



Department for
Energy Security
& Net Zero

UK's Net Zero Innovation Plan - Progress and Outlook

Damitha Adikaari

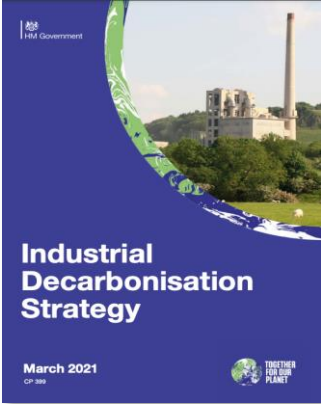
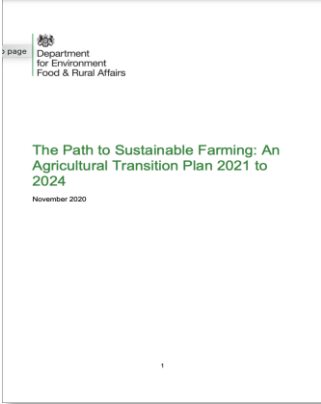
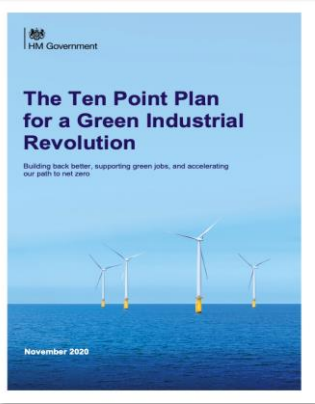
Director - Science and Innovation for Climate and Energy



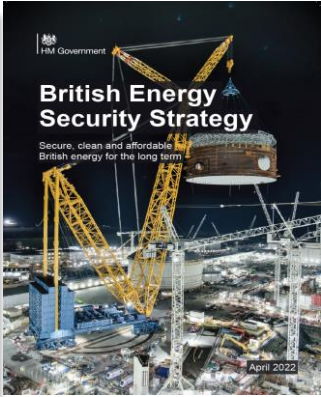
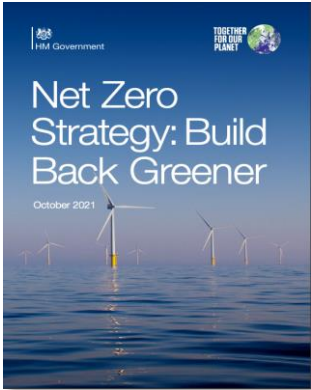
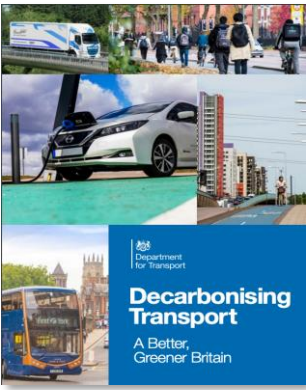
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UK has published a series of ambitious strategies...

Dec 20



Mar 21



Apr 22



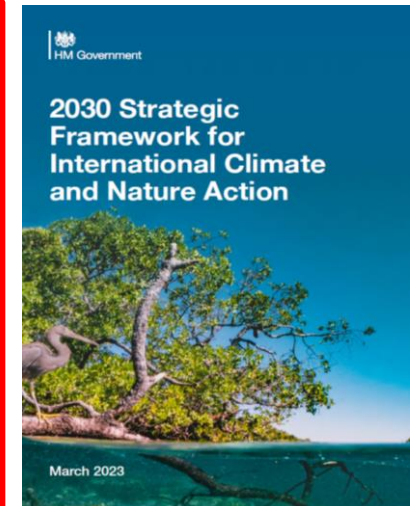
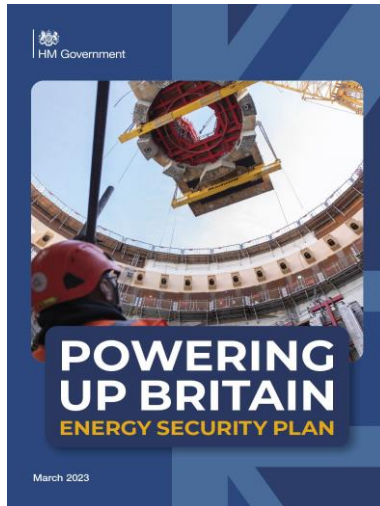
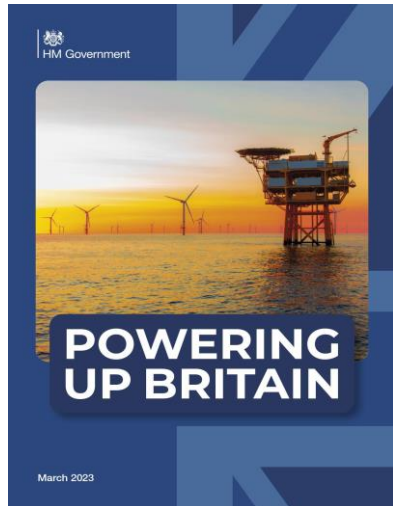
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...most recently

Powering Up Britain sets out the department's approach to delivering energy security and net zero, and acts as an introduction to **Powering Up Britain: Energy Security Plan**, and **Powering Up Britain: Net Zero Growth Plan**, both of which are complementary.

In parallel, numerous other related publications were released, such as:

- **2023 Green Finance Strategy**
- **Research & Innovation Delivery Plan 2022-25**
- **2030 Strategic Framework for International Climate and Nature**
- **International Climate Finance Strategy**



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Innovation is critical to drive down costs, create opportunities and develop new technologies

- The **10 Point Plan** and **Net Zero Strategy** set out how innovation is needed to **drive down the costs** of technologies, processes and systems, and explore new **business models, financing, regulatory frameworks** and the role of **consumers**.
- Innovation can enhance mature technology, more rapidly develop emerging technologies, and discover and invent new technologies.
- Technologies needed to deliver almost half of the CO₂ reductions required to reach net zero by 2050 are still in prototype phases (Fig 3).
- Working back from 2050, **major research and innovation challenges must be tackled this decade**.

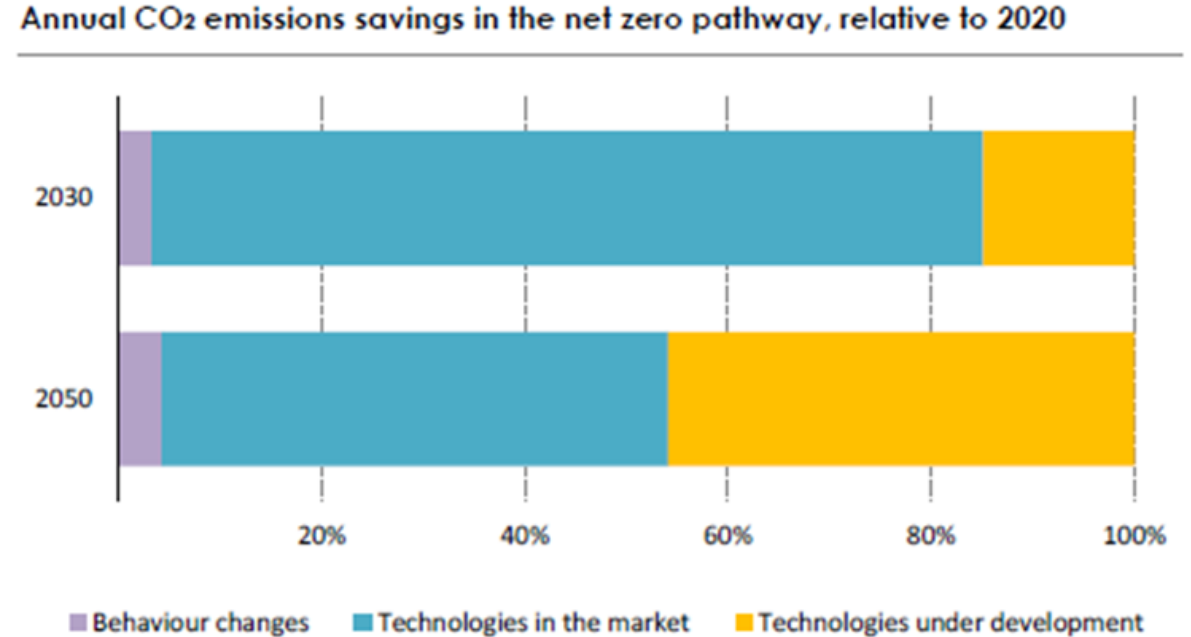


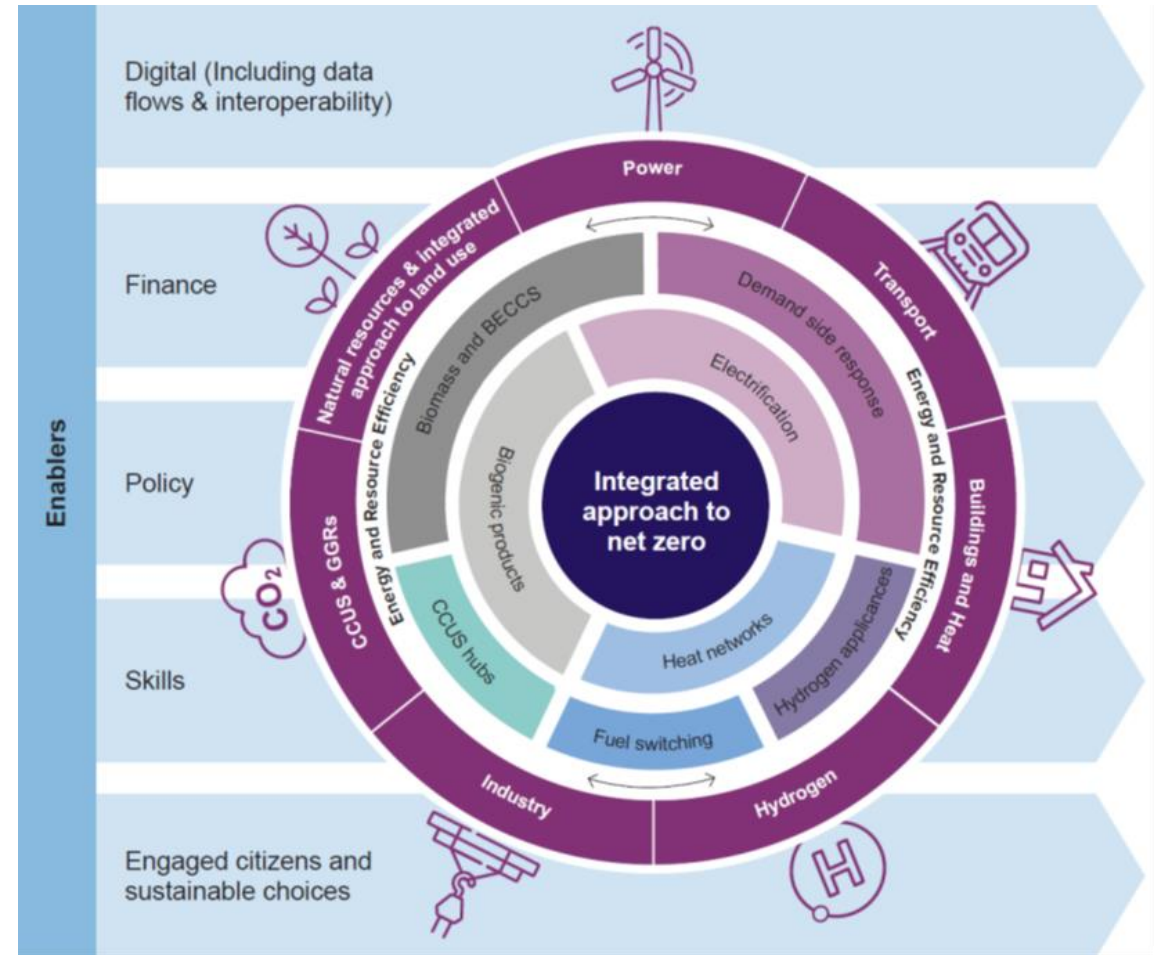
Fig 3 – High proportion of technologies needed for net zero by 2050 ‘under development’ (IEA, 2021)



UK Net Zero Research & Innovation Framework

- Sets the strategy and builds on the importance of innovation as an enabler of net zero.
- Outlines key research and innovation challenges that require development over the next 5-10 years to accelerate UK progress to net zero.
- Takes an integrated systems approach to innovation.
- Provides a focus for Government's net zero R&D plans and signals our intent to work with business and researchers to tackle these challenges.
- Set criteria for prioritising government net zero R&D:

- Maximising UK strategic advantage and developing UK energy security
- Expected contribution to delivering the UK's carbon budgets
- Retaining optionality of different net zero pathways

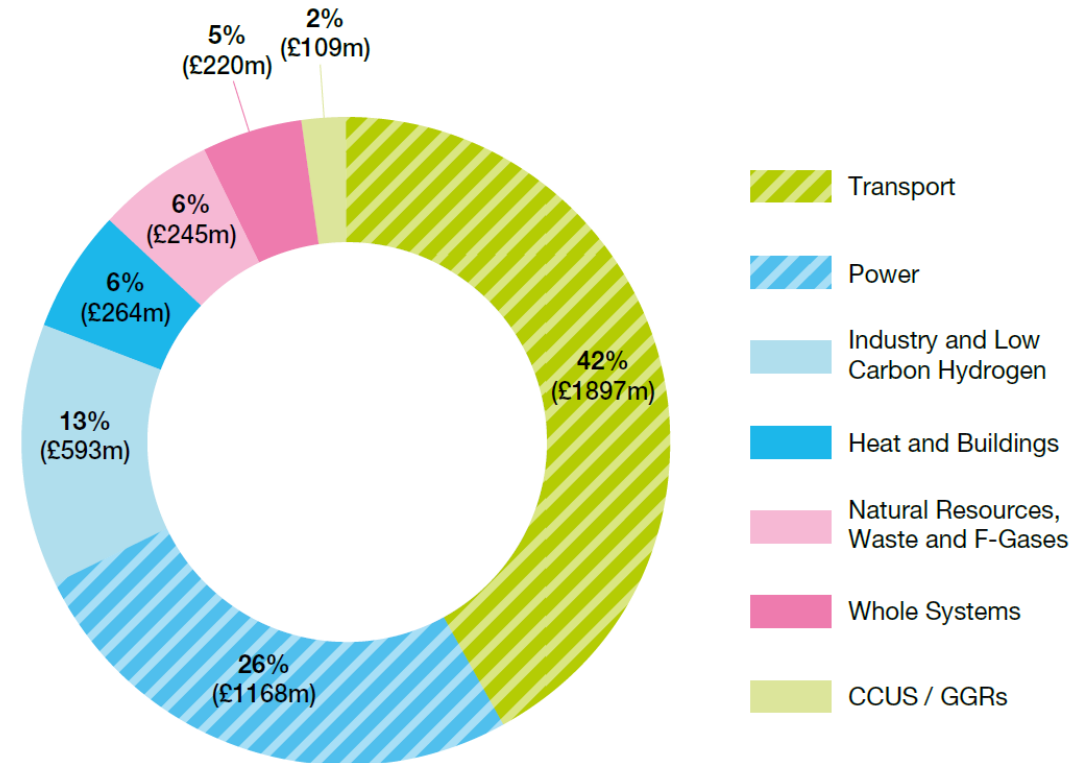


NZ Research & Innovation Delivery Plan 2022-2025

- Published the UK Net Zero Research and Innovation Framework Delivery Plan which sets out the **£4.2 billion of UK government spending on net zero research and innovation** across this Spending Review 2022-25.
- Shows what government is prioritising with the aim catalyse interest from researchers and further investment from innovative UK businesses.
- **NAO review of government's approach** to supporting net zero R&I recognised this work to improve cross-government collaboration and set clear priorities.
- Recommended the government consider:
 - The complexity of the funding landscape
 - Responsibility for end-to-end oversight of the innovation cycle through to commercialisation
 - Key outcomes and risk appetite across the government portfolio of programmes



Figure 3 - Planned proportion of spending per sector as announced by 31 December 2022



Note: The proportions and spending included in the chart are intended as illustrative as some spending will relate to more than one sector, for example aspects of spend on buildings, power and transport can overlap in certain instances.

£1bn Net Zero Innovation Portfolio (NZIP) and the £385m Advanced Nuclear Fund

- Aims to accelerate the commercialisation of innovative low-carbon technologies, systems and business models in power, buildings and industry and decrease the costs of decarbonisation.
- Investing in ten technology themes.
- Builds on previous £505m Energy Innovation Programme.
- Potential to unlock 300,000 jobs by 2030 in exports and domestic industry; enables savings across low carbon sectors; will have a strong regional impact.
- Portfolio will publish its first progress report this week.



NZIP/ANF Progress

Halfway through delivery of the portfolio – initial phase has been feasibility studies, best innovations are now being down selected for larger-scale demonstrations.

Key performance statistics

Number of projects



457

projects completed or ongoing

TRL progression



35%

of projects (for which we have more than one year of data) increased their TRL so far. (n=97)

Finance leveraged



£345m

BEIS funding leveraged 345 million in matched funding. (n=449)

Jobs created



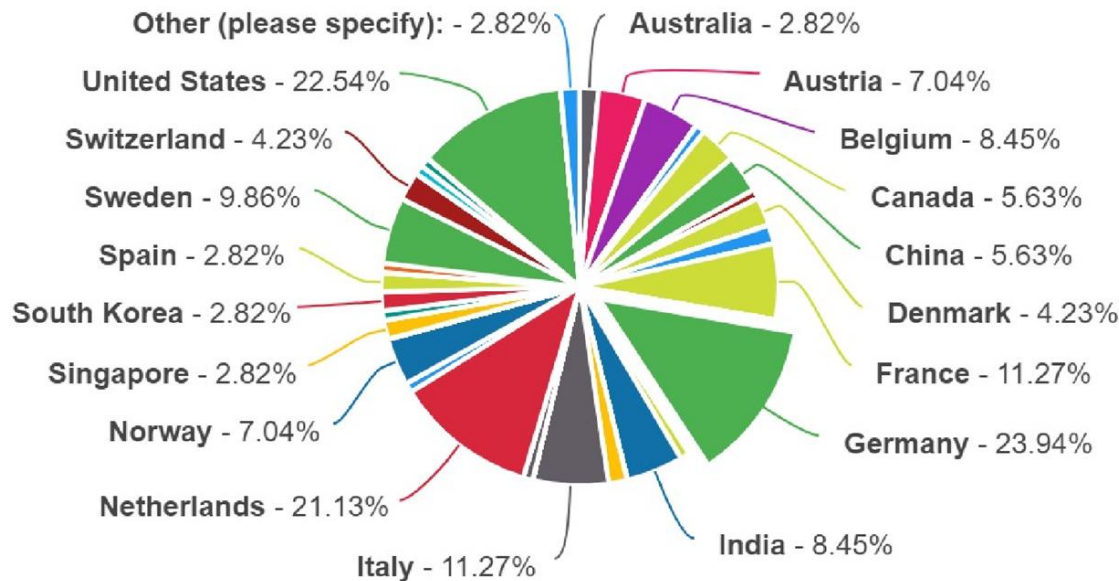
3,810

At least 3,810 full time equivalents (FTE) have been supported by NZIP. (n=354)

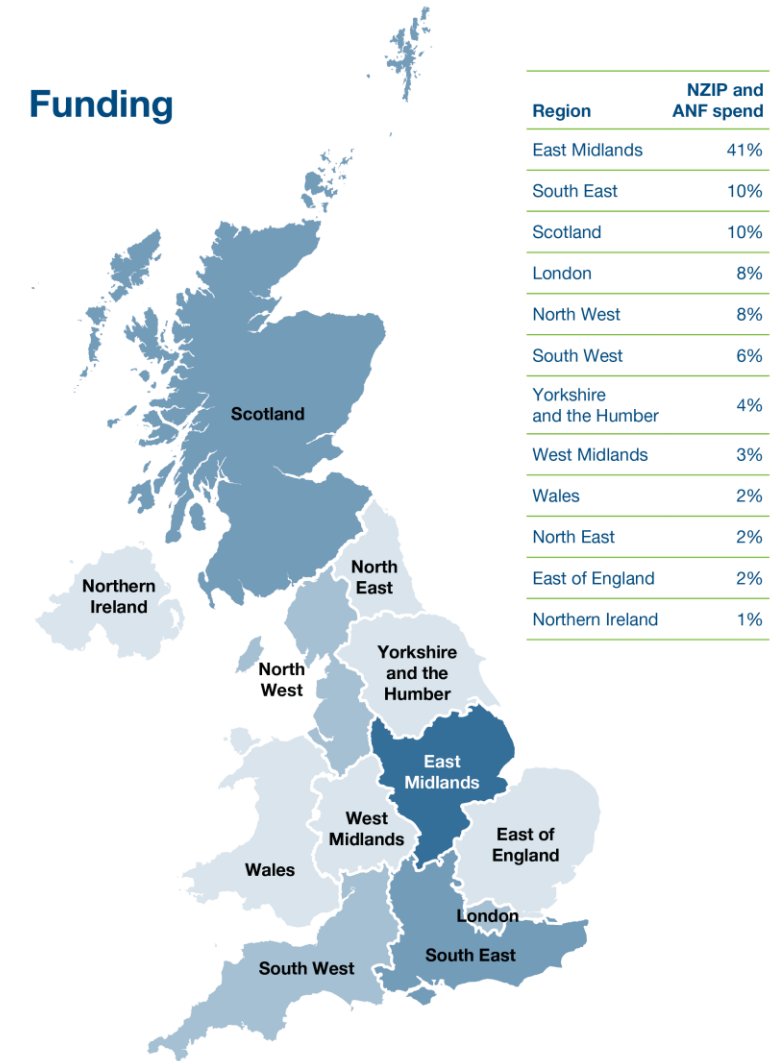


NZIP/ANF Progress

- NZIP supports projects across all UK regions, with the majority of spend being outside London and the South East.
- Projects developing new working collaborations with international partners. Leading countries: Germany, US, and the Netherlands.



Funding



Location data based on 316 projects' lead and partner organisation location.
The large East Midlands spend represents £210m funding for the Rolls Royce SMR project.

International collaboration for the transition

- **Mission Innovation**, launched at COP21, is the main intergovernmental platform for accelerating clean energy innovation. These members are responsible for >90% of public clean energy RD&D investments globally, cumulatively projected to be at least \$250bn this decade.
- UK is a leading member, including heading the Secretariat.
- Co-lead the **Green Powered Future Mission**, which aims to enable the integration of up to 100% variable renewable energy into the grid;
- Co-lead the **Clean Hydrogen Mission**, which is targeting reducing the cost of clean hydrogen to the end user to 2 USD/kg by 2030.
- Core Member of the Zero Emission Shipping Mission and the Net Zero Industries Mission, and a Support Member of the Carbon Dioxide Removal Mission and the Integrated Biorefineries Mission. The UK also co-leads the Heating and Cooling Innovation Community.

