

Long-Term Aspirational Goals (LTAG) for CO₂ Reductions

INTRODUCTION

The aviation industry has a record of achieving significant environmental improvements in the past decades. Since the beginning of the jet age, reduction of CO₂ emissions per seat kilometer has been significant (80%) as aircraft structures, aircraft engines, and aircraft operations have become more fuel efficient. In recent years, this reduction has been, on average, 2.1% per annum. But more must be done to bring the aviation sector in line with the goals formulated in the Paris Agreement, (Article 2, 1a):

"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."

Temperature rise has an approximate linear relationship with the cumulative CO₂ emitted. The remaining carbon budget from 2020 to 2050 from all anthropogenic sources is estimated to be 400 gigatons (Gt) CO₂ at 67% probability of limiting temperature increase to 1.5°C. The comparable budget for 2°C at a 67% probability is 1,150 Gt.

According to the latest (2019, pre-pandemic) figures from the International Energy Agency and ICAO, aviation was responsible for nearly one gigaton of CO₂ emissions annually, around 2.4% of the global total. As aviation demand is expected to grow, this share is projected to increase to somewhere between 3.0% and 10.1% of the total cumulative CO₂ budget available through 2100.

The Paris Agreement does not explicitly refer to aviation emissions (international or domestic), although it is assumed that the responsibility for continued action on international emissions will remain with ICAO. Many stakeholders and individual States have recently formulated their commitment to (net-zero) carbon targets for 2050: IATA,

ACI, IBAC, Eurocontrol, EU, and US. ICAO is reviewing their 2009 goals through a thorough assessment and is expected to redefine a more stringent goal in fall 2022.

This paper focuses on CO₂ emissions, not on all GHGs. However, there are significant non-CO₂ climate forcings arising from emissions of particles, NO_x, and water vapor, including the formation of contrails and contrail-cirrus that give rise to additional warming over CO₂ (IPCC, 1999). Substantial mitigation opportunities may exist for these non-CO₂ forcings, which may imply a CO₂ trade-off.

ICAO

In 2009, ICAO adopted the following goals for international aviation (emissions from domestic aviation are the purview of government actions under their NDCs):

- a global annual average fuel efficiency improvement of 2% to 2050; and
- a collective medium-term global aspirational goal of keeping the global net carbon emissions from international aviation from 2020 at the same level (CNG2020).
- A long-term goal of halving net CO₂ emissions by 2050, relative to 2005.

ICAO has adopted a four-pillar approach to deliver on this. It is based on improvements in technology (airframes and engines), improvements to infrastructure and operations (make airport operations, air traffic control, airspace design and the way aircraft fly more efficient), market-based measures and the introduction of sustainable aviation fuels. This is known as the “basket of measures”.

To support the improvements in technology, the ICAO Council adopted an aircraft CO₂ emissions standard in 2017. The CO₂ standard will apply to new aircraft type designs from 2020 and to aircraft type designs already in-production as of 2023.

Market-based measures are implemented globally through the ICAO’s Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). It will be phased in for international aviation, first on a voluntary basis for States (110 States have now volunteered), and compulsory for all States from 2027 onwards (small island developing nations and least-developed States are exempt).

The baseline is presently set on a pre-COVID carbon neutral growth, relative to 2019 (CNG 2019) and will be re-assessed in 2022. It will mitigate CO₂ emissions through inside and outside sector reductions and offsets and will generate climate financing. In late 2022 ICAO will likely agree on a more stringent goal – possibly net carbon-neutral 2050 - for international aviation CO₂ emissions after a long and careful assessment on feasibility and sustainability, to bring these goals in line with Paris.

ISSUES

- Feasibility
- In line with Paris Agreement
- Impact on social, economic, and environmental issues
- No trade-off with safety
- Roadmap, intermediate goals
- Accountability
- Government support

HIGH LEVEL PRINCIPLE

IFALPA will contribute to the industry's efforts to minimize the environmental impact of commercial aviation. IFALPA believes that the aviation industry, while continuing to pursue the highest level of aviation safety worldwide, should be environmentally, economically, and socially sustainable.

Measures to reduce the environmental impact of commercial aviation must balance technological and operational feasibility, fair economic principles, and environmental benefits, while ensuring that safety is not compromised.

CURRENT IFALPA POSITION ON LTAG ([15POS14](#))

- IFALPA believes that, while promoting the highest level of aviation safety worldwide, a viable and expanding air transport industry can only be achieved on sustainable grounds.
- Every solution for environmental benefit should be weighed according to technological and operational feasibility, economic reasonableness, and environmental benefit. Safety should be the overriding principle and should not be affected negatively.
- All relevant partners including manufacturers, airlines, aerodrome operators, and Air Navigation Service providers should adopt an environmental policy to reduce the ecological footprint and cater for future growth. The environmental goals are very challenging and require a collective, long-term, and coordinated effort.
- Whereas safety increments should keep track of the increase in traffic volume, the environmental performances should exceed/outnumber the increase of traffic for the mid-term predictions.

- Management and policy makers should use environmental performance indicators to assess environmental benefits in an objective way. The target level of these indicators is subject to local and political preferences. GHG targets should be set with international agreement.

NEW POSITION ON LTAG

- IFALPA believes that, while promoting the highest level of aviation safety world-wide, a viable and expanding air transport industry can only be achieved on sustainable grounds.
- IFALPA will promote good environmental practice, supported by robust evidence.
- Aviation CO₂ emission reduction goals (LTAG) for domestic and international aviation must be in line with the Paris Agreement, to restrict temperature rise preferably to below 1.5°C, and these goals should be set with global agreement amongst all stakeholders. This means a net-zero goal for 2050 according to current scientific understanding, and negative emissions for 2050-2100 (IPCC, 2018).
- Intermediate goals are needed to assure timely development and implementation of measures as CO₂ emissions are cumulative (e.g. for 2030 and 2040).
- Every solution for environmental benefit should be weighed according to technological and operational feasibility, environmental benefit, and trade-offs.
- Safety should be the overriding principle and should not be affected negatively. The measures should take the foreseen increased air traffic demand into account.
- Out-of-sector offsets, such as forestation projects and carbon capture techniques, should be available to compensate for in-sector emissions, as in-sector reductions may not be sufficient on the mid-term.
- These offsets must be truly sustainable (according to the sustainability requirements of the UN sustainable development goals - UNSDG), transparent, and reliable.
- IFALPA may highlight inconsistencies with data as related to carbon offsetting and reduction measures that undermine credibility in the industry.

- CO₂ reductions must be calculated on a life cycle/well-to-wake basis, free of double-counting.
- Voluntary offsets for passengers should be promoted for public commitment but should not be included in the sector's LTAG.
- All relevant stakeholders and States including manufacturers, airlines, aerodrome operators, and Air Navigation Service providers should adopt an environmental policy including a long-term goal to reduce the ecological footprint and cater for future growth. The environmental goals are very challenging and require an industry-wide, long-term, and coordinated effort.
- Government support is required to facilitate this transition within the set timeframe, especially on incentivizing the widespread use and production of SAFs.
- International agreed aspirational goals should be adopted into State Action Plans and legislation.

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