

**To:** Climate and Ecological Emergency Working Group

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**SUBJECT:** BRIEFING NOTE ON GOVERNMENT'S 'NET ZERO STRATEGY: BUILD BACK GREENER'

**SUMMARY:** This report summarises the Government's recently published Net Zero Strategy, 'Build Back Greener', for the Working Group's information.

## **1. BACKGROUND**

- 1.1 The Government published the 'Net Zero Strategy: Build Back Greener' on 19 October 2021. The strategy sets out the Government's plan to reduce the country's greenhouse gas emissions to net zero by 2050.<sup>1</sup>
- 1.2 The strategy has four chapters:
  - Chapter 1: Why Net Zero;
  - Chapter 2: The Journey to Net Zero;
  - Chapter 3: Reducing Emissions across the Economy; and
  - Chapter 4: Supporting the Transition across the Economy.
- 1.3 Technical appendices set out information on carbon budgets and international emissions targets and the science on the changing climate.
- 1.4 The sections below summarise the main discussion points and proposals set out in the document. An executive summary has been extracted from the document and is included as Appendix 1 to this report.
- 1.5 There is a strong focus on technology and innovation throughout the strategy. Financial measures and investment tools are promoted to capture private sector resources for net zero projects. The role of education and skills is also stressed,

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<sup>1</sup> Available to view at:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1026655/net-zero-strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1026655/net-zero-strategy.pdf)

with the need to retrain existing workers and prepare young people for the emerging net zero economy.

- 1.6 The role of local authorities is dealt with in Chapter Four, and paragraphs 5.22 to 5.29 of this report summarise the Government's aims under the heading 'Local climate action'. The Government's focus is on setting clear expectations of how central and local government should interact in the delivery of net zero. The Government will set up a 'Local Net Zero Forum' to bring together national and local government senior officials on a regular basis to discuss policy and delivery options.
- 1.7 The strategy states that the Government will support local energy hubs to help all areas of England to reach net zero, promote best practice, share knowledge and incentivise local net zero projects that can attract commercial investment.

## 2 CHAPTER ONE: WHY NET ZERO

- 2.1. This chapter sets out the case for action on climate change. It stresses that we are already seeing the impacts of climate change today and that we need to act urgently to reduce global greenhouse gas emissions.
- 2.2. The strategy stresses that decarbonisation measures will not reduce emissions to absolute zero by 2050 and that greenhouse gas removals (GGR), including tree planting, carbon capture and storage technology, will be essential to compensate for remaining emissions from sectors such as industry, agriculture and aviation that are difficult to decarbonise completely.

## 3. CHAPTER TWO: THE JOURNEY TO NET ZERO

- 3.1. The strategy explores three scenarios for reaching net zero by 2050, modelled in detail in the Technical Annex, although it stresses that these are not 'most likely' or 'preferred' solutions:
  - **Scenario 1: High electrification** – widespread electrification with deep decarbonisation of the electricity supply;
  - **Scenario 2: High resource** – using low carbon hydrogen extensively, for decarbonising buildings, power and heavy vehicles, with increased tree planting; and
  - **Scenario 3: High innovation** – where innovations enable lower residual emissions and carbon capture technologies are used extensively.
- 3.2. Having considered these options, the strategy puts forward what it terms an 'indicative pathway' to 2037, prioritising emissions reductions where known technologies exist and minimising reliance on the use of greenhouse gas removals. This is designed to drive progress in the short-term, while keeping further options open to stay on track for net zero by 2050. Key features of the indicative pathway for different sectors are summarised below:

- **Power** (11 per cent of current emissions) – by 2035 all electricity will come from low carbon sources, while residual emissions will be limited to carbon capture and storage plants, unabated gas and energy from waste.
  - **Fuel supply and hydrogen** (5 per cent of current emissions) – emissions savings from the existing fuel supply sector will be offset by emissions from low carbon hydrogen, enabling significant emissions savings through fuel switching across a range of sectors. Hydrogen production will significantly increase in the early 2030s.
  - **Industry** (15 per cent of current emissions) – industry will be decarbonised by a combination of increased energy efficiencies, fuel switching and carbon capture, starting with major emitters, such as the steel sector.
  - **Heat and buildings** (17 per cent of current emissions) – emissions will be reduced by improved energy efficiency and the substantial uptake of low carbon heating up to 2035, when all new installations will be net zero compatible.
  - **Transport** (32 per cent of current emissions) – road transport will be transformed through the uptake of zero emission vehicles, increased cycling, walking and public transport. Energy efficiency improvements and low carbon fuels will decarbonise aviation and shipping.
  - **Natural resources** (20 per cent of current emissions) – emissions from natural resources will be reduced through increased afforestation, peat restoration and the cultivation of energy crops and short rotation forestry. Biodegradable waste will be diverted from landfill and improved farming practices will reduce emissions from livestock.
  - **Greenhouse gas removals** – deployment will be dependent on the development of carbon capture, usage and storage (CCUS) infrastructure.
- 3.3. The strategy builds on the Government’s *Ten Point Plan for a Green Industrial Revolution*<sup>2</sup> noting the ambition to create the conditions for the private sector to invest with confidence, expand new green industries (including hydrogen production and clean aviation) alongside the accelerating decarbonisation of buildings, transport and the electricity and heat networks.
- 3.4. The strategy notes the importance of attracting private-sector finance and highlights additional Government support to: deliver energy efficiency in homes and businesses; invest and strengthen the electricity distribution grid; expand sustainable electricity generation; accelerate hydrogen production; and provide research grants to develop carbon capture technologies.
- 3.5. The strategy puts forward four principles which will underpin the transition to net-zero:

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<sup>2</sup> ‘The Ten Point Plan for a Green Industrial Revolution’, HM Government (November 2020). See: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/936567/10\\_POINT\\_PLAN\\_BOOKLET.pdf#:~:text=Introduction%205%20The%20Ten%20Point%20Plan%20for%20a,Accelerating%20the%20Shift%20to%20Zero%20Emission%20Vehicles%2014](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf#:~:text=Introduction%205%20The%20Ten%20Point%20Plan%20for%20a,Accelerating%20the%20Shift%20to%20Zero%20Emission%20Vehicles%2014)

- Working with the grain of consumer choice;
- The biggest polluters pay most for the transition through fair carbon pricing;
- The most vulnerable are protected through support in the form of energy bill discounts and energy efficiency upgrades; and
- Working with businesses to deliver cost reductions in low-carbon technology, to reduce costs for consumers and to deliver benefits for businesses.

#### **4. CHAPTER THREE: REDUCING EMISSIONS ACROSS THE ECONOMY**

##### **Electricity**

- 4.1. By 2035, the strategy states, all electricity will come from low carbon sources, subject to security of supply. This will be achieved by: accelerating the delivery of solar and offshore wind; securing a decision on large-scale nuclear plants within the current parliament; maximising system flexibility; driving the rollout of smart meters; ensuring that consumers pay a fair price for electricity; and ensuring that the planning system supports low carbon energy infrastructure.
- 4.2. Regarding nuclear power, the strategy also states that the Government will launch a new £120 million Future Nuclear Enabling Fund, exploring options for future technologies, including Small Modular Reactors (SMRs). The Government is also progressing plans for an Advanced Modular Reactor (AMR) demonstrator project; there are a number of potential sites, although the Wylfa site in North Wales is the only location named in the strategy.
- 4.3. Even with major improvements in overall energy efficiency, revised market design and increased flexibility in the energy system, the transition to net-zero represents a doubling of electricity demand which requires a four-fold increase in low carbon electricity generation and significant expansion of distribution networks.
- 4.4. The strategy highlights the need for an energy system transformation to a smart and digital system alongside a new market design that supports and rewards flexibility. The planning system must also support the deployment of low carbon energy infrastructure; this will be achieved by updating the energy National Policy Statements and streamlining the consenting process.
- 4.5. The strategy notes that new low carbon generation assets will require investment of £280-£400 billion and an additional £20-£30 billion investment by 2037 in the national and local distribution systems, alongside a growth in industrial capabilities and skills.
- 4.6. The strategy supports the deployment of unsubsidised rooftop solar and local battery storage to complement the market-based approach of ensuring exporters receive a fair price through the Smart Export Guarantee.

##### **Heat and buildings**

- 4.7. The strategy states that the transition to low carbon buildings will be made affordable and achievable by phasing out the installation of new and replacement natural gas boilers by 2035 and ensuring that all heating systems used in 2050 are compatible with net zero.
- 4.8. The market for heat pumps will be expanded to support 600,000 installations a year by 2028, working with industry to reduce costs by at least 25 to 50 per cent by 2025 and to parity with gas boilers by 2030 at the latest. Households will be supported with a new £450 million Boiler Upgrade Scheme providing £5,000 capital grants and a new incentive for heating system manufacturers, while investing £60 million in heat pump innovation.
- 4.9. A range of interventions are set out to help households and businesses reduce their energy bills while making buildings warmer, including:
- Upgrading fuel-poor homes to EPC Band C by 2030 where reasonably practicable and providing additional funding to the Home Upgrade Grant and the Social Housing Decarbonisation Fund – investing £1.75 billion;
  - Consulting on phasing in higher minimum performance standards to ensure all homes meet EPC Band C by 2035, where cost-effective, practical and affordable;
  - Setting long-term regulatory standards to upgrade privately-rented homes to EPC C by 2028 and considering setting a long-term regulatory standard for Social Housing, subject to consultation;
  - Setting a minimum energy efficiency standard of EPC Band B by 2030 for privately-rented commercial buildings;
  - Reducing the energy consumption in commercial and industrial buildings by 2030, using measures including regulations and a performance-based measurement scheme;
  - Investing a further £1.425 billion in the Public Sector Decarbonisation Scheme, with the aim of reducing direct emissions from public sector buildings by 75 per cent by 2037;
  - Establishing large-scale trials of hydrogen for heating to inform a decision on the role of hydrogen in decarbonising heating in 2026. The Government will consult on the case for enabling or requiring hydrogen-ready boilers and broader heating system efficiencies;
  - Continuing to grow and decarbonise the UK Heat Network market through the £338 million Heat Network Transformation Programme of which at least £270 million will go towards the Green Heat Network Fund, introducing sector regulation and new heat network zones by 2025; and
  - Launching a new world-class policy framework for energy-related products to ensure products use less energy.
- 4.10. There are four enabling factors that the Government will address including: providing advice and guidance tailored to local circumstances; green finance

innovation; rebalancing energy prices to equalise zero-carbon energy prices with fossil fuel prices; and developing the skilled workforce.

### **Industrial decarbonisation**

- 4.11. The rate of industrial decarbonisation has slowed in recent years and the strategy recognises the importance of: carbon capture, utilisation and storage (CCUS); the need for further reductions of embedded carbon in the supply chain; energy efficiency savings; realising the demand side measures; and the impact of the anticipated increase in carbon pricing.
- 4.12. The need for short-to-medium term capital funding and revenue support to industry is recognised, with the aim of stimulating long-term private sector investment.
- 4.13. A programme of industrial decarbonisation is planned through the mid-2020s, recognising the differences between sectors and that key investment decisions are affected by the degrees of certainty on low carbon resources and zero carbon fuel types on production methods.

### **Hydrogen**

- 4.14. The strategy highlights the Government's commitment to further research and investment to reduce risk for the transition to a hydrogen economy for: haulage; electricity generation (for example fuel cells); long-term power storage; and the development of sustainable aviation fuel (SAF).<sup>3</sup>
- 4.15. The strategy acknowledges that the future demand for natural gas will decline and that the gas system will need to change to meet the net zero targets. In 2022 there will be a call for evidence and research undertaken into the introduction of blended hydrogen into the gas grid to support initial steps to decarbonise heating.

### **Transport**

- 4.16. The Government will accelerate the development of low carbon transport fuels, including biomass, and the development of UK plants to produce advanced fuels, with grant funding through schemes including the Future Fuels for Flight and Freight Competition (F4C) and Advanced Biofuels Demonstration Competition (ABDC).
- 4.17. The sale of new petrol and diesel cars and vans will be ended by 2030. All new cars and vans must be zero emission at the tailpipe by 2035. Subject to consultation, the sale of all new non-zero emission vehicles, including buses and HGVs, will be ended by 2040. The taxation of motoring will keep pace with the change to electric vehicles.

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<sup>3</sup> See also: 'UK Hydrogen Strategy', HM Government (August 2021), available to view at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1011283/UK-Hydrogen-Strategy\\_web.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1011283/UK-Hydrogen-Strategy_web.pdf)

- 4.18. Building on the £1.9 billion from the 2020 Spending Review, the Government has committed an additional £620 million to support the transition to electric vehicles. The funding will support the rollout of charging infrastructure, with a particular focus on local on-street residential charging, and targeted plug-in vehicle grants.
- 4.19. The strategy states that the Government will support decarbonisation by investing more than £12 billion in local transport systems over the current parliament. This will include investment of £2 billion in cycling and walking, with the aim that half of all journeys in towns and cities will be cycled or walked by 2030, with freight encouraged to shift to rail, cargo bikes and inland waterways. *The Transport Decarbonisation Plan*<sup>4</sup> announced the creation of at least one 'zero emission transport city'.
- 4.20. Investment will also be made in the *National Bus Strategy*<sup>5</sup>, a net-zero UK marine industry and phasing out the sale of non-zero-emission domestic shipping vessels, working with the UK Shipping Office for Reducing Emissions and investing in zero-emission flights and sustainable aviation fuels (SAF).

#### **Natural resources, waste and fluorinated gases**

- 4.21. The strategy anticipates that 75 per cent of farmers in England will be engaged in low carbon practices by 2030. The Government will introduce farming schemes, and increase investment in research and development, to help deliver net zero in agriculture and horticulture.
- 4.22. The commitment is also made to treble woodland creation rates by the end of the current Parliament, reflecting England's contribution to meeting the UK's overall target of increasing tree planting rates to 30,000 hectares per year and maintain new planting at least at this level from 2025 onwards.
- 4.23. An increase of £124 million is pledged to the existing £640 million Nature for Climate Fund targeted on peat restoration and woodland creation and management. Private investment will be supported in tree planting through the Woodland Carbon Code and the Government's Woodland Carbon Guarantee.
- 4.24. The Government will explore options for the near elimination of biodegradable municipal waste to landfill from 2028, with £295 million of capital funding which will allow local authorities in England to prepare to implement free separate food waste collections for all households from 2025.

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<sup>4</sup> 'Decarbonising Transport: A Better, Greener Britain', Department for Transport (2021), available to view at:  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf)

<sup>5</sup> 'Bus Back Better: National Bus Strategy for England', Department for Transport (2021), available to view at:  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/980227/DfT-Bus-Back-Better-national-bus-strategy-for-England.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/980227/DfT-Bus-Back-Better-national-bus-strategy-for-England.pdf)

- 4.25. A commitment is also made to complete a review of the fluorinated gas regulation and assess whether the Government can go further than the current requirements and international commitments, looking at what additional reductions in fluorinated gas use can be made to help the UK meet net zero by 2050.

### **Greenhouse gas removal**

- 4.26. The Government's ambition is to remove, by engineered means, 5 million tonnes of carbon dioxide a year by 2030 and deliver £100 million of innovation funding into Direct Air Carbon Capture and Storage and other greenhouse gas removal systems. The market and regulatory framework will be explored and developed.

## **5. CHAPTER FOUR: SUPPORTING THE TRANSITION ACROSS THE ECONOMY**

- 5.1. This chapter highlights key commitments to innovation in the new green sectors including:

- The hydrogen economy with carbon capture and storage;
- Green finance;
- Creating the skilled workforce to deliver net zero;
- Developing the supply chains to put the UK in the forefront of global markets; and
- Embedding net-zero in Government through leadership, public procurement, oversight of key projects and decarbonising the public sector.

### **Innovation for net zero**

- 5.2. The commitment is made to increase Government investment in research and development to £22 billion. The Government will publish the *Net Zero Research & Innovation Framework* to establish the challenges for the next five to ten years and deliver a programme of innovation to enable decarbonisation. The UK will also take a leadership role in *Mission Innovation 2.0*, a global initiative to accelerate clean energy innovation, with the goal of becoming a global leader in decarbonisation technologies, processes, services and business models.
- 5.3. Investment in research will be supported by a cross-government portfolio of net-zero innovation support to accelerate commercialisation, prioritising areas where there is a strong case for Government investment alongside leveraging funds from private sector. The Industrial Strategy Challenge Fund (ISCF), delivered by UK Research and Innovation (UKRI), has invested in eight challenges (including transforming food production and the Faraday Battery Challenge), which will be refreshed by the *Innovation Missions* programme.
- 5.4. The strategy states that there will be continued investment in research and development, including the creation of a new institution, the Advanced

Research and Innovation Agency (ARIA), specifically to fund high-risk, high-reward research.

- 5.5. The strategy notes the importance of market design, regulation and policy to incentivise the development and deployment of new technologies, particularly where competition and Government support has reduced the capital costs and created the right conditions and confidence. The *Net Zero Research & Innovation Framework*<sup>6</sup> sets out the structure for this approach.
- 5.6. The Government is engaging with industry to address the barriers to long-term investment and unlock the £2.2 trillion held in UK Pension Funds, alongside targeting the fiscal incentives for research and development and early-stage investment.
- 5.7. Non-financial support highlighted in the strategy includes international collaboration with *Horizon Europe* and with *Mission Innovation* to deliver clean energy innovation and low cost, low carbon hydrogen and, in the domestic market, the UK Research and Innovation (UKRI) Knowledge Transfer Network. Other support includes:
  - UKRI's digital platform pilot programme, that brings together investors and with net zero businesses;
  - Innovate UK's On-line Innovation Hub, to navigate the Government's funding offer; and
  - Innovate UK's EDGE service to enhance investment readiness.

### **Green investment**

- 5.8. Key commitments for green investment include:
  - Using the UK Infrastructure Bank (UKIB) to bring in private finance to kick-start large-scale infrastructure projects, regional growth, sector maturity and scale particularly by supporting projects led by local authorities;
  - Issuing further Green Gilts;
  - The Government-owned British Business Bank (BBB) has been charged with economic development to drive sustainability and incorporate net-zero across all activity; and
  - Introducing new Sustainability Disclosure Requirements through *Greening Finance: A Roadmap to Sustainable Investing* and a second iteration of the *Green Finance Strategy* to be published in 2022 that will outline the pathway to net zero.
- 5.9. The Government recognises that each sector will require strategic use of public funds, long-term policy frameworks and the leverage of private investment

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<sup>6</sup> 'UK Net Zero Research and Innovation Framework', HM Government (October 2021), available to view at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1030656/uk-net-zero-research-innovation-framework.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1030656/uk-net-zero-research-innovation-framework.pdf)

tailored to meet the technology and sector challenges and the funding life cycle (from early stage through to commercialised mass market).

- 5.10. Public funds will provide support for research and development, later stage investment from the Clean Growth Venture Capital Fund (VC) or support from the BBB, with UK Export Finance and the UKIB providing funding to bring forward private sector investments using models similar to that which has brought forward off-shore wind. The Industrial Decarbonisation and Hydrogen Revenue Support (IDHRS) scheme will unlock private finance for industrial carbon capture and hydrogen production projects by providing long-term certainty and reducing risks.
- 5.11. The strategy states that the new UKIB will be pivotal in accessing private sector finance to kick-start regional infrastructure projects as a cornerstone investor or guarantor to tackle climate change and support regional economic growth. The UKIB will also catalyse the role of local Government in the transition, by financing strategic infrastructure projects led by local authorities and providing investment advice and expertise.

### **Green jobs, skills and industries**

- 5.12. The strategy commits to creating and supporting a skilled workforce to deliver net zero and put UK supply chains at the forefront of global markets. The Government will:
  - Publish sector and supply chain development plans;
  - Support the development of a skilled, competitive supply chain for key green industries;
  - Reform the skills system, including introducing legislation, to incentivise training providers, employers and learners;
  - Deliver a Lifetime Skills Guarantee and grow post-16 training programmes aligned to the needs of green employers; and
  - Introduce a sustainability and climate change strategy for education and children's services to equip children and young people to contribute to the green economy.
- 5.13. The strategy recognises the need for engineers, digital and automation experts and the need to transition to a net zero economy and support the expected 440,000 new jobs across net zero industries by 2030. The support includes:
  - Supporting workers in high carbon economy jobs to transition into green jobs;
  - Working with businesses to ensure people from all backgrounds can access the opportunities;
  - Providing children and young people with high quality education and training to work in a green career, improving teacher training and development in STEM (science, technology, engineering and mathematics) and key subjects; and

- Expanding post-16 training programmes aligned to green employer needs.
- 5.14. Central to the reforms are the plans set out in the *Skills for Jobs White Paper*<sup>7</sup>, where employers set out their skills needs to drive provision at local colleges through the local skills development plan, and the Development Fund that undertook 18 pilots in July 2021.
- 5.15. Government will increase support for workers in high-carbon sectors to transition to green jobs, work with businesses to support inclusivity and access to a green career and build the foundations for future green careers. The Government is also working with the Green Apprenticeships Advisory Panel (GAAP) to align apprenticeships to net zero objectives and create the required green standards.
- 5.16. The Government has also published the *Carbon Capture, Usage and Storage (CCUS) Supply Chain Roadmap*<sup>8</sup> and will publish a hydrogen sector development plan in 2022. The strategy recognises that the impact of the transition will not be evenly spread across the UK, reflecting the areas where new industries will flourish and old industries contract.

### **Embedding net zero in Government**

- 5.17. The commitments in this section include, through the *Environment Bill*, embedding environmental issues in national policy-making through the consideration of five environmental principles:
- Protection – policy-makers will embed environmental protection policies in other policy fields;
  - Prevention – preventing, reducing or mitigating environmental harm;
  - Rectification – damage to the environment to be tackled at source;
  - Polluter pays – responsibility for mitigation or compensation for pollution; and
  - Precautionary – the need for scientific certainty shall not be used to postpone cost-effective measures to prevent environmental degradation.
- 5.18. The Government will also ensure that decisions on spending are informed by their impact on net zero, positive measures will reduce carbon emissions from procurement and the Government will continue to fund the £475 million a year Public Sector Decarbonisation Scheme.

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<sup>7</sup> 'Skills for Jobs: Lifelong Learning for Opportunity and Growth', Department for Education (January 2021), available to view at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/957810/Skills\\_for\\_jobs\\_lifelong\\_learning\\_for\\_opportunity\\_and\\_growth\\_print\\_version\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957810/Skills_for_jobs_lifelong_learning_for_opportunity_and_growth_print_version_.pdf)

<sup>8</sup> 'CCUS Supply Chains: a roadmap to maximize the UK's potential', Department for Business, Energy and Industrial Strategy (May 2021), available to view at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/984308/ccus-supply-chains-roadmap.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/984308/ccus-supply-chains-roadmap.pdf)

- 5.19. The strategy recognises the need for a consistent approach across the UK (and with the devolved administrations) and the HM Treasury Green Book has a major priority to ensure spending decisions contribute to net zero. The strategy notes that the industry regulators have a key role to play and have legal obligations in setting strategic priorities to achieve net zero.
- 5.20. Public sector procurement will include the Social Value Model and a requirement for larger public sector tenders to require the commitment of the tenderer to achieve net zero by 2050 and detail their emissions in the Carbon Reduction Plan. Policy will be brought forward to allow procurers to balance carbon and cost.
- 5.21. The strategy promotes increased transparency in reporting and outcomes against the quantified targets in power, industry, fuel supply and hydrogen, heat and buildings, transport, natural resources, waste and fluorinated gases and Greenhouse Gas Removal.

### **Local climate action**

- 5.22. In supporting decarbonisation and regeneration in local areas and in communities the key commitments of the strategy are to:
- Set clear expectations on how local and central Government interact in the delivery of net zero;
  - Establish a Local Net Zero Forum to bring together national and local government officials on a regular basis to discuss policy and delivery options for net zero; and
  - Continue the Local Net Zero Programme including:
    - Supporting the Local Net Zero Hubs (formerly local energy hubs) and Local Enterprise Partnerships (LEP);
    - Promoting best practice and supporting local authorities to develop net zero projects that can attract commercial interest; and
    - Increase knowledge-sharing and sharing successful net zero solutions.
- 5.23. Local authorities are recognised as having a key role to play (the strategy claims that 82 per cent of all UK emissions are within the scope of influence of local authorities). The strategy considers that, although a new general statutory requirement is not required, there is a real need to support local leaders by clarifying national expectations and enhancing the capacity and capabilities of local areas to accelerate and deliver net zero. Taking a place-based approach to net zero, the strategy states, will also ensure that the opportunities from the transition support the Government's levelling up agenda.
- 5.24. The strategy recognises that coastal communities face significant challenges as they may be vulnerable to more frequent flooding, rises in sea level and accelerated coastal erosion; however, they may be able to utilise tidal energy or industrial scale water source heat pump technologies.

- 5.25. The strategy pledges that local leaders and the community will be empowered to deliver emissions savings, including continuing to provide support for public and private investment opportunities. To support this the Government will:
- Set clearer expectations for local places;
  - Provide resources to deliver stronger contributions to net zero targets with dedicated funding streams; and
  - Build capacity and capability and support areas to accelerate delivery.
- 5.26. The Department for Business, Energy and Industrial Strategy (BEIS) will take overall responsibility for improving coordination with local government. BEIS will chair the new Local Net Zero Forum to support the establishment of clearer delivery roles for local government and provide a single engagement route to central Government.
- 5.27. The strategy notes that funding for local climate action is sourced from a combination of the Local Government Finance Settlement, Government grants and support schemes, borrowing and private finance – some 22 dedicated grant schemes for net zero work from central to local government. Additional investment advice and lending support for strategic and high-value, local authority-led projects is available from the UK Investment Bank (UKIB).
- 5.28. The strategy notes the importance of local authorities and local communities working in partnership to deliver local energy solutions, decarbonise heat and power in buildings, decarbonise local transport and deliver local green infrastructure and Local Nature Recovery strategies – which the Government will support through the launch of the *National Framework of Green Infrastructure Standards* in 2022.
- 5.29. The new Community Renewal Fund, the Rural Community Energy Fund (RCEF), the Levelling-Up Fund and the Towns Fund enable local areas to tackle net zero goals tailored to their areas – noting the importance of development stage grants to projects focusing on technologies including solar, wind, low carbon heating and electric vehicle charging. Community energy schemes have predominately been financed commercially through share offers and borrowing against future revenues.

### **Empowering the public and business to make green choices**

- 5.30. The strategy's aim is to make it significantly easier, clearer and cheaper to choose green options. The Government intends to work within the grain of existing behaviour and trends by working in partnership with local authorities, voluntary organisations, social enterprise regulators and businesses to encourage the behaviours that impact on net zero, including:
- Adopting new low carbon technologies;
  - Using energy more efficiently; and
  - Making everyday business and consumer choices that are green.
- 5.31. The six principles underpinning the green choices are to:

- Minimise the 'ask', by sending clear regulatory signals;
- Make the green choice easier by addressing major barriers and reducing the impact on people's lives;
- Make the green choice affordable and mobilise savings into green Local Climate Bonds;
- Empower people and businesses to make their own choices, with clear information coupled with tailored impartial advice (e.g. Simple Energy Advice service) and operational data (e.g. in-home displays for smart meters);
- Motivate and build public acceptance for major change, recognising that it is vital to listen to public views on how to reach net zero and shape policies and actions accordingly, including avoiding negative impacts on disadvantaged groups; and
- Present a clear vision on how to get to net zero and the role of people and business.

**APPENDIX 1: H.M. GOVERNMENT, 'NET ZERO STRATEGY: BUILD BACK GREENER' – EXECUTIVE SUMMARY**





## The policies and proposals for power in the Net Zero Strategy will ...

Support for up to 59,000 jobs in 2024 and up to 120,000 jobs in 2030

Start to mobilise additional public and private investment of £150-270 billion, in line with our 2037 delivery pathway

Fully decarbonise our power system by 2035

The net zero economy will be underpinned by cheap clean electricity, made in Britain. A clean, reliable power system is the foundation of a productive net zero economy as we electrify other sectors – so **we will fully decarbonise our power system by 2035**, subject to security of supply. Our power system will consist of abundant, cheap British

renewables, cutting edge new nuclear power stations, and be underpinned by flexibility including storage, gas with CCS, hydrogen and ensure reliable power is always there at the flick of a switch. The transformation of the power sector will bring high skill, high wage job opportunities right across the UK.

### Key policies:

- By 2035 the UK will be powered entirely by clean electricity, subject to security of supply.
- Secure a final investment decision on a large-scale nuclear plant by the end of this Parliament, and launch a new £120 million Future Nuclear Enabling Fund, retaining options for future nuclear technologies, including Small Modular Reactors, with a number of potential sites including Wylfa in North Wales.
- 40GW of offshore wind by 2030, with more onshore, solar, and other renewables – with a new approach to onshore and offshore electricity networks to incorporate new low carbon generation and demand in the most efficient manner that takes account of the needs of local communities like those in East Anglia.
- Moving towards 1GW of floating offshore wind by 2030 to put us at the forefront of this new technology that can utilise our North and Celtic Seas – backed by £380 million overall funding for our world-leading offshore wind sector.
- Deployment of new flexibility measures including storage to help smooth out future price spikes.



# Fuel Supply & Hydrogen

## The policies and proposals for fuel supply and hydrogen in the Net Zero Strategy will...

Support up to 10,000 jobs in 2030 in fuel supply

Start to mobilise additional public and private investment of £20-30 billion, in line with our 2037 delivery pathway

Deliver 5 GW of hydrogen production capacity by 2030, whilst halving emissions from oil and gas

While electricity will be the primary source of energy, we cannot rely on it alone. Many sectors require low carbon energy, including those where electrification is not a viable option, making the supply of cleaner fuels essential to achieving net zero. Building on commitments in the *North Sea Transition Deal*, we will significantly reduce emissions from traditional oil and gas fuel supplies,

whilst scaling-up the production of low carbon alternatives such as hydrogen and biofuels. Current gas prices spikes underline the need to get off hydrocarbons as quickly as possible, but we will manage the transition in a way that protects jobs and investment, uses existing infrastructure, maintains security of supply, and minimises environmental impacts.

### Key policies:

- We have set up the Industrial Decarbonisation and Hydrogen Revenue Support (IDHRS) scheme to fund our new hydrogen and industrial carbon capture business models. We will be providing up to £140 million to establish the scheme, including up to £100 million to award contracts of up to 250MW of electrolytic hydrogen production capacity in 2023 with further allocation in 2024.
- Introducing a new climate compatibility checkpoint for future licensing on the UK Continental Shelf and regulating the oil and gas sector in a way that minimises greenhouse gases through the revised Oil and Gas Authority strategy.



# Industry

## The policies and proposals for industry in the Net Zero Strategy will...

Support up to 54,000 jobs in 2030 in industry

Start to mobilise additional public and private investment of at least £14 billion in industry, in line with our 2037 delivery pathway

Deliver four carbon capture usage and storage (CCUS) clusters, capturing 20-30 MtCO<sub>2</sub> across the economy, including 6 MtCO<sub>2</sub> of industrial emissions, per year by 2030

We will decarbonise industry in line with our net zero goals whilst simultaneously transforming our industrial heartlands by attracting inward investment, future-proofing businesses, and securing high wage, high skill jobs. We will do this by supporting industry to switch to cleaner fuels; helping them improve their resource and energy efficiency, and through fair carbon pricing to drive deep decarbonisation of industry. Growing new industries in low carbon hydrogen alongside

CCUS and renewable energy will put our industrial 'SuperPlaces' at the forefront of technological development – accelerating decarbonisation in 'clusters', which account for approximately half of the UK's industrial emissions. These clusters could have the opportunity to access support under government's CCUS programme, which includes the £1 billion CCS Infrastructure Fund and revenue support mechanisms.

### Key policies:

- Following the Phase 1 of the Cluster Sequencing process, the Hynet and East Coast Clusters, will act as economic hubs for green jobs in line with our ambition to capture 20-30 MtCO<sub>2</sub> per year by 2030. This puts Teesside and the Humber, Merseyside and North Wales, along with the North East of Scotland as a reserve cluster, among the potential early SuperPlaces which will be transformed over the next decade.
- Future-proofing industrial sectors, and the communities they employ through the £315 million Industrial Energy Transformation Fund (IETF), (£289 million for England, Wales and Northern Ireland, £26 million for Scotland).
- Incentivise cost-effective abatement in industry at the pace and scale required to deliver net zero, through the UK ETS by consulting on a net zero consistent UK ETS cap (in partnership with the Devolved Administrations).



# Heat and Buildings

## The policies and proposals for heat and buildings in the Net Zero Strategy will...

Support up to 100,000 jobs in the middle of the 2020s and up to 175,000 in 2030

Start to mobilise additional public and private investment of approximately £200 billion, in line with our 2037 delivery pathway

Set a path to all new heating appliances in homes and workplaces from 2035 being low carbon

Reaching net zero means tackling all sources of emissions – and heating for homes and workspaces makes up almost a third of all UK carbon emissions. So we will improve the energy efficiency of housing and non-domestic properties across the UK, ensuring they require less energy to heat, making them cheaper to run and more comfortable to live and work in while reducing our dependence on imported energy. We are setting the ambition that, by 2035, once costs have come down, all new heating appliances installed in homes and workplaces will be low-carbon technologies, like electric heat pumps or hydrogen boilers. We will take a decision in 2026 on the role of hydrogen heating. Crucially, this will be a gradual transition that

works with the grain of consumer choice. But the costs of low carbon technology can fall quickly – working with industry, we expect a heat pump to be as cheap to buy and run as a gas boiler this decade. We want to reduce electricity costs so when the current gas spike subsidies we will look at options to shift or rebalance energy levies (such as RO and FiTs) and obligations (such as ECO) away from electricity to gas over this decade. This will include looking at options to expand carbon pricing and remove costs from electricity bills while ensuring that we continue to limit any impact on bills overall. We know that in the long run, green products are more efficient and cheaper, and we are putting fairness and affordability at the heart of our approach.

### Key policies:

- An ambition that by 2035, no new gas boilers will be sold.
- A new £450 million three-year Boiler Upgrade Scheme will see households offered grants of up to £5,000 for low-carbon heating systems so they cost the same as a gas boiler now.
- A new £60 million Heat Pump Ready programme that will provide funding for pioneering heat pump technologies and will support the government's target of 600,000 installations a year by 2028.
- Delivering cheaper electricity by rebalancing of policy costs from electricity bills to gas bills this decade.

- Further funding for the Social Housing Decarbonisation Scheme and Home Upgrade Grants, investing £1.75 billion. Additional funding of £1.425 billion for Public Sector Decarbonisation, with the aim of reducing emissions from public sector buildings by 75% by 2037.
- Launching a Hydrogen Village trial to inform a decision on the role of hydrogen in the heating system by 2026.



# Transport

## The policies and proposals for transport in the Net Zero Strategy will ...

Support for up to 22,000 jobs in 2024 and up to 74,000 jobs in 2030

Start to mobilise additional public and private investment of around £220 billion, in line with our 2037 delivery pathway

Remove all road emissions at the tailpipe and kickstart zero emissions international travel

We will transform our cities and towns with greener, faster and more efficient transport. Our streets will be cleaner and people healthier from breathing cleaner air, walking and cycling more. Our zero emissions vehicle (ZEV) mandate will guarantee greater number of zero emission vehicles on our roads, unlocking the transformation of our road transport. Additional funding will support our automotive sector to stay at the cutting edge and capture jobs of the future. Significant new investment in vehicle grants and electric vehicle infrastructure will ensure that we see even more green vans delivering our goods and big improvements in local public

chargepoint provision. We will increase the share of journeys taken by public transport, cycling and walking, electrifying more railway lines, investing £3 billion to transform bus services and £2 billion for cycling. We will build on our strong maritime heritage and the success of the Clean Maritime Demonstration Competition to deliver a more ambitious multi-year programme for the sector. Setting out an ambitious position on SAF will set us on a path to decarbonise this challenging sector. Accelerating the decarbonisation of transport will save lives and significantly reduce noise, making our urban centres more enjoyable places to live.

### Key policies:

- A zero emission vehicle mandate to improve consumer choice and ensure we maximise the economic benefit from this transition by giving a clear signal to investors. This will deliver on our 2030 commitment to end the sale of new petrol and diesel cars, and 2035 commitment that all cars must be fully zero emissions capable.
- Further funding of £620 million for zero emission vehicle grants and EV Infrastructure, including further funding for local EV Infrastructure, with a focus on local on street residential charging.
- Allocating a further £350 million of our up to £1 billion Automotive Transformation Fund (ATF) to support the electrification of UK vehicles and their supply chains.
- Building on the success of our £20 million zero emission road freight trials, we will expand these to trial three zero emission HGV technologies at scale on UK roads to determine their operational benefits, as well as their infrastructure needs.

- £2 billion investment which will help enable half of journeys in towns and cities to be cycled or walked by 2030.
- £3 billion to create integrated bus networks, more frequent services and bus lanes to speed journeys.
- Transformation of local transport systems, with 4,000 new zero emission buses and the infrastructure to support them, and a net zero rail network by 2050, with the ambition to remove all diesel-only trains by 2040.
- Building on the success of the Clean Maritime Demonstration Competition, we will be extending this to a multi-year programme, delivering real-world demonstrations and technology trials of clean maritime vessels and infrastructure to decarbonise the maritime sector. This is part of our commitment to a UK Shipping Office for Reducing Emissions.
- Significant investment in rail electrification and city rapid transit systems.
- Aim to become a world-leader in zero emission flight and kick-starting the commercialisation of the UK sustainable aviation fuel so people can fly, and connect without guilt. Our ambition is to enable delivery of 10% SAF by 2030 and will be supporting UK industry with £180 million funding for the development of SAF plants.



# Natural Resources, waste and fluorinated gases

The policies and proposals for natural resources, waste, and fluorinated gases in the Net Zero Strategy will...

New employment opportunities across the UK. Afforestation in England could support up to 1,900 jobs in 2024 and 2,000 jobs in 2030	Start to mobilise additional public and private investment of approximately £30 billion, in line with our 2037 delivery pathway	Treble woodland creation rates in England, contributing to the UK's overall target of increasing planting rates to 30,000 hectares per year by the end of this Parliament
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Halting climate change and protecting the natural world are two sides of the same coin, so we will restore our countryside to reduce emissions, sequester carbon and build our resilience to climate change at the same time. We will support farmers to implement a range of low carbon farming practices that can help increase productivity and enable more efficient use of land, such as through agroforestry. We will increase tree planting to sequester carbon, and protect and restore our peatlands. As part of reforms to the resources and waste system, we also will move towards a circular economy, improve resource efficiency, and achieve near elimination of biodegradable waste to landfill. We will continue to phase down the use of F-gases in line with domestic regulations and international commitments.

## Key policies:

- Supporting low-carbon farming and agricultural innovation through the Farming Investment Fund and the Farming Innovation Programme to invest in equipment, technology, and infrastructure to improve profitability, benefit the environment and support emissions reductions.
- We will boost the existing £640 million Nature for Climate Fund with a further £124 million of new money, ensuring total spend of more than £750 million by 2025 on peat restoration, woodland creation and management – above and beyond what was promised in the manifesto. This will enable more opportunities for farmers and landowners to support Net Zero through land use change.
- Restoring approximately 280,000 hectares of peat in England by 2050 and trebling woodland creation rates in England, contributing to the UK's overall target of increasing planting rates to 30,000 hectares per year by the end of the Parliament.
- £75 million on net zero related R&D across Natural Resources, Waste & F-gases, to inform our pathway to 2037.

- To support our commitment to explore options for the near elimination of biodegradable municipal waste to landfill from 2028, we are bringing forward £295 million of capital funding which will allow local authorities in England to prepare to implement free separate food waste collections for all households from 2025.



# Greenhouse Gas Removals

## The policies and proposals for GGRs in the Net Zero Strategy will provide...

New, highly skilled, jobs in our industrial heartlands

Start to mobilise additional public and private investment of around £20 billion, in line with our 2037 delivery pathway

An ambition to deploy at least 5 MtCO<sub>2</sub>/year of engineered GGRs by 2030.

Our most important step to achieving net zero is to take ambitious decarbonisation measures across society. However, greenhouse gas removals (GGRs) will also play a critical role in balancing residual emissions from the hardest to decarbonise sectors such as aviation, agriculture, and heavy industry. Our innovation-led approach positions the UK as a global leader in this rapidly developing sector.

Government intervention in the short term will support early commercial deployment of GGRs, with an ambition to move towards a market-based framework for GGRs. This will support our delivery of net zero emissions and position us to export our skills and expertise, capitalising on economic opportunities for the UK and supporting the global shift to net zero.

## Key policies:

- Delivering £100 million of investment in GGR innovation could enable further deployment of GGRs, which in turn will leverage private investment and demand for transferrable engineering expertise from the UK's oil and gas sector.
- Explore options for regulatory oversight to provide robust monitoring, reporting and verification (MRV) of GGRs, following the recommendations of the BEIS-led MRV Task & Finish Group involving experts from industry and academia.



## Supporting the transition with cross-cutting action

We will maximise the opportunities of this transition, and make sure we are geared up to deliver these changes by also taking cross-cutting action. As the host nation for COP26 in Glasgow this year, we will use our global platform to continue to urge countries to set targets to get to net zero by 2050, and more ambitious 2030 emissions reduction targets to get us there. We will back innovation and our world-leading green finance sector. We will support each stage of the innovation chain to drive down costs and bring through key technologies and ideas to meet net zero. We will work with the private sector to leverage private investment to provide the finance needed, while providing the conditions for green finance to flourish.

We will put consumers at the heart of the transition and our goal is to make choosing green options significantly easier, cheaper, and more rewarding. We will back training and skills, supporting workers to retrain and upskill and build low carbon industries with strong UK supply chains that are resilient to changes. We will also take a place-based approach to net zero, working with local government to ensure that all local areas have the capability and capacity for net zero delivery as we level up the country. And Government is leading the way – embedding climate into our policy and spending decisions, increasing the transparency of our progress on climate goals, and providing funding to drive ambitious emissions reductions in schools and hospitals.

### Key policies:

- Deliver at least £1.5 billion of funding to support net zero innovation projects.
- Use the UK Infrastructure Bank (UKIB) to crowd in private finance, support more than £40 billion of investment, and pull through low carbon technologies and sectors to maturity and scale.
- Introduce a new Sustainability Disclosures Regime, including mandatory climate related financial disclosures and a UK green taxonomy.
- Reform the skills system so that training providers, employers and learners are incentivised and equipped to play their part in delivering the transition to net zero.
- Publish an annual progress update against a set of key indicators for achieving our climate goals.