

How we can use digital technology to make UK energy cheaper and cleaner

techUK is the trade association for the technology sector in the UK. Our over-1000 members, the majority of which are UK-based SMEs, are based around the United Kingdom. They employ 1.1 million people across the UK, with a turnover of £329bn in 2023 and an estimated annual growth rate of 10%.

We have prepared this briefing to help Prospective Parliamentary Candidates understand key tech issues in the UK. This briefing focuses on shoring up the UK's future energy supply and incentivising energy efficiency– vital for the future of the UK's energy security and cutting energy bills.

This briefing draws upon:

- Our [*UK Tech Plan: How the next Government can use technology to build a better Britain*](#)
- The [*Seven Tech Priorities for the next Government and polling of 250 tech industry leaders in February 2023*](#).

More briefings, both from ourselves and techUK's members, can be found on our [online briefing hub](#).

What are the problems?

To meet the UK Government's net zero target by 2050,¹ and the Climate Change Committee's legally binding targets,² the UK must get the energy transition right. However, the UK's net zero commitments, rising energy costs, and the move to become more energy independent and meet increasing energy demand raise questions about the future of the UK's energy supply, particularly concerning its security, affordability, and sustainability.

The UK is also projected to see a 50% increase in electricity demand by 2035, the energy system will therefore need to manage this demand. In addition to business demand, this increase encompasses connections for new low-carbon energy sources and the rising low-carbon demand from the widespread electrification of infrastructure and transportation systems, future computing needs, and the digital services essential for the UK to become a tech and science leader while making the green transition necessary for the 21st century energy supply.

This increase in demand comes in the context of high existing energy costs for UK businesses. **techUK and Public First's recent polling of over 250 tech leaders**

¹ UK Parliament (2023) 'The UK's plans and progress to reach net zero by 2050' <https://commonslibrary.parliament.uk/research-briefings/cbp-9888/>

² CCC (n.d.) 'Future emissions targets must not be loosened' <https://www.theccc.org.uk/>

revealed that energy costs are the top concern for business (36%). Deloitte's recent economic survey also found that geopolitical risk is the main concern for CFO's due to business concern over disruption to energy supplies or higher energy prices.

It's not just the high price of energy that is already impacting businesses' willingness to invest in the UK. **There is stark evidence³ that grid connection times are delaying and/or impacting businesses' net zero transition,** impacting on significant investment. Furthermore, decarbonisation pathways (including electrification, onsite electricity generation, hydrogen and CCUS) also require new or upgraded grid connections.

Securing planning permission remains a significant barrier to accelerating our clean energy transition, preventing the building of both new green infrastructure and new digital infrastructure that can save energy. Furthermore, collaborative efforts and data sharing between the energy sector and planning authorities will be increasingly important. Renewable energy projects and compute infrastructure such as data centres play a pivotal role in driving the economic growth of the UK. They often entail investments amounting to hundreds of millions or even billions of pounds. Investment decisions of such magnitude are made with a diminished risk exposure when there is a high degree of certainty surrounding processes such as planning permission and grid connection.

What are the solutions?

Digitalisation is essential for achieving the green transition. To fully decarbonise and electrify our infrastructure, as envisioned in strategies such as the Government's net zero pathway and Labour's ambition for clean power by 2030, we must digitalise our energy system to be able to locate each asset and predict demand accordingly to future needs. Furthermore, power grids must also increase their capacity and flexibility to meet the growing demand for electricity. This involves reinforcing current supply, decentralising of supply, and using existing resources more efficiently. **The net-zero transition will therefore impossible if digital infrastructure is not integrated into our energy system.**

The next Government must therefore take decisive action to secure the UK's energy supply, save businesses and taxpayers money and progress on decarbonising the UK's Energy System. This should begin by looking to bring down UK energy costs for businesses and individuals by:

- **Including digital infrastructure sectors within the Energy Intensive Industries Scheme.** High energy costs for digital infrastructure mean high costs for the

³ <https://www.businessgreen.com/news/4148134/survey-grid-connection-delays-holding-industrial-decarbonisation>

whole economy, including consumers, business, and the energy sector. The Energy Intensive Industries Scheme (EIIS) provides relief to energy intensive users but is limited to more traditional energy intensive sectors and does not cover digital infrastructure, such as telecoms networks, computer infrastructure and semiconductor manufacturing, despite energy costs being a major determinant of site selection. The next Government should also continue the Regional System Planners (RSPs) initiative, who are essential in developing comprehensive energy plans that consider all aspects of the system.

- **Improving the speed at which Nationally Significant Infrastructure Projects are approved** as well as increasing resource for planning appeals and decisions, this would be a low-cost intervention that would support both digital and green infrastructure.

Digitalisation needs to be at the heart of the future of UK energy planning to fully realise the benefits of the green transition through establishing robust and resilient operational control capabilities. This can be enabled in the following ways:

- **The next Government should place digitalisation at the heart of the National Energy System Operator (NESO)**, the independent, public corporation responsible for planning Britain's electricity networks and operating the energy system.
- **Swift adoption of digital technologies is necessary to drive the digitalisation of the energy system**, using emerging innovations and UK industry (including AI, Digital Twins, Connectivity) to create a clean, affordable, and flexible energy grid that can help better use the energy the UK already has, increasing supply through smarter management.
- **There should be a long-term Government plan for how the grid should deploy digital technologies** such as digital twins, AI and cloud computing in order improve resilience, capacity and decision making.
- The next government must ensure coordination between the digital and energy departments for this work. The Office for Net Zero, within the Cabinet Office, should be responsible for holding the government accountable for delivery and uniting key departments. **Improving visibility of assets on the system** via appropriate telecommunication infrastructure on both transmission and distribution network will allow the Grid to be able to work cheaply and efficiently

What are the benefits?

The net zero transition offers substantial economic prospects for the UK. But the right government framework, prioritisation and incentives are crucial to support and speed up delivery. Acting on our proposed recommendations could support the net zero transition and ultimately save taxpayers money.

There are significant positive benefits to the UK economy. A recent [CBI Economics/Energy and Climate Intelligence Unit \(ECIU\) report](#) showed that the net zero economy supports nearly 4% of UK economic activity – that's £74 billion in GVA. EnergyUK analysis also revealed that an accelerated net zero transition could boost the UK's economy by £240 billion more in 2050 than the current trajectory.⁴ Due to the high value nature of net zero activities, the jobs they employ are 60% more productive than the average UK job and pay nearly £10,000 per year more in average wages (£44,600), 23% more than the UK average (£35,400).

Analysis by the Carbon Trust and Imperial College further shows that a fully flexible and digital energy system could cut the cost of reaching net zero by up to £16.7 billion a year by 2050.⁵ These measures will also allow business costs to be cut. As mentioned, improving the visibility of assets on the Grid has the potential to enable consumer benefits alone of up to £150m per annum according to National Grid ESO alone.

Improving the visibility of the entire National Grid by using digital technology will enable the creation of Strategic National and Regional Spatial Energy Plans that set out what needs to be built, where and when, to achieve net zero. Digital technology will therefore be crucial for providing the evidence base for the key clean energy projects to be delivered by 2035.

Finally, by aiding the green transition, digitalisation can enable heavy emitting sectors, such as transport and manufacturing, to connect to a clean energy grid to support sectoral and national net zero goals.

How can I learn more?

If you would like to know more about the importance of getting our incentives for innovation right, you can read our [UK Tech Plan](#) and [Seven Tech Priorities](#).

techUK can also arrange a call with yourself and our policy managers so we can brief you on this topic in more detail. If this would be of benefit to you, please contact archie.breare@techuk.org and alice.campbell@techuk.org.

techUK is also able to arrange a meeting between yourself and a member company of ours who has premises in your constituency if possible. This would provide you with a photo opportunity and allow you to discuss the importance of this issue further with a company operating in your constituency.

⁴ EnergyUK (2023) 'Empowering our nation: energy matters for politicians' <https://www.energy-uk.org.uk/publications/energy-matters-in-politics/>

⁵ <https://www.carbontrust.com/news-and-insights/news/groundbreaking-analysis-reveals-a-fully-flexible-energy-system-could-cut-the-cost-of-reaching-net-zero-by-up-to-ps167bn-a-year-in-2050>