Climate Impacts of Heathrow Expansion

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NO 3RD RUNWAY COALITION

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Summary

This briefing highlights the climate impacts of Heathrow expansion. Supporting expansion at Heathrow is a significant gamble and risks undermining the decarbonisation efforts of the wider aviation sector as well as other key sectors of the economy. A 3rd runway at Heathrow would mean that aviation would constitute 25% of the UK's carbon emissions by 2050. The key question of how to ensure that Heathrow expansion is compatible with meeting legal climate change commitments has not been answered.

Emissions from Expansion

- Heathrow is already the biggest single source of carbon emissions in the UK and expansion will result in an estimated additional extra 7-9 megatonnes (MtCO2) of CO2 per year.
- Construction of the 3rd runway and associated works is expected to result in an additional 3.7MtCO2 of emissions up to 2050.[1]
- The Government has included international aviation emissions in the 6th Carbon Budget. Heathrow's expansion plans were based on the exclusion of those emissions in order to be compliant with UK climate law.
- Expansion will result in 41Mt per year of carbon emissions from aviation by 2050, double the estimates of the Jet Zero Strategy, with Heathrow making up over half of that figure.
- Equally, the Climate Change Committee (CCC) balanced pathway to Net Zero anticipates that aviation will be emitting 19 megatonnes of CO2 by 2050.
- Allowing aviation emissions to overshoot the limit (as would be inevitable with a new runway) would require other sectors making emissions cuts beyond the limit of what is feasible.[2]
- Neither Heathrow or the Department for Transport comprehensively consider the non-CO2 impacts from Heathrow's expansion proposals which have a significant impact on the climate.[3]
- The Appraisal of Sustainability, published alongside the Heathrow Expansion National Policy Statement (HENPS), highlights major adverse impacts resulting from expansion. This is not made clear in HENPS nor are considerations of alternative policies (e.g. demand management) that will be required to enable the expansion.

Aviation Decarbonsiation Targets

- The Government's Jet Zero Strategy plots several scenarios through which aviation might decarbonise, but these are extremely optimistic and based on speculative technological breakthroughs that are in their infancy or do not yet exist. Indeed, the strategy allows emissions to continue to grow into the 2030s making the decarbonisation challenge even more difficult to deliver.
- The appraisal report published alongside the HENPS accepts that **Jet Zero modelling is wrong** and needs to be reviewed (to be done in 2027).
- Other than for sustainable aviation fuels (SAF), there is no policy to realise the potential for zero-emissions flight, deliver greenhouse gas removals and to address non-CO2 impacts. In terms of carbon pricing, the two policy levers - CORSIA and the UK ETS have carbon prices below the assumed carbon values used by the government in its modelling. Indeed, there is no reference to carbon price in HENPS despite appraisal showing that Jet Zero prices are way off the mark £436 per tonnes vs £123 per tonne (actual).
- The Climate Change Committee has concluded that by 2040, aviation emissions fall by 17% but will account for 29.5 $MtCO_2$ of UK GHG emissions and will be the UK's highest-emitting sector.

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[1] Heathrow Expansion: Preliminary Environmental Impact Report ((PEIR), Volume 3, Chapter 9: Carbon and greenhouse gases. Appendices. Table 9.4.4 and Graphic 9.2.4 (Appendix, 9.4-10 to 9.4-11)

[2] https://www.theccc.org.uk/wp-content/uploads/2013/07/CCC_letter_aviation_commission.pdf

[3] PEIR, Appendix 9.3.2

- All pillars of the Jet Zero Strategy should also be considered against a backdrop of high abatement costs, investor uncertainty, and question marks about the availability of sustainable feedstocks, surplus renewable energy and green hydrogen at the scales required.

Limits of technological innovation

- The Climate Change Committee have modelled a range of scenarios and assessments about the contribution of technology, emissions trading and removals to help reduce emissions from UK aviation. They conclude that: ***"Low-carbon aviation technologies are at an early stage of development and the balance between them is uncertain – multiple options should be pursued. Government may need to take additional demand management measures if aviation sector emissions are not developing in line with Net Zero.***[4]
- ICAO (2019) estimates long-term aviation efficiency gains at ~1.37% per year, even under optimistic assumptions. This is far below projected industry growth (~5% per year), meaning emissions will continue to rise overall.
- Carbon removal technologies (e.g. direct air capture) are unproven at scale and may not reduce net emissions.
- Potential solutions proposed like SAF are simply not being manufactured at the pace or scale required. UK CCC advises that SAF should not be expected to exceed 17% by 2040 despite a Government target of 20%.
- Even if SAF target met 80% of the aircraft flying from an expanded Heathrow in 2040 would be flying on kerosene.

Assessing Proposals for Expansion

- Any proposal must be assessed against legal commitments and credible evidence using the best available science to ensure aviation does not push the UK's climate targets out of reach or cause unacceptable impacts on other sectors. This should include:
  - Analysis of cumulative emissions from the third runway (including departing planes and airport specific "on the ground" emissions) under different projections of technological development.
  - The CCC's assessment of whether the third runway can be used while keeping within the UK's carbon budgets.
  - An assessment of the costs, resource implications, including for other sectors, and feasibility of using technological solutions, particularly negative emissions, to address the increase in emissions from the third runway.
  - An assessment of the non-CO2 emissions and pathway to address these, including costs, resource implications and feasibility of technological solutions.

Key Questions for Government

1. Can the expansion occur without threatening the ability of UK aviation to stay within the carbon budget?
2. Will the cumulative total additional emissions from expanding the airport from the date of opening in 2035 be compatible with the steep downward trajectory in aviation emissions modelled under the Carbon Budget Growth and Delivery Plan in years 2036 & 2037, and delivery of CB7 in each of the years 2038-2042?
3. Can the government commit to a mechanism that ensures the minimum carbon price assumed in the aviation net-zero trajectory is met?
4. Has the scheme been tested against the latest scientific and policy developments around accounting for non-CO2 effects using a precautionary approach and under the scientific consensus that these have historically made up around two-thirds of the warming from aviation to date?

[4] CCC (2025) 7th Carbon Budget https://www.theccc.org.uk/publication/the-seventh-carbon-budget/