June 2021

Joint Recommendations

2021 Report to Parliament

Climate Change Committee

Climate Change Committee Recommendations

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Table A1 Recommendations for Number 10 and Cabinet Office		Timing
Cross-cutting	Use the **Cabinet Committees** on Climate Strategy and Climate Action to drive home the need for more pace in policy development across Departments. Consider whether additional governance mechanisms such as independent delivery bodies are required in particular areas, such as heat decarbonisation.	2021-22 Priority recommendation
	Commit to a **'Net Zero Test'** to ensure that all Government decisions are compatible with the legislated emissions targets.	2021 Priority recommendation
	Develop (with BEIS) a **public engagement strategy** for Net Zero which builds on the findings of the UK Climate Assembly by involving people in decision-making, providing trusted information on decarbonisation choices and the need to reduce emissions and adapt to climate change. The strategy should also identify preferred policy options to empower people to contribute fully towards the path to Net Zero.	2021-22 Priority recommendation
	Support **local government** (with MHCLG) to play a full role in the Net Zero transition, including through increased resourcing, guidance, involvement in local area energy plans, statutory reporting on the emissions from their estate and reforming the planning framework to enable delivery of low-carbon and climate-resilient measures. This is likely to require additional funding for staffing and resources for local delivery plans, alongside a 'duty to collaborate' to encourage authorities to work with local, regional and national partners to deliver their climate ambitions.	2021-23 (funding for local authorities at next Budget) Priority recommendation
	Cabinet Office should ensure that **adaptation** is integrated into major upcoming policies in the next two years related to the priority CCRA3 risk for which it has lead responsibility, coordinating work with other relevant departments as necessary: • Multiple risks to the UK from climate change impacts overseas In addition, for the coming five-year period (2023-2028), Cabinet Office should outline appropriate actions in the next **National Adaptation Programme** to address the adaptation gap identified for the other risks and opportunities in the CCRA3 for which it is the lead department (see Adaptation Report Annex).	By 2023 Priority recommendation
	Review **guidance documents** used in policy and business case development (e.g. the Green Book) and ensure these are consistent with the requirements of Net Zero and account for the impacts of climate change.	2022
	Ensure all departmental policy decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing
	Cabinet Office should build a strong **climate resilience capabilit**y for the UK, including making use of storyline or 'what-if' scenarios to assess risks, in addition to or instead of using 'reasonable worst-case' approaches. It should develop an early warning system for global climate shocks. It should consider how more allowance and flexibility can be built into policy making and policy implementation. This could include enhancing the ability of the Government to make fast decisions by bringing in technical advice and expertise quickly when needed, and both protecting, and enhancing, monitoring and surveillance systems to enable faster reactions as events unfold.	By 2023
	Develop and implement fully-funded plans towards making all **public buildings and vehicle fleets** zero-carbon in the long term. This must include a move to multi-year programmatic funding to deliver the stated ambitions of switching to ultra-low emission vehicles by 2030 and to halve emissions from public buildings by 2032, supported by cross-government strategy (including an ambitious new set of Greening the Government commitments) and capital funding levels in the order of £1 billion/year for buildings.	2021-22
	As the public sector, lead the shift to other positive behaviours that **reduce travel demand**, for example encouraging home-working.	2021
International (With BEIS and the COP Unit)	Work towards securing more **climate finance commitments** from developed countries to get back on track for mobilising $100 billion a year in climate finance as soon as possible.	2021
	Work to bring forward additional **emissions reduction ambition** from countries that haven't yet strengthened commitments ahead of COP26.	H2 2021
	Place aligning **global COVID-19 recovery plans** with the goals of the Paris Agreement as a core goal of the UK's G7 and COP26 presidencies.	2021-22
	Ensure that any outcome on **international carbon markets** at COP26 has high integrity and genuinely supports global ambition to tackle climate change.	H2 2021
	Develop the option of applying either **border carbon tariffs or minimum standards to imports** of selected embedded-emission-intense industrial and agricultural products and fuels. This should include initiating development of carbon intensity measurement standards and fostering international consensus around trade policies through the G7 and COP presidencies.	2021 Priority recommendation

Table A2 Recommendations for the COP Unit, the Foreign, Commonwealth and Development Office (FCDO) and the Department for International Trade (DIT)		Timing
Cross-cutting	Ensure all departmental policy decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing
Action in the run-up to COP26	Work towards securing more **climate finance commitments** from developed countries to get back on track for mobilising $100 billion a year in climate finance as soon as possible.	2021 (COP26)
	Work to bring forward additional **emissions reduction ambition** from countries that haven't yet strengthened commitments ahead of COP26.	H2 2021
	Provide a clear commitment prior to COP26 regarding the timescale by which the **UK's official development assistance (ODA) contribution** will return to 0.7% of GNI given the UK's commitment to align its ODA spend with Paris Agreement requirements and the need for increased finance to achieve the Paris Agreement.	H2 2021
	Place aligning **global COVID-19 recovery** plans with the goals of the Paris Agreement as a core goal of the UK's G7 and COP26 presidencies.	2021-22
	Ensure that any outcome on **international carbon markets** at COP26 has high integrity and genuinely supports global ambition to tackle climate change.	H2 2021
	Develop the option of applying either **border carbon tariffs or minimum standards to imports** of selected embedded-emission-intense industrial and agricultural products and fuels. This should include initiating development of carbon intensity measurement standards and fostering international consensus around trade policies through the G7 and COP presidencies.	2021 Priority recommendation
Ongoing climate action	For the coming five-year period (2023-2028), FCDO should outline appropriate actions in the next **National Adaptation Programme** to address the adaptation gap identified for the risks in the CCRA for which it is the lead department (see Adaptation Report Annex).	2023 Priority recommendation
	Publish a new strategy for the UK's **international climate policy** for after COP26 - ensuring that the initiatives for the COP26 presidency have long-term benefits for global emissions over the coming decade and supports the implementation of policies to deliver on strengthened national targets.	H1 2022
	For the coming five-year period (2023-2028), DIT should outline appropriate actions in the next **National Adaptation Programme** to address the adaptation gap identified for the risks and opportunities in the CCRA3 for which it is the lead department (see Adaptation Report Annex).	2023
	DIT should use trade policy to **encourage increased ambition** on both climate change mitigation and adaptation in other countries, including considering the role for border carbon adjustments and standards to **prevent carbon leakage.**	Spring 2022

Table A3 Recommendations for the HM Treasury (HMT)		Timing
	Complete the overdue **Net Zero Review**, which should: • Develop a plan for funding decarbonisation fairly, reviewing the distribution of costs for businesses, households and the Exchequer. • Set approach to near-term and long-term decarbonisation funding needs. • Consider policy implications for a just transition.	2021 Priority recommendation
	The **spending review(s)** should ensure departments are fully equipped to deliver the necessary actions across climate change mitigation and adaptation, during the rest of this Parliament and beyond.	2021 Priority recommendation
	For the coming five-year period (2023-2028), outline appropriate actions in the next **National Adaptation Programme** to address the adaptation gap identified for the risks in the CCRA for which it is the lead department (see Adaptation Report Annex).	2023 Priority recommendation
	Ensure all departmental policy decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing
Funding	Increase resources for **local government** to play a full role in the Net Zero transition.	2021-23 (funding for LAs at next budget) Priority recommendation
	Fund plans towards making all **public buildings and vehicle fleets** zero-carbon in the long term. This must include a move to multi-year programmatic funding to deliver the stated ambitions of switching to ultra-low emission vehicles by 2030 and halving emissions from public buildings by 2032, supported by cross-government strategy (including an updated set of Greening the Government commitments) and capital funding levels in the order of £1 billion/year for buildings.	2021-22
	Provide a clear commitment prior to COP26 regarding the timescale by which the **UK's official development assistance (ODA) contribution** will return to 0.7% of GNI given the UK's commitment to align its ODA spend with Paris Agreement requirements and the need for increased finance to achieve the Paris Agreement.	H2 2021
	Establish mechanisms (with BEIS) to close the substantial funding gap for **heat networks**, with a multi-year funding programme needed of sufficient scale to deliver the growth in network deployment, and transition to low-carbon heat sources.	2022
Taxation, carbon and energy pricing	Work with BEIS on the **Heat and Buildings Strategy:** to ensure that relative prices favour a shift to low-carbon technologies, consulting widely including with the Committee on Fuel Poverty; to ensure that sufficient funding is available; and to consider the role of tax incentives (e.g. Stamp Duty differentials). Work with MHCLG and the new buildings safety regulator to ensure that local authorities are properly funded to enforce buildings standards.	2021 Priority recommendation
	Consult on **reforms to electricity pricing** to remove disincentives to electrification, based on consideration of the strategic and fair allocation of legacy policy costs associated with the past deployment of less-mature low-carbon electricity generation. Also consider the balance of existing taxes, such as the Climate Change Levy, on different energy sources. These reforms in combination with wider sectoral incentives, standards and carbon pricing should remove price barriers to electrification.	H1 2022
	Consult (with BEIS) on the introduction of a **carbon tax** (either as part of the UK ETS or a separate instrument) aimed at curbing rising emissions from Energy from Waste.	2022
	Reform **Vehicle Excise Duty**, with larger differentials across all vehicle types, to provide stronger incentives to purchase zero-emission vehicles and reverse the shift towards cars that have higher lifecycle emissions. The reforms should consider the impact and design of second and subsequent year rates, to ensure they encourage the purchase of zero-emission vehicles in the second-hand market.	H1 2022
	Aviation tax reform should seek to address price imbalances between aviation and surface transport, encouraging the low-carbon alternative (e.g. rail) for journeys where one exists. Taxation should also be used, alongside improvements in broadband, to embed positive behaviours that have arisen during the pandemic (e.g. replacing business travel with videoconferencing and online collaboration).	2021-22
	Create a clear incentive for manufacturing facilities not currently covered by the UK ETS to switch to low-carbon energy sources by reforming the suite of energy and carbon policies, which could include rebalancing the **Climate Change Levy** rates for electricity and gas.	2023
	Set out a clear plan for ensuring that carbon prices and taxes on manufacturers, energy producers and aviation encourage emissions reductions in line with the CCC Pathway, planning for revised (and likely higher) carbon prices from 2023. This should include setting out a **cap for the UK ETS** consistent with a credible path to the Sixth Carbon Budget for consultation by Q3 2021.	2021
	Develop (with DIT) the option of applying either **border carbon tariffs or minimum standards to imports** of selected embedded-emission-intense industrial and agricultural products and fuels. This should include initiating development of carbon intensity measurement standards and fostering international consensus around trade policies through the G7 and COP presidencies.	2021 Priority recommendation

Table A3 Recommendations for the HM Treasury (HMT)		Timing
Green finance	Develop further ways to embed Net Zero and climate risk in **financial decisions** by UK firms, building on the UK's Green Finance Strategy. This should include implementing mandatory climate disclosure, adoption of a robust green taxonomy with clear guidance on how it should be used. It should also consider the recommendations of the Committee's Finance Advisory Group, such as making Net Zero and adaptation plans mandatory for financial institutions and monitoring financial flows into climate action.	2021-25
	In the **green gilt framework**, setting out the rules on what spending green sovereign bonds can be used for, ensure that revenue is used to fund expenditure that will genuinely contribute to Net Zero and improved climate resilience.	2021

Table A4 Recommendations for the Department for Business, Energy and Industrial Strategy (BEIS)		Timing
Cross-cutting	Publish the overall **Net Zero Strategy**. It should: • Provide a comprehensive plan for achieving Net Zero, the 2030 NDC and the carbon budgets, setting out ambition for sectors and key technologies and behaviours that together will meet the challenge. • Set out the approach to the key cross-cutting challenges of fair funding, just transition, skills, public engagement, local delivery, governance. • Set timelines for how policies will start to deliver decarbonisation with the required urgency, and ensure that wider policy development is consistent with the UK's climate goals. • Ensure adaptation is properly integrated in the plan, maximising synergies and minimising trade-offs, while recognising the risks and impacts from climate change (see Adaptation Progress Report for more details). • Introduce processes for monitoring progress and mechanisms to course-correct over time.	2021 Priority recommendation
	Ensure that **adaptation is integrated** into major upcoming policies in the next two years related to the eight priority risks identified in the Committee's advice on the third UK Climate Change Risk Assessment (CCRA3) for which BEIS has lead responsibility, coordinating work with other relevant departments as necessary: • Risks to the supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks (with Defra and DIT). • Risks to people and the economy from climate-related failure of the power system. In addition, for the coming five-year period (2023-2028), BEIS should outline appropriate actions in the next National Adaptation Programme to address the adaptation gap identified for the other risks and opportunities in the CCRA for which it is the lead department (see Adaptation Report Annex).	By 2023 Priority recommendation
	Develop a **public engagement** strategy for Net Zero which builds on the findings of the UK Climate Assembly by involving people in decision-making, providing trusted information on decarbonisation choices and the need to reduce emissions. The strategy should link to engagement on adaptation and identify preferred policy options to empower people to contribute fully towards the path to Net Zero.	2021-22 Priority recommendation
	Ensure **all departmental policy decisions**, and procurement decisions, are consistent with the Net Zero goal and reflect the latest understanding of climate risks.	Now and ongoing
International	Update the UK's long-term **low greenhouse gas emission development strategy with the UNFCCC** to reflect a formulated economy-wide plan to achieve Net Zero by 2050 (expected to be the Net Zero Strategy).	H2 2021
	Place aligning **global COVID-19 recovery plans** with the goals of the Paris Agreement as a core goal of the UK's G7 and COP26 presidencies.	H2 2022
	Publish a new strategy for the UK's **international climate policy for after COP26** - ensuring that the initiatives for the COP26 presidency have long-term benefits for global emissions over the coming decade and support the implementation of policies to deliver on strengthened national targets.	H1 2022
Jobs and skills	Working with DWP, DfE, the Home Office and MHCLG, develop a strategy for a **Net Zero workforce** that ensures a just transition for workers transitioning from high-carbon to low-carbon and climate-resilient jobs, integrates relevant skills into the UK's education framework and actively monitors the risks and opportunities arising from the transition. This strategy should include the development and roll-out of plans for training and skills, with buildings and manufacturing being priority areas.	2021 Priority recommendation
	Design industrial decarbonisation policies to **support and create jobs**, especially in regions with reliance on industrial jobs.	Now and ongoing

Table A4 Recommendations for the Department for Business, Energy and Industrial Strategy (BEIS)		Timing
Supporting business action	**Support businesses** to play their full role in the Net Zero transition and in adapting to climate risks and opportunities, for example by extending and expanding the role of the Net Zero Business Champion beyond COP26, building on the Race to Zero and Race to Resilience campaigns and providing sufficient resources to fully support businesses of all sizes to engage in the transition, to input to policy development and to set their own robust Net Zero and adaptation action plans.	2021-22
	Develop further ways to embed Net Zero and climate risk in **financial decisions** by UK firms, building on the UK's Green Finance Strategy. This should include implementing mandatory climate disclosure, adoption of a robust green taxonomy with clear guidance on how it should be used. It should also consider the recommendations of the Committee's Finance Advisory Group, such as making Net Zero and adaptation plans mandatory for financial institutions and monitoring financial flows into climate action.	2021-25
	Determine appropriate regulatory arrangements, rules and guidance for the use of **carbon offsetting by UK corporates** within their Net Zero strategies, recognising the growing demand for offsetting markets, the interactions with the UK ETS and currently accredited schemes (i.e. the Woodland Carbon Code and the Peatland Code), and the need to avoid double-counting or negative outcomes for non-carbon objectives.	2021-22
Research and data	Drawing on the Energy Innovation Needs Assessments ensure **innovation funding** (e.g. through UKRI, Catapults, the Industrial Strategy Challenge Funding, BEIS Innovation Programme and the Net Zero Innovation Portfolio) drives forward an extensive research and innovation package for delivering a Net Zero, climate-resilient future.	Now and ongoing
	Make monitoring and data analysis of climate risks more accessible, alongside better digitisation of past records. Further efforts should be taken to make the evidence on climate risks more usable for decision makers through co-design of research programmes with end users, where the user drives the research question from the beginning of the process. A major gap is the lack of projections of impacts in 2°C and 4°C scenarios; this needs addressing as an urgent priority ahead of CCRA4.	2022
	Review plan for improving **data collection** and statistical reporting for the purposes of monitoring and informing the low-carbon transition, as part of the broader work the ONS are already undertaking to improve the collection of climate-related data.	2022
	Work with ONS to put in place plans to **collect and report data** annually on low-carbon heat networks, specifically the amount of heat delivered (split by DUKES consumption sector, i.e. Residential/Public/Commercial/Industry, and where possible, by source of heat supply). This should be part of a plan for improving data collection and statistical reporting for the purposes of monitoring and informing the low-carbon transition.	2022
	Improve the collection and reporting of **industrial decarbonisation data** to allow for progress to be monitored more effectively, particularly on energy and resource efficiency.	2022
Energy / carbon pricing and emissions trading	Set out a clear plan (with HMT) for ensuring that carbon prices and taxes on manufacturers, energy producers and aviation encourage emissions reductions in line with the CCC Pathway, planning for revised (and likely higher) carbon prices from 2023. This should include setting out a **cap for the UK ETS** consistent with a credible path to the Sixth Carbon Budget for consultation by Q3 2021.	2021
	Consult (with HMT) on **reforms to electricity pricing** to remove disincentives to electrification, based on consideration of the strategic and fair allocation of legacy policy costs associated with the past deployment of less-mature low-carbon electricity generation. It should also consider the balance of existing taxes, such as the Climate Change Levy, on different energy sources. These reforms in combination with wider sectoral incentives, standards and carbon pricing should remove price barriers to electrification.	H1 2022
	Consult (with HMT) on the introduction of a **carbon tax** (either as part of the UK ETS or a separate instrument) aimed at curbing rising emissions from Energy from Waste.	2022
	Commit (with DfT) not to use credits from the **Carbon Offsetting and Reduction Scheme for International Aviation** (CORSIA) for flights covered by the UK ETS unless and until they can satisfy strict eligibility criteria (equivalence, additionality, permanence, sustainability).	2021-22
	Develop (with DIT) the option of applying either **border carbon tariffs** or **minimum standards to imports** of selected embedded-emission-intense industrial and agricultural products and fuels. This should include initiating development of carbon intensity measurement standards and fostering international consensus around trade policies through the G7 and COP presidencies.	2021 Priority recommendation

Table A4 Recommendations for the Department for Business, Energy and Industrial Strategy (BEIS)		Timing
Buildings	Produce a robust, equitable and ambitious **heat strategy** to eliminate emissions from buildings through a clear direction for the next 30 years. This must include: • Standards covering all segments of the building stock, with support for consumers through the transition. • Plans to rebalance policy costs - in consultation with the Committee on Fuel Poverty and wider stakeholders - while making low-carbon solutions more financially attractive. • Plans to introduce Green Building Passports. • Formalisation of a governance framework to drive decisions on heat infrastructure including a role for area-based energy plans and zoning of heat networks.	2021 Priority recommendation
	Provide a stable long-term policy framework to support sustained **energy efficiency and heat pump** growth at sufficient scale (i.e. 600,000 heat pumps per year in existing homes by 2028). This must include a replacement for the Green Homes Grant voucher scheme which works, backed by standards and support for non-residential heat pump installations. Create a level-playing field for hybrid heat pumps off the gas grid and ensure hybrid heat pumps are an integral part of PAS2035 retrofit coordinator advice.	2021 Priority recommendation
	Establish mechanisms to close the substantial funding gap for **heat networks**, with a multi-year funding programme of sufficient scale to deliver the growth in network deployment, and transition to low-carbon heat sources, needed. Finalise policy on the future market framework for heat networks, including requiring new district heat schemes to utilise low-carbon sources from 2025 at the latest and setting regulations for the conversion of legacy fossil fuel schemes to low-carbon sources.	2022
	Publish proposals for standards to phase out the installation of **new liquid and solid fossil fuel heating** by 2028 at the latest. Send clear signals on the phase-out of gas heating, including the roles for area-based planning and standards in phasing out gas installations (as in Scotland).	2021
	Move to **multi-year programmatic funding** to deliver the stated ambition of halving emissions from public buildings by 2032. This must be supported with cross-government strategy (either independent or integrated with the Net Zero or Buildings Strategies) and funding levels in the order of £1 billion/year. Support mechanisms must be designed so that smaller public bodies can access them.	2022
	Set requirements for all **new gas boilers to be hydrogen-ready** by 2025 at the latest, while ensuring that all new boilers outperform current and expected future air quality standards.	2021
	Implement improvements to the **Energy Performance Certificate** (EPC) and **Standard Assessment Procedure** (SAP) framework, including: • Ensuring EPCs drive deployment of the necessary energy efficiency measures and do so on a holistic basis to address overheating, ventilation, and moisture-risk. • Supporting delivery objectives across both energy efficiency and low-carbon heat, and valuing properly the benefits of low-carbon and flexible technologies. • Formally integrating a forward trajectory for declining grid carbon-intensity, in line with Government projections. • Addressing wider issues of quality/robustness, with a commitment to integrate in-use performance metrics from 2023. • Plans for the future role of Green Building Passports.	2022
	Improve understanding of and support action on **overheating in existing residential buildings** and encourage retrofit of passive cooling measures. The Heat and Building Strategy must consider overheating risks. The following steps are needed: • Further research to understand when overheating occurs in existing homes, including ongoing monitoring of temperatures in the housing stock, monitoring of overheating exceedances in homes, and the number of homes currently adapted. • Guidance and information for homeowners with the steps that can be taken if their homes overheat. This should include an outline of behavioural options and the measures that can be installed to reduce internal temperatures. Green Building Passports and home retrofit plans could provide holistic guidance and help to unlock green finance. • Overheating risk considered and mitigated against if necessary when doing energy efficiency retrofit programmes. • Making finance available to install adaptation measures. This could be via grant schemes or green finance for private owners, with public funding targeted at low-income or vulnerable households alongside energy efficiency retrofit.	2022
	Bring forward the date to reach EPC C in **social homes** to 2028, in line with the Private Rented Sector (PRS) proposals and finalise the delivery mechanism. Implement ambitious **PRS standards** for homes which drive fabric efficiency, while valuing deployment of cost-effective low-carbon heat alongside this. Implement the EPC B target for **PRS non-domestic buildings** in line with new proposals. Consult on options to cover the regulatory policy gap for **owner-occupied homes**.	2021

Table A4 Recommendations for the Department for Business, Energy and Industrial Strategy (BEIS)		Timing
Power	Publish a plan for reaching an emissions intensity of 50 gCO_2/kWh by 2030, with a total of around 350 TWh of low-carbon generation. Set out a schedule for regular auctions to procure **low-carbon generation**, with a clear pathway of volumes to be procured and robust contingency for uncertainties in demand and delivery. Address potential barriers to deploying and using low-carbon generation at scale (e.g. the planning and consenting regime for renewables and networks, exposure to climate risks) and, with Ofgem, develop a framework under which sufficient supply resilience can be ensured.	2022 Priority recommendation
	Commit to phasing out **unabated gas generation** by 2035, subject to ensuring security of supply.	2021 Priority recommendation
	Publish a comprehensive long-term strategy for **unabated gas phase-out**, including ensuring new gas plant are properly CCS- and/or hydrogen-ready as soon as possible and by 2025 at the latest.	By Spring 2022 Priority recommendation
	Develop a strategy as soon as possible on **market design** for the medium to long term for a fully decarbonised, resilient electricity system in the 2030s and onwards.	2023
	Develop mechanisms for strategic investment in coordination with Ofgem to ensure that **electricity networks** can accommodate increased future demand levels, including large localised demand increases associated with electrification in manufacturing, transport and buildings, and that lack of network capacity does not cause delays in emissions reduction.	2023
	Develop a strategy to coordinate the development of **interconnectors**, connections for offshore wind farms and the enhancement of inter-area transfer capacity for the onshore network, ensuring cost-effective, timely delivery, bringing forward any legislation necessary to enable it.	H1 2022
	Work in partnership with Ofgem to publish and implement a new **Smart System Plan** and **Energy Data and Digitalisation Strategy**, including working with DCMS on cyber-security, in order to continue to unlock the full benefits of electricity system flexibility. Ensure that, alongside smart standards for heating, all electricity users have access to half-hourly metering and the option of tariffs that encourage flexibility in use of electric heat and electric vehicle charging.	2021
	Improve information sharing on climate risks to infrastructure interdependencies at a local level, especially for **electricity, digital and ICT networks**. As reported in our previous assessment in 2019, NAP actions to enhance arrangements for information sharing between local infrastructure operators and improve understanding of critical risks arising from interdependencies have not been completed. Defra's link with Local Resilience Forums is key, and BEIS and DCMS should engage with utility companies to encourage standardised benchmarking and data sharing on climate risks to electricity networks, digital & ICT.	Now and ongoing
Waste	Set out capacity and usage requirements for **Energy from Waste** consistent with plans to improve recycling and waste prevention. Issue guidance to align local authority waste contracts and planning policy to these targets.	2021 Priority recommendation
	Introduce the necessary planning guidance and policy to ensure any **new Energy from Waste** plants (including incineration, gasification & pyrolysis facilities) are built with carbon capture usage and storage (CCUS) or are 'CCUS-ready'.	Spring 2022 Priority recommendation
	Set out how **existing Energy from Waste** plants will be supported to be retrofitted with CCUS from late 2020s onwards, with 2050 a backstop date for full CCUS coverage.	2022

Table A4 Recommendations for the Department for Business, Energy and Industrial Strategy (BEIS)		Timing
Manufacturing and construction	Establish funding mechanism(s) to support operational and capital costs of both **electrification and hydrogen-use in manufacturing**, as soon as possible, with the aim of awarding funding in 2022. There must be mechanisms for both options, not only hydrogen, and the mechanism(s) should be designed to ensure that, in the medium term, hydrogen-use and electrification compete on a level playing field, to ensure the best value for consumers and taxpayers. Support for electrification may be combined with reforms to electricity pricing.	2022 Priority recommendation
	Continue to support **innovation** and demonstration of fuel switching and CCS technologies for decarbonising manufacturing and construction. Ensure that a full range of options is developed, filling previous gaps in support, such as encouraging electrification projects to come forward.	Spring 2022
	Set out which policies will deliver the pathway to 4 $MtCO_2e$ of **industrial energy efficiency** abatement set out in the Industrial Decarbonisation Strategy and quantify how much abatement will come from each policy: • Set out the future role of Climate Change Agreements (CCAs) and any required CCA reforms. • Consult on mandating the use of Energy Management Systems and on Government support and incentives for implementing energy management standards. • Set out the role of energy efficiency standards and audit programmes. • Develop resources such as direct advice and training to address capacity and expertise gaps, and highlight available energy efficiency solutions, particularly for SMEs.	Spring 2022
	Ensure the policy package for decarbonising manufacturing addresses manufacturers' low appetite for investments with long **payback times**, either using grants or favourable loans, particularly for energy efficiency.	2022
	Work with the minerals industries to develop a detailed joint plan for **CO_2 transport from dispersed sites**.	Spring 2022
	Commit to **targets** for ore-based steelmaking and cement production in the UK to reach near-zero emissions by 2035 and 2040, respectively.	2021
	Deliver industrial **carbon capture contracts** (ICC) to enable final investment decisions on the first ICC projects by mid-2022.	H1 2022
	Deliver the proposed **CCS transport and storage** regulatory investment model to enable final investment decisions by mid-2022 that are consistent with establishing at least two CCS transport and storage clusters in the mid-2020s.	H1 2022
	Create a clear incentive for **manufacturing facilities not currently covered by the UK ETS** to switch to low-carbon energy sources by reforming the suite of energy and carbon policies, which could include rebalancing the Climate Change Levy rates for electricity and gas.	2023
	Set out a strategy for decarbonisation of **off-road mobile machinery** and work with industry to identify potential policies to increase uptake of low-carbon off-road mobile machinery. This will require work across BEIS, MHCLG, DfT and Defra.	2021

Table A4 Recommendations for the Department for Business, Energy and Industrial Strategy (BEIS)		Timing
Resource efficiency in manufacturing and construction	Step up efforts (with Defra) to deliver the **waste prevention and resource efficiency** improvements required as part of the pathway to Net Zero, including by: • Accelerating delivery of the Waste Prevention Programme so that key policies, such as Extended Producer Responsibility and new product standards, are on track to be in place well before 2025. • Setting out how levels of resource efficiency improvements identified within the Industrial Decarbonisation Strategy will be delivered. • Beginning to develop and implement any additional policies needed to deliver these resource efficiency improvements, by the end of 2022. • Ensure cross-departmental working, potentially through new cross-Whitehall governance focused on resource efficiency.	Spring 2022 Priority recommendation (end 2022 for additional policies)
	Develop policies (with MHCLG, Defra and DfT) to drive more **resource-efficient construction** and use of existing low-carbon materials, including a substantial increase in the use of **wood in construction**. Policies should include: • Reviewing and clarifying the position of structural timber in the ban on combustible materials, underpinned by further research and testing where necessary, and ensuring there are no barriers to the safe use of timber in buildings. The buildings safety regulator to play a role in overseeing this on an ongoing basis. • The development of a fully-funded policy roadmap on the use of timber, including policies to support the development of UK wood supply chains. • Finalising the reporting methodology for whole-life carbon standards. • Setting out a plan for phasing in mandatory whole-life reporting followed by minimum whole-life standards for all buildings, roads and infrastructure by 2025, with differentiated targets by function, scale, and public/private construction.	Spring 2022
	Consult on detailed proposals (with Defra) for **product standards and extended producer responsibility** to improve the resource efficiency of consumer goods' lifecycles. The proposals should include all consumer goods with high environmental impact and cover how products are made, through indicators such as the level of recycled content and critical material content, and the repairability, durability and upgradability of a product.	Spring 2022
	Work with business to encourage and **enable consumers to share**, lease and use products for longer while discouraging 'disposable' business models.	Spring 2022
Transport	Continue to support (with DfT and Ofgem) widespread deployment of **EV charging infrastructure**: • This should ensure it can support high EV uptake levels. Project Rapid has the right ambition for the strategic road network and should be developed into a full strategy for the 2020s and beyond. • Further investment is needed to support on-street and other urban charging solutions for those without off-street parking and destination charging. • Government should aim for there to be around 150,000 public charge points operating by 2025. These should be widely available across all regions of the UK. • Implement the recommendations of the EV Energy Taskforce, in particular improving the consumer charging experience and making smart-charging accessible, appealing and cost-effective for as many EV users as possible.	Now and ongoing Priority recommendation
	Produce a clear assessment (with DfT) of how best to re-use and **recycle EV batteries** and fund development of competitive, large-scale battery recycling facilities in the UK.	2021-22
	Continue innovation and demonstration support (with DfT) for **zero-carbon fuel technologies** and their use in shipping, and ship efficiency measures. Develop incentives for zero-carbon ammonia and hydrogen supply chains.	Early 2020s

Table A4 Recommendations for the Department for Business, Energy and Industrial Strategy (BEIS)		Timing
Greenhouse gas removals (GGRs)	The overall Net Zero Strategy should place **GGRs in context** of a wider strategic approach to reaching Net Zero, setting out a plan for development and deployment of removals, but also for actions elsewhere to limit the need for them.	2021 Priority recommendation
	Building on the Greenhouse Gas Removals (GGR) call for evidence, launch consultation on Government's preferred **GGR strategy** and long-term expected requirement for GHG removals, including a proposed market design, a set of governance principles and proposals that recognise the need for a long-term price signal.	H1 2022 Priority recommendation
	Support the **demonstration of engineered GGR** at scale in the 2020s, either through amending existing policies or introducing new support mechanisms.	2022 Priority recommendation
	Build on the recently commenced **innovation programmes**, the Direct Air Capture and other Greenhouse Gas Removals Competition and UK Greenhouse Gas Removal Demonstration Programme, to support both the demonstration and commercialisation of more advanced greenhouse gas removal technologies (taking these from technology readiness level 5 to 8), and alongside undertake research and development into less advanced removal approaches including through pilots and field experiments.	Now and ongoing
	Ensure that a **public engagement strategy** for Net Zero includes national, regional, and local communities to improve the public's understanding of GGR approaches and both the local and system-wide implications of different options - awareness is currently very low, and support is mixed or uncertain.	2021-22
	Align with adaptation policies to ensure long-term **resilience and effectiveness of GGRs** in the face of climate impacts and exploit potential for co-benefits (e.g. choice of tree species, protecting new infrastructure from flood risks).	Before 2025
Fuel supply	Develop a **Hydrogen Strategy** out to 2035 that determines plans and sets out pathways to appropriate hydrogen use across power, industry, transport, and buildings; low-carbon hydrogen production options; and the associated infrastructure. Ensure that large-scale hydrogen trials begin in the early 2020s.	2021 Priority recommendation
	Deliver a **Biomass Strategy** that is aligned to the UK's path to Net Zero, and which reflects recommendations on governance, monitoring and best-use from the Committee's 2018 Biomass report and 2020 Land Use report. The UK should also continue to take a global lead on further developing and improving UK and international biomass governance and sustainability criteria.	2022 Priority recommendation
	Set new requirements for CCS-readiness at **biofuel conversion facilities** of all scales. This should include dates beyond which new facilities should be built with CCS, and dates for when CCS will need to be retrofitted to biofuel facilities already in operation.	2022
	Set out policies to reduce **upstream emissions from oil and gas** production by 68% by 2030, relative to 2018 levels: • Develop policies to reduce emissions from existing oil and gas platforms, including developing carbon-intensity measurement standards for gas and oil. • Set a requirement for new plans for offshore oil and gas platforms and associated installations to use low-carbon energy for their operations, aligning to zero direct emissions from operational energy use by 2027. • Make plans to ensure flaring and venting is only permitted for safety reasons from 2025.	2021
	Work with Ofgem to make explicit how current and future policies will reduce emissions associated with **methane leakage** from the gas networks in a way that is consistent with the Sixth Carbon Budget.	2021
	Formalise the process, governance framework and timeline for decisions on the **conversion to hydrogen** of appropriate parts of the gas pipeline networks. This should include starting a programme of research with Ofgem to identify areas which are unlikely to be suitable (such that electrification and alternatives can be prioritised), alongside priority candidate areas for hydrogen.	2021

Table A5 Recommendations for the Department for Environment, Food and Rural Affairs (Defra)		Timing
Cross-cutting	The next **National Adaptation Programme**, due in 2023, should ramp up adaptation ambition, implementation and evaluation. It should: • Set out the Government's vision for a well-adapted UK, alongside the measurable outcomes that the Government is aiming to achieve by the end of the next NAP period (2023 – 2028). • Include a detailed monitoring and evaluation framework, including which indicators will be used to monitor progress in reducing risk and showing the effectiveness of different adaptation responses for each risk in CCRA3. • Report how departments have addressed the top eight priority risks set out in the CCRA3 Advice Report for urgent action between 2021 and 2023. • Set out how adaptation is being integrated into policy, and the measurable actions by department for adaptation across each of the 61 risks and opportunities set out in the CCRA3 Technical for the period 2023-2028. • Ensure the adaptation actions and the programme as a whole are framed around the principles for good adaptation outlined in the CCRA3 Advice Report: – Adapt to 2°C warming, assess the risks for 4°C – Prepare for unpredictable extremes – Assess interdependencies – Understand threshold effects – Integrate adaptation into relevant policies – Ensure adaptation is sufficiently financed – Avoid lock-in – Address inequalities – Consider opportunities from climate change • Specific actions to manage international climate risks should be included, setting out the direct response to the risks identified in CCRA3.	2023 onwards Priority recommendation
	Ensure that **adaptation is integrated** into major upcoming policies in the next two years related to the priority CCRA3 risks for which Defra has lead responsibility, coordinating work with other relevant departments as necessary: • Risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards. • Risks to soil health from increased flooding and drought. • Risks to natural carbon stores and sequestration (trees, soils and wetlands) from multiple hazards. • Risks to crops, livestock, and commercial trees from multiple hazards. In addition, for the coming five-year period (2023-2028), Defra should outline appropriate actions in the next National Adaptation Programme to address the adaptation gap identified for the other risks and opportunities in the CCRA for which it is the lead department (see Adaptation Report Annex).	By 2023 Priority recommendation
	Implement a **public engagement programme about national adaptation objectives**, acceptable levels of risk, desired resilience standards, how to address inequalities, and responsibilities across society. The findings from the programme should feed into the vision and desired outcomes of the next National Adaptation Programme.	2021 Priority recommendation
	Implement measures to address **non-financial barriers to tackling emissions from land use and agriculture**, including awareness and improving skills in sustainable forestry and peatland management; scaling up supply chains; streamlining application processes and addressing contractual and tax issues where they are acting as barriers. Delivery plans should also set out measures to: • Improve knowledge exchange of low-carbon farming practices to provide confidence to farmers to take up measures to reduce on-farm GHGs. • Improve the science and evidence base for woodlands and peatlands, to deliver GHG reductions and multiple other benefits, ensure the right tree is planted in the right place and that they are resilient to future climate impacts.	2021-25 Priority recommendation

Table A5 Recommendations for the Department for Environment, Food and Rural Affairs (Defra)		Timing
Cross-cutting	Legislate the **Environment Bill** this year, using it to strengthen commitments on waste, resource efficiency, agriculture and land-use.	2021
	Develop (with DIT) the option of applying either **border carbon tariffs or minimum standards to imports** of selected embedded-emission-intense industrial and agricultural products and fuels. This should include initiating development of carbon intensity measurement standards and fostering international consensus around trade policies through the G7 and COP presidencies.	2021 Priority recommendation
	Ensure **all departmental policy decisions**, and procurement decisions, are consistent with the Net Zero goal and reflect the latest understanding of climate risks.	Now and ongoing
Research and data	Fund a programme of work to design and populate the appropriate new **priority adaptation indicators** for England. These should complement other environmental and social indicators collated by Government. The CCC could be tasked to coordinate this activity in partnership with other relevant organisations such as the Office for Environmental Protection and Environment Agency.	2021
	Continue to monitor **consumption emissions**. These are important to ensure that action to decarbonise UK-based activities does not result in emissions moving offshore, and to track progress in decarbonisation of imports to the UK, which in turn can inform future policy (e.g. border carbon adjustments).	Now and ongoing
	Improve the collection and reporting of **industrial decarbonisation data** to allow for progress to be monitored more effectively, particularly on energy and resource efficiency.	2022
Nature and land use	Extend current ambition set out by the UK government and the devolved administrations to implement a comprehensive delivery mechanism to address **degraded peatland**: • 17% of upland peat is restored, equivalent to 200,000 hectares (and where this is not possible, stabilise the peat) by 2025; 58% by 2035 (700,000 hectares) and the remaining area by 2045. • Rewet and sustainably manage 12% of lowland peat used for crops by 2025 (24,000 hectares), rising to 38% by 2035 (72,000 hectares). • Rewet 8% of lowland grassland area by 2025 (18,000 hectares), rising to 25% by 2035 (54,000 hectares). • Remove all low-productive trees (i.e. less than YC8) from peatland (equivalent to 16,000 hectares by 2025), and restore all peat extraction sites by 2035 (equivalent to 50,000 hectares by 2025).	2021-25 Priority recommendation
	Extend current ambition set out by the UK government and the devolved administrations to implement a comprehensive **delivery mechanism for new woodland** to create at least 30,000 hectares per year across the UK by 2025 (in line with the Government's commitment) and an average of 40,000 hectares per year in the 2030s.	2021-25 Priority recommendation
	Introduce legislation to: • Extend the **ban on rotational burning of peat** from certain protected upland bog sites to all peatland before the start of the burn season in 2021 • End peat extraction, and ban its sale for all horticultural uses including in the professional sectors and apply this to imports by 2023. • Mandate water companies to restore peatland under their ownership. • Ensure lowland peat soils are not left bare.	2021-23 Priority recommendation
	Publish an overarching strategy that clearly outlines the relationships and **interactions between the multiple action plans** in development for the natural environment, including those for peat, trees, nature and plant biosecurity. This must clearly outline how the different strategies will combine to support the Government's climate change goals on both Net Zero and adaptation, along with the wider environment and other goals.	2021
	Make **long-term targets for biodiversity**, set out under the Environment Bill, and associated timeframes outcome-based and linked directly to the goals set out in the Government's 25-Year Environment Plan.	H1 2022
	Make **interim targets for biodiversity** statutory and link them clearly to the long-term targets set out in the Environment Bill.	H1 2022
	The commitment in the 25 Year Environment Plan to achieve 75% **restoration for terrestrial and freshwater** protected sites should be extended to include all priority habitat sites.	2021
	Set out a clear mechanism to account for the consequences of **higher water temperatures and low flows** (including drying up) in water bodies for freshwater habitats and species, and for meeting the Water Framework Directive (WFD) targets. This is lacking in current plans to revise the River Basin Management Plans (RBMPs).	H1 2022
	Extend the statutory requirements of **marine plan policies** to the decisions of public and private organisations. At present only public authorities are duty bound under law to apply the plan policies to their decisions meaning there is a significant gap in the protections they are designed to provide.	Now

Table A5 Recommendations for the Department for Environment, Food and Rural Affairs (Defra)		Timing
Agriculture and food	Provide **incentives and address non-financial barriers** across all of the UK to: • Plant **trees** on 2% of farmland by 2025 while maintaining their primary use, rising to 5% by 2035. • Extend **hedgerows** by 20% by 2035 and better manage existing hedgerows. • Increase the area growing **energy crops** across the UK to 6,000 hectares per year by 2025, and 30,000 hectares per year by 2035.	2021-25 Priority recommendation
	Implement measures to encourage consumers to **shift diets and reduce food waste** across the supply chain, including: • Low-cost, low-regret actions to encourage a 20% shift away from all meat by 2030, rising to 35% by 2050, and a 20% shift from dairy products by 2030. Develop an evidence-based strategy to establish options for successful behaviour shifts and demonstrate public sector leadership. • Policy to reduce food waste by 50% by 2030 and 60% by 2050, with the public sector taking a lead through measures such as target setting and effective product labelling.	Start now and review mid-2020s for diet change Priority recommendation
	Introduce a strong **post-CAP regulatory baseline,** and adopt and retain existing EU rules that benefit GHG mitigation into UK legislation. These include low-cost, low-regret on-farm measures to reduce emissions; extending coverage of Nitrate Vulnerable Zones across all of the UK; including measures that reduce enteric methane emissions in the Clean Air Strategy, specifically under the proposal to extend environmental permitting to the dairy and intensive beef sectors; and mandating UK feed producers to incorporate methane inhibiting additives in compound feed and mineral supplements.	2021-23
	Set out measures to ensure the resilience of the **food supply chain**, including to the risks of extreme weather in England and internationally, as part of its white paper responding to the independent review of the National Food Strategy for England.	2022
	Introduce a comprehensive plan and incentives to deliver **emissions reduction across all UK farms** through: • High take-up of low-carbon agricultural measures (60-75% by 2050) covering livestock (diets, breeding, and health), soils (cover crops and grass-legume mix) & waste management (anaerobic digestion and slurry covers). • Measures to incentivise the take-up of near-zero-emissions options for agricultural machinery and vehicles from the mid-2020s, and develop options where they are not currently available.	2021-25
	The landscape-level and on-farm measures set out above should: • **Leverage private and public finance** (e.g. a trading scheme or auctioned contracts). New and existing funding streams should continue during the transition period to this system to avoid a hiatus in deployment. • Be accompanied by a strong **monitoring, reporting and verification** system that uses the latest monitoring tools and technologies to create a strong institutional framework to verify actions across the UK.	2021-25
	Set out a strategy for decarbonisation of **off-road mobile machinery** and work with industry to identify potential policies to increase uptake of low-carbon off-road mobile machinery. This will require work across BEIS, MHCLG, DfT and Defra.	2021

Table A5 Recommendations for the Department for Environment, Food and Rural Affairs (Defra)		Timing
Waste	Introduce the necessary planning guidance and policy to ensure any new **Energy from Waste** plants (including incineration, gasification & pyrolysis facilities) are built with carbon capture usage and storage (CCUS) or are 'CCUS ready'.	Spring 2022 Priority recommendation
	Set out how existing **Energy from Waste** plants will be supported to be retrofitted with CCUS from late 2020s onwards, with 2050 a backstop date for full CCUS coverage.	2022 Priority recommendation
	Set out capacity and usage requirements for **Energy from Waste** consistent with plans to improve recycling and waste prevention. Issue guidance to align local authority waste contracts and planning policy to these targets.	2021 Priority recommendation
	Set out **funding arrangements for local authorities** to provide the recycling, composting and waste management services and infrastructure required to deliver at least the commitments in the Environment Bill, Waste Prevention Programme and Resources and Waste Strategy, by 2022.	2022-25
	Consult on the introduction of a **carbon tax** (either as part of the UK ETS or a separate instrument) aimed at curbing rising emissions from Energy from Waste.	2022
	Set a target for a 68% **recycling rate** by 2030 covering all wastes in England via the Environment Bill and announce new policies to meet this target. Northern Ireland to set a 70% target for 2030. Scotland and Wales to set new targets for 2030 that go beyond their 70% targets for 2025.	2021
	Composting facilities should be incentivised to install forced aeration as a method of reducing on-site emissions.	From 2022
	Mandatory **business food waste** reporting to be introduced by 2022, building on WRAP's existing voluntary scheme.	2022
	Legislate for (in England via the Environment Bill, and in Wales, Scotland, and Northern Ireland via new legislation) and implement a **ban on landfilling of the main biodegradable waste** streams from 2025 (both municipal and non-municipal). There must be sufficient recycling/composting/AD treatment capacity made available before the ban comes into force, so that significant increases in energy-from-waste are avoided.	2021
	Long-term plans should be announced for eventual **diversion of all wastes from landfill** (except for where no alternative treatment or disposal method exists) but with a date conditional on sufficient action on reduction, re-use and recycling, and installation of CCS at energy-from-waste plants, to avoid a surge in fossil emissions when the ban comes into force.	Mid-2020s
	Introduce policies and funding for increased **methane capture and oxidation at landfill sites**, to decrease fugitive landfill methane emissions significantly.	2022
	Phase out **exports of waste** by 2030 at the latest, through improvements in waste prevention and domestic recycling and recovery, while strengthening tracking and enforcement to ensure that any exports intended for recycling are being treated appropriately.	2020s
Greenhouse gas removals and offsets	Build on the recently commenced innovation programmes (with BEIS), the Direct Air Capture and other Greenhouse Gas Removals Competition and UK Greenhouse Gas Removal Demonstration Programme, to support both the **demonstration and commercialisation of more advanced greenhouse gas removal** technologies (taking these from technology readiness level 5 to 8), and alongside undertake research and development into less advanced removal approaches including through pilots and field experiments.	Now and ongoing
	Align with adaptation policies to ensure long-term **resilience and effectiveness of GGRs** in the face of climate impacts and exploit potential for co-benefits (e.g. choice of tree species, protecting new infrastructure from flood risks).	Before 2025
	Consider (with BEIS) the appropriate regulatory arrangements, rules and guidance for the use of **carbon offsetting by UK corporates** within their Net Zero strategies, recognising the growing demand for offsetting markets, the interactions with the UK ETS and currently accredited schemes (i.e. the Woodland Carbon Code and the Peatland Code), and the need to avoid double-counting or negative outcomes for non-carbon objectives.	2021-22

Table A5 Recommendations for the Department for Environment, Food and Rural Affairs (Defra)		Timing
Resource efficiency	Step up efforts to deliver the **waste prevention and resource efficiency** improvements required as part of the pathway to Net Zero, including by:* • Accelerating delivery of the Waste Prevention Programme so that key policies, such as Extended Producer Responsibility and new product standards, are on track to be in place well before 2025. • Setting out how levels of resource efficiency improvements identified within the Industrial Decarbonisation Strategy will be delivered. • Beginning to develop and implement any additional policies needed to deliver these resource efficiency improvements, by the end of 2022. • Ensure cross-departmental working, potentially through new cross-Whitehall governance focused on resource efficiency.	Spring 2022 Priority recommendation (end 2022 for additional policies)
	Consult on detailed proposals for **product standards and extended producer responsibility** to improve the resource efficiency of consumer goods' lifecycles. The proposals should include all consumer goods with high environmental impact and cover how products are made, through indicators such as the level of recycled content and critical material content, and the repairability, durability and upgradability of a product.	Spring 2022
	Develop policies (with BEIS, MHCLG and DfT) to drive more **resource-efficient construction** and use of existing low-carbon materials, including a substantial increase in the use of **wood in construction**. Policies should include: • Reviewing and clarifying the position of structural timber in the ban on combustible materials, underpinned by further research and testing where necessary, and ensuring there are no barriers to the safe use of timber in buildings. Buildings safety regulator to play a role in overseeing this on an ongoing basis. • The development of a fully funded policy roadmap on the use of timber, including policies to support the development of UK wood supply chains. • Finalising the reporting methodology for whole-life carbon standards. • Setting out a plan for phasing in mandatory whole-life reporting followed by minimum whole-life standards for all buildings, roads and infrastructure by 2025, with differentiated targets by function, scale, and public/private construction.	Spring 2022
	Work with business to encourage and enable consumers to share, lease and use products for longer whilst **discouraging 'disposable' business models.**	Spring 2022
Buildings and infrastructure	Make changes ahead of the next round of reporting under the **Adaptation Reporting Power** (ARP). When used effectively, the ARP can present updated risks and adaptation actions that allows for an assessment of preparedness of all infrastructure sectors and their interdependencies. In particular: • The next round of reporting must be mandatory. • The deadline for reporting must allow sufficient time for consideration of all the reports in the fourth UK Climate Change Risk Assessment, and the CCC's statutory assessment of progress on adaptation. • The list of organisations reporting should be expanded to ensure comprehensive coverage of critical infrastructure and services, such as canals and food supply chains, as recommended by the ARP3 consultation.	2023
	Work with the Environment Agency to set out the measures being taken to improve the uptake of **property-level flood resilience** (PFR) following stakeholder responses to its PFR call for evidence and consultation. This should include improved data collection to monitor progress. Plans for the new national flood risk assessment and 2025 long-term investment scenarios must ensure that the evidence they provide can be used to identify the most effective locations for PFR, and smart targets for their installation with timescales.	2022
	Work with **Port Operators and the British Ports Association** to ensure the format of reporting under the Adaptation Reporting Power is appropriate for port operators and that the right operators are being asked to report, as well as to identify what further support could be offered to enable more comprehensive reporting on adaptation by the ports sector.	2023
	Improve information sharing on climate risks to infrastructure interdependencies at a local level, especially for **electricity, digital and ICT networks**. As reported in our previous assessment in 2019, NAP actions to enhance arrangements for information sharing between local infrastructure operators and improve understanding of critical risks arising from interdependencies have not been completed. Defra's link with Local Resilience Forums is key, and BEIS and DCMS should engage with utility companies to encourage standardised benchmarking and data sharing on climate risks to electricity networks, digital & ICT.	Now and ongoing

Table A5 Recommendations for the Department for Environment, Food and Rural Affairs (Defra)		Timing
Waste and wasterwater	Work with the Environment Agency, Ofwat and other stakeholders to set out targets and supporting measures for **reducing water use by business**. This could be through ensuring that any water reduction targets linked to the Environment Bill include business as well as household water use, and responding to advice and recommendations from Defra's new Senior Water Demand Reduction Group.	2022
	Commit innovation funding to development and demonstration of novel **wastewater treatment** process that achieve a step change improvement in direct process emissions.	2022
	Outside of the municipal wastewater sector, incentivise **industrial wastewater plants** to reduce their process emissions.	From 2022

Table A6 Recommendations for the Department for Transport (DfT)		Timing
Cross-cutting	For the coming five-year period (2023-2028), DfT should outline appropriate actions in the next **National Adaptation Programme** to address the adaptation gap identified for the risks and opportunities in the CCRA for which it is the lead department (see Adaptation Report Annex).	2023 Priority recommendation
	Decisions on **investment in roads** should be contingent on analysis justifying how they contribute to the UK's pathway to Net Zero. This analysis should demonstrate that the proposals would not lead to increases in overall emissions. Wherever possible, investment in roads should be accompanied by proportionate investment in EV charging infrastructure and in active travel and public transport.	2021-22
	Develop policies (with BEIS, Defra and MHCLG) to drive more **resource-efficient construction** and use of existing low-carbon materials. DfT's focus should be on: • Finalising the reporting methodology for whole-life carbon standards • Contributing to a plan for phasing in mandatory whole-life reporting followed by minimum whole-life standards for all roads and infrastructure by 2025, with differentiated targets by function, scale, and public/private construction.	Spring 2022
	Ensure all departmental policy decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing
Electric vehicles	Develop a comprehensive policy package to **support the supply and uptake of EVs** to enable delivery of the 2030 phase-out of new petrol and diesel cars and vans. This will require: • Strong consumer incentives to purchase zero-emission vehicles, whether in the form of purchase subsidies or preferential tax rates and duties. These should be fair across consumer groups and scaled back as costs of EVs fall. • Introducing a zero-emission vehicle mandate requiring car manufacturers to sell a rising proportion of zero-emission vehicles (specifically, fully battery-electric vehicles), reaching nearly 50% by 2025 and 100% by 2030, with only a very small proportion of hybrids allowed alongside until 2035. This will benefit air quality and consumers, as well as greenhouse gas emissions. • Setting out ambitious UK regulations on new car and van CO_2 intensities to 2030, with more regular intervals than the EU's five years, requiring around a 55% reduction by 2025 and 97% by 2030.	Policy package: 2021 Support: Now and ongoing Priority recommendation
	Continue to support widespread deployment of **EV charging infrastructure**: • This should ensure it can support high EV uptake levels. Project Rapid has the right ambition for the strategic road network and should be developed into a full strategy for the 2020s and beyond. • Further investment is needed to support on-street and other urban charging solutions for those without off-street parking and destination charging. • Government should aim for there to be around 150,000 public charge points operating by 2025. These should be widely available across all regions of the UK. • Implement the recommendations of the EV Energy Taskforce, in particular improving the consumer charging experience and making smart-charging accessible, appealing and cost-effective for as many EV users as possible.	Now and ongoing Priority recommendation
	Produce a clear assessment of how best to re-use and **recycle EV batteries** and fund development of competitive, large-scale battery recycling facilities in the UK.	2021-22

Table A6 Recommendations for the Department for Transport (DfT)		Timing
Public transport and active travel	Strengthen support for, and provision of, schemes to support **walking, cycling and public transport** to reduce demand for higher-carbon travel: • Provision of infrastructure for active travel and other support schemes, as well as measures to make it less attractive to drive, are needed. • This should include maintaining positive behaviour shifts and addressing risks resulting from the COVID-19 pandemic. • Working across delivery bodies (e.g. local authorities) is critical.	2021-22 Priority recommendation
	Government should support the **public transport and shared mobility** sectors to recover from the COVID-19 pandemic: • Positive communications and messaging will be required to rebuild public confidence in the safety of public transport. • Financial support for the sector should be maintained while confidence and demand are rebuilt, to avoid the risk of operators cutting service provision. • Government should seek to reverse the increasing relative price advantage of car travel over public transport.	2021-22
	Set out a clear vision to deliver Net Zero in **rail,** and support Network Rail and other bodies in delivering the target to remove all passenger diesel trains by 2040. This should cover a mix of zero-emission technologies (e.g. track electrification, battery-electric, hydrogen and hybrid trains). The strategy should be published by 2021 as recommended by the National Infrastructure Commission.	2021
	Mandate a **phase-out** of new sales of all **diesel buses and coaches** by 2040 at the latest. • This should include a requirement for new sales of diesel vehicles operating on shorter, urban routes to end considerably sooner. • Local authorities should be empowered to continue driving zero-emission bus take-up and to deliver improvements to bus services.	2021-22
Freight and off-road mobile machinery	Implement large-scale **trials of zero-emission HGVs** in the early-2020s to demonstrate the commercial feasibility of these technologies and establish the most suitable and cost-effective technology mix.	Early 2020s
	Set out and implement a **strategy to transition to zero-carbon freight**, including: • Ending sales of new diesel HGVs by 2040 at the latest. • Stronger purchase and other incentives for zero-emission HGVs. • Infrastructure plans and support (e.g. ultra-rapid chargers for battery-electric HGVs and hydrogen refuelling stations for hydrogen HGVs). • Clean air zones.	2021
	Implement schemes to **reduce HGV and van use** in urban areas (e.g. e-cargo bikes and use of urban consolidation centres), to reduce traffic and improve the safety of active travel.	2021
	Set out a strategy for decarbonisation of **off-road mobile machinery** and work with industry to identify potential policies to increase uptake of low-carbon off-road mobile machinery. This will require work across BEIS, MHCLG, DfT and Defra.	2021
Shipping	Build on the **Clean Maritime Plan** and formal inclusion of international shipping in CB6 and Net Zero to set a Net Zero 2050 goal for UK shipping (including international shipping) and a pathway to get there.	2021
	Take a leadership role in working with the **International Maritime Organisation** (IMO) and other willing partners on global shipping policies, research funding, tighter efficiency targets and other initiatives to reduce shipping emissions. Work to strengthen the IMO 2050 global target.	2021-22
	Commit to the UK's first **clean maritime cluster(s)** operating at commercial scale (supplying at least 2 TWh/year of zero-carbon fuels) by 2030 at the latest, with zero-carbon fuels expanding to 33% of UK shipping fuel use by 2035.	2021-22
	Continue **innovation and demonstration support for zero-carbon fuel** technologies and their use in shipping, and ship efficiency measures. Develop incentives for zero-carbon ammonia and hydrogen supply chains.	Early 2020s
	Provide support for ports' investment in **shore power** and electric recharging infrastructure.	Early 2020s
	Start monitoring **non-CO_2 effects** of shipping and decide on how best to tackle them alongside UK climate targets.	2021

Table A6 Recommendations for the Department for Transport (DfT)		Timing
Aviation	Commit to a Net Zero goal and pathway for UK aviation as part of the forthcoming **Aviation Decarbonisation Strategy**, with UK international aviation reaching Net Zero emissions by 2050 at the latest, and domestic aviation potentially earlier. Plan for residual emissions (after efficiency, low-carbon fuels, and demand-side measures) to be offset by verifiable greenhouse gas removals, on a sector net emissions trajectory to Net Zero.	2021 Priority recommendation
	Assess the Government's **airport capacity strategy** in the context of Net Zero and any lasting impacts on demand from COVID-19, as part of the aviation strategy. There should be no net expansion of UK airport capacity unless the sector is on track to sufficiently outperform its net emissions trajectory and can accommodate the additional demand. A demand management framework will need to be developed (by 2022) and be in place by the mid-2020s to annually assess and, if required, control sector GHG emissions and non-CO_2 effects.	2021-22 Priority recommendation
	Take a leadership role within the **International Civil Aviation Organisation** (ICAO), and work with other high-ambition nations, to set a long-term goal for aviation consistent with the Paris Agreement, strengthen the CORSIA scheme and align CORSIA to this long-term goal.	2021-22
	Continue innovation and demonstration support for **sustainable aviation fuel** (SAF) technologies, aircraft efficiency measures, hybrid, full electric and hydrogen aircraft development and airspace modernisation. Set out a policy package for supporting the near-term deployment of commercial SAF facilities in the UK (with carbon capture and storage where applicable). Longer-term, support for SAF should transition to a more bespoke, enduring policy to drive uptake.	Now and ongoing Policy package in 2021
	Use **aviation tax reform** to address price imbalances between aviation and surface transport, encouraging the low-carbon alternative (e.g. rail) for journeys where one exists. Taxation should also be used, alongside improvements in broadband, to embed positive behaviours that have arisen during the pandemic (e.g. replacing business travel with online networking).	2021-22
	Commit to not use credits from the **Carbon Offsetting and Reduction Scheme for International Aviation** (CORSIA) for flights covered by the UK ETS unless and until they can satisfy strict eligibility criteria (equivalence, additionality, permanence, sustainability).	2021-22
	Start monitoring **non-CO_2 effects** of aviation (including through CORSIA for eligible aeroplane operators), set a minimum goal of no further warming after 2050, research mitigation options, and consider how best to tackle non-CO_2 effects alongside UK climate targets without increasing CO_2 emissions.	2021-22

Table A7 Recommendations for the Ministry of Housing, Communities and Local Government (MHCLG)		Timing
Cross-cutting	Support **local government** to play a full role in the Net Zero transition, including through increased resourcing, guidance, involvement in local area energy plans, statutory reporting on the emissions from their estate and reforming the planning framework to enable delivery of low-carbon and climate resilient measures. This is likely to require additional funding for staffing and resources for local delivery plans, alongside a 'duty to collaborate' to encourage authorities to work with local, regional and national partners to deliver their climate ambitions.	2021-23 Priority recommendation (funding for local areas at next budget)
	Ensure that **adaptation is integrated** into major upcoming policies in the next two years related to the priority CCRA3 risks for which MHCLG has lead responsibility, coordinating work with other relevant departments as necessary: • Risks to human health, wellbeing and productivity from increased exposure to heat in homes and buildings (with DHSC). • In addition, for the coming five-year period (2023-2028), MHCLG should outline appropriate actions in the next National Adaptation Programme to address the adaptation gap identified for the risks and opportunities in the CCRA for which it is the lead department (see Adaptation Report Annex).	By 2023 Priority recommendation
	Working with BEIS, DWP, DfE and the Home Office, develop a strategy for a **Net Zero workforce** that ensures a just transition for workers transitioning from high-carbon to low-carbon and climate-resilient jobs, integrates relevant skills into the UK's education framework and actively monitors the risks and opportunities arising from the transition. This strategy should include the development and roll-out of plans for training and skills, with buildings and manufacturing being priority areas.	2021 Priority recommendation
	Ensure that developments and infrastructure are compliant with **Net Zero** and appropriately **resilient to climate change** through proposed amendments to the Planning Bill.	2021-22
	Introduce an **urban greenspace** target to reverse the decline and ensure towns and cities are adapted to more frequent heatwaves in the future and that the 25-Year Plan goals are met.	2022
	Ensure all departmental policy decisions, planning decisions and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing
Flooding	Ensure that all types of current and future **flood risk** are included in policies to assess flood risk to new developments. Housing targets for local authorities should take account of flood risk, amongst other environmental issues. Assessments and management of flood risk in new developments must as a minimum: • Include evidence that the development will be safe over its full lifetime, with a consideration of the downstream interactions and impacts of new developments (i.e. it should not increase flooding in other areas). • Include an assessment of current and future flood risk under both 2°C and 4°C global climate scenarios. • Assess and manage the risk of flooding to local infrastructure as well as housing. • Include a consideration of better preparedness as set out in the Government's recent FCERM Policy Statement. • Ensure there are properly funded and trained staff in local authorities.	2022
	To help improve the **information on SuDS and surface water flood risk**, urgently begin collecting data on sewer capacity and SuDS location, type and capacity. This would bring the level of information in line with that for river and coastal flood risk defences.	2021
	To address the issue of increased risk of **surface water flooding** in new developments, commit to ensuring that new developments do not put more water into the public sewers than what was there before, taking into account climate change. To incentivise this, end the automatic right to connect to the public sewer; planning reforms should enact Schedule 3 of the Flood and Water Management Act (2010); and technical SuDS standards should be made mandatory and be updated to deliver SuDS that provide multiple economic, social and environmental benefits.	2022
	The **consultation process for surface water flood risk** must be improved. This should be done by adding statutory consultees for all development type and sizes. Consultees must have the appropriate skills to provide advice on surface water flood mitigation. Ensure that Local Authorities fully justify planning decisions where applications can proceed either without or going against formal flood risk mitigation advice.	2022

Table A7 Recommendations for the Ministry of Housing, Communities and Local Government (MHCLG)		Timing
Buildings	Implement a **strong set of standards – with robust enforcement** – that ensure both new and existing buildings are designed for a changing climate and deliver high levels of energy efficiency and low-carbon heat. Including: • Publish robust definitions of the Future Homes Standard and Future Buildings Standard which are legislated in advance of 2023 and ensure no fossil fuels are burnt in new buildings. This must include coordination with DfE, MoJ, DHSC as well as BEIS and HMT. • Regulate the overheating requirement as set out in the Future Buildings Standard consultation. Expand the requirement to cover refurbishments of existing buildings and conversions of non-residential buildings to residential. • Work with BEIS on the Heat and Buildings Strategy and use standards to set a clear direction for retrofit across the buildings stock. • Ensure that the remit of the new buildings safety regulator covers climate change mitigation and adaptation, strengthened through an explicit responsibility for sustainability; and is fully equipped to monitor and enforce compliance with buildings standards. • Work with HM Treasury to ensure that local authorities are properly funded to enforce buildings standards. • Close loopholes allowing homes to be built which do not meet the current minimum standards for new dwellings. This includes provisions around the expiry of planning permission and permitted development rights relating to change of use. Make accurate performance testing and reporting widespread, committing developers to the standards they advertise.	2021-22 Priority recommendation
	Develop and implement plans to make all **public-sector buildings and vehicle fleets** within the department's remit zero-carbon in the long term, switching to ultra-low emission vehicles by 2030 and halving emissions from public buildings by 2032. This must be part of a coherent cross-government strategy including an updated set of Greening the Government commitments, multi-year spending commitments and annual reporting.	2021-22
	Implement improvements to the **Energy Performance Certificate** (EPC) and **Standard Assessment Procedure** (SAP) framework, including: • Ensuring EPCs drive deployment of the necessary energy efficiency measures and do so on a holistic basis to address overheating, ventilation, and moisture-risk. • Supporting delivery objectives across both energy efficiency and low-carbon heat, and valuing properly the benefits of low-carbon and flexible technologies. • Formally integrating a forward trajectory for declining grid carbon-intensity, in line with Government projections. • Addressing wider issues of quality/robustness, with a commitment to integrate in-use performance metrics from 2023. • Plans for the future role of Green Building Passports.	2022
Construction	Step up efforts to deliver the **waste prevention and resource efficiency** improvements required as part of the pathway to Net Zero, including by: • Setting out how levels of resource efficiency improvements in construction identified within the Industrial Decarbonisation Strategy will be delivered. • Beginning to develop and implement any additional policies needed to deliver these resource efficiency improvements, by the end of 2022. • Ensure cross-departmental working, potentially through new cross-Whitehall governance focused on resource efficiency.	Spring 2022 Priority recommendation (end 2022 for additional policies)
	Develop policies (with BEIS, Defra and DfT) to drive more **resource-efficient construction** and use of existing low-carbon materials, including a substantial increase in the use of **wood in construction.** Policies should include: • Reviewing and clarifying the position of structural timber in the ban on combustible materials, underpinned by further research and testing where necessary, and ensuring there are no barriers to the safe use of timber in buildings. Buildings safety regulator to play a role in overseeing this on an ongoing basis. • The development of a fully funded policy roadmap on the use of timber, including policies to support the development of UK wood supply chains. • Finalising the reporting methodology for whole-life carbon standards. • Setting out a plan for phasing in mandatory whole-life reporting followed by minimum whole-life standards for all buildings, roads and infrastructure by 2025, with differentiated targets by function, scale, and public/private construction.	Spring 2022
	Set out a strategy for decarbonisation of **off-road mobile machinery** and work with industry to identify potential policies to increase uptake of low-carbon off-road mobile machinery. This will require work across BEIS, MHCLG, DfT and Defra.	2021

Table A8 Recommendations for the Department for Digital, Culture, Media and Sport (DCMS)		Timing
Cross-cutting	Support BEIS in developing a **public engagement strategy** for Net Zero which builds on the findings of the UK Climate Assembly by involving people in decision-making, providing trusted information on decarbonisation choices and the need to reduce emissions and adapt to climate change. The strategy should also identify preferred policy options to empower people to contribute fully towards the path to Net Zero.	2021-22 Priority recommendation
	For the coming five-year period (2023-2028), outline appropriate actions in the next **National Adaptation Programme** to address the adaptation gap identified for the risks and opportunities in the CCRA for which it is the lead department (see Adaptation Report Annex).	2023 Priority recommendation
	Work in partnership with Ofgem to publish and implement a new **Smart System Plan** and **Energy Data and Digitalisation Strategy**, including on cyber-security, in order to continue to unlock the full benefits of electricity system flexibility. Ensure that, alongside smart standards for heating, all electricity users have access to half-hourly metering and the option of tariffs that encourage flexibility in use of electric heat and electric vehicle charging.	2021
	Ensure **sport and culture strategies** align to other departments' plans for lower-carbon buildings, more active travel and improved public health.	2021
	Ensure all departmental policy decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing
Digital infrastructure	Ensure plans for a **digital transition and fibre roll-out** can complement changing work patterns and travel behaviours, leading to lower-carbon working. Co-ordinate with DfT to invest in digital infrastructure to lock in positive behaviours that reduce travel demand (e.g. home-working).	2021
	Resilience standards for the digital sector must include requirements pertaining to climate change risks. In addressing the National Infrastructure Commission recommendations from the Resilience Study, Government should incorporate consideration of climate change risks and adaptation actions into any new standards being developed. Standards for digital infrastructure operators should include requirements to: • Assess climate risks under both 2°C and 4°C global climate scenarios. • Consider interdependencies with other critical infrastructure, and • Set out actions to reduce risk and monitor progress.	2022
	Improve information sharing on climate risks to infrastructure interdependencies at a local level, especially for **electricity, digital and ICT networks**. As reported in our previous assessment in 2019, NAP actions to enhance arrangements for information sharing between local infrastructure operators and improve understanding of critical risks arising from interdependencies have not been completed. Defra's link with Local Resilience Forums is key, and BEIS and DCMS should engage with utility companies to encourage standardised benchmarking and data sharing on climate risks to electricity networks, digital & ICT.	Now and ongoing

Table A9 Recommendations for the Department for Education (DfE)		Timing
	Working with BEIS, DWP, MHCLG and the Home Office, develop a strategy for a **Net Zero workforce** that ensures a just transition for workers transitioning from high-carbon to low-carbon and climate-resilient jobs, integrates relevant skills into the UK's education framework and actively monitors the risks and opportunities arising from the transition. This strategy should include the development and roll-out of plans for training and skills, with buildings and manufacturing being priority areas.	2021 Priority recommendation
	Support BEIS in developing a **public engagement strategy** for Net Zero which builds on the findings of the UK Climate Assembly by involving people in decision-making, providing trusted information on decarbonisation choices and the need to reduce emissions and adapt to climate change. The strategy should also identify preferred policy options to empower people to contribute fully towards the path to Net Zero.	2021-22 Priority recommendation
	For the coming five-year period (2023-2028), DfE should outline appropriate actions in the next **National Adaptation Programme** to address the adaptation gap identified for the one risk in the CCRA for which it is the lead department (see Adaptation Report Annex).	2023 Priority recommendation
	Develop and implement plans to make all **public-sector buildings and vehicle fleets** within the department's remit zero-carbon in the long term, switching to ultra-low emission vehicles by 2030 and halving emissions from public buildings by 2032. This must be part of a coherent cross-government strategy including an updated set of Greening the Government commitments, multi-year spending commitments and annual reporting.	2021-22
	Ensure all departmental policy decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing

Table A10 Recommendations for the Department for Work and Pensions (DWP)		Timing
	Ensure all departmental policy decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing
	Working with BEIS, DfE, MHCLG and the Home Office, develop a strategy for a **Net Zero workforce** that ensures a just transition for workers transitioning from high-carbon to low-carbon and climate-resilient jobs, integrates relevant skills into the UK's education framework and actively monitors the risks and opportunities arising from the transition. This strategy should include the development and roll-out of plans for training and skills, with buildings and manufacturing being priority areas.	2021 Priority recommendation
	Design industrial decarbonisation policies to **support and create jobs**, especially in regions with reliance on industrial jobs.	Now and ongoing
	Develop and implement plans to make all **public-sector buildings and vehicle fleets** within the department's remit zero-carbon in the long term, switching to ultra-low emission vehicles by 2030 and halving emissions from public buildings by 2032. This must be part of a coherent cross-government strategy including an updated set of Greening the Government commitments, multi-year spending commitments and annual reporting.	2021-22

Table A11 Recommendations for the Department of Health and Social Care (DHSC)		Timing
	For the coming five-year period (2023-2028), DHSC should outline appropriate actions in the next National Adaptation Programme to address the adaptation gap identified for the risks and opportunities in the CCRA for which it is the lead department (see Adaptation Report Annex).	2023 Priority recommendation
	Assess **health sector vulnerability** to existing and future climate risks, particularly for care homes and home-based care. Following this, develop a cross-sector approach to address risks. This cross-sector approach should include input from DHSC, CQC, PHE, NHS, MHCLG and local level public health bodies.	2022
	Fund the strengthening and widening of vector and pathogen surveillance and early-warning mechanisms, due to the increasing risk of **disease spread** as a result of climate change and other factors.	Now and ongoing
	Develop and implement plans to make all **public-sector buildings and vehicle fleets** within the department's remit zero-carbon in the long term, switching to ultra-low emission vehicles by 2030 and halving emissions from public buildings by 2032. This must be part of a coherent cross-government strategy including an updated set of Greening the Government commitments, multi-year spending commitments and annual reporting.	Now and ongoing
	Support the **NHS** in delivering on its Net Zero plan.	Now and ongoing
	Take an active role in climate policy development that also has **health benefits**, such as active travel, access to green space, air quality, better buildings and healthier diets.	Now and ongoing
	Ensure all departmental policy decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing

Table A12 Recommendations for the Home Office and the Ministry of Justice (MoJ)		Timing
	For the coming five-year period (2023-2028), MoJ should outline appropriate actions in the next **National Adaptation Programme** to address the adaptation gap identified for the risks in the CCRA for which it is the lead department (see Adaptation Report Annex).	2023 Priority recommendation
	Home Office, BEIS, DWP, DfE and MHCLG, should develop a strategy for a **Net Zero workforce** that ensures a just transition for workers transitioning from high-carbon to low-carbon and climate-resilient jobs, integrates relevant skills into the UK's education framework and actively monitors the risks and opportunities arising from the transition. This strategy should include the development and roll-out of plans for training and skills, with buildings and manufacturing being priority areas.	2021 Priority recommendation
	Develop and implement plans to make all **public-sector buildings and vehicle fleets** within the department's remit zero-carbon in the long term, switching to ultra-low emission vehicles by 2030 and halving emissions from public buildings by 2032. This must be part of a coherent cross-government strategy including an updated set of Greening the Government commitments, multi-year spending commitments and annual reporting.	2021-22
	Ensure all departmental policy decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing

Table A13 Recommendations for the Ministry of Defence (MoD)		Timing
	Ensure all departmental policy decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing
	Develop and implement plans to make all **public-sector buildings and vehicle fleets** within the department's remit zero-carbon in the long term, switching to ultra-low emission vehicles by 2030 and halving emissions from public buildings by 2032. This must be part of a coherent cross-government strategy including an updated set of Greening the Government commitments, multi-year spending commitments and annual reporting.	2021-22
	Assess the potential for **alternative fuels** (such as low-carbon electricity, hydrogen or bioenergy) to be used for land vehicles, ships and aircraft, and consider opportunities to support wider use of low-carbon technologies in civil applications (e.g. through research or demonstration).	Now and ongoing

Table A14 Recommendations for the Office of Gas and Electricity Markets (Ofgem)		Timing
	Continue to support widespread deployment of **EV charging infrastructure**: • This should ensure it can support high EV uptake levels. Project Rapid has the right ambition for the strategic road network and should be developed into a full strategy for the 2020s and beyond. • Further investment is needed to support on-street and other urban charging solutions for those without off-street parking and destination charging. • Around 150,000 public charge points will need to be operating by 2025. These should be widely available across all regions of the UK. • Implement the recommendations of the EV Energy Taskforce, in particular improving the consumer charging experience and making smart-charging accessible, appealing and cost-effective for as many EV users as possible.	Now and ongoing Priority recommendation
	Ensure all regulatory decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks**.	Now and ongoing
	Develop mechanisms for strategic investment in coordination with BEIS to ensure that **electricity networks** can accommodate increased future demand levels, including large localised demand increases associated with electrification in manufacturing, transport and buildings, and that lack of network capacity does not cause delays in emissions reduction.	2023
	Start a programme of research with BEIS to identify **areas which are unlikely to be suitable for hydrogen** (such that electrification and alternatives can be prioritised), **alongside priority candidate areas for hydrogen**. Distribution Network Operators should gather and share detailed information on network capacity (at least to substation level) to feed into this.	2021
	Set out reforms to encourage the **utilisation of existing network capacity** and ensure that costs of local network upgrades are shared fairly and do not disincentivise the roll-out of low-carbon technologies.	2021
	Work in partnership with BEIS to publish and implement a new **Smart System Plan** and **Energy Data and Digitalisation Strategy**, including working with DCMS on cyber-security, in order to continue to unlock the full benefits of electricity system flexibility. Ensure that, alongside smart standards for heating, all electricity users have access to half-hourly metering and the option of tariffs that encourage flexibility in use of electric heat and electric vehicle charging.	2021
	Develop (with BEIS) a strategy to coordinate the development of **interconnectors**, connections for offshore wind farms and the enhancement of inter-area transfer capacity for the onshore network, ensuring cost-effective, timely delivery, bringing forward any legislation necessary to enable it.	H1 2022
	Work with BEIS to make explicit how current and future policies will reduce emissions associated with **methane leakage** from the gas networks in a way that is consistent with the Sixth Carbon Budget.	2021

Table A15 Recommendations for the Water Services Regulation Authority (Ofwat)		Timing
	Ensure all regulatory decisions, and procurement decisions, are consistent with the **Net Zero goal** and reflect the latest understanding of **climate risks.**	Now and ongoing
	Include **decarbonisation** as one of Ofwat's core principles, to assist the water industry's goal of decarbonising by 2030, and the need to roll out advanced anaerobic digestion systems.	2021
	Work with Defra, the Environment Agency and other stakeholders to set out targets and supporting measures for **reducing water use by business**. This could be through ensuring that any water reduction targets linked to the Environment Bill include business as well as household water use as well as responding to advice and recommendations from Defra's new Senior Water Demand Reduction Group.	2022

Table A16 Recommendations for the Office for National Statistics (ONS)		Timing
	Review plan for improving **data collection** and statistical reporting for the purposes of monitoring and informing the low-carbon transition, as part of the broader work the ONS are already undertaking to improve the collection of climate-related data.	2022
	Work with BEIS to put in place plans to collect and report data annually on **low-carbon heat networks**, specifically, the amount of heat delivered (split by DUKES consumption sector, i.e. Residential/Public/Commercial/Industry, and where possible, by source of heat supply).	2022
	Improve the collection and reporting of **industrial decarbonisation data** to allow for progress to be monitored more effectively, particularly on energy and resource efficiency.	2022

Table A17 Recommendations for the Scottish Government		Timing
	Scale up delivery across all sectors in line with the ambition set out in the recent **Climate Change Plan Update.**	Now and ongoing
	Publish the finalised **Heat in Buildings strategy**. • This must include finalising the regulatory framework and role of different trigger points (including area-based plans), and setting in train the legislation needed to underpin these. • Consult on the trajectory of reform for metrics such as EPCs, to ensure they are robust and enforceable, fit for purpose to deliver the measures needed on a holistic basis, do not disincentivise low-carbon heat, integrate in-use performance metrics from 2023, and include plans for the future role of Green Building Passports. • Provide further detail on the ambition for heat networks and heat pumps over the coming decade, and determine how funding for energy efficiency and low-carbon heat will be allocated to meet strategic priorities.	2021
	Proposals in Scotland's Updated Climate Change Plan 2018-32 to set out a **route map for agricultural transformation** should be scaled up, with the development of environmental conditionality that incentivises emission reduction and carbon sequestration measures in the land sector that build towards Scotland's climate goals. It is essential that appropriate incentives are in place to drive early action, given the time (often decadal) needed for some measures to reduce and sequester carbon (e.g. afforestation and peat restoration).	2021
	Renew efforts to improve **recycling and resource efficiency**, including by: Bringing forward the planned circular economy package for legislating within the forthcoming Programme for Government. Putting in place the policy and support to ensure the 2025 targets (including the 70% recycling target) within the package are delivered, and setting new ambitious targets for 2030. Legislating to ban key biodegradable waste streams going to landfill from 2025, and ensuring this is delivered through increased resource efficiency and recycling.	2021
	Publish a strategy setting out how the Scottish Government will achieve a 20% reduction in **car-kilometres** by 2030 and deliver 20-minute neighbourhoods. This should be supported by: Continuing to strengthen schemes to support walking, cycling, and public transport. Investment in infrastructure connectivity to lock in positive behavioural changes that reduce travel demand (e.g. home-working). Supporting the public transport and shared mobility sectors to recover from the COVID-19 pandemic, including through recovery funding and positive communication and messaging.	2021
	Continue to support the expansion of Scotland's **public EV charge point network**, to ensure the EV transition works for all road users in Scotland.	Now and ongoing
	Maintain the provision of **interest-free loans** for EVs (now including second-hand EVs) on top of existing UK government grants. Plan for a transition to fiscally-neutral incentives as EV costs fall.	2021-22
	Taxation should be used, alongside improvements in broadband, to **embed positive behaviours** that have arisen during the pandemic, replacing business travel with videoconferencing and online collaboration.	2021-22
	Seek to address price imbalances between aviation and surface transport, once **aviation taxation** is devolved to Scotland, encouraging the low-carbon alternative (e.g. rail) for journeys where one exists.	2021-22
	Play a leading role in decarbonising the **shipping** sector by exploring opportunities to transition ferries operated by Transport Scotland to low-carbon energy and establishing appropriate business models to encourage their adoption.	Now and ongoing

Table A18 Recommendations for the Welsh Government		Timing
	Publish a new **Net Zero Delivery Plan** that sets out a long-term vision for meeting the Net Zero goal in 2050, with a particular focus on the Third Carbon Budget and beyond.	2021
	Publish a coherent, **long-term strategy for heat and energy** efficiency in Welsh homes and other buildings, setting a framework for progress in areas of devolved responsibility. As part of this, energy efficiency policy should be designed so as to ensure that funds go as far as possible in reducing the fuel poverty gap and improving the energy efficiency of homes, by focusing on the most cost-effective interventions (including upgrading homes to EPC B and EPC C where applicable).	2021
	Deliver on the priorities set out in Llbwyr Newydd to **reduce demand for higher-carbon travel**. This includes: • Delivering a better, more integrated, decarbonised bus system. • Developing a network of connected local routes for walking and cycling. • Investing in infrastructure connectivity to enable delivery of the ambition for 30% of the workforce to work remotely on a regular basis. • Supporting the public transport and shared mobility sectors to recover from the COVID-19 pandemic, including through recovery funding and positive communication and messaging.	2021-22
	Support delivery of a **charging network** that meets the ambition set out in the Electric Vehicle Charging Strategy, to ensure the EV transition works for all road users in Wales.	Now and ongoing
	The Welsh Government's second statutory decarbonisation plan (LCDP2), due out later this year, should set out policies to **accelerate afforestation rates** to deliver its share of the UK target to plant 30,000 hectares in 2025.	2021
	Build on strong progress made on **recycling and resource efficiency**, including by: • Implementing the policies set out in the recent 'Beyond Recycling' strategy. • Legislating and progressing towards the existing 70% recycling target, and set new ambitious targets for 2030. • Legislating to ban key biodegradable waste streams going to landfill from 2025, and ensuring this is delivered through increased resource efficiency and recycling.	2021

Table A19 Recommendations for the Northern Ireland Executive		Timing
	Legislate a credible **long-term emissions reduction target** that is backed up by evidence on its deliverability and a clear plan for how it can be achieved in a way that is fair for Northern Ireland's citizens – the Committee previously advised that an 82% reduction on 1990 levels by 2050 is Northern Ireland's appropriate contribution to the Paris Agreement and the UK Net Zero goal.	2021-22
	Publish a final energy strategy that sets out how Northern Ireland will achieve a **net-zero-carbon energy system** by 2050, in line with the pathways recommended in our December 2020 advice.	2021
	Publish a coherent, **long-term strategy for heat and energy efficiency** in Northern Ireland's homes and other buildings; encompassing regulatory, policy and funding commitments to facilitate delivery. • The strategy should include a trajectory of regulatory standards for energy efficiency, supported by reforms to relevant metrics (such as EPCs) to ensure they drive the measures needed on a holistic basis and do not disincentivise low-carbon heat. Reforms should ensure metrics are robust and enforceable such that standards targeted are achieved in practice. • Publish proposals on the phase-out of fossil fuel heating, including standards to phase out the installation of new liquid and solid fossil fuel heating. Proposals should recognise the critical role of heat pumps and hybrid heat pumps in these homes, minimising the use of biofuels to reflect economy-wide needs.	2022
	Consult on an ambitious trajectory of **new-build standards** uplifts, including ensuring all new homes are designed for a changing climate, are ultra-efficient and use low-carbon heating from 2025.	2021
	Set out provisions to integrate a **post-CAP framework** that helps the land sector contribute to Northern Ireland's climate goals as soon as the climate legislation is introduced. This should include providing incentives for landowners and tenants to deliver low-carbon farming practices and change the use of land to reduce emissions and increase carbon sequestration.	2022
	The Northern Ireland Executive should bring forward a **resource efficiency package** which matches the ambition of Wales and Scotland, including by: • Setting a target for 70% recycling across all wastes by 2030. • Policies to deliver such a target, as well as improving waste prevention and re-use. • Legislating to ban key biodegradable waste streams going to landfill from 2025, and ensuring this is delivered through increased resource efficiency and recycling.	2022
	Strengthen support for and provision of schemes to support **walking, cycling and public transport** to reduce Northern Ireland's high levels of car-dependence: • Strengthen schemes to ensure access to local amenities without dependency on cars. • Invest in infrastructure connectivity to lock in positive behavioural changes that reduce travel demand, e.g. home-working. • Support the public transport and shared mobility sectors to recover from the COVID-19 pandemic, including through recovery funding and positive communication and messaging.	2021-22
	Support the deployment of **public charge points** across Northern Ireland, to address the issue that Northern Ireland currently has the fewest EV charge points per capita of any of the UK nations.	Now and ongoing
	Resume collecting and publishing **data on vehicle-kilometres** travelled by mode in Northern Ireland. This will help identify which actions are effective in encouraging modal shift away from car travel.	2021-22
	Long-haul air passenger duty, which is devolved to Northern Ireland, should be increased at least in line with UK-wide long-distance APD, to better reflect the climate change impact of flying.	2021-22

June 2021

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Climate Change Committee

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