Transport: Aviation Biofuel

This lever controls the sub-levers listed in the table, and ambition levels are for the end year shown on the right-hand side.

Biofuels have the potential to reduce greenhouse gas (GHG) emissions as the CO_2 produced at the tail pipe has been absorbed during the growth of the biomass used. The net GHG emissions impact of biofuel is therefore generally low being just those incurred in the supply chain, although for some crops (such as oil seeds) the impact can be much higher, hence the interest in biofuel production from wastes such as used cooking oil.

Aviation has fewer options for decarbonisation since full electrification of large planes is not thought to be technically feasible. However, biofuels represent a potentially straightforward way to reduce emissions from air travel. For this reason, when faced with limited biofuel supply, aviation may be one sector to prioritise (over light vehicles for example, which can be electrified more easily).

Key Interaction

Increasing the use of biofuels in transport has implications for how that increased demand for biofuels will be satisfied. Biofuels can be created from waste and biomass grown in the UK, but feedstocks can equally be imported from a wide range of countries around the world. There are however limits to how much of these feedstocks are sustainably available both domestically and globally. UK bioenergy production can be controlled through the Land Use & Biofuels levers.

Level 1

The share of biofuels in aviation fuels remains zero.

Level 2

The share of biofuels in aviation fuel is 10%, corresponding the “Likely” scenario published by Committee on Sustainable Aviation[1].

Level 3

The share of biofuels in aviation fuel is 30%, corresponding to the “Speculative” scenario published by Sustainable Aviation[1].

Level 4

All aviation fuel is biofuel. Unless aviation demand is reduced, this would require more than the maximum available raw biomass of around 300 TWh/year (CCC ‘Global governance and innovation’ scenario[2]).

[1] https://www.sustainableaviation.co.uk/wp-content/uploads/2018/06/FINAL__SA_Roadmap_2016.pdf

[2] https://www.theccc.org.uk/publication/biomass-in-a-low-carbon-economy/

Default Timing

Start year: 2025, End year: 2050

Biofuel share of liquid fuel

Sub-Lever	Units	2015	Level 1	Level 2	Level 3	Level 4
Aviation Domestic	share	0%	0%	10%	30%	100%
Aviation International	share	0%	0%	10%	30%	100%