OPPORTUNITY GREEN

Using the COSIS Advisory Opinion in ICAO negotiations

Briefing Note | June 2025

I. Background

1. Problem statement

In 2023, aviation accounted for 2.5% of global carbon dioxide (CO_2) emissions,[1] and 1.9% of total greenhouse gas (GHG) emissions in 2019.[2] All projected estimates of aviation's growth are upwards, at a pace exceeding the rail, road and shipping sectors, and while the sector's emissions declined due to the pandemic, they are forecast to surpass the 2019 level in 2025.[3] Aviation's annual global CO2 emissions[4] could rise to 22% by 2050.[5]

Aviation's climate impacts derive from its CO_2 and non-CO_2 emissions. The sector as a whole is on a pathway aligned with 4 degrees of warming.[6]

It is crucial that policymakers at the International Civil Aviation Organization (ICAO) act now in order to meaningfully put the aviation industry on a trajectory to net zero GHG emissions. The time is now to ensure investment pathways are directed to true

[1] International Energy Agency (n.d.) *Aviation* (online). Available at: https://www.iea.org/energy-system/transport/aviation. [Accessed: April 2025].
[2] Ritchie, Hannah. (2024). "What share of global CO_2 emissions come from aviation?" Available online at 'https://ourworldindata.org/global-aviation-emissions'. [Accessed: April 2025].
[3] (n1).
[4] D.S. Lee and others, 'The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018' (2021) 244(117834) Atmospheric Environment 1, 4.
[5] Martin Cames and others, 'Emission Reduction Targets for International Aviation and Shipping' (2015) Policy PE 569.964, European Parliament's Committee on Environment, Public Health and Food Safety (ENVI) <https://www.europarl.europa.eu/RegData/etudes/STUD/2015/569964/IPOL_STU(2015)569964_EN.pdf> accessed 13 May 2025, 9.
[6] Climate Action Tracker, Aviation (online). Available at: https://climateactiontracker.org/sectors/aviation/. [Accessed: May 2025].

zero emission solutions. The following are some of the oft-cited issues that the aviation industry will need to grapple with:

a) **'Sustainable Aviation Fuels' (SAFs)**: CO_2 represents the largest fraction of aircraft emissions at around 70% of exhaust emissions[7]. Innovations in aviation fuel have the potential to reduce both CO_2 and other exhaust emissions, however the lifecycle emissions of 'sustainable aviation fuels' vary significantly depending on how each fuel is produced. The use of the term 'SAF' to describe certain alternative fuel types – particularly biofuels – risks being misleading as to the true climate benefit of the fuel. As of 2024, 34,095kt of SAFs were used globally, of which 49 per cent was derived from agricultural and forestry residues or municipal solid waste[8].

b) **Increased aircraft / logistics efficiency**: innovations in aircraft design as well as improvements in airport operations and logistics have the potential to contribute to emissions reductions through e.g. improved fuel consumption or reduced holding patterns.

c) **Taxation**: taxing the aviation industry based on its carbon intensity – for example through a high price, flat-rate levy on all GHG emissions – could provide both an incentive to accelerate emissions reductions and a revenue stream that can support a just and equitable transition in climate vulnerable countries as well as generating international finance to address climate-induced loss and damage.

d) **Aviation non-CO_2 emissions**: whilst CO_2 from fuel consumption represents the largest fraction of emissions, the water vapour (contrail) element of non-CO_2 emissions causes up to three times more radiative forcing annually than the industry's cumulative CO_2 emissions. It is only a relatively small fraction of global flights that produce the majority of the contrail effect (2% of all flights causing 80% of all annual contrails).[9]

II. Applicable regime in relation to international aviation emissions

At present, there are regulations at the international, EU and national level, governing international aviation emissions. These are outlined below. In summary,

[7] Jeff Overton, 'The Growth in Greenhouse Gas Emissions from Commercial Aviation' (2022) Environmental and Energy Study Institute <https://www.eesi.org/papers/view/fact-sheet-the-growth-in-greenhouse-gas-emissions-from-commercial-aviation> accessed 27 March 2025.

[8] Transport and Environment *SAF Observatory: SAF around the world* (2024) <https://www.transportenvironment.org/topics/planes/saf-observatory/saf-around-the-world> accessed 27 March 2025.

[9] Roger Teoh and others 'Global Aviation Contrail Climate Effects from 2019 to 2021' (2024) 24 Atmospheric Chemistry and Physics, 6071-6093.

existing EU and international regulations are not ambitious enough to successfully decarbonise the aviation industry in accordance with the requirements of international law and to ensure compliance with States' legal obligations as set out in the Advisory Opinion.

1. European regulations

a) **EU Emissions Trading Scheme (ETS):** Under the EU ETS, all airlines operating in Europe, European and non-European alike, are required to monitor, report and verify their emissions. They receive tradeable allowances allowing a certain level of emissions from their flights each year. The target of the ETS is to reduce emissions by 62% by 2030. The ETS currently applies only to flights that land and take off at an airport in the European Economic Area but may apply to all flights departing the EU from 2027, pending legislative agreement.

b) **ReFuel EU**: This legislation aims to increase the proportion of Sustainable Aviation Fuels (SAFs) in use in EU airports with specific targets for synthetic aviation fuels (namely e-fuels). The objective is to achieve 70% of SAF fuels in EU airports and 25% of synthetic aviation fuels10 by 2050. Whilst there are some limits on the types of "sustainable" fuel that can be used, biofuels also count towards the targets. Since the use of biofuels significantly harms biodiversity,11 the counting of biofuels as SAF jeopardises the EU's biodiversity targets.

2. International law

a) The Paris Agreement requires 'economy-wide' absolute emissions reductions, which includes aviation.[12]

b) On 21 May 2024, the **International Tribunal for the Law of the Sea (ITLOS) issued its advisory opinion in Case No. 31** (Advisory Opinion), clarifying States' obligations under the United Nations Convention on the Law of the Sea (UNCLOS) to tackle the climate crisis and protect the marine environment from climate harm caused by GHG emissions. Accordingly, ICAO policies, including its non-binding long-term aspirational goal (LTAG), must be updated to be 1.5C aligned. In-sector measures and interim targets

[10] Synthetic aviation fuels are defined in RefuelEU as 'from renewable hydrogen and captured carbon'.
[11] SASHA Coalition 'Fuelling nature: how e-fuels can mitigate biodiversity risk in EU aviation and maritime policy' (2024) < https://www.sashacoalition.org/biodiversity-risks-eu-aviation-maritime-policy> accessed 21 May 2025.
[12] Estelle Dehon KC, In the Matter of the UN Framework Convention on Climate Change and in the Matter of the Paris Agreement. Re: Inclusion of emissions from international aviation and shipping in Nationally Determined Contributions (Transport & Environment 2021) <www.transportenvironment.org/wp-content/uploads/2021/10/Re-Aviation-Shipping-NDC-UPDATED-Legal-Advice-Final-3-5-21-corr-1.pdf> accessed 7 March 2024.

should be adopted to ensure the goal is met. It also follows that Developed States should provide financial and other relevant assistance to Developing States, in particular climate vulnerable Developing States. Key conclusions deriving from the Advisory Opinion as they apply to ICAO are described in Section 3 of this document: Certain obligations of States with respect to GHG emissions into the atmosphere under UNCLOS.

3. ICAO regulations

a) **ICAO's Aircraft CO_2 Standard:** In 2016, the ICAO adopted a CO_2 Standard for new aircraft types which came into force in 2020. The standard aims to reduce CO_2 emissions through the integration of fuel-efficient technologies into aircraft design and development and is based on an aircraft's performance during the 'cruise' phase of flight and is expressed in kilogramme of fuel per kilometre of flight. Analysis has shown that the standard will not drive any real reductions in emissions because the average newly-delivered aircraft already comply, so there is no incentive for manufacturers to further improve their aircraft.[13]

b) **ICAO's LTAG:** In 2022 ICAO Member States adopted a 'long-term global aspirational goal' (LTAG) to achieve net-zero carbon emissions by 2050. The LTAG is envisioned as a non-binding agreement, which aims to catalyse change in the sector. However, it does not commit Member States to any specific legal obligations and relies on voluntary commitments only. Nor does it set interim targets or account for non-CO_2 emissions, which could cause twice as much warming as CO_2 alone.[14]

c) **ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA):** CORSIA is a global mechanism established by ICAO to address and offset the growth in CO_2 emissions from international aviation. It mandates airlines to monitor and report their emissions and offset emissions exceeding the set baseline through the purchase of "eligible emissions" units (i.e. carbon credits). From 2024, airlines may, on a voluntary basis, choose to offset their emissions exceeding 85% of 2019 emissions levels. The scheme will not be mandatory until 2027, after which it will be mandatory for 8 years only, until the scheme ends in 2035. Furthermore, emissions below the baseline set by ICAO are not covered, which means that airlines do not have an incentive to be ambitious or an obligation to

[13] International Council on Clean Transportation (**ICCT**) 'U.S. Passenger Jets under ICAO's CO2 Standard, 2018-2038' (2018) <https://theicct.org/sites/default/files/publications/Aircraft_CO2_Standard_US_20181002.pdf> accessed 27 March 2025.

[14] ICCT 'ICAO's 2050 Net-Zero CO2 Goal for International Aviation' (2023) <https://theicct.org/publication/global-aviation-icao-net-zero-goal-jan23/> accessed 27 March 2025.

offset or reduce their emissions below the set threshold. Recent analysis suggests that, rather than reducing emissions, participation in CORSIA has accompanied an increase in aviation sector carbon emissions for some economies.[19]

4. National frameworks

a) While States have historically cooperated through ICAO to address the climate impacts of aviation, ICAO does not have exclusive jurisdiction over international aviation emissions, and is not a global regulator of international aviation law; States are responsible for establishing and enforcing regulatory requirements.

b) **The obligation to reduce aviation emissions under international law falls on all states individually**, as would emissions from any other activity under their jurisdiction.

III. Certain obligations of States with respect to GHG emissions into the atmosphere under UNCLOS[15]

In its interpretation of the United Nations Convention on the Law of the Sea (UNCLOS), the ITLOS Advisory Opinion of May 21, 2024,[16] established a link between aircraft GHG emissions and marine pollution by referring to provisions of UNCLOS relating to atmospheric emissions from aircraft that have an impact on the marine environment. **The Tribunal's recent conclusions should guide states in determining measures they must take, including in the aviation sector, to ensure compliance with their obligations under UNCLOS.**

The Tribunal concluded that anthropogenic GHG emissions (Emissions)[17] released into the atmosphere by human activities constitute pollution of the marine environment (marine pollution) as defined in Article 1(4) of UNCLOS[18]. Indeed, "the ocean 'stores heat trapped in the atmosphere'" and also stores excess carbon dioxide (CO2) present in the atmosphere. Thus, "[a]bout a quarter of carbon dioxide (CO2) released by human activities is taken up by the ocean." (¶ 55). It represents an introduction of energy into the marine environment resulting in deleterious effects, including "sea level rise, increasing ocean heat content and marine heat waves, ocean deoxygenation, and ocean acidification". (¶ 57.) This ultimately disrupts the ocean's role as a regulator of the climate system, accelerating the climate crisis.

The Tribunal further clarified that the 170 States Parties to UNCLOS have:

1. **An obligation to take all necessary measures with due diligence with the objective to prevent, reduce and control marine pollution caused by anthropogenic (human-induced) emissions of GHGs.** They also have to endeavour to harmonize their policies to achieve that goal, pursuant to Article 194 of UNCLOS.

[15] While this document is published under the auspices of Opportunity Green (OG), sections of this report have been independently prepared by OG and COSIS. The analysis and conclusions presented in Section III are those of COSIS alone. They are provided for informational purposes and do not constitute legal advice or represent the official policy or position of any contributors to this briefing note.

[16] ITLOS, Request for an Advisory Opinion Submitted by the Commission of Small Island States on Climate Change and International Law, Case No. 31, Advisory Opinion (21 May 2024).

[17] "Emissions" means "anthropogenic GHG emissions".

[18] "marine pollution" means "pollution of the marine environment caused by anthropogenic greenhouse gas emissions within the meaning of Article 1(1)(4) of UNCLOS".
Article 1(1)(4) of UNCLOS reads as follows: "Pollution of the marine environment means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities […]".

a) Who has the obligation to take measures?

States parties must adopt laws and regulations to prevent, reduce, and control marine pollution from GHG emissions into the atmosphere, by aircrafts flying and emitting within their airspace or registered with their national registry, pursuant to Article 212 of UNCLOS.

b) What level of commitment?

The obligation to take all necessary measures is an obligation "to deploy adequate means, to exercise best possible efforts, to do the utmost" to achieve that objective (¶ 233).

c) What measures to take?

"Necessary measures" to be taken include measures that are indispensable or make it possible to achieve the goal of preventing, reducing and controlling marine pollution.(¶ 204.)

The content of necessary measures to be taken to reduce GHG emissions is not entirely left to the discretion of States and must be determined objectively on the basis of:

I. the **best available scientific data**. (¶ 207) The Tribunal considers that the conclusions of the Intergovernmental Panel on Climate Change are source of the best available science on climate change and ocean acidification(¶ 208); and

II. **recommended practices and procedure, and applicable international rules and standards relating to climate change** (¶ 207, 214), including:
   - the UNFCCC and the Paris Agreement's global temperature and emissions pathway goals of limiting temperature increase to 1.5°C of pre-industrial levels and achieving net zero Emissions around 2050 (¶ 222);
   - Volumes III and IV of Annex 16 to the Chicago Convention on the emissions from aircrafts;
   - The Montreal Protocol including the Kigali Amendment.(¶214)

III. **Available means and scientific, technical, economic and financial capabilities** of the state concerned, (¶ 207, 225) meaning that States with greater means and capabilities must do more to reduce Emissions.

Due diligence requires States to adopt laws, regulations, administrative procedures and other measures nationally ("put in place a national system" (¶ 235.)), to implement international rules and standards, to enforce their laws through enforcement mechanisms, and to establish global and regional rules, standards and recommended practices through international organizations or diplomatic conferences, to prevent, reduce and control marine pollution from or through the

atmosphere, including from aircrafts, according to Articles 194, 212 and 222 of UNCLOS.

2. An obligation to ensure that the activities under its control or jurisdiction do not cause damage by pollution to another State and its environment or do not spread transboundary if pollution on its territory or under its control has occurred.

In accordance with Article 194(2) of the UNCLOS, a State has the obligation to ensure that the activities under its control or jurisdiction do not cause pollution damage to another State and its environment.

If pollution occurs, the State has the obligation to ensure that it does not spread beyond its borders. Applied to the aviation sector, States must ensure that aircrafts registered in their national registry or flying in their jurisdiction comply with reference emission standards that are consistent with the UNCLOS and the criteria set out by the Tribunal in its advisory opinion.

3. An obligation to assist developing states scientifically and technically, directly or through international organizations, pursuant to Article 202 of UNCLOS.

Since not all States are in a position to take the same measures, the measures to be taken by a State are determined on the basis of that State's capabilities and available resources. In the aviation sector, for example, measures taken by small island States to reduce aviation emissions may be less ambitious than those taken by developed states that have greater capacity and means to implement measures.

In addition, developed States must assist developing States in combating marine pollution caused by such Emissions, directly or through competent international organizations, including the ICAO. Such assistance must include, *inter alia*, capacity building, sharing of scientific expertise, transfer of technology, preferential treatment of developing States in funding, technical assistance and the provision of specialized services by international organizations.

4. An obligation to monitor, publish reports, and conduct environmental impact assessments, pursuant to Articles 204, 205 and 206 of UNCLOS.

In order to address marine pollution caused by Emissions, States Parties must monitor, report and conduct environmental impact assessments as follows.

a) *First*, States Parties must observe, measure, evaluate and analyse the risks or effects of marine pollution.

b) *Second*, States must continuously monitor the effects of activities they have permitted or are engaged in to determine whether such activities are likely to cause marine pollution.

c) *Third*, States must publish the results obtained from monitoring the risks or effects of marine pollution or communicate them to the competent international organizations for dissemination, which may include sharing relevant information on GHG emissions and their effects with the ICAO.

d) *Fourth*, in order to mitigate Emissions and enable adaptation to their adverse effects on the marine environment, States must conduct environmental impact assessments (EIA) for public or private emitting activities falling within their jurisdiction or control that are likely to cause significant marine pollution and cumulative effects. They shall communicate the results of the EIA in accordance with Article 205 of UNCLOS.

5. An obligation to cooperate directly or through international organizations continuously, meaningfully and in good faith to prevent, reduce and control marine pollution.

In accordance with Articles 201 and 197 of the UNCLOS, States have an obligation to cooperate in establishing, as a first step, appropriate scientific criteria and, subsequently, in formulating and elaborating rules, standards and recommended practices and procedures based on these criteria. Consequently, all states must cooperate in good faith to establish robust frameworks for meaningful reductions in Emissions, including by establishing a framework within the ICAO for the reduction of emissions from aircraft.

In accordance with Article 200 of the UNCLOS, States have an obligation to cooperate in promoting studies, undertaking scientific research and encouraging the exchange of information and data on marine pollution, its pathways, risks, remedies and mitigation measures. It can be inferred that States must cooperate in exchanging information on Emissions caused by aviation within their jurisdiction, identifying possible Emission reduction pathways and available solutions, including technological solutions, to meaningfully reduce their Emissions in the aviation sector.

IV. Policy toolkit: Options to reduce aviation emissions

Members of ICAO only come together once every three years: at the Assembly that will be held later this year in September 2025. The Assembly represents a key opportunity for States to point out the misalignment between states' international climate law obligations and the lack of action on aviation emissions. Doing so could catalyse ambitious action on emissions and potentially unlock a potential source of climate finance for resilience and adaptation.

States have several practical options to increase ambition to reduce aviation emissions in the atmosphere:

1. **Actively work in ICAO to increase ambition:** September 2025 is the next ICAO Assembly, which occurs every three years and is the only time all ICAO Member States come together. Therefore, it is a crucial moment for any ambitious state to engage and promote action on emissions. Some suggestions include:

    a) Removing the provision from the Assembly Resolution which states that aviation should not be taxed and therefore should not be a source of climate finance. Aviation should contribute to a just and equitable climate solution, just like any other sector.
    b) Requesting the ICAO Council to institute a scheme to support developing countries to attend all ICAO meetings related to climate change (e.g., with travel and accommodation costs).
    c) Requesting the ICAO Council to institute a series of climate change-focused meetings which would occur more regularly than the ICAO General Assembly, to allow for more rapid progress on the growing climate impact of aviation. Every ICAO Member State should be welcome at such meetings.
    d) CORSIA ending in 2035, implementing a universal levy on all aviation emissions, with at least a portion of the revenues supporting the most climate vulnerable in …. The levy could supersede the current scheme, and tax especially the flights between developed countries.

2. **Join the Global Solidarities Levies Task Force (GSLTF):** the GSLTF is working to_bring together countries from around the world to advance options for international levies that will raise much needed revenue to fight climate change and support development and nature.

3. **Join Coalition on Phasing Out Fossil Fuel Incentives Including Subsidies (COFFIS)**, a coalition of governments working together to remove barriers and facilitate transparency toward the phase-out of fossil fuel subsidies,

and working to identify the opportunities for the development of international pricing mechanisms via the ICAO.

4. **EU countries can support the inclusion of international aviation in the EU Emissions Trading System from 2027**, and ensure that at least a portion of the revenues go to climate vulnerable countries.