



Briefing

Five tests for the Jet Zero strategy

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Overview

Emissions from the aviation sector have more than doubled since 1990. No other sector of the UK economy has generated such dramatic emissions growth.

While the Department for Transport (DfT) has published indicative visions for a net zero aviation sector in two consultations, there are no corresponding policy plans to ensure emissions fall sufficiently to meet the UK's legally binding climate targets.

The government's upcoming Jet Zero strategy is likely to include measures to promote system efficiency improvements and sustainable aviation fuels (SAF), while encouraging the development of zero emissions aircraft (ZEA) and stronger carbon pricing signals.

The strategy is not expected to include plans to finance technological solutions, including greenhouse gas removals; nor will it include a plan to manage passenger levels, should technological solutions not materialise at the pace required. For the strategy to be successful in meeting targets set for 2035 and 2050, it will need to meet the tests below:

Five tests for the Jet Zero strategy

1. It should be published alongside detailed policy proposals on how its ambitions will be achieved, with specific policy mechanisms to create incentives for the development and deployment of zero emission aircraft and sustainable aviation fuel.
2. It should develop and adopt a decarbonisation pathway that has a significant reduction in emissions by 2035, compared to the pre-pandemic baseline.

3. It should introduce a framework to manage emissions by reducing passenger demand, since technological solutions may not deliver emissions reductions at the rate necessary to meet the decarbonisation pathway, and no airport expansion should be permitted in the interim.
4. It must include specific policies to address the significant non-CO₂ climate impacts of aviation.
5. It must ensure the polluter pays principle is applied across all carbon emissions from flying, and the full costs of aviation decarbonisation measures should be borne by the aviation industry, not the taxpayer.

Limits of sustainable aviation fuels and zero emission aircraft

While the Jet Zero strategy puts emphasis on both SAF and ZEA, neither have yet been scaled up commercially and, therefore, they will not offer significant emissions reductions in the next decade; over this period the rest of the UK economy must decarbonise significantly. These solutions face serious cost and technological barriers even to small scale commercial roll-out.

The upcoming SAF mandate will force alternative fuels into the fuel mix, but this is not a panacea. While SAF will deliver some carbon emissions reductions on a net, lifecycle basis they are not zero emission, largely due to other non-CO₂ emissions from the fuel which have a climate impact.

In addition, it is not yet clear whether the SAF mandate will include a sub-mandate for synthetic fuels (the fuel alternative which offers the greatest emissions reduction potential).

Beyond some R&D funding, there is no policy mechanism to ensure the development and scaling up of ZEA, which also face significant technological hurdles.

Managing passenger levels

While technological solutions are in the early stages of development, there are [doubts](#) about whether they will reduce emissions sufficiently prior to 2050, and they are unlikely to result in significant emissions reductions by 2035, when the UK must have reduced overall emissions by 78 per cent.

None of the pathways presented in the Jet Zero strategy will offer significant emissions reductions prior to 2035 compared to pre-pandemic levels. The government should develop a new decarbonisation pathway which sees a

more rapid reduction in emissions in the next decade, to secure climate targets and keep the sector on track for net zero by 2050.

Until technological solutions are more widely deployed, emissions reductions can be secured by limiting the demand for flying. DfT projects [passenger growth](#) will expand 74 per cent by 2050; however, the Climate Change Committee recommends a '[demand management framework](#)' that allows no significant growth in passenger numbers to 2035 and, thereafter, limits growth to 25 per cent by 2050, allowing for no net expansion of airports. The introduction of a demand management framework would ensure the sector stays on its decarbonisation pathway if technology does not cut emissions at the rate or scale required.

Non-CO₂ emission impacts

The climate warming impact from aviation is not just caused by the release of CO₂ but also by non-CO₂ emissions and effects, primarily contrails and nitrogen oxides (NO_x). These non-CO₂ effects are estimated to cause two thirds of aviation's warming impacts, meaning the real climate impact of aviation is three times greater than suggested by CO₂ emissions alone.

In direct contradiction to the polluter pays principle, non-CO₂ emissions are not regulated or priced, meaning there are no incentives for airlines to reduce them. Options to price could include applying a NO_x charge; applying an additional charge or multiplier to the UK emissions trading scheme (ETS); or charging airlines a fee for deliberately flying through areas where meteorological conditions mean contrails will occur.

Applying pricing to aviation's non-CO₂ effects from UK-departing flights would be world-leading and send a powerful signal to the aviation industry that it must mitigate all its climate impacts.

The polluter pays principle

In direct contrast to road users, fuel burnt in planes is not taxed, which amounted to a £7 billion annual [tax break](#) pre-Covid, and most of aviation's carbon emissions have not been included in the UK ETS. The Jet Zero strategy is likely to support stronger carbon pricing as a decarbonisation tool, but details are needed about how this will be implemented, and a carbon price alone does not cover non-CO₂ impacts.

There is [public support](#) for managing levels of aviation and increasing the costs of flying to reflect its environmental impacts and remove current market distortions (such as a fuel tax being levied on petrol, but not on jet fuel), but this needs to be done in a way that is fair and provides airlines with a sufficient incentive to reduce emissions.

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