

Main thematic area: *Economics/Science/Technology*

Cost: £/££/£££

MAGAVIATION: Assessing the potential impact of aviation growth on global temperature changes

Increasing impacts

Aviation is currently a small part of the human activities that affect the earth's climate. But given the industry's growth, its effects on the global climate may also steadily increase. It is suggested that global greenhouse gas emissions need to be approximately halved by 2050 relative to 1990 in order to keep the global mean temperature increase below 2°C. This poses immense challenges for all regions and sectors, including aviation. Climate change is and will be a key driver for policies and investments in the aviation sector. Quantifying the global temperature implications of various aviation growth scenarios is therefore vital for informed decision-making – especially given the present deep concerns over climate change.

This project will compile future scenarios of aviation from the research literature and information from industry and governmental stakeholders. Hypothetical factors around aviation growth, alternative fuels and radical aircraft design will also be incorporated. Scenarios will be interpreted in terms of greenhouse gas emissions and other effects on the atmosphere such as aircraft contrails.

The study will assess these aviation projections in the light of various climate mitigation scenarios, including stabilization scenarios and those compatible with the EU's 2°C climate change target. Various time horizons will be considered including 2020, 2030, 2050 and possibly beyond. The project will provide likely temperature projections and their medians for each aviation growth scenario.



MAGICC model

Researchers will use the MAGICC model (Model for the Assessment of Greenhouse-gas induced Climate Change), the simple climate model used by the Intergovernmental Panel on Climate Change for multiple scenario analysis, in order to assess the climate implications of potential aviation growth.

Benefits

This study will provide the scientific community with a new set of aviation growth scenarios and associated global temperature implications. Governmental authorities and industry stakeholders will get an assessment of aviation growth scenarios and their impact on climate change. This will enable informed decision-making, both in terms of policies (such as inclusion of the aviation sector in an emissions trading scheme) and industry investment. Information will be available on the impact of aviation relative to the total human-induced effects on climate change.

Lead: Manchester Metropolitan University
Duration: 12 months

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