

Net zero policy tracker

April 2021 update

The UK is off track but there is still time to act

This year is a key moment for global climate action. Not only is almost every nation in the world set to announce updated climate targets as part of the Paris Agreement process, but they will do so whilst putting in place huge recovery packages to create jobs and stimulate industry following the pandemic. If spent in the right way, these recovery packages could kickstart low carbon and green industries worldwide.

The UK is hosting the G7 summit in June 2021 and the UN climate summit in Glasgow in November 2021. In hosting these two influential summits, the opportunity is ripe to showcase forward looking, agile leadership on the most important issues facing the world this century. Using momentum from the recent change in administration in the US and new net zero carbon pledges from China and the EU, the UK is well placed to make sure 2021 is the turning point that triggers a global green industrial revolution.

The challenge will be for the UK to bring other countries along with it. To achieve this, it must lead by example, with new policy and funding that puts it on track to achieving its world-leading domestic goal of net zero carbon emissions by 2050.

The country needs to set major changes in motion over the next decade to reach this goal. It is currently a long way off track, but there is still time to put this right.

We are monitoring the progress that new government policy, announced since the start of 2020, is making towards meeting UK climate change targets ahead of the Glasgow climate summit at the end of 2021.

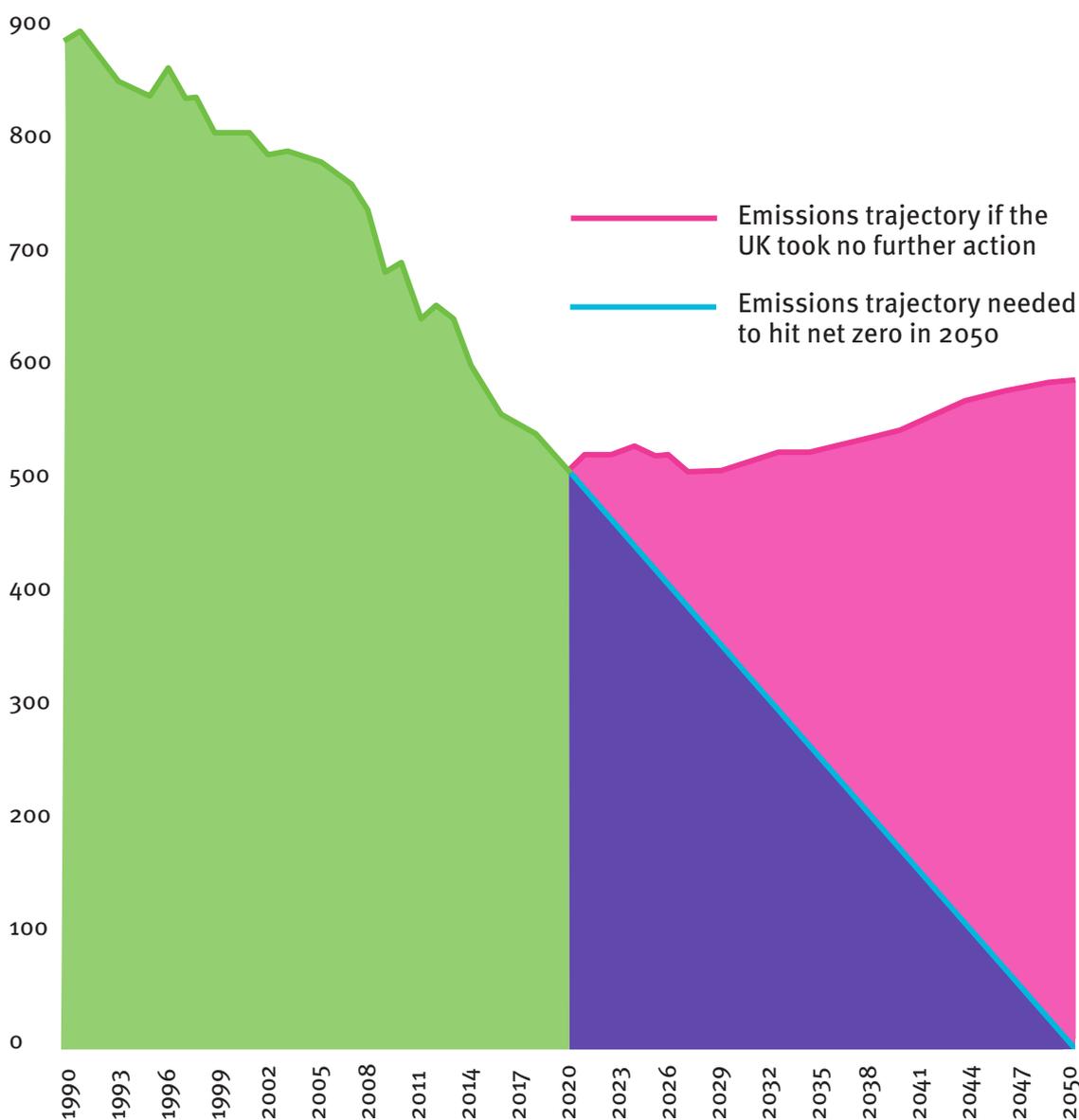
The logo for Green Alliance, featuring a red double quote icon followed by the text "green alliance..." in white lowercase letters on a dark teal background.

“green
alliance...

What will happen to UK emissions?

Business as usual vs ambitious net zero action¹

Emissions (MtCO₂e) including emissions from international aviation and shipping



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Progress summary

Emissions reductions since the start of 2020

Since 1990, the UK has reduced its territorial CO₂ emissions by 41 per cent – including international aviation and shipping.² The UK now has a legal target of net zero emissions by 2050, which requires a rapid reduction of greenhouse gases from current levels. In 2019, the UK generated 522MtCO₂e of greenhouse gas emissions.

The UK has two important targets to reach around 2030 which will be a measure of progress towards the 2050 goal:

1. The UK's Nationally Determined Contribution (NDC).

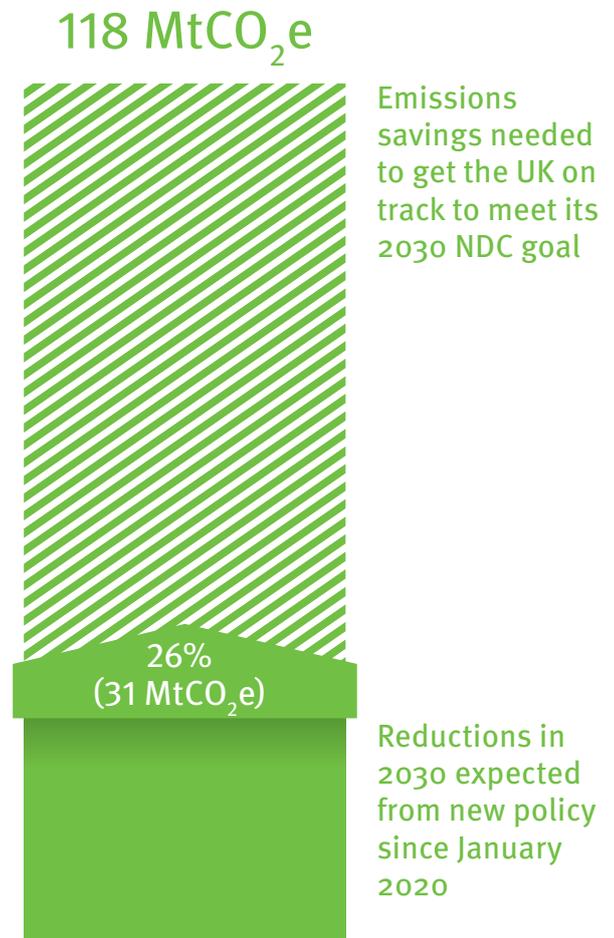
This pledge, for the 2021 UN Glasgow climate summit, commits to a 68 per cent emissions reduction by 2030, compared to 1990 levels. If achieved, this would put the UK on the right trajectory in 2030 to meet the net zero goal.

But policies announced since the start of 2020 are not enough to get on track. They will lead to 31MtCO₂e of savings which is just 26 per cent of the additional emissions reductions necessary in 2030. This leaves further reductions of 87MtCO₂e needed to be on course. Despite their significant emissions, international aviation and shipping have not been included in this target set by the UK, so other policies are required for these sectors.

2. The fifth carbon budget. The UK government has national 'carbon budgets' which set a trajectory for reducing emissions over five year periods from 2008 to 2050. The important upcoming fifth carbon budget period is 2028 to 2032. Actions required to put emissions on track for net zero in this period were recommended by the the government's adviser, the Climate Change Committee (CCC), in its recent report.³

Historic policies have left an emissions excess of 831 MtCO₂e over what the CCC says is needed to be on track to reaching net zero during the fifth carbon budget period (which is more ambitious than the government's own target for this period) and, yet, government announcements over the past 15 months have only helped to close 153 MtCO₂e, or 18 per cent, of that projected 2028-32 gap. This includes emissions from international aviation and shipping, which the CCC recommends should be formally included in legal carbon budgets.

Current shortfall in greenhouse gas emissions reductions



Progress summary

Net zero spending

At this point in the year, it is unclear whether the Treasury has fully grasped either the scale of the climate challenge or the economic opportunity that a green recovery offers post-pandemic.

Long term and consistent government expenditure can help to unlock private investment, scale up supply chains and encourage green spending by consumers. Alongside direct government spending, government mechanisms like the National Infrastructure Bank, green sovereign bonds and new mandatory reporting on lending and finance streams can help to raise the necessary level of funds for decarbonisation.

Since January 2020, the government has pledged new funding of £32.2 billion for climate and nature over the course of the next parliament, including spending on low carbon transport, industrial decarbonisation and greener buildings. It also recently announced, in the 2021 budget, a new National Infrastructure Bank which has tackling climate change as a core objective, backed by £5 billion of government funding. This could act as leverage for as much as £40 billion spending on low carbon projects over the next four years.

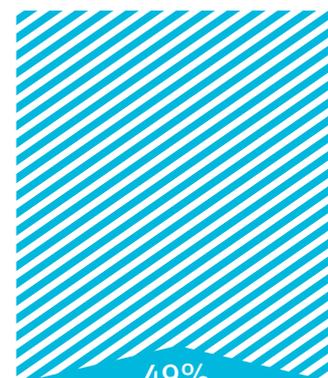
Taking these existing commitments into account, we estimate that an extra £22.4 billion is needed every year to tackle the climate crisis to the end of this parliament in 2024.

This should include:

- an extra £8.7 billion a year on low carbon transport, including accelerating the transition away from the most polluting vehicles through a scrappage scheme linked to mobility credits, and on upgrading and improving walking, cycling and public transport infrastructure.
- £2.3 billion a year to make buildings efficient and kickstarting the roll-out of electric heat pump systems.
- £400 million a year to establish a resource efficiency programme for industry.
- £6.6 billion a year for nature restoration and establishing a sustainable food, farming and fishing sector.

Current shortfall in spending to reach the net zero target

£43.6bn



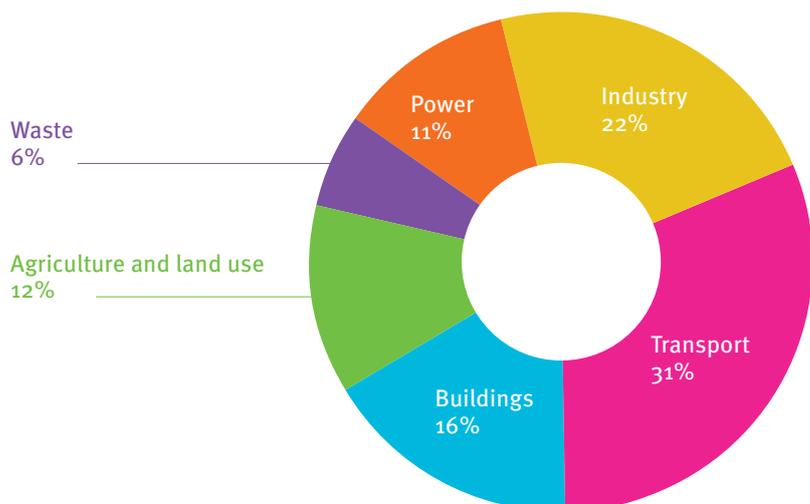
Annual spending needed to 2024

Annual spending pledged by government to 2024

Progress summary

Emissions reductions from different sectors⁴

CO₂e emissions by sector in the UK, 2019



Not all sectors in the UK have decarbonised at the same rate. Most emissions reductions so far have come from the power sector, due to coal being phased out for electricity generation and replaced by renewable and other low carbon energy sources. Emissions from industry have fallen by 53 per cent since 1990 due to increases in efficiency and a reduction in heavy industry. Emissions from waste have also decreased 69 per cent since 1990 due to less biodegradable waste being sent to landfill.⁵

However, emissions from transport, housing and agriculture have barely come down over the past decade. Transport emissions are at the same level as in 1990 and are now the biggest source of emissions in the UK. Emissions from buildings have only fallen by ten per cent in the past decade and are higher now than in 2015. Emissions from agriculture have also remained flat since 2008.⁶

New decarbonisation policies, announced since the beginning of 2020, are projected to have a mixed impact on the emissions of different sectors, with no sector currently looking like it will have cut emissions sufficiently to be on track to net zero during the 2028-32 period.

Compared to projections in the CCC's central 'Balanced net zero pathway' for each sector's emissions over the fifth carbon budget period, progress in most sectors since the start of 2020 is well short of where it should be.

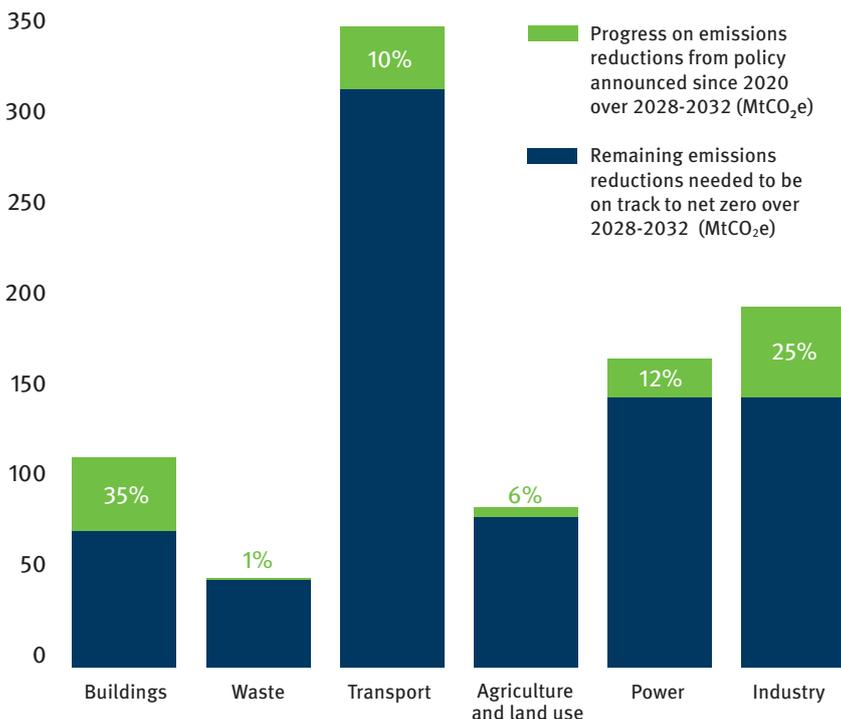
Some progress has been made in the buildings sector, where a combination of funding and regulations announced since January 2020 will help to make about a third of the emissions savings needed.

Industry has also made some headway, with strong government policy on carbon capture and storage (CCS), efficiency improvements and hydrogen development resulting in about a quarter of the emissions cuts needed.

A lack of firm policy for the waste sector means it is currently the worst performing sector and is barely one per cent towards where it should be to play its part in reaching the net zero goal.

Similarly, although there have been strong statements of ambition on the natural environment and transport decarbonisation, there is still a lack of policy to deliver emissions reductions from these sectors over the next decade. They are still below ten per cent of where they need to be.

Impact on emissions projections in 2028-32 from new policies by sector since the start of 2020⁷



Five priority net zero policies for 2021

1. Robust homes decarbonisation policy that puts in place long term regulations and funding for incentives

Almost all the UK's 29 million homes will need to be retrofitted for energy efficiency and low carbon heat if the country is to meet climate targets by 2050, requiring an ambitious new approach.

Building on the hard lessons of the now scrapped Green Homes Grant, the government should put in place a strategy that kickstarts the upgrade of the UK's inefficient homes over the next decade. This must include: regulation on minimum energy efficiency standards of all tenures of housing, so that all homes are rated EPC Band C or above by 2030; setting out attractive incentives to upgrade homes through grants, financial mechanisms like green mortgages; and bringing VAT on renovation and low carbon installations in line with zero rate VAT on new build.

This will have multiple benefits. A long term home decarbonisation programme could create 190,000 jobs, reduce UK household energy expenditure by £7.5 billion a year, alleviate pressure on the NHS by preventing excess winter deaths and reduce inequality in and between regions.⁸

2. An ambitious target to halve resource consumption by 2050

Resource extraction and processing causes half of all global greenhouse gas emissions.⁹ It is currently an almost untapped area of climate policy: industrial energy efficiency could result in savings three or four times greater than the carbon savings currently envisaged from domestic energy efficiency by 2050.¹⁰

Better resource use is also critical to levelling up the regions of the UK: it could add £10 billion a year to the bottom line of UK manufacturing firms, which represent a fifth of the economy in areas of high unemployment.¹¹ A transformational shift to a circular economy has the potential to create half a million gross jobs by 2030.¹² The government should set an economy wide target to reduce resource use by 50 per cent by 2050, with separate targets for high impact sectors and strategic materials. Binding interim targets should be set to ensure progress.

3. A Transport Decarbonisation Plan that puts all of the UK transport sector on track for net zero

The CCC calculates that electrifying transport can deliver annual operating cost savings of over £30 billion by 2050.¹³ Sustainable transport can also improve air quality which currently leads to around 36,000 early deaths per year in the UK.¹⁴

The Transport Decarbonisation Plan, due out this year, must set out a detailed and quantified pathway for emissions reduction for all parts of the transport sector in the near term, and provide sources of funding to bolster public transport, walking and cycling, to tackle the spending shortfall outlined above. Crucially, as part of this, the government should clarify the role of local authorities in decarbonisation at every level and ensure local decisions are not contradicting national strategy and locking in high carbon travel; it should also bring in a Zero Emissions Mandate for vehicle manufacturers to increase the supply of electric vehicles; and introduce new policy to reduce demand for aviation. Key to this is including emissions from international aviation and shipping in the sixth carbon budget (2032-37) when it is set later in 2021.

4. Improved regulation and increased ambition in the Environmental Land Management scheme

The new Environmental Land Management scheme (ELM) will be important in signalling not only an intention to break away from the damaging practices of the EU's Common Agricultural Policy but also to support farm businesses in adopting sustainable land management practices. Farmers have cited a lack of access to capital and uncertainty as the biggest barriers to making environmental improvements.^{15,16}

ELM must be ambitious and underpinned by stronger regulation. Specifically, the Sustainable Farming Incentive component of ELM should be developed so it aligns more strongly with the core principle of 'public money for public goods'; and the Local Nature Recovery and Landscape Recovery components of the scheme should be prioritised.

To ensure value for money from public payments for public goods, regulation must be updated to reflect environmental challenges, including air and water quality and climate change, and a new and better system of compliance and enforcement must be implemented to replace cross compliance. These must also be implemented alongside regulation, including new legal targets to halt and reverse the decline of nature in the UK by 2030.

5.

Legislate to phase out unabated natural gas for power by 2035, alongside new ambitious targets for increasing renewable capacity

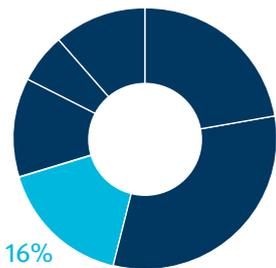
The UK has already shown bold leadership in the power sector through the highly successful phase out of coal generation, which will be completely removed from the electricity grid by 2024, and the parallel increase in renewable generation. However, the main source of emissions in the power sector is now unabated natural gas. The government recently committed £350 million for new gas power.¹⁷ It can continue its enormous success at reducing emissions from the power sector whilst simultaneously driving demand for new low carbon industries like CCS, with new legislation to phase out unabated natural gas for power by 2035. This should be complimented by new ambitions around onshore wind and solar deployment, to ensure that renewables remain the focus of decarbonisation in the power sector.

Decarbonisation progress by sector since December 2020

Buildings

Buildings account for 16 per cent of UK carbon emissions. Reductions have been very slow over the past decade, reducing only ten per cent between 2009 and 2019.

Share of UK emissions



★
Priority for 2021
(Click for more detail)

Strengthen policy for homes decarbonisation through long term regulation and funding.

Positive

The government has a new fuel poverty strategy which sets out funding and policy to help the most vulnerable households in England. This includes an extension to 2026 of the Energy Company Obligation, which requires larger energy companies to provide energy efficiency measures to fuel poor and vulnerable homes, and an increase in funding for this, from £640 million to £1 billion per year. The government will also invest a further £60 million in innovative projects to retrofit social housing, and £150 million more in the Homes Upgrade Grant, which will also help fuel poor households to access energy efficiency measures.

New regulations for non-domestic rented properties have been approved, so those who own commercial or industrial rented properties will need to increase their energy efficiency to at least EPC Band B by 2030. This will save as much as 9MtCO₂e over the fifth carbon budget.

Funding for the Local Authority Delivery Scheme and the Social Housing Decarbonisation Fund Demonstrator has been successfully allocated to upgrade homes most likely to be in fuel poverty and social housing. This highlights the important role local councils play in driving forward housing decarbonisation.

Negative

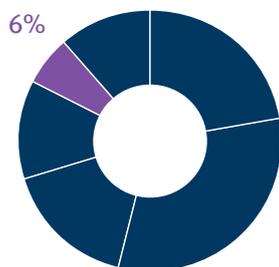
The scrapped Green Homes Grant has damaged consumer trust in the industry. Despite high public demand to upgrade homes for energy efficiency, customers and suppliers have been let down by poor administration, short timescales and funding cuts. The Green Homes Grant was intended to be the government's flagship green recovery programme, and its failure sends the wrong signals ahead of the UK-hosted Glasgow climate summit.

The Future Homes Standard is delayed to 2025. New standards for homes have been introduced that will ensure they produce 75-80 per cent lower emissions than those built to current standards, with homes required to have low carbon heating installed rather than being connected to the gas grid. However, despite previously suggesting the Future Homes Standard would be introduced in 2023, it has now been delayed to 2025, meaning hundreds of thousands of homes are likely to be built to lower standards in the period to 2025, placing the burden and cost of home efficiency improvements on the future owners of those homes.

Waste

Emissions from waste (including from landfill, incineration, anaerobic digestion, wastewater treatment and composting) is responsible for six per cent of the UK's emissions.¹⁸ Emissions from waste have reduced by 63 per cent since 1990, mainly due to lower emissions from less biodegradable waste going to landfill. However, little progress has been made since 2014 as waste policy has stalled.

Share of UK emissions



Priority for 2021
(Click for more detail)

Set an ambitious resource reduction target to halve overall resource consumption by 2050

Positive

Ecodesign and energy labelling regulations for white goods have passed into law in Great Britain. This reflects EU regulations transposed after the UK left the EU, and will ensure that white goods last longer, are easier to repair and cheaper to run, saving households an average of £75 a year.¹⁹

The government has committed to a new plastic packaging tax, which applies to plastic packaging that does not contain at least 30 per cent recycled plastic. This is a step in the right direction, but the fixed 30 per cent threshold is insufficient to drive improvements over the long term, and it only encourages recycling rather than reducing plastic use in the first place.

Negative

After two years of delay, the waste prevention plan was finally published in March. While this plan is stronger than its 2013 iteration, which has prevented only 0.009 per cent of waste in England, without greater funding and policy development, it looks extremely unlikely that it will deliver the transformational changes needed.

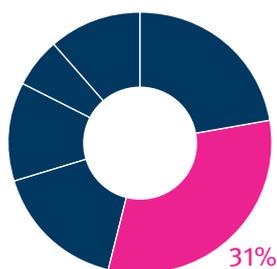
The Environment Bill is delayed. This bill is the main vehicle that will give the government the power to implement waste reduction policies, but it will now not pass into law until the next session of parliament. The bill itself still does not have sufficient provisions to achieve concerted progress towards the government's own aim for a circular economy or to address the shortcomings in the government's approach to waste prevention.

There are delays in responding to consultations around how to implement the resources and waste strategy, which was published over two years ago. For example, the Deposit Return Scheme for bottles and cans has now been delayed until 2024.

Transport

Transport is the largest emitting sector in the UK, accounting for 31 per cent of UK emissions, including international aviation and shipping. Emissions from surface transport are the same as they were in 1990, while emissions from aviation have risen.

Share of UK emissions



Priority for 2021
(Click for more detail)

Publish a Transport Decarbonisation Plan that puts all the UK transport sector on track for net zero

Positive

The government has published its long awaited National Bus Strategy for England. The announcement of more bus priority measures, as well as a consultation on phasing out the sale of new diesel buses are both welcome, although the benefits of the strategy will be limited unless the environmental impacts of private car use are reflected in the costs of fossil fuels used for motoring.

There has been additional support for railway service upgrades and reduced support for new roads. New investment has been announced to encourage rail decarbonisation, increase rail freight capacity and expand some local railways. On the other hand, some high carbon new roads schemes, like the OxCam expressway, have been cancelled.

The government will require all road transport fuel producers to ensure ten per cent of fuels are from bioethanol. This reduces emissions from a fossil fuel powered vehicle by around two per cent and saves 5MtCO₂e over the fifth carbon budget period.

To support the 2030 phase out of sales of new petrol and diesel vehicles, the government has committed to higher funding of £1.3 billion for electric vehicle charging infrastructure. Around £20 million of that was confirmed for spending in 2021, targeted at landlords, small businesses and leaseholders.

Negative

The Transport Decarbonisation Plan has been delayed from autumn 2020 until summer 2021. This critical framework is urgently needed to set the UK transport sector on the right pathway to achieve net zero emissions.

The government aims to cut Air Passenger Duty for domestic flights. This would provide an incentive to increase use of the most polluting form of travel, at the same time as rail fares are rising which will discourage one of the most sustainable forms of travel. This is short sighted and will delay transport decarbonisation.

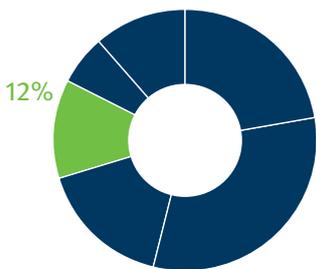
Fuel duty rise has been delayed once again. The spring budget froze the fuel duty rise for the 11th consecutive year. Analysis shows that, if fuel duty had risen as originally planned in 2010, emissions in the UK would be up to five per cent lower than they are today.²⁰ The government says it expects to raise fuel duty in the context of meeting net zero soon.

The government is continuing with its multi-billion pound roads programme despite evidence of its underestimated emissions impacts.²¹

Agriculture and land use

Emissions from agriculture account for 12 per cent of UK carbon emissions. They have remained flat since 2008, only decreasing by two per cent in the past decade.

Share of UK emissions



Priority for 2021
(Click for more detail)

Make agriculture deliver for nature and climate in the near term by improving regulation and increasing ambition in the Environmental Land Management scheme (ELM)

Positive

The government has announced new money to mobilise investment in nature restoration. The new £10 million Natural Environment Investment Fund will provide grants to environmental organisations to help to attract private investment in natural environment projects.

The Department for Environment, Food and Rural Affairs (Defra) has launched an improved Countryside Stewardship Scheme for 2022 which will act as a bridge between the current support for farmers and the new Environmental Land Management scheme, which will reward farmers for public goods, like good soil management and habitat creation from 2024.

Defra has published a policy paper outlining the Sustainable Farming Incentive (SFI) scheme and how it will be piloted and launched. The scheme encourages land management which delivers for nature, helps reduce emissions and increases carbon storage. As currently structured, however, the SFI is likely to make only small contributions to these outcomes. Piloting will begin in March 2021 and the scheme will be launched in 2022.

The government has announced there will be an interim Office for Environmental Protection (OEP) to ensure some environmental protection is in place in the UK to fill the gap between the UK leaving the EU and the Environmental Bill becoming law, and before the permanent OEP is established.

Negative

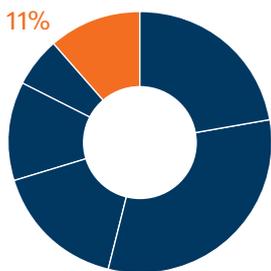
The government's consultation on a new ban on peat burning will only protect nine per cent of English peatland. Although the ban is welcome, it covers just one type of peatland, and only in protected areas. There are also several exemptions for the agricultural, horticultural and timber industries. The ban should be widened to all upland peat and the exemptions should be tightened to avoid the continuation of burning.

The promised Tree and Peat Strategies are both yet to be published, having been delayed several times, and the Environment Bill has been delayed until the next session of parliament. This means there are currently no active strategies driving environmental restoration in England.

Power

Emissions from this sector are 62 per cent below 1990 levels and now account for 11 per cent of UK carbon emissions. In 2019, renewables provided 37 per cent of the UK's power.

Share of UK emissions



*

Priority for 2021
(Click for more detail)

Introduce legislation to phase out unabated natural gas for power by 2035, alongside new ambitious targets for increasing renewable capacity

Positive

New competitions have been launched to develop and improve the delivery of some key low carbon power technologies. These include floating offshore wind, innovative energy storage technologies and a biomass feedstock programme.

The government has begun consulting on the phase out of coal generation by 2024, a year earlier than planned.

A new scheme has been introduced to kickstart a just transition in the North Sea oil and gas industry, with £27 million for an Energy Transition Zone in Aberdeen and £2 million for a North Sea Transition Zone. Whilst this represents a good step forward in a just transition for oil and gas workers in the North Sea, the scheme is undermined by the government's recent decision to continue to grant licenses for oil and gas exploration if a project passes a 'climate compatibility test', which is not yet defined.

The government has stopped financially supporting the fossil fuel energy sector abroad. Following the announcement in December that the government would end fossil fuel subsidies overseas, the policy has come into effect from the 31st March.

Negative

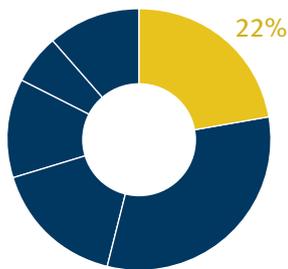
The carbon price floor remains frozen at the same level as it has been since 2016, reducing pressure on operators to remove highly polluting power generation from the grid.

Government business models for carbon capture and storage (CCS) are still awaited. These will set out revenue streams for CCS and should help to kickstart private investment in carbon sequestration for energy intensive industries. Where possible, however, investment should be focused on energy demand reduction and renewables, which are guaranteed to deliver by 2030 at the lowest cost to consumers.

Industry

Carbon emissions from industry are 52 per cent below their 1990 levels and now account for 22 per cent of UK emissions.

Share of UK emissions



Priority for 2021

Set an ambitious resource reduction target which aims, at a minimum, to halve overall resource consumption by 2050 in key industries.

Positive

The government has published the Industrial Decarbonisation Strategy. This new strategy sets out an ambition to cut emissions from industry by two thirds by 2035 (compared to 2018 levels) and will be reviewed and updated every five years. It sets out some good policies for near term decarbonisation, including measures to build markets for low carbon products and energy efficiency improvements. The strategy falls short, however, because it sets out little detail on how it will turn its ambition into reality and there is no new funding.

The government has increased the ambition of the Industrial Clusters Mission, so it now aims to deliver four low carbon industrial clusters, instead of one, by 2030 and at least one, rather than only one, net zero cluster by 2040.

The government has established a UK emissions trading scheme (ETS), with the cap initially set five per cent lower than the EU ETS. This year, the government will consult on aligning the emissions cap with the UK's net zero targets by 2024 and expanding the scheme to cover more economic sectors.

Negative

The government has ordered a public inquiry into the proposal for a new coal mine to provide coking coal for the steel industry. The decision is positive, as the mine is not compatible with the Paris climate agreement. But it is concerning that the inquiry, which could take months, could cast a cloud over UK climate leadership in the lead up to the Glasgow climate summit. It is also possible the government could ultimately approve the proposal.²²

Lack of commitment on decarbonising steel production. The government has not yet committed to the CCC's recommendation of reducing ore-based steelmaking to near zero emissions by 2035. It must explore how this can be achieved through more efficient methods of steel production and funding trials of hydrogen-based steelmaking.

Methodology and assumptions

This policy tracker only measures national UK level policies, not additional policies announced by the devolved administrations. Almost all the spending and policy asks relate to England only (except for a small proportion of rail investment), reflecting the devolution of many important policy areas, relevant to decarbonisation, to the Welsh, Scottish and Northern Irish administrations.

Emissions calculations

The baseline for emissions projections over the fifth carbon budget comes from the latest CCC projections. For this, we use the total greenhouse gas projections rather than net carbon account emissions projections.

We report a figure that includes international aviation and shipping, updated peatland emissions and values for methane intensity, as outlined in the CCC's recent sixth carbon budget advice.

The baseline for emissions projections to 2030 for the Nationally Determined Contribution (NDC) comes from the latest projections by the Department for Business, Energy and Industrial Strategy (BEIS). For this, we use the total greenhouse gas projections rather than net carbon account emissions projections.

The level of emissions for the NDC is calculated using a 70 per cent reduction on 1990 levels of emissions, not including international aviation and shipping or peatland. For this, we assume that the CCC's advice on a 68 per cent reduction of emissions compared to 1990 would have been two per cent higher if it were using older inventories for peatland and methane intensity (as suggested by the CCC).

Estimated emissions reductions from policy come from several sources. These include government impact assessments associated with policies which are publicly available online and from Green Alliance's own analysis (for example, our work on the emissions savings from a 2030 phase out of the sale of new petrol and diesel cars).²³ All of these estimate the carbon emissions reductions from policies over the fifth carbon budget period (2028-32).

Investment calculations

Investments made by the government since January 2020 in climate and nature are averaged over the next four years until the end of this parliament in 2024-25. For example, even though the plug-in grants for electric vehicles are only allocated to 2023, we average spending to 2025 to give average spending on electric vehicle grants over the course of this parliament. We, and a group of other NGOs, have developed a list of priority asks for investment in climate and nature.²⁴ We only mark progress against these asks in our overall figures for annual spending needed on nature and climate to 2024-25. The government may have also invested, or may need to invest, in additional green spending which is not included in our priority asks. We used Wildlife and Countryside Link's asks for nature restoration in the UK, made ahead of the 2020 spending review, to calculate England's nature spend. Spending asks are given per year until the end of this parliament.

Endnotes

- ¹ Committee on Climate Change (CCC), 2020, *Sixth carbon budget advice report*, figure 2.3
- ² CCC, 2020, *The sixth carbon budget, the UK's path to net zero*
- ³ Ibid
- ⁴ CCC, 2020, *Sixth carbon budget advice report*, figure 2.1
- ⁵ CCC, 2020, *Progress report to parliament 2020*
- ⁶ Ibid
- ⁷ CCC, 2020, *Sixth carbon budget advice dataset*. We compared their baseline projections for each sector over 2028-32 [CCC, 2020, *Sixth carbon budget advice report*, figure 2.3] against its sectoral recommendations over the same period (CCC, 2020, *Sixth carbon budget advice report*, figure 2.4). Calculations for estimated emissions savings from policy since 2020 are explained in the methodology on page 16.
- ⁸ Energy Efficiency Infrastructure Group, 2020, *From the Green Homes Grant towards a resilient net zero economy*
- ⁹ UN environment programme, 2019, *Global Resources Outlook 2019: natural resources for the future we want*
- ¹⁰ Green Alliance, 2020, *Balancing the energy equation*
- ¹¹ Institute for Manufacturing, 2013, *The next manufacturing revolution: non-labour resource productivity and its potential for UK manufacturing*
- ¹² Green Alliance and WRAP, 2015, *Employment and the circular economy: job creation in a more resource efficient Britain*
- ¹³ CCC, 2020, *The sixth carbon budget, the UK's path to net zero*
- ¹⁴ Committee on Medical Effects of Air Pollutants, 2018, *Associations of long-term average concentrations of nitrogen dioxide with mortality*
- ¹⁵ National Farming Union, 2017, *Contributions of UK agriculture*
- ¹⁶ Wildlife and Countryside Link, 2019, *Putting our eggs in a better basket a survey of English farmers' opinions on agriculture policy*
- ¹⁷ Ember, 12 March 2021, 'UK spent £350m on new gas power despite nearing fossil phase-out'
- ¹⁸ CCC, 2020, *Sixth carbon budget advice methodology*
- ¹⁹ UK Government, 2020 Press release: www.gov.uk/government/news/electrical-appliances-to-be-cheaper-to-run-and-last-longer-with-new-standards
- ²⁰ Carbon Brief, 2020, 'Analysis: Fuel-duty freeze has increased UK CO2 emissions by up to 5%'
- ²¹ *The Guardian*, 6 April 2021, 'Carbon emissions from England's roads plan '100 times greater than government claims''
- ²² Green Alliance, 2020, *The case against new coal mines in the UK*
- ²³ Green Alliance, 2019, Ending the sale of new diesel, petrol and hybrid cars and vans: the contribution to UK emissions targets, green-alliance.org.uk/resources/Green_Alliance_Greenpeace_2030_ICE_Phase-Out_Briefing_September_2020.pdf
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