

Written evidence submitted by the No 3rd Runway Coalition to the Environmental Audit Committee inquiry into Net Zero Aviation and Shipping

September 2021

1. Executive Summary

- 1.1** Heathrow is the largest single polluter in the UK and its emissions account for half of all UK aviation emissions. Its expansion proposals allow for 260,000 additional flights per year, on top of the existing 480,000. This would add 7 megatonnes of carbon per year to our atmosphere and severely impact the U.K's ability to meet its net zero targets under the amended Climate Change Act 2008.
- 1.2** Development of new technologies and sustainable aviation fuels could help secure lower emissions in the aviation sector. However, hydrogen and electric aircraft will not enter even the short haul market for considerable time; not soon enough to meet our binding net zero targets.
- 1.3** We believe that however credible various initiatives to reduce aviation emissions, including the Jet Zero and Transport Decarbonisation Plans, any actions are fatally undermined until plans to expand Heathrow are firmly ruled out.

2. Introduction

- 2.1** The No 3rd Runway Coalition is the largest organisation campaigning against the expansion of Heathrow. Our membership includes local communities, parliamentarians, local authorities, trade unions and environmental NGOs.
- 2.2** Our members believe the expansion of Heathrow is incompatible with the UK's net zero targets especially as Heathrow's own data show the massive increase in CO₂ emissions resulting from a third runway.
- 2.3** Heathrow is the single largest polluter in the UK, and its emissions account for over half of all UK aviation emissions. It currently emits around 20MtCO₂ of carbon annually. A 3rd runway would increase this by approximately 7MtCO₂ to 27MtCO₂.
- 2.4** Annual emissions from surface access transport at Heathrow are just under 1MtCO₂ per annum currently. This might reduce to 0.91 Mt CO₂ in 2050 if

there were just two runways – and increase 1.25MtCO₂ with the third runway – a difference of approximately 0.34MtCO₂ per year.¹

- 2.5** Further, construction of the 3rd runway and associated works is expected to result in an additional 3.7MtCO₂ of emissions up to 2050.²
- 2.6** 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
- 2.7** A 3rd runway at Heathrow would require operational restrictions at other UK airports if the U.K. is to stay within the carbon budget as advised by the Climate Change Committee (CCC).
- 2.8** The Government should initiate a review of the Airports National Policy Statement following its legislative commitments as per the amendment to the Climate Change Act 2008, in 2019.

3. What contribution can operational efficiencies make to reduce emissions from aircraft / shipping vessels and over what timescale could these have an effect on emissions?

- 3.1** A report by the International Civil Aviation Organisation (ICAO) in 2019 assumed long-term overall efficiency gains, even under the most optimistic scenario, of 1.37% per annum. This includes improvements associated with both technology and operations.⁴
- 3.2** These potential efficiency gains do not come close to matching the projected and desired growth (5% per annum) from the aviation industry and are insufficient to reduce emissions from the current level.
- 3.3** Pidcock and Yeo (2016), show that carbon emissions from international aviation will still represent 12% of the 205Gt remaining global CO₂ budget in 2050, even if technological and operational efficiencies are maximised and the total demand for conventional jet fuel is met with alternatives. This may rise to 20% should alternative jet fuels not become available in sufficient quantities.⁵

¹ Heathrow Expansion: Preliminary Environmental Impact Report, 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 Ibid., Table 9.2.4 (Appendix, 9.12-12)

³ Ibid., Appendix 9.3.2

⁴ ICAO (2019) Environmental Trends in Aviation to 2050. https://www.icao.int/environmental-protection/Documents/EnvironmentalReports/2019/ENVReport2019_pg17-23.pdf

⁵ Pidcock & Yeo (2016). *Analysis: aviation could consume a quarter of 1.5C carbon budget by 2050*. Retrieved from: <https://www.carbonbrief.org/aviation-consume-quarter-carbon-budget>

- 4. How close are zero carbon fuels to commercialisation for aviation / shipping? How effective will the Jet Zero Council be in catalysing zero emissions technologies? What role should transitional fuels such as alternative hydrocarbon fuels play?**
- 4.1** In 2010 the aviation industry pledged to source 10% of fuels from sustainable sources in 2020. Yet by 2018, the industry had managed to source a grand total of 0.002%. Sustainable Aviation Fuel (SAF) production today is still less than 1 percent of overall jet fuel supply despite being pitched by the industry as the panacea for decarbonisation.
- 4.2** The current global targets for approximately 50% alternative jet fuel use in 2050 would require three new bio-jet fuel refineries to be built every month for the next 30 years. Today there are just two facilities – the market is not delivering at the pace required.
- 4.3** It is not clear how much investment industry or Government is willing to commit to enable alternative aviation fuels generation to be scaled up and sold at a price that is competitive with kerosene.
- 4.4** The CCC advises that we shouldn't plan for aviation biofuel to exceed 10% of total aviation fuel use by 2050. Their analysis suggests that the largest contribution to reducing emissions from aviation will come from new technologies and aircraft design.⁶
- 4.5** The International Energy Association's Sustainable Development Scenario (SDS), anticipates biofuels reaching around 10% of aviation fuel demand by 2030, and close to 20% by 2040.⁷
- 5. What new technologies are there to reduce emissions from aircraft / shipping vessels and how close to commercialisation are they?**
- 5.1** The industry's own assessment suggests that even if a technological breakthrough does become commercially available before 2050, new technological developments in the aviation sector usually take up to a couple of decades before reaching maturity (IATA, 2013).⁸

⁶ <https://www.theccc.org.uk/wp-content/uploads/2013/04/Aviation-factsheet.pdf>

⁷ <https://www.iea.org/commentaries/are-aviation-biofuels-ready-for-take-off>

⁸ IATA, 2013. Technology Roadmap, fourth ed. Retrieved from:
<https://www.iata.org/whatwedo/environment/Documents/technology-roadmap-2013.pdf>

Electric Aircraft

- 5.2** Analysis by Fellow Travellers⁹ reveals that electric aircraft in development in 2021 have the technical potential to cut 13% of UK aviation's greenhouse gas emissions.
- 5.3** Delivering this level of emissions reduction before 2050 would require regulation and major market intervention to accelerate product development and fleet turnover cycles of around 25 years.
- 5.4** Engineering constraints mean larger gains are unlikely in this timeframe, and it is probably not possible for transatlantic-range battery powered aircraft to be economically viable.
- 5.5** There are no electric aircraft currently in development which could compete with the majority of the current global civil aviation fleet on range or capacity. [Even in the aviation industry](#), the consensus is that we're unlikely to see electric flights at 1,500km or longer, yet these journeys make up [80 percent of aviation emissions](#).¹⁰ This undermines the case for expansion at Heathrow, where the overwhelming majority of the additional 260,000 flights per year will use kerosene.

Hydrogen

- 5.6** In June 2021, Airbus told the EU that most airlines will rely on traditional jet engines until at least 2050. They plan to develop the world's first zero-emission commercial aircraft by 2035, but assert that, *"Zero-emission hydrogen aircraft will be primarily focused on regional and shorter-range aircraft from 2035. Which means that current and future iterations of highly efficient gas turbines will still be required as we move towards 2050, especially for long-haul operations."*¹¹ The fact that hydrogen aircraft even if developed will be unsuitable for the long-haul traffic that Heathrow relies upon shows how their expansion would undermine efforts at decarbonisation. Hydrogen planes would also require very extensive modifications to airport infrastructure which airports like Heathrow would struggle to deliver.
- 5.7** If hydrogen is to form part of the Government's alternative aviation fuels strategy, then it will need to set goals that are realistic and achievable, and focus on creating a secure market for green hydrogen with high sustainability standards so that industry can make the long-term investments that are

⁹ Fellow Travellers (2018) *Electric Dreams: the carbon mitigation potential of electric aviation in the UK air travel market*. <https://s3-eu-west-1.amazonaws.com/media.afreeride.org/documents/Electric+Dreams.pdf>

¹⁰ "Electric planes: the revolution has some snags" Financial Times, June 17 2019, <https://www.ft.com/content/a9dc81d2-725e-11e9-bf5c-6eeb837566c5>

¹¹ <https://www.reuters.com/business/aerospace-defense/airbus-tells-eu-hydrogen-wont-be-widely-used-planes-before-2050-2021-06-10/>

required to scale up sustainably. As stated above only hydrogen currently produced by electrolysis could hope to meet this standard depending on where the electricity needed is generated from.

6. How should the Government's net zero aviation strategy support UK industry in the development and uptake of technologies, fuels and infrastructure to deliver net zero shipping and aviation?

6.1 To meet Net Zero legislation there will need to be a robust framework from Government with strict targets and incentives to help boost investment and innovation.

6.2 Government should produce an assessment of how other appropriate technology solutions for aviation will be delivered between now and 2050, and what policy interventions will be needed to ensure that these are delivered.

6.3 The UK Renewable Transport Fuels Obligation should include a requirement for airlines to purchase genuinely sustainable aviation fuels (e-kerosene). This would help to provide an incentive for investment and innovation.

6.4 The Government should drop the 'growth everywhere' mantra and set out robust plans for demand management options, incentives, and penalties to ensure promised technological improvements are delivered and a framework of mechanisms to ensure that the industry also addresses non-CO2 emissions.

7. What is the most equitable way to reduce aircraft passenger numbers (e.g., reforming air passenger duty and taxes, frequent flyer levies, bans on domestic flights where trains are available, restrictions on airport capacity)? Are there any policy mechanisms that could reduce our reliance on shipping?

7.1 It is clear from the advice of the CCC that aviation policy needs to include demand management.

7.2 A frequent flyer levy could be an effective and morally defensible way to reduce UK aviation emissions while maintaining access to air travel for all members of British society.

7.3 Commendable work by Possible proposes a frequent flyer levy¹² and the New Economics Foundation in their analysis and assessments of how a frequent flyer levy could be introduced.¹⁵ This could work to an even greater extent and

¹² Proposal for a frequent flyer levy <https://s3-eu-west-1.amazonaws.com/media.afreeride.org/documents/FFL+Policy+Proposal.pdf>

¹⁵ Managing Aviation Passenger demand with a frequent flyer levy <https://s3-eu-west-1.amazonaws.com/media.afreeride.org/documents/FFL+Modelling+paper.pdf>

reduce emission further if policies such as banning extremely short domestic flights on the UK mainland were introduced. In April 2021, France introduced such a ban for flights that can be completed by more sustainable travel modes in under four hours.¹⁴

The Government could also amend the Airports National Policy Statement to remove the requirement for any expansion at Heathrow to have 15% of slots reserved for domestic flights

8. What further action is needed by the International Civil Aviation Organization and International Maritime Organization to drive emissions reductions? What can the UK Government do to drive international action on emissions?

8.1 Academic evidence suggests that including non-CO₂ emissions would result in a doubling of the overall climate impact of aviation.¹⁵ Following the recommendation of the CCC it is vital that further research is commissioned to guide policy and regulations for non-CO₂ emissions.

9. How effective will the global offsetting scheme for international airlines (ICAO's CORSIA) and the UK and EU ETS be at stimulating technology improvement and/ or behaviour change to reduce emissions from aviation / shipping?

9.1 Offsetting is not a credible policy mechanism as it does not stop aircraft from emitting greenhouse gasses into the atmosphere.

9.2 The CCC has advised the Government not to use CORSIA as a way to meet its 2050 net zero target. CORSIA does not include an actual emissions reduction target.

9.3 Airports like Heathrow seek to sidestep their carbon issue by claiming that an international 'offsetting' scheme (CORSIA) will resolve the problem. This is highly misleading because:

- there is no assurance that CORSIA will be implemented at all.
- Most offset schemes do not achieve genuine net reductions.
- As emissions worldwide are reduced in accordance with the Paris agreement, there will be a rapidly shrinking source of emissions available to be offset against aviation.

¹⁴ <https://www.bbc.co.uk/news/world-europe-56716708>

¹⁵ Lee et al (2021) The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018. Atmospheric Environment, Volume 244, 117834. <https://doi.org/10.1016/j.atmosenv.2020.117834>