



Delivering the Clean Power 2030 Action Plan

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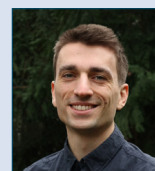
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Introduction

The government's Clean Power 2030 Action Plan has provided a clear direction for the UK's energy transition, helping to mobilise investment and accelerate the transition. However, with just four years remaining until the target, attention is increasingly shifting from ambition to delivery. Grid constraints, electricity market design and infrastructure costs present significant challenges to achieving a cleaner, more secure and affordable electricity system.

These pressures are compounded by geopolitical instability and volatile international gas prices, which continue to expose the UK to global energy market shocks. Meanwhile, concerns over household bills and industrial competitiveness have brought the economic implications of the transition into sharper political focus.

The discussion examined the reforms needed to maintain momentum towards 2030, including unlocking private capital, expanding energy storage and demand-side flexibility, and supporting emerging renewable technologies. Participants also explored how government can strengthen incentives for household electrification and ensure that consumers benefit from the transition.

A central theme was the distinction between the technical challenges of delivering Clean Power 2030 and the earlier stage of wider electrification, where consumer uptake and public engagement remain critical. Participants recognised that 2030 is a milestone rather than an endpoint, and that lasting progress will require coordinated government action, sustained political leadership and greater public confidence in the UK's energy future.

Key takeaways

Clean Power 2030 must form part of a wider, coordinated industrial strategy

- Described as a “good north star”, Clean Power 2030 has provided an important strategic direction for the energy sector, helping to mobilise private investment and accelerate renewable deployment. However, achieving the target alone will not deliver the wider economic transformation required to reach net zero by 2050.
- Greater coordination is needed across government departments, particularly between energy, transport, business, planning and the Treasury. Decisions concerning electricity generation, network infrastructure, industrial competitiveness and consumer electrification cannot be treated in isolation.
- The transition will depend heavily on private capital. Clear regulatory frameworks, credible market arrangements and long-term policy certainty are essential to maintaining investor confidence, particularly as countries increasingly compete for clean energy investment.
- Participants raised concerns about government short-termism, emphasising that decisions on critical infrastructure must be guided by the national interest rather than immediate political considerations.
- Sustained progress requires ensuring that the transition remains “economically credible, politically sustainable, and attractive for investors beyond 2030”.

Switching from gas to battery-powered redundancy

- As the grid decommissions thermal gas generation, the built-in system redundancy traditionally provided by gas must be directly replaced by rapid-response battery storage and automated demand-side flexibility.
- “We are moving from a system of spinning gas reserves to a system that must maintain permanent equilibrium through storage and flexibility.”
- Unlike gas plants that ramp up to meet unexpected demand spikes, a renewables-led grid relies on utility-scale and domestic batteries to maintain constant, real-time equilibrium by absorbing surplus generation during periods of high wind and solar output and releasing it instantaneously to prevent blackouts[cite: 4, 5].

- Current modelling from government agencies and bodies such as NISO overestimates the required volumes of centralised reserve power, failing to reflect real-world grid operations and risking unnecessary system costs.
- Moreover, redundancy does not simply mean building massive centralised backup capacity, instead the UK energy system should transition to smarter, distributed energy network. By combining utility-scale storage with household batteries and smart assets, consumers are incentivised to hold localised backup storage that can export power back to the grid during peak periods.

Battery storage and demand-side flexibility

- Household batteries, rooftop solar and electric vehicles represent a structural shift, providing flexibility at a local level.
- Participants highlighted the growing relationship between rooftop solar and home battery storage, noting that over 90% of new solar installations in the UK now include battery storage, allowing households to store surplus electricity and reduce demand on the grid during peak periods
- Automated energy management platforms can enable households to respond to changing electricity prices and grid conditions without requiring active intervention from consumers.
- By allowing stored electricity to be exported to the grid during periods of high demand, these technologies could contribute to a more responsive and resilient electricity system.
- Realising this potential will require better integration of distributed energy resources, alongside market arrangements that appropriately reward flexibility.

Consumer incentives must make electrification an attractive and accessible choice

- Despite the UK experiencing two major energy crises in five years, consumer adoption of low-carbon technologies is still developing, highlighting the need for stronger incentives and sustained public engagement.
- The comparatively high cost of electricity relative to gas remains a significant barrier to the adoption of electric vehicles, heat pumps and other low-carbon technologies – “If we can't reduce the cost of electricity relative to gas, we won't be able to scale to the extent that is required.”
- Vehicle-to-grid (V2G) technology could allow electric vehicles to operate as distributed energy storage, enabling consumers to export electricity during periods of high demand.
- Differences were highlighted in how consumers experience low-carbon technologies. While home batteries and EV chargers can be installed relatively straightforwardly, heat pumps may involve greater upfront costs, disruption and building modifications. Ensuring technologies are accessible, affordable and easy to operate will be critical to uptake.
- Ultimately, the challenge is “enabling ordinary people who are totally uninterested in this to do it”, reducing the complexity associated with adopting and using low-carbon technologies.

Emerging renewable technologies require greater support to reach commercial scale

- Participants highlighted the potential for emerging technologies, particularly tidal and marine energy, to contribute to a more diverse and resilient electricity system.
- The experience of offshore wind demonstrates the time and investment required to bring emerging technologies to commercial maturity, with the first offshore wind farm developed in Denmark in 1991 and the technology taking more than a generation to achieve widespread commercial deployment.
- “Before you can scale, you need to standardise” – technological development, operational experience and sustained investment are crucial.
- High development costs and uncertain revenues can hinder the commercialisation of emerging technologies, highlighting the need for targeted investment and market support.
- Public institutions, including Great British Energy, could support emerging technologies that offer long-term benefits for energy security, resilience and regional growth.

Energy security, affordability and public confidence must underpin the transition

- Renewed volatility in international fossil fuel markets has reinforced the economic and strategic case for expanding domestic clean energy generation. Reducing dependence on imported gas is essential to protecting consumers and businesses from future price shocks.
- The economic benefits of clean energy must also be considered over the longer term. While expanding renewable generation and modernising electricity infrastructure require substantial upfront investment, reducing exposure to volatile fuel prices offers the potential for greater energy security and more stable costs.
- Affordability remains fundamental to maintaining public support. Consumers must be able to “feel and see the benefits” of clean power, particularly through lower costs, greater energy security and more accessible low-carbon technologies.
- Building support for electrification will require sustained engagement with consumers, recognising that public confidence is won incrementally, or “heart by heart, soul by soul”.
- With the politics of net zero becoming increasingly contested, clear and compelling storytelling will be essential to countering misinformation, strengthening consumer buy-in and maintaining political support for the transition.

Issues raised

Electricity market arrangements are not adequately rewarding flexibility

Existing electricity market arrangements do not always recognise the value that battery storage and flexible demand can provide to the grid. Concerns were raised about high battery ‘skip rates’, where available batteries are overlooked when the system needs to balance electricity supply and demand, despite potentially offering a cheaper alternative to other sources of power. Grid constraints and insufficient financial incentives can also prevent batteries from storing surplus renewable electricity and supplying it when demand is high. The decision to retain a single national wholesale electricity price raises further questions about how the market accounts for regional differences in electricity supply and demand. Without reform, existing storage capacity risks remaining underutilised, increasing system costs and discouraging future investment.

The distribution of transition costs and the affordability of electricity

Beyond the need to make electrification financially attractive, participants questioned whether the costs of the energy transition are being distributed fairly. Existing arrangements for recovering infrastructure and policy costs through electricity bills can place a disproportionate burden on lower-income households and those dependent on electric heating. One participant emphasised the importance of “driving that correct ratio of electricity to gas price”, ensuring that low-carbon alternatives become more affordable and accessible. Without a fairer approach to cost allocation, the transition risks exacerbating existing inequalities and undermining public confidence in clean energy.

Public understanding and confidence remain barriers to adoption

The discussion highlighted a disconnect between the technical benefits of clean energy technologies and how they are understood by the public. While household batteries and electric vehicles are becoming increasingly familiar, heat pumps continue to face concerns over installation costs, disruption and suitability for existing homes. Financial incentives alone will not overcome these barriers without clearer communication and simpler consumer experiences. The politicisation of net zero and misleading claims about transition costs also risk undermining public trust – “it’s so easy to tell an entirely untruthful story because people don’t know the truth of story.”

Recommendations

- Strengthen cross-government coordination between energy, transport, business, planning and the Treasury to align Clean Power 2030 with wider industrial and electrification objectives.
- Accelerate grid connections reform and infrastructure delivery to remove barriers preventing viable renewable generation and storage projects from progressing.
- Review electricity market arrangements, including battery dispatch practices and locational incentives, to ensure storage and demand-side flexibility are appropriately valued.
- Provide long-term regulatory and investment certainty to maintain private sector confidence and attract capital into clean energy infrastructure.
- Support the commercialisation of emerging renewable technologies through targeted public investment and appropriate revenue-support mechanisms.
- Strengthen incentives for household battery storage and vehicle-to-grid technology, including financial support, interoperability standards and measures to address manufacturer warranty restrictions.
- Address the imbalance between electricity and gas prices to make electrification more affordable for households and businesses.
- Improve public communication around clean energy, clearly explaining the economic, security and consumer benefits of the transition while addressing misinformation and concerns about new technologies.

We would like to thank the members of our Advisory Board for their contributions and continuing support.



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