



MONITORING

The UK's Road to Net Zero: A Progress Report

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Introduction

Will 2021 be hailed as a milestone on the UK's road to net zero? Not only is the UK hosting COP26 – the crucial UN Climate Change Conference of the Parties in Glasgow in November – but the government has also set itself an ambitious national **climate goal**. In April, Prime Minister Boris Johnson announced that the government would enshrine in law a new target to cut UK carbon emissions by 78 percent by 2035 when compared to 1990 levels, in line with the recommendations of the independent Climate Change Committee (CCC). “We want to see world leaders follow our lead and match our ambition in the run up to the crucial climate summit COP26, as we will only build back greener and protect our planet if we come together to take action,” he said at the time. Hitting that target would be a major step towards reaching net zero by 2050, the point where the amount of greenhouse gas (GHG) emissions produced match the amount

that is removed. Achieving net zero is the prime strategy for meeting the 2015 Paris Agreement, which aims to limit global warming to well below 2 degrees Celsius, preferably 1.5 degrees, compared to pre-industrial levels.

However, the latest major **report** by the Intergovernmental Panel on Climate Change (IPCC), the UN body for assessing the science related to climate change, published on 9 August warned that global warming of 2 degrees will be exceeded during the 21st century unless deep reductions in GHG emissions occur in the coming decades, but the worst catastrophes of climate change could still be averted if politicians take swift and immediate action. António Guterres, the UN Secretary General, **described** the report—which was approved by representatives of 195 governments – as a “code red for humanity.” COP26 President Alok Sharma **said that** the

window of opportunity for achieving 1.5 degrees was “retreating fast,” with the science suggesting that achieving the temperature goal required global emissions to halve by 2030 and net zero to be achieved worldwide by 2050.

This Dods Monitoring briefing examines the progress the UK has made on net zero and the challenges ahead in six key sectors – energy, transport, buildings and housing, agriculture, financial services, and defence – which account for a significant proportion of total emissions. While the UK over-achieved against its first and second carbon budgets – legally binding GHG emissions restrictions set by parliament on the advice of the CCC – and is on track to outperform the third, questions remain over the roadmap to net zero and the roles of individuals, businesses, and different levels of government in driving Johnson’s so-called Green Industrial Revolution. Emissions have dropped in many areas since 1990, but none of these key emitting sectors can be considered on track for net zero by 2050. Some areas have seen increases in emissions, such as from vans.

Like the UK, several nations have announced plans to tackle climate change ahead of COP26. The European Commission published its “Fit for 55” package in July, its most detailed legislative plan yet for the European Union to reduce net GHG emissions by at least 55 percent by 2030, and an important step in the European Green Deal ambition to achieve net zero by 2050. But despite the Commission’s claim that “we are the

last generation that can still act in time,” there are signs, as detailed in a recent Dods EU Monitoring [report](#), that member states and other parties are pushing back against some of the proposals.

One of the biggest challenges facing the UK government, and policymakers around the world, is how to cover the high cost of moving to net zero, particularly in the wake of the Covid crisis. The CCC puts the cumulative investment cost for decarbonising the UK economy between now and 2050, plus the operating costs of emissions removals, at around £1.4trn in 2019 prices. Many of the measures, such as changes to heating homes and transport, will require significant changes in people’s behaviour and be more expensive than fossil fuel alternatives, at least initially. However, tackling climate change also promises to unlock significant opportunities that could help the UK’s economy bounce back from the devastating impact of the Covid crisis. [A report by the European Climate Foundation](#) found that the UK’s focus on decarbonisation could create 625,000 new jobs, while data [published](#) by the Office for National Statistics in April 2021 found that more than 800,000 UK job losses caused by the pandemic could be replaced by new green jobs. While estimates depend on a multitude of factors, including the pace of innovation and eagerness of the private sector, most commentators agree that the sooner decarbonisation efforts get underway the more affordable the transition will be.

The politics behind the net zero challenge

Laying the path to “net zero” is high on Boris Johnson’s priority list and he has hurtled through a series of commitments with characteristic gusto and fist thumping enthusiasm. But finding the money to fund the huge structural changes required and convincing the public and sceptical Conservative MPs of the need to switch to electric vehicles and more expensive environmentally-friendly heating options will take much more than rhetoric.

Johnson has already committed £12bn to a **10 point plan for a so-called Green Industrial Revolution** and post-coronavirus he wants to “build back greener.” Speaking at a virtual summit of global leaders in April, Johnson said tackling climate change was about growth and jobs. “It’s vital for all of us to show that this is not all about some expensive, politically correct, green act of bunny hugging,” he said. Conservative MPs in former red wall seats have welcomed the new green jobs promised, and politically it’s a way to appeal to younger and liberal voters that were put off by Brexit. On a personal level, tackling climate change is important to those around the Prime Minister like father Stanley, wife Carrie Johnson, and Department for Environment, Food and Rural Affairs minister and environmentalist Lord Zac Goldsmith.

Climate change also presents an opportunity for Johnson to engage with international partners, such as the US and European Union, and bolster the government’s “Global Britain” agenda following Brexit. COP26 in particular is a major reputational moment for the Prime Minister, and a chance for him to show off how committed the UK is to getting emissions down to net zero by 2050. PoliticsHome reported in April that Whitehall had been working for months on a plan to fly Johnson and other leaders to Glasgow on low emission “Green Fuel” planes.

However, two very difficult political issues have reared their head at the same time which threaten to complicate the government’s net zero mission. Firstly, the country’s finances have been squeezed like never before in peacetime by the immense spending needs of the pandemic and this has led to obvious questions from backbench MPs about whether the country can afford to go as green as Johnson wishes. There have been reports for months of Treasury and No10 clashes over how much of the country’s budget can be spent on decarbonising.

Secondly, the journey to net zero has reached a point where to make serious change, the government will need to ask individuals to adapt their lifestyles and, in many circumstances, pay more money to do so. Whether it’s replacing gas boilers with heat pumps, accepting higher energy bills to help fund lower emission generation, or doing away with diesel cars, the onus is gradually being shifted on to the consumer. This additional burden on voters is already opening fault lines within the Conservative Party over whether this is fair or politically savvy if it hits the lower income families the Tories are trying to appeal to.

PoliticsHome has recently reported how the upcoming Spending Review has thrown up questions on just how green the next round of financial commitments can be considering borrowing hit a record £300bn in the first 12 months of the pandemic. If Chancellor of the Exchequer Rishi Sunak holds the event before COP26 it is likely to be a moment where Johnson will want to secure a package of innovative domestic commitments he can reel off to international delegates. Green stakeholders operating outside of Westminster however say that Sunak and the Joint Economic Unit are less keen to dole out the cash, and promises have already been tweaked due to money concerns, including pushing back the date to ban the sale

of new gas boilers. Political advisers insist that Sunak is just as committed as the PM to reaching net zero with Chief Secretary to the Treasury, Stephen Barclay, actively welcoming bids from Whitehall departments for environmentally friendly projects. One special advisor told PoliticsHome that if anything is getting money at the Spending Review, it's green policies.

However, the push for net zero has the potential to create significant internecine strife in the Conservative Party of the kind that could draw parallels with the debate about Brexit. The House magazine looked at this issue recently, highlighting how prominent Tory ex-minister and arch-Brexiter Steve Baker has pledged to make pushing back against the cost of

decarbonisation "his next great crusade." His involvement in the debate is not good news for Johnson and any hopes he might have of showing a united Conservative front on the issue. Baker's management of the European Research Group during the Brexit votes showed he is an effective organiser and media communicator. He told The Sun earlier this year that if costs spiral for householders, "The cost of net zero could deliver a political crisis greater than the poll tax." It's already clear this parliament has its fair share of Tory rebels, and when it comes to green spending, it could well be a tense few months ahead.

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Net zero: key dates

1988: Intergovernmental Panel on Climate Change established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO).

1990: IPCC publishes **First Assessment Report**. The UN General Assembly initiates negotiations for a framework convention on climate change.

1992: The IPCC publishes **Supplementary Reports**. The United Nations Framework Convention on Climate Change (UNFCCC) opened for signature at the **UN Conference on Environment and Development in Rio de Janeiro**.

1997: The UNFCCC's **Kyoto Protocol** adopted – comes into force in 2005.

November 2008: UK passes **the Climate Change Act**, which commits to reducing greenhouse gas emissions by 80 percent by 2050 and establishes independent **Climate Change Committee (CCC)**.

2008-2014: **First UK carbon budget** targets 25 percent reduction from 1990 emissions levels.

11-18 December 2008: **European Union climate and energy package** agreed, commits member states to reduce by 20 percent emissions of greenhouse gases compared to 1990 levels.

2009: UNFCCC's **Copenhagen Accord** adopted.

2013-2017: **Second carbon budget** targets 31 percent reduction from 1990 emission levels.

2015: UNFCCC's **Paris Agreement** adopted – comes into force November 2016.

2017: Sweden becomes first nation to enshrine **a mid-century net zero target (2045) in law**.

2017: **Clean growth strategy published**, setting out proposals for decarbonising all sectors of the UK economy through the 2020s.

2018: UK publishes **25-year environment plan**.

2018-2022: **Third carbon budget** targets 37 percent reduction by 2020 from 1990 emission levels.

2018: **The IPCC Special Report on 1.5°C** says preventing worst impacts of climate change implies reaching net zero emissions of CO₂ by mid-century along with deep reductions in non-CO₂ emissions.

May 2019: CCC **recommends** 2050 target date for the UK reaching net zero.

11 June, 2019: Prime Minister Theresa May **commits UK to net zero by 2050**.

September 2020: China **commits to carbon neutrality** 'before 2060.'

9 August 2021 – IPCC **publishes** first volume of its Sixth Assessment Report on the science of climate change.

Autumn 2021: UK Government expected to **publish** Net Zero Strategy, alongside strategies on low carbon heat and buildings, and Net Zero Review.

Autumn 2021 (TBC): **The Environment Bill** expected to become law.

September 2021: New eco-friendly E10 petrol to be **introduced** at petrol stations across the UK.

31 October-12 November 2021: UN Climate Change Conference of the Parties (**COP26**) in Glasgow

June 2022: IPCC - **Sixth Assessment Report** to be published.

2022: UK local EV infrastructure fund to be **launched**.

2023: Paris Agreement - **global stocktake**

2023-2027: **Fourth carbon budget** targets 51 percent reduction by 2025 from 1990 emission levels.

2024: Unabated coal to be **removed** from UK energy mix.

2024: **Environmental Land Management Scheme** rolled out.

2025: **Future Homes Standard** to come into effect, all new homes must be zero carbon ready.

2025: UK to **facilitate** deployment of carbon capture, utilisation and storage (CCUS) in two industrial clusters by the mid-2020s.

2025: Full progress review of the rollout of EVs **undertaken**.

2028: UK **targets** installation of 600,000 heat pumps per year.

2028-2032: **Fifth carbon budget** targets 57 percent reduction by 2030 from 1990 emission levels.

2030: Sale of new petrol and diesel cars to be **banned** in the UK.

2030: **Sustainable Development Goals** are meant to have been met.

2030: UK offshore oil and gas sector has **committed** to reducing offshore production emissions by 50 percent by 2030 against a 2018 baseline.

2030: Plans for a **pilot hydrogen town** in the UK should be devised by 2030.

2030: First demonstrators of innovative nuclear technologies, Small Modular Reactors and Advanced Modular Reactors, **set to be deployed** in the UK.

2032: UK **aims to ensure** public sector has cut emissions by 50 percent compared to 2017 baseline.

2033-2037: **Sixth carbon budget** targets 78 percent reduction by 2035 from 1990 emission levels.

2035: Sale of hybrid cars and vans to be **phased out** in the UK.

2040: International Energy Agency says the global electricity sector **should have** reached net zero.

2040: **NFU target** for the UK agricultural sector to reach net zero.

2045: Scottish Government's **deadline for achieving net zero**.

2050: UK and Welsh Governments' **deadline for achieving net zero**.



Net zero by sector

The following section examines the progress made on net zero and challenges ahead in UK sectors that have a key role to play in cutting GHG emissions: energy, transport, buildings and housing, agriculture, financial services, and defence.

Energy

In November 2020, Prime Minister Boris Johnson set out his **Ten Point Plan** for a Green Industrial Revolution, including an ambitious blueprint for a net zero energy sector by 2050. The pace of transformation in the UK energy sector over the past decade shows that the clean energy revolution is well underway, despite the sector accounting for 15 percent of UK greenhouse gas emissions in 2018.

Between 2012 and 2018, emissions from electricity generation in the UK fell by around 58 percent, **reflecting** a rapid transition from coal and gas towards low carbon generation. Coal now accounts for less than 5 percent of electricity generation and the UK government has **committed** to ending its use altogether by 2024. While emissions from fossil fuel supply accounted for 7 percent of UK emissions in 2018 and rose marginally the year after, emissions from refining, processing and other means of fossil fuel production were 53 percent lower than 1990 levels.

Tumbling emissions have been aided by falling UK electricity demand, which was 12 percent lower in 2018 compared to the previous decade despite a growing population and 10 percent rise in manufacturing output. This largely **reflects** structural changes in manufacturing away from more carbon-intensive industry, as well as widespread energy efficiency improvements. Falling costs have also been both a driver and a consequence of the shift to cleaner energy generation. Offshore wind, which **accounted** for 13 percent of UK electricity generation in 2020,

has become much more competitive, falling to around £45/MWh from £150/MWh over the last decade. This is cheaper than gas generation, which means renewable energy is now the most competitive technology on a level cost basis.

Nonetheless, the energy sector remains far from net zero and the road to achieving it will involve much more radical transformation than seen over the last decade. According to the CCC, achieving the **Sixth Carbon Budget** will require UK electricity generation to achieve zero carbon by 2035. Major progress is also needed to decarbonise the North Sea oil and gas sector, and clean-up practices such as flaring, the controlled combustion of gas generated during various processes including oil and gas exploration, production, and processing. In March 2021, the government **announced** a landmark North Sea Transition Deal with the industry, committing the sector to halving emissions by 2030. While the decision to permit further drilling has **angered** many campaigners, **new research** suggests the North Sea's reputation as a globally renowned oil and gas hub will be eclipsed by the rapidly growing clean energy sector within the next decade.

The government and businesses have been driving each other on as the market for clean energy becomes increasingly competitive. The government has **published** an Industrial Decarbonisation Strategy, and its **Ten Point Plan** and **Energy White Paper** published in late 2020 aim to slash emissions by 230m metric tonnes and achieve "overwhelmingly decarbonised power" in the 2030s. Businesses **are now required** to publish a carbon reduction plan to win major government contracts and 30 UK FTSE100 companies have **signed up** to the UN **Race to Zero** campaign. Nonetheless, questions remain over the willingness of the energy sector to match rhetoric with action. The sector has called for the government to provide strategic direction and a clear roadmap to net zero.

The International Energy Agency has said the **path** to global net zero is narrow and will require a radical overhaul of energy systems and people's behaviour. This includes the development of no new oil and gas fields, the complete phaseout of new fossil fuel boilers in homes by 2025 and net zero emissions from electricity generation in advanced economies by 2035. The CCC agrees and has argued that the phaseout of unabated gas by 2035 and establishment of a power system made up of 75-90 percent renewable generation by 2050 is both possible and necessary.

Variable renewables, which are dependent on fluctuating sources like the wind and sun, are expected to form the backbone of the net zero transition. According to National Grid ESO, between 34GW and 77GW of new wind and solar generation **could be required** overall to meet UK energy demand in 2030, alongside up to 13GW of new electricity storage to help balance fluctuating output. Although the offshore wind sector has been a **success story** of the UK's energy transition, "firm power," which does not depend on fluctuating weather patterns, will remain pivotal in securing supply. As Energy UK's chief executive, Emma Pinchbeck, **commented** in July 2021, "For a vital service like energy, the ability to withstand whatever the weather throws at it has long been built into the development and operation of power plants. An increasingly volatile climate and a fast-changing generation mix, bringing far more numerous and diverse sources of low carbon power, means this challenge will continue to grow."

This suggests a continued role for nuclear, which provides 20 percent of UK generation. Operator EDF says **Hinkley Point C** in Somerset, the first new nuclear power station to be built in the UK in over 20 years, will provide low-carbon electricity for around six million homes and the electricity generated by its two reactors will offset 9 million tonnes of carbon dioxide emissions a year. While new nuclear remains contingent on costs, and around 8GW of the UK's current 9GW of nuclear capacity is set to retire in the 2020s, innovations such as Small Modular Reactors could increase its commercial viability.

Surplus nuclear energy could also be used to produce hydrogen, which could play a crucial role in powering industry, transport, and heating homes.

Achieving net zero will also require the management of a more flexible energy network, given that a greater reliance on renewable generation will increase the risk of intermittency in electricity supply. Greater storage and interconnector capacity will be needed and, despite presenting a major infrastructural challenge, research by Carbon Trust – an independent organisation that aims to accelerate the delivery of a sustainable low carbon economy – **has said** that a more flexible energy system could cut the cost of reaching net zero by up to £16.7bn per year.

Jonathan Brearley, the chief executive of the Office of Gas and Electricity Markets, the industry regulator better known as Ofgem, **told** Energy UK's annual conference last October that a smarter and more flexible energy network "represents a very compelling vision of the future, particularly when you add electric vehicles into the mix. The more we can shift our demand, and potentially our supply, to adapt to a more intermittent world of renewables, the more likely it is that we will make this transition in a cost-effective way." Lowering electricity consumption is likely to be crucial, with the support of energy efficient technologies such as longer-range electric vehicles, low-energy lightbulbs and heat pumps.

The energy transition will also require a further shift in the behaviour of consumers, and likely involve higher costs in the short term. Although the price of more environmentally friendly technologies is tumbling, many options, such as heat pumps, remain more expensive than fossil fuel alternatives like traditional gas boilers. Research suggests consumers are **concerned** by climate change, but not necessarily to such an extent that they are willing to take on the added costs involved in switching to greener technologies. Ministers have reportedly drawn up plans to reduce carbon emissions that could

increase gas bills and the cost of running a car by hundreds of pounds each year. But such a move could be politically toxic. A **recent survey** by the Energy and Utilities Alliance – a not-for-profit trade association that aims to shape future policy direction within the sector – found that 40 percent of voters said they would be less likely to vote for a government that hiked up gas prices to encourage the uptake of heat pumps.

Consumers and businesses are looking for the government's strategies on net zero and

low carbon heat, both of which are expected before COP26, to see what incentives may be introduced. Recent **polling** by Ipsos MORI found that less than a third of Britons believe the government has a clear plan to combat climate change and it remains unclear how far consumers and businesses are willing to sacrifice profits, behaviours and lifestyle choices to support the net zero transition.

– *Written by Michael Thorogood, Dods Political Consultant for Energy and Utilities – @MJThoro*



Transport

Getting the transport sector to net zero by 2050 promises to be a major challenge. The government's long-awaited **Transport Decarbonisation Plan** published in July 2021 said it was feasible, and extolled the benefits a decarbonised transport sector would bring for public health, the green economy, and the planet, but it did not suggest the transition would be simple or cheap.

Despite the sharp rise in electric vehicle (EV) sales, surface transport is the single highest emitter of GHGs in the UK, responsible for 113 metric tons of carbon dioxide equivalent (MtCO₂e) of GHG emissions in 2019, 22 percent of the UK's total, according to CCC **figures**. The UK's share of aviation emissions was estimated by the CCC at 39.6 MtCO₂e while shipping produced 14.3 MtCO₂e, roughly 7 percent and 3 percent of the UK's total respectively.

CCC data shows GHG emissions from cars and buses have **fallen** 5 percent and 40 percent respectively since the 1990s. But there has also been a 1 percent increase of emissions from heavy goods vehicles (HGVs), following a 10 percent increase in traffic, while emissions from vans have soared 67 percent since 1990.

Accelerating the shift to zero emission vehicles, mostly electric, has been a key tenet of the government's Ten Point Plan. When the Prime Minister unveiled the strategy, he brought forward a planned ban on the sale of new petrol and diesel cars to 2030 with all vehicles required to be 100 percent zero emissions five years later. The transition has been underpinned by the **2035 delivery plan**, which sets out a series of key deadlines to be achieved in the coming 14 years. Vehicle manufacturers have responded by rolling out more EV models in the UK and related manufacturing infrastructure, with Nissan announcing plans in July 2021 for a \$1.4bn battery plant in Sunderland. The market for EVs has continued to grow, with plug-in hybrid sales

rising 152 percent over the past year, and battery electric vehicle sales now comprising 7.7 percent of the market.

However, EVs **are not a panacea**. Experts say the government will also need to encourage greater use of public transport to help reach its decarbonisation goals. In the last six months, the government has published plans to reform and revitalise both the **bus network** and the **national rail model**. The government also published an **active travel plan** in summer 2020, outlining how it would spend £2bn to encourage the public to adopt zero-carbon mobility options, such as walking and cycling, as their first choice for daily activities. Successful implementation of these plans, alongside sustained efforts to decarbonise public transport through alternative fuels and electrification, has the potential to reduce the demand for private vehicles. However, the government will need to ensure that investments in low- and no-carbon infrastructure are spread across the UK, including rural and remote areas, to bring the public along.

Although aviation emissions are small in global terms, they are growing fast as more people travel internationally and planes produce significant amounts of GHGs compared to other forms of transport. The UK government has begun to explore how to decarbonise the UK's share of aviation emissions by publishing the **Jet Zero Consultation** alongside the Decarbonisation Plan. This follows the government's decision to include domestic emissions in its net zero aims, as recommended by the CCC. The consultation seeks views on whether the sector could feasibly reach 'jet zero' by 2040, which would represent a marked step up in the government's ambition and would position the UK as a world leader in green international travel. However, the CCC **maintains** that the sector will still be dependent on offsetting emissions in 2050 even on its most ambitious pathway. Some analysts have suggested that, in the absence of ways to significantly reduce emissions from the sector, reducing demand should not be a taboo subject.

The investments being made by vehicle manufacturers and willingness demonstrated by the **British aviation industry** indicate the transport sector is keen to realise the government's net zero ambitions, but some analysts say private stakeholders would benefit from additional financial and non-financial support and planning to encourage them to accelerate the transition. However, the Covid crisis created difficulties by making cars and other private vehicles a more attractive option than public transport and ensuring debate in the aviation sector is focused on recovery rather than lowering emissions. As lockdown restrictions are lifted, the government and industry will need to work together to ensure that public transport is seen as a safe and cost-effective option for travellers, with the support of further fare reform and integrated ticketing.

Underpinning the government's efforts is an ambition for the UK to become a leader in green transport technology and innovation. The government's **Future of Transport programme** is exploring a variety of options including so-called micromobility, the use of lightweight vehicles such as bicycles or electric scooters; flexible bus services; and Mobility-as-a-Service (MaaS), which involves integrating various modes of transport into a single service from public transport to bike- or car-sharing. The Society of Motor

Manufacturers and Traders (SMMT) has said **the government will need to continue to invest** in sustainable fuels and other environmentally-friendly technologies and support research and development in the sector to reduce the costs of innovation for UK businesses. The Department for Transport is expected to publish a new Science Plan in coming months, which is likely to showcase its commitment to decarbonisation.

Although the transport industry has welcomed the Transport Decarbonisation Plan, several government transport strategies remain outstanding, including the Future of Freight Strategy, the Future of Transport: Rural Strategy, and the Integrated Rail Plan.

The rail plan, in particular, could provide the government with an opportunity to demonstrate its commitment to greener transport. As the lowest-emitting form of surface travel, the plan offers government the opportunity to deliver on its ambition to **position rail as the backbone** of the UK's green transport recovery, as recommended by the CCC, and capitalise on the momentum of the launch of Great British Rail by further investing in electrification and offering further financial incentive to passengers.

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Buildings and Housing

The Sixth Carbon Budget published in December 2020 showed that buildings produced 87 MtCO₂e of direct emissions of GHGs in 2019, around 17 percent of the UK total. When taking account of indirect emissions, such as from waste disposal or purchased electricity, buildings accounted for 23 percent of the total for the UK. The report showed that although direct emissions from buildings fell by 19 percent between 1990 to 2015, largely due to energy efficiency improvements, they have remained steady since then. Indirect emissions have been falling at an average rate of 10 percent per year since 2009.

The government has outlined several building policy initiatives to support its climate objectives, but many have yet to be set out in detail. The Future Homes Standard, for example, aims to ensure that new homes in England have low-carbon heating systems and greater levels of energy efficiency from 2025, but full details of the initiative have not been released. Other initiatives have included the clean growth strategy and changing Energy Performance Certificate (EPC) ratings in privately rented properties. The government's Ten Point Plan, which aims to mobilise some £12bn of government investment, includes the target of 600,000 heat pump installations per year by 2028.

The Future Homes Standard aims to ensure that homes built from 2025 are "zero carbon ready" and produce 75-80 percent less CO₂ emissions than those built to current standards. It will amend Part F (ventilation) and Part L (conservation of fuel and energy) of building regulations. In January 2021, the government **responded** to a consultation on the initiative and confirmed that all new homes would have to have low-carbon heating from 2025. The government also introduced a **consultation** on the future buildings standard, which proposed new energy efficiency and ventilation standards for existing homes and non-domestic buildings.

However, the government has faced criticism for scrapping some of its green initiatives, most notably the **Green Homes Grant. Announced in**

2020, the initiative provided financial support in the form of vouchers to help homeowners and residential landlords pay for energy efficiency improvements, including insulation, heat pumps, and draught proofing. The vouchers could be used to cover the cost of labour, materials, and value-added tax. Brian Berry, Chief Executive of the Federation of Master Builders (FMB), **said** "The misguided scrapping of the Green Homes Grant scheme sends entirely the wrong message to consumers and builders, and will harm the UK's desire to be seen as a global leader in tackling climate change." However, the government has continued to operate the **Green Homes Grant Local Authority Delivery scheme** launched in 2020, which provides £500m to help fund energy efficiency measures and low carbon heating projects for low-income households in England. The scheme aims to upgrade around 50,000 homes.

Although stakeholders have welcomed the Sixth Carbon Budget, many have said that progress by the government has been slow and more needs to be done to meet the UK's climate ambitions. The House of Commons **Environmental Audit Committee** said there was little chance of meeting the UK's target of net zero emissions by 2050 without a comprehensive programme to insulate 19m homes and switch from gas boilers to low-carbon heating systems. One of the biggest challenges remains the issue of how to cover the cost of introducing low carbon options that in many cases are more expensive than existing systems. Replacing gas boilers with heat pumps in homes across the UK will not be cheap. Recent reports suggest the government has considered providing UK families with annual payments to offset the higher gas bills and encourage a switch to green energy. The scheme would mean low- and middle-income families are paid a set amount each year, determined by how much the government raised from new carbon taxes. Other measures could include grants worth up to £6,000 for low-carbon heating installations and a 2035 ban on gas boiler sales.

The CCC has called on the government to ensure that the price of all forms of heating is fair. In its

latest progress report for parliament published in June, the independent advisor said the government deserved credit for making historic climate pledges in the past year, but it had been too slow in delivery. However, it also said that the pandemic lockdowns had reduced UK emissions in 2020 by 13 percent from the previous year. The CCC has called for the government to be ambitious in its Heat and Buildings Strategy, which is due to be published this autumn. Industry representatives have echoed that and said they hope the strategy sets out a

comprehensive vision for the sector to meet its emissions reduction targets. The strategy **could feature** a potential successor to the Green Homes Grant. Other solutions could involve stamp duty, green mortgages or reducing VAT. The diversity of housing stock as well as standards in insulation makes it difficult to design a One-size-fits-all approach for industry and homeowners to follow.

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Agriculture

Achieving net zero in the agricultural sector poses distinct challenges to other industries as emissions are an inherent by-product of crop and livestock production and farming also plays a key role in absorbing CO₂. The GHGs are also different, with methane (63 percent) and nitrous oxide (26 percent) making up the lion's share of agricultural emissions. The CCC has said the sector could achieve 39 MtCO₂e by 2035 and 35 MtCO₂e by 2050. Although the sector has reduced GHG emissions by 16 percent from 1990, the rate of decline has slowed significantly since 2008, according to the CCC. This drop in emissions was also mainly due to the UK's participation in the European Union's Common Agricultural Policy (CAP), which resulted in reduced numbers of livestock and less polluting farming practices. Since leaving the EU, the government passed the **Agriculture Bill** in late 2020, which sets out how the UK will move on from CAP by 2028. The Bill aims to help the UK achieve its goals under the 25-year environmental plan and achieve net zero, and includes three key **Environmental Land Management schemes**: Sustainable Farming Incentive, Local Nature Recovery, and Landscape Recovery. The schemes enable farmers and land managers to be paid for delivering a range of environmental benefits, including clean air and water, thriving plants and wildlife, protection from environmental hazards, reduction of climate change, and beauty, heritage and engagement with the environment.

The **Sustainable Farming Incentive** will financially reward farmers for improving soil standards. The scheme is designed to appeal to a broad range of farmers and is guided by a principle of **co-design** so farmers can have an input into the scheme. Soil Association Director of Policy and Strategy Joanna Lewis told Dods UK Monitoring: "We broadly welcome the Minister's announcement as a first step and we are particularly pleased to see the focus on soil and animal welfare, which is entirely appropriate." However, she was critical of the lack of clear nature-based targets, such as reducing the use of pesticides and nitrogen.

Local Nature Recovery strategies are designed to map, protect and improve natural habitats and be led by local communities to ensure stakeholder buy in. The pilot of this scheme is due to be launched in 2022 to gather initial data on its effectiveness, before it is fully implemented in 2024. The Wildlife and Countryside Link welcomed the planned scheme but warned that it would not ensure the recovery of nature on its own, and that the status of these strategies needed to be strengthened in the Environment Bill to have a greater impact on public policy.

The **Landscape Recovery scheme** is designed to support landscape and ecosystem recovery through long-term projects, such as planting woods and restoring peatlands. The scheme will have 10 pilot projects at the start of 2022. Professor Alastair Driver, Director of **Rewilding Britain**, welcomed the scheme, but warned that the government must ensure the pilot projects are not just worthy initiatives that were already happening, but must be "genuine new rewilding projects delivering multiple public benefits and major biodiversity recovery at scale."

Importantly, the government's efforts to lower emissions in the sector has got the support of the National Farmers Union (NFU), which has pledged to reach net zero across the whole of agriculture in England and Wales by 2040. It has said achieving this aim will require a range of measures that fall under three broad headings: improving farming's productive efficiency; improving land management and changing land use to capture more carbon; and boosting renewable energy and the wider bioeconomy. In a report published in April 2021, researchers at UCL said farmers needed to be prepared to take action now to achieve net zero by 2050 and a detailed investment plan was essential. They recommended a range of measures, including improving farming productivity and efficiency, planting trees and restoring habitats and soil, generating and using renewable energy, and becoming leaders in changing diets and reducing food waste.

Experts say behavioural change will play an important role in tackling emissions in the agricultural sector, particularly attitudes to food waste and consumption of meat and dairy products. The [National Food Strategy](#) (part two) published in July 2021 has advanced the discussion in this area. The independent review commissioned by the government and led by restaurateur Henry Dimbleby set out a vision for a different food system, including legislation to help improve diets, a guaranteed budget for agricultural payments until at least 2029 to help farmers transition to more sustainable land use, and defining minimum standards for trade

deals including on animal welfare, environment, and carbon emissions. The NFU [welcomed](#) the recommendation that future trade deals should be subjected to parliamentary scrutiny and said it was working with government as part of the newly established Trade and Agriculture Commission to ensure British farming standards are not undermined by opening the British markets to food that would be illegal to produce in the UK.

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Financial services

In the last two years, the UK Government has made solid progress in setting out plans to drive financial services companies to support its net zero ambitions. The primary policy focus has been to encourage and mandate financial institutions to recognise, measure and manage the physical and transitional climate-related risks that threaten the value of the assets they hold.

One of the key policies is mandating disclosures aligned to the Task Force on Climate-Related Financial Disclosures (TCFD) in the UK across the economy by 2025, with a significant portion of requirements due to be in place by 2023. The first step in implementing TCFD across the economy was introducing them for premium listed companies in December 2020. The Financial Conduct Authority (FCA) is **consulting** on the rules for standard listing and asset managers, life insurers, and FCA-regulated pension providers. The Department for Business, Energy and Industrial Strategy (BEIS) **intends** to lay the statutory instrument by the end of 2021, with regulations coming into force on 6 April 2022 for publicly quoted companies, large private companies and Limited Liability Partnerships (LLPs).

A new set of global accounting standards for sustainability-related reporting for listed companies and banks is also in the pipeline. The initiative is being led by the International Financial Reporting Standards Foundation, which is looking to establish a new International Sustainability Standards Board that will focus on climate related reporting. The direction set out follows a consultation in 2020 that **raised concerns** about failing to address 'double materiality', which means looking both at financial material sustainability impacts on the company as well as the environmental and social impacts of a company's activities.

The Bank of England has also introduced climate stress tests for financial institutions as part of its overall mission to maintain monetary and financial stability, with aggregate results due to

be published in May 2022. The UK central bank was the first to announce these types of tests to explore the resilience of the UK financial system to the physical and transition risks associated with different climate pathways. However, the government and BoE have rejected calls to use these tests to set carbon capital rules on the grounds that they are too prescriptive and a lack of evidence, respectively.

However, Sam Woods, the head of the Prudential Regulation Authority (PRA) and the Deputy Governor of the BoE, has raised concerns that the path to net zero is not clear to financial firms. This was impeding their understanding of the transition and the accuracy of pricing the climate change impact on their portfolios.

The government has also started a process to make it easier for investors to understand how green an investment opportunity is and root out so-called greenwashing, using marketing spin to persuade others that an organisation's products and practices are more environmentally friendly than they really are. After Brexit, Chancellor of the Exchequer Rishi Sunak announced the UK would create its own taxonomy, based on the EU's, that would classify economic activities in different shades of green. The Green Technical Advisory Group (GTAG), which was tasked with the delivery of the taxonomy, had its first meeting in June 2021. The process, which the EU's experience shows is difficult, is expected to take at least two years. The Chancellor has also recently **committed** to creating a new sustainable investment label – based on Sustainability Disclosures Requirements reporting – to help investors compare the impacts and sustainability of their investments for the first time.

The pensions industry has already seen significant policy changes related to climate change under the Pensions Schemes Act. The Government has **legislated for** new measures that will see the UK become the first Group of Seven country in which trustees of the largest pension schemes are required by law to consider, assess and report on the financial risks of climate change within their portfolios.

The government shied away from consulting on making it mandatory for trustees to measure and report their implied temperature rise, although it encouraged schemes to examine ways to monitor and calculate this metric and said it would consider a consultation on the issue this year depending on how much progress has been made. A temperature metric assesses the impact that activities that have been invested in would have on global temperature. The FCA is currently consulting on adding these types of forward-looking metrics on a 'best efforts' basis for asset managers, life insurers and FCA-regulated pension providers.

UK Finance, which represents the banking and finance industry, **argued** in January that "while such [forward-looking] metrics hold promise, their immaturity, complexity and inconsistent application across firms meant that they were not yet ready to be promoted for widespread adoption."

Despite a busy policy agenda to align the financial sector with net zero, there is a long way to go. A financial advisory group to the CCC **warned** in December 2020, that the financial system was far from aligned with the Paris Agreement objectives. The sterling corporate bond market is estimated to have an implied temperature rise of around 3-3.5°C, as reflected by the **BOE's** own corporate bond portfolio.

The advisory group warned that net zero was not yet embedded as a structural feature of the financial system. A first step towards this fundamental rethink was changing the remit of financial regulators by requiring them to take into account the carbon target for 2050 under the **Financial Services Act 2021**. It remains to be seen how much the new remit will translate into policy that drives net zero in the sector. The BoE's **refusal** to look at changing capital rules based on the climate stress tests could be an indication that despite the amended remit, the central bank may not be willing to drive policy when it comes to net zero.

Green bonds could also play a key role in embedding net zero into the financial system, but the advisory group warned that the UK remained well outside the top 10 issuers. The government is hoping to change this and has committed to issuing both sovereign green bonds as well as Green Savings Bonds via NS&I. In July 2021 it published the **UK Government Green Financing Framework**, which details how the proceeds from the Green Gilt and retail Green Savings Bonds will finance expenditures to help tackle climate change, biodiversity loss, and other environmental challenges, while creating green jobs across the UK. But the Green Gilt issuance in the 2021-22 financial year will total a minimum of £15bn, relatively low compared to the pre-pandemic annual borrowing in 2019-20 of **£55.6bn**.

The most obvious challenge for the industry is the multitude of standards, which leaves the door open for greenwashing. A Greenpeace and WWF **report** published in May 2021 found that the UK financial sector was responsible for financing activities resulting in 805m tonnes of CO₂ in 2019, 1.8 times the UK annual net emissions of CO₂. In his Mansion House speech in July 2021, Chancellor Rishi Sunak set out new plans to streamline existing climate reporting requirements by announcing new integrated Sustainability Disclosure Requirements (SDR), an approach that will be set out ahead of COP26. These requirements, he said, would ensure consumers and investors have the information they need to make informed investment decisions and drive positive environmental impact. The UK government is expected to focus on streamlining sustainability corporate reporting at COP26 and encourage other countries to approach finance through the prism of the climate emergency.

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Defence

The Integrated Review, [published earlier this year](#), repeatedly identified the UK's ambition to hit net zero by 2050 as an essential international priority. Likewise, it acknowledged that the increasing numbers of extreme weather events, rising sea levels and the impact of desertification associated with climate change will drive increasing instability and the potential for greater armed conflict in regions vital to UK security interests.

Alongside the task of delivering a greater global presence, the UK's armed forces have also been asked to do so with a smaller carbon footprint in support of the net zero target. In March 2021, the Ministry of Defence (MoD) [set out the blueprint for doing so](#) in their sustainability review, which laid out the ways in which the sector could address the global challenge as both a consumer and emitter.

The MoD itself notes that it [accounts for around 50 percent](#) of the UK central government's emissions, although according to Procurement Minister Jeremy Quin, emissions across the UK defence estate [have been reduced by half](#) in the last 10 years. Unsurprisingly, the highest levels of fuel consumption come from the services' aviation operations, accounting for nearly two-thirds of fuel used across defence, making this area arguably the most important to tackle if UK forces are to become far less dependent on fossil fuels.

Work is already underway in decarbonising the defence estate – moving towards the aim of the built estate to have reduced its emissions by 30 percent to meet the CCC target. Buildings from accommodation to office spaces will be retrofitted to make them 'greener' and the MoD intends to prioritise this based on emission intensity, as well as producing policy on new builds with sustainability and emission reduction at its core.

For now, the defence sustainability strategy outlines how, in the first five years, initial aims will include cataloguing emissions and identifying reduction targets.

With the UK hosting COP26 later this year, the MoD says it wants to [position itself at the international forefront](#) in responding to emerging geopolitical and conflict-related threats being exacerbated by climate change. Likewise, the MoD wants to take a leading role in the new and growing green military agenda, through new types of vehicles, fuel standards, energy storage, and more.

The CCC have previously identified adjustments to product standards as [one potential way of reducing industrial emissions](#) and the MoD changed their aviation fuel standards in November last year to allow for this. Following this, they announced their aim for aircraft – including F-35s, Typhoons and Wildcat helicopters – [to eventually have 50 percent of their power sourced from Sustainable Aviation Fuel \(SAF\)](#), drawn from the likes of algae, biomass, alcohol and household waste.

Further to this, the Royal Air Force's Astra campaign to develop the service also [sets out goals to reduce emissions in infrastructure and training](#), with the aim of the force having a carbon-neutral estate – including bases and accommodation – by 2040. Such moves are already underway with the recent announcement of a [market exploration to investigate zero emission options](#) for the replacement of the existing fleet of light training aircraft.

Likewise, the military have identified power quality as another key area to address in their goal for net zero, which is why the Defence and Security Accelerator (DASA) has also [recently launched a market exploration to explore potential technologies](#) to improve the MoD's ability to monitor and improve in this area.

Although some pilot schemes for addressing vehicle sustainability are underway – such as [trials using hybrid electric drives on the army's Foxhound and Jackal 2 scout vehicles](#) – the Ajax heavy armoured vehicle is entering service with a diesel engine and conventional transmission. Although this might appear counterintuitive to the MoD's sustainability agenda, the issue is that any significant reduction in emissions at

this point would not be cost-effective before the vehicle's mid-life upgrade.

The lack of longer-term, detailed goals in current plans are perhaps indicative of the Department recognising that many green technologies across the wider private sector are not yet mature enough to be applied to military equipment and settings. However, the MoD has stated it **aims to take a "fast follower" approach** – drawing on new developments in the civilian sector and adapting with combat-specific measures at pace.

On top of this, by 2025 they intend to make sustainability an integral part of investment and

procurement decisions, with a focus on "cleaner, resilient energy options," even in their ancillary services. The Ministry has also decided that, rather than purchasing carbon offsets on the commercial market, it would be better served to generate its own.

While there is a long road ahead to decarbonise defence, some positive steps are already being taken. The key question is: with the sector holding such a large carbon footprint, can it be done soon enough?

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Conclusion

Time will tell if 2021 will be hailed as a milestone on the UK's road to net zero. Tackling climate change is both a domestic and international policymaking challenge for the Johnson government. While the UK **aims to achieve** the majority of its emission reductions by 2035, the landmark 9 August IPCC report reinforced the importance of climate leadership ahead of COP26. Almost half of the world's nations **failed** to submit an updated climate change action plan, or Nationally Determined Contribution (NDC), ahead of the UNFCCC's deadline in July and only 13 of the G20 members have so far committed to net zero. The UK government has rallied other countries to publish ambitious NDCs ahead of COP26. Johnson said he hoped the IPCC report would be "a wake-up call for the world to take action now, before we meet in Glasgow in November for the critical COP26 summit."

Achieving the net zero goal is often presented as a linear process of emission reductions that culminate in 2050. In practice, however, climate change experts say much of the work will need to start long before, including changing the behaviour of individuals and radically transforming how everyone travels, consumes, and heats their homes. Reaching net zero will also require a significant development of skills to transform UK infrastructure and rollout clean and energy efficient innovations in towns

and homes across the country. While the UK has made some headway in reducing carbon emissions from 1990 levels, this briefing shows that key sectors have not yet made sufficient progress to be considered on track for net zero by 2050. Furthermore, some of the policies that have helped reduce emissions have stopped or been scrapped, such as the CAP and the Green Homes Grant Scheme.

Perhaps most significantly, the UK government has yet to kickstart a serious debate about how to foot the bill for tackling climate change, despite research showing costs will rise the longer it takes to address them. Recently **published** statistics from the Office for Budget Responsibility found that ending the UK's contribution to the global climate crisis could add 21 percent of GDP to national debt by 2050, around £469bn in today's terms. However, it found that these costs could climb twice as high if action is delayed and, if left unchecked, the impact of the climate crisis could cause public debt to spiral by 289 percent of GDP by the end of the century. The impetus is therefore on the government, businesses, and individuals to accelerate the UK's path towards net zero. The quicker the government can fuel the transition, the sooner the UK could also stand to benefit from related economic opportunities.



MONITORING

The UK's Road to Net Zero: A Progress Report

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