Working Together for Net-Zero by 2050: UNFCCC and ICAO's Joint Efforts

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The UNFCCC: Building Global Climate Ambition

The United Nations Framework Convention on Climate Change (UNFCCC), in force since 1994, is the primary international treaty addressing the threat of climate change. With near-universal membership (198 Parties), it forms the foundation of the international climate regime, complemented by the 1997 Kyoto Protocol and the 2015 Paris Agreement. Together, these instruments aim to stabilize atmospheric greenhouse gas (GHG) concentrations at safe levels and within timeframes that support ecological and socio-economic resilience.

Under the Paris Agreement, agreed in 2015, countries committed to limiting the global average temperature increase to well below 2°C, while pursuing efforts to cap temperature rise at 1.5°C above pre-industrial levels. Achieving these temperature goals requires peaking global GHG emissions rapidly, followed by steep reductions to reach global net-zero emissions in the second half of the century. This objective requires all sectors to put forward ambitious mitigation strategies.

The Paris Agreement introduced a robust architecture of mitigation, adaptation, means of implementation (finance, technology, capacity building) and transparency, and set in motion a dynamic process of increasing ambition through Global Stocktakes (GSTs) to be completed every five years, as well as new and more ambitious nationally determined contributions (NDCs).

Distinguishing Responsibilities: Domestic vs. International Aviation Emissions

Thirty years after the Convention's entry into force and ten years after that of the Paris Agreement, implementation of mitigation action on a global scale and across all sectors needs further strengthening.

According to the World Meteorological Organization,[1] 2024 was registered as the warmest year on record, exceeding pre-industrial levels by 1.5°C for the first time in recorded history. UNFCCC's 2024 synthesis report of NDCs projected that the global average temperature is on course to reach 2.1–2.8°C even with full implementation of all current NDC targets and the International Civil Aviation Organization (ICAO) mid-term global aspirational goal.

The overall achievement of the Paris Agreement's long-term global average temperature goals does not distinguish between emissions sources, whether from international aviation or other sectors. However, emissions from domestic and international aviation are managed differently.

The Intergovernmental Panel on Climate Change (IPCC) provides the methodological basis for reporting aviation emissions to the UNFCCC. Domestic aviation emissions are included in national totals under the UNFCCC. International aviation emissions, those from flights between two or more countries, are estimated as part of national GHG inventories, but are not attributed to individual countries

1 https://library.wmo.int/records/item/69455-state-of-the-global-climate-2024

under the UNFCCC and are not included in national totals; instead, they are reported separately.[2]

While under the UNFCCC process, the focus has been on emissions from domestic sources, emissions from international aviation—estimated at 1.2% of global GHG emissions[3]— are addressed through ICAO as recognized in both UNFCCC and Paris Agreement negotiations. This distinction underpins the division of responsibilities: countries account for domestic emissions under their NDCs, while international aviation emissions are managed through ICAO-led initiatives, including the ICAO Long-Term Aspirational Goal (LTAG) and Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

UNFCCC–ICAO Linkages: Parallel and Complementary Action

The UNFCCC and ICAO have a long-standing cooperation that spans the last 30 years, going back to the 1st Conference of the Parties (COP1) to the Convention, in 1995, which invited ICAO to update Parties to the UNFCCC on its efforts to address emissions from fuels used in international aviation.[4] In response, ICAO has been providing regular reports on its progress in addressing international aviation emissions at each UNFCCC session.

The cooperation between UNFCCC and ICAO is becoming increasingly critical as the climate crisis intensifies. In this regard, while governments have started developing new and more ambitious NDCs under the Paris Agreement –due in 2025 – ICAO, its Member States and industry stakeholders have advanced their efforts in mitigating GHG emissions from international aviation.

Over the years, governments (working through both UN entities) have been engaging in comparable activities towards the achievement of respective goals and ambitions, as highlighted below.

UNFCCC	ICAO
Global Stocktake (GST) outcomes	LTAG and ICAO Global Framework for SAF, LCAF and other Aviation Cleaner Energies
Nationally Determined Contributions	State Action Plans
Article 6 mechanisms	CORSIA
New Collective Quantified Goal (NCQG)	ICAO Finvest Hub
Transparency Framework and BTRs	LTAG monitoring and reporting, CORSIA Monitoring, Reporting and Verification (MRV)
Adaptation Framework	Aviation adaptation work (e.g., resilience planning)

These connections reflect a whole-of-government and all-sectors approach to decarbonization and climate resilience.

Mitigation and Decarbonization

The first Global Stocktake (GST1) outcome at COP28 called for a just and equitable transition away from fossil fuels, emphasizing renewable energies, energy efficiency and low-carbon fuels.[5] This aligns with ICAO's LTAG for net-zero carbon emissions from international aviation by 2050 and the Global Framework for Sustainable Aviation Fuels (SAF), Lower Carbon Aviation Fuels (LCAF), and other Aviation Cleaner Energies.[6] ICAO estimates that SAF and similar fuels could potentially contribute up to 55% of the emissions reductions needed to meet the LTAG target.[7]

Market-Based Mechanisms

Article 6 of the Paris Agreement enables international carbon markets. At COP29, Parties finalized the operational framework for carbon markets under Article 6 of the Paris Agreement that allows for higher mitigation ambitions in a cost-effective manner, including the rules for authorizing the trade of carbon credits and operationalizing the associated registries.[8] In parallel, ICAO's CORSIA addresses emissions from international flights which cannot be addressed through in-sector measures alone.

2 The IPCC definition for domestic/international emissions is based on the country that supplies the aviation fuel, which is different to the ICAO definition that is based on the nationality of the carrier that uses the aviation fuel.
3 https://unfccc.int/documents/641792
4 https://unfccc.int/resource/docs/cop1/07a01.pdf#page=15
5 https://unfccc.int/sites/default/files/resource/1_CMA.5.pdf
6 https://www.icao.int/Meetings/CAAF3/Documents/ICAO%20Global%20Framework%20on%20Aviation%20Cleaner%20Energies_24Nov2023.pdf
7 https://www.icao.int/environmental-protection/LTAG/Pages/LTAGreport.aspx
8 https://unfccc.int/documents/644471

While differing in scope and design, both mechanisms contribute to cost-effective emissions reductions and environmental integrity.

Climate Finance and Investment

To bridge the climate finance gap, COP29 established the New Collective Quantified Goal (NCQG), calling on all actors to work together to enable the scaling up of financing for climate action in developing countries from all public and private sources to at least USD 1.3 trillion annually by 2035, and setting a target for developed countries to take the lead in mobilizing at least USD 300 billion per year for developing countries by 2035.[9]

ICAO, for its part, is operationalizing the Finvest Hub—a platform to facilitate private and public investments in sustainable aviation, particularly in developing countries.[10]

Looking Ahead to COP30 and ICAO Assembly 42

The Incoming COP30 President has called for a global ***Mutirão***—a collective effort—against climate change[11] and is currently engaging with other Parties on how to intensify efforts towards the achievement of the temperature goals of the Paris Agreement.

COP30 will mark the first test of the GST's influence on NDC ambition. Around 20 new or updated NDCs have been submitted so far, with more expected throughout 2025.[12] These new NDCs are anticipated to make further progress towards the achievement of global GHG emissions reductions of about 60% by 2035 relative to the 2019 level that are consistent with 1.5°C pathways according to the IPCC.[13] Their collective impact will be analyzed in the UNFCCC's 2025 synthesis report, which will be published before COP30.

Regarding the current implementation status, as of 15 April 2025, around 100 Parties had submitted their first biennial transparency reports (BTRs) that track progress in implementing their current and previous NDCs.[14] A synthesis report for these BTRs will also be published before COP30.

With the NCQG in place, the focus has now turned to mobilizing financial resources for the realization of the targets outlined in Parties' NDCs. This includes work on how to mobilize USD 1.3 trillion annually under the Baku to Belém Roadmap. The COP29 Presidency and the Incoming COP30 Presidency will produce a report summarizing the results of this work in advance of COP30.

The 42nd ICAO Assembly presents an opportunity to advance the work on GHG emissions from international aviation through making further progress on the achievement of the collective medium-term global aspirational goal of keeping global net carbon emissions from international aviation at the same level as in 2020, and of the LTAG, while further pursuing the implementation of ICAO CORSIA. A successful outcome of the 42nd ICAO Assembly can provide renewed impetus for a COP30 outcome that will drive further ambition and implementation.

Final Remarks

Achieving net-zero carbon emissions by 2050 is a global imperative. The UNFCCC and ICAO have distinct but complementary roles towards this goal. Through enhanced cooperation and coherent implementation of respective processes, including mitigation, market-based mechanisms, finance, and transparency, the international community can deliver on the promise of the Paris Agreement—ensuring a safe and sustainable future for all.

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9 https://unfccc.int/documents/644460
10 https://www4.unfccc.int/sites/SubmissionsStaging/Documents/202411091958---ICAO%20Submission_SBSTA61_Final.pdf?_gl=1*1w4zi4e*_ga*MTg5MTI4MjczNi4xNzMwMTA3Njcw*_ga_7ZZWT14N79*MTc0NDgzNjgyMi42MjguMS4xNzQ0ODM2ODM1LjAuMC4w
11 https://cop30.br/en/brazilian-presidency/letters-from-the-presidency/letter-from-the-brazilian-presidency
12 https://unfccc.int/NDCREG
13 IPCC. 2023. *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Core Writing Team, H Lee, and J Romero (eds.). Geneva: IPCC. Available at https://www.ipcc.ch/report/ar6/syr/ .
14 https://unfccc.int/first-biennial-transparency-reports