



IATA Net Zero Progress Report 2025

In 2021, IATA member airlines committed to achieving net zero carbon emissions by 2050, and ICAO member states adopted the long-term aspirational goal (LTAG) at the 41st ICAO Assembly in 2022.¹ Monitoring CO₂ emissions is critical, as it provides important insights into the deployment and effectiveness of aviation decarbonization levers and helps track the industry's progress toward its goal of achieving net-zero CO₂ emissions by 2050.

In 2025, airlines emitted a (gross) total of 983 million tonnes (Mt) of CO₂, of which 1.0% was mitigated through offsets or Sustainable Aviation Fuel (SAF) use, reducing net emissions to 972 Mt CO₂.

Scope of the Report

The Report follows the IATA Net Zero Tracking Methodology to report the industry's progress toward net zero.² Therefore, the industry's total annual emissions are calculated based on the CO₂ tank-to-wake (TTW) emissions or aircraft operators' tailpipe CO₂ emissions.³

Methodology

IATA launched the TrackZero platform in 2024 to collect primary data directly from airlines to substantiate the net-zero CO₂ emissions target.

Airlines contributing to TrackZero submit data on total fuel consumption and emissions mitigation measures. Emissions mitigation measures include carbon credits (carbon avoidance, reduction, and removal), SAF, and new aircraft technology.

Data is submitted to TrackZero between May and August of the following year, e.g., 2025 data was submitted between May and August 2026. This way, airlines have sufficient time to complete their regional and CORSIA reports and have emissions data verified by a third party. Additionally, this may give the airline time to gather data and complete

retirements/reporting of SAF and offsets to account for the previous year.

All submissions to TrackZero are validated by the IATA TrackZero Admin team by comparing results against third-party verification documents and other internal IATA sources.

To date, 132 aircraft operators, representing 60% of IATA's members by revenue-tonne-kilometer (RTK), have contributed to the initiative.

Industry Overview

The CO₂ emissions of the aviation industry are monitored using three key metrics: net total CO₂ emissions, net CO₂ emissions per RTK, which accounts for traffic volumes, and net CO₂ emissions per available tonne-kilometer (ATK), which considers available capacity.

The first metric, net CO₂ emissions, summarizes absolute CO₂ emissions after accounting for decarbonization measures (e.g., SAF use, carbon offsets, etc.), while the latter two show emissions intensity expressed as net CO₂ emissions per volume of air traffic. While net zero is an absolute target, tracking intensity improvements provides insights into progress, even when traffic growth may have exceeded the effects of mitigation measures.

¹ [IATA Net Zero 2050 commitment; ICAO Long term global aspirational goal \(LTAG\) for international aviation](#)

² [IATA Net Zero Progress Tracking Methodology](#)

³ Following the scope of emissions, emissions reductions associated with the use of SAF are also calculated using a 3.16 gCO₂/g of fuel and a conventional aviation fuel (CAF) baseline of 89 gCO₂e/MJ.

Table 1: Key Metrics for Net CO₂ Emissions, 2019-2025.⁴

	Net CO ₂ (Mt)	gCO ₂ /RTK	gCO ₂ /ATK
2019	912	845	592
2020	476	931	557
2021	562	912	564
2022	711	869	585
2023	874	856	587
2024	941	831	583
2025	972	819	576

In 2025, total net emissions were up about 3.4% YoY with increased air traffic⁵.

Intensity metrics showed limited improvement. Passenger load factors, already at a record high, improved by only 0.1%, resulting in stagnation in CO₂ per RTK values, an improvement by 1.4%. Additionally, CO₂ per ATK showed a slight improvement by 1.2%, due to the severe and prolonged commercial aircraft shortage. In 2025, the shortage caused an estimated \$4.2 billion in excess fuel costs.⁶

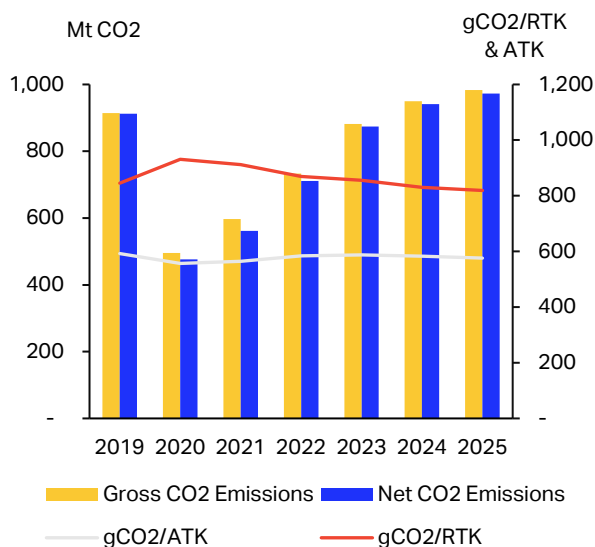


Chart 1: Total Gross, Net CO₂ Emissions, and Emissions Efficiency of the Airline Sector, 2019-2025.

Emissions Mitigation

There are various emissions mitigation measures that can drive the airline industry to net zero. Carbon credits and SAF use⁷ are key levers with the highest potential in the short term.

Table 2: Emissions Reductions per Reduction Source in Mt, 2019-2025.

	Carbon offsets	SAF	New aircraft technology
2019	1.7	0.05	0
2020	18.7	0.09	0
2021	35.2	0.18	0
2022	21.9	0.53	0
2023	6.1	1.11	0
2024	6.5	2.53	0
2025	5.5	5.04	0

Carbon offsets played the most significant role in emission-reduction efforts in 2025 and accounted for the overwhelming majority of emissions reductions in the "Carbon credits" category.

The use of carbon offsets is expected to grow for CORSIA compliance purposes. Between 170 to 236 million tonnes of CORSIA Eligible Emissions Units (CEEUs) are expected to be used for the first CORSIA compliance cycle, from 2024 to 2026.⁸

CEEUs are emerging in the market. Airlines have started purchasing CEEUs in carbon registries (e.g., on Aviation Carbon Exchange), and the credits can be retired for claiming in the first phase (2024-2026) by January 2028.

More carbon removal purchase agreements were announced in 2025, signaling growing market interest. However, most of the associated credits, based on currently announced CDR projects, are not expected to become available until the 2028-2030 timeframe, limiting their near-term impact. In 2025, less than 0.1 million credits were delivered and retired by the airline industry. There are also concerns about credit delivery delays for projects

⁴ Mt = million tonnes

⁵ 2024 emissions were updated due to methodological changes

⁶ [IATA - Supply Chain Challenges Could Cost Airlines More than \\$11 Billion in 2025](#)

⁷ Airline-funded SAF and offsets retired in 2025 are considered in the report.

⁸ [IATA's updated CORSIA Sectoral Growth Factor Forecast](#)

that were expected to be operating by 2025. While carbon removal technologies have significant potential, they must scale considerably to achieve a meaningful impact on the aviation sector. In addition, high costs remain a key barrier to widespread adoption.

Meanwhile, SAF output for airline use doubled in 2025. However, this value falls short of initial projections by IATA and ICAO.⁹ Airlines have reported a lack of timely documentation as a barrier to reporting or claiming SAF benefits. Therefore, the report uses SAF production estimates to assume the amount of neat SAF industry used in 2025.

Of the SAF use reported to TrackZero, more than 97% was HEFA SAF, and the remaining was co-processing. As a result, the average emissions savings from the use of SAF were 84%¹⁰. To reach the 2050 net-zero carbon emissions target, it is both urgent and essential that more production pathways achieve commercial viability.¹¹

The development of new aircraft with greater fuel efficiency has been an integral part of the aviation sector since its inception. Novel technologies, such as hydrogen-, hybrid-electric-, or electric-propulsion aircraft, are integral long-term contributors to decarbonization.¹² Some tests have been conducted by airlines and their partners; the technology must mature and move closer to commercial readiness to better understand its impact on efforts to reach net zero by 2050.

Raw Data

The raw data for the metrics included in this report are shown in Table 3.

Table 3: Raw data for 2025 Net Zero Progress Report.

	Gross Emissions [MtCO ₂]	Net Emissions [MtCO ₂]	Intensity Net [gCO ₂ /RTK]	Intensity net [gCO ₂ /ATK]	Carbon credits [MtCO ₂]	Total neat SAF delivered [kt] ¹³	Reductions through SAF use [MtCO ₂]
2019	914	912	845	592	1.7	22.5	0.05
2020	495	476	931	557	18.7	40	0.09
2021	597	562	912	564	35.2	80	0.18
2022	733	711	869	585	21.9	240	0.53
2023	882	874	855	587	6.1	500	1.11
2024	950	941	831	583	6.5	1000	2.53
2025	983	972	819	576	5.0	1900	5.04

Data source:

Data from internal IATA sources including TrackZero were considered to estimate the gross 2025 CO₂ emissions and compute the CO₂ emissions reductions per emissions reduction source.¹⁴

Disclaimer: The data shown in this report constitutes best estimates at the time of writing.

⁹ [IATA - SAF Production Growth Rate is Slowing Down, Essential to Correct Course Ahead of e-SAF Mandates; LTAG Report](#)

¹⁰ Against a CAF baseline of 89 gCO₂/MJ

¹¹ [IATA - Global Feedstock Assessment for SAF Production](#)

¹² [IATA - Net Zero Roadmaps](#)

¹³ kt = thousand tonnes

¹⁴ Totals may not sum due to rounding.