



***Accelerating & integrating next generation
renewable energy technologies:
challenges facing the UK***

*Mark Sommerfeld, Deputy Director of Policy
November 2023*



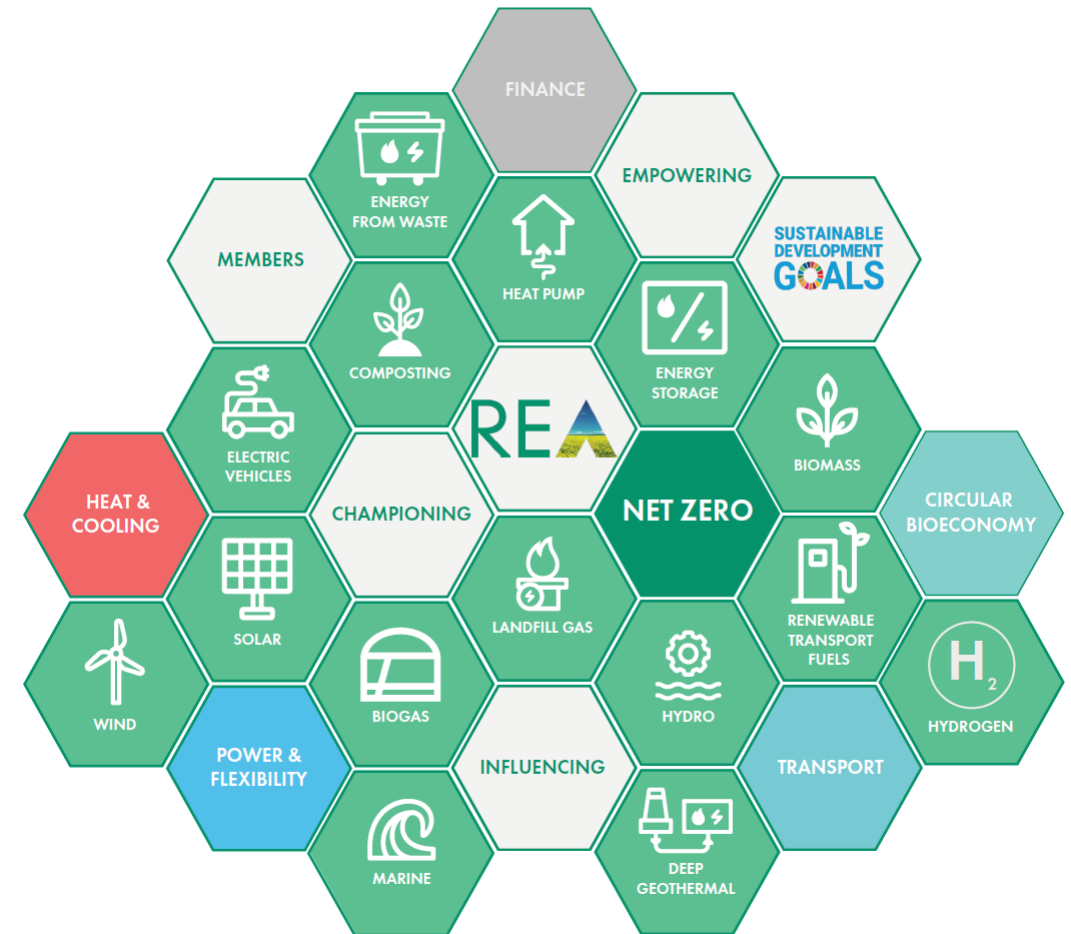
UK's largest trade association for renewable energy and clean technologies

550+ members operating across heat, power, transport, and the circular bioeconomy.

Not-for-profit representing renewable energy and clean technology companies operating in over fourteen sectors. Including the REA Finance Forum.

Member organisations range from major multinationals to sole traders

Deputy Director for Policy: helping manage the policy team across 14 technology forums. Largely focus on decarbonisation power, delivering flexibility and bioenergy.



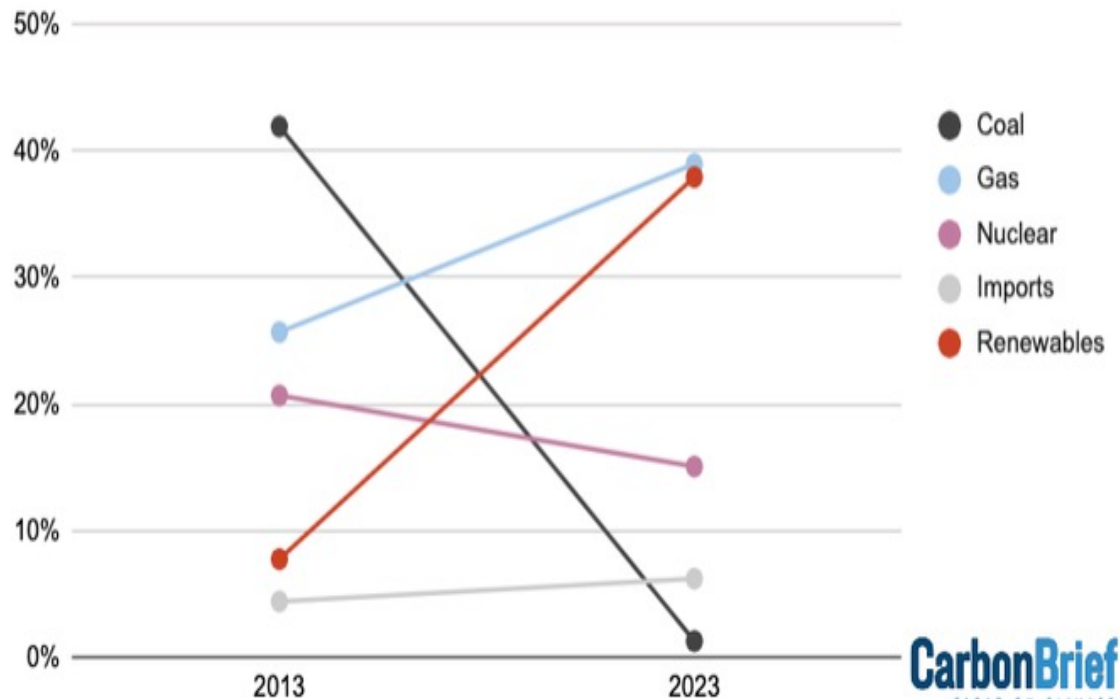
Where are we at in the Energy Transition?

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- Significant progress has been made, especially on decarbonising power, but we have a long way to go.
- Substantial policy gaps remain

Electricity generation in Great Britain has been transformed

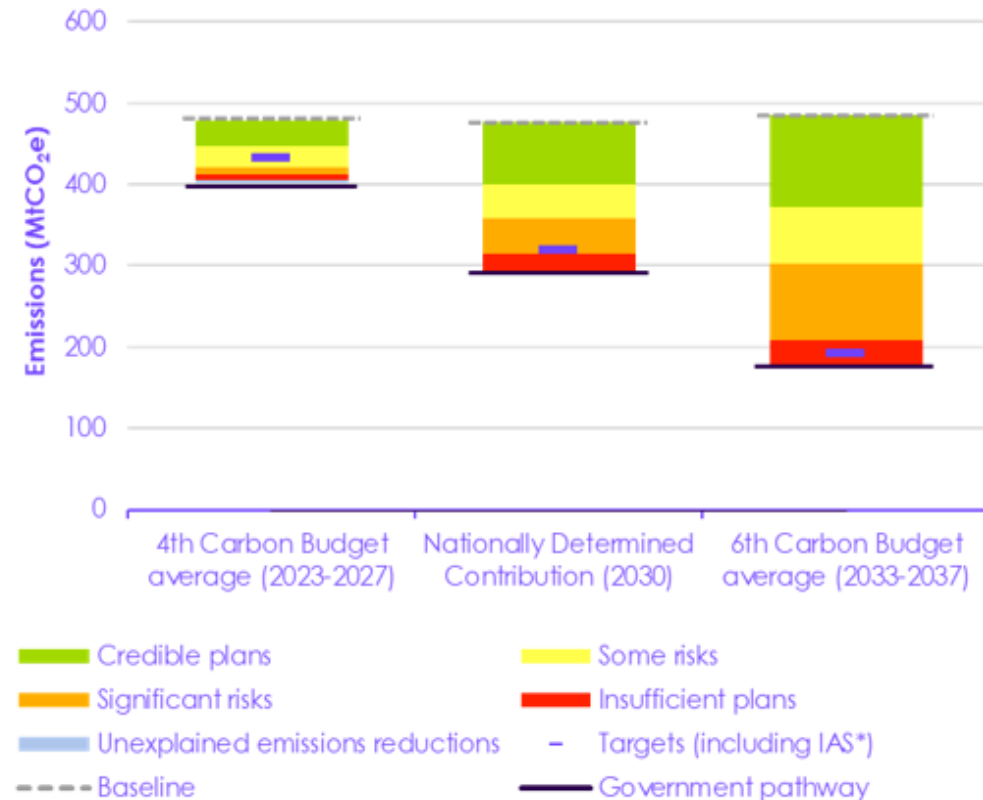
Share of GB electricity by source, %, latest 12mths vs 10yrs earlier



CarbonBrief
CLEAR ON CLIMATE

CCC, 2022 Progress Report

Chart 2.12 Assessment of Policies and Plans



Where are we at in the Energy Transition?

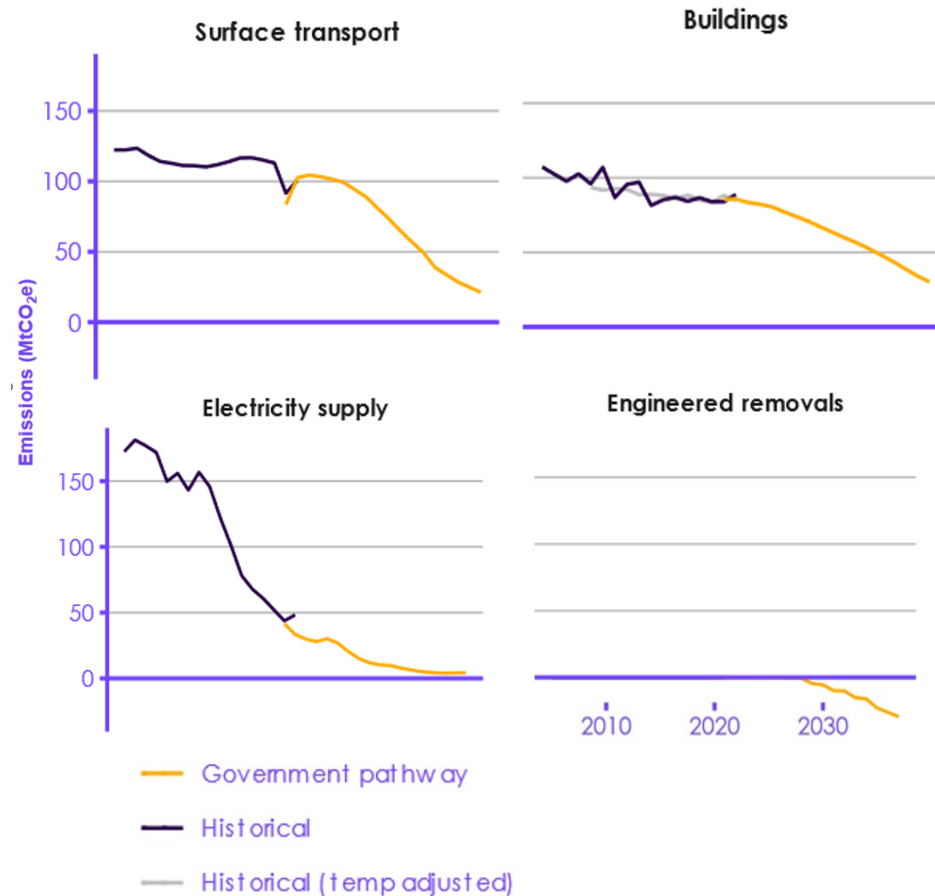
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Energy Transition goes well beyond power production.

Energy security and affordability now central tenants.

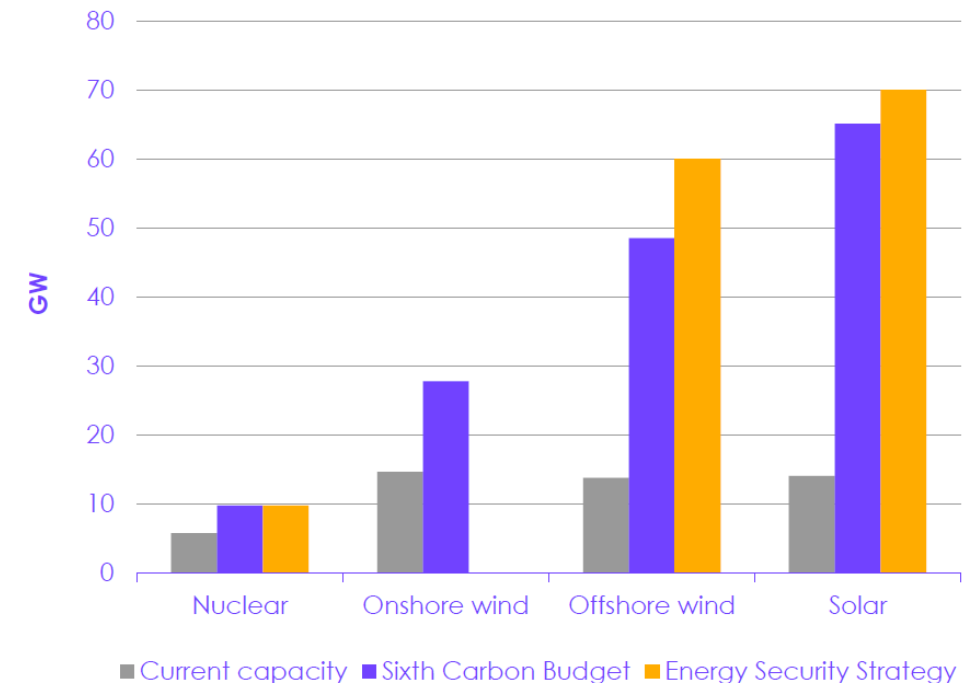
The Energy Crisis has changed the discussion. It is not just about decarbonisation.

Adapted from CCC progress report 2022, Fig 2.7, UK Historical Emissions Vs Government Pathway.



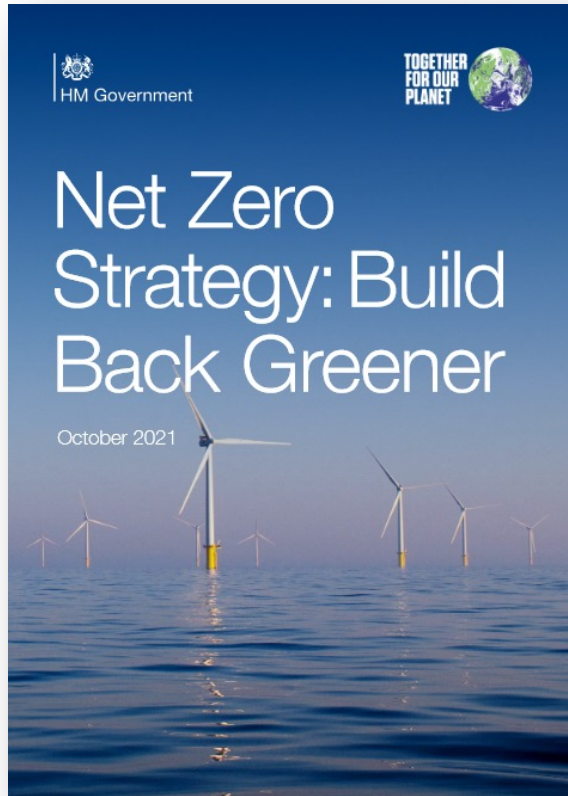
CCC, "Delivering a Reliable Decarbonised Power System"

Figure 7 Zero-carbon capacity in the scenarios (2035)

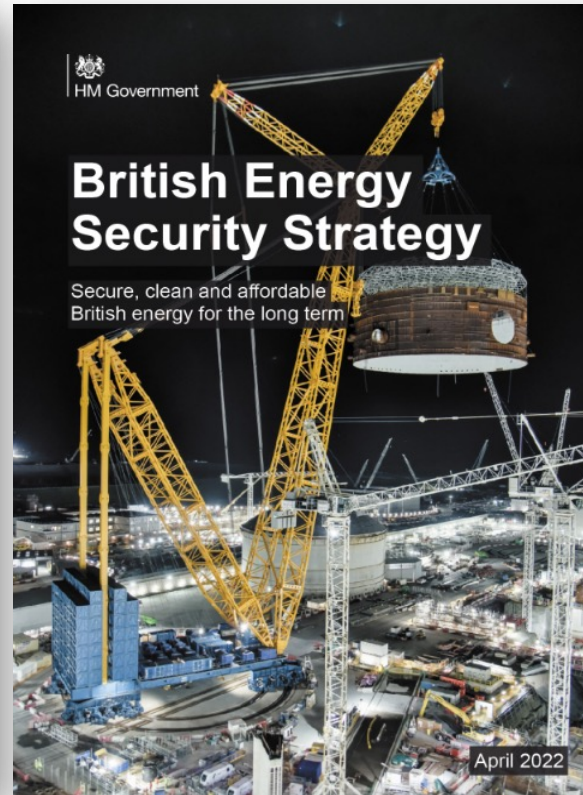


Net Zero and Energy Security in Context

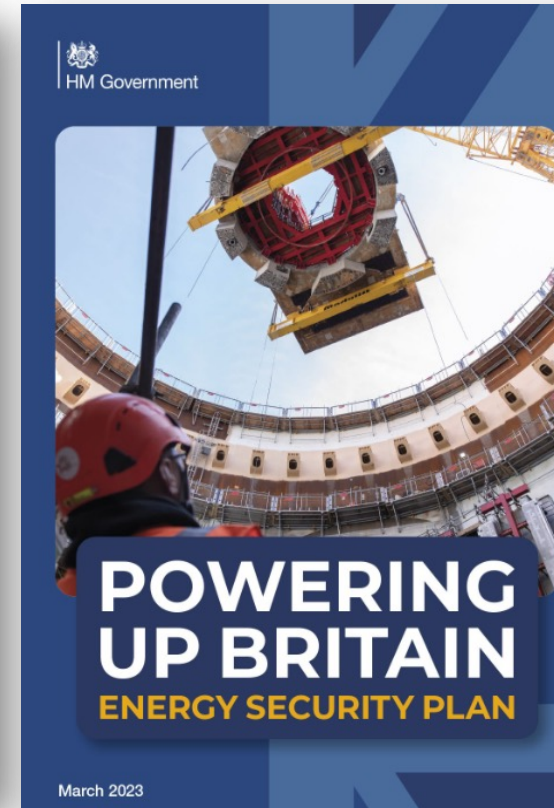
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October 2021



April 2022



March 2023



September 2023



Badged as a 'Pragmatic' approach – but also evidently part of a wider election strategy.

- New oil and Gas licences for the North Sea.
- Phase out date for sales of new petrol and diesel cars and vans moved back to 2035, from the previous start date in 2030.
- Delay on the ban on installing oil and LPG boilers for off-gas-grid homes - to 2035 rather than 2026.
- *"Rule out policy ideas that would require people to share cars, eat less meat and dairy, be taxed to discourage their flying, or have seven bins to hit recycling targets."*

But also some good news:

- Increase in the Boiler Upgrade Scheme – £7500 for heat pumps
- New spatial strategy for energy and sped up grid connections (with an approach prioritising those projects 'most ready') as well as faster planning processes for 'nationally significant' infrastructure.



Decarbonisation

- Carbon Budgets and 2050 Net Zero Target

Renewable Deployment

- 50 GW of Offshore Wind by 2030
- 70 GW Solar by 2035
- Annual CfD Allocation Rounds

Innovation

- 5 MTCO₂/year of engineered Carbon removals by 2030
- 10 GW of Low Carbon Hydrogen production capacity by 2030
- 30 GW of low carbon flexible assets, including energy storage required by 2030

Transport

- ZEV mandate enters into effect January 2024 – requirement for at least 22% on new cars and 10% of new vans to be zero emission. Targets escalating each year.
- Renewable Transport Fuel Obligation Targets – 5% increase by 2032.
- Sustainable Aviation Fuel Mandate – 10% of fuel by 2030

Heat

- 600,000 heat pump installs a year by 2028

Industry and Finance

- 2023 Green Finance Strategy
- Financial Services and Market Act, inc. the Sustainability Disclosure Requirements
- UK ETS Evolution



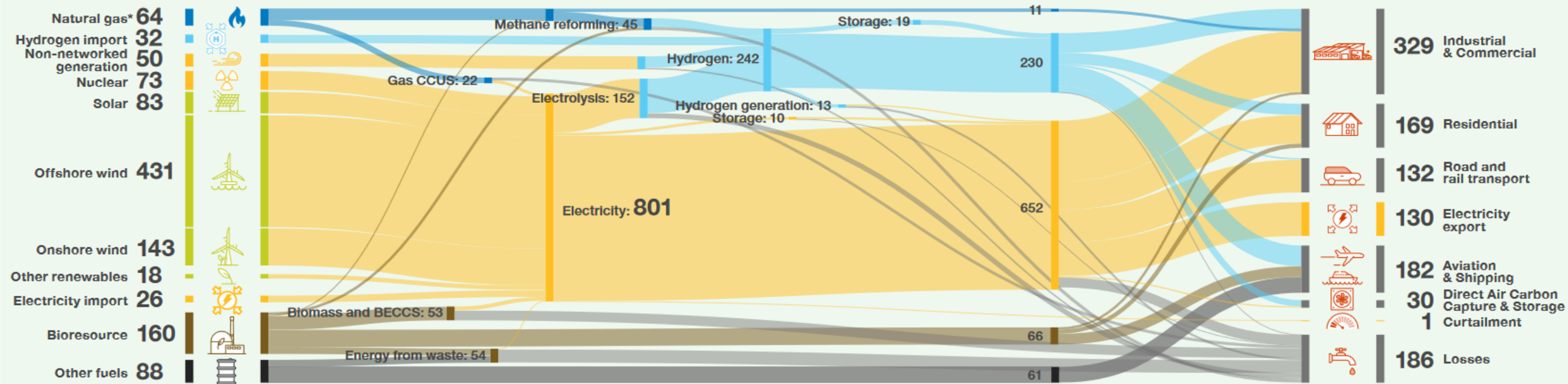
What's Needed? *Everything*

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Energy supply and demand in 2050

Leading the Way (1167 TWh)

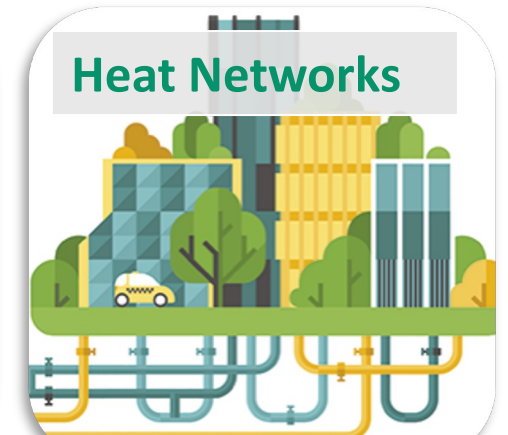
- Combination of hydrogen and electricity used in industry and to heat homes
- Lowest level of electricity curtailment across the scenarios, due to the highest level of flexibility
- Lower bioresource use for negative emissions due to emissions reduction from land use change and Direct Air Carbon Capture and Storage (DACCS)
- Zero carbon fuels meet two thirds of aviation demand

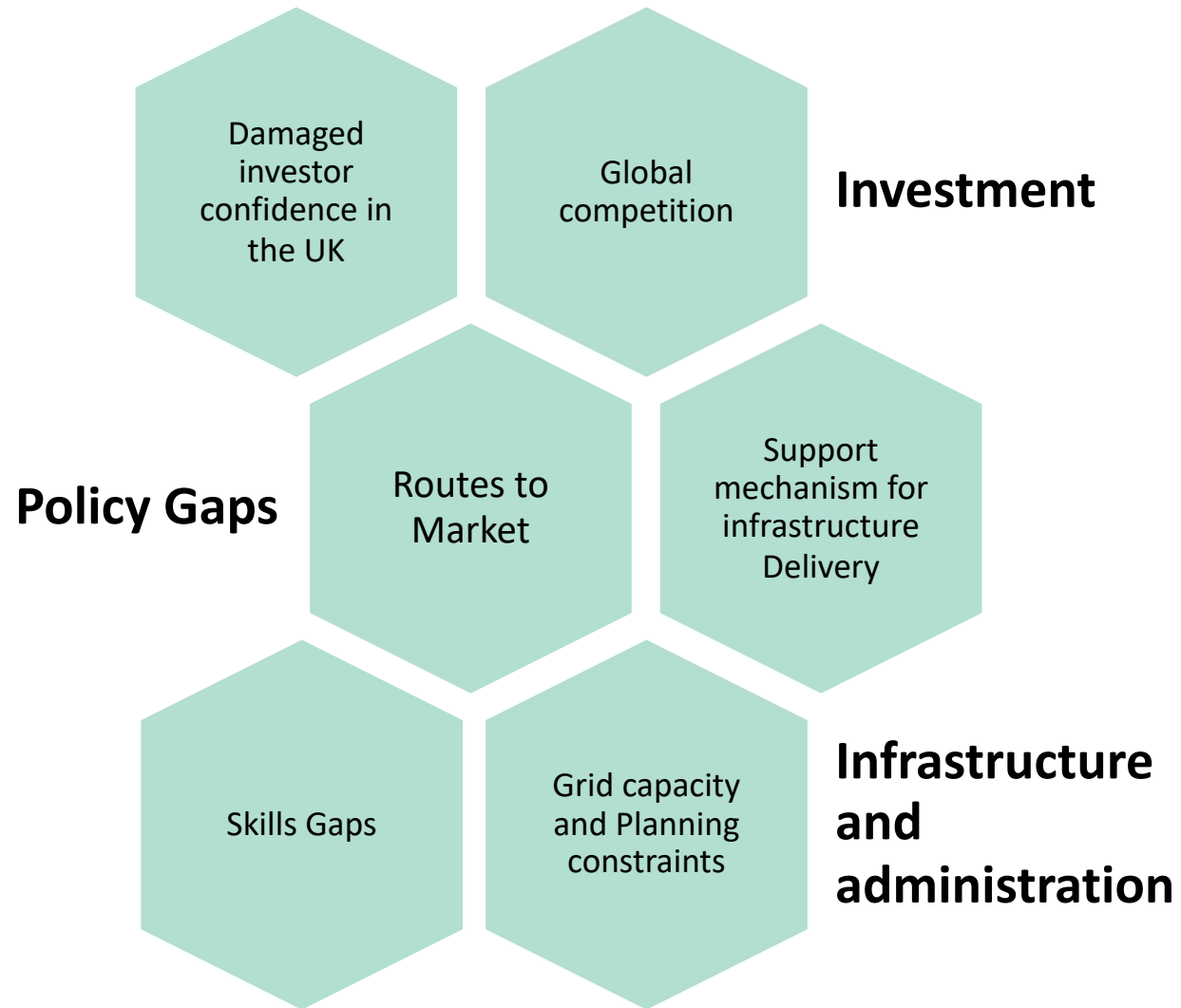


Source: National Grid ESO Future Energy Scenarios 2023

'Next Generation' Technologies

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Domestic Support

Boiler Upgrade Scheme
(Domestic)

Great British Insulation
Scheme

Zero rated VAT on energy
Saving Materials

Non-Domestic Support

Public Sector
Decarbonisation
Scheme

Capital
Allowances

Transport Support

Plug-in Car
Grant

Electric Vehicle
Home Charge
Scheme

Workplace
Charging
Scheme

On –street
Residential
ChargePoint
Scheme

In Development

Clean Heat Market
Mechanism

Industrial Energy
Transformation Fund
next phase

Investment
Taxonomy

Review of Electricity
Market
Arrangements

Power BECCS, ICC
and GGR Business
Models

Hydrogen Business
Model and Low
Carbon Hydrogen
Standard

Long Duration Energy
Storage Support
Mechanisms

ZEV and SAF Mandate

Net Zero Innovation Portfolio

CCUS/ Hydrogen
BECCS/ Direct Air
Capture

Long Duration
Energy Storage

Biomass Feedstock
Innovation
Programme

Flexibility
Innovation
Programme

Space Based Solar

Green Home
Finance

AI for
Decarbonisation

Industrial Fuel
Switching

Floating Offshore
Wind

Heat Pump Ready

Industrial Hydrogen
Accelerator projects

AMR Nuclear



Grid Connection and Planning Reform Workstreams

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Energy Network Association Connections Action Plan

Action 1) Reforming the distribution network connection queue

Action 2) Changing how transmission and distribution coordinate connections

Action 3) Greater Flexibility for storage distribution customers

Expecting implementation of analysed solutions in second half of 2023

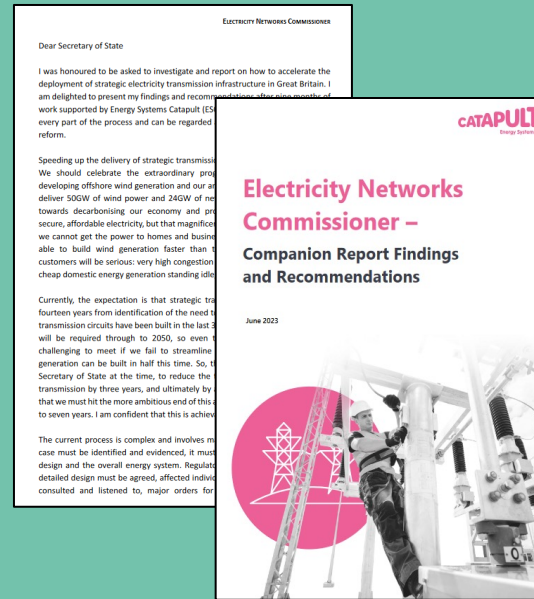


National Grid ESO – Five Point Plan and Connections Reform

1. Transmission entry capacity; Amnesty till Apr 23
2. Update modelling assumptions for current connection rates
3. Changing treatment of battery storage
4. Developing new contractual terms for connection contracts
5. Non-firm (stage) for all connections



Nick Winser OBE Electricity Networks Commissioner Recommendations



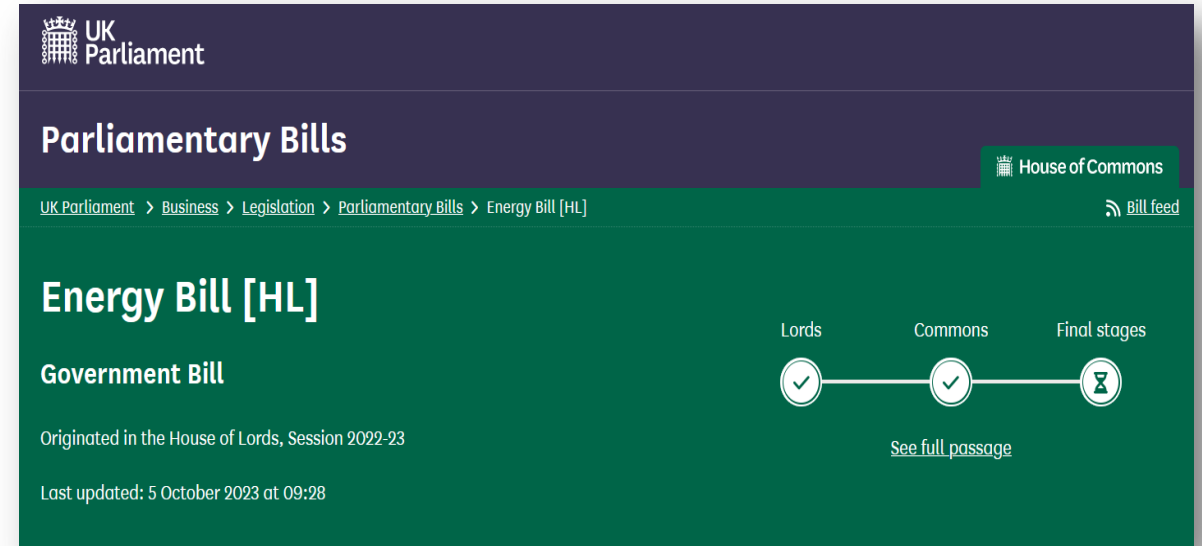
Department for Levelling Up,
Housing & Communities

Nationally Significant Infrastructure Projects (NSIPs) and National Planning Policy Framework reviews ongoing.



Receive royal assent last week, wide ranging bill that includes powers for the Secretary of State to:

- Establishment of Future System Operator
- Regulation of Load Control and energy smart appliances
- ECO Buy-out Mechanism and Threshold change for Suppliers.
- Powers to Review Energy Performance of Buildings Regulations
- Hydrogen and Carbon Capture Business Models
- Heat Network Regulation
- Heat Network Zoning
- Low carbon heat scheme



The screenshot shows the UK Parliament website's 'Parliamentary Bills' section. The main heading is 'Energy Bill [HL]'. Below it, it is identified as a 'Government Bill'. A progress bar shows the bill's journey: 'Lords' (checked), 'Commons' (checked), and 'Final stages' (hourglass icon). Text indicates it 'Originated in the House of Lords, Session 2022-23' and was 'Last updated: 5 October 2023 at 09:28'. A 'See full passage' link is also present. The top navigation bar includes 'UK Parliament', 'Parliamentary Bills', and a 'House of Commons' tab. A 'Bill feed' icon is in the top right.



What about Labour?

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Approaches to net zero becoming an increasingly dividing line between the two parties.

Labour have put out bullish targets for decarbonisation, including decarbonisation of power system by 2030.

Policy proposals still very much in development, but expectation to see heavy focus on deployment of cheapest renewables, especially solar and wind.

Making the establishment of 'GB Energy' a flagship policy

Still a lot of detail required to understand how these ambitions would work and be realised. However, election could see shift in policy focus.



Labour conference 2023

Ed Miliband to announce Labour plan to boost energy independence and cut bills



REA MANIFESTO 2023

Power and Flex

- Ensure the Future System Operator (FSO) is operating by the end of 2024.
- Provide capital allowances for investments in new low carbon generation technology,
- Within the new administration's first Spring Budget.
- Implement a cap and floor support mechanism for long duration energy storage

Transport

- Immediately reinstate the initial 2030 phase-out date for sales of new petrol and diesel cars.
- Introduce a national scrappage scheme by 2025, financially compensating people with the most polluting cars, and supporting them with interest free credit to buy an EV.
- Ensure an ambitious Sustainable Aviation Fuel Mandate to start in 2025

Heat

- Incentivise non-domestic heat for small and medium enterprises with a fuel switching tariff, to enable organisations to switch from fossil fuels to a range of low carbon
- alternatives including heat pumps, biomass, green gas and hydrogen
- Incentivise large scale industrial heat decarbonisation projects through establishment of
- a Heat Contracts for Difference mechanism.

Plus Much More.....



Thank You

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