

Net zero: introductory brief

Issue

1. To inform you of your role in delivering net zero and set out the key decisions coming up imminently and in the new year.

Recommendation

2. **To note** your role, upcoming decisions and our current assessment of our ability to meet our carbon commitments.

Background

Economic opportunities of net zero

3. The transition to net zero can support economic growth, investment, and exports as well as mitigating climate change. Businesses, to a large degree, see the net zero transition as inevitable: 91% of the global economy is signed up to a net zero target, and our competitors are actively looking to grow their share of low carbon markets and inward investment.
4. The UK has an opportunity to be a global leader in technologies to address climate change and we are well placed in many sectors to use our competitive advantage, for example in Carbon Capture Utilisation and Storage (CCUS), greenhouse gas removals and hydrogen, offshore wind, automotive and aerospace, green finance and smart energy.
5. There are currently three challenges to investment: macroeconomic instability; policy uncertainty; and growing international competition. To fully capitalise on economic opportunities we need to improve the investment environment in the UK. Investors' key ask is for policy certainty and frameworks that provide the clarity and confidence they need, particularly in emergent sectors like CCUS and hydrogen.

Carbon targets and SoS role

6. The Climate Change Act 2008 was updated in 2019 to set a legally binding target to reduce greenhouse gas emissions to 'net zero' by 2050. To ensure a phased and realistic transition towards the 2050 target, the Act also established a system of carbon budgets: legally binding interim targets which cap emissions in successive five-year blocks. The first six carbon budgets up to 2037 have been set in law (see Annex B).
7. Under the Climate Change Act you (Secretary of State) are legally responsible for ensuring that UK emissions will not exceed the level set in carbon budgets, for preparing policies and proposals to enable them to be met, and for publishing a report every 5 years setting these out. The second and third duties were the subject of successful challenges in a Judicial Review earlier this year which mean we must set out detailed plans for meeting our next three carbon budgets by end March 2023 - you will be receiving separate advice on this.
8. Alongside the domestic carbon budget framework, under the Paris Agreement each signatory must publish a Nationally Determined Contribution (NDC) which is a signal of their 'highest possible ambition' in emission reductions by 2030. Ahead of COP26 the UK set its NDC at a more ambitious level than Carbon Budget 5.
9. Last year the government published the Net Zero Strategy, which set out a detailed plan for achieving our emissions targets up to 2037, and a vision for a market-led, technology-driven transition with emphasis on growth, private investment, and going with the grain of consumer choice. Our most recent projections from August show **we have sufficient savings to meet carbon budgets and the NDC if all planned policies are delivered**

in full, but there are increasing delivery risks and little or no headroom to later targets (Annex C). Further developments since August may have affected this position, including a recent update on the CCUS Programme, on which you have received separate advice. We will provide further advice on the overall carbon picture.

Considerations

Key upcoming decisions

10. There are a series of policy decisions over the coming months which will have significant implications for net zero and whether planned savings and investment opportunities can be achieved. Some of these decisions are BEIS led, including:
 - **UK Emissions Trading Scheme (ETS)**- is a cap-and-trade scheme covering around 25% of UK emissions. We consulted in spring 2022 on proposals to align the cap to a net zero consistent trajectory, and other policy changes to develop the scheme: you will need to take decisions to enable a response to the consultation in the new year.
 - **CCUS & Hydrogen Programme**- the rollout of these technologies is critical for meeting carbon budgets, and for supporting economic growth. You will need to take decisions on legislative policy framework and funding.
 - **Primary legislation plans**- No.10 decision on continuing the passage of the Energy Security Bill will have implications for wide-ranging areas including hydrogen, CCUS, electricity networks and governance, heat pumps and energy efficiency. We have made clear to No10 and the Business Managers that you are ready and keen to progress with the Bill. However, there are competing priorities for legislative slots across Whitehall.
 - **Energy Efficiency**: this has been highlighted by the Committee on Climate Change as an area where government is lagging behind. You have an opportunity, working with the current chancellor, to address this. There is a strong imperative for ambitious action in this area to reduce costs as well as emissions.
11. Other decisions will be made outside of BEIS but you will have an interest in trying to ensure they are compatible with your wider carbon budget duties:
 - **Zero Emissions Vehicle Mandate**: this has the biggest carbon savings of any policy. A DfT consultation this autumn will determine whether these savings can be achieved.
 - **Environmental Land Management (ELM) Schemes**- are a key lever for delivering Defra's agricultural emissions savings and are currently under review.
12. You will need to be informed of and take account of the carbon implications of these and other decisions you make to reduce the risk of successful legal challenges. In addition, we will need to keep you updated on the broader assessment of our ability to meet our carbon budgets, and the cumulative effect of different decisions, to meet your duties in the Climate Change Act.
13. In the new year, we will need to respond to:
 - the **Judicial Review** court order to set out more detail on our plans to reach net zero by end March
 - the **Climate Change Committee's** statutory annual progress report on reducing emissions, also by end March;
 - the **Net Zero Review led by Chris Skidmore**.
There are options about how we respond to these, e.g. individually or in a broader, combined response, and how ambitious we want to be. We could use this point as a communications opportunity to set out the Government's updated plans on net zero.
14. The Court Order will require you to ensure we have a set of policies and proposals that will enable HMG to deliver Carbon Budgets: this may require you to work with Ministerial colleagues to find additional savings to close any gaps. Timescales may be challenging, depending on the level of ambition we set, how quickly and comprehensively we respond to the Net Zero Review and whether we need to find more carbon savings to stay credibly on track to meet our commitments. We will provide further advice shortly.

Annexes

Annex A: Considerations summary

Annex B: UK carbon targets

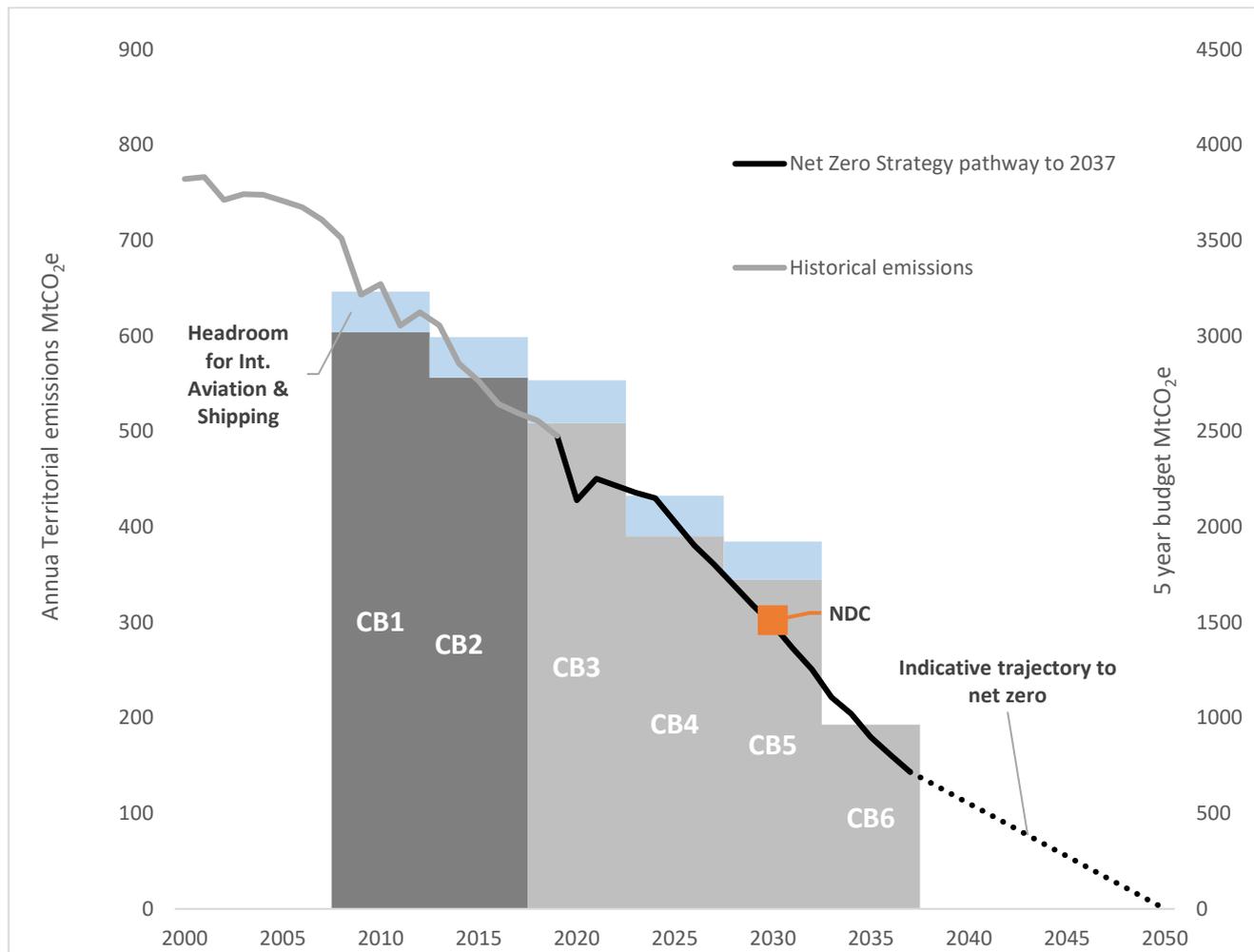
Annex C: Projected emissions savings, by delivery confidence

Annex D: Sectoral summary

Annex A: Considerations summary

Value for Money	The submission does not include new spending implications.
Analytical Assurance	The analysis on progress against carbon budgets has been subject to an analytical assurance process. This analysis is based on the latest data provided by net zero sectors, commissioned in August 2022, so changes since then will not be reflected. The analysis is a central case, but there are significant uncertainties. Policy design and delivery can affect savings, represented by 'delivery confidence' reflecting judgements of officials. Emission savings are also conditional on projections of GDP, population, fuel prices, and technology costs and availability.
Public Sector Equality Duty	Advice on equality impacts of specific policies and decisions will be provided as part of future advice.
[REDACTED]	[REDACTED] [REDACTED] [REDACTED]
Net Zero	This submission informs you of key considerations and upcoming decisions associated with delivering net zero.

Annex B: UK carbon targets



Note: The sixth carbon budget was the first to include the UK's share of international aviation and shipping (IAS) emissions. Previous budgets did not include IAS emissions but were set such that headroom for IAS emissions was left. The NDC also excludes IAS. The headroom for IAS, shown in blue and incorporated into the NDC mark, allows you to compare the trajectory on a whole-economy basis consistent with CB6

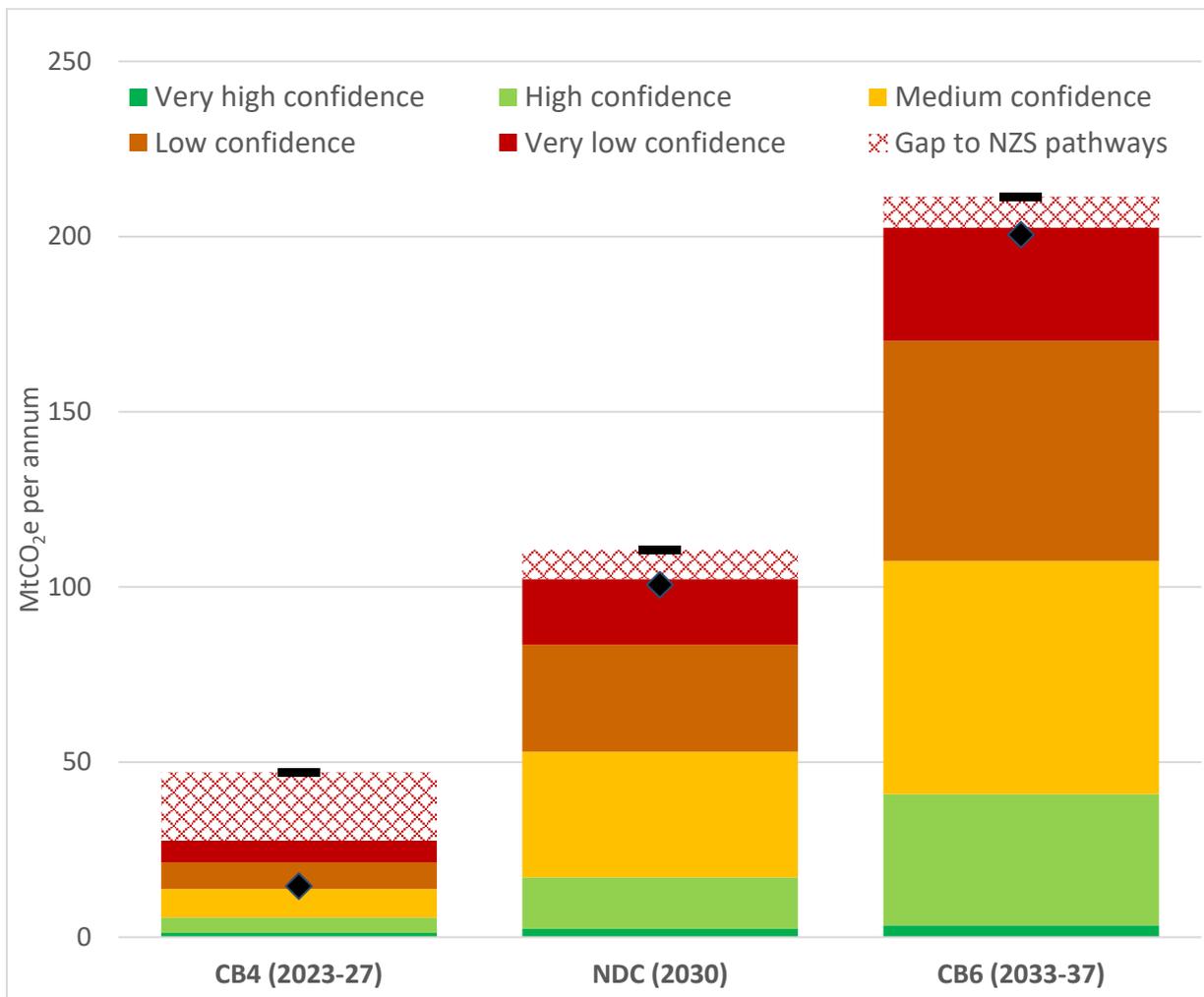
Annex C: Projected emissions savings, by delivery confidence

This chart shows the projected emissions savings from planned policies across all sectors of the economy, with carbon savings categorised by level of delivery confidence (data as of August 2022).

These are shown against carbon targets: Carbon Budget 4 (CB4), the Nationally Determined Contribution (NDC- shown as it is slightly more ambitious than Carbon Budget 5, which covers the same time period) and Carbon Budget 6 (CB6).

Progress is shown against two benchmarks:

- Carbon budget/NDC target-** this is the level of our legislated carbon budgets, and our NDC. The chart below shows projected carbon savings would be sufficient to meet these carbon targets if all planned policies were delivered in full.
- Net Zero Strategy (NZS) pathways-** this shows the trajectory of emissions reductions originally assumed at the time of publication of the Net Zero Strategy. These are more ambitious than our legislated carbon targets in order to leave some headroom and due to changes in carbon accounting since the publication of the strategy. The chart below shows gaps are opening up to these pathways as some sectors are falling behind agreed emissions reduction pathways (i.e. not meeting their “sector effort shares”).



Annex D: Sectoral summary

Sector	% of UK emissions (2019)	Expected reduction by 2035 from 1990	Summary of progress to date	Key policies in development with largest carbon impact
Power	11%	80-85%	Good progress has been made in 2022 to raise ambition on renewables (with a highly successful CfD allocation round) and to deliver historic CO2 savings by phasing out of coal. However, the sector has also been impacted by high energy prices, inflation and funding challenges to deliver the ambitions of the Energy Security Strategy.	Decarbonising the UK's power system by 2035, subject to security of supply. Includes actions in: <ul style="list-style-type: none"> • Onshore and offshore wind • Solar • Nuclear • Power-CCUS • Storage, networks and flexibility • Market reform • Power BECCS • Energy from Waste
Fuel supply and hydrogen production	5%	53-60%	Upstream emissions show modest decline, largely from platform decommissioning. Slow progress on electrification, interactions with windfall tax and price spike. Midstream emissions– steady success of Iron Mains Risk Reduction Programme (IMRRP) Hydrogen – nascent policy, delivery confidence is medium to low, with high ambition resting on private investment, legislation and funding.	<i>Upstream</i> <ul style="list-style-type: none"> • electrifying North Sea platforms • ending routine flaring, action on venting <i>Midstream</i> <ul style="list-style-type: none"> • Iron Mains Replacement Programme <i>Hydrogen Production</i> <ul style="list-style-type: none"> • Electrification or Hydrogen Pathways, including NZ Hydrogen Fund, Hydrogen Business Model, Low Carbon Hydrogen Standard.
Industry	15%	63-76 %	Manufacturing and construction account for c.14% of UK emissions. Government has increased ambition for over the 2030s, but we are starting to see slips in delivery which risk meeting those commitments in full.	<ul style="list-style-type: none"> • Steel decarbonisation policy package • CCS technical potential • Industrial Fuel Switching • Resource Efficiency technical potential • UK Emissions Trading Scheme (ETS)
Heat and buildings	17%	47-62%	Progress to decarbonise the UK's building stock has been slow. Though important frameworks and policy ambition are now in place through the Heat and Buildings Strategy, policy gaps remain,	Energy efficiency: <ul style="list-style-type: none"> • Domestic • Non Domestic

			especially for the owner occupier tenure. Emissions remain at a plateau, with changes correlating largely with mild/harsh winters.	Low Carbon heating deployment: <ul style="list-style-type: none"> • Non Domestic • Future phases of Public Sector Decarbonisation
Transport (Domestic & International Aviation & Shipping)	32%	47-59%	<p>Transport is the largest share of emissions, with the biggest contribution from road transport. Reductions have been small, as vehicle efficiency improvements have been offset by growth in vehicle numbers and journeys.</p> <p>Emissions from the UK's share of international aviation more than doubled from 1990-2019. For shipping, emissions have stayed broadly flat.</p>	Road transport <ul style="list-style-type: none"> • ZEV mandate and CO2 regulation for cars & vans • ZEV mandate for HGVs • Disincentivise use of ICE vehicles Shipping <ul style="list-style-type: none"> • global high ambition negotiated outcome Aviation <ul style="list-style-type: none"> • commercialisation of sustainable aviation fuels
Natural resources, waste and fluorinated-gases (NRWF)	20%	39-51%	Emissions from the Natural Resources, Waste and Fluorinated gases have almost halved since 1990, largely driven by a reduction in biodegradable waste to landfill. For the agriculture sector, emissions reductions have been slow.	<p>The sector's savings include actions in:</p> Agriculture: <ul style="list-style-type: none"> • Environmental land management (ELM) schemes to support low carbon farming practices • R&D programmes Peatlands Forestry <ul style="list-style-type: none"> • increasing woodland creation and agroforestry Biomass <ul style="list-style-type: none"> • growing energy crops & short rotation forestry Waste Fluorinated gases
Engineered greenhouse gas removals	n/a	n/a	Greenhouse Gas Removal (GGR) technologies will be essential for reaching net zero – balancing residual emissions from hard-to-decarbonise sectors. In the Net Zero Strategy we announced an ambition to deploy at least 5MtCO ₂ /yr of engineered removals by 2030, potentially rising to 23MtCO ₂ /yr by 2035. To support deployment of these technologies, we consulted on business models for GGRs over summer 2022.	<ul style="list-style-type: none"> • GGR business model consultation (closed September 2022) • Power Bioenergy with carbon capture and storage (BECCS) business model consultation • £100m innovation funding for GGRs, including the Direct Air Capture and GGR Innovation Competition