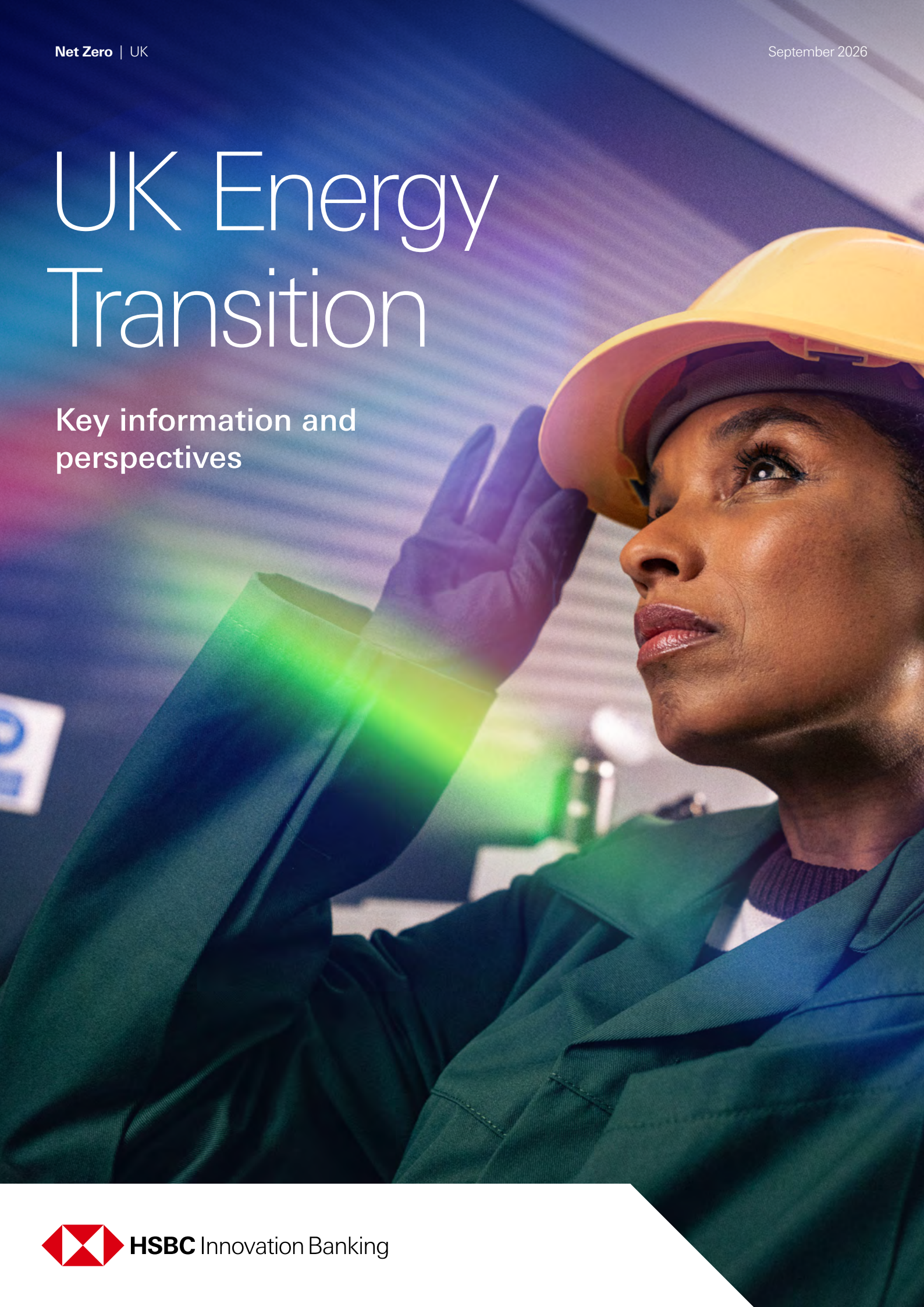


UK Energy Transition

Key information and
perspectives



Foreword

Examining the UK energy transition

The UK has one of the fastest decarbonising electricity grids in the world¹. But while the generation of our electricity has transformed in recent years, our wider energy system is still heavily reliant on fossil fuels. As a net importer of oil and gas, the UK is vulnerable to price shocks.

But the past is not a guide to the future. Energy system change is accelerating, with electrification of demand as the dominant energy story of the next ten years. Low carbon generation is displacing fossil fuel generation – increasingly as a result of cost and efficiency, and supported by UK government policy. In 2025, renewables reached a record 52.5% share of UK electricity generation².

The commercial case for clean electrification has continued to build. With the UK government sending long term policy signals through their ambitious targets (95% of electricity to come from zero carbon sources by 2030³), revenue support schemes, grid and planning overhauls and demand side drivers, investment will follow, and UK businesses can start taking the opportunities it brings.

This report explores the key themes of the UK's energy transition, what it means for UK businesses and how HSBC Innovation Banking can help innovative businesses to capture these opportunities.

New and emerging technologies will be key to delivering the UK's energy transition. The UK ClimateTech ecosystem is open for business for innovation and growth, with Sightline data showing £1.4bn invested in UK Energy Tech companies alone in 2025⁴.

HSBC Innovation Banking is here to help businesses seize this opportunity, with our suite of products, tools and the expertise of our teams based across the country.



Tim Lord,
Head of Climate and Energy,
HSBC UK



Randolph Brazier,
Global Head of Clean Power,
HSBC



- 1 NESO – Future Energy Scenarios – Pathways to Net Zero November 2025
- 2 Department for Energy Security and Net Zero – Energy Trends: UK electricity (Quarterly Oct to Dec 2025, and 2025) – published March 2026
- 3 UK Government – Clean Power 2030 Action Plan
- 4 HSBC Innovation Banking analysis of Sightline Climate Data – 2025 Energy

Foreword

Extraordinary energy tech

The UK government recently announced a vision to become one of the top 3 global leaders in clean energy innovation, and emerging technologies are likely to play a key role in achieving the UK's energy transition⁵.

The energy transition challenge requires wholesale change across technologies, processes and stakeholders in the energy system, but investment data shows that "Energy Tech" - "processes and innovations that improve existing energy systems or create new ones, facilitating the transfer of technology from research to commercial use" - may be at the forefront.

Currence (formerly Sightline) data shows that £1.4bn was invested in UK Energy Tech companies in 2025. That's 40% of total Climate Tech investment for the year. Within this significant number, more than half was invested into Energy Storage⁶.

Deal counts also reveal the momentum in Energy Tech. Half of all raises were for hardware focused companies, with 37% for software solutions, and the balance for technologies incorporating both software and hardware⁷.

This report provides insight into the UK's energy transition as a whole and explores investor interest in energy tech specifically to understand the extraordinary opportunity the space presents.



Matt Jolley,
Director, Climate Tech & Sustainability,
HSBC Innovation Banking



⁵ UK Government, Clean energy industries, 2026

⁶ HSBC analysis of Sightline Climate Data – 2025 Energy

⁷ Ibid.

Introduction

The UK, like the global economy, is undergoing a revolution in the way we produce and use energy.

The UK has made strong progress in decarbonising its economy, and in decoupling emissions from economic growth – more than halving emissions between 1990 and 2025 while growing the economy by more than 80%⁸.

Much of that progress has been driven by the power sector – the UK has one of the fastest decarbonising electricity grids in the world⁹, and emissions in the sector are now 82% lower than in 2008¹⁰.

But if we consider the energy system as a whole, the UK is in the foothills of the energy transition. While electricity is rapidly decarbonising, energy more widely still has a long way to go given reliance on gas and oil, in particular for the heating and transport sectors. In 1990, the UK sourced 92% of its energy from fossil fuels. In 2024, that figure was 73.5%¹¹ – meaning the UK is still reliant on fossil fuels for almost three quarters of its primary energy. Electricity still makes up a relatively small proportion of total energy demand

– less than 20% of total UK energy need was met by electricity in 2024¹².

But electricity punches above its weight in delivering useful energy due to its superior efficiency, meaning that increased electrification of demand will result in less energy use than would otherwise be the case. The UK energy system is now moving into the next phase of the transition, which will be driven by a rising proportion of energy use being met by electricity, with this electricity coming almost entirely from low carbon sources of generation.

These changes are well underway, and are increasingly being driven by cost, efficiency, and supported by government policy. This creates significant opportunities for businesses throughout the value chain. This report will explore the key themes of the UK's energy transition, what it means for UK business and how HSBC Innovation Banking can help innovative businesses to capture these opportunities.

8 UK Government – Carbon Budget and Growth Delivery Plan October 2025
9 NESO – Future Energy Scenarios – Pathways to Net Zero November 2025
10 Climate Change Committee – Progress in reducing emissions – report to Parliament June 2025
11 Department for Energy Security and Net Zero – Energy Trends: UK electricity (Quarterly) March 2026
12 National Energy System Operator – Britain's Electricity Explained: 2024 Review



Electrons displace molecules: Electrification as the dominant energy story of the next 10 years

Electrons, if generated with local resources, can offer cheaper, homegrown alternatives to gas and oil molecules, and with geopolitical headwinds still present across the world, energy security and resilience have been at the top of national agendas. The 2022 and 2026 energy price shocks have accelerated the focus on electrification, as a result of increased attention on energy security. The global pivot towards electricity led the IEA last year to declare that “the age of fossil fuels is over and the age of electricity is here”¹³. This is based on global electricity demand which grew 4.3% in 2024, a significant jump from the 2.5% growth seen in 2023 – and comparably higher than fossil fuel growth in 2024 (2.2%)¹⁴.

Some countries are already surging ahead with electrification, with China seeing electricity demand grow 5% year-on-year in 2025. China has been installing more renewables capacity than any other country and clean energy (particularly solar and wind) outpaced demand growth in 2025¹⁵. In 1990, China derived just over 5% of energy from electricity, a figure which has risen to almost 30% today¹⁶.

In the UK, the cost and security benefits of electrification mean that electricity demand is expected to more than double between now and 2050¹⁷. And that change is underway. After a long period of electricity demand reduction, due to the shift towards less energy intensive

economic sectors and energy efficiency (think LED bulbs), in 2025, electricity demand grew for the second year in a row. This could mark the start of an increasingly sharp incline, as more of the UK’s economy electrifies.

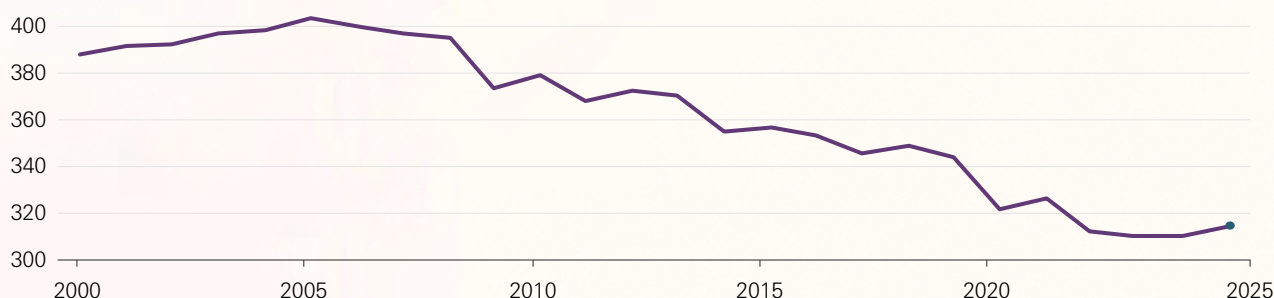
This surge in overall electricity demand is driven primarily by:

- **Increasing electrification of fossil fuelled activities:** including electric vehicles, heat pumps, and electrification of industry, which are replacing fossil fuel alternatives.
- **Additional electricity demand:** due to new technologies and sources of demand coming onto the grid, such as data centres connecting in larger numbers¹⁸.

Cost effectiveness has been a key driver in increasing electrification – with technologies in many cases now lower cost than fossil fuel alternatives. For example, new electric cars are cheaper on a lifetime basis for UK consumers, and now cheaper on average transaction price¹⁹. For many homes and businesses, electrification of heating makes increasing financial sense. In addition to cost attractiveness, the switch to electrification is being driven by the desire for increased energy security and resilience, reduced carbon emissions, and a better experience for many technologies.

1. UK electricity use grew by 1% in 2025 after decades of trending downwards

Annual electricity demand, terawatt-hours (TWh)



Source: Carbon Brief analysis of data from NESO and DESNZ

¹³ International Energy Agency – World Energy Outlook 2025

¹⁴ International Energy Agency – Global Energy Review 2025

¹⁵ Carbon Brief Analysis – Coal power drops in China, January 2026

¹⁶ Ember – Highlights of the global energy transition in 2025

¹⁷ NESO – Future Energy Scenarios – Pathways to Net Zero November 2025

¹⁸ Carbon Brief Analysis – UK renewables enjoy record year in 2025

¹⁹ Autotrader Press Release – New electric cars now cheaper than petrol on average, April 2026

Each part of the energy system is changing

The way we use energy, how it is generated, how it gets transmitted around the country and how it is used by consumers and businesses is changing:

1. Low carbon generation displacing fossil fuels

While the world electrifies, the make-up of that electricity is changing. Historically, gas and coal have been the primary source of UK electricity generation. But this has rapidly changed in the last decade. In 2025, renewables reached a record 52.5% share of UK electricity generation²⁰. In April 2026, for a short period, UK power generation from fossil fuels fell to just 2% of the nation's electricity supply, the lowest since records started in 2009.

Government policy has been an important driver of this progress, with ambitious decarbonisation targets supported by interventions such as the Contract for Difference scheme. Looking ahead, the government has set a target for 95% of electricity to come from 'clean power' sources by 2030. Meeting this will be a huge challenge, with large amounts of further low carbon generation required.

But 2026 has already marked a major milestone, with the UK's most successful Contracts for Difference auction to date. Allocation Round 7 (AR7) secured 14.7GW of new clean electricity capacity in total. Offshore wind projects totalling 8.4GW of electricity secured contracts. This is towards the top end of expectations – for comparison, the UK currently has about 16GW of offshore wind installed in total today. These projects will, when delivered, provide equivalent to the annual electricity requirement of 12m homes. In addition, the solar and onshore wind auctions secured further contracts – 4.9GW and 1.3GW respectively²¹. Taken together, these projects, alongside nuclear and carbon capture, will put the UK close to on-track for clean power targets.

The UK government is also considering further policy moves, including measures to partly delink electricity and gas prices, by offering some existing generators a fixed power price via Contract for Difference.



Electricity generation sources are changing. At the same time, the number of generation sources is rapidly increasing across the country – our electricity grid has evolved from centralised generation (less than 100 points in the early 1990s) to now over 1.5 million distributed rooftop solar generation points alone²².

2. Transmission and distribution

To support the future energy system, upgrades in electricity infrastructure are required. The electricity distribution and transmission network will need to expand rapidly and evolve to move energy from sources all around the UK.

As well as expanding, the UK electricity grid needs to be upgraded to make it digitised and smarter – this is essential given the trends towards decentralised generation and dynamic demands. Grid flexibility will be needed to make more efficient use of low-cost renewables on the supply-side but increasingly also on the demand-side as consumers will start to have more control of their energy use and costs.

3. Demand trends: Rising electrification

UK electricity demand is expected to more than double between now and 2050. Increasing electrification, additional demand due to new technology and cost-attractiveness is already increasing demand, with a 1% rise in electricity use in 2025²³. The Boiler Upgrade Scheme and an easing in planning laws, meant that over 125,000 heat pump units were sold in the UK in 2025, a 27% increase on 2024²⁴. Electric vehicle uptake also hit a record last year, with total EV registrations passing two million²⁵.

20 Department for Energy Security and Net Zero – Energy Trends: UK electricity (Quarterly Oct to Dec 2025, and 2025) – published March 2026

21 UK Government – Contracts for Difference Allocation Round 7 results

22 UK Government – Solar Roadmap June 2025

23 NESO – Future Energy Scenarios – Pathways to Net Zero November 2025

24 CIBSE – UK Heat Pump sales reach record high in 2025 (analysis of HPA UK data), February 2026

25 SMMT – UK new car market reaches two million, January 2026

Challenges ahead

Building this new system will not be without its challenges:

1. Delays in planning, permitting, and grid connections are a major barrier for renewables deployment, even when investor appetite is strong. Slow and/or inconsistent planning decisions can significantly delay project timescales, increase costs, and raise the risk of missing subsidies and/or offtake agreements – ultimately increasing capital cost. Permitting bottlenecks also create uncertainty and grid connection queues can strand wind and solar assets. In April 2026, the government announced the ‘Clean Power Package’ – a range of energy-related permitted development rights to speed up the planning process and accelerate delivery of clean power projects.
2. Delays in global supply chains are also a barrier, due to bottlenecks with manufacturers and competent renewables installers.
3. Ensuring bill impacts are managed, and costs come down over time, will be essential given the high capital requirements. This is important both to maintain public support for the energy transition, and to ensure UK competitiveness.
4. A systems approach is essential. Electrification requires an integrated approach: capacity additions, generation, transmission, distribution, consumer demand, new technologies, digitalisation, telecommunications, transportation, industry – these are all interlinked across sectors, technologies and geographies.
5. The final issue is pace – all of the elements of the transition listed above need to happen at pace to deliver the change required to meet clean power targets and ensure that the UK does not face the costs associated with inaction, and long-term reliance on imported gas.



What it means for UK businesses

The commercial case for electrification has continued to build. Countries across the world are accelerating action to realise the commercial benefits that clean electrons can offer – including resilience, cost, and additional revenue streams. China has been leading the pack and Europe also had a record-breaking year in 2025²⁶.

With the UK government sending long term policy signals through their ambitious targets, revenue support schemes, grid and planning overhauls and demand side drivers, investment will follow, and UK business can start taking the opportunities it brings. Key areas to look out for in 2026 and beyond could be:

- **Opportunity for businesses to adopt new energy technologies**, both hardware and software, to reduce energy costs, increase resilience, and support net zero and sustainability objectives.
- **Ecosystem benefits as capital flows into projects**: the opportunities for developers and investors are clear and capital will also flow into the surrounding value chains associated with generation, transmission and demand.
- **Supply chains**: supporting the scale-up of key ecosystems to drive local and regional growth, and partnering internationally to build supply chain capacity.
- **New business models**: the growth of electrification opens up the potential of new value streams such as energy as a service and carbon markets.
- **The rise of energy tech in the UK landscape**: the UK government has a mission to “build it in Britain and power the world” seeking to become a global hub for new technologies²⁷. In April 2026, it launched a new ‘Electrification Package’ that includes applications for a ‘heat pump investment accelerator’ and a ‘heat pump ready programme’ to boost homegrown industry. On the software side, AI and digital innovation will be key to unlocking grid optimisation, flexibility and planning.
- **Falling cost of renewables**: The cost of renewables has plummeted over the past ten years, and it is predicted to fall further. By 2035, BNEF forecasts levelized cost of electricity reductions of 30% in solar, 25% in battery storage, 23% in onshore wind and 20% in offshore wind²⁸. Cheaper renewables translate into (1) lower electricity costs which can help to increase demand for electrification, and (2) increased adoption by corporates of behind-the-meter renewable energy generation and storage.



²⁶ Ember – Highlights of the global energy transition in 2025, December 2025

²⁷ UK Government – Industrial Strategy, Clean Energy Industries Sector Plan

²⁸ BloombergNEF – Battery Storage Costs Hit Record Lows, February 2026

Focus on energy tech: the UK is a leading market

New and emerging technologies will be key to achieving the UK's energy transition, and the UK government has recognised this, this year announcing their vision to be one of the top three global leaders in clean energy innovation and create one of the world's first trillion-dollar clean energy enterprises.

The UK ClimateTech ecosystem is open for business for innovation and growth, with Sightline data showing £1.4bn invested in UK Energy Tech companies in 2025. Energy Tech innovation, already strong in the UK, has emerged as the largest segment of ClimateTech investment at 40% of the total for the year. Of the £1.4bn invested, over half was in Energy Storage, and on deal count half of all raises were for hardware focused companies, with 37% for software solutions, and the balance for technologies incorporating both software and hardware²⁹.

This growth in the UK Energy Tech market is being driven by several key factors:

- 1. Policy Support** – through the Clean Power 2030 agenda and new policies such as the Warm Homes Plan, Future Homes Standard, and Clean Power Package, Long Duration Energy Storage cap-and-floor mechanism alongside accelerated planning decisions for national significant infrastructure.
- 2. Grid Reform** – being driven by Ofgem, NESO and DESNZ to facilitate faster grid connections and integration of new generation assets.
- 3. Financing Enablers** – The creation of Great British Energy to complement the existing National Wealth Fund and British Business Bank, as well as early-stage tech support from Innovate UK. Energy Tech companies are also seeing sustained support from VC investors, growing interest from infrastructure style investors, and commercial lenders at the venture and project levels.
- 4. Commercial Opportunities** – created by both the growing demand for energy and new hardware and software solutions to support efficiency, flexibility, and digitisation of the grid, and new opportunities beyond the grid with the growth in behind-the-meter requirements.

29 HSBC analysis of Sightline Climate Data – 2025 Energy





A number of areas stand out at present in terms of both the opportunity and level of innovation:

- **Grid:** The need to upgrade the grid whilst limiting the impact on consumers and bills, means there is a growing market for novel companies seeking to help the grid do more, with less – also known as smart grid solutions. The digitisation of the grid, balancing requirements from new generation mixes, and new market demands are creating opportunities for software and AI driven solutions, as well as new hardware requirements.
- **Energy Storage / Batteries:** Patents are a solid indicator of innovation, and globally, the share of energy patenting going into batteries in the past few years has been unprecedented, representing 40% of all energy patents in 2023³⁰. In 2025 in the UK, the Department for Business and Trade announced a £452m investment in the Battery Innovation Programme, as part of their long-term manufacturing sector plan. The ambition is to encourage cross sector innovation, optimise battery technologies to make them cheaper, better performing and recyclable. There is also a strong pipeline of novel long duration energy storage solutions in the UK too.
- **Energy as a Service:** Increasing digitisation, hardware upgrades and new technologies are creating opportunities for models where customers pay for energy services through subscription models rather than upfront capital investment. This can include digital services, efficiency upgrades, renewable generation or storage.
- **Behind-the-meter Tech:** There is a growing market for energy assets off the grid to meet specific demand cases. This includes on-site generation such as renewables, battery energy storage systems, demand side management solutions and microgrids. A recent report by DNV suggests that by 2060 around 17% of electricity demand of residential buildings will be generated behind-the-meter, and 8% for commercial buildings³¹. Demand in behind-the-meter technology is also being accelerated by the energy requirements and grid connectivity timelines of data centres.
- **Electric Vehicles:** The need to electrify road transport means innovation will be required across the whole ecosystem. There are opportunities in vehicle-to-grid charging, smart charging, fast charging, and aggregation services, as well as making EVs simpler and cheaper, and expanding fleet solutions.

30 International Energy Agency – The State of Energy Innovation 2026 Report

31 DNV Global Energy Transition Outlook 2025

Extraordinary energy transition businesses

We are proud to support Energy Tech companies from early stage to exit and beyond across the UK.

Here are some companies we have already helped on their journeys.

How Fuse flipped the switch on energy

Fuse owns and operates its own low-carbon generation assets, including solar and wind farms. This allows them to produce their own electricity rather than purely buying it from third parties. By combining large-scale wind and solar generation with the latest optimisation software and direct-to-consumer distribution, Fuse is stripping away the inefficiencies and intermediaries that have defined traditional utilities for decades.

Raft Energy: A battery powered by love

RAFT Energy sees biogas as a big green battery: reducing reliance on fossil fuels, easing pressure on national grids and creating value from food waste, manure and agricultural by-products. With European expansion underway, what started with chicken manure, kitchen scraps and an eye-watering heating bill is becoming a blueprint for a cleaner, more resilient energy system.

TEM Energy: Transparent pricing for businesses

We have extended Venture Debt and Trade Guarantee facilities to Tem, supporting their growth as a pricing infrastructure operator in the UK energy market; one that removes wholesale mark-ups and brings bill transparency to businesses at scale.





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