Seventy-ninth report of Session 2022-23

Department for Energy Security and Net Zero, HM Treasury

Support for innovation to deliver net zero

Introduction from the Committee

In June 2019, Parliament passed an amendment to the Climate Change Act 2008 committing the UK to achieving net zero emissions by 2050. This will require the UK to reduce substantially its emissions from current levels, and the Government expects technological innovation to play a crucial part in the UK achieving this. In October 2021, The Government published its Net Zero Innovation Framework, setting out for the first time the 31 technology challenge areas it intends to support and the timescales within which it expects technological solutions to be delivered. In March 2023, the Government followed up the Framework with a delivery plan, setting out how government will prioritise investment into net zero innovation. The delivery plan set out £4.2 billion of government support, to be delivered across eight government departments, for the period from 2022 to 2025.

The newly formed Department for Energy Security & Net Zero (DESNZ) has responsibility for net zero policy, while the newly created Department for Science, Innovation & Technology (DSIT) has responsibility for supporting research and innovation and creating the underlying conditions for it to succeed. A host of public bodies may be involved in supporting the development and deployment of new technologies. This can range from UK Research and Innovation (UKRI) providing funding for research and the early stages of innovation, through to departmental policy teams creating the conditions to support market deployment, working with regulators and, for example, the UK Infrastructure Bank and British Business Bank.

Based on a report by the National Audit Office, the Committee took evidence on 15 June 2023 from the Department for Energy Security and Net Zero, the Department for Science, Innovation and Technology, and HM Treasury. The Committee published its report on 15 November 2023. This is the government's response to the Committee's report.

Relevant reports

- NAO report: Support for innovation to deliver net zero – Session 2022-23 (HC 1321)
- PAC report: Support for innovation to deliver net zero – Session 2022-23 (HC 1331)

Government response to the Committee

1. PAC conclusion: Too often The Government's plans for supporting the progression of net zero technologies are short-term, which risks jeopardising efforts to attract the large amounts of private investment needed to achieve net zero by 2050.

1a. PAC recommendation: DESNZ, working with the Treasury, should set out its plans for supporting priority technologies beyond the confines of the spending review period, including, where appropriate, potential funding support.

1.1 The government agrees with the Committee's recommendation**.**

Recommendation implemented

1.2 Departmental budgets are set at Spending Reviews to enable Ministers to consider the value for money of spending proposals across government priorities and within fiscal constraints, to ensure total spending is affordable. The government recognises the importance of long-term policy and funding certainty for net zero, particularly to mobilise private investment into the transition. The government's plans for all sectors of the economy are set out in Powering Up Britain, and government has provided targeted longer-term funding certainty to several priorities for net zero, including:

- Autumn Statement 2022 announced £6 billion of new government funding for energy efficiency, which will be made available from 2025 to 2028, in addition to £6.6 billion allocated this Parliament.
- Spring Budget 2023 confirmed up to £20 billion in long-term support for the early deployment of Carbon Capture, Usage and Storage (CCUS).
- At Autumn statement 2023, the government announced a £960 million Green Industries Growth Accelerator. This will support investments in manufacturing capabilities for the clean energy sectors where the UK can gain the clearest strengths: CCUS, hydrogen, offshore wind, electricity networks and nuclear.

1.3 On research and innovation (R&I), the government has committed £4.2 billion of funding support in the current Spending Review period (2022-2025), including the flagship £1 billion Net Zero Innovation Portfolio. More broadly, the government has steadily increased funding for R&I since 2016 and is committed to spending £20 billion per annum by 2024-25. The Prime Minister also recently announced an additional £150 million of long-term funding for the Green Future Fellowship, which will fund scientists and engineers to develop practical, breakthrough green technologies and climate change solutions.

1.4 In addition, government uses a range of policy levers to provide long term support, including the Contracts for Difference scheme for low-carbon electricity generation, through which generators have received almost £6 billion net in price support to date. Further, the government passed the Nuclear Energy (Financing) Act 2022, which enables new nuclear projects to benefit from a Regulated Asset Base model, reducing the cost of new build nuclear and providing certainty to private finance.

1b. PAC recommendation: [DESNZ] should explain how recent announcements to delay the phasing out of new fossil fuel vehicles and heating systems will impact on costs.

1.5 The government agrees with the Committee's recommendation.

Recommendation implemented

1.6 As the Prime Minister set out, the transition to net zero must be pragmatic, proportionate and credible, while taking into account that some measures under previous plans would have imposed significant upfront costs on families. For example, delaying the Electric Vehicle phase out date will allow consumers to choose the vehicle that best suits their budget, whether that means opting for an Electric Vehicle now or waiting to take advantage of falling prices over the coming decade.

1.7 The Zero Emission Vehicle mandate for the next seven years will require manufacturers to sell an increasing share of zero emission vehicles each year and help charge-point and car manufacturers develop their business plans and develop supply chains.

1.8 The government will also be introducing an exemption to the fossil fuel boiler phase out so that those households who cannot make the switch no longer need to. At the same time, the grants available for heat pumps have increased to £7,500, providing additional support to families to upgrade their heating systems. This, alongside policies such as the Clean Heat Market Mechanism, will grow the market, reducing prices in the long term.

1.9 The Climate Change Committee published analysis in October on the impact of these recent announcements, and from their 2023 Annual Progress Report, they have increased confidence in the UK meeting the forth Carbon Budget.

1.10 Through the *Net Zero Strategy* and *Powering Up Britain,* government has published two detailed plans setting out unprecedented levels of detail on the UK's plans to reach net zero. Each year the Department for Energy Security and Net Zero (DESNZ) publish updated forecasts of future emission projections and will continue to do so.

2. PAC conclusion: The Government is dependent on businesses delivering successful innovation to reach net zero, but too often it is difficult for businesses to know what support is available and how to access it.

2. PAC recommendation: Ahead of the next Spending Review, the Treasury, working with DESNZ and DSIT, should take the opportunity to review whether the current complex funding arrangements, which largely pre-date the development of the Innovation Framework, are best suited to supporting the fast-paced innovation needed to deliver many aspects of net zero.

2.1 The government agrees with the Committee's recommendation.

Target implementation date: Summer 2024

2.2 The scale and breadth of the net zero transition means a wide range of programmes will likely continue to be required as we determine the pathways towards net zero that are most effective, sustainable and represent the best value for money.

2.3 The government recognises that the current funding landscape can be complex for businesses to navigate and has taken steps to improve accessibility and understanding of innovation funding support. This includes publishing the Net Zero Research and Innovation Framework Delivery Plan that details the allocation of £4.2 billion of spending and the resulting programmes being supported over the current Spending Review period, aligned to the priorities in the Net Zero Research and Innovation Framework. Innovate UK has also launched an Innovation Hub which aims to help businesses find public funding and support for innovation in one place.

2.4 The Net Zero Innovation Board, chaired by the Government Chief Scientific Advisor, will review the current net zero R&I portfolio and consider evidence to assess progress and emerging R&I challenges for support. This will inform future allocation decisions, recognising the fast-paced nature of innovation needed to deliver net zero.

3. PAC conclusion: We are not convinced that the Government is paying sufficient attention to the practical challenges consumers can face in adopting low carbon technologies and how to overcome them.

3. PAC recommendation: When it next reviews progress against the innovation priorities, DESNZ, working with other government departments, should commit to assessing specifically the challenges consumers might face in adopting new technologies and whether these are being adequately addressed when re-assessing priorities.

3.1 The government agrees with the Committee's recommendation.

Target implementation date: Spring 2025

3.2 The Net Zero Strategy set out six clear principles on how the government will engage the public and support them to make green choices. This includes ensuring that green choices are affordable and easier to make.

3.3 In summer 2022 government launched a comprehensive energy advice service on GOV.UK to help consumers improve the energy performance of their homes, which is supported by a phoneline and in-person advice scheme.

3.4 The government has also spent over £2 billion to support the transition to zero emission vehicles. This funding has focused on reducing barriers to the adoption of such vehicles, including offsetting their higher upfront cost and accelerating the rollout of charge-point infrastructure.

3.5 Consumer interests and the potential challenges they face are a key consideration when designing R&I programmes. For example, through the £1 billion Net Zero Innovation Portfolio, the Heat Pump Ready programme tests how domestic heat pumps can be made more accessible, deployable and attractive to the consumer. Similarly, the Green Home Finance Accelerator develops new consumer finance models to make the initial capital required for building energy efficiency measures more accessible.

3.6 The government will further consider consumer challenges as it reviews progress against the innovation priorities. As part of this, DESNZ intends to publish an update on the Net Zero Research and Innovation Framework Delivery Plan by the end of the current Spending Review period in 2025.

4. PAC conclusion: Despite the Government's ambition to have an effective end-to-end innovation system, responsibility for overseeing progress is siloed, making it difficult to assess progress across each of the priority technology areas.

4. PAC recommendation: DESNZ, working with other departments, should identify clear responsibilities for overseeing cross-government progress on each of the net zero technologies. These responsibilities should include paying particular attention to whether factors that might impede deployment of viable technologies are being given early enough attention, for example by policy teams, regulators and the investment community.

4.1 The government agrees with the Committee's recommendation.

Target implementation date: Spring 2024

4.2 DESNZ has overall responsibility in government for the UK's net zero target and ensuring the whole of government works effectively to achieve it. The government has established arrangements for coordinating the main departments including the Domestic and Economic Affairs (Energy, Climate and Net Zero) Committee, chaired by the Deputy Prime Minister, responsible for considering matters relating to energy and to the delivery of the UK's domestic and international climate strategy.

4.3 Officials in DESNZ work with counterparts across government to coordinate action and manage cross-departmental risks and to ensure net zero is embedded in government policy and decision-making. The setting of common goals is also achieved through Outcome Delivery Plans, and the sector specific public commitments in the recent Net Zero Growth Plan, help to drive accountability for achieving net zero in each leading department.

4.4 For overall net zero delivery governance, the Net Zero Integrated Review Implementation sub-Group (sub-IRIG) comprises senior officials from across government with responsibility for establishing and implementing a cross-government net zero delivery strategy.

4.5 The Net Zero Innovation Board (NZIB), chaired by the Government Chief Scientific Adviser with representatives from across government, is responsible for providing coordinated and strategic oversight on net zero R&I programmes and ensuring alignment with government priorities.

4.6 A set of actions and responsibilities between the Sub-IRIG and NZIB will be agreed to strengthen governance around the end-to-end cross-government progress on net zero technologies. This will include identifying key interdependencies between R&I programmes and wider net zero policy, regulation and investment, and mitigating challenges as they are identified.

5. PAC conclusion: The Government has not yet defined what success will look like for the main net zero technology challenge areas and therefore lacks benchmarks with which to judge whether progress remains on track.

5. PAC recommendation: Government should define the outcomes, rather the outputs, that it is hoping to deliver from each technology in the short, medium and longer-term to enable it to benchmark progress and ensure that taxpayer support continues to be well targeted.

5.1 The government agrees with the Committee's recommendation.

Target implementation date: Spring 2024

5.2 The Net Zero Innovation Board, through its Innovation Delivery Board sub-group, will consider challenge outcomes for the current government net zero R&I portfolio as set out in the Net Zero Research and Innovation Framework Delivery Plan and agree these by Spring 2024.

5.3 The Innovation Delivery Board will regularly monitor progress of the portfolio at each of its meetings. DESNZ intends to publish an update on the Net Zero Research and Innovation Framework Delivery Plan ahead of the next Spending Review. This will allow time for most of the current innovation programmes to complete and an initial assessment against intended outcomes to be considered.

6. PAC conclusion: A well-run innovation programme always carries with it the risk of failure, but government has yet to define what failure is tolerable overall before its net zero objectives are jeopardised.

6. PAC recommendation: In reporting on progress on the priority technologies, government should include its assessment of which technologies are likely to deliver within the timescales required and those it regards as higher risk.

6.1 The government agrees with the Committee's recommendation.

Target implementation date: Spring 2024

6.2 The Net Zero Innovation Board, through its Innovation Delivery sub-group, will consider risk appetite and tolerance for programmes in the current net zero R&I portfolio as set out in the Delivery Plan and develop an overall government risk appetite statement by Spring 2024.

6.3 This Innovation Delivery Board will regularly monitor progress of the portfolio at each of its meetings. DESNZ intends to publish a progress update on the Net Zero Research and Innovation Framework Delivery Plan ahead of the next Spending Review. This will include a view on the progress and timescales for the development of different technologies.

7. PAC conclusion: There is no clear mechanism for reporting publicly progress in each of the priority technology areas.

7. PAC recommendation: For each of the technology areas, the Government should report publicly on progress against the measures of success that it has defined, to make it visible whether the initial expectations are being met.

7.1 The government agrees with the Committee's recommendation**.**

Target implementation date: Spring 2025

7.2 DESNZ intends to publish an update on the Net Zero Research and Innovation Framework Delivery Plan's progress by the end of the current Spending Review period in 2025.