

AVIATION 2050 GOAL AND THE PARIS AGREEMENT

How does the aviation industry's 2050 goal to reduce net CO₂ emissions by 50% (against a 2005 baseline) compare with the Paris Agreement goals?

Aviation adopted a set of short-, medium- and long-term climate goals in 2009, the world's first for any single global sector. The industry's medium-term goal, to achieve carbon-neutral growth from 2020 and the long-term goal, of halving net CO₂ emissions from the sector by 2050, relative to 2005 levels, are particularly ambitious goals for this growing sector. In 2015, the world's governments negotiated the Paris Agreement, a climate change response built on voluntary pledges of emissions reductions by all states (known as nationally-determined contributions, or NDCs).

Although the Paris Agreement does not establish sector-specific goals for addressing potential temperature rise, the aviation sector's 2050 goal to halve net CO₂ emissions on a 2005 baseline is in line with the Paris Agreement goal to limit global temperature rise to below 2°C above pre-industrial levels.

Aviation's 2050 goal

- » In 2005, global aviation emissions reached 650 MtCO₂. Therefore, to meet the aviation industry 2050 goal, net emissions would have to be reduced to 325 MtCO₂ in 2050.
 - ↳ "Net" emissions refers to the fact that, while aviation will continue to drive emissions reductions through technology, operations and infrastructure advances, additional significant CO₂ reductions are likely to be achieved through the use of sustainable aviation fuels.
- » The 2050 goal is an industry-wide goal (airlines, airports, air navigation service providers and manufacturers). Governments meeting at the International Civil Aviation Organisation (ICAO) have adopted two goals that support a trajectory towards the industry goal.
 - ↳ an efficiency goal of 2% per annum until 2050; and through the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), support for the ICAO and industry goal of capping net emissions at 2020 levels. Both ICAO goals are for international flights.
 - ↳ Generally, emissions from domestic aviation are the purview of government actions under their NDCs, whereas the difficulty in accounting for international emissions from the aviation and shipping sectors mean these are looked after by ICAO and the International Maritime Organisation, respectively.
- » The aviation industry goals are global – encompassing both international and domestic aviation emissions. This is because for the industry, there is no difference in the technology, operations or energy transition that needs to be deployed at a global or national level.
- » Importantly, the industry needs to ensure political acceptability across all countries in setting goals. Aviation requires global standards that can be instituted everywhere. Developing a goal which disadvantages some countries would result in no uptake and little environmental integrity.

The Paris Agreement goals

The Paris Agreement set a main goal and a stretch goal of:

Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change.

Analysis has shown that there is a significant difference in how the world will meet the 2°C goal vs the 1.5°C stretch goal.

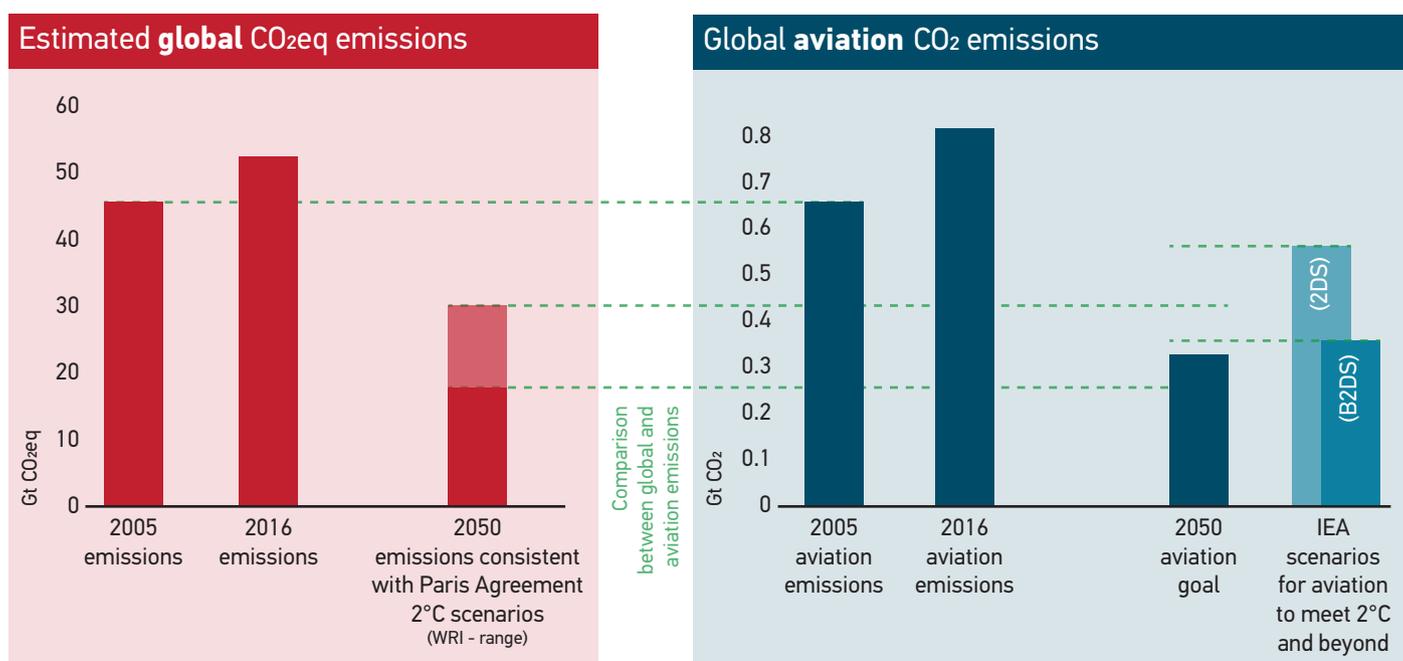
- » Current global emissions are around 52GtCO₂eq¹, with an expectation (based on current NDC pledges) that 2030 emissions will be between 52 and 58GtCO₂eq. This does not meet the Paris Agreement 2°C goal, which would require emissions to be between 25-30 GtCO₂eq in 2030 and 18-30GtCO₂eq in 2050².

The current NDC pledges are due to be revised by countries in the coming years, with pressure to raise the ambition of these voluntary commitments.

Aviation 2050 goal in context of 2°C

While the international aviation sector was not included under the Paris Agreement, a comparison of the aviation industry 2050 goal vs. global emissions levels expected to result from implementation of the NDCs under the Paris Agreement and 2°C scenarios can help put the planned efforts by the aviation industry in context.

- » Taking 2005 emissions levels of the global economy and air transport sector as reference, the aviation industry 2050 goal is in line with (somewhat more ambitious than) emissions reductions efforts from all other sectors under 2°C scenario.
 - ↳ This requires all other sectors to reduce emissions at around the same rate as air transport. However, most other sectors have a much easier transition and could / should reduce emissions much faster or entirely.
 - ↳ If global emissions were between 18 and 30 GtCO₂eq in 2050 (consistent with 2°C scenarios), aviation's 325 MtCO₂ emissions would be around 1.1-1.8% of CO₂ emissions in 2050.
- » The International Energy Agency (IEA), Energy Technology Perspectives (ETP, 2017) suggest that the current aviation industry 2050 goal is more ambitious than requirements under a 2°C Scenario (2DS)³ and close to a Beyond 2°C Scenario (B2DS)⁴.



Aviation 2050 goal in context of 1.5°C

While the current industry goal is in line with the 2°C Paris Agreement goal, attributing the 1.5°C stretch target to aviation on a sector-specific basis would itself be a stretch. The IPCC published several pathways to meeting 1.5C, requiring a peaking of emissions across the economy between 2020 and 2030 and a rapid reduction in emissions following that, with net zero emissions by the mid-century. Whether this is politically or technically possible remains to be seen. But for hard-to-decarbonise sectors such as air transport, meeting the 1.5°C goal and remaining a small percentage of overall human emissions will be a major challenge.

The industry is currently exploring options for how it could work towards a similar path, whilst maintaining the service it provides to connectivity around the world.

¹ Gigatonnes of CO₂ equivalent, or 52 billion tonnes. Aviation is currently around 0.9 billion tonnes. Source: World Resources Institute, International Air Transport Association.

² UNFCCC, "Aggregate effect of the intended nationally determined contributions: an update", 2 May 2016, FCCC/CP/20016/2.

³ The 2°C Scenario (2DS) has been the main climate scenario in the ETP series for many years, and it has been widely used by policy makers and business stakeholders to assess their climate strategies.

⁴ The Beyond 2°C Scenario (B2DS) looks at how far known clean energy technologies could go if pushed to their practical limits, in line with countries' more ambitious aspirations in the Paris Agreement. In the B2DS, the energy sector reaches carbon neutrality by 2060 to limit future temperature increases to 1.75°C by 2100, the midpoint of the Paris Agreement's ambition range.