International aviation

In 2013, 24.6 million international aviation passengers used Irish airports. According to Eurocontrol, the European Organisation for the Safety of Air Navigation, passenger air travel in Europe by 2050 may increase by up to 150% in a high growth scenario; this is reflected in trajectories 1 and 2. In a fragmenting global growth and high fuel price scenario, passenger numbers may grow at slower pace, increasing by 30% by 2050 compared to 2013 (Trajectory 4).

Now there is no agreed way of allocating international aviation emissions to different countries. Such emissions are not currently included in Ireland's 2050 target, largely for this reason. However, they are included in the 2050 Calculator to ensure complete coverage of all sectors.

Trajectory 1

By 2050, the number of international passengers using Irish airports increases by about 150%. Action to reduce inefficiencies in air traffic related operations, and action to promote behavioural change amongst leisure passengers improves efficiency by 0.9% per year. By 2050 the sector uses 70% more fuel than in 2010.

Trajectory 2

Trajectory 2 assumes the number of international passengers using Irish airports increases by 150%. Air carriers improve the match between aircraft and flight requirements and international action to introduce CO_2 standards and international fuel burn goals lead to efficiency improvements averaging 1.2% per year. By 2050 the sector uses 50% more fuel than in 2010.

Trajectory 3

Trajectory 3 assumes the same efficiency improvements as in Trajectory 2. By 2050 the number of international passengers using Irish airports more than doubles to 110% above 2013 levels. The sector uses 30% more fuel than in 2010.

Trajectory 4

Trajectory 4 assumes that all the efficiency measures in trajectory 2 and 3 hold but that by 2050 the number of international passengers using Irish airports increases by only 30%. The sector uses 20% less fuel than in 2010.

Interaction with other choices

Test flights have demonstrated the possibility of using biofuels in aviation. However biofuel is available in limited quantity and it is subject to competing demands for its use. In the future, aircraft may be able to use biofuels in really significant quantities. To choose a 2050 Calculator pathway where biofuels are used in aviation, either select a pathway that has bioenergy imports, or select a pathway that has both Irish bioenergy production and conversion to mainly liquid bioenergy.

Figure 4: Boeing 737 MAX, due to be rolled out in 2017 with at least 10-12% improved efficiency.

Figure 5: Energy demand in TWh/yr for international aviation in Ireland.