## What does this sector include?

The aviation sector comprises emissions from domestic and international flights. Only domestic flights are currently covered by carbon budgets, but the UK share of international emissions is included in our target to reduce emissions by at least 80% by 2050.

In 2013 the aviation sector accounted for 5% of total greenhouse gas emissions in the UK (Figure 1). The vast majority of aviation emissions are from international flights (95% in 2013). Aviation emissions have doubled since 1990 due to increasing passenger demand, with most growth coming from international flights (Figure 2).

Figure 1. UK greenhouse gas emissions from aviation (2013)

Total UK GHG emissions: 609 MtCO$_2$e (incl. IAS*)

Aviation 5.3%

Shipping 1.4%

Other Sectors 93.3%
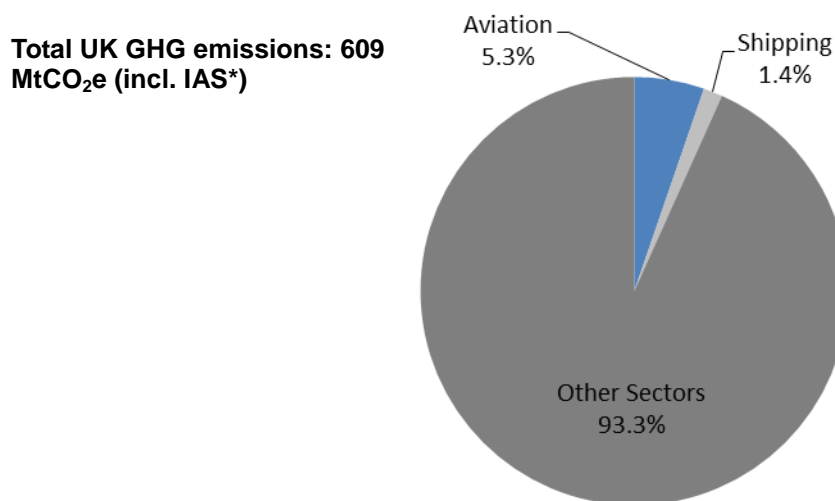
Source: DECC (2015)
*International Aviation and Shipping

Figure 2. UK aviation CO$_2$ emissions (1990-2013)


International aviation

Domestic aviation
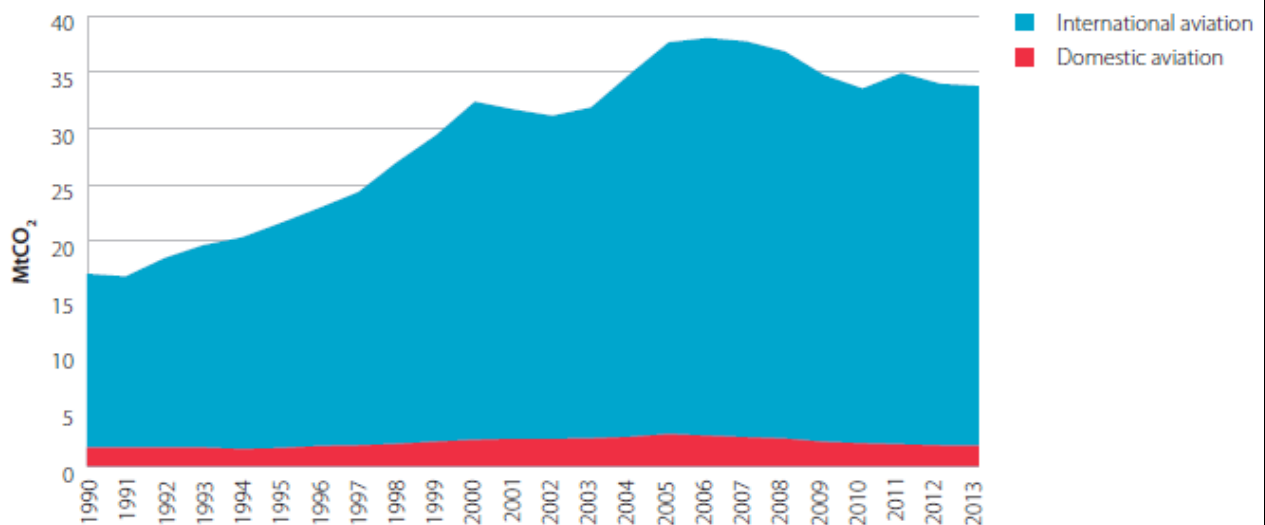
Source: DECC (2015)

What can be done to reduce emissions in this sector?

Reducing growth in aviation emissions can be achieved through reducing the carbon intensity of flights, and using alternatives to air travel:

- **Carbon intensity** can be improved through use of more fuel efficient planes (new aircraft and engine designs), improving air space management, and use of biofuels.

- **Alternatives to air travel** include video-conferencing and switching to rail.

Figure 3 shows how these factors can contribute. By 2050 carbon intensity of flights is likely to have improved by around 35%, with the majority of this coming from more fuel efficient planes. With these improvements, demand for flying can continue to increase while still meeting climate objectives - demand growth of around 60% on 2005 levels is compatible with keeping aviation emissions to 2005 levels.

Figure 3. CCC aviation emissions "Likely" scenario (2005 –2050)

Source: CCC analysis
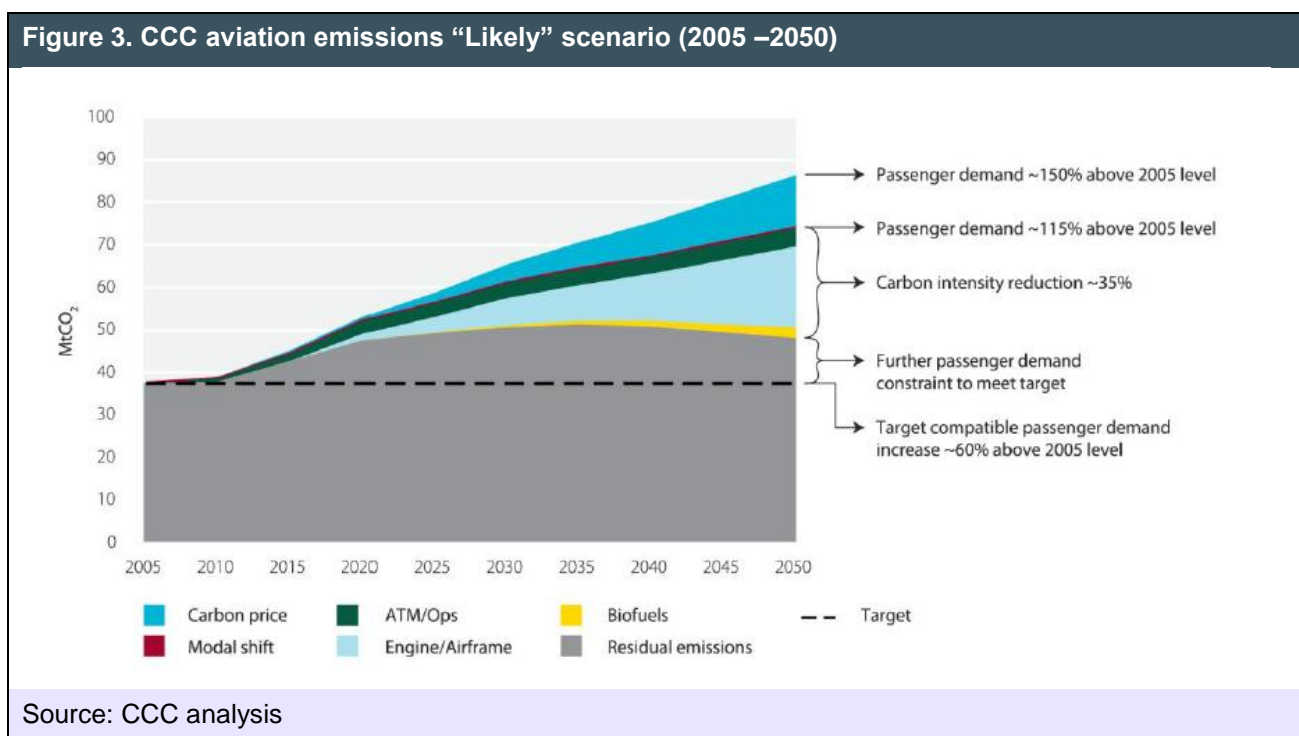
What is Government doing?

- **EU Emissions Trading System**. The Government has supported the inclusion of aviation in the EU Emission Trading System (EU ETS) from January 2012. Non-EU flights are currently suspended from the EU ETS ahead of a global policy expected to be agreed by 2016 and applying from 2020. http://tools.decc.gov.uk/en/content/cms/emissions/eu_ets/aviation/aviation.aspx

- **Aviation policy framework**. The Government launched a new policy framework for aviation in the UK in March 2013. https://www.gov.uk/government/publications/aviation-policy-framework

- **Airports Commission**. In September 2012 the Government established the Airports Commission to advise on the future need for airport capacity. The Commission released their interim advice in

December 2013, which recommended the need for an additional runway in the south east by 2030.Their final advice will be released in summer 2015.The Commission includes Julia King who is a member of the Committee on Climate Change.
https://www.gov.uk/government/organisations/airports-commission

What is the CCC's position?

- **Aviation emissions in 2050**. Long term aims for aviation emissions should reflect international/EU approaches rather than unilateral UK action, given risk of emissions leakage. However, planning assumptions are useful to inform the strategy for meeting the overall 2050 emissions target.

- **An appropriate planning assumption for 2050 aviation emissions** is to be around 2005 levels (i.e. 37.5 $MtCO_2$). This is achievable through measures which are feasible, and is consistent with government and industry analysis, and objectives of the industry at UK and global levels.

- **Demand growth**. An increase in passenger demand of around 60% on 2005 levels (90% on 2010 levels) is compatible with returning aviation emissions to 2005 levels by 2050.

- **Airport capacity**. Decisions on airport capacity need to reflect a wide range factors beyond emissions - including local environmental effects, economic impacts, competition between UK and foreign hubs, customer preferences, alternatives to air travel. The combination of policies should be designed to be consistent with an overall 60% increase in passenger demand by 2050 compared to 2005 levels.

- **Biofuels**. Use of sustainable biofuels in aviation could be desirable in the long-term, as a direct low-carbon replacement for jet fuel. However, competing claims for scarce bioenergy resource means policy should not be planned on the basis of significant penetration of biofuels in aviation. Penetration of around 10% is broadly appropriate as a planning assumption.

Links to recent work by CCC

Aviation Report – How to get aviation emissions to 2005 levels by 2050**.**
http://www.theccc.org.uk/publication/meeting-the-uk-aviation-target-options-for-reducing-emissions-to-2050

International Aviation and Shipping Review – advice on inclusion of international aviation and shipping in carbon budgets.
http://www.theccc.org.uk/publication/international-aviation-shipping-review

2015 Annual Progress Report - Chapter 4 - Progress decarbonising the transport sector.
http://www.theccc.org.uk