

Main thematic area: Economics/Science/Technology  
Cost: £/££/£££

## Strategies for a low carbon aviation future

### Background

Some scenarios suggest that if current trends continue, the aviation sector might account for at least 90% of UK permissible emissions in 2050 under a 'carbon constrained' future. This may be an unrealistically harsh view but it acknowledges the difficulty in delivering emissions solutions as demand increases.

Radically reducing carbon emissions from aviation will require major changes to either travel patterns or the technologies used for long distance passenger transportation. The aviation sector is highly innovative but changing the direction of technological development will involve levels of investment and changes in business structures that the industry is not currently considering.

### Study aims

This project will address what combinations of social, political, institutional and technological changes are required – and indeed feasible – in order to keep aviation emissions at or close to current levels or even reduce them. The investigation will suggest possible policy developments – around changes to social functions of aviation, industry structures, engineering analyses and technology pathways – in order that sustainable and viable ways forward can be found for the sector.

### Key questions

The study will address some key questions, for example:

- What are the different functions of aviation in society and how do industrial and regulatory structures determine aviation growth and impacts?
- What will encourage the industry to invest in radically new technologies?

Lead: University of Cambridge  
Duration: 12 months  
Partner: Cranfield

[www.omega.mmu.ac.uk](http://www.omega.mmu.ac.uk)



- How might aviation's role change in the light of new technology eg future generation communications or radical transport technology?
- What lessons can be learned from the histories of analogous technological challenges?

### Strategic approach

The uptake of different technological options for reducing the environmental impacts of aviation depends on the extent to which these make commercial and strategic sense for those in the aviation industry (including manufacturers, airlines and airport operators).

A multidisciplinary analysis of different options and technology pathways would be of interest to both industry and policy makers. It can inform scenario development. It is vital to develop a realistic understanding of the possible range of responses by firms in the aviation sector to the incentives that policies will create. These responses are not just changes in prices to passengers and logistics for firms, but also decisions on investment in infrastructure, new technologies for aircraft and expansion of route networks.

Principal investigator: Dr Clive Lawson  
E-mail: [cl204@econ.cam.ac.uk](mailto:cl204@econ.cam.ac.uk)

*Omega is funded by HEFCE*