

Committee on Climate Change sets out options to meet the UK's aviation emissions target

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A report from the Committee on Climate Change (CCC) published today says that aviation policy should be based on the assumption that demand growth between now and 2050 cannot exceed 60% if the UK is to meet the Government's target that aviation emissions in 2050 must not exceed 2005 levels.

The report concludes that fuel efficiency and operational improvements are likely to result in a 30% reduction in carbon emissions per seat km flown and that sustainable biofuels could account for 10% of aviation fuel use in 2050. Faster technological improvements are possible, but unless and until they are achieved, it is not prudent to assume that demand increases of more than 60% are compatible with the target.

Fuel efficiency improvements will arise from engine and airframe design innovation, and improved efficiency of Air Traffic Movements and operations. Increased investment in aircraft technology research and development might make possible more rapid progress than currently likely.

The report finds that the use of biofuels in aviation is likely to be technically and economically viable. However, there are significant uncertainties over the level of sustainable biofuels available for use in aviation, for three reasons: 1) the land area and water resource required given increased food demand resulting from an increasing world population 2) technological uncertainty over the feasibility of biofuels production that does not require agricultural land (e.g. algae based) 3) other demands for biomass feedstocks to produce low-carbon energy (e.g. biofuels for HGVs, biomass power generation). It is therefore prudent to base current policy on the assumption that biofuels cannot account for more than 10% of the total aviation fuel mix in 2050.

The report finds that on a "business as usual" path UK air passenger demand would

grow over 200% by 2050, reflecting the high income elasticity of demand. This would not be compatible with meeting the UK's aviation or wider economy emissions targets.

The report highlights various options for reducing demand:

- A carbon price rising gradually to £200 / tCO₂ by 2050, combined with capacity constraints as envisaged in the 2003 Aviation White Paper (i.e. with addition of capacity at Edinburgh, Heathrow and Stansted but at no other airports) could limit demand growth to 115% by 2050.
- High-speed rail has the potential to substitute for domestic and short haul flights to Europe; this could result in a 10% aviation demand reduction in 2050.
- Video-conferencing technology is still at an early stage of development but by 2050 could substitute for up to 30% of business trips based on current best business practice.

However, the combination of the anticipated carbon price, modal shift and increased use of videoconferencing in business is unlikely to constrain demand growth to 60%. Clear additional policies (beyond the introduction of a carbon price at this level) will therefore be required to constrain passenger demand in the period to 2050.

The report notes that a demand increase of 60% could be compatible with a variety of different policies in respect to expansion at specific airports, which need to reflect a range of factors beyond the Committee's remit. Expansion plans in aggregate however should be consistent with limiting passenger growth in 2050 to a maximum of 60% above 2005 levels.

Throughout the report, the assumption is that UK action is in the context of an international agreement which limits aviation emissions in all countries.

The report considers non-CO₂ effects from aviation (e.g. water vapour). The scientific evidence suggests that these are likely to result in increased warming, and will have to be included within both international and UK targets as scientific understanding

improves. This may mean that the UK's aviation target needs to be tightened in future.

The Committee's next annual report to Parliament in June 2010 will include an assessment of the latest data on UK aviation emissions.

Lord Turner, Chair of the Committee on Climate Change said:

“Aviation emissions must be included within our strategy to tackle climate change. We have set out options for achieving the Government's target that aviation emissions in 2050 should not exceed 2005 levels. Given the likely pace of technological progress a demand increase of up to 60% but no more could be compatible with the government's target. Aviation policies should be consistent with this overall limit on demand growth, unless and until more rapid technological progress than currently anticipated makes any greater increase compatible with the target “

ENDS

Notes to Editors

Committee on Climate Change (CCC)

The Committee on Climate Change (CCC) is an independent body established under the Climate Change Act to advise the UK Government on setting carbon budgets, and to report to Parliament on the progress made in reducing greenhouse gas emissions: www.theccc.org.uk/

The report is available to download from: <http://www.theccc.org.uk/reports/aviation-report>

- The Committee was requested by the Government “*to assess scope for [emissions] reductions, including from improvements in technology and the effect of appropriate policy levers; and the implications of further aviation expansion beyond 2020*”.
- Given forecast income growth of 150% in the period to 2050, and absent a carbon price or infrastructure capacity constraints, we project that demand could grow by over 200%, from the current (2005) level of 230 million passengers annually to 695 million passengers in 2050.
- Based on the technology mix in the fleet today, emissions would grow to just under 100 MtCO₂, relative to 2005 emissions of 37.5 MtCO₂.
- Fleet fuel efficiency improvement of 0.8% per annum in the period to 2050 is achievable under the current framework through airframe and engine technology innovation, and improved efficiency of Air Traffic Management and operations.
- It is currently very unclear that sufficient land will be available for growth of biofuels feedstocks and to grow food for a global population projected to increase from the current 6.7 billion to 9.1 billion in 2050.
- There are no clear implications of our analysis for specific airports (e.g. Heathrow). The key implication for aviation expansion is that whatever the pattern of capacity development, this should be consistent with adding no more than 140 million passengers in 2050 (i.e., constraining demand growth in 2050 to around 60% above 2005 levels) if the target is to be achieved.

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