

Transport: Aviation Efficiency

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

In 2015, domestic and international aircraft consumed 249.6 MJ and 374.3 MJ of fuel per km flown respectively. This is termed the energy intensity and gives a measure of how efficient an aircraft is (i.e., lower energy intensities mean greater efficiencies).

Currently only one/two-person electric aircraft prototypes exist. Whilst Airbus and Boeing have R&D programs related to electric aircraft, there are no release dates for larger prototypes or proven vehicles. However, many of the ground operations such as taxiing are suitable for electrification, and use a significant proportion of the aircraft's fuel therefore, there is a role for hybrids.

Main influences on efficiency

Operational performance

- Congestion – historical trends have remained roughly the same as improved ground control methods have been offset by an increase in traffic.

- Time spent on the ground

Technological performance

- Design of aircraft – increases in efficiency from using lighter weight, high-strength materials. Engines used at higher temperatures and pressures. Equipment installed on-board (for entertainment, for example) increases weight and therefore decreases efficiency.

The number of seats on board has been increasing and is desirable for increasing efficiency.

Level 1

Efficiency improves at a rate equivalent to 0.5% per year for 30 years

Level 2

Efficiency improves at a rate equivalent to 1% per year for 30 years. The proportion of hybrid planes remain at 0% based on estimates provided by airline experts.

Level 3

Efficiency improves at a rate equivalent to 1.2% per year for 30 years. The proportion of hybrid planes remain at 0% based on estimates provided by airline experts.

Level 4

Efficiency improves at a rate equivalent to 1.4% per year for 30 years and 30% of domestic and international aircrafts are hybrids.

Default Timing Start year: 2020, End year: 2050

Sub-Lever	Units	2015	Level 1	Level 2	Level 3	Level 4
Energy Intensity						
Domestic	Index	1.0	0.85	0.7	0.65	0.6
International	Index	1.0	0.85	0.7	0.65	0.6
Plug-In Hybrid Electric Share						
Domestic	share	0.0	0	0	0	0.3
International	share	0.0	0	0	0	0.3

Aviation - Energy Intensity Index

