



REA Members Briefing on the Climate Change Committee's 7th Carbon Budget Recommendations

Introduction

The Climate Change Committee's 7th Carbon Budget Recommendations have been published today (26th February 2025).

The Budget period covers the period 2038 – 2042 and recommends an 87% reduction in UK emissions on a 1990 baseline – a total of 535 MtCO₂e, including emissions from international aviation and shipping. The Government recently affirmed the UK's targets for the preceding Carbon Budget, at 81% reductions.

The full document is available [here](#).

POWER AND FLEXIBILITY

Solar and Wind

- In the Balanced Pathway scenario, offshore and onshore wind, together with solar, provide the bulk of generation in the future electricity system in the Balanced Pathway.
- The share of generation from wind and solar has rapidly increased from 3% in 2010 to 34% in 2023, displacing generation from coal and gas.
- By 2040, the CCC's CB7 Balanced Pathway sees offshore wind grow six-fold from 15 GW of capacity in 2023 to 88 GW by 2040. Onshore wind capacity doubles to 32 GW by 2040 and solar capacity increases to 82 GW.
- By 2050, Solar PV capacity increases from 20 GW today to 106 GW in 2050.
- CCC state that "alongside renewables, storable forms of energy including batteries, as well as interconnection to neighbouring markets, ensure a reliable supply of electricity even in adverse weather years. These technologies need to be accompanied by rapidly expanding the transmission grid, upgrading the distribution network, and speeding up the grid connection process."
- Annual installation rates of Solar PV will need to almost quadruple, reaching similar levels to the historical peak seen in 2015.
- The cost of solar has fallen significantly in recent years, and is expected to fall further in the CCC's Balanced pathway, from £52/MWh to £29/MWh by 2040.
- The average cost of offshore wind is expected to fall from £49/MWh to £35/MWh by 2040.
- The CCC state that these technologies need to be accompanied by investment in network infrastructure, including rapidly building out the transmission grid and speeding up the grid connection process, which currently poses a barrier to

electrifying industry and HGV depots. Steep growth is needed from today out to 2040.

- To deploy the 2050 levels in the Balanced Pathway would conservatively require around 1% of UK land for solar and 2% for onshore wind.
- The uptake of small-scale solar (for example, on rooftops) could also significantly reduce the already relatively small land use requirements for solar.
- The global average cost for new electricity generation has fallen by 88% for solar PV, 60% for wind, and nearly 90% for battery storage since 2010.

Energy Storage

- Batteries are positively referenced for their flexibility on the system. The Balanced Pathway deploys 35 GW of short-duration batteries (up to 9 hours) by 2050, more than a ten-fold increase on 2023 levels.
- A range of other options are acknowledged to provide storage over the “medium term” (which they term days-to-weeks), including pumped hydro and other technologies at different stages of commercialisation (for example, compressed and liquid air storage, flow batteries, and thermal storage). The CCC Balanced Pathway analysis deploys 7 GW of ‘medium-duration’ grid storage by 2050.
- Battery storage capacity is projected to rise from 7 GW / 10 in 2025, to 21 GW / 54 GWh in 2035 and 35 GW / 139 GWh by 2050.
- Medium-duration storage capacity (excl. hydrogen storage) is envisaged as 3 GW / 24 GWh (2025) to 7 GW / 433 GWh by 2050.

Landfill Gas

- Even with decreasing use of landfill for disposal, legacy methane emissions will need to be addressed by improving methane capture rates for use in power or in the gas grid, while feasible. Landfill methane capture rates increase to 80% by 2050.
- In the REA’s view around 85% of capacity currently generating electricity loses RO support in April 2027 and there is a significant risk of an increase in methane emissions if no action is taken. Government needs to introduce both a short-term intervention to maintain existing capture rates and design a long-term policy to maximise methane capture over the longer term.

BIOMASS & HEAT

Biomass Power

- CCC recommend that large-scale biomass power plants are not given extended contracts to operate unabated at high load factors beyond 2027.
- Publish a common sustainability framework for biomass, along with robust procedures for monitoring, reporting, and verification. This should prioritise domestic supply and provide clarity on which feedstocks are provably sustainable, both in their climate impact and interactions with wider environmental objectives.
- Finalise business models for engineered removals.

- BECCS is expected to contribute around 25 MtCO₂e of removals by 2050 – down from 53 MtCO₂e in CB6.
- An ongoing role for sustainable biomass in hard-to-abate sectors, including aviation via SAF.

Heat

- CCC is explicit in recommending no role for hydrogen in home heating.
- They state Government should reinstate regulations so that beyond 2035 all heating systems installed are low carbon. The REA will be pushing for this to include bioenergy systems, given the report's view that "biomass boilers should be replaced by air-to-water heat pumps, freeing up biofuels for use where there are fewer alternatives."
- By 2040, 52% of existing homes in the UK will be heated using a heat pump in the Balanced Pathway, compared to around 1% in 2023.
- Non-residential buildings will also install heat pumps, with 83% and 95% of heat in commercial and public sector buildings delivered by low-carbon technology by 2040.
- By 2040, electricity meets 61% of industrial energy demand in the Balanced Pathway, up from 26% in 2022 - major sources of heat in industry are replaced with electric options (electric boilers, electric ovens, electric furnaces in the glass sector, and electric heat pumps which could produce a large part of industrial demand for low-temperature heat).
- Regarding Low-carbon heat networks it is expected that around 9% of heat will be supplied by these by 2040 (residential), down from 19% for homes in CB6.
- Would also require converting existing heat networks to low-carbon sources from 2025 with 40% converted by 2030 and all converted by 2040.
- No reference to the role that geothermal could play in future heat decarbonisation, including in heat networks, which is disappointing.

Energy from Waste

- As set out in the Decarbonisation Readiness regulations and recent tightening of planning, recommendation to prevent energy from waste capacity expansion unless a viable route to connecting CCS can be established.
- CCS at EfW plants will deliver 25% of emissions reduction for waste in 2040. EfW with CCS increases throughout the 2030s as EfW without CCS declines, until there are no EfW plants without CCS by 2045.
- Around 5 MtCO₂e of removals (BECCS) by 2050 delivered from burning biodegradable waste in an EfW plant fitted with CCS.
- Overall, the CCC predicts a decrease in EfW capacity from current levels, as the amount of waste disposed of in EfW plants falls due to improvements in recycling and reuse.
- CCC acknowledges that local authorities, who manage around 40% of waste, will need funding and policy certainty to deliver improved recycling and manage additional costs from using CCS with EfW.
- Near elimination of biodegradable waste sent to landfill is assumed from 2028, in line with the UK Government's proposed ambition for England. The near elimination of all waste sent to landfill is assumed from 2045.

- Investment in the wastewater sector is also needed to roll out advanced anaerobic digestion to both municipal and industrial wastewater treatment plants and improve water quality.

Green Gas

- Overall role for hydrogen in future is more limited than in previous Carbon Budgets – by 2040, it is expected to play a “small but important role, particularly in industrial sectors...” however the report does call on government to continue to support CCS and hydrogen in policy making.
- Hydrogen is not recommended for use in the domestic heating sector in the future.
- Put in place requirements on housing developers ensuring no new properties completed from 2026 are connected to the gas grid.
- Biogas predominantly blended into the gas grid as biomethane displacing natural gas, with role declining over time as heating is electrified.
- In wastewater treatment, methane emissions are addressed through the deployment of advanced anaerobic digestion and upgrading biogas to biomethane for use as a natural gas substitute.
- Emissions from biomethane injection into the gas grid are negative as they displace emissions from fossil gas. However, savings reduce over time as fossil gas use declines alongside introducing carbon capture technology to biomethane production.

Energy Crops and Woodland Management

- Energy crops to contribute 7% of emissions reduction for land use and agriculture in 2040.
- Land allocated to energy crop planting across the three crop types reaches 0.7 million hectares by 2050, which equates to almost 3% of UK land area.
- In the CCC’s Balanced pathway, domestic energy crops provide savings in the engineered removals sector of 3 MtCO₂e in 2040, and 10 MtCO₂e in 2050.
- This pathway represents a transition away from biomass feedstock imports for energy combustion to using mainly UK supplies via dedicated energy crops and biomass residues by 2050.
- Woodland creation and management should contribute 4% of emissions reduction in 2040, rising to 15% by 2050). In the Balanced Pathway, planting new diverse woodlands increases UK woodland cover area from the current 13% to 16% by 2040.
- When trees outside woodlands are considered (for example under agroforestry and short-rotation forestry measures), this increases to 19%. It is vital that tree planting rates increase quickly, due to the time taken for new trees to reach peak sequestration rates. This will require tree planting rates to more than double from 13 kha in 2023 to 32 kha per year by 2030.

Biochar

- The application of biochar to soils as an additional source of CO₂ sequestration is acknowledged in the engineered removals section.

- Enhanced weathering and biochar are grouped into a single subsector, reflecting uncertainty on their relative roles. Deployment is included at the lowest boundary of potential contribution, beginning in 2030 and scaling up to reach 3 MtCO₂e in 2050.
- Assessment of biochar's technical potential is acknowledged, with the report highlighting research putting the upper limit of biochar's contribution to GGRs at 20 MtCO₂e by 2050.

CIRCULAR BIORESOURCES

Waste and Recycling

- Overall, while the report acknowledges the great strides the waste sector has made in decarbonising over the last 35 years, the REA welcomes further recommendations on how the sector can continue to contribute to the UK's Net Zero goals.
- The CCC calls for policies enabling improved recycling and waste reduction are put in place across the UK ahead of the near elimination of biodegradable waste sent to landfill and the inclusion of energy from waste in the UK ETS.
- The CCC sees waste reduction as a key measure to reduce emissions. Emissions decrease as the amount of waste sent for disposal decreases. This is achieved by increased recycling rates, improving resource efficiency, reducing food waste, and a near elimination of waste sent to landfill.
- In addition, the CCC calls for food waste reductions by 2030 consistent with the UN Sustainable Development Goal 12.3. The CCC pathway sees a 39% reduction in total food waste per capita by 2030 and a 45% reduction by 2040, from 2021 levels.
- The Balanced pathway sees the proportion of food waste collected for anaerobic digestion increasing from roughly 60% in 2024 to 90% in 2030, enabled by mandatory weekly household food waste collections in England due to be introduced from 2026. The rest of the UK already collects household food waste separately. In Wales and Northern Ireland, all households have separate food waste collections, and Scotland has a statutory requirement to collect household food waste separately.
- The Balanced Pathway assumes a significant improvement in combined recycling rates across household and non-household waste to 68% by 2035, up from 47% in 2021 but acknowledges that planned policies are unlikely to achieve this. Greater clarity is required on government plans around recycling, reuse, and resource efficiency. This will require the UK household recycling rate to increase from the current 45% (2021) to 57% by 2035, a rate already achieved in Wales.
- The recycling rate for non-household waste needs to increase from an estimated 49% in 2021 to 74% by 2035. Commercial and industrial waste has a higher potential for recycling than other non-household waste due to higher purity.
- The near elimination of biodegradable waste sent to landfill is assumed from 2028, in line with the UK Government's proposed ambition for England. The near elimination of all waste sent to landfill is assumed from 2045, in line with the date at which CCS is installed in most EfW plants.

- The report calls for the provision of funding and policy certainty for local authorities. Around 40% of waste is managed by local authorities. Supporting them to improve recycling through policy certainty and improved long-term funding will be key to decarbonising the waste sector. This is something long advocated for by the REA.
- The report acknowledges that composting plays an important part in recycling food and garden waste. The CCC suggest that use of pumped air to improve compost aeration and product quality is rolled out to appropriate sites and will result in 1% emissions reduction in 2040. Around 30% of composting sites are suitable for aeration, which is rolled out to all these sites by 2030.

Waste Water

- The report calls for improved monitoring of wastewater emissions and encourage investment in technology development and deployment to reduce emissions from wastewater, such as advanced anaerobic digestion for both municipal and industrial wastewater treatment plants.
- Advanced anaerobic digestion is already in widespread use, deployed across half of wastewater treatment sites. In the pathway, it is rolled out to all plants by 2030. Membrane aerated biofilm reactors are rolled out from 2030 to 10% of sites by 2045.
- Enhanced monitoring and real-time control reduce emissions by allowing identification and treatment of issues within treatment plants. Digital twins (virtual models of treatment plants based on real-time data) reduce process emissions through optimisation. These measures, along with biogas to grid and covering and containment, are rolled out from 2025 to 70% of sites.
- Industrial wastewater improvements lag five years behind the earliest deployment in the municipal wastewater sector due to reduced incentives and regulatory pressure.

Agriculture and Land Use

- Combined emissions in the agriculture and land use sectors reached 48.4 MtCO₂e in 2022. This is 25% lower than 1990, when emissions totalled 64.8 MtCO₂e.
- Nearly two-thirds (63%) of agricultural emissions (and all agricultural methane emissions) in 2022 were directly emitted from livestock, with 49% from the digestive process (enteric fermentation) of cattle and sheep and 14% from the management of livestock waste and manure.
- Agricultural soils, mainly from the application of organic and chemical fertiliser onto grassland and cropland, accounted for a further 24%. The remaining 12% was from energy use for stationary and off-road mobile machinery. These shares have been almost constant in the last 10 years.
- Low-carbon farming practices and technologies represent 35% of emissions reduction in 2040. The take-up of low-carbon farming practices and technologies combine to reduce emissions from managing agricultural soils and livestock, and from machinery use.

- Other land-based actions to increase natural carbon sequestration and reduce emissions from land deliver 2% of the required emissions reduction by 2040, although this share grows quickly to over 5% by 2050.
- Peatland restoration and management represents 17% of emissions reduction in 2040 through restoration of upland peatlands, forested peats and restoration and management of lowland peatlands.

The key actions called for in the report are:

- Publish a land use framework that sets out how land can deliver multiple functions, including for climate mitigation and adaptation, sustainable food production, biodiversity, and wider environmental goals.
- Provide incentives and address barriers for farmers and land managers to diversify land use and management into woodland creation, peatland restoration, bioenergy crops, and renewable energy.
- Provide long-term certainty on public funding for farming practices and technologies which reduce emissions from managing crops and livestock. As part of this, ensure low-regret and low-cost measures are taken up through regulations or minimum requirements in agricultural support mechanisms, especially when they can deliver efficiency improvements.
- Enable a shift in average meat and dairy consumption in the UK towards lower carbon foods. The most promising levers include replacing a small amount (for example, 15%) of meat and dairy content in pre-prepared meals with plant whole foods or alternative proteins; increasing choice and availability of lower carbon foods in public procurement, restaurant, and supermarket settings; and supporting more novel alternative proteins with improved taste and texture.
- Protect against the risks of carbon leakage from trade in agricultural products. This could be achieved with a carbon border adjustment mechanism.

TRANSPORT

Electric Vehicles

HGVs

- The CCC suggest incentives to overcome the upfront price premium are likely to be needed to deliver lifetime cost savings for operators over the next 10 to 15 years and a collaborative approach to establishing a network of depot chargers is needed.
- The CCC calls for the Government to implement a regulatory mechanism requiring sales of zero-emission HGVs to scale up to meet the 2040 end-of-sales date for new diesel HGVs (2035 for smaller HGVs) and provide purchase subsidies where required.

Buses

- Zero emissions buses made up 1% of the fleet in 2023 and should make up to 18% by 2030 and 60% by 2040, the majority of local routes will be electric.

Cars and Vans

- For cars and vans price parity with traditional vehicle equivalents will be reached between 2026 and 2028 the CCC believe.
- The CCC call on the government to develop further policies and incentives to accelerate zero-emission van uptake, working with major van fleet operators to understand and overcome barriers to uptake such as charging and access to finance.
- The REA through the zero emissions van plan has seen some initial success in this, and would remind members of the [ongoing consultation](#) and the need to submit comments as soon as possible to Matt Adams.
- Improving air quality by the shift to EVs and low carbon heating appliances can save the NHS £2.7 billion per year in 2040.
- By 2050 the road transport sector can almost completely decarbonise through rapid electrification.
- The CCC set even higher projections than the ZEV mandate for car and van EV sales and claim that the ZEV mandate targets are deliverable in their current form. Electric cars and vans reach around 95% of new sales by 2030 and 100% by 2035.

Charging Infrastructure

- The CCC forecast in addition to 300,000 chargepoints by 2030 we will need over 550,000 public chargepoints in total by 2040.
- Access to home charging is seen as one of the last barriers to adoption. They say therefore that consumers on lower incomes or with no access to off-street parking are likely to be the last to switch to EVs. Leading to calls to increase access to domestic charging and a greater variety of near home charging options with easy payment options.
- The CCC also call for a strategy to deliver the required charging infrastructure for heavy-duty vehicles, including HGVs and buses. The strategy should also include guidance on establishing new grid connections.
- The CCC highlight costs for installing charging infrastructure (both home and public chargers) increase until the early 2030s then slowly decline. Costs will continue to be incurred for scaling up the network to meet growing demand, operation and maintenance, and developing a network for charging HGVs.
- This highlights the need for continued Government support and the need to create a positive environment for investment.
- The citizens panel also shares many of the views expressed previously by the REA including around the need to reestablish a chargepoint grant for homes and continue support for rental properties; a scrappage scheme, upfront grants to achieve price parity quicker, and preferred interest free loans and salary sacrifice, both points picked up in our ZEV mandate response.

RENEWABLE TRANSPORT FUELS

Surface Transport

- Renewable transport fuels are not shown individually in the sources of GHG reductions in the ‘balanced pathway’. A footnote explains that this is because these fuels appear in both the baseline and balanced scenarios.
- This downplays the role of renewable transport fuels. In 2022, the RTFO resulted in 7 million tonnes of CO₂ abatement – and the main obligation target is set to rise by over 30% by 2032.
- This approach also fails to consider the potential for increasing the CO₂ abatement from renewable transport fuels. In November last year, DfT published a call for evidence on future targets, which is looking at the scope for further increases – consistent with sustainability and affordability considerations.
- There is considerable scope for increased savings from fuels used in surface transport – and CCC should reflect this in its analysis. There are particular opportunities for immediate emissions reductions in the HGV sector – whether through gaseous fuels such as biomethane or liquid fuels.

Aviation

Demand for Aviation

- The CCC seeks a substantial break with the previous government’s policy by arguing that there needs to be a significant slowdown in growth in aviation.
- The balanced pathway sees a growth of 16% between 2025-2040, while the baseline is 53%. This is assumed to be achieved by reflecting the costs of decarbonisation measures within the prices paid by passengers.
- It remains to be seen whether the government would be prepared to take action if these measures were unpopular – or to take additional measures if demand for aviation continued to grow rapidly. Any emissions resulting from higher than modelled demand would have to be addressed by action elsewhere.

Role of Sustainable Aviation Fuels (SAF)

- The balanced pathway puts this at 17% of fuel by 2040. This is significantly lower than the target in the SAF mandate for that year (28%) – CCC states this is due to concerns over fuel availability, particularly feedstocks.
- When combined with the modelled reduction in demand, this would mean the absolute quantity of SAF required in 2040 is even lower. Whatever the merits of this analysis, it is difficult to square it with the government’s stated intention to encourage investment in SAF production facilities in the UK, including via the design and implementation of a Revenue Certainty Mechanism.

Green Finance

- The CCC state that financial institutions have a central role in building a low-carbon economy. They can facilitate investment and prioritise lending away from emitting and towards low-carbon activities and assets.
- Certain businesses may need additional support. More limited capacity in other companies, such as SMEs, means they require additional support from the Government and the rest of the private sector. Businesses which face additional difficulty in financing the upfront costs of upgrading assets such as buildings, vehicles, and equipment need access to affordable, flexible finance.

- Opportunities: The global Net Zero transition creates opportunities for UK financial services that facilitate investment into low-carbon projects. – The value of global green finance (bond issues, initial public offerings (IPOs), and private equity investment) grew from \$5.2 billion in 2012 to \$540.6 billion in 2021.
- Opportunities: London is recognised as the number one global financial centre for green finance, while Edinburgh also features in the top 20.
- International climate finance: in 2019, the UK Government committed to providing £11.6 billion in international climate finance in aggregate over 2021/22–2025/26. This ambition was reiterated in 2024.
- The CCC also say that Government should set out an ambitious and fair contribution to the new global climate finance goal agreed at COP29. The UK should leverage its position as a global financial hub to support a wider mobilisation of public and private climate finance.

REA, February 2025