

Clean power by 2030

How could a Labour government achieve its mission for power sector decarbonisation?



About this report

In opposition the Labour Party set out some ambitious plans for power sector decarbonisation, with a mission to deliver 'clean power by 2030'. This report looks at how, if elected, it could meet this aim, specifically exploring the barriers to faster power sector decarbonisation and steps that could accelerate delivery.

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Summary

The UK is just a week out from the general election and the polls are sitting firmly in Labour's favour. If these polls are correct, Keir Starmer will enter Downing Street on 5 July to lead the first Labour government for 14 years. That government will want to begin translating its plans into action from day one. Of all the 'missions' Labour has set for itself in government, one of the most ambitious, and most challenging, is to provide Britain with "clean power by 2030".

Decarbonising the UK's power system will require huge effort from across government. It will require deploying renewable energy infrastructure at historic rates, alongside novel technologies like carbon capture and storage (CCS) and green hydrogen – neither of which are currently deployed at commercial scale in the UK. The electricity grid will also need to be upgraded to carry clean power around the country, and expanded to cope with increased demand as gas boilers are replaced with heat pumps and more and more people make the switch to electric vehicles.

Great Britain has, over the last few years, made real progress in decarbonising its power sector – today, around 50% of electricity is provided by renewables. But despite this, in most areas delivery is not on track to meet the Sunak government's target of decarbonising the UK's power system by 2035, five years later than Labour's target.

Past successes in large-scale infrastructure projects – from the building of the 'supergrid' in the 1950s to the 'dash for gas' in the 1990s – show that it is possible to deliver at speed, but new infrastructure will have to be delivered at a much faster pace than has been achieved in recent years.

So to make progress on its 2030 target Labour will need to take action to speed up delivery efforts. Key to this will be removing barriers to faster delivery, including:

- The **capacity of the grid** – there is little point building new wind or solar farms if the grid cannot transport the energy they produce. In 2022 renewable generators were paid £1.38 billion to reduce supply when there was more electricity in some areas than the grid could safely handle.¹
- The **queue for connection to the grid**, which despite reforms still includes many 'zombie' projects that will never be delivered but are still taking up spots in the queue.
- Getting enough materials and equipment through **supply chains** in markets where the UK is competing with other countries trying to do this at the same time. This is not helped by years of **inconsistent messaging and policies** in some areas, which has dented confidence in domestic supply chains.

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- Finding enough people with the right **skills** to build the infrastructure required.
 - Low capacity in the **planning system**, which is currently delaying delivery of key infrastructure. Average waits to get consent for nationally significant infrastructure increased from 2.6 to 4.2 years between 2012 and 2023.²
 - A failure to **engage the public** in their role when it comes to demand management, in particular.
 - And the difficulty of **co-ordinating across the energy sector**.

Some of these require long-term solutions – building supply chains and a pipeline of skilled workers is not something that can be done overnight. But some can be addressed sooner, and will need to be to deliver clean power by 2030 .

Recommendations in brief

This report looks at what a potential Labour government would need to do to make progress on that target – from the first week, the first month, and the first 100 days. It will need to start knocking down some of these barriers and laying the foundation for fast-paced power sector decarbonisation, and the transition to net zero more widely.

First week

- The **prime minister should reaffirm that power decarbonisation is a priority** and that he expects all departments to play a part in delivery.
- **Decide on the scope of legislation to be included in the first King’s Speech.** If legislation is going to be developed very quickly it is key that it starts to tackle some of the barriers described above.
- **The Department for Energy Security and Net Zero (DESNZ) should start to carry out a rapid stocktake of what is needed for 2030 and the scope for acceleration.** This should aim to provide a clear sense of the position left by the previous government and what is feasible as well as identifying steps that could be taken immediately.

First month

- **Work out how critical strategic decisions will be made.** There are difficult trade-offs between speed, cost and public acceptability. And decisions on power decarbonisation will impact the longer term path to net zero. There are many approaches that could work well if the prime minister and chancellor are committed. But including organisations like the new National Energy System Operator (NESO) and Ofgem fully could be beneficial, meaning an inter-ministerial group or mission board might work particularly well.

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- **Ensure there is good internal co-ordination below permanent secretary level in DESNZ.** The department needs to be better joined up internally to ensure plans across technologies are coherent and processes can be streamlined to accelerate delivery. A new function to lead on that could take many forms but the priority should be to get a team that can do this operating as quickly as possible, regardless of what it is called.
 - **Initiate planning reforms.** Planning reform is a long-term project, but a few first steps can be taken immediately. Foremost among them is giving onshore wind, one of the cheapest sources of energy, the same planning rules as other energy infrastructure alongside reviewing the planning thresholds for other technologies.

First 100 days

- **Actively engage with the public on what decarbonisation means.** Progress on decarbonisation is one of the few areas where the UK has been genuinely world-leading. But the current government's messaging has been confusing. The next government should explain why this should be a national priority and the benefits it believes it would have for the public.
- **Engage with the fiscal and distributional questions.** Decarbonising the power sector is essential for net zero but, if done right, it should also reduce energy costs for consumers and businesses in the long term. However, there are critical questions about who pays and how the vulnerable will be protected during the transition – which have been avoided to date. The next government needs to engage with these questions from the start and communicate decisions transparently. The chancellor should take a leading role.
- **Make it clear who is responsible for what.** There are many organisations with a role in the energy sector; more will be added if Labour wins the election. Communicating to both new and existing organisations what they should and should *not* be doing, and clarifying the relationships between them, will be key.
- **Set out what is expected from local authorities – and give them more support.** Local authorities should not have to waste capacity on bidding for competitive funding pots – the next government should make moving towards longer term funding a priority. Local authorities also need more clarity on what their role is in the energy transition. The next government should communicate clearly whether they are expected to produce local area energy plans (LAEPs) and what their role in community energy projects should be, as well as looking at who in the current system is best positioned to support them.
- **Set up a forum with key private sector stakeholders.** Years of policy inconsistency, on energy efficiency in particular, have damaged confidence in supply chains. The next government should set up a formal mechanism to allow the private sector to give views on key policies and raise issues quickly.

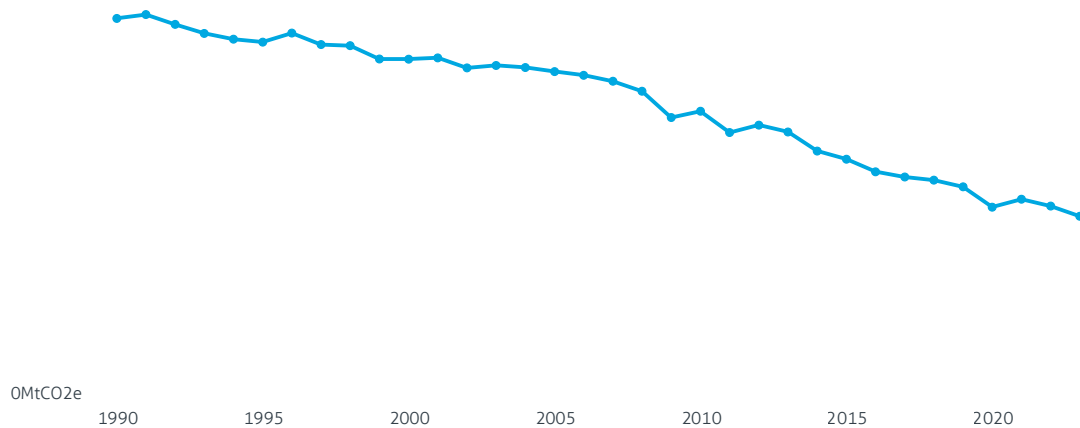
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- **Decide on a strategic approach to supply chains.** There is a key decision to be made on the trade-off between building manufacturing capacity in these industries and just getting equipment and materials as quickly and cheaply as possible.
 - **Work out where the people to staff those supply chains are going to come from.** There are several levers that can be pulled to try to get more people with critical skills into key industries. But first the next government needs to be clear how many people with what skills will be needed when, and where. Then it can look at where and how to build up the domestic skills pipeline and whether it would be necessary to try to bring in skilled workers from other countries.
 - **Bring plans together into a clear roadmap to clean power by 2030, with critical milestones, and establish monitoring and escalation mechanisms.** This should be a short document bringing together the outputs of the decisions and planning described above, with the aim of giving a rough sense of what will be needed when and something to track progress against. It should be iterative, with the assumption it will be updated as and when new decisions are made or new information emerges.

If elected on 5 July Labour will have under six years to meet its goal of delivering clean power by 2030. The next two or three years will be critical to whether this is achievable. The UK has shown previously that it is able to deliver ambitious projects quickly under the right circumstances. It will need to do so again.

The scale of the challenge

In 2019 the UK government committed to reducing net greenhouse gas emissions to zero by 2050, raising its ambition from the 80% cut committed to in the 2008 Climate Change Act (CCA).¹ This is a huge challenge.

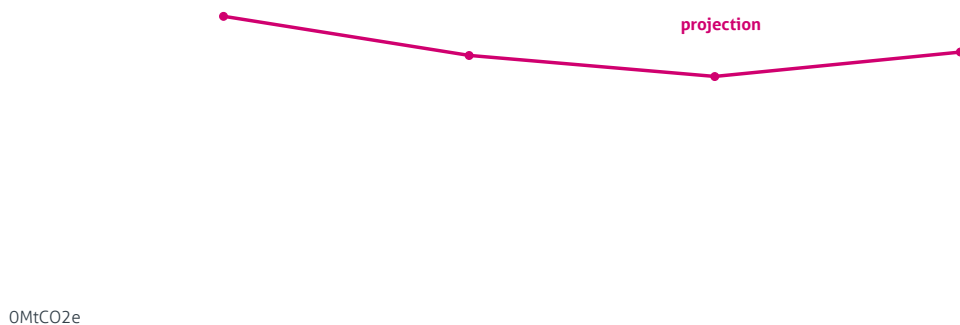
Figure 1 **UK territorial greenhouse gas emissions, 1990–2023**



Source: Institute for Government analysis of Department for Energy Security and Net Zero, Provisional UK greenhouse gas emissions national statistics, 2023, 28 March 2024. Notes: 2023 statistics provisional.

The UK has made good progress in reducing emissions – in 2022 they were 50% lower than 1990.² However, much of the ‘low hanging fruit’ – like shutting down coal-fired power stations – has been picked, making future targets highly ambitious. The Department for Energy Security and Net Zero (DESNZ), the department responsible for the UK’s net zero plans, projected last year that under the policies ready for analysis at that time the UK would miss the sixth carbon budget by a long way.³

Figure 2 **DESNZ projected performance against UK carbon budgets (million tonnes of carbon dioxide equivalent)**



Source: Institute for Government analysis of Department for Energy Security and Net Zero, DESNZ 2022–2040 Energy & Emissions Projections, 30 November 2023.

Hitting net zero will require large and rapid changes in infrastructure and behaviour. People will need to change how they travel and heat their homes – for most people, this will mean electrifying both, replacing boilers with heat pumps, and petrol and diesel cars with electric vehicles (EVs).⁴

That will only be possible if they can be connected to the grid and there is electricity available to power them. In short, much more electricity will be needed. The Electricity System Operator (ESO), formerly National Grid ESO, assumes that the UK will need to have the capacity to generate more than double the amount of electricity it does now by 2050.⁵ Electrifying some parts of industry will also increase demand – one estimate in 2023 put the amount of green hydrogen required to run a medium-sized fertiliser plant as equivalent to the entire amount produced by the biggest offshore wind farm in the world.^{*6}

And that electricity will have to be generated almost exclusively from low carbon sources. So the UK needs to expand electricity generation and transmission capacity and switch generation over from fossil fuels to low-carbon sources simultaneously.

The increase in demand for electricity and more distributed sources of generation will also require major grid upgrades to connect new sources of renewable power and distribute that power around the country.⁷ National Grid said in 2022 that to support offshore wind targets it would need to install more than five times the amount of transmissions infrastructure in the next seven years than had been built over the last three decades.⁸

Demand reduction measures, like improved energy efficiency, could reduce some of the need for increased supply and grid capacity as well as reducing bills. Flexibility – through digitalisation and changes in consumer behaviour; for example, charging EVs overnight when demand is low – will also help.⁹ The Sunak government's target is a 15% reduction in demand by 2030 but progress has been limited; Labour would need to engage seriously with demand reduction to hit its targets.¹⁰

* On the other hand high gas prices are driving deindustrialisation – the UK no longer has any fertiliser plants as they closed following the gas price crisis.

Box 1 **The UK electricity system**

Currently UK electricity is generated from a variety of sources: from gas-fired and nuclear power stations or biomass plants to wind turbines and solar panels. Electricity supply and demand has to be balanced across the system on a second-by-second basis to prevent blackouts and different types of electricity generation provide different functions. Renewables provide cheap but variable electricity supply, while gas-fired or nuclear plants can provide predictable supply (called firm or baseload power); gas plants and hydrogen can turn on and off rapidly, helping to adjust supply to match demand quickly.¹¹

Electricity is transported around the UK via networks of overhead, underground or undersea cables – the grid – to where it is either used by consumers or exported/imported via interconnectors with other countries.

The transmission network carries high-voltage electricity across the UK to the more local distribution networks, which provide it to consumers.

Decarbonisation will require big changes to the UK power system

Estimates of the exact balance of different technologies that might be needed vary across models. The Climate Change Committee (CCC) suggests that wind and solar will likely form the backbone of a decarbonised electricity system (at around 70% of supply), with consistent 'baseload' power provided by nuclear, gas with carbon capture and storage (CCS)^{*} or bioenergy with carbon capture and storage (BECCS).^{**}¹²

However, it has also suggested that some unabated gas (without CCS) may still be needed (up to 2% of annual electricity production in 2035).¹³ Low-carbon or 'green' hydrogen provides a potential alternative to fossil gas in balancing the grid by powering turbines to provide a source of power that can be turned on and off relatively quickly.¹⁴ Labour in opposition committed to targets including: 55GW of offshore wind capacity, 35GW of onshore wind, 50GW of solar and 10GW of green hydrogen by 2030.¹⁵ In 2022 the UK had just over 100GW of installed capacity in total.¹⁶

Different types of generation will need to be combined with more short- and long-term energy storage and co-operation with other countries to balance the grid and ensure that power is available when and where it is needed, meaning new interconnectors as well as energy storage and balancing infrastructure.¹⁷ 'Enabling' infrastructure like ports will also have to be upgraded to enable construction of floating offshore wind, for example. An industry initiative, the Floating Offshore Wind Taskforce, estimated that £4bn of investment in port infrastructure would be required by the end of the decade.¹⁸

* Carbon capture and storage is when carbon dioxide emissions from industrial processes or the burning of fossil fuels, for example, is captured and transported to storage deep underground in geological formations.

** Bioenergy uses biomass – organic materials, like wood – to produce energy.

At the same time the UK needs to prepare for the impacts of climate change that are already baked in (even if the exact effects are not fully known yet) and ensure that all energy infrastructure is sufficiently resilient to the likely range of impacts. Infrastructure in coastal areas will need to take account of the likely range of sea level rise, for example. It will be poor value for money if new infrastructure has to be replaced before the end of its lifespan because potential climate change effects were not taken into account.¹⁹

Box 2 **How is the power system managed and who does what?**

The Department for Energy Security and Net Zero (DESNZ) is responsible for both the energy system and hitting net zero, as well as delivering security of energy supply, ensuring properly functioning energy markets, improving energy efficiency and making sure the UK is on track to meet its net zero targets.²⁰ The department was created in February 2023 when the prime minister, Rishi Sunak, reversed Theresa May's decision to merge the Energy and Climate Change department into the business department.

The Office of Gas and Electricity Markets (Ofgem) regulates energy markets, with a mandate to protect consumer interests as well as supporting the transition to net zero.²¹ Ofgem is governed by the Gas and Electricity Markets Authority (GEMA). The members of GEMA are appointed by the secretary of state at DESNZ.²²

The Electricity System Operator (ESO) manages the supply of energy around the UK to ensure that supply and demand are balanced.²³ From summer 2024 the new National Energy System Operator (NESO) will start to take on these responsibilities as well as strategic spatial planning across the energy system.²⁴ Traditionally, the UK energy system has been split into gas and electricity but NESO will look across both. ESO is a private company, whereas NESO will be a public corporation.²⁵ In November 2023 Ofgem also announced that it will create regional energy strategic planners (RESPs) to work with local government and gas and electricity networks to create plans for the energy infrastructure needed in different areas and attract investment. NESO will work with democratically accountable regional institutions to deliver RESPs.²⁶

National Grid is an energy company that owns the high-voltage electricity transmission network in England and Wales responsible for making sure electricity is transported safely and efficiently.²⁷ Distribution network operators (DNOs) are companies that own and operate the electricity distribution network, which distributes electricity to homes and businesses. The costs of maintaining and upgrading these networks are charged to suppliers and generators but then passed on to consumers through energy bills. What DNOs can charge to

customers is regulated by Ofgem.²⁸ Electricity is generated by private companies and sold on the wholesale market to energy retail companies who sell it on to consumers.²⁹

Local authorities are responsible for granting planning consent for smaller-scale renewable energy projects – for example, solar farms up to 50MW – and supporting infrastructure like battery storage and smaller grid infrastructure. They also have the option of developing local area energy plans (LAEPs), to look at what changes are needed to the local energy system to hit net zero, covering, for example, where more demand for heat pumps or EV charging might be expected.³⁰

Labour has promised if elected to create GB Energy, a publicly owned clean energy company. During the campaign Labour said GB Energy would: focus on co-investing in new technologies like floating offshore wind, tidal power and hydrogen; partner with private firms to accelerate deployment of mature technologies like wind, solar and nuclear; and work with local authorities and co-operatives to scale community energy.³¹

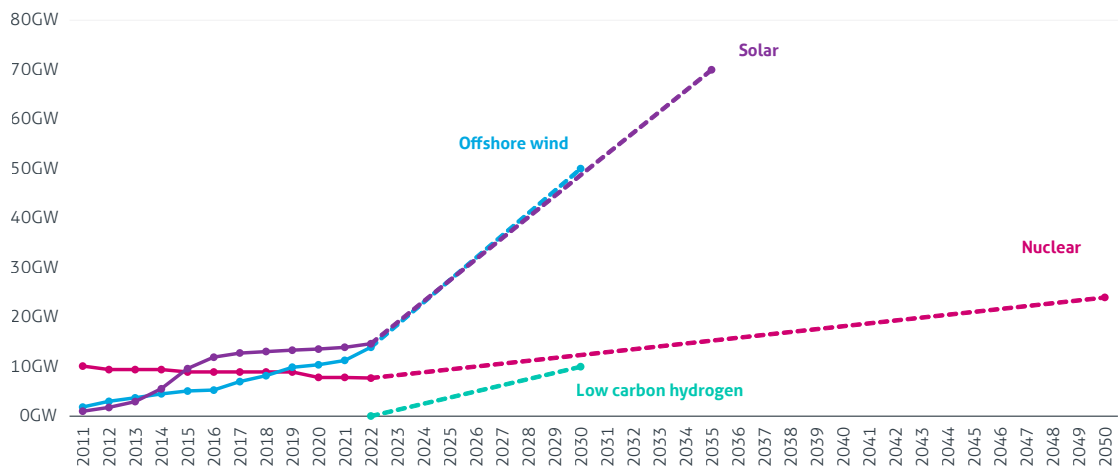
The UK has made good progress on decarbonisation in some areas

The UK has exceeded what was thought possible even a few years ago. In February 2024 the Conservative government announced that the UK had again met and overachieved the third carbon budget, cutting emissions by 50% between 1990 and 2020, while the economy grew by 79% in the same period, making it the fastest decarbonisation of any G7 economy.³²

Progress has been particularly marked in electricity supply, with around 50% of electricity in Great Britain now provided by renewables, up from just 7% in 2010. At one point in January 2023 low-carbon sources provided for the first time the vast majority of electricity (87.6%).³³ However, progress has been concentrated in some technologies – like offshore wind. In other areas, like solar, progress has been much slower. There has also been regional variation – onshore wind capacity has grown much faster in Scotland than in England, where it has flat-lined, since planning rules were changed in 2016. These differences have cost implications – onshore wind and solar are two of the most cost-effective forms of energy generation, and are significantly cheaper than offshore wind.³⁴ The CCC's most recent progress report judged that renewable electricity capacity had not increased in 2022 at the rate required to meet the government's net zero targets. Even offshore wind was found to be slightly off track, with solar even more so.³⁵

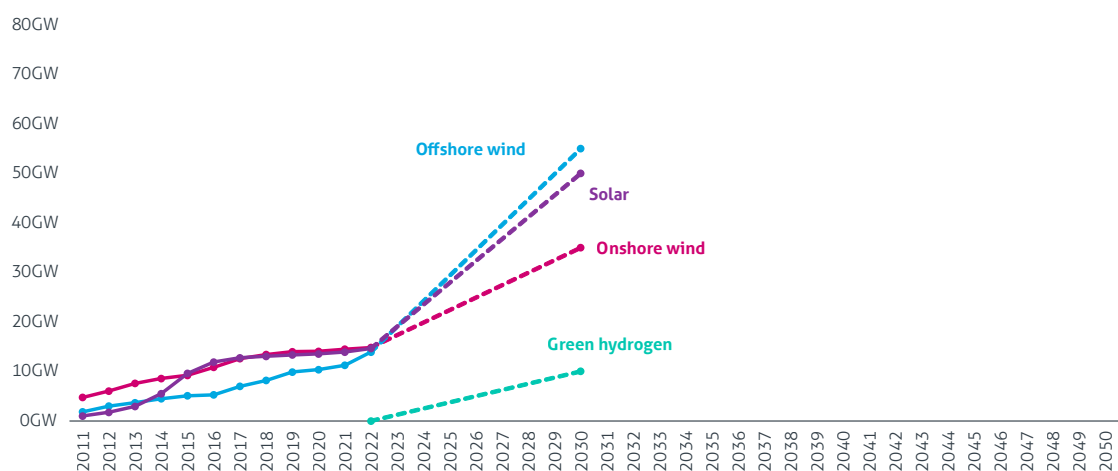
A big increase in renewable generating capacity will be required – the National Audit Office (NAO) pointed out in a recent report that hitting 50GW of offshore wind by 2030 would mean the deployment of three times as much offshore wind capacity in less than a decade than had been deployed in the last two decades combined.³⁶ The CCC's report on power decarbonisation suggested that infrastructure build rates in a number of areas would "need to exceed what has been achieved historically".³⁷

Figure 3 UK electricity network total installed capacity and Conservative government targets for offshore wind, solar, nuclear and green hydrogen, 2011–2050



Source: Institute for Government analysis of Department for Energy Security and Net Zero, Digest of UK Energy Statistics (DUKES), 27 July 2023 and Department for Business, Energy and Industrial Strategy, Department for Energy Security and Net Zero, Prime Minister’s Office, 10 Downing Street, British energy security strategy, 7 April 2022.

Figure 4 UK electricity network total installed capacity and Labour targets for wind, solar and green hydrogen, 2011–2050



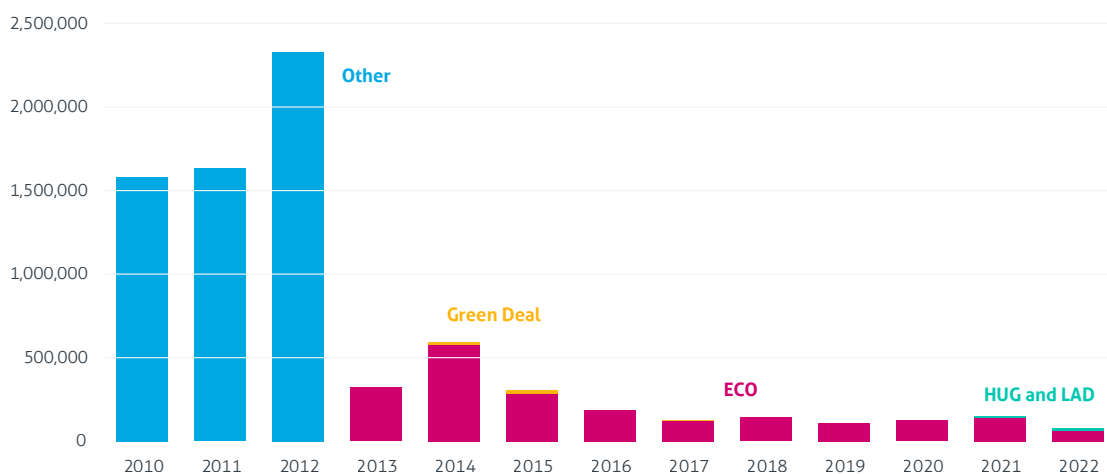
Source: Institute for Government analysis of Department for Energy Security and Net Zero, Digest of UK Energy Statistics (DUKES), 27 July 2023 and Labour Party, Make Britain A Clean Energy Superpower, March 2024.

When it comes to nuclear, the Conservative government published its civil nuclear roadmap in January 2024 and launched a nuclear delivery body known as Great British Nuclear. But the UK’s nuclear capacity has dropped from around 13GW in the mid-1990s to only around 6GW currently as older nuclear power stations have been taken offline. And of the six generating stations currently operating, only Sizewell B is scheduled to continue beyond 2028, although EDF is looking to extend operations at some of its sites. Hinkley Point C is under construction but its opening has now been delayed to 2029–31 and the only other nuclear plant under development, Sizewell C, was expected to be operational in mid-2034 but is still yet to receive a final investment decision.³⁸

Where newer technologies are concerned, CCS, low-carbon or green hydrogen production and storage, and hydrogen-fuelled generation have not yet been delivered at commercial scale in the UK, with only around 5MW of green hydrogen projects operational.³⁹ There is, however, 7GW of dispatchable low-carbon capacity (gas with CCS or hydrogen) in development, which is in line with the CCC's modelling of 4–11GW by 2025.⁴⁰ Similarly, if the 5GW of grid-scale battery storage with contracts for delivery in 2026/27 can be delivered and connected to the grid the CCC suggests grid storage capacity is currently on track.⁴¹

Progress in demand management – shifting or reducing energy use – is difficult to measure due to data gaps but is believed to be underused. The ESO has launched a demand flexibility service, allowing consumers to save money by rewarding them for voluntarily reducing or shifting demand, saving 3.3GWh of demand over winter 2022/23.⁴² But the CCC judged that smart meter rollout – needed to enable demand management – was slightly off track in 2023.⁴³ Home energy efficiency improvements – which will increase the efficiency of heat pumps and therefore reduce demand – fell dramatically after 2013 when support schemes were changed. At present, the UK is not on track to produce a decarbonised power system by the 2030s.

Figure 5 **Fabric efficiency measures installed under government-funded schemes for fuel-poor homes, 2010–22**



Source: Institute for Government analysis of Climate Change Committee, Progress in reducing emissions: 2023 Report to Parliament – Charts and data, June 2023. Notes: 'Fabric energy efficiency' is a term that includes various statistics relating to the energy efficiency of materials used in construction projects; ECO = 'Energy company obligation', HUG = 'Home upgrade grant', LAD = 'Local authority delivery'.

Barriers to faster delivery

Despite the real progress in decarbonising electricity production to date, delivery is still not at the pace needed to deliver 'clean energy by 2030'. In this section we identify 10 key barriers to faster delivery.

Slow connections and insufficient grid capacity

Hitting renewable *generation* targets will be useless if there is no way to connect those new power sources to the grid. In turn, consumers will not be able to switch to heat pumps and electric vehicles if the grid cannot provide the electricity needed to run them.¹ The grid's capacity and resilience dictate the pace at which power sector decarbonisation can take place – and capacity is a major blocker at the moment.

Connection queues

There are currently two main issues with the grid. The first is the queue to connect. In 2023, DESNZ and Ofgem's 'connections action plan' (CAP) concluded that the connection process was "not fit for purpose" and required fundamental reform.² Projects are facing long waits to connect – 70% of applicants who had received a connection offer in the year leading up to the CCC's 2023 progress report received connection dates that were five or more years in the future and over a quarter received connection dates beyond 2032.³

The connection queue is based on a first come, first served basis and has relatively low entry requirements. This, combined with the knowledge that connection dates have long lead-in times and the ESO's inability to remove projects that are not progressing from the list, means that many projects in the queue are at best speculative and are unlikely to end up connecting, blocking the path of more viable projects.

The CAP set out ambitions to raise entry requirements, remove stalled projects, better utilise and allocate existing capacity, and develop longer term connections process models in late 2023.⁴ ESO has also published proposals for a reformed connections process, which is aiming to launch by the start of 2025. This includes higher entry requirements, as well as a short-term amnesty allowing developers to terminate connection contracts without liabilities.⁵ These reforms are sensible but have not yet eliminated so-called 'zombie' projects from the queue.

Physical capacity

These proposals also do not tackle the second key issue – the physical capacity of the grid.⁶ The electricity networks commissioner, Nick Winser, warned in 2023 that new offshore wind capacity may be built faster than it can be connected, risking renewable generation being "wasted". He suggested that in the next seven years around four times as much new transmission network will be needed than has been built since 1990.⁷

The last major upgrade to the grid was when the 'supergrid' was built – in the 1950s. Over the last 70 years the network has mainly required only small upgrades. But it is starting to struggle.⁸ National Grid ESO is having to intervene more frequently to balance the grid – in 2022/23 this cost £4.2bn. The ESO paid £1.38bn in 2022 to generators to reduce the supply of cheap renewable energy located on the edge of the network (for example, wind farms off the coast of Scotland) and increase supply from gas plants closer to demand to manage constraints (when there is more electricity in some parts of the grid than can be safely handled due to lack of capacity).⁹

Capacity has primarily been a problem in the national transmission network but it has been suggested that without further investment the more local distribution network is beginning to struggle too.¹⁰ There have been recent reports of housing developments having to fit gas connections rather than low-carbon heating because of grid capacity concerns.¹¹

ESO, which will soon become the government owned National Energy System Operator (NESO), has produced a proposal for an upgrade to the transmission network with substantial new networks of primarily undersea and underground cabling. ESO estimates this will require £58bn of investment between 2030 and 2035, adding around £20–£30 a year to bills. This comes after an estimated £54bn that is to be spent between now and 2030.¹²

The amount network operators can charge energy bill payers for making upgrades to the grid is set by Ofgem. As the energy regulator Ofgem has to balance increasing costs for consumers with the need to ensure that there is sufficient investment to run a secure network that can deliver a decarbonised power system safely and without the risk of blackouts. This no small task. It has been criticised for getting this balance wrong previously and not facilitating sufficient anticipatory investment. But network operators have also been criticised for making excessive returns and not investing sufficiently.¹³ National Grid's plans will also have to go through the planning process and community consultations before the physical infrastructure can be built.

Stretched supply chains

Building all this new infrastructure requires reliable supply chains. The offshore wind sector provided a stark example of the delays that issues with supply chains can cause last year. The 2023 'contracts for difference' (CfD) auction* received no bids from developers for new capacity as developers felt the government had set the price they would receive for energy produced too low, citing rising supply chain costs.¹⁴

* 'Contracts for difference' work by guaranteeing a set price that generators will be paid for electricity (known as the strike price). If wholesale electricity prices are lower than the strike price the difference is made up by a subsidy. If wholesale prices are higher the generator pays back any surplus above the strike price. The cost or benefit is passed on to consumers through bills. See: <https://commonslibrary.parliament.uk/research-briefings/cbp-9871>

Companies are also increasingly not only competing within the UK but also internationally as many advanced economies try to decarbonise their power systems at the same time.¹⁵ The electricity networks commissioner's 2023 report into accelerating the delivery of transmission infrastructure stated that the supply chain was 'becoming more and more constrained', as many countries competed for the equipment and engineering services required to upgrade their grids.¹⁶

So far the UK has not taken any kind of co-ordinated approach to procuring the kind of kit needed for the grid.¹⁷ In contrast the Environmental Audit Committee heard recently that the Dutch–German transmission operator TenneT, which is owned by the Dutch government, put in an order for €30bn to secure its offshore infrastructure equipment requirements for the next decade.¹⁸ The electricity networks commissioner recommended that government and industry should take a more strategic approach to procurement from the supply chain.¹⁹

Labour has promised that GB Energy will take a role in procuring key grid infrastructure. However, given the grid needs to be upgraded early enough that new renewables can be connected as they come online, and the time it could take to set up GB Energy, that might come too late to help achieve its 2030 target.

Availability of skills and expertise

Shortages of engineering and technician skills have been a problem for several years.²⁰ Witnesses to an Environmental Audit Committee (EAC) hearing in February 2024 detailed the issues they were having with workforce across different sectors.²¹ The Offshore Wind Industry Council identified more than 32,000 people in the offshore wind workforce and forecast that to meet the target of 50GW of offshore wind that would need to increase to more than 100,000 roles by 2030.²² Large numbers of workers will have to be trained (or in some cases retrained).

The shortage of skilled workers is exacerbated by the pre-existing decline in skills in sectors critical to the transition and in adult education more broadly. Recent analysis found that the number of adult learners fell by 47% between 2010–11 and 2022–23, while public spending on adult skills decreased to around £4.4bn in 2022–23 from a peak of £6.3bn (adjusted for inflation) in 2003–04, a 30% drop.²³ Despite an increase in provision for skills in 2024–25, total skills spending will still be 23% below 2009–10 levels and employers invest less today than they did in the past.²⁴

Skills policy is devolved and the devolved governments have their own schemes. Provision is largely delivered by local authorities (although some private companies also operate skills academies) and skills and employment funding is split across many different funding streams.²⁵ These are often competitive and short term, taking capacity within local authorities and making it hard to build long-term consistency.²⁶ Local skills improvement plans allow more ownership of skills policy by local authorities but funding and capacity remain major issues.²⁷

Chris Skidmore’s net zero review found “a significant gap” between the scale of the skills challenge at national level and local plans for skills development.²⁸ Demonstrating this, the Green Jobs Delivery Group’s action plan was expected in early 2024 but failed to appear before the election, meaning there is not yet a clear strategy for developing the skills needed for decarbonisation.²⁹

Getting the specialist skills and capacity needed to design these kinds of strategies within government is another challenge. It is notoriously difficult for the government to compete with private sector salaries within the energy sector and in some parts of this challenge it is also competing with other sectors like defence and aerospace, for example. This leads to higher spending on consultants to bring expertise into government but is also a real challenge when it comes to setting up new bodies like NESO and GB Energy, which are recruiting from the same workforce, and can take expertise away from other public bodies.

Skilled workers are a major constraint on the feasibility of rapid power sector decarbonisation – the UK will only be able to get the policy in place and build the infrastructure needed to decarbonise the power sector at the pace allowed by the available workforce. However, the UK has achieved energy transitions in the past – when the ‘supergrid’ was built in the 1950s; when households were converted from town gas in the 1960s and 1970s; and during the 1990s’ ‘dash for gas’, when the UK built around 40 gas power stations, or around 20GW of capacity in 10 years. This shows that workforce is not an insurmountable challenge.³⁰

The planning system

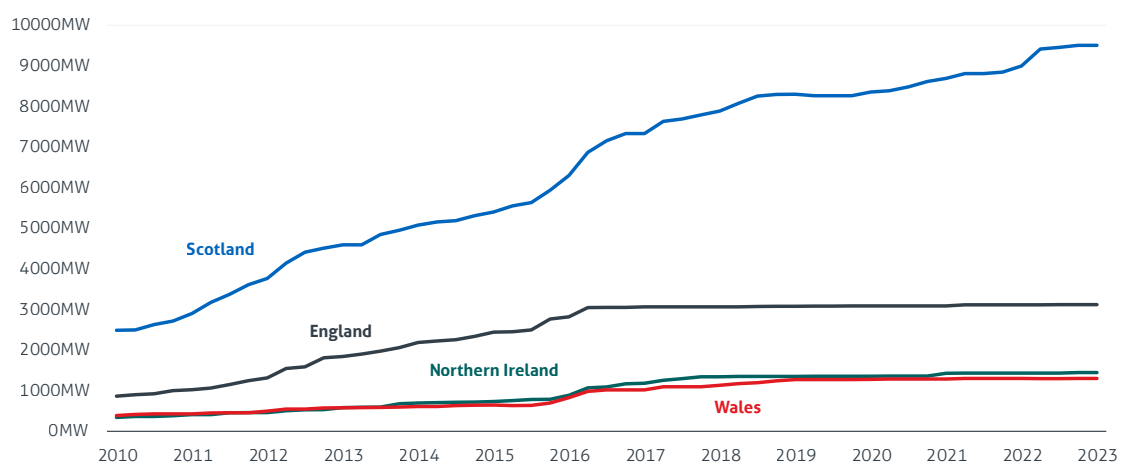
New energy infrastructure is facing longer waits to get through the planning process than previously, and waits are longer than the statutory guidance.³¹ The planning decision for the Hornsea 3 offshore wind farm was delayed four times and spent two years sitting on the secretary of state’s desk before a decision was finally made; Hornsea 4 spent five months on hold.³² As well as delaying provision of new infrastructure, this also increases costs, which are passed on to taxpayers or increase consumers’ energy bills at a point when they are much higher than they have been in recent decades. For large schemes project teams can cost around £1.5 million per month to run and teams cannot easily be wound down while projects wait for decisions.³³

There are two different streams of the planning system. Smaller energy projects, such as smaller scale solar farms or network infrastructure, go through local planning departments that have seen their capacity eroded in since 2013.³⁴ Larger projects, including energy generation projects over 50MW in England, are designated as nationally significant infrastructure projects (NSIPs) and go through a separate system led by the Planning Inspectorate. The Planning Inspectorate makes a recommendation on each application, which is then sent to the relevant secretary of state for sign-off. They have three months to make their final decision.³⁵

The National Infrastructure Commission (NIC) recently reported that since 2012 the time it has taken to get consent in the NSIP system has increased by 65%, from 2.6 to 4.2 years, with offshore wind particularly badly affected. The number of cases being judicially reviewed has also jumped in recent years to 58% from a long-term average of 10%.³⁶ In part these increases are due to the rising number of projects being put forward as well as increasing complexity – for example, in terms of the amount of environmental data required – as well as the national policy statements, which give planning guidance, not being updated since they were first issued in the early 2010s.³⁷ Capacity is also an issue beyond local authorities – for example, in the Planning Inspectorate and among statutory consultees (bodies like Natural England, which have to be consulted as part of the planning process).³⁸

Onshore wind farms, one of the cheapest forms of electricity generation, were removed from the NSIP system in England in 2016, returning planning decisions to local authorities. Restrictions on them were also tightened and, as a consequence, onshore wind installations in England decreased by over 80% between 2016 and 2022.³⁹ Only two onshore wind farms were built in 2022.⁴⁰ In 2023 the government made some reforms to make it easier to build onshore wind but stopped short of simply giving it the same planning rules as other technologies.⁴¹ The contrast with Scotland, where onshore wind installations continued after 2016, shows the scale of the missed opportunity south of the border.

Figure 6 **Cumulative onshore wind capacity 2010–2023**



Source: Institute for Government analysis of Department for Energy Security and Net Zero, Energy Trends: Renewable electricity capacity and generation, March 2024.

The current government announced various measures in the last year to try to speed up the planning process, committing to:

- accelerating the NSIP process
- improving availability of environmental data so that projects were not duplicating data collection

-
- extending the critical national priority designation to more low-carbon infrastructure, establishing a stronger case for why infrastructure was needed⁴²
 - putting in place a ministerially led forum or 'star chamber' at the centre of government to drive infrastructure delivery, with oversight of major infrastructure projects.⁴³

It also introduced a system to allow the Planning Inspectorate and key statutory consultees to recover costs from developers to help deliver resources to build up capacity and an updated national policy statement for energy, which came into effect in early 2024.⁴⁴ It is unclear what impact these have had yet, or whether they will be sufficient to speed up planning to the extent required.

The planning system is going to have to work at unprecedented speed if energy targets are going to be hit – the NIC pointed out, for example, that to produce 50GW of offshore wind by 2030, planners would have to grant consent to wind farms and transmission infrastructure much faster than it has historically.⁴⁵

Insufficient public engagement

Opposition to new energy infrastructure, often from vocal minorities, is another barrier. The decision to make it harder to get consent for onshore wind was partly a response to vocal opposition to the installation of turbines and there have been numerous media reports of local opposition to rural solar farms as well as new pylons as part of the National Grid's upgrade plans recently.⁴⁶ (Pylons are much cheaper and have a lower environmental impact than either burying or offshoring transmission cables, but tend to be more unpopular.)⁴⁷

There is polling evidence suggesting that opposition to new energy infrastructure may well be a minority view even in many rural areas and that overall a majority of the public support new onshore wind construction.⁴⁸ But opposition (even if only from a vocal minority) still has the potential to delay, or raise the cost, of energy decarbonisation and those additional costs will be passed on to consumers already struggling with high energy bills.

Successive governments have failed to set out why energy decarbonisation, and net zero more widely, will benefit citizens, or be clear about the kind of actions they will need to take. Actions and messaging from the Sunak government have been inconsistent, with policies pushing ahead with the transition while statements implied opposition to net zero. Even in his speech announcing the election Rishi Sunak stated that his government had "prioritised energy security and your family finances over environmental dogma".⁴⁹ Given that better energy efficiency and a more decarbonised energy system would have reduced the cost to individuals of the recent energy price crisis, and that both were stated government aims, this kind of rhetoric felt confusing at best, and actively unhelpful to the government's stated aims at worst. The government did not have a strategy to allow it to explain how it would help support people through the energy transition.

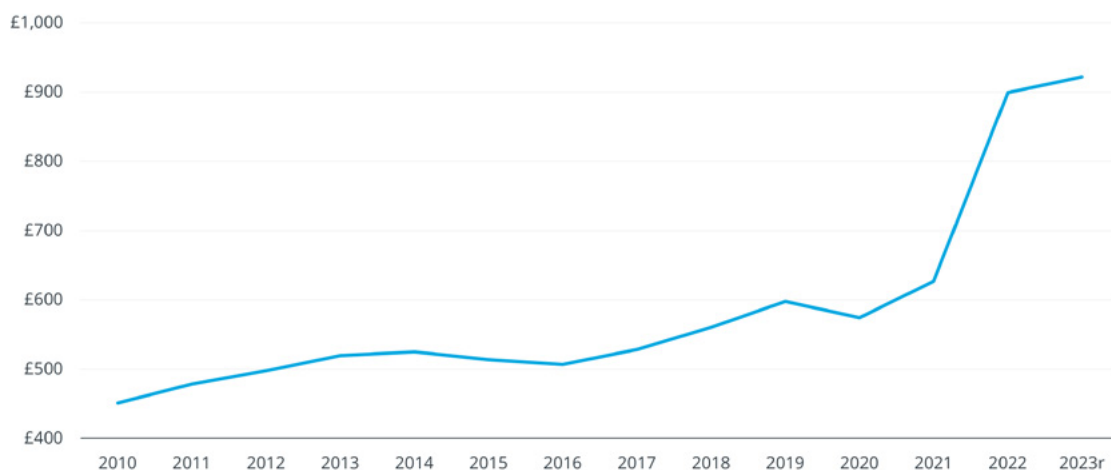
To produce a reliable decarbonised energy system that the grid can cope with is going to require action from the public to reduce demand as well as shifting it away from the busiest parts of the day – for example, by charging EVs overnight when demand is lowest. Successive governments have also failed to engage the public on demand management, while policies around energy efficiency have been stop-start and inconsistent.⁵⁰

The lack of a strategic approach to investment

Most of the investment for power sector decarbonisation will come from the private sector. And in the long term, decarbonisation should result in lower operating costs. But some public sector support will be needed for key technologies where the market is not yet sufficiently advanced. And costs for things like upgrading the grid will ultimately end up on energy bills as well.

Although funding public subsidies through energy bills has been seen as a politically easier approach, the spike in energy prices and accompanying high bills make this a more complicated option now. Funding through bills is also more regressive than general taxation. The focus on using individual levies on energy bills for different technologies has also slowed delivery, as each had to be developed in turn. General taxation or a single levy covering multiple technologies would have been a faster approach. And the lack of a strategic approach has meant more time spent deciding how policies will be funded rather than getting on with delivery.

Figure 7 **Average UK annual domestic standard electricity bills in real terms, 2010–2023**



Source: Institute for Government analysis of Department for Energy Security and Net Zero, Annual domestic energy bills, 28 March 2024.

Inconsistent policies

Inconsistent policies have also damaged confidence in supply chains. Energy efficiency and demand reduction has been a particularly bad area. A decade ago, the UK was hitting more than two million annual installations of loft and cavity wall insulation. But rates of installations under government schemes then collapsed due to a string of poorly thought through and executed policy changes.⁵¹ More recently the Green Homes Grant, introduced in 2020, was cancelled after only nine months

after issues with supply chains as customers struggled to find certified installers and administrative arrangements including vouchers being delayed.⁵² A key constraint was potential installers having little confidence in government schemes after years of inconsistent policy.⁵³

Policy consistency has also been a problem more widely. The absence of an official decision on the use of hydrogen for home heating despite signals from the government, for example, created unnecessary uncertainty about the amount of hydrogen production that might be needed. Another example is the cancellation of the CCS support programme in 2015.⁵⁴ Inconsistent messaging and policies damage the confidence of consumers, business and investors, hampering attempts to build up local supply chains and making the UK a less attractive place to invest.⁵⁵ This is critical in a period when many countries are competing for the same investment and supply chains.

Lack of consistent attention from government

The energy price crisis was addressed first by the Department for Business, Energy and Industrial Strategy (BEIS), and then later DESNZ – as well as the centre – with attention that could have been on decarbonisation focused on designing support schemes and managing company collapses instead. It also forced up bills not just to cover higher costs but to pay for bailouts of collapsed companies, making net zero investments that would increase costs for consumers in the short term a much more difficult option.

But other countries took the crisis as an opportunity to focus on energy efficiency and reducing demand as a means to cut bills. The UK's failure to do the same means demand in 2030 will likely be higher than it would have been if the government had used the opportunity to push ahead with demand reduction and domestic renewable energy investments in a context where they had just become significantly more cost-competitive, reducing exposure to future energy price shocks.

Insufficient co-ordination

There are many different organisations involved in decarbonising the power sector, with more being added – like NESO – or potentially to be added in future depending on the result of the election – like Labour's GB Energy and National Wealth Fund. But as of now, the government has failed to set out clearly who it saw doing what, and, as importantly, what different organisations should *not* be doing. Ofgem's recent provisional decision not to approve new interconnectors, despite the government's target to increase interconnector capacity, is one example of this lack of join-up.⁵⁶

DESNZ has been criticised for being insufficiently joined up across different technology streams. This has meant that strategies for these technologies do not clearly add up to a consistent and workable overall plan for decarbonisation. The delays to the green skills plan also show the difficulty of working rapidly across departments – with DESNZ leading the work but the Department for Education (DfE) holding all the levers relating to skills policy.

Delivery case studies: 1950s–2010s

There are several large-scale projects UK governments have successfully undertaken in the past that might provide useful lessons for similar projects today – including on decarbonisation. In the 1950s the electricity 'supergrid', made up of 4,000 miles of transmission lines, was built in 12 years. Then during the 1990s 'dash for gas' the UK also built around 40 gas power stations in 10 years.¹

Perhaps most interestingly, in just 10 years between 1967 and 1977 gas appliances in the UK were converted from 'town gas' (made from coal or oil) to 'natural gas' following the discovery in 1965 of reserves in the North Sea. The move involved around 13.5 million buildings and 40 million appliances being converted, requiring close co-ordination between regional gas boards, industry, contractors and the public. Entire neighbourhoods needed to be converted simultaneously to avoid leaving housing without heating. Through the nationalised gas boards the government provided co-ordination of both the delivery programme and a publicity campaign as well as an active role in managing supply chain capacity and skills – setting up 13 dedicated training schools to train contractors.²

Away from energy, the successful delivery of the 2012 London Olympics has often been used as a case study for successful infrastructure delivery. Despite the difference in scale, it shares some similarities with net zero in that it involved an international commitment (in that case to the International Olympic Committee), with a clear target date and a strong pull factor in terms of drawing people to work on the project.

Its success relied on a dedicated delivery organisation, a sense of common purpose facilitating co-ordination, a strong focus on recruiting the external people with proven track records from outside government (who stayed with the project to its conclusion) as well as commitment from both major political parties. There was also investment early on in getting the scope of the project right, with some suggestions that there was probably 'over-planning' but that this was preferable to 'under-planning'. There was also a preference for using tried and tested methods rather than innovative approaches, working through the organisations already leading in different spaces – for example, with Transport for London. Finally, there was strong political vision and leadership even when the cost–benefit ratios did not look convincing.³

When it comes to cautionary lessons, more recent delivery projects provide lots of options. One that stands out is the digital switchover of phone lines. Traditional landlines are being phased out for broadband-enabled phones reliant on electricity. However, a lack of focus on resilience and regional specificity meant that when Storm Arwen hit in 2021 hundreds of thousands of households in northern England lost power, leaving people in rural areas without mobile reception with no means of

communication, unable to contact power companies or call for emergency assistance. Ofcom says that work is now being undertaken to improve preparedness, but it indicates the importance of ensuring new systems are resilient and considering potential impacts of climate change.⁴

How to speed up delivery of clean power

Fundamentally one of the biggest reasons delivery is struggling to hit the pace required is because of the ambition of both parties' energy decarbonisation targets – Labour's in particular, should it form the next government. Interviewees for this project were divided about whether 2030 was technically feasible or not. If it is, it is a massive challenge requiring politically difficult decisions, high-level co-ordination, careful sequencing of actions and closing down technology options at the optimal moment. It could also have implications for the longer term path to net zero.

The next two or three years will be critical to whether 2030 is achievable. As covered above there are various barriers to acceleration but, as the last section showed, the UK has demonstrated that these can be overcome in the right circumstances.

The following are a series of actions the next government could take starting on day one to accelerate delivery and, more importantly, lay the foundation for a secure and sustainable clean energy system and get the UK back on track for net zero.

First week

The prime minister should reaffirm that power decarbonisation is a priority

Strong direction from the prime minister will be vital. They must state early on that their government is committed to it and they require all departments to play their part. Progress and engagement across departments on net zero has been patchy and DESNZ does not have the clout to push other departments to engage. No.10 does.

The fact that clean energy would be one of a Labour government's five missions is an essential start. But if Labour wins the election it would be important to reaffirm that commitment both privately and publicly, perhaps when it lays out its programme for government.

Decide on the scope of legislation to be included in the first King's Speech

If the next government hopes to bring energy legislation forward quickly one of the first decisions to be made is what needs to be legislated for and what that legislation should include. A Labour government would need to determine what form GB Energy will take and what powers it would need, alongside preparing for its establishment in shadow form so it could start operating as quickly as possible. A critical decision to be made as early as possible is whether GB Energy needs to be legislated for or whether it could be set up without legislation, which might allow it to start operating more quickly.

More broadly, it should start thinking about what other legislation might be needed to remove barriers to 2030 and what can be done without new legislation, which should be the preferred option wherever possible. That should primarily be DESNZ's

responsibility, but DLUHC will also need to engage fully on planning to ensure that if any legislation is needed for critical planning reforms for energy that does not fall through the cracks.

Kick off a rapid stocktake of the current situation, what is needed for 2030 and the scope for acceleration

To hit the ground running a rapid audit is needed of the current position, what supply will be required in 2030, what is on track, where the gaps are, where there is scope for acceleration, and what is really feasible – whether there is scope to accelerate offshore wind more without first upgrading port infrastructure, for example. This will help to identify actions that can be taken immediately and lay the foundation for critical decisions on trade-offs. DESNZ should take the lead on providing that information, with ESO/NESO providing input on the spatial distribution of the infrastructure required and system requirements.

DESNZ should also look at the likely impact of the barriers described above – particularly the grid, skills, supply chains and planning – and where it could start to mitigate them, tackling the most straightforward issues first. One example might be looking urgently at options to remove more ‘zombie’ projects from the grid connection queue and working out what is needed to get grid upgrades built as quickly as possible. Where options are less clear it should convene rapid reviews from task and finish groups made up of civil servants from across Whitehall and outside experts to make recommendations on what can be done in the short and medium term to ease specific blockers.

If the polls are right and Labour is elected there is then a critical decision to be made as quickly as possible on what level of additional cost is acceptable to hit 2030 instead of 2035, both monetarily and in terms of the constraints it could put on the overall path to net zero. It would need to decide, for example, whether 2030 rather than 2035 would still be the desired goal if it meant that wider shifts to EVs and heat pumps had to be delayed to reduce pressure on the grid and what level of unabated gas it might be willing to tolerate.

DESNZ should work with the Treasury and CCC to model the additional costs and potential impacts on net zero trajectories so that the next government can take an informed decision on what success would look like when it comes to a decarbonised power system in the 2030s – both for the sector but also for the transition to net zero more widely – and use that as a target and a measure to judge success against.

First month

Work out how critical strategic decisions will be made

Better strategic direction is urgently needed on these critical questions. Key decisions on trade-offs need to be made quickly and stuck to over the long term to rebuild public and private sector confidence in the next government’s plans. Plans and resources need to align, different actors within and outside Whitehall need to be co-ordinated, and there needs to be a better mechanism for unblocking issues as they arise.

There are major trade-offs to be made in terms of pace, cost and public acceptability. Decisions about the approach to these trade-offs will need to be quick and consistent if decarbonisation is to proceed at the speed required. They are also fundamentally political decisions with distributional implications; No.10, the Cabinet Office and the Treasury need to be fully engaged and play an active role; it cannot all be left to DESNZ.

There are many ways a new central function could be set up, most of which could be successful given commitment from the prime minister and chancellor, and it depends in part how the prime minister wants to manage the government's missions more widely. A new cabinet committee is the most traditional approach. It is a well-established format and quick to set up. The downside of a cabinet committee is that it does not allow other organisations to participate fully. With the importance of organisations like NESO and Ofgem to energy decarbonisation, another alternative might be a mission board, or an inter-ministerial group of some form, learning from the model used on levelling up under Michael Gove. That could bring together relevant departments but also key organisations to facilitate co-ordination and unblocking across the energy system, not just within Whitehall.

In either case an early decision to be made is whether any new central co-ordinating function should focus on power decarbonisation specifically, energy system decarbonisation, or net zero as a whole. Net zero might risk losing focus, but the decisions made on power and energy decarbonisation now have implications for the path to net zero more widely – for example, in determining how many heat pumps can be connected, and when. One option might be to start with the clean power mission, broadening to energy and net zero as required.

Whatever the exact set-up it should be led by the secretary of state for energy security and net zero and it should not just duplicate or replace DESNZ; the priority should be to get it up and running as quickly as possible. The key functions the new decision making function needs are:

- an ability to take decisions that stick across government
- the involvement of key players in those decisions and getting all departments that need to be involved to see their role as facilitating achievement of the objective
- a way to ensure that resources follow decisions to make sure they can be delivered
- And effective mechanisms for progress chasing and addressing quickly issues that emerge.

These are also key elements in getting mission governance right more generally.

Ensure there is effective internal co-ordination below permanent secretary level in DESNZ

Plans across different technologies do not currently cohere into an overall delivery plan. DESNZ has also been developing bespoke business models and contracts for most new technologies – this allows those models to be tailored minutely but it is also time-consuming. If the next government is committed to decarbonising the power system by 2030 it may have to accept a slightly higher risk that models and contracts are not perfect and start standardising or reusing them to increase the pace of delivery.

There will need to be a clear driving and co-ordinating function within DESNZ, ensuring that progress is being made, plans for different technologies cohere and that teams within the department are learning from each other and using existing models wherever possible. That function could take many forms. But it should focus on co-ordinating across DESNZ and other departments as well as unblocking problems as they arise and holding parties to account for timely delivery. And the priority should be to get it up and running as quickly as possible.

Initiate planning reforms

Reforming the planning system is a long-term challenge, but there are specific changes that can be implemented quickly. To its credit, the Conservative government started to make various moves towards reform, which should be continued. For example, the new government should reiterate the commitment to ensure that national policy statements (NPSs) for energy (updated in January 2024 for the first time since their introduction) are regularly updated to provide clarity to developers and planners, and take into account the strategic spatial energy plan once it is produced by NESO.¹

Labour committed before the election to treating onshore wind like other energy infrastructure and processing it through the nationally significant infrastructure projects (NSIP) system. This would be a quick way to boost generation from one of the cheapest sources of energy and should be initiated as quickly as possible.²

Similarly, the NIC has suggested reviewing the threshold for energy projects to be included in the NSIP system. For solar this could result in more mid-range projects being developed – currently solar projects above 50MW are classed as NSIPs but the NIC heard that the costs of taking projects through the process were not worthwhile for developers under 200MW.³

In the slightly longer term the next government should also decide its preferred approach to the trade-offs between public consultation, environmental considerations, and the speed of the planning process. Speeding up the planning system to the point where it can support delivery of clean power by 2030 may require reducing public consultation or environmental assessments for key strategic infrastructure as well as potentially whether decisions are subject to judicial review. The next government will need to decide urgently what steps it would be willing to take.

Less controversially it could look at whether it would be possible to lease sites for new infrastructure with planning permission attached, as has been done in some other countries. For offshore wind, the Crown Estate could, for example, obtain planning permission for new wind farms ahead of leasing the sites to developers, smoothing the path to delivery and unlocking economies of scale at the same time as reducing the number of separate planning applications.

Finally, the next government should look at standardising community benefits so that they are more consistent and fairly distributed. And it should start thinking about how it could increase capacity in the Planning Inspectorate and local authorities as well as among statutory consultees and whether there is potential to streamline processes – for example, in the number of statutory consultees.

First 100 days

Actively engage with the public on what decarbonisation means

Power sector decarbonisation, not to mention net zero, will be impossible without action and continued buy-in from the public. It will be very difficult to build a reliable energy system that can power electrified heating and transport without the public reducing and spreading out demand. Much of this will be facilitated by smart devices but as the slow rollout of (optional) smart meters shows, this is also reliant on consumer take-up.⁴

Communications on net zero under the Sunak government have been inconsistent at best, and confusing or contradictory at worst. Although polling shows continued high levels of support for net zero, there has been increasing politicisation of the issue, with the prime minister even promising to scrap policies that have never existed, like “forcing” people to get rid of their boilers.⁵

The next government should set out its vision for what a net zero UK looks like and, crucially, the benefits it would have for citizens, both monetarily and in terms of quality of life. But, as crucially, it should also be open and honest about the costs and what it is going to do to support those who will struggle to switch over to low-carbon alternatives or see their jobs disappear as fossil fuels are phased out. It will also need to engage the public on the actions they need to take and why. This will require a more active and consistent approach than that taken to date, perhaps including public information campaigns on issues like demand management – the approach taken during the shift to natural gas in the 1960s and 70s.

Decarbonisation is one area where the UK has been genuinely world-leading and can be proud of its performance. It can continue to be so, but the government will need to get the British public on board.

Address the fiscal and distributional questions

The next government also needs to engage with the question of who is paying for what up front and more transparently. Previous governments have ducked the distributional questions raised by net zero but they are key to ensuring that the transition is, and is seen as, fair.

Although in the long term a decarbonised power system should reduce costs, asking for more money from taxpayers or energy bill payers for power sector decarbonisation puts more pressure on to households that are already struggling, limiting the scope to increase spending or taxes in other areas. Given the state of public services these are critical decisions.⁶ The approach needs to be clear and transparent to maintain confidence in the transition.

The next chancellor should decide on their preferred approach to funding investments in power sector decarbonisation and, in particular, whether they should primarily be funded by adding costs to energy bills or through general taxation. Paying through energy bills has generally been seen as less politically painful but is also more regressive. Whatever the decision, setting an overall approach would limit the amount of time spent debating how individual policies should be funded and developing bespoke levies on energy bills, allowing support schemes for technologies to move more quickly towards delivery.

The Treasury has engaged much more with net zero in recent years. But the next chancellor could still do more to make the Treasury a true partner in power sector decarbonisation and the net zero transition more widely. This commitment should be shown in part by the chancellor being a principal participant in the cabinet committee, mission board or ministerial group we propose above.

Clarify roles and responsibilities

Energy in the UK is a complex system with many different actors in both the private and public sectors. There are already several new organisations in the process of being set up or planned and other parts of the system are relatively new – UK Infrastructure Bank and GB Nuclear, for example. Every new organisation adds to the complexity of the system and to the number of actors who need to be co-ordinated, with the risk of slowing down delivery rather than speeding it up.

The roles and responsibilities across the existing system need to be clearer, as should who has the power to take, or overrule, decisions in different areas – for example, with Ofgem's decisions on interconnectors, as discussed above. The next government should give clear directions to both new and existing bodies on what their roles and responsibilities are and where the limits of those lie, to avoid duplication and minimise contradictory decisions. And that information should be made public so that the private sector, local government and the public understand who they should be engaging with on what.

Set out what is expected from local authorities and give them more support

Local authorities also need more clarity about their role to 2030. They are responsible for giving planning consent to smaller generation and transmission infrastructure, developing local area energy plans (LAEPs) and delivering skills policies. But their capacity and relationships with central government have been damaged by successive cuts to funding and the use of competitive funding pots.⁷

When it comes to local government Labour has said that GB Energy would work with local authorities and private companies to develop distributed renewable generation in local communities. It also said that it would “require local authorities to proactively identify areas suitable for renewable generation”.⁸ If elected it should clarify as quickly as possible whether that means all local authorities are expected to produce LAEPs and if so when, as well as how they will be used by RESPs and NESO.

The next government should provide support with the LAEP process and any other actions expected from local government, encouraging co-operation and sharing of ideas between local authorities. As set out in recent Institute research, it should stop short-term competitions for small funding pots and look at streamlining funding into larger, multi-year funds, with competitive funding used only in exceptional circumstances.⁹

Setting up a new organisation to support local government would have significant time and resource costs. But the next government should look at who within the system is best placed to provide advice on power sector decarbonisation and the transition more widely. DLUHC has existing relationships, while DESNZ is leading on energy decarbonisation – but given the issues in recent relationships between central and local government, an external body like the Energy Saving Trust might be better placed if additional support was provided to build capacity.

Set up a forum with key private sector energy actors

Most of the actual delivery will be done by the private sector – upgrading the grid and building generation infrastructure, for example – so the next government will need to work closely with the private sector to achieve its goals. DESNZ already has close ties to key private sector actors but it should look to formalise those either through an existing forum, or if necessary a new forum, to engage with the energy sector and wider supply chains on a regular basis. This would allow more involvement in policy design, as well as a more regular process of monitoring progress and identifying potential blockers ahead of time. However, given the levels of policy inconsistency seen in recent years, taking key decisions – and sticking to them – will also be crucial for building confidence in the private sector.

Develop a strategic approach to supply chains

Even with greater policy consistency and confidence, supply chain blockages in key equipment and materials could derail power sector decarbonisation. The new government should make sure it is monitoring the state of supply chains and planning for potential blockages in key areas.

Labour has said that it envisages that GB Energy would take an active role in facilitating procurement of equipment and materials for grid upgrades.¹⁰ This would be positive in the longer term, cutting costs for consumers by utilising economies of scale and reducing delays (which can be very costly as outlined above). But if Labour forms the next government it should carefully consider when equipment for grid upgrades will be required, whether GB Energy would be able to initiate this in shadow form and if not whether this is the best approach in the short term given the urgency of grid upgrades and the length of time it might take to get GB Energy established.

The next government should also decide on a strategic approach to UK net zero manufacturing – whether it wants to try to drive development of UK production capacity in key markets where the UK might have a competitive advantage even if that might raise costs in the short term, or have the UK continue to import most of the equipment and materials needed.¹¹ Labour has promised incentives in CfD auctions for companies to target their investment at specific areas of the UK, building supply chains and jobs in these areas. This is sensible, but should be part of a wider strategic approach.¹²

Work out where the people to work in those supply chains are going to come from

Decarbonising power is dependent on recruiting the skilled workers to staff supply chains. The next government should try to develop a rough idea of how many workers with what specific skills are going to be needed where, when, and how many of those will be delivered by the current skills pipeline. Once it knows what the skills gaps are it can begin developing approaches to filling those.

Examples of past delivery in the UK suggest that these could include:

- Setting up dedicated training schools
- Encouraging companies to set up their own training programmes
- Adding specific skills to the shortage occupation list and/or offering incentives to workers with relevant skills from other countries to come and work in the UK.

Another option might be to develop a list of specific strategic skills and support that provision outside the current skills funding model; for example, by providing funding for increasing advertising and outreach rather than shutting courses down if there is low uptake.

Some combination of approaches may be required. Building up the skills pipeline domestically is perhaps the most sustainable option in the long term, with benefits outside the power sector (skills like welding, for example, are also useful more widely). But it will take time to build skills domestically and may not help to fill more immediate gaps. Making it easier for those with key skills to come from other countries might be more feasible in the short term but could be politically difficult and the UK will also be competing with other countries for those workers.

Skills is a devolved policy area and Labour has also promised if elected to devolve adult skills funding to combined authorities so the next UK government will need to work with devolved governments as well as local authorities and the private sector to address skills gaps.¹³ Labour has promised to create Skills England to bring together business and unions with local and national government but it will need to make sure that early steps to tackle skills shortages are taken ahead of its establishment.¹⁴

Developing and implementing a coherent approach will also require better co-ordination within government on skills policy. Currently DESNZ is leading on green skills but DfE holds the levers for skills policy. The results can be seen in the delays to the green skills action plan, which was supposed to be published earlier this year. The Treasury and the Department for Business and Trade should also be fully involved, and skills policy needs to be joined up with the approach to UK supply chains – developing domestic manufacturing capacity is only feasible if there are workers available to staff those supply chains.

Getting expertise into Whitehall will almost certainly continue to be difficult given the challenges of competing with private sector salaries. The next government should consider reforms such as those proposed by previous Institute research to make it easier to hire, and keep, individuals with high levels of expertise rather than employing consultants on short-term contracts; for example, by establishing new senior specialist roles.¹⁵

Develop a 'roadmap' with critical milestones and establish monitoring and escalation mechanisms

Finally, to facilitate rapid delivery and unblock issues the next government should bring the strategies DESNZ has developed across different technologies and the strategic spatial energy plan NESO will produce into a clear roadmap with milestones.¹⁶ There is always the danger of diverting attention away from actually delivering into producing a perfect plan. To avoid this the roadmap should be a short document bringing together the outputs of the decisions and planning described above, with the aim of giving a rough sense of what will be needed when and something to track progress against.

It should include a proposed timeline of when key policy decisions or actions will be taken – for example, on rebalancing policy costs on electricity and gas or ending new connections to the gas grid. But it should be iterative, with the assumption it will be updated as and when new decisions are made or new information emerges. It should also establish monitoring and escalation mechanisms to ensure that milestones are hit and address issues if they are not. And it should be produced alongside getting on with delivering in areas where there are clear-cut or quick actions to take.

This will still require some time and effort, which is why it is important that quick no-regret actions are identified and taken as quickly as possible. But it should increase overall delivery speed in the medium term by bringing clarity and consistency and identifying potential issues before they arise, help the new government engage with some of the key decisions and trade-offs and form a starting point for the revised net zero strategy mandated by the recent court ruling that the previous plan was unlawful.

Conclusion

If polls are correct and Labour forms the next government, it will need to start work on its ambitious plans to decarbonise the UK's power system right away. Its target of 2030 is just six years away, and as well as being a sensible goal in itself, a Labour government will want to show that it has delivered – or come close to delivering – on its mission in time for the *next* election. It will also want to show it has been able to do it in a way that does not increase bills. That is a big ask: as of now the UK is not on track to meet the Conservative government's less ambitious 2035 target.

This means the next government will need to swing into action straight after the election, agree a plan, and convince the private sector that the UK offers a good investment opportunity compared to other countries competing for scarce capital. That means confronting and overcoming the barriers outlined in this report and, above all, ensuring that the UK provides a stable and predictable policy framework that will rebuild the private sector's confidence in its strategy.

It means getting government's act together, as well as co-ordinating more widely across the energy system to make sure all the actors are moving in the same direction, not getting in each other's way. It also means addressing the skills and supply chain constraints that threaten to hold back progress and reassuring people that decarbonisation will neither mean unreliable energy supplies nor unaffordable bills.

Setting ambitious targets in opposition is easy. Achieving them in government is the real test.

References

Summary

- 1 House of Commons Business, Energy and Industrial Strategy Committee, *Decarbonisation of the power sector: Eleventh Report of Session 2022–23* (HC 283), The Stationery Office, 25 April 2023, <https://committees.parliament.uk/publications/39325/documents/193081/default>
- 2 National Infrastructure Commission, *Delivering net zero, climate resilience and growth*, April 2023, <https://nic.org.uk/app/uploads/NIC-Planning-Study-Final-Report.pdf>

The scale of the challenge

- 1 Comptroller and Auditor General, *Decarbonising the power sector*, Session 2022–23, HC 1131, National Audit Office, 2023, www.nao.org.uk/wp-content/uploads/2023/03/decarbonising-the-power-sector.pdf; HM Government, *Carbon Budget Delivery Plan*, HC 1269, The Stationery Office, March 2023, <https://assets.publishing.service.gov.uk/media/6424b2d760a35e000c0cb135/carbon-budget-delivery-plan.pdf>
- 2 Department for Energy Security and Net Zero, National Statistics, '2022 UK Greenhouse Gas Emissions, Final Figures', 6 February 2024, <https://assets.publishing.service.gov.uk/media/65c0d15863a23d0013c821e9/2022-final-greenhouse-gas-emissions-statistical-release.pdf>
- 3 Department for Energy Security and Net Zero, Department for Business, Energy and Industrial Strategy, 'Energy and emissions projections: 2022 to 2040', 30 November 2023, www.gov.uk/government/collections/energy-and-emissions-projections
- 4 Climate Change Committee, *Sixth Carbon Budget*, 9 December 2020, www.theccc.org.uk/publication/sixth-carbon-budget
- 5 National Grid ESO, '2035: Key Challenges', www.nationalgrideso.com/document/250156/download
- 6 'Transcript: The Inconvenient Truth About Reaching Net Zero', Bloomberg UK, www.bloomberg.com/news/articles/2023-06-21/ed-conway-sky-news-econ-editor-and-material-world-author-on-merryn-talks-money
- 7 HM Government, *Carbon Budget Delivery Plan*, HC 1269, The Stationery Office, March 2023, <https://assets.publishing.service.gov.uk/media/6424b2d760a35e000c0cb135/carbon-budget-delivery-plan.pdf>; Department for Energy Security and Net Zero, *Transmission Acceleration Action Plan*, November 2023, <https://assets.publishing.service.gov.uk/media/65646bd31fd90c0013ac3bd8/transmission-acceleration-action-plan.pdf>; House of Commons Business, Energy and Industrial Strategy Committee, *Decarbonisation of the power sector: Eleventh Report of Session 2022–23* (HC 283), The Stationery Office, 25 April 2023, <https://committees.parliament.uk/publications/39325/documents/193081/default>
- 8 National Grid, 'Report for the period ended 30 September 2022', 10 November 2022, www.nationalgrid.com/document/148586/download; Climate Change Committee, *Delivering a reliable decarbonised power system*, March 2023, <https://www.theccc.org.uk/publication/delivering-a-reliable-decarbonised-power-system>
- 9 House of Commons Business, Energy and Industrial Strategy Committee, *Decarbonisation of the power sector: Eleventh Report of Session 2022–23* (HC 283), The Stationery Office, 25 April 2023, <https://committees.parliament.uk/publications/39325/documents/193081/default>
- 10 HM Government, *Powering Up Britain*, The Stationery Office, March 2023, <https://assets.publishing.service.gov.uk/media/642468ff2fa8480013ec0f39/powering-up-britain-joint-overview.pdf>
- 11 House of Commons Business, Energy and Industrial Strategy Committee, *Decarbonisation of the power sector: Eleventh Report of Session 2022–23* (HC 283), The Stationery Office, 25 April 2023, <https://committees.parliament.uk/publications/39325/documents/193081/default>
- 12 Climate Change Committee, *Delivering a reliable decarbonised power system*, March 2023, <https://www.theccc.org.uk/publication/delivering-a-reliable-decarbonised-power-system>; House of Commons Business, Energy and Industrial Strategy Committee, *Decarbonisation of the power sector: Eleventh Report of Session 2022–23* (HC 283), The Stationery Office, 25 April 2023, <https://committees.parliament.uk/publications/39325/documents/193081/default>
- 13 ESO, 'Future Energy Scenarios: Net zero', accessed 21 June 2024, www.nationalgrideso.com/future-energy/future-energy-scenarios-fes/fes-sections/net-zero; Climate Change Committee, *Delivering a reliable decarbonised power system*, March 2023, www.theccc.org.uk/publication/delivering-a-reliable-decarbonised-power-system
- 14 Climate Change Committee, *Sixth Carbon Budget*, 9 December 2020, www.theccc.org.uk/publication/sixth-carbon-budget

-
- 15 Labour, *Make Britain a clean energy superpower*, March 2024, <https://labour.org.uk/wp-content/uploads/2024/03/Make-Britain-a-Clean-Energy-Superpower.pdf>.
 - 16 Department for Energy Security and Net Zero, 'Digest of UK Energy Statistics (DUKES): electricity DUKES: Plant installed capacity, by connection – United Kingdom', 27 July 2023, www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes
 - 17 Comptroller and Auditor General, *Decarbonising the power sector*, Session 2022–23, HC 1131, National Audit Office, 2023, www.nao.org.uk/wp-content/uploads/2023/03/decarbonising-the-power-sector.pdf
 - 18 Norris R, 'Government must step up ambition on floating wind to secure industrial benefits for UK ports', Renewable UK, 30 March 2023, www.renewableuk.com/news/636103/Government-must-step-up-ambition-on-floating-wind-to-secure-industrial-benefits-for-UK-ports-.htm
 - 19 Climate Change Committee, *Sixth Carbon Budget*, 9 December 2020, www.theccc.org.uk/publication/sixth-carbon-budget; Climate Change Committee, *Progress in reducing emissions: 2023 Report to Parliament*, June 2023, www.theccc.org.uk/wp-content/uploads/2023/06/Progress-in-reducing-UK-emissions-2023-Report-to-Parliament-1.pdf; Climate Change Committee, *Delivering a reliable decarbonised power system*, March 2023, www.theccc.org.uk/publication/delivering-a-reliable-decarbonised-power-system
 - 20 Department for Energy Security and Net Zero, 'About us', accessed 21 June 2024, www.gov.uk/government/organisations/department-for-energy-security-and-net-zero/about
 - 21 Ofgem, 'Our role and responsibilities', accessed 21 June 2024, www.ofgem.gov.uk/our-role-and-responsibilities
 - 22 Ofgem, 'Our structure and leadership', accessed 21 June 2024, www.ofgem.gov.uk/about-us/our-structure-and-leadership
 - 23 ESO, 'What we do', accessed 21 June 2024, www.nationalgrideso.com/what-we-do
 - 24 ESO, 'Becoming the National Energy System Operator (NESO)', accessed 21 June 2024, www.nationalgrideso.com/what-we-do/becoming-national-energy-system-operator-neso
 - 25 *Ibid.*
 - 26 Ofgem, 'Ofgem green lights regional energy planning roles to speed up net zero transition', press release, 15 November 2023, www.ofgem.gov.uk/press-release/ofgem-green-lights-regional-energy-planning-roles-speed-net-zero-transition
 - 27 ESO, 'What we do', accessed 21 June 2024, www.nationalgrideso.com/what-we-do
 - 28 National Grid, 'Your bill explained', accessed 21 June 2024, www.nationalgrid.com/electricity-transmission/who-we-are/breaking-down-your-bill; ESO, 'The charges for using Great Britain's electricity system', accessed 21 June 2024, www.nationalgrideso.com/industry-information/charging/charges-using-great-britains-electricity-system
 - 29 Energy UK, 'How the retail market works', 21 June 2024, www.energy-uk.org.uk/insights/how-the-retail-market-works
 - 30 Rankl F, Collins A, Tyers R and Carver D, *The role of local government in delivering Net Zero*, House of Commons Library, 2 June 2023, <https://researchbriefings.files.parliament.uk/documents/CDP-2023-0122/CDP-2023-0122.pdf>
 - 31 Great British Energy, accessed 21 June 2024, <https://great-british-energy.org.uk>
 - 32 Department for Energy Security and Net Zero, The Rt Hon Claire Coutinho, 'UK first major economy to halve emissions', press release, 6 February 2024, www.gov.uk/government/news/uk-first-major-economy-to-halve-emissions
 - 33 ESO, *Beyond 2030*, March 2024, www.nationalgrideso.com/document/304756/download
 - 34 National Grid, 'Onshore vs offshore wind energy: what's the difference?', accessed 21 June 2024, www.nationalgrid.com/stories/energy-explained/onshore-vs-offshore-wind-energy
 - 35 Climate Change Committee, *Progress in reducing emissions: 2023 Report to Parliament*, June 2023, www.theccc.org.uk/wp-content/uploads/2023/06/Progress-in-reducing-UK-emissions-2023-Report-to-Parliament-1.pdf
 - 36 Comptroller and Auditor General, *Decarbonising the power sector*, Session 2022–23, HC 1131, National Audit Office, 2023, www.nao.org.uk/wp-content/uploads/2023/03/decarbonising-the-power-sector.pdf
 - 37 Climate Change Committee, *Delivering a reliable decarbonised power system*, March 2023, www.theccc.org.uk/publication/delivering-a-reliable-decarbonised-power-system

-
- 38 Pickard J, Millard R and White S, 'Labour faces doubts over 2030 'clean energy' target after delay to UK nuclear plant', *Financial Times*, 26 January 2024, www.ft.com/content/c31b4b33-69f3-4f41-b4e4-328cd96630ea; Department for Energy Security and Net Zero, 'Policy paper: Civil nuclear: roadmap to 2050', 26 January 2024, www.gov.uk/government/publications/civil-nuclear-roadmap-to-2050/civil-nuclear-roadmap-to-2050-accessible-webpage; HM Government, *Powering Up Britain*, The Stationery Office, March 2023, <https://assets.publishing.service.gov.uk/media/642468ff2fa8480013ec0f39/powering-up-britain-joint-overview.pdf>; HM Government, *Carbon Budget Delivery Plan*, HC 1269, The Stationery Office, March 2023, <https://assets.publishing.service.gov.uk/media/6424b2d760a35e000c0cb135/carbon-budget-delivery-plan.pdf>; Department for Business, Energy and Industrial Strategy, Prime Minister's Office, 10 Downing Street, The Rt Hon Kwasi Kwarteng and The Rt Hon Boris Johnson, 'Nuclear energy: What you need to know', 6 April 2022, www.gov.uk/government/news/nuclear-energy-what-you-need-to-know; 'UK's approval of Sizewell C nuclear project lawful, court rules', Reuters, 20 December 2023, www.reuters.com/business/energy/uks-approval-sizewell-c-nuclear-project-lawful-court-rules-2023-12-20
 - 39 Climate Change Committee, *Delivering a reliable decarbonised power system*, March 2023, www.theccc.org.uk/publication/delivering-a-reliable-decarbonised-power-system; Millard R, 'UK's nascent green hydrogen sector faces 'defining moment'', *Financial Times*, 5 December 2023, www.ft.com/content/51526d23-f87d-4a55-a5e4-4b57c802148c
 - 40 HM Government, *Carbon Budget Delivery Plan*, HC 1269, The Stationery Office, March 2023, <https://assets.publishing.service.gov.uk/media/6424b2d760a35e000c0cb135/carbon-budget-delivery-plan.pdf>; Climate Change Committee, *Progress in reducing emissions: 2023 Report to Parliament*, June 2023, www.theccc.org.uk/wp-content/uploads/2023/06/Progress-in-reducing-UK-emissions-2023-Report-to-Parliament-1.pdf
 - 41 Climate Change Committee, *Progress in reducing emissions: 2023 Report to Parliament*, June 2023, www.theccc.org.uk/wp-content/uploads/2023/06/Progress-in-reducing-UK-emissions-2023-Report-to-Parliament-1.pdf
 - 42 ESO, *Beyond 2030*, March 2024, www.nationalgrideso.com/document/304756/download
 - 43 Climate Change Committee, *Progress in reducing emissions: 2023 Report to Parliament*, June 2023, www.theccc.org.uk/wp-content/uploads/2023/06/Progress-in-reducing-UK-emissions-2023-Report-to-Parliament-1.pdf

Barriers to faster delivery

- 1 National Infrastructure Commission, *Second National Infrastructure Assessment*, 18 October 2023, <https://nic.org.uk/studies-reports/national-infrastructure-assessment/second-nia/#tab-netzero>
- 2 Department for Energy Security and Net Zero and Ofgem, *Connections Action Plan: Speeding up connections to the electricity network across Great Britain*, November 2023, <https://assets.publishing.service.gov.uk/media/655dd873d03a8d001207fe56/connections-action-plan.pdf>
- 3 Climate Change Committee, *Progress in reducing emissions: 2023 Report to Parliament*, June 2023, www.theccc.org.uk/wp-content/uploads/2023/06/Progress-in-reducing-UK-emissions-2023-Report-to-Parliament-1.pdf; see also: House of Commons Environmental Audit Committee, 'Oral evidence: Enabling sustainable electrification of the UK economy', HC 278, 7 February 2024, <https://committees.parliament.uk/oralevidence/14267/pdf>
- 4 Department for Energy Security and Net Zero and Ofgem, *Connections Action Plan: Speeding up connections to the electricity network across Great Britain*, November 2023, <https://assets.publishing.service.gov.uk/media/655dd873d03a8d001207fe56/connections-action-plan.pdf>
- 5 ESO, 'Connections Reform Summary of final recommendations', December 2023, www.nationalgrideso.com/document/298491/download; House of Commons Business, Energy and Industrial Strategy Committee, *Decarbonisation of the power sector: Eleventh Report of Session 2022–23* (HC 283), The Stationery Office, 2023, <https://committees.parliament.uk/publications/39325/documents/193081/default>
- 6 House of Commons Environmental Audit Committee, 'Oral evidence: Enabling sustainable electrification of the UK economy', HC 278, 7 February 2024, <https://committees.parliament.uk/oralevidence/14267/pdf>
- 7 Winser N, *Electricity Network Commissioner's principle areas of recommendations*, Department for Energy Security and Net Zero, 2023, <https://assets.publishing.service.gov.uk/media/64c8e96e19f5622360f3c0f0/electricity-networks-commissioner-letter-to-desnz-secretary.pdf>; See also: Pick T, *Independent report of the Offshore Wind Champion*, March 2023, <https://assets.publishing.service.gov.uk/media/65a662c1867cd800135ae90b/offshore-wind-champion-independent-report.pdf>
- 8 ESO, 'Connections Reform Summary of final recommendations', December 2023, www.nationalgrideso.com/document/298491/download; National Infrastructure Commission, *Delivering net zero, climate resilience and growth*, April 2023, <https://nic.org.uk/app/uploads/NIC-Planning-Study-Final-Report.pdf>
- 9 House of Commons Business, Energy and Industrial Strategy Committee, *Decarbonisation of the power sector: Eleventh Report of Session 2022–23* (HC 283), The Stationery Office, 2023, <https://committees.parliament.uk/publications/39325/documents/193081/default>

-
- 10 *Ibid.*
 - 11 Simpson J, 'Capacity crunch: why the UK doesn't have the power to solve the housing crisis', *The Guardian*, 4 May 2024, www.theguardian.com/business/article/2024/may/04/capacity-crunch-why-the-uk-doesnt-have-the-power-to-solve-housing-crisis; Reading Borough Council, 'Electricity Capacity Constraints Threaten Reading's Climate Targets', 18 September 2023, <https://media.reading.gov.uk/news/electricity-capacity-constraints-threaten-readings-climate-targets>
 - 12 ESO, *Beyond 2030*, March 2024, www.nationalgrideso.com/document/304756/download; Jack S, 'Electricity upgrade plan includes miles of pylons', BBC News, 19 March 2024, www.bbc.co.uk/news/business-68601354
 - 13 House of Commons Business, Energy and Industrial Strategy Committee, *Decarbonisation of the power sector: Eleventh Report of Session 2022–23*, (HC 283), The Stationery Office, 2023, <https://committees.parliament.uk/publications/39325/documents/193081/default>
 - 14 Metcalfe S and Sasse T, *The development of the UK's offshore wind sector 2010–16*, October 2023, www.instituteforgovernment.org.uk/publication/uk-offshore-wind-sector
 - 15 US Department of Energy, Office of Energy Efficiency and Renewable Energy, *Offshore Wind Market Report: 2023 Edition*, 24 August 2023, www.energy.gov/eere/wind/articles/offshore-wind-market-report-2023-edition; 'Britain is losing its way in cutting carbon', *The Economist*, 5 September 2023, www.economist.com/britain/2023/09/05/britain-is-losing-its-way-in-cutting-carbon
 - 16 Energy Systems Catapult, *Electricity Networks Commissioner – Companion Report Findings and Recommendations*, June 2023, <https://assets.publishing.service.gov.uk/media/64c8e85219f5622360f3c0ee/electricity-networks-commissioner-companion-report.pdf>
 - 17 House of Commons Environmental Audit Committee, 'Oral evidence: Enabling sustainable electrification of the UK economy', HC 278, 7 February 2024, <https://committees.parliament.uk/oralevidence/14267/pdf>.
 - 18 *Ibid.*
 - 19 Energy Systems Catapult, *Electricity Networks Commissioner – Companion Report Findings and Recommendations*, June 2023, <https://assets.publishing.service.gov.uk/media/64c8e85219f5622360f3c0ee/electricity-networks-commissioner-companion-report.pdf>; Department for Energy Security and Net Zero, *Transmission Acceleration Action Plan*, November 2023, <https://assets.publishing.service.gov.uk/media/65646bd31fd90c0013ac3bd8/transmission-acceleration-action-plan.pdf>
 - 20 Energy Systems Catapult, *Electricity Networks Commissioner – Companion Report Findings and Recommendations*, June 2023, <https://assets.publishing.service.gov.uk/media/64c8e85219f5622360f3c0ee/electricity-networks-commissioner-companion-report.pdf>; see also Green Alliance, *Closing the UK's green skills gap*, January 2022, https://green-alliance.org.uk/wp-content/uploads/2022/01/Closing_the_UKs_green_skills_gap.pdf
 - 21 House of Commons Environmental Audit Committee, 'Oral evidence: Enabling sustainable electrification of the UK economy', HC 278, 7 February 2024, <https://committees.parliament.uk/oralevidence/14267/pdf>
 - 22 ORE Catapult, *Supply chain capability requirements for UK Floating Offshore Wind Farms*, 28 February 2024, <https://ore.catapult.org.uk/?orecatapultreports=supply-chain-capability-requirements-for-uk-floating-offshore-wind-farms>
 - 23 Borrett A, 'Funding cuts have halved number of adult learners in England since 2010', *Financial Times*, 27 May 2024, www.ft.com/content/e201b548-aaa4-40d0-bc37-d9bf5b6d0058; Egglestone C and Evans S, 'The great skills divide: how learning inequalities risk holding the UK back', Learning and Work Institute, 27 May 2024, <https://learningandwork.org.uk/resources/research-and-reports/the-great-skills-divide-how-learning-inequalities-risk-holding-the-uk-back>; IFS, 'Adult education and skills', accessed 21 June 2024, <https://ifs.org.uk/education-spending/adult-education-and-skills>
 - 24 IFS, 'Adult education and skills', accessed 21 June 2024, <https://ifs.org.uk/education-spending/adult-education-and-skills>; Rt Hon Chris Skidmore MP, *Mission Zero: Independent Review of Net Zero*, 26 September 2022, <https://assets.publishing.service.gov.uk/media/63c0299ee90e0771c128965b/mission-zero-independent-review.pdf>; Simmonds P and Lally C, 'Green skills in education and employment', UK Parliament, POSTnote 711, 18 January 2024, <https://researchbriefings.files.parliament.uk/documents/POST-PN-0711/POST-PN-0711.pdf>
 - 25 Simmonds P and Lally C, 'Green skills in education and employment', UK Parliament, POSTnote 711, 18 January 2024, <https://researchbriefings.files.parliament.uk/documents/POST-PN-0711/POST-PN-0711.pdf>
 - 26 Pope T and McKee R, *Funding local growth in England*, Institute for Government, 31 May 2024, www.instituteforgovernment.org.uk/publication/funding-local-growth-england; Local Government Association, 'Green jobs: creating the workforce to deliver net zero', 20 June 2023, www.local.gov.uk/publications/green-jobs-creating-workforce-deliver-net-zero; Simmonds P and Lally C, 'Green skills in education and employment', UK Parliament, POSTnote 711, 18 January 2024, <https://researchbriefings.files.parliament.uk/documents/POST-PN-0711/POST-PN-0711.pdf>

-
- 27 Simmonds P and Lally C, 'Green skills in education and employment', UK Parliament, POSTnote 711, 18 January 2024, <https://researchbriefings.files.parliament.uk/documents/POST-PN-0711/POST-PN-0711.pdf>
 - 28 Rt Hon Chris Skidmore MP, *Mission Zero: Independent Review of Net Zero*, 26 September 2022, <https://assets.publishing.service.gov.uk/media/63c0299ee90e0771c128965b/mission-zero-independent-review.pdf>
 - 29 House of Commons Environmental Audit Committee, 'Oral evidence: Enabling sustainable electrification of the UK economy', HC 278, 7 February 2024, <https://committees.parliament.uk/oralevidence/14267/pdf>; Simmonds P and Lally C, 'Green skills in education and employment', UK Parliament, POSTnote 711, 18 January 2024, <https://researchbriefings.files.parliament.uk/documents/POST-PN-0711/POST-PN-0711.pdf>; 'Provisional Terms of Reference (July 2023) Green Jobs Delivery Group – steering group', July 2023, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1175144/green-jobs-delivery-group-terms-of-reference.pdf
 - 30 Office for Budget Responsibility, *Fiscal Risks Report*, June 2021, https://obr.uk/docs/dlm_uploads/Fiscal_risks_report_July_2021.pdf; National Infrastructure Commission, *Second National Infrastructure Assessment*, 18 October 2023, <https://nic.org.uk/studies-reports/national-infrastructure-assessment/second-nia/#tab-netzero>
 - 31 Climate Change Committee, *Progress in reducing emissions: 2023 Report to Parliament*, June 2023, www.theccc.org.uk/wp-content/uploads/2023/06/Progress-in-reducing-UK-emissions-2023-Report-to-Parliament-1.pdf; National Infrastructure Commission, *Second National Infrastructure Assessment*, 18 October 2023, <https://nic.org.uk/studies-reports/national-infrastructure-assessment/second-nia/#tab-netzero>; Rt Hon Chris Skidmore MP, *Mission Zero: Independent Review of Net Zero*, 26 September 2022, <https://assets.publishing.service.gov.uk/media/63c0299ee90e0771c128965b/mission-zero-independent-review.pdf>; Letter from Nick Winser CBE to the secretary of state for energy security and net zero, June 2023, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1175649/electricity-networks-commissioner-letter-to-desnz-secretary.pdf
 - 32 Richards S, 'Sam Richards: Slash the red tape stopping ministers from decarbonising the grid and growing our economy', Conservative Home, 28 March 2024, <https://conservativehome.com/2024/03/28/sam-richards-slash-the-red-tape-stopping-ministers-from-decarbonising-the-grid-and-growing-our-economy>
 - 33 National Infrastructure Commission, *Delivering net zero, climate resilience and growth*, April 2023, <https://nic.org.uk/app/uploads/NIC-Planning-Study-Final-Report.pdf>
 - 34 Royal Town Planning Institute, *State Of The Profession 2023*, November 2023, www.rtpi.org.uk/media/16015/state-of-the-profession-2023-final.pdf; Raynsford Review of Planning in England, *Planning 2020 'One Year On': 21st Century Slums?*, January 2020, www.tcpa.org.uk/wp-content/uploads/2021/11/Raynsford_Review_one_year_on_WEBSITE-1.pdf; National Infrastructure Commission, *Delivering net zero, climate resilience and growth*, April 2023, <https://nic.org.uk/app/uploads/NIC-Planning-Study-Final-Report.pdf>
 - 35 The Planning Inspectorate, 'National Infrastructure Planning: Application Process', accessed 21 June 2024, <https://infrastructure.planninginspectorate.gov.uk/application-process>; Department for Levelling Up, Housing & Communities, 'Policy paper: Getting Great Britain building again: Speeding up infrastructure delivery', 22 November 2023, www.gov.uk/government/publications/getting-great-britain-building-again-speeding-up-infrastructure-delivery/getting-great-britain-building-again-speeding-up-infrastructure-delivery
 - 36 National Infrastructure Commission, *Delivering net zero, climate resilience and growth*, April 2023, <https://nic.org.uk/app/uploads/NIC-Planning-Study-Final-Report.pdf>; Pick T, *Independent report of the Offshore Wind Champion*, March 2023, <https://assets.publishing.service.gov.uk/media/65a662c1867cd800135ae90b/offshore-wind-champion-independent-report.pdf>
 - 37 Department for Levelling Up, Housing & Communities, 'Policy Paper: Nationally Significant Infrastructure: action plan for reforms to the planning process', 23 February 2023, www.gov.uk/government/publications/nationally-significant-infrastructure-projects-nsip-reforms-action-plan/nationally-significant-infrastructure-action-plan-for-reforms-to-the-planning-process; National Infrastructure Commission, *Delivering net zero, climate resilience and growth*, April 2023, <https://nic.org.uk/app/uploads/NIC-Planning-Study-Final-Report.pdf>; Metcalfe S and Sasse T, *The development of the UK's offshore wind sector 2010–16*, October 2023, www.instituteforgovernment.org.uk/publication/uk-offshore-wind-sector
 - 38 Department for Levelling Up, Housing & Communities, 'Policy Paper: Nationally Significant Infrastructure: action plan for reforms to the planning process', 23 February 2023, www.gov.uk/government/publications/nationally-significant-infrastructure-projects-nsip-reforms-action-plan/nationally-significant-infrastructure-action-plan-for-reforms-to-the-planning-process; National Infrastructure Commission, *Delivering net zero, climate resilience and growth*, April 2023, <https://nic.org.uk/app/uploads/NIC-Planning-Study-Final-Report.pdf>
 - 39 Rankl F, 'Planning for onshore wind', House of Commons Library, 17 May 2024, <https://researchbriefings.files.parliament.uk/documents/SN04370/SN04370.pdf>; National Infrastructure Commission, *Delivering net zero, climate resilience and growth*, April 2023, <https://nic.org.uk/app/uploads/NIC-Planning-Study-Final-Report.pdf>
 - 40 Ambrose J, 'Ukraine built more onshore wind turbines in past year than England', *The Guardian*, 28 May 2023, www.theguardian.com/environment/2023/may/28/ukraine-built-more-onshore-wind-turbines-last-year-than-england

-
- 41 Rankl F, 'Planning for onshore wind', House of Commons Library, 17 May 2024, <https://researchbriefings.files.parliament.uk/documents/SN04370/SN04370.pdf>; House of Commons Environmental Audit Committee, 'Oral evidence: Enabling sustainable electrification of the UK economy', HC 278, 7 February 2024, <https://committees.parliament.uk/oralevidence/14267/pdf>
 - 42 Department for Levelling Up, Housing & Communities, 'Policy Paper: Nationally Significant Infrastructure: action plan for reforms to the planning process', 23 February 2023, www.gov.uk/government/publications/nationally-significant-infrastructure-projects-nsip-reforms-action-plan/nationally-significant-infrastructure-action-plan-for-reforms-to-the-planning-process; Department for Energy Security and Net Zero, 'National Policy Statements for energy infrastructure', 17 January 2024, www.gov.uk/government/collections/national-policy-statements-for-energy-infrastructure; Department for Business, Energy and Industrial Strategy, 'Energy Security Bill Policy Statement: Offshore Wind Environmental Improvement Package Measures', January 2023, <https://assets.publishing.service.gov.uk/media/65b13f381702b1000dcb1209/energy-security-bill-offshore-wind-environmental-improvement-measures.pdf>
 - 43 House of Commons Business, Energy and Industrial Strategy Committee, *Decarbonisation of the power sector: Eleventh Report of Session 2022–23* (HC 283), The Stationery Office, 2023, <https://committees.parliament.uk/publications/39325/documents/193081/default>; Department for Levelling Up, Housing & Communities, 'Policy paper: Getting Great Britain building again: Speeding up infrastructure delivery', 22 November 2023, www.gov.uk/government/publications/getting-great-britain-building-again-speeding-up-infrastructure-delivery/getting-great-britain-building-again-speeding-up-infrastructure-delivery
 - 44 Department for Levelling Up, Housing & Communities, 'Policy Paper: Nationally Significant Infrastructure: action plan for reforms to the planning process', 23 February 2023, www.gov.uk/government/publications/nationally-significant-infrastructure-projects-nsip-reforms-action-plan/nationally-significant-infrastructure-action-plan-for-reforms-to-the-planning-process; Department for Energy Security and Net Zero, 'National Policy Statements for energy infrastructure', 17 January 2024, www.gov.uk/government/collections/national-policy-statements-for-energy-infrastructure
 - 45 National Infrastructure Commission, *Delivering net zero, climate resilience and growth*, April 2023, <https://nic.org.uk/app/uploads/NIC-Planning-Study-Final-Report.pdf>
 - 46 See for example: Edgar B, 'Campaigners step up opposition to solar farm', BBC News, 2 May 2024, www.bbc.co.uk/news/articles/cgrw8jzl623o; Morgan K, 'Why are some people anti-plans for Lime Down Solar Park?', BBC News, 5 April 2024, www.bbc.co.uk/news/articles/cyezr0re1deo; see also: Sasse T and Hodgkin R, *Tackling the UK's energy efficiency problem: What the Truss government should learn from other countries*, Institute for Government, 9 September 2022, www.instituteforgovernment.org.uk/publication/tackling-uk-energy-efficiency-problem
 - 47 Sinclair A, 'Norwich to Tilbury pylons cheaper overground – National Grid', BBC News, 14 December 2024, www.bbc.co.uk/news/uk-england-norfolk-63977995; McKenna D and Turner J, 'Lincolnshire pylons: Campaigners criticise National Grid plan', BBC News, 25 January 2024, www.bbc.co.uk/news/uk-england-lincolnshire-68096352
 - 48 Beament E, 'Rural voters back wind and solar energy farms as Labour leads in countryside', *The Independent*, 31 May 2024, www.independent.co.uk/news/uk/politics/clean-energy-net-zero-rural-voters-labour-tories-b2554280.html; Cockburn H, 'Onshore wind more popular with Conservative voters than MPs realise, polls show', *The Independent*, 16 November 2022, www.independent.co.uk/climate-change/news/onshore-wind-support-mps-conservatives-poll-b2226521.html; Smeeton G, 'MP poll: wrong on public support for onshore wind and don't understand basic climate science', ECIU, 10 July 2023, <https://eciu.net/media/press-releases/2023/mp-poll-wrong-on-public-support-for-onshore-wind-and-dont-understand-basic-climate-science>
 - 49 'Rishi Sunak's full speech announcing general election on 4 July', Sky News, 22 May 2024, <https://news.sky.com/story/rishi-sunaks-full-speech-announcing-general-election-on-4-july-13141431>
 - 50 House of Commons Committee of Public Accounts, *Decarbonising the power sector: Fifty-Ninth Report of Session 2022–23* (HC 1003), The Stationery Office, 2023, <https://committees.parliament.uk/publications/40495/documents/197590/default>
 - 51 Sasse T and Hodgkin R, *Tackling the UK's energy efficiency problem: What the Truss government should learn from other countries*, Institute for Government, 9 September 2022, www.instituteforgovernment.org.uk/publication/tackling-uk-energy-efficiency-problem; Comptroller and Auditor General, *Green Deal and Energy Company Obligation*, Session 2015–16, HC 607, National Audit Office, 2016, www.nao.org.uk/reports/green-deal-and-energy-company-obligation
 - 52 McDowall W and Britchfield C, *Decarbonising heating at home*, Institute for Government, April 2021, www.instituteforgovernment.org.uk/publication/report/decarbonising-heating-home
 - 53 Sasse T and Hodgkin R, *Tackling the UK's energy efficiency problem: What the Truss government should learn from other countries*, Institute for Government, 9 September 2022, www.instituteforgovernment.org.uk/publication/tackling-uk-energy-efficiency-problem

-
- 54 Comptroller and Auditor General, *Carbon capture and storage: the second competition for government support*, Session 2016–17, HC 950, National Audit Office, 2017, www.nao.org.uk/wp-content/uploads/2017/01/Carbon-Capture-and-Storage-the-second-competition-for-government-support.pdf
 - 55 House of Commons Committee of Public Accounts, *Decarbonising the power sector: Fifty-Ninth Report of Session 2022–23* (HC 1003), The Stationery Office, 2023, <https://committees.parliament.uk/publications/40495/documents/197590/default>
 - 56 Blackman D, 'LinkedOut | Ofgem caution on interconnectors imperils 18GW target', *Utility Week*, 28 May 2024, <https://utilityweek.co.uk/linkedin-out-ofgem-caution-on-interconnectors-imperils-18gw-target>

Delivery case studies: 1950–2010s

- 1 National Infrastructure Commission, *Second National Infrastructure Assessment*, 18 October 2023, <https://nic.org.uk/studies-reports/national-infrastructure-assessment/second-nia/#tab-netzero>
- 2 Office for Budget Responsibility, *Fiscal Risks Report*, June 2021, https://obr.uk/docs/dlm_uploads/Fiscal_risks_report_July_2021.pdf; National Infrastructure Commission, *Second National Infrastructure Assessment*, 18 October 2023, <https://nic.org.uk/studies-reports/national-infrastructure-assessment/second-nia/#tab-netzero>
- 3 Norris E, Rutter J and Medland J, *Making the Games: What government can learn from London 2012*, Institute for Government, January 2013, www.instituteforgovernment.org.uk/publication/report/making-games
- 4 Williams F, 'Storm Arwen: Why power cuts left people unable to phone for help', BBC News, 12 December 2021, www.bbc.co.uk/news/uk-england-cumbria-59564480; Clark A, 'The withdrawal of landlines and switch to digital calls', House of Commons Library, 23 May 2024, <https://researchbriefings.files.parliament.uk/documents/CBP-9471/CBP-9471.pdf>

How to speed up delivery of clean power

- 1 Department for Energy Security and Net Zero, 'National Policy Statements for energy infrastructure', 17 January 2024, www.gov.uk/government/collections/national-policy-statements-for-energy-infrastructure; Department for Energy Security and Net Zero, *Transmission Acceleration Action Plan*, November 2023, <https://assets.publishing.service.gov.uk/media/65646bd31fd90c0013ac3bd8/transmission-acceleration-action-plan.pdf>; National Infrastructure Commission, *Delivering net zero, climate resilience and growth*, April 2023, <https://nic.org.uk/app/uploads/NIC-Planning-Study-Final-Report.pdf>; Department for Levelling Up, Housing and Communities, 'Policy Paper: Nationally Significant Infrastructure: action plan for reforms to the planning process', 23 February 2023, www.gov.uk/government/publications/nationally-significant-infrastructure-projects-nsip-reforms-action-plan/nationally-significant-infrastructure-action-plan-for-reforms-to-the-planning-process
- 2 Labour, *Make Britain a clean energy superpower*, March 2024, <https://labour.org.uk/wp-content/uploads/2024/03/Make-Britain-a-Clean-Energy-Superpower.pdf>
- 3 National Infrastructure Commission, *Delivering net zero, climate resilience and growth*, April 2023, <https://nic.org.uk/app/uploads/NIC-Planning-Study-Final-Report.pdf>; Rankl F, 'Planning and solar farms', House of Commons Library, 18 July 2023, <https://researchbriefings.files.parliament.uk/documents/CDP-2023-0168/CDP-2023-0168.pdf>
- 4 House of Commons Committee of Public Accounts, *Update on the rollout of smart meters: Seventy-Second Report of Session 2022–23* (HC 1332), The Stationery Office, 2023, <https://publications.parliament.uk/pa/cm5803/cmselect/cmpubacc/1332/report.html>
- 5 Hodgkin R, 'Rishi Sunak's net zero strategy is not more honest and pragmatic', Institute for Government, 22 September 2023, www.instituteforgovernment.org.uk/comment/rishi-sunak-speech-net-zero; Prime Minister's Office, 10 Downing Street and The Rt Hon Rishi Sunak, 'PM speech on Net Zero: 20 September 2023', 20 September 2023, www.gov.uk/government/speeches/pm-speech-on-net-zero-20-september-2023
- 6 *General election 2024: The precarious state of the state*, Institute for Government, 7 June 2024, www.instituteforgovernment.org.uk/publication/general-election-2024-precarious-state
- 7 Pope T and McKee R, *Funding local growth in England*, Institute for Government, 31 May 2024, www.instituteforgovernment.org.uk/publication/funding-local-growth-england
- 8 Labour, *Make Britain a clean energy superpower*, March 2024, <https://labour.org.uk/wp-content/uploads/2024/03/Make-Britain-a-Clean-Energy-Superpower.pdf>
- 9 Pope T and McKee R, *Funding local growth in England*, Institute for Government, 31 May 2024, www.instituteforgovernment.org.uk/publication/funding-local-growth-england

-
- 10 Labour, 'Labour sets out plan to "rewire Britain" and build the clean energy grid the country needs', press release, 8 October 2023, <https://labour.org.uk/updates/press-releases/labour-sets-out-plan-to-rewire-britain-and-build-the-clean-energy-grid-the-country-needs>
 - 11 Narayanan P, Dibb G, Vanino E, Gasperin S and Murphy L, 'Manufacturing matters: The cornerstone of a competitive green economy', IPPR, 15 May 2024, www.ippr.org/articles/manufacturing-matters
 - 12 Labour, *Make Britain a clean energy superpower*, March 2024, <https://labour.org.uk/wp-content/uploads/2024/03/Make-Britain-a-Clean-Energy-Superpower.pdf>
 - 13 Climate Change Committee, *Progress in reducing emissions: 2023 Report to Parliament*, June 2023, www.theccc.org.uk/wp-content/uploads/2023/06/Progress-in-reducing-UK-emissions-2023-Report-to-Parliament-1.pdf
 - 14 Labour, *Change: Labour Party Manifesto 2024*, June 2024, <https://labour.org.uk/wp-content/uploads/2024/06/Labour-Party-manifesto-2024.pdf>
 - 15 Urban J and Thomas A, *Opening up: how to strengthen the civil service through external recruitment*, Institute for Government, 1 December 2024, www.instituteforgovernment.org.uk/publication/civil-service-external-recruitment
 - 16 House of Commons Committee of Public Accounts, *Decarbonising the power sector: Fifty-Ninth Report of Session 2022–23 (HC 1003)*, The Stationery Office, 2023, <https://committees.parliament.uk/publications/40495/documents/197590/default>

About the author

Rosa Hodgkin

Rosa is a researcher at the Institute for Government, working on policy making. She recently completed a PhD in economic history looking at how attitudes to tax changed in Britain between 1945 and 1992. During that time, Rosa spent six months on secondment in the Cabinet Office Open Innovation Team. She also has an MPhil in economic and social history, and a degree in history. She has previously worked as an analyst for the climate think tank InfluenceMap.

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-  enquiries@instituteforgovernment.org.uk
-  +44 (0) 20 7747 0400
-  @instituteforgov

**Institute for Government, 2 Carlton Gardens
London SW1Y 5AA, United Kingdom**