Source: Digest of UK Energy Statistics, DESNZ

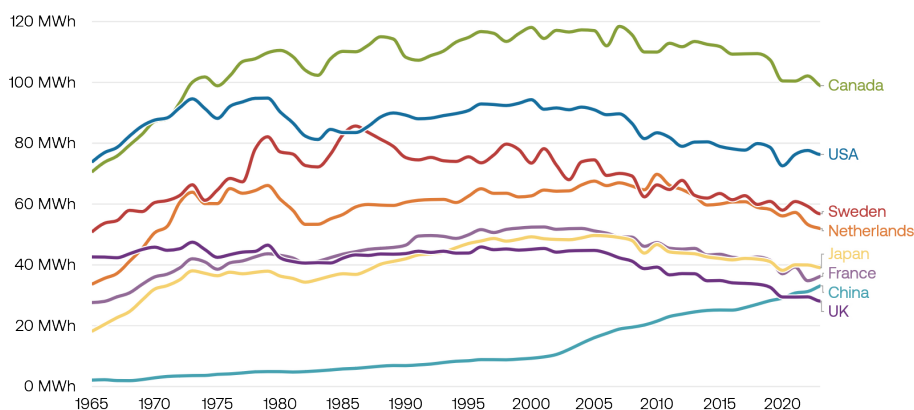
In the domestic sector, energy demand has been in steady decline since the early 2000s. Since the energy crisis in 2022, the drop in demand has accelerated even further, dropping by 16 per cent between 2021 and 2022 and 6 per cent between 2022 and 2023.²⁴ These reductions are primarily driven by falling gas use. The Office for Budget Responsibility (OBR) estimated that in March 2023 the weather-adjusted household gas demand that winter was around 15 per cent lower than before Russia's invasion of Ukraine.²⁵ While temperature increases and efficiency have played a role, these reductions – in particular over the past few years – reflect involuntary cutbacks as a response to high prices. Surveys during and after the 2022 energy crisis showed that almost 80 per cent of households in the UK turned their thermostats to lower temperatures in November and December 2022 compared to the previous year.²⁶ The price rises saw an estimated one in three people plunged into fuel poverty, with one in four people choosing not to turn on the heating during winter.²⁷ Energy debt is currently

at a record high of around £4 billion,²⁸ and millions of households are on repayment plans or in arrears.²⁹ This has considerable societal impacts: cold homes resulted in 13,400 more deaths in the winter period between December 2021 and March 2022, and additional winter pressures on the NHS.³⁰

Viewed in international context, the UK is an outlier in terms of energy consumption. According to data from Our World in Data,³¹ the UK ranks near the bottom among developed economies for per capita energy consumption – significantly below Germany, France and the European average.

FIGURE 4

The UK consumes less energy per capita than most developed economies



Source: Our World in Data

The causes of this energy-demand reduction over recent decades are a series of complicated factors, representing both elements of progress and structural challenges. On the one hand, changing energy-demand patterns represent economic modernisation and effective energy-efficiency measures – reducing consumption without sacrificing growth. There seems, on the other hand, to be evidence to suggest that some of the UK's falling

energy demand signals underinvestment, stagnation or constrained activity. This is evident not only in domestic consumption over recent years, but also in the challenges heavy industry in the UK is facing as a result of higher energy costs. Some analysts have noted that the fall in UK energy use in recent years has coincided with weak productivity growth.³² While correlation does not imply causation, historical patterns suggest a close link between rising energy demand and economic growth – especially in contexts where industrial activity or infrastructure expansion drives output.³³

Trend 3: Decarbonisation at a Cost

The final trend in UK energy over recent decades is the transformation of the UK's electricity sector from a cheap, high-carbon one to an expensive, low-carbon one.

Between 1990 and 2023, carbon emissions from electricity generation fell by 78.4 per cent.³⁴ This single sectoral shift has been central to the UK's broader success in halving national greenhouse-gas emissions since 1990, reinforcing its reputation as a global leader in decarbonisation.

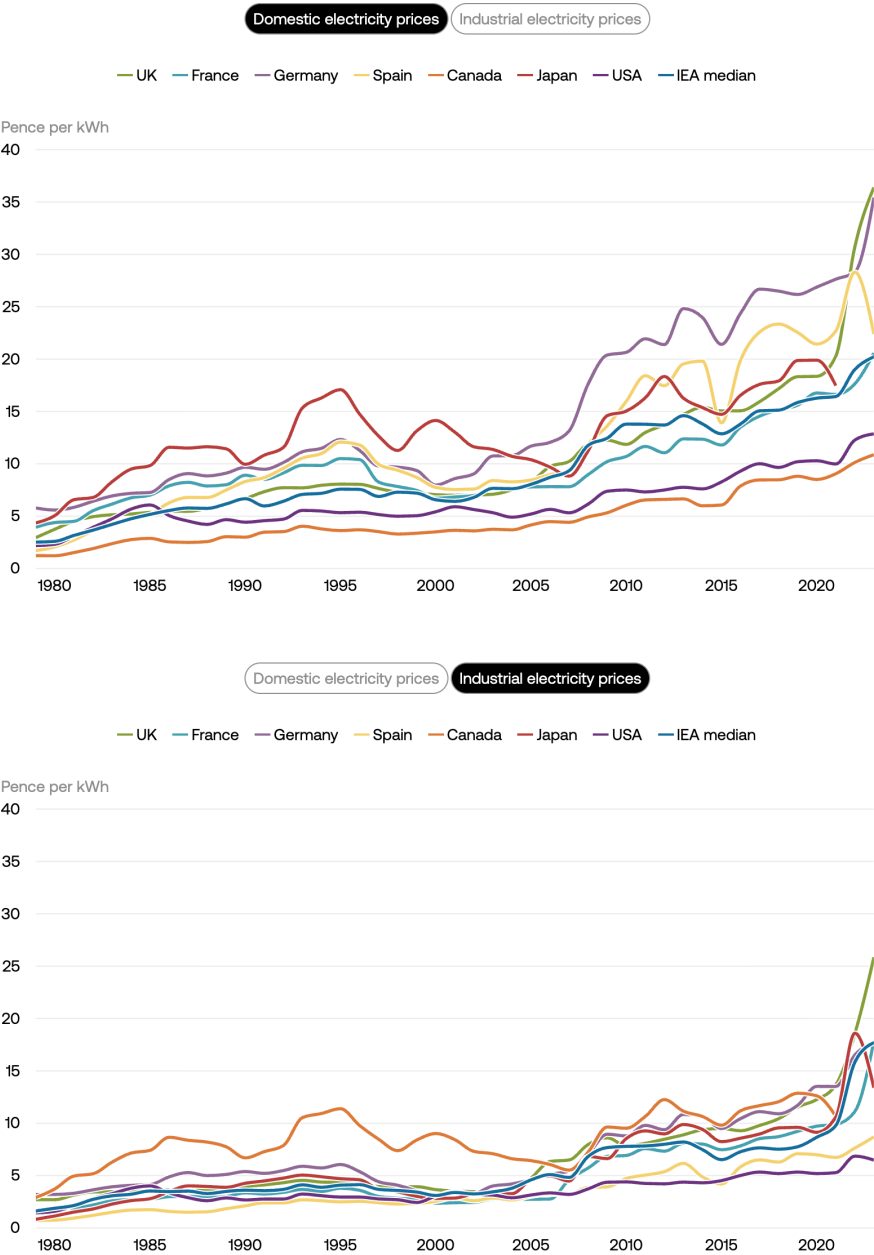
But the way this transition has been delivered – including market design, policy sequencing and infrastructure lag – has contributed to a steady rise in electricity prices.

In 1990, domestic electricity prices in the UK were just 10 per cent above the International Energy Agency (IEA) median and among the most affordable in the G7. By 2005, they had crept up to 17 per cent above the IEA median. By 2020 – well before the gas crisis – they had more than doubled, standing more than 40 per cent above the IEA median. This trend shows that the UK's relative decline in affordability pre-dated the spike of 2022–23, when prices surged to 64 per cent above the IEA median and the highest in the G7.³⁵ Including taxes – what consumers actually feel – the story is similar: starting at the IEA median in 1990, consumer prices in the UK jumped to 43 per cent above median by 2020 and then skyrocketed to 80 per cent above the median in 2023.

For industrial consumers, the pattern is similar. In 1990, UK electricity prices were just 14 per cent above the IEA median excluding taxes, and mid-ranking in the G7. By 2005 they were still only slightly above the IEA median. By 2020 – again, before the gas crisis – the price had nearly tripled to around 62 per cent above the IEA median, the steepest divergence in the G7. Prices peaked in 2023, when they were 54 per cent above the IEA median. This confirms that the UK's electricity affordability challenge is not limited to households: it is a systemic feature of the market that undermines industrial competitiveness.³⁶

FIGURE 5

Electricity prices in the UK have increased steadily since the early 2000s



Source: DESNZ

The story of this rise in prices begins with the liberalisation of the electricity market through the 1989 Electricity Act. Prior to this, generation and transmission were managed by the state-owned Central Electricity Generating Board, with regional boards handling distribution. While this vertically integrated system ensured stability, it was marked by inefficiencies, ageing infrastructure and slow adoption of new technology. Liberalisation, intended to attract private capital and improve efficiency, sparked a major shift in the 1990s: the so-called “dash for gas”. This was enabled by low North Sea gas prices, advances in turbine technology and the newly competitive market. Gas-fired plants rapidly replaced coal and nuclear in new generation investment, dramatically reshaping the energy mix.

The UK's commitment to climate leadership helped accelerate the transformation of its energy system. In response to international and European pressures – including the 1997 Kyoto Protocol, the EU's 2001 Renewables Directive and tighter pollution limits under the revised Large Combustion Plant Directive – the UK moved quickly to phase out or retrofit ageing coal plants. Domestically, it introduced the Renewables Obligation in 2002 to support large-scale renewable power, and Feed-in Tariffs in 2010 to encourage small-scale generation. Most significantly, the 2008 Climate Change Act established a legally binding framework for reducing emissions, with progress overseen by the newly created Committee on Climate Change.

In the 2010s, the government introduced the Electricity Market Reform package, which tackled key barriers to investment in low-carbon technologies. The centrepiece, Contracts for Difference (CfDs), offered guaranteed prices for renewable generators, especially offshore wind. These drove down costs of offshore wind and helped the UK become a global leader in wind energy. To ensure reliability in an increasingly intermittent system, the government launched the Capacity Market in 2014, paying providers to be available when needed.

Further reforms followed. A UK-specific carbon price floor introduced in 2013 made coal uncompetitive, accelerating its exit from the grid.³⁷ In 2019, the UK became the first major economy to legislate for net-zero emissions by 2050.³⁸ By September 2024, it had closed its last coal power station – the first G7 country to do so.³⁹

The outcome of these policies is a dramatically different electricity mix. In 2000, the grid was dominated by coal (38.2 per cent) and gas (39.3 per cent), with just 2.8 per cent from renewables.⁴⁰ By 2024, coal's share had fallen to 0.2 per cent and gas to 30 per cent – and renewables had risen to 36.4 per cent.⁴¹ Wind power saw the most dramatic growth, expanding from just 400 MW⁴² installed capacity in 2000 to over 30GW in 2024⁴³ – a 75-fold increase. Solar grew from less than 100 MW to more than 17GW over the same period. Coal's share of generation fell from 39 per cent in 2012 to virtually zero in 2024.⁴⁴

The transformation of the UK's electricity grid has been a decarbonisation success story. But it has come at a cost. The structure of the UK electricity system now makes the country's electricity among the most expensive and volatile in the developed world.⁴⁵

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Understanding the Price of British Electricity

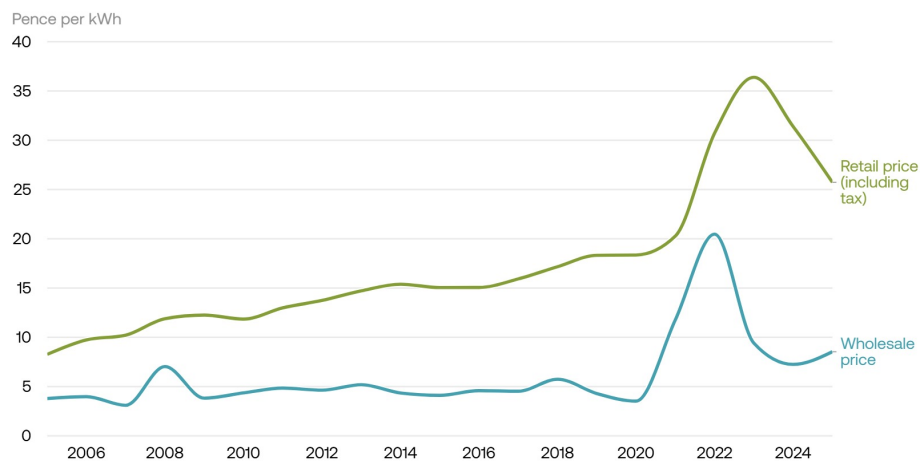
The high cost of electricity is attributable to a multitude of factors beyond its wholesale cost. In fact, over the past 20 years, the share of household energy costs accounted for by the wholesale price has fallen from 46 per cent to 23 per cent.

To understand the costs beyond wholesale price, it is useful to break down the components of a typical household⁴⁶ electricity bill (based on a 3100 kWh household).⁴⁷ A household bill consists of:

- The wholesale price, primarily determined by gas prices since the phaseout of coal.⁴⁸ This accounts for about one-third of a normal household electricity bill.
- Network costs, including distribution, transmission and balancing costs. These make up about 20 per cent of the bill.
- Current and legacy subsidies to support generation technologies. This accounts for another 20 per cent of the bill.
- The remainder includes value-added tax (shown separately in the breakdown), fuel-poverty support schemes, the smart-meter rollout, and supplier costs and margins. These margins partly reflect regulatory requirements, such as suppliers carrying more customer debt defaults.

FIGURE 6

The UK has some of the highest electricity prices in the developed world



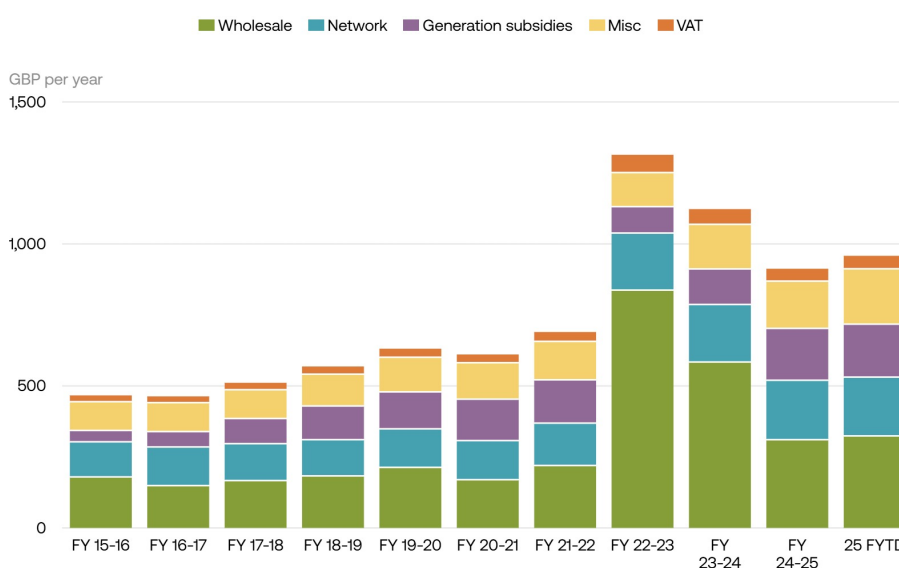
Source: Institution of Civil Engineers (ICE), Low Carbon Contracts Company, TBI analysis

Note: Wholesale electricity prices are shown using ICE forward baseload contract data (2005 to 2015) and the Imbalance Market Reference Price (IMRP), published by the Low Carbon Contracts Company (LCCC) from 2016 onwards. The IMRP more accurately reflects actual wholesale prices paid by suppliers, while ICE provides a consistent forward-looking series before 2016. Values are converted to pence per kWh for comparability.

This illustrates that multiple factors contribute to high electricity prices. However, to understand how the UK has gone from having middle-of-the-pack prices to the highest in the developed world, it is useful to consider how this has developed over time.

FIGURE 7

Energy-bill components have all increased over the past decade, but the sharpest rise has been in generation subsidies



Source: www.electricitybills.uk

During the gas crisis, wholesale energy costs surged due to soaring international gas prices. In fact, wholesale costs explain 80 per cent of the growth in electricity bills between 2015 and the 2022 peak. While prices have fallen from their crisis peak, wholesale costs remain significantly above pre-Ukraine war levels – continuing to drive up energy bills.

Yet as a share of the total bill, wholesale costs are now broadly in line with their 2015 levels (around 36.4 per cent today, compared to 38.5 per cent then). This means other components of the bill have also grown. Network and miscellaneous costs have risen in absolute terms, but their proportion of the bill has slightly declined.

The most striking shift is in generation subsidies, which have more than doubled — from 8.5 per cent of the electricity bill in 2015 to around 20 per cent today. In other words, all components of the energy bill have increased over the past decade. This creates a complex picture of why prices have increased, but there are three core drivers.

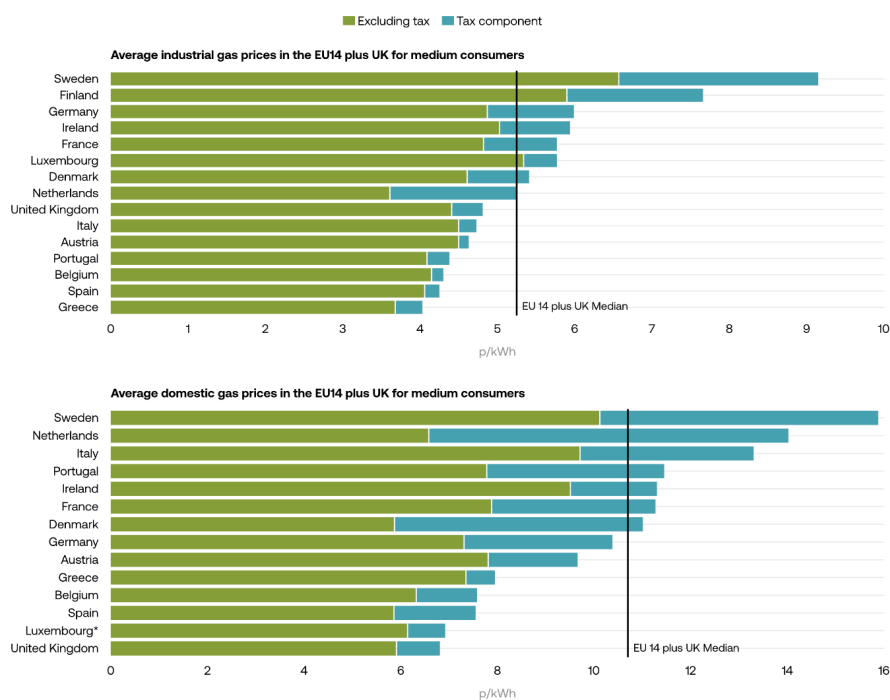
Driver 1. Gas Still Sets the Price

Most debate about energy prices in the UK points to gas as the reason why prices are so high. This is partially because the price of gas was the cause of the spiralling energy costs in 2022 after Russia's invasion of Ukraine, and partly because wholesale prices remain the single largest component of the electricity bill (and often an even more significant part of the bill for industrial consumers who are exempt from other costs).

However, the UK is no outlier when it comes to the price of gas. Gas costs are set on the international market. The UK's industrial gas prices are in fact roughly average for Europe, and on the lower end for domestic gas prices.

FIGURE 8

The UK's gas prices are average for Europe while domestic gas prices are at the lower end of the scale



*Luxembourg's price excluding tax is 6.92 p/kWh, with a subsidy of 0.78 p/kWh. Total price including subsidy is therefore 6.14 p/kWh

Source: DESNZ

Note: *Luxembourg's price excluding tax is 6.92 p/kWh, with a subsidy of 0.78 p/kWh. Total price including subsidy is therefore 6.14 p/kWh

What is different about the UK system is how often gas sets the wholesale price of electricity. The energy market in the UK operates, like most other Western countries, on the basis of marginal pricing. This means the wholesale electricity price is set by the marginal generator – the last unit needed to meet demand at any given time. In practice, this is usually a gas-fired power station. While the UK has added more than 40GW of renewable capacity over recent decades, wind and solar rarely set the wholesale price. Under CfD and other support schemes, their long-run costs are recovered

outside the wholesale market. As a result, they can bid into the market at zero, ensuring they are dispatched whenever available, but leaving the marginal price to be set by whichever non-renewable generator is needed. In fact, in 2021, natural gas set the UK's day-ahead marginal electricity price 97 per cent of the time – the highest share in Europe. Across the “EU+” (the EU, Norway and the UK combined), the average was 39 per cent.⁴⁹ Now, the figure is estimated to be closer to 85 per cent.⁵⁰

The fact that gas sets the price so much more frequently in the UK system, compared to other systems around Europe, can be explained by the UK's generation mix. In fact, wind and solar very rarely set the wholesale price in any European system.⁵¹

Other countries with lower-carbon grids than the UK often have a strong backbone of baseload-generating sources that more frequently set the price. This is why countries like France, Sweden and Norway have lower energy costs than the UK – lower-cost, domestic nuclear or hydroelectric power often set the price, making their domestic markets less subject to international gas prices (even though France suffers from considerable price volatility). TBI research shows that if the UK had continued its nuclear programme at the same rate as it did pre-Chernobyl, the country's energy-related emissions would have been 7.7 per cent lower in 2023, and it is likely that nuclear would be setting the price more frequently. Combined with regulatory reform, this would deliver lower energy costs.

Other electricity-mix factors matter too. The phasing out of coal plants – undoubtedly the right decision on climate grounds – removed what had historically acted as a hedge against gas. Without a sufficient alternative in place, the UK has been left more exposed to swings in gas prices. In practice, this has meant electricity costs could be higher than they might have been with a more balanced mix. This can be seen for instance by comparing UK electricity prices to German electricity prices.⁵² The long-term hedge, however, is not a return to coal but an accelerated build-out of renewables and firm low-carbon generation, supported by storage and grid reform.

In the UK system, gas not only frequently determines prices, but the gas power stations the country relies on are also more expensive to run than equivalents elsewhere. Many are ageing assets that are inefficient and designed to operate at a higher utilisation rate, which raises costs. On top of this, UK carbon pricing – through the Carbon Price Support and the UK Emissions Trading Scheme – applies directly to gas-fired generation. These instruments were successful in forcing coal off the system and continue to provide a long-term decarbonisation signal, but their main effect today is to raise the marginal cost of electricity when gas is on the margin.

Renewables have still had an effect on wholesale prices – though not because they set the price themselves. Wind and solar bid in at close to zero and are always dispatched when available. This means they do not determine the clearing price directly, but reduce the volume of more expensive plants needed to meet demand by displacing gas. In effect, renewables squeeze out the less efficient, costlier gas units, lowering the level at which gas clears. The Energy and Climate Intelligence Unit estimates that without large-scale wind, day-ahead wholesale prices in 2024 would have been around £25 per megawatt hour (MWh) higher – roughly 25 per cent more expensive.⁵³ The exact impact would depend on the specific scenario, but this “merit-order effect” has delivered real savings when CfD strike prices for renewables are below the wholesale price set by gas, since consumers benefited both from lower wholesale costs and cheaper top-up payments.

Driver 2. Grid and Balancing Costs Are Rising

These factors explain the wholesale proportion of the bill, but as the breakdown of the electricity bill in Figure 7 shows, wholesale costs are less than half the story for domestic bills (and about half for industrial users).

Looking at the network and balancing costs, the upward pressures that can already be seen – and which are projected to accelerate over time – reflect a broader shift in how the system works. A decentralised, weather-dependent grid built around renewables requires more sophisticated system management and stronger grid infrastructure. This brings added costs:

upgrading and maintaining the transmission and distribution network, ensuring real-time balance between supply and demand, and paying for ancillary services to keep the system stable.

Understanding Balancing Costs

Electricity supply and demand must be matched at every moment. To keep the grid stable, the system operator (NESO in the UK) pays some generators to produce more power and others to reduce output. These payments make up balancing costs: the money spent to keep supply and demand in sync across time and space.

Balancing costs used to be minor but have grown sharply in recent years because:

1. Renewables are variable, so output fluctuates with the weather.
2. Grid constraints mean electricity can't always flow to where it is needed.

A large component of balancing costs is constraint payments. This is compensation paid to generators (often wind farms) to switch off when there isn't enough grid capacity to carry their power to demand centres, while other sources (usually gas plants) are paid to produce.

These costs are not captured in the Levelised Cost of Energy (LCOE), which measures the average cost of generating electricity from a plant over its lifetime. LCOE also excludes wider system-level costs such as grid reinforcement and transmission upgrades, to move power efficiently across regions, and backup and flexibility costs, to ensure reliable supply when variable sources fall short.

These characteristics are inherent to a renewables-based system. But in the UK, the way decarbonisation has been pursued has made these costs higher than they need to be.

First, the location of the UK's best offshore wind resources means that there has been a rapid build-out of wind power in remote locations – such as the North Sea and northern Scotland – far from major demand centres in the south of the country. However, the incentives to build this wind power were not matched by a coordinated strategy to expand the transmission grid, invest in storage infrastructure or place demand closer to supply.

As a result, electricity often cannot flow freely to where it's needed, and the system relies on costly “constraint payments” – compensating wind farms to turn off when the grid cannot absorb their output and paying gas power plants elsewhere to turn on in their place. Much of this cost comes not from curtailing wind, but from having to run gas generation inefficiently in parts of the country with available grid capacity. Constraint payments reached £1.7 billion in 2024–25 and are forecast to peak between £4 to £8 billion in 2030.⁵⁴

Second, at the same time, the UK's grid-control systems have not kept pace with the complexity of the modern electricity system. Despite the growth of battery storage, the system operator still defaults to large gas turbines because current systems struggle to integrate and coordinate distributed assets like batteries. Three-quarters of the time, the control room dispatches a more expensive gas generator because it cannot manage smaller, more flexible options.⁵⁵ In 2024 alone, at least £846 million was paid to gas generators via the Balancing Mechanism to ramp up supply.⁵⁶ Progress is being made. For example, recent system-operator reforms have enabled a 47 per cent increase in battery dispatch.⁵⁷ But the wider technical infrastructure is still catching up.

Finally, in addition to a slow grid build-out and inefficiencies in the way the system is managed, demand-side flexibility remains underdeveloped in the UK. Consumers lack the incentives and infrastructure (such as smart tariffs and automated demand response) to shift consumption, placing more strain on the supply side and increasing system costs.⁵⁸

The result is a significant – and rising – burden on consumers. NESO estimates that balancing costs will rise from £2.4 billion in 2023-24 to £4.7 billion by 2030.⁵⁹ Similarly, transmission and distribution costs are also projected to increase significantly as the country builds out the grid infrastructure needed for a decarbonised energy system.⁶⁰

Driver 3. Levies Are Increasing

A final component that has pushed up electricity bills is the impact of levies on consumers to finance subsidies. In fact, as highlighted above, the subsidies component of the electricity bill is the component that has increased the most between 2015 and today – from 8.5 per cent to approximately 20 per cent.⁶¹

One reason why these costs are so high is that many of the early renewables policies adopted in the UK were expensive and long-lasting. For instance, while the Renewables Obligation closed to new projects in 2017, payments to existing projects will continue until 2037. Some Feed-in-Tariff payments will continue until 2044.

Later policies brought scheme costs down but have not removed the rise in levy payments. CfDs have succeeded in driving large volumes of offshore wind at falling strike prices, which has reduced the cost on consumer bills compared to previous schemes. However, by design, CfDs are still funded through levies on consumer bills, so while CfDs can reduce wholesale prices when strike prices are lower than gas prices, the scheme adds a levy cost to bills, shifting costs there. In recent years, contracts agreed at prices well below gas-driven wholesale costs have pushed the overall cost of power down, more than offsetting the levy effect.⁶² But this dynamic may not persist: more than half of the contracts already allocated have yet to be activated, and the next Allocation Round is expected to be the largest yet – possibly with higher strike prices⁶³ – while gas prices remain considerably lower than during the gas crisis.

Importantly, beyond their direct impact on bills, CfDs also weaken the link between the value of electricity to the system and the revenue of generators. They pay a fixed price for every megawatt hour, regardless of when or where it is generated. This strips out incentives for wind and solar producers to respond to temporal scarcity (when power is most needed) or locational constraints (where power is most useful). Most systems around the world take the same approach: they treat variable renewables as pure volume and balance the system elsewhere, rather than requiring renewables to provide a firmer, more predictable product. But the result is that CfD-backed generators can bid in at zero, guaranteeing dispatch, but leaving the costs of balancing, constraints and security of supply to consumers. As Dieter Helm argued in his 2017 *Cost of Energy Review*,⁶⁴ CfDs buy volume rather than value – locking in generation but leaving the system to fund flexibility on top.

This has a knock-on effect: the Capacity Market, introduced in 2014 to ensure reliability, is now essential because dispatchable plants cannot survive on wholesale revenues depressed by CfDs. This ensures security of supply by paying firm generation and demand-side response – such as batteries and gas power plants – to remain on standby. Its cost is expected to rise significantly due to the need to extend the operating life of many of the UK's ageing gas plants. Currently, more than half of the UK's gas capacity is due to be retired or retrofitted by 2035, which could reduce available capacity to as little as 12GW and risk shortfalls in generation.⁶⁵ Under current plans, life extensions will be paid through multi-year contracts in the Capacity Market. As a result, the overall cost of the scheme is projected to more than double by 2028.⁶⁶

New schemes are also emerging with significant levy-backed costs. Carbon capture and storage (CCS), a key part of the government's decarbonisation plans, will be funded primarily through electricity levies. Around 75 per cent of total support for CCS is expected to be raised directly from consumer and business energy bills⁶⁷ – adding to long-term upward pressure on electricity prices.

Overall, the OBR projects that policy costs will make up £14.8 billion in 2029-30 – this has risen by £3.4 billion since their last estimate in March 2024.⁶⁸ The energy-market analyst Cornwall Insight suggests that the predicted household cost of levies in 2028 had increased by one-third from their previous predictions.⁶⁹ This includes more costs of the Capacity Market, CfD scheme and the new Green Gas Levy.

An Inevitability?

These three drivers have pushed UK electricity bills to their current level. The question, therefore, is whether it was inevitable that they would reach this level. Did the UK make the wrong strategic choices, or is there something intrinsic about decarbonising the energy system using intermittent renewables as the main source of energy that drives up costs?

The country's frontrunner status in the race to decarbonise has certainly entailed shouldering the lion's share of the costs of technological and policy development along the way. However, better choices could certainly have been made. For instance, more investment in nuclear energy and a more strategic and integrated approach to siting and investing in the grid could have reduced grid constraints and balancing costs. However, it is easy to make these judgements with the benefit of hindsight.

What the UK energy system requires is not just a simple transition from dirty to clean – it needs a wider economic shift. Moving towards renewables, a less energy-dense source of electricity generation, has involved significant investment in new generation capacity with less generation output. In other words – while UK generation capacity increased from 73.6GW in 2000 to 102GW in 2023,⁷⁰ total electricity production has declined from 337TWh to 286TWh.⁷¹ At the same time, the additional capital investment required to convert the transmission grid from centralised to decentralised generation is significant. NESO projects that the £112 billion needed to connect 44TWh of offshore wind is potentially more than the capital expenditure of the windfarms themselves.^{72,73}

These investment pressures have been compounded by a regulatory framework that has not always been aligned with system needs. Under Ofgem's five-year price-control cycles, network companies have had limited scope to innovate or front-load investment, which has contributed to delays and higher costs. While the system has provided stability and protected consumers from some risks, it has also constrained the pace of network build-out, with progress only more recently being made through more flexible approaches.

These additional system costs, including balancing, grid infrastructure and legacy subsidies, are no longer marginal. They are now structural features of the UK's high-energy-price environment. But they can also be understood as the growing pains of an energy system in transition: the cost of building the physical, technical and policy infrastructure for the system of tomorrow.

The UK's clean-energy transition has been a technical and environmental success but a strategic and economic challenge. The UK decarbonised fast, but not always cost efficiently. Going forward, the task is not to reverse decarbonisation, but to design a second-generation strategy that delivers clean energy at low cost to propel the electrification of the economy and support economic growth and prosperity.

03

The Future of Energy

These three trends and drivers paint a challenging picture for UK energy policy. Energy has gone from being an engine of economic progress to increasingly becoming an economic drag. This is in part a challenge of geography, as the UK grapples with limited domestic fossil-fuel resources, but also a result of decades of energy policy that has inadequately considered the long-term effects and trade-offs of the domestic energy transition.

Now is the moment when the UK needs to change that trend. The country needs a new strategy for the future. To create this, however, it is necessary to be open-eyed about what is feasible and what constraints are at play. The energy system is complex – a strong strategy needs to consider the economy, security and decarbonisation.

The Changing Economics of Energy

Energy has always underpinned economic productivity as a key input for industry, an engine of job creation and a core determinant of national competitiveness. But its role is changing. Clean, abundant electricity is no longer just a climate goal – it is fast becoming a prerequisite for economic leadership.

In recent decades, Britain, like many advanced economies, pursued a model of economic growth based on structural change: moving away from energy-intensive industries, improving efficiency and offshoring much of its manufacturing base.

But the global economy is shifting again. Electricity is becoming a defining input for future growth sectors. Compute is now a traded good, and hyperscale and sovereign data centres go where power is cheap and reliable. Each large site anchors long-term investment, high-value jobs and adjacent supply chains. If UK electricity is competitively priced, these facilities will locate here; if not, the workloads – and the tax base – will

migrate. The same can be seen with other emerging energy-intensive manufacturing of the future. Cheap, firm power is therefore not a “nice to have” but a prerequisite for attracting AI-driven growth.

In addition to this, across the wider economy, switching from combustion to electric technologies cuts waste and raises output per unit of energy. Electric motors and drives deliver higher conversion efficiency and precision; heat pumps multiply useful heat from each unit of electricity; electric furnaces and e-boilers offer tighter process control with lower maintenance and downtime. The result is lower operating costs, higher uptime and better product quality in transport, heating and industry, translating directly into productivity gains.

Within this transition, clean electricity is gaining strategic value. Large firms, particularly in tech and advanced manufacturing, are demanding low-carbon power not only to meet their climate targets but to avoid future regulatory penalties, such as carbon border adjustment mechanisms. In this context, the ability to offer abundant, clean and affordable electricity is becoming a key differentiator for attracting investment. Furthermore, to unleash the productivity gains from electrification, consumers must see the cost-efficiency of the shift.

While the UK performs strongly on carbon intensity, with one of the cleanest electricity grids among major economies, it underperforms on the cost and availability of low-carbon electricity, especially for large industrial users. In contrast, countries like Sweden, Norway and France offer lower electricity prices and faster grid connections, attracting new industrial investment. For example, Sweden has become a hub for green steel, battery production and data centres, thanks to abundant cheap hydropower and coordinated grid planning.⁷⁴

The UK aims to address the cost of electricity through accelerated renewables deployment and grid reform. But two major economic challenges risk undermining progress.

First, the financial landscape has changed. The energy landscape is shifting from a commodity-based system (where costs are dominated by fuel) to a capital-based one (where upfront investment matters most). The low-interest-rate environment of the 2010s supported this model, making capital-intensive technologies like offshore wind economically attractive. But with higher interest rates, the cost of capital has risen. This was reflected in the failure to secure any offshore wind projects at the proposed strike price in the 2023 CfD Allocation Round 5⁷⁵ and the cancellation of major projects like Orsted's Hornsea 4, whose strike price (approximately £83 per MWh) is no longer viable.⁷⁶ The same pressures are hitting grid infrastructure and other long-term energy investments.

Second, while the cost of renewables has fallen, the wider system needed to support a renewables-led grid remains expensive and immature. Long-duration storage remains at an early stage of deployment, and in its absence, the cost of balancing an intermittent system is high. At the same time, investment in transmission, innovation in dispatching distributed assets like batteries, and policy reforms such as locational pricing have failed to keep pace with government targets or the rapid rollout of renewables. Unless these system enablers are accelerated, the UK risks locking in structurally high electricity costs as it pushes towards net zero.

These headwinds demand a more deliberate strategy. One that lowers system-wide costs while preserving the ambition of the transition.

There is opportunity here, too. Global demand for clean-energy infrastructure is booming. Countries that can build and export the enabling technologies – from grid software to green hydrogen systems – will gain new sources of growth. The UK, as an early mover in offshore wind and renewables integration, should be well-positioned. But to date, the benefits have largely been offshored. The UK failed to develop a domestic wind supply chain during its CfD-led build-out. The current government is seeking to reverse that, and as [TBI has previously argued](#), a targeted green industrial strategy – if done right – can anchor value at home, accelerate deployment and create jobs in critical supply chains.

Energy Security in the 21st Century

The mid-21st century is re-establishing energy security as a central strategic concern. A fragmenting world order and a rising awareness of the geopolitical dimensions of energy are forcing governments to revisit long-standing assumptions. Energy strategy is no longer just about market efficiency – it is about resilience, sovereignty and national power.

There is a major realignment of the global energy system is taking place. Key investment banks like JPMorgan⁷⁷ and Carlyle⁷⁸ as well as energy analysts are now proclaiming a new “energy security age”. While in the 20th century geopolitical power rested on hydrocarbons – those who controlled the oil and gas supplies controlled markets, alliances and even wars – in the 21st, power also flows through electrons, grids, financing and critical supply chains. Two distinct paths for navigating this shift are emerging. The US is using its abundant natural fossil fuels for “energy dominance”, alongside investment in nuclear and grid to support AI data-centre growth. China is rapidly electrifying its economy and expanding its electricity supply using renewables, nuclear and coal to rapidly reduce its reliance on imported fossil fuels and dominate in clean technologies. Crucially, they are also consolidating dominance over critical clean-tech supply chains, from solar panels and batteries to rare-earth metals and mineral processing.

In terms of energy security, the UK is facing a distinct set of vulnerabilities. On the one hand, its fossil-fuel resources are limited, meaning that the US fossil-fuel-based route to energy security is unavailable. On the other hand, electricity accounts for just 20.7 per cent of final energy use – lower than France (25.1 per cent), Portugal (26.7 per cent) or China (29.7 per cent), and far below electrified economies like Norway (46.5 per cent).⁷⁹ This leaves the UK more exposed to volatile fossil-fuel markets, particularly for gas, than countries further along the electrification curve. Some countries, like Germany and the Netherlands, face even greater exposure, but their industrial scale gives them different risk profiles. At the same time, Asian countries such as Vietnam, Cambodia and Bangladesh (in addition to China) are electrifying fast, while the UK stands still.⁸⁰

This vulnerability will not disappear with the transition to net zero. Government projections suggest that by 2050, the UK could rely on imports for half its oil and 90 per cent of its gas, even under an ambitious decarbonisation pathway.⁸¹ Given dwindling North Sea supplies, even maximising domestic oil and gas production would leave the UK dependent on imports.

This underscores a core truth: Britain's long-term energy security depends on an economy based on clean electricity. That means accelerating the electrification of the economy and building a robust, domestically anchored system of low-carbon generation.

But this shift comes with its own security challenges. Greater reliance on electrification will mean increased dependence on imported technologies and materials – many of which are concentrated in China – creating risks of technological dependency and supply-chain disruption during geopolitical crises. A more decentralised, intermittent system also brings both advantages and vulnerabilities: it increases redundancy by dispersing generation across many nodes, but it also places a greater burden on digital systems, information technology and system operators to coordinate and protect against failure. In the age of hybrid warfare and cyber-attacks, that shift creates new security imperatives. Without parallel investment in grid flexibility, storage and frequency control, the speed of decarbonisation could outpace the system's ability to remain stable, raising the risk of blackouts. Still, these risks are ultimately easier to manage than continued reliance on fossil fuels.

In this new context, energy security is no longer just about molecules of gas or barrels of oil. It is about control over supply chains, the resilience of critical infrastructure and adaptability to evolving threats. The UK will need to decide what must be produced domestically, where interdependence is acceptable and which vulnerabilities must be actively mitigated.

Decarbonisation in the Age of Doubt

For the future of the planet, its economy and its people, there is a clear imperative for rapidly decarbonising global economies. Energy remains the biggest piece of this puzzle. On a global scale, energy is responsible for just over three-quarters of emissions.⁸² The transformation of the energy system is therefore urgent and necessary.

The UK has a target to achieve net zero by 2050, and on the path to this has a target to reduce emissions by 81 per cent by 2035 on 1990 levels.⁸³ This comes in addition to the commitments under the Paris Agreement that set a target of 68 per cent reduction by 2030 and 78 per cent by 2035.

Delivering on them, however, requires a profound transformation of the economy that has only just begun. Reaching net zero will demand far more than reaching clean power. Electricity supply is in fact only 11.5 per cent of UK emissions, after transport, building and industry.⁸⁴ Decarbonisation relies on widespread electrification – shifting from petrol and diesel vehicles to electric vehicles (EVs), and from gas boilers to heat pumps – alongside a massive expansion of clean electricity generation. Even under the most ambitious clean-power scenarios, the UK is currently off track.

This challenge is compounded by shifting global dynamics. Climate cooperation is faltering, multilateral efforts are under pressure and several major economies are retreating from their targets. Many are now prioritising “least-cost” strategies to preserve economic resilience – which often means prolonging fossil-fuel use. The result is a growing risk that global investment in clean-energy innovation could slow, raising costs for early movers like the UK.

For the UK, this creates a strategic dilemma. Even the most ambitious domestic efforts will make little dent in global emissions unless others follow suit. Without international momentum, the UK risks decarbonising in isolation – absorbing high costs while achieving limited environmental benefit and potentially undermining its economic competitiveness.

Meanwhile, progress in the technologies needed to support a deeply decarbonised grid is falling short. Long-duration storage, clean dispatchable generation and carbon capture are all advancing more slowly than hoped. Without them, the integration of high levels of renewables becomes more complex and expensive, making it harder to phase out natural gas and raising costs for consumers and businesses. The lack of solutions for low-generation periods has been identified by the IEA.⁸⁵

These constraints present two major risks. First, that public support for decarbonisation erodes if it's perceived to drive up bills or restrict opportunity. Second, that the UK misses out on the industrial and technological rewards of the transition, falling behind countries with more coherent, better-resourced strategies.

None of this undermines the case for net zero. But it does demand a shift in framing: from decarbonisation as a moral imperative or diplomatic signal to decarbonisation as a platform for national resilience, prosperity and industrial leadership. A successful UK strategy will align climate action with economic competitiveness, system efficiency and global collaboration – not just targets on paper.

04

Creating a UK Energy Strategy for Now and for the Future

The UK's energy future depends on mass electrification, powered by clean, domestically produced electricity. Clean, abundant energy is no longer just an environmental goal: it is the foundation of prosperity, industrial strength and national resilience. The AI revolution, advanced manufacturing and clean-tech supply chains will all be shaped by which countries can deliver cheap, reliable, low-carbon power at scale. Where influence in the 20th century was defined by access to hydrocarbons, in the 21st it will be determined by leadership in clean energy.

Yet the UK's strategy has remained too narrowly focused on emissions targets, overlooking energy's role as the bedrock of competitiveness and security. Delivering clean power is not simply a matter of replacing one technology with another. It requires reimagining how the system works: building a smarter, more agile grid that integrates demand-side flexibility, distributed generation, firm low-carbon power and modern infrastructure.

Policy has succeeded in deploying renewables at scale, but it has not yet created the market structures or enabling technologies needed to deliver a low-cost, secure system. Without change, the UK risks higher bills, weaker resilience and lost industrial advantage. With the right strategy – one that aligns decarbonisation with competitiveness and security – the UK can reset its energy system to meet the demands of this decade and the decades ahead.

Recalibrate the Clean Power Action Plan for Low-Cost, Abundant Power

The Clean Power Action Plan was announced in 2022 in the context of the global gas crisis, when energy bills were skyrocketing due to high wholesale gas prices. Based on analysis from the global energy think tank Ember, the Labour Party – then in opposition – committed to a Clean Power 2030

target with the aim of lowering bills and reducing the UK's dependence on imported fossil fuels. This ambition has since become a central government mission – with some changes to clarify that the target is 95 per cent, rather than 100 per cent clean power, in effect mirroring the existing target from when the Conservatives were in government.^{86,87}

The government is now focused on delivery, but two core questions confront this target: whether it is deliverable and whether it is the most attractive route to decarbonisation.

Taking deliverability first, the government itself recognises that the mission is a “moonshot” while NESO stressed that “several elements must deliver at the limit of what is feasible”.⁸⁸

In addition to NESO's own assessment, significant analysis suggests it is unlikely to be a feasible route. Modelling from the energy-research firm Aurora in 2024 suggested that Britain was on track for 100 per cent clean power by 2051.⁸⁹ Their modelling explored a clean power by 2030 scenario, highlighting that on this timeline, less generation would be available from nuclear, CCS and bioenergy with CCS. Renewables would therefore need to comprise 77 per cent of generation – an increase of 51 per cent. To ensure generation is effective, the 2030 timeline would also require a doubling of flexible technologies and tripling of capacity at the boundary between the English and Scottish transmission grids (known as the B6 boundary). Aurora suggests delivery would rely on “an impossibly rapid ramp-up of support schemes and planning reforms, far beyond what's feasible”.⁹⁰ The report notes that clean power by 2035 may be feasible, but highlights that the necessary grid build-out to reach this timeline would likely be unfeasible too.

Yet even if the 2030 target proves unreachable, that does not mean accelerating clean power is the wrong ambition. If it is pushing in the right direction – delivering clean, cheap and secure power more quickly than otherwise would have happened – it may be worth doing, especially if much can be done through regulatory changes.

But there are also good reasons to believe that speed of delivery has an impact on the outcomes. In other words, the government may be choosing pace over cost.

There are three main reasons why rushing to Clean Power 2030 may increase prices.

First, rushed delivery risks higher costs. After CfD Allocation Round 5 failed to get any successful projects through and the Hornsea 4 project was cancelled after a successful bid at the last Allocation Round, there is a need for the upcoming Allocation Rounds 7 and 8 to procure between 15GW and 23GW offshore wind according to Energy UK. In comparison, a total of 16.5GW has been effectively procured across all previous auctions.⁹¹ Meanwhile, tight supply chains for clean technology are pushing up costs.

As NESO itself warns in the Clean Power 2030 report: “There are also risks that the accelerated pace reduces competitive pressure, increases supply-chain tightness or otherwise increases costs. Managing these risks and opportunities will be a key challenge for the Clean Power 2030 Unit.”⁹²

Second, rushed delivery means that essential grid infrastructure may not be delivered as quickly as the renewables build-out. The UK is unlikely to deliver the grid infrastructure needed to integrate renewables at scale in the current timeframe. Indeed, only recently NESO found that two key grid projects that will connect windfarms to the UK grids will be delayed to at least 2031.⁹³ Delays in planning, permitting and construction will constrain capacity and raise system costs. As NESO outlines in its report: “In many cases, the delay of even a single project until after 2030 could add over £0.5 billion to annual constraint costs and increase emissions.” And “Compounding delays of multiple projects can easily escalate these by billions of pounds, adding to the risks for the clean power goal.”⁹⁴

As a number of the UK’s nuclear power stations are scheduled to come offline before 2030, and Hinkley Point C delivery has been delayed to after 2030,⁹⁵ there will also be a lack of nuclear capacity on the grid in 2030. This is not just a problem in terms of capacity: nuclear energy provides valuable

functions to the grid that renewables don't, including maintaining grid inertia levels. This will introduce pressure to create alternative service arrangements for ancillary services, which may increase costs.⁹⁶

Finally, crucial market reforms are delayed by delivery pressure. For example, efforts to reform the electricity market to locational pricing faced considerable resistance from the large energy companies and the investor community, as it was seen as a force that would disrupt delivery of the 2030 target and the investment environment needed to deliver it. However, market reform and the move towards more granular locational and temporal signals is essential to create the right investment signals and reduce energy bills. In short, the “moonshot” approach – optimised solely for speed – risks locking in higher bills and systemic inefficiencies for years to come.

Understanding the NESO Report

In 2024 the newly formed NESO published advice for achieving the government's mission to deliver clean power by 2030.⁹⁷ This plan outlines that Clean Power 2030 does not represent an increase in electricity costs for consumers, compared to a counterfactual scenario. However, there are a number of assumptions in the analysis that make it unlikely to be the route towards lowest-cost electricity.

As is natural when modelling, due to high uncertainty, the NESO report makes several assumptions that may not hold true. It assumes:

- Gas prices are similar to mid-October 2024 (101 pence per therm – higher than DESNZ projections of 72 pence), carbon prices are high (£147 per tonne of CO₂, compared to £38 per tonne today), and there is a counterfactual £25 carbon penalty for gas-fired power stations. Depending on what happens with international gas markets and government policy decisions, gas may be cheaper than this, which could push the costs of the counterfactual scenario down.
- Gas or alternative flexible generation is setting the price of electricity between 15 per cent and 50 per cent of the time. This is also highly uncertain. As highlighted by Stonehaven, there is also no plan for how unabated gas generation will be limited to 5 per cent of generation under current policy proposals as the incentives in the market may make gas participate in the market more frequently.⁹⁸
- CfD costs will continue to fall, with no expected increase due to higher interest rates, tight international supply chains and other costs associated with pushing for rapid delivery.

In addition to these constraints and uncertainties, the assumption also relies on perfect delivery, including rapid grid expansion and delivery of a large number of new renewables projects. These are already behind schedule and unlikely to be delivered in the context of Britain's planning system and strained international supply chains.

Even if the assumptions hold true, the plan outlines potential cost savings compared to a counterfactual that doesn't represent a least-cost scenario – instead, it is based on the above assumptions. In fact, neither scenario necessarily involves reduced electricity costs compared to the status quo. The UK does not currently have a plan that directly optimises for low costs.

There are strong reasons to believe that an alternative pathway – still committed to clean power, but more focused on sequencing, cost and system optimisation – could deliver a more robust platform for electrification and long-term decarbonisation.

This moment calls for a plan that optimises not just for pace, but for cost, security and resilience. The UK needs an agile system strategy capable of adjusting to shifting conditions and mapping the most cost-effective, deliverable route to full decarbonisation.

At present, NESO is working to a single fixed-year pathway: Clean Power 2030. The destination must remain clean power, but a narrow mandate tied rigidly to a date constrains strategic flexibility and prevents the energy system from adapting to new risks or opportunities.

A more effective plan must be capable of regular review and recalibration. Key assumptions – such as gas prices, CfD strike prices, grid-delivery timelines and consumer flexibility – are highly uncertain and evolving rapidly. Without a mechanism to test these assumptions over time and adjust course accordingly, the UK risks overcommitting to an inflexible and potentially high-cost pathway. Embedding a process of ongoing system monitoring and iterative scenario testing is essential to ensure the electricity transition remains cost-effective, resilient and supported by the public.

Recommendation: *The government should instruct NESO to develop a new national system plan that keeps Clean Power 2030 as the goal but incorporates annual reviews and transparent reporting on costs, risks and trade-offs. This requires strengthening NESO's modelling and planning tools, providing access to granular demand forecasts, resource data, and the authority to conduct integrated planning across generation, flexibility, storage and transmission.*

As an immediate step to implement this plan, the government will need to course correct on the upcoming Allocation Round 7 (AR7). The risks of clean trumping cheap are very live in the next offshore wind procurement round. Offshore wind remains central to the Clean Power 2030 plan, yet costs have surged – administrative strike prices have risen by more than 75 per cent since AR4, with the latest benchmark of £113 per MWh far above the cost of onshore wind, solar or efficient gas generation. Despite this, DESNZ can now authorise extra offshore wind capacity above the CfD budget under AR7, using new powers to view anonymised bids that exceed the cap.⁹⁹ While intended to prevent underspend, this creates a clear risk that political pressure to meet capacity targets will override cost discipline.

Recommendation: *HM Treasury should apply a strict value-for-money safeguard to AR7, ensuring that offshore wind procurement does not sacrifice affordability for speed. Any capacity procured above the published CfD budget should face a hard cost cap equivalent to the marginal cost of efficient gas generation – and be approved only if it demonstrably reduces whole-system costs and avoids worsening grid constraints. This would keep delivery on track while protecting consumers from being locked into expensive long-term contracts in pursuit of Clean Power 2030 targets.*

This is not about stepping back from rapid decarbonisation, but about ensuring that delivery is grounded in realistic system design. An economy-wide electrification strategy – particularly one that supports competitiveness and energy security – will not succeed without an optimised, cost-aware and fully integrated system plan. If another system could deliver lower bills, and money could be channelled into electrification, this is likely to reduce carbon emissions faster and put the UK more firmly on a path towards energy security.

Implement Radical Planning Reform

Planning reform is no longer a technical side issue – it is a first-order national priority. As the UK transitions from a fossil-fuel-based system, where fuel prices drive costs, to a renewables-based system, where capital costs dominate, the cost of financing becomes the primary driver of electricity prices. And in this system, nothing raises the cost of capital more than a slow, uncertain and fragmented planning regime.

Investors today face long delays, overlapping jurisdictions and unclear timelines, all of which increase perceived risk and drive up the cost of clean-power projects. We are already paying the price. The UK's most significant barrier to a well-functioning, low-cost electricity system is the lack of a modernised, connected grid – especially in terms of north-south transmission capacity. Long grid-connection queues and inadequate anticipatory investment are adding billions of pounds to system costs, while holding back growth and electrification.

Planning isn't just a policy issue. It's an economic issue, an energy issue and a test of political seriousness. If Labour wants to decarbonise the grid, build new industry and reduce bills, it must start by rebuilding Britain's capacity to deliver.

MAKING THE PLANNING SYSTEM WORK FOR NATIONALLY SIGNIFICANT INFRASTRUCTURE PROJECTS

The government's upcoming Planning and Infrastructure Bill is a once-in-a-generation chance to fix the British planning system. It must be passed swiftly and implemented with purpose. Key measures – such as reducing statutory consultation burdens for Nationally Significant Infrastructure Projects (NSIPs) – should be preserved and strengthened. But much more is needed. This moment must be used to deliver radical, centralised and unapologetically pro-build reform.

This is a strong bill, and the first priority must now be effective delivery. For instance, the Nature Restoration Fund introduces a promising shift: instead of developers facing fragmented environmental assessments on a project-by-project basis, in cases when a government-approved Environmental Delivery Plan (EDP) is in place, they can contribute to a central fund. In return, site-specific legal constraints under the Habitats Regulations can be disapplied. This model could bypass issues that have traditionally caused significant delays, but its success depends entirely on the timely creation and implementation of EDPs. Without strategic plans in place, the new system risks introducing precisely the kind of delay it is designed to eliminate. The government should therefore consider the creation of a national EDP as a backstop for critical national infrastructure (like data centres) when site-specific EDPs have not been put in place, as suggested by Britain Remade Head of Policy Sam Dumitriu.¹⁰⁰

Recommendation: *For NSIP reforms to work, the Ministry of Housing, Communities & Local Government (MHCLG) should create a national EDP as a backstop, while also ensuring that Natural England has the tools necessary to quickly and comprehensively put in place site-specific EDPs.*

In addition to this, there are opportunities to go even further to implement radical planning reform. TBI has [previously set out](#) how to cut consenting timelines by 80 per cent through a bold new model of national infrastructure planning. This includes empowering National Policy Statements (NPS) to actively authorise priority projects and giving democratic legitimacy to strategic national infrastructure.

The National Infrastructure and Service Transformation Authority (NISTA) could be tasked with refreshing sector-specific NPS documents annually, ensuring that the system keeps pace with demand.

The UK should also learn from successful international models such as Portugal's renewable zoning framework and Austria's Burgenland wind plan, which combine upfront environmental screening, grid alignment and streamlined permitting to accelerate clean energy build-out.¹⁰¹ Similar "Clean Energy Zones" could be introduced in the UK to deliver coordinated, low-cost development while preserving public engagement and community benefit. And this approach must extend beyond renewables. TBI papers on [*Revitalising Nuclear: The UK Can Power AI and Lead the Clean-Energy Transition*](#) and [*Sovereignty, Security Scale: A UK Strategy for AI Infrastructure*](#) highlight how a centralised, consent-based model in which Parliament approves priority projects and removes legal veto points can reduce delay, unlock investment and bring clarity to developers.

For the UK, rather than only introducing Clean Energy Zones, Parliament could approve full grid projects. This approach has been successfully used in Germany, which has rapidly expanded its grid connections.

This isn't about bypassing communities. It's about replacing gridlock with delivery – using digitalised planning tools, clearer standards and structured consultation to ensure meaningful engagement without enabling procedural vetoes. Environmental assessments should be modernised with real-time data and digital modelling to eliminate duplication and reduce costs.

Above all, the public must see the upside. These reforms should be accompanied by stronger community-benefit frameworks and a national narrative that links planning to jobs, cheaper energy, cleaner air and long-term security.

This is not just a procedural challenge. It is a political test – of the government's seriousness about growth, about net zero and about delivering a modern state.

REFORM THE PLANNING SYSTEM

The government has also begun the process of reforming the regular Town and Country Planning Act system, which applies to all projects that are not classed within the NSIP regime. This is particularly important for smaller renewable projects, as well as for demand-side technologies.

Measures are already being taken to ensure that changes to the National Planning Policy Framework (NPPF) improve this process, but more could be done.

Recommendation: *To help ensure projects are approved more rapidly, the MHCLG Secretary of State should issue a written ministerial statement saying the department will use call-in powers to approve grid upgrades, such as substation upgrades, that can help deliver faster connections.*

Stifling regulations and the requirement to obtain planning approval continue to hold back efforts to invest in the infrastructure needed for electrification. The government has already taken long-overdue steps to reduce regulatory barriers for heat pumps by removing the requirement to get planning permission for an installation within a meter of a neighbouring property¹⁰² and for installation of electric-vehicle charging points.¹⁰³

As proposed by the National Infrastructure Commission, the government should next introduce reforms to the planning system to make it easier to build the distribution grid infrastructure needed to support electrified technologies, including changes to the Town and Country Planning Act, Electricity Act 1989 and Overhead Lines (Exemption) (England & Wales) Regulations 2009.¹⁰⁴

Recommendation: *The government should rapidly change regulations to make construction and maintenance of Distribution Network Operator infrastructure easier.*

Fix Market Design and Investment Signals

The transition to a renewables-heavy energy system is not simply a shift from fossil fuels to clean sources. It represents a deeper transformation: from a centralised, dispatchable model to one that is more decentralised, variable and weather dependent. Market structures designed for the old system no longer align with the economic or physical realities of the emerging one.

The UK has begun to take steps in this direction, but much remains to be done to ensure that electricity-market arrangements reflect the properties of a modern power system in which flexibility, location and time-of-use increasingly determine value. Getting this right will help enable more efficient investment, drive innovation, and ultimately reduce bills through system-wide competition and coordination.

As the UK enters the next phase of the energy transition, market design must now focus on supporting the technologies and behaviours that will define a low-cost, flexible, 21st-century grid while remaining mindful of how market design can impact costs. Where previous reforms aimed to bolt low-carbon technologies onto a fossil-fuel-based system, the energy system of the future will be built around decentralised renewables, smart demand, storage and digital optimisation.

LIBERALISE BUILD

The real constraint on UK energy delivery today is not a lack of ambition, but a system that is overly centralised and prescriptive about what can be built.

Britain has long suffered with inadequate forward-thinking and strategic planning of its energy system. As identified by many, including previous TBI paper [*Powering the Future of Britain: How to Deliver a Decade of Electrification*](#), the lack of a holistic plan and anticipatory investment in the system has meant that Britain's grid is far too underdeveloped. An important move towards a better electricity system came with the establishment of NESO and the introduction of the Strategic Spatial Energy Plan in 2024. This will help focus minds and shape anticipatory investment in the system.

However, stronger strategic planning has led down a path towards stringent central control of investment. Under the Clean Power 2030 plan, only projects that fit within predefined government pathways are effectively allowed to proceed – limiting capacity growth, deterring investment, and sidelining viable technologies that could contribute to decarbonisation and lower system costs.

This approach reflects a specific mindset: that the centre must not only set targets but also pick the exact mix and sequence of technologies to deliver them. But in a fast-moving energy landscape – where demand is rising rapidly due to AI infrastructure, electrification, new industry and the speed of innovation on the supply side^{105,106} – this level of planning precision is neither realistic nor desirable. It creates bottlenecks, crowds out innovation and prevents the market from responding dynamically to changing needs.

Instead, the UK should liberalise the energy build-out and let the market decide what gets built, subject to clear planning, environmental and system standards. If a developer can finance, permit and connect a project (whether solar, storage or other innovative clean technologies), it should be able to proceed, even if it falls outside the narrow scope of the Clean Power 2030 model.

The role of government should be to set the overall direction – net zero, affordability, energy security – and create the market frameworks that allow a range of technologies to compete to deliver it. That includes reforming grid access, speeding up planning, and ensuring that market signals reward flexibility, reliability and low cost rather than alignment with a single-model pathway.

A liberalised approach would unlock stranded capacity, ease pressure on government auctions and help the UK adapt more effectively to uncertainty. As argued in TBI paper *Reimagining the UK's Net-Zero Strategy*, the key to success is delivery, not perfect planning. If the UK wants to electrify the economy, reduce bills and build a resilient energy system, it must unblock private capital and allow more to be built, not just what Whitehall expects.

Recommendation: *Reassess prioritisation within the system of electricity-supply projects that are in line with the generation projects stipulated in the Clean Power 2030 plan – focusing the efforts instead only on “first ready, first connected”.*

This case for liberalising energy build-out applies just as much to demand-side technologies. While the connections reforms don't have the same impact on demand-side projects as they do on the supply side, there are a number of other measures still being taken to restrict certain types of energy demand.

A recent TBI paper on [AI infrastructure](#) outlined how the energy system can better enable on-location energy and AI infrastructure together through reforms.

This applies to other technologies too. For example, the recent calls by Britain Remade¹⁰⁷ and the Centre for British Progress¹⁰⁸ to relax regulatory restrictions on air conditioning and heat pumps highlights how rigid regulations are blocking the uptake of technologies that are increasingly vital for household comfort, public health and energy flexibility as the UK climate changes. In a decarbonising, electrified economy, demand patterns will evolve – and the energy system must be allowed to respond. That means enabling new technologies to be built where there is need and market appetite, not only where they fit within existing models.

Finally, there is also an opportunity for the government to think in new ways about opening transmission build up to competition. Currently, the UK has Independent Distribution Network Operators (IDNOs) operating on the distribution grid, but not competition for building out the transmission grid. As previously outlined in [Powering the Future of Britain: How to Deliver a Decade of Electrification](#), Ofgem should allow competition on the transmission grid to allow faster development, and allow both demand- and supply-side consumers to build out their own connections – just as already happens with the offshore grid – potentially reducing costs.

Recommendation: *Ofgem should allow competition in building the UK transmission network to speed up build and incentivise innovative delivery.*

REFORMING ENERGY-MARKET ARRANGEMENTS

Much time has been spent on the review of electricity-market arrangements (REMA)¹⁰⁹ process over recent years, causing uncertainty for industry and investors, and taking up significant time for government. However, while a decision not to move forward with locational pricing has now been taken, the need for improved locational signals in the system has not gone away.

The process over recent years cannot, and should not, be repeated. But at the same time, the current system cannot, and should not, be the end state for a decarbonised system. One of the key missing pieces has been an understanding of the longer-term vision for what a renewables-based electricity market should look like.

Recommendation: *The government must urgently outline its vision for what a renewables-based electricity market will look like – including a pathway for how it will get there. This will increase certainty for the various players in the market and ensure that critical reforms are not put off but implemented at pace.*

Given the economic and physical properties of renewables, the long-term vision for a renewables-based system that works on market-based principles must involve increasingly granular temporal and locational signals to guide investment.

Progress in delivering shorter settlement periods in the UK is moving forward, albeit slowly due to inertia in the system. Given Ofgem estimates that Market-Wide Half-Hourly Settlement (MHHS) could deliver net consumer benefits of £1.6 billion to £4.5 billion between 2021 and 2045,¹¹⁰ and Australia and some countries in Europe have already adopted far shorter settlement periods, the government should ensure that efforts to make the move are expedited rather than subject to further delays.

Had the government introduced locational pricing after the recent REMA process it could have saved customers £55 billion by 2050. While it would have been a challenging transition involving some uncertainty for investors and generators as the government is accelerating renewables rollout, and

with differing prices across the country, it would have reshaped the system for better function and lower cost. Indeed, locational pricing alone could save customers £55 billion by 2050 (£3.7 billion per year)¹¹¹ through improved dispatch efficiency and siting decisions, leading to reduced need for transmission investment.

While there are political challenges to different consumers being charged different amounts based on location, other prices are already set geographically: the price of homes, food and other key resources. Locational pricing is necessary to make a renewables-based, flexible system work effectively and at low cost.

The process of moving towards more granular local signals cannot be subject to a lengthy consultation process like REMA. The government now has all the necessary information to make decisions and can, on this basis, create a clear roadmap for its introduction.

Recommendation: *The government should reverse its decision not to move ahead with locational marginal pricing and set out a roadmap towards nodal pricing on an accelerated timeline.*

Alongside a clear roadmap towards locational marginal pricing, the government should strengthen complementary reforms to accelerate efficiency and investor certainty. Ofgem should open up markets for flexible demand, building on half-hourly settlement to ensure that consumers and aggregators can participate fully in balancing and constraint management. In parallel, sharper Transmission Network Use of System (TNUoS) locational signals should be introduced well before 2029, removing distortions such as the current £0 floor on demand charges. Finally, reforms to network connection standards, such as Guaranteed Standards of Performance (GSOPs) on connection times, would help speed up electrification and give households confidence in the transition.

REFORMING CONTRACTS FOR DIFFERENCE

CfDs have been the cornerstone of renewable-energy expansion in the UK, particularly for offshore wind. They successfully reduced the cost of capital by insulating investors from price volatility and provided a clear pathway to scale up deployment. But CfDs were never designed to be permanent. The 2012 Electricity Market Reform Impact Assessment explicitly stated that they were intended as a bridge: a temporary support while the market reassured itself and matured.¹¹² More than a decade later, however, CfDs have become entrenched as the default model. Their contract lengths have even been extended from 15 to 20 years while onshore wind projects can now submit for repowering, cementing dependence rather than phasing it out.¹¹³

The problem is structural: CfDs buy volume, not value. They guarantee megawatt hours, but they do not guarantee that power arrives at the right time or in the right place. This is the same limitation as levelised cost of energy (LCOE), which remains the dominant metric for comparing generation technologies. LCOE ignores time, location and system impacts, treating a unit of wind in the North Sea as equivalent to a unit of nuclear in Yorkshire, causing experts such as the Clean Air Task Force to urge LCOE to not be used for long-term energy system planning.¹¹⁴ As Robert Boswall has argued,¹¹⁵ CfDs effectively embed that flawed logic into policy, leaving balancing, grid constraints and standby costs to others, all of which ultimately fall back on consumers.

The last few years have seen CfD strike prices increasing rather than decreasing, especially for offshore wind, as a result of increasing interest rates. But even at very low strike prices, CfDs risk locking in “cheap” volume that creates expensive system costs elsewhere. As Dieter Helm put it in his 2017 *Cost of Energy Review*: “An important feature of these costs is that they are not currently borne by those who cause them.”

If CfDs are extended indiscriminately to all technologies, Britain risks hardwiring a system in which consumers permanently underwrite risks that should be borne by generators and aggregators who are best placed to manage them.

The next phase of market reform should therefore reintroduce competition and locational value into contract design. Options include locational CfDs, technology-neutral CfD auctions, partial or market-exposed hedges, integrated capacity–energy reliability options, or ultimately replacing CfDs with supplier obligations.

Each of these models shares a common goal: to internalise system costs and align private incentives with public efficiency – reducing the upward pressure on bills from constraint payments, capacity auctions and network congestion, while ensuring that future investment rewards flexibility, reliability and system value, not just raw generation volume.

Recommendation: *Move beyond the current one-size-fits-all CfD model by reforming contract design to reflect locational and system value. The government should explore a suite of competitive, market-based options to ensure future contracts reward flexibility, efficiency and reliability, not just low strike prices.*

Alongside this, to support specific nascent technologies that the UK wants to champion as part of its industrial strategy, the government can introduce other schemes. Extending CfDs to nascent technologies might not just create market distortions but also fail to convey any benefits of lower costs while the technology produces power. This risks locking in high costs for consumers and undermining public support. For instance, the most recent Allocation Round set a price cap of £271 per MWh for floating offshore wind,¹¹⁶ which will increase energy costs for consumers.

The core issue is not whether the government should support innovation, but how. Rather than guaranteeing high revenues for immature technologies, the UK should shift towards a model of government co-investment to reduce the cost of capital where there are strong reasons why the UK should support – particularly through shared infrastructure, concessional finance or deployment-linked grants.

This shift is now more feasible under the government's new fiscal rules, which allow borrowing for productive investment that supports long-term economic growth. With energy infrastructure and clean technology squarely

in that category, there is a strong case for public co-investment in early-stage technologies. This would enable the state to play a catalytic role in reducing costs without overburdening energy consumers.

Other countries have already shown this can work. The US Department of Energy's Loan Programs Office supported early-stage solar and battery deployment not by guaranteeing revenue, but by lowering investor risk through direct financial backing. Similarly, Germany's innovation tenders cap the volume of subsidised deployment and let developers compete on efficiency, keeping system costs under control. If the UK wants to lead on next-generation clean energy, it must reform how innovation is financed – shifting from price protection to strategic cost participation.

Recommendation: *Reform support for innovation by replacing revenue guarantees for nascent technologies with targeted public co-investment through concessional finance, shared infrastructure and deployment-linked grants, to reduce costs without overburdening consumers.*

Accelerate Technology, Data and System Innovation

The UK electricity system is undergoing a profound shift, not just in how energy is generated, but in how it must be managed. As the system becomes more decentralised, electrified and dependent on variable renewables, it is also becoming vastly more complex. Millions of new distributed assets are joining the grid, from rooftop solar and batteries to EVs and heat pumps, each generating data and requiring coordination but also bringing new opportunities to reduce bills and improve energy security.

Balancing supply and demand in real time is no longer a matter of adjusting a few large gas plants; it now requires processing millions of data points across time and geography and making split-second optimisation decisions. This is not a shift that should be shied away from. It should be baked into the transition to clean power from the beginning, by encouraging the adoption of new, clean, AI-era technologies on both the demand side and the supply side at speed.

DIGITISE THE GRID AND INTEGRATE AI

AI is a natural match for the challenge of creating a renewables-based electricity system. It offers the ability to forecast demand and generation, manage flexible resources, detect faults, optimise networks and deliver faster, smarter public services. As argued in [*AI and Clean Energy: How Governments Can Unlock the Power of the “Twin Transitions”*](#), integrating AI into the energy system isn't just a technology upgrade – it's a system necessity. The energy transition and the AI revolution are not parallel tracks; they must be treated as mutually reinforcing missions.

While the UK electricity system is steadily becoming more digitised, it is not yet fully equipped to harness the transformative potential of AI and advanced digital technologies. As the energy system becomes increasingly decentralised and complex, AI offers powerful tools for optimising grid operations – from balancing supply and demand in real time to forecasting constraints, managing storage and automating routine processes. AI can also streamline planning, accelerate grid connections and enhance customer-facing services. This could help speed up the pace of decarbonisation, while also reducing the costs.

However, to realise these benefits, the UK must first build the foundational infrastructure required to support a digital, AI-enabled grid. For example, the current NESO control-room architecture is not designed to manage a highly flexible system involving numerous distributed assets such as batteries. This means that the UK does not get the most out of its battery assets. An upgraded control centre that harnesses the power of AI could better utilise all the assets on the grid. Energy UK has estimated that these upgrades would involve only a small amount of investment and offer billions in savings within this parliament.¹¹⁷ Eventually, AI could enable a move towards a world without human intervention in the energy system, where more efficient decisions are made about balancing supply and demand at least-cost.

Recommendation: *The government should prioritise upgrades to the NESO control room to make it fit for a renewables and AI future.*

Ofgem should also set clearer performance targets for NESO, ensuring that lower-cost demand flexibility is prioritised ahead of curtailing renewable generation, to bring down balancing costs and improve system efficiency.

There are other infrastructure enhancements that could allow the UK to get the most out of the AI opportunities for the energy system. AI combined with grid-enhancing technologies such as dynamic line rating and other sensor-based technologies can unlock extra capacity on existing transmission lines, reducing the need for costly upgrades and providing greater short-term flexibility.

More rapid adoption of this type of modern infrastructure will require changes to the pace at which the grid embraces innovation. Currently, the UK's grid is relatively slow in adopting new grid-technology innovation, for instance compared to the US. By making changes to how the government regulates the networks and allowing it to spend more money on new innovations, the UK could create a more modern grid that gets more out of existing infrastructure. Innovation within grid technology is happening at pace around the world – Britain's regulatory system must keep pace to allow its electricity system to benefit from the many opportunities AI brings.

Recommendation: *The government should expand the Network Innovation Allowance, as outlined in TBI paper [Reimagining the UK's Net-Zero Strategy](#), to enable the National Grid to spend more on innovative grid solutions.*

BUILD A SMART, OPEN-ENERGY DATA ENVIRONMENT

To fully unleash the power of AI in the UK energy system, more needs to be done to ensure the availability, transparency and interoperability of energy data – both between different elements of the system itself and also, importantly, for innovators outside the current system. Making certain types of data open in a secure and standardised way can enable the next wave of smart energy solutions. The industry is already taking steps to make energy data available by default with the emergence of initiatives like Icebreaker One,¹¹⁸ a non-profit operating at the intersection of data and sustainability.

However, the government should take a stronger lead by improving the collection and regular release of data for all at-home energy assets and strengthening requirements for all transmission-system and distribution-system operator data to be made available in standard formats. Many industry players report issues with how NESO releases and collects data, suggesting there are considerable steps that could be taken to improve both data quality and the information released.

This is not the first time the need for better utilisation of energy data has been identified, but progress has remained too slow. Many of the recommendations made by the Energy Data Taskforce should be revisited and implemented.¹¹⁹ To ensure progress happens at pace, this needs to be directed by the centre of government – also to connect data from different sources across government that have implications for energy (see also recommendation below on accelerating citizen led electrification).

Recommendation: *Number 10 should direct DESNZ, other relevant departments and Ofgem to ensure all energy data that can be released is released in standardised formats and in a timely manner – ready for the AI age.*

TRANSFORMING THE GRID AND ELECTRIFYING DEMAND

Enhanced electrification is the only way to drive decarbonisation and energy security for the UK. In 2022, only 20.7 per cent of final energy demand in the UK is electricity¹²⁰ – the rest is mostly fossil fuels. A move to clean power will help lower exposure to imported gas, but action must be taken on the demand side to really make a dent in the UK's reliance on fossil fuels.

Enhanced electrification will also have the dual benefits of lowering bills.

First, on a societal level, greater electrification (in particular flexible demand such as EVs) could reduce all electricity users' bills by lowering the unit costs and enhancing flexibility in the system. This is because the grid is built for peak demand, which means that demand that can be moved to off-peak times can flatten overall demand and improve grid utilisation and spread the standing charges on bills over a larger number of consumers. For instance,

analysis shows that more EVs on the road could reduce energy bills for everyone and utilise excess renewable capacity at times of high output.¹²¹ A similar effect can be seen in air conditioning, as utilisation is higher when solar output is high and other sources lower.¹²²

Second, introducing more electrified technologies in homes provides opportunities for flexibility and for consumers to benefit from at-home generation. According to Energy UK, the average household with a battery, heat pump or EV could save £115 per year, with smaller reductions enjoyed by households who can only, for example, run their dishwasher at night rather than peak time.¹²³

The problem is that electrification usually requires significant upfront capital investment, with a longer-term period of recuperating savings through lower bills. To make the transition viable for people, this is not the right time to force anyone to make changes to their homes.

Recommendation: *The government should make home electrification easier, cheaper and more attractive for people to create a market for these technologies.*

ACCELERATE CITIZEN-LED ELECTRIFICATION

A core element of the transition to a renewables-based system is that the clear lines between the supply side and demand side will become less pronounced. Indeed, a more electrified and flexible demand side, is – as identified in NESO's modelling – essential to delivering a low-cost electricity system.

However, Britain's electrification is lagging behind many other countries. The solution is not to force households to adopt heat pumps and EVs through stringent bans and mandates. Instead, the government must play a far more active role in creating the conditions to make it easier and more straightforward for people to electrify their homes. In addition to making electricity cheaper, which is identified by the Climate Change Committee as

key to driving electrification,¹²⁴ unnecessarily restrictive regulations on noise, planning and EPCs should be scrapped to make the process of getting a heat pump as frictionless as getting a boiler.

Government could also improve the conditions for targeted advice to specific homes and circumstances – easily linking consumers with suppliers and advising what support schemes they can use. New opportunities from technology such as heat mapping, as trialled by thermal-imaging company Kestrix, could also enhance the data on and understanding of different households. This would allow the delivery of more targeted support and reduce reliance on the current data in energy performance certificates, which is often poor.

In *Governing in the Age of AI*, TBI set out what enhanced government services for energy using AI could look like, and recommended improved options for sharing data with the government to allow better targeted advice and support. In the case of energy-bill support this could be automatic relief for some individuals and households, similar to how Portugal's Automatic Social Energy Tariff works.¹²⁵ This would also allow the government to develop a better, more targeted approach to helping people through their home-decarbonisation journeys. Moreover, in the event of a future gas-price spike, it could also be used to proactively assure consumers they will automatically receive targeted electricity-bill support, to give them confidence that the government has control over electricity bills.

To succeed, the government must continue to work with industry to identify data gaps, such as the availability of good property or household-income data. The National Data Library represents an opportunity to effectively identify and link the relevant data, to make it a seamless process to enable proactive home and business energy services, as TBI has [previously explored](#).

Recommendation: *Create a digital one-stop service for household electrification, bringing together property-level data, tailored advice, available subsidies and pre-approved suppliers, powered by AI tools to ensure households receive personalised and accessible guidance.*

Alongside this, the government can also do more to change the regulatory environment to create the conditions for flexibility to thrive. As more renewables like wind and solar are added to the grid, the maximum electricity generated will frequently be beyond demand, creating a need for increased system flexibility. Flexibility also reduces the need to build networks and power stations to meet peak demand, which according to Energy UK could eliminate the need for £3.5 billion of investment.¹²⁶

Conservative regulatory approaches and a focus on prioritising consumer protection have prevented some of the progress in creating a regulatory environment that allows innovation and the rollout of more flexible solutions. While consumer protection is clearly essential, more could be done to provide robust incentives for flexibility – for instance, through aligning the regulatory standards for home-energy assets with their risk profile and by accelerating the transition to half-hourly settlement. This should be accompanied by effective reform of the energy retail market, as set out previously in [Reimagining the UK's Net-Zero Strategy](#).

The government should also explore whether schemes intended to support energy efficiency for low-income households and social housing could be expanded to include investment in domestic batteries, which could help lower costs for these households and reduce exposure to the grid.

Recommendation: *Expand existing low-income and social-housing energy schemes to cover domestic battery installations – reducing bills for vulnerable households while unlocking distributed storage that strengthens grid resilience.*

Developing a Low-Cost Generation Mix That Works for Now and the Future

As part of its Cheaper Power remit, NESO should be tasked with identifying the generation mix that can deliver the lowest cost, most reliable electricity system for the UK. This will require a system-level view of costs, grid capacity and operability – not just meeting decarbonisation targets, but doing so in a way that reduces prices for households and industry.

Offshore wind will remain central to the UK's clean-power transition, but recent evidence shows that its costs are rising faster than expected. This inflation, combined with grid constraints – particularly in Scotland – means that new capacity cannot always be efficiently connected or utilised, leading to higher system costs and constraint payments when power cannot flow to where it is needed. Managing the pace and sequencing of offshore wind expansion, and coordinating it with transmission upgrades, will therefore be essential to keeping costs down.

At the same time, the UK should accelerate the deployment of onshore wind and solar, which continue to deliver low-cost generation below £45 per MWh, and invest in battery and long-duration storage to strengthen system flexibility. These technologies remain the cheapest sources of new power and, together with efficiency and demand-side flexibility, will form the foundation of a low-cost, decarbonised grid.

But optimising for cost will also mean reassessing how other generation technologies fit into the picture – ensuring that nuclear, CCS and biomass all contribute to the overall affordability, resilience and operability of the power system.

DELIVERING CHEAPER NUCLEAR POWER

Countries with low prices and low emissions such as Norway, France and Canada combine cheap renewables with strong baseload generation, whether from hydro or nuclear power. In other words, baseload power sources appear to have a stabilising force on energy costs. There is a growing amount of evidence that suggests a larger proportion of nuclear within a renewables-based system delivers lower energy costs. The US Department of Energy has modelled that, for California, the generational and transmission-system costs of nuclear are 37 per cent lower than they would be in a system with renewables and storage only.¹²⁷ Similarly, for the UK, an Aurora Energy Research study for the National Infrastructure Commission showed that a “high nuclear” scenario was the best route to lower bills for the UK energy system alongside a “high flex” scenario.¹²⁸ Arguably, these two scenarios combined would be a significant driver of lower energy costs.

There are also important system-wide reasons why the UK needs to consider a more diverse path – beyond renewables – towards decarbonising its electricity sector. As the UK shifts to a power system increasingly built around renewables and flexible technologies, new operability challenges are emerging. As Aurora highlights,¹²⁹ lower load factors at thermal plants reduce system inertia, making frequency more volatile. The decline in synchronous generation also increases the need for reactive power, while the variability of renewables places growing pressure on frequency response. At the same time, the traditional providers of system restoration – large thermal generators – are declining, and energy balancing is becoming more complex and costly due to rising volumes and volatility in the Balancing Mechanism. With falling gas generation and Hinkley Point C not yet online, 2030 will be a pinch point in system inertia. Aurora's modelling shows that under the Net Zero 2030 scenario (their version of Clean Power 2030), low-inertia periods increase by 39 per cent compared to today's limit set by NESO. To manage this, more synchronous generation – especially combined-cycle gas turbine power plants (CCGTs) – may need to run, pushing up emissions. Nuclear energy can ease the problem by reducing the need for ancillary inertia.

The case for nuclear power is also growing due to the need for the UK to expand its AI infrastructure.¹³⁰ Large-scale AI models and data centres demand vast, round-the-clock electricity supplies, which renewables alone cannot provide reliably or affordably. Without secure baseload power, the UK risks facing higher prices, grid instability or dependence on imported energy to sustain its AI ambitions. Nuclear offers a unique advantage: it can provide clean, domestic, 24/7 electricity at scale, complementing renewables while anchoring the energy needs of digital infrastructure. In this sense, investment in nuclear is not only a climate and energy decision, but also a strategic industrial one, directly tied to the UK's competitiveness in the age of AI.

The UK should now be planning to expand its nuclear capacity. Both through the two current large nuclear projects in the pipeline and potentially through the commissioning of a further fleet of nuclear projects. As outlined before, the UK should also seek to expand its small modular reactor (SMR) fleet to

provide further nuclear-power generation, potentially directly to energy-intensive industry. Energy Systems Catapult modelling suggests up to 18GW of SMRs could be required for a cost-effective route to net zero.¹³¹

However, for this to be a viable option for the UK, and to manage costs for consumers, the government first needs to reform the regulatory regime nuclear operates within so it can be delivered cheaply and quickly for consumers. There can be no doubt that the UK's two current nuclear projects – Hinkley Point C and Sizewell C are both far too expensive and risk increasing costs to consumers at least in the short term. This is not a problem that is intrinsic to nuclear, but rather a result of how we've decided to regulate nuclear energy in the West. The TBI paper [A New Nuclear Age](#) argued the nuclear regulatory system is based upon a warped perception of risk and suggested a number of steps to reform the planning and wider regulatory systems to make building new nuclear cheaper and faster.

The government has also recognised the importance of reforming nuclear regulation by appointing a Nuclear Regulatory Taskforce. In its interim report in August 2025,¹³² the taskforce emphasised the need for a “radical, once-in-a-generation” reset of the UK's nuclear regulatory system, which it described as “unnecessarily slow, inefficient and costly”.¹³³ The report identified several structural barriers – including overly complex, duplicative processes, a culture of excessive risk aversion, outdated planning frameworks unfit for emerging technologies like SMRs, acute workforce-capacity challenges and lack of international harmonisation.

Taking the Nuclear Taskforce report and recommendation seriously, at rapid pace, will be necessary for the UK's energy strategy, to help deliver low-cost baseload capacity at pace and scale to deliver a strong UK energy strategy for the AI age.

Recommendation: *Continue to empower the Nuclear Regulatory Taskforce, take its recommendations seriously and ensure they are implemented quickly.*

Recommendation: *Reform the way nuclear is regulated in the UK to improve both the speed and cost of build, as outlined in the TBI paper [Revitalising Nuclear](#):*

- *Recognising nuclear energy as an “existing practice” under current regulations to remove duplicative, time-consuming approval hurdles.*
- *Introducing a two-year limit for the Office for Nuclear Regulation (ONR), the Environment Agency and Planning Inspectorate to approve nuclear-reactor construction in cases where the proposed reactor is similar to already-licensed designs.*
- *Recognising new design approvals for nuclear technology from trusted international regulators such as the US, Canada, France and South Korea to enable faster approvals of new designs through the UK regulatory process.*
- *Requiring the ONR to regard approval of a single reactor as the basis for fleet approval as standard, to standardise design across deployment. Additionally, the new nuclear taskforce should consider the cost-benefit analysis of nuclear energy, including the limitations of the as-low-as-reasonably practicable principle. It should also explore ways to improve political oversight of the nuclear regulatory process, perhaps by relocating the ONR from the Department for Work & Pensions to the Cabinet Office.*

The other major question the government must address to make nuclear energy a core part of the UK's energy strategy is how to achieve economies of scale.

Evidence from around the world shows that building a large number of the same reactor to the same specifications helps improve learning rates and reduce costs. For instance, in China or South Korea, many Gen-III units have been completed in less than six years, reflecting programme effects and mature supply chains. The Organisation for Economic Co-operation and Development Nuclear Energy Agency (OECD-NEA) finds that multi-unit, standardised programmes deliver an approximately 15 per cent cost reduction on the second reactor at a twin-unit site (and approximately 5 per cent more on the second pair), while broader series effects can lower overnight construction costs by 15 to 20 per cent and, via shorter schedules,

interest during construction more than 60 per cent, yielding total cost reductions of approximately 25 to 40 per cent.¹³⁴ These effects may be even greater for SMRs, which are designed to be mass produced and benefit from learning rates.

The UK will not be able to reach this scale on its own. For SMRs, TBI suggested in *Revitalising Nuclear* that the government can develop a co-financing partnership with the US to drive an international orderbook of a particular SMR or AMR design or set of designs, expanding the potential pool of offtakers and investors, and aggregating a broader suite of private and public financing tools.

For large-scale reactors, the UK should consider international partnerships to reach scale. Other countries across Europe are expanding, or considering expanding, their nuclear generation as they face similar pressures to the UK. The UK should consider entering into a single procurement programme for the same reactor design.

Recommendation: *As part of future nuclear development, the UK should consider entering into partnerships with like-minded countries to achieve economies-of-scale benefits associated with similar procurement.*

It is important to note that, while a valuable solution for the UK, nuclear energy will not be the only (or even main) component of a balanced electricity mix. In fact, the price volatility in France from winter spikes in demand, shows that other solutions are needed for stable, low prices.¹³⁵ A slower transition may mean that other technologies required to create a low-cost grid mix, such as Long Duration Energy Storage, could become more economically viable.

FOCUSING CARBON CAPTURE AND STORAGE ON INDUSTRY RATHER THAN POWER

The UK should maintain its leadership in industrial carbon capture and the development of CO₂ transport and storage infrastructure, where it has a clear strategic advantage through the North Sea. These investments underpin future decarbonisation of steel, cement and chemicals, and will form the backbone of new industrial bases across the country.

One of the CCS projects supported by the government is a CCS gas-powered generation project, with other similar projects potentially in the pipeline.¹³⁶ However, CCS for power generation is not a low-cost solution. Captured gas plants consume more fuel per MWh, pay for CO₂ transport and storage, and require new subsidies to operate.¹³⁷ Under the government's current framework, around three-quarters of the operational cost of power-CCS projects would be recovered from electricity bills through a new levy.¹³⁸ Taken together, all of this could add over £100 per household per year once large projects are built.

Even if capture efficiencies improve, inherent costs mean gas CCS can never compete on price with conventional gas generation, let alone renewables or nuclear. Continuing to subsidise power-sector CCS now therefore risks locking the UK into a higher-cost pathway – one that slows electrification and keeps electricity prices elevated for households and industry alike.

Under a Cheaper Power 2030, Net Zero 2050 strategy, the government should therefore pause all new commitments to power-sector CCS until the technology can demonstrate genuine cost and reliability advantages. Public funding should instead focus on industrial decarbonisation and CO₂ transport and storage networks. This would reduce pressure on household bills while still supporting the parts of CCS that are essential to long-term climate goals.

Recommendation: *The government should pause all CCS for power until electricity prices start going down and the technology is proven more viable.*

REASSESSING BIOMASS

The same principle applies to biomass generation. Subsidies to the biomass energy producer Drax have cost consumers around £0.5 billion to £1 billion per year, according to Ember's 2024 analysis of Drax's annual report, which found the company received £869 million in public support last year – equivalent to over £2 million per day in subsidies.¹³⁹

In February 2025 the government confirmed a short-term CfD for 2027 to 2031, capped at a 27 per cent eligible load factor and set at a £113 per MWh strike price (2012 prices), with an estimated subsidy of approximately £470 million per year.¹⁴⁰ Even with the cap and halved support, that strike price remains well above the cost of efficient gas generation and new onshore wind and solar, so when Drax runs it still raises system costs relative to lower-cost alternatives.

Looking further ahead, the government's proposed bioenergy with carbon capture and storage (BECCS) package could add an additional £31.7 billion.¹⁴¹ Yet the promise of "carbon-negative" generation rests on uncertain assumptions about imported feedstocks, lifecycle emissions and the readiness of carbon-capture infrastructure. In practice, BECCS would raise electricity costs substantially without guaranteed net-zero benefits.

Drax remains one of the UK's largest thermal power stations and an important source of dispatchable generation, meaning any transition away from biomass must be carefully managed. Replacing its capacity will require new flexible generation and storage to maintain system stability. Nonetheless, phasing out direct consumer subsidies for biomass generation before 2030 would be a low-regret and fiscally responsible step towards cheaper power.

Recommendation: *The government should move towards ending support for Drax's biomass generation as part of a planned phase-out.*

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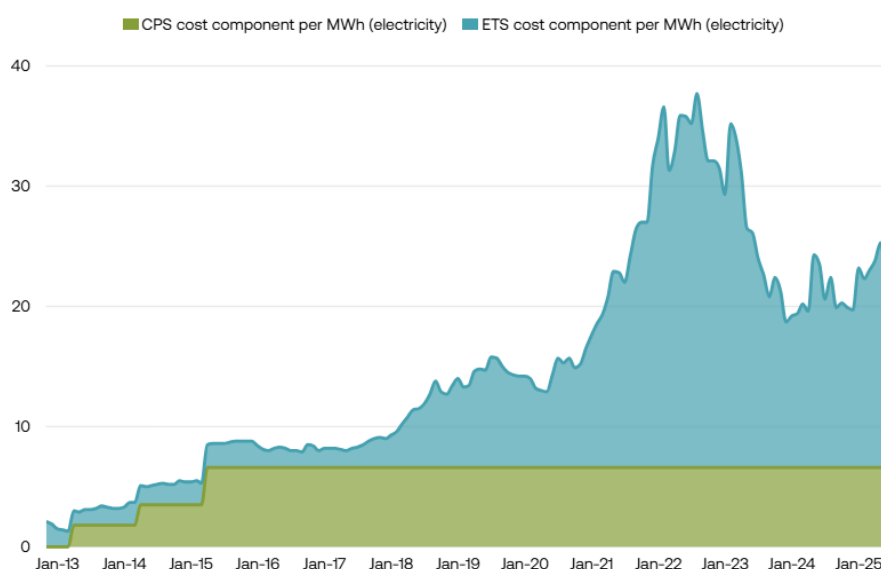
Addressing the Cost of Gas

Although gas now generates just over a quarter of UK electricity,¹⁴² it sets the wholesale clearing price 85 to 90 per cent of the time, meaning the cost of gas-fired power is the main determinant of what consumers and businesses pay for electricity. Addressing the price of gas is therefore a key lever to reduce bills.

However, the cost of gas-fired generation has risen sharply in recent years, driven not only by volatility in global commodity markets but also by domestic policy choices. Analysis by the Centre for British Progress shows that since 2012 the carbon cost attached to gas has grown into a significant component of the total price of electricity from CCGTs.¹⁴³

FIGURE 9

Carbon costs have become a significant part of UK gas power prices



Source: Watt Direction

There are two key costs: Emissions Trading Scheme (ETS) (at £50 in March 2025¹⁴⁴ or £18.6 per MWh) and the UK-specific Carbon Price Support (CPS) (at £18 per tonne or £6.6 per MWh). Together these add roughly £25 per MWh¹⁴⁵ to the cost of gas-fired generation.

These carbon taxes were designed to accelerate decarbonisation by making coal uneconomic and creating a stronger investment signal for renewables. Yet with coal now virtually eliminated from the UK system, the taxes increasingly function as a surcharge on the only large-scale dispatchable power plants currently available.

The effect is twofold: first, higher gas costs translate directly into higher wholesale electricity prices, since gas sets the marginal price in most hours. Second, the burden falls heavily on consumers and industry alike, raising energy bills and undermining competitiveness. This dynamic was also noted in the Draghi Report, which highlighted that part of the reason EU electricity prices are higher than in the US is that European treasuries have become structurally reliant on energy taxation.¹⁴⁶

While this mechanism was defensible when the UK was still grappling with the coal-to-gas transition, it is less clear today that penalising gas to this extent is the most efficient means of driving decarbonisation. Some taxation on gas can still have an important effect of favouring batteries and lower-carbon imports, but the level is not proportionate to the need. This is particularly true as renewables have already become the cheapest source of new generation, and their continued expansion depends more on grid upgrades and market reform than on higher carbon prices.

A more proportionate approach would be to reduce the carbon tax on gas, at least through 2030, by removing the CPS levy. Doing so would not derail the UK's climate goals: renewables would still undercut gas on cost and continue to attract investment, while coal is already gone. But it would provide price reductions for households and businesses while ensuring that CCGTs remain viable during periods of low wind or solar output.

Removing the ETS would be impractical, given the need for the UK to relink its scheme with that of the EU in due course. But removing the CPS levy is both feasible and economically defensible. Doing so would not derail the UK's climate goals – renewables will continue to outcompete gas on cost and coal has already disappeared – but it would reduce prices for households and ensure that CCGTs remain viable as the main source of flexible, dispatchable power during periods of low wind or solar output.

The fiscal impact of such a reform would need to be managed carefully. While precise modelling is limited, the cost of removing the CPS is likely to be around £0.5 billion to £0.8 billion per year, reflecting lost CPS revenue and associated impacts on other receipts such as the Electricity Generator Levy. In addition, renewable and nuclear generators that sell power outside CfD arrangements would collectively lose up to £1 billion in market revenues, as the lower marginal price from gas would reduce their wholesale returns.

These losses to low-carbon generators and to the Exchequer would, however, be mirrored by gains elsewhere in the economy: roughly £0.6 billion to households and £1 billion to businesses through lower electricity bills. For a typical household, the saving would amount to less than £20 per year (around 2 per cent of the average annual electricity bill). Across the 13 million people in the UK living below the poverty line, it adds up to over £250 million in relief – money that matters when families are already struggling with record energy debts and high prices. For businesses, the impact varies by consumption:

- Small firms (5 to 15 MWh/year): up to £100 saved
- Medium firms (25 to 50 MWh/year): up to £330 saved
- Large energy-intensive users (approximately 1 TWh/year): £5–6 million saved

This does represent a tax cut, at a time when UK finances are stretched. To deal with this, the government should look for other cuts in net-zero spending – such as the reduced support to floating offshore wind, Great British Energy or gas-powered CCS – and could consider whether to reduce subsidies to energy-intensive industry. Given that the pressures on bills are

particularly high now and could reduce over time, in particular if gas sets the price less, the government should also commit to CPS removal as a short-term intervention, lasting until other cost-adding schemes are scaled back.

Recommendation: *The UK should remove the CPS levy to rebalance the cost of dispatchable generation. This would provide modest household savings, improve industrial competitiveness and reduce overall system costs while complementary investments in efficiency, storage and grid reform would keep the transition on track.*

Structural reforms should accompany this change. For instance, market mechanisms could be adjusted so that plants are rewarded for availability and flexibility rather than penalised through high carbon charges. This would preserve a resilient source of backup power, reduce costs for consumers and avoid undermining the UK's long-term decarbonisation strategy.

More structural steps can also be taken to help reduce the wholesale cost of gas itself and mitigate volatility. Notably, countries like France have secured long-term bilateral supply agreements with key exporters, providing price stability and reducing exposure to spot-market swings. The UK could pursue a similar approach, particularly with Norway and major LNG suppliers, to underpin its energy security. In parallel, restoring strategic gas-storage capacity and exploring regional procurement partnerships would further dampen volatility. Together, these measures would not only support lower consumer prices but also ensure greater resilience in the UK's gas supply.

Conclusion

This is an important moment for the UK's energy strategy. Recent decades have significantly changed the country's energy landscape, turning energy from a strategic asset to a drag on growth and prosperity.

With a strategy based upon lessons from the past, and one that considers the economic, security and decarbonisation drivers of the present, the UK has an opportunity to take charge of its energy future.

Britain can turn a corner on the key trends over recent years. The country could again become an energy exporter, its people could enjoy lower energy costs, and its economy could grow and prosper through higher electricity consumption.

This is the time for genuine energy realism and a strong plan for a cleaner, more secure and lower-cost energy system.

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