

INTERNATIONAL AVIATION'S LINK TO CLIMATE CHANGE:



Emissions from international aviation number among the top 10 largest sources of global carbon emissions. The sector is now the 7th biggest emitter, producing more pollution than either Canada or South Korea, but less than Germany. Aviation accounts for approximately 2% of the world's carbon emissions.

Already a significant percentage of global emissions, international aviation is growing quickly. If nothing is done to address pollution from the industry, total emissions are projected to balloon by 300% above 2005 levels by mid-century.



SOLVING AVIATION POLLUTION WITH A GLOBAL MARKET-BASED MEASURE

In 2010, the UN's International Civil Aviation Organization (ICAO) set **an aspirational goal of carbon-neutral growth from 2020 levels** (known as the CNG2020 target).

Aviation has a huge "emissions gap" of approximately 7.8 billion tonnes of carbon pollution that international aviation will have to deal with to meet its own climate goals.

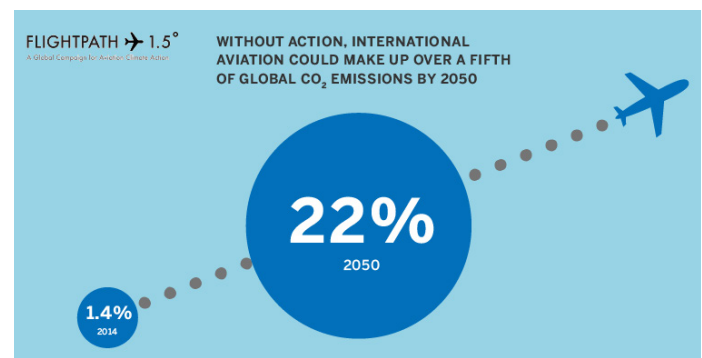
The bulk of the emissions gap can be addressed by a binding carbon offsetting system, referred to as the Global Market-Based Measure (GMBM) and being developed under the name the **Carbon Offsetting Scheme for International Aviation (COSIA)**. A GMBM would give each airline the flexibility to reduce emissions from its own operations and to purchase emissions units from other carbon market programs. Of the 191 nations in the ICAO Assembly, 42 nations have been involved in designing a global agreement on aviation emissions in ICAO.

ICAO set a deadline to vote on and adopt a GMBM at its 2016 fall General Assembly meeting. If adopted at the 2016 fall assembly, the GMBM would then come into force on January 1, 2021. ICAO will not convene another General Assembly until 2019, making 2016 a critical year for action.



FUTURE OF AVIATION POLLUTION TO BE DECIDED AT FALL 2016 ICAO ASSEMBLY MEETINGS

Starting on September 27th and concluding on October 7th, the 39th session of the ICAO full assembly will convene in Montreal. The 191 countries of the assembly are expected to spend the first few days of the nearly two week session discussing the GMBM, working through the remaining log jams. It is then anticipated that they will put the agreement text aside and come back to it towards the end of the meeting when it is expected to be brought to a vote and adopted.



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GLOBAL MARKET-BASED MEASURE CRITERIA FOR SUCCESS

The International Coalition for Sustainable Aviation (ICSA) - the only civil society group accredited to observe the proceedings - have agreed on a set of standards that the GMBM will need to meet to achieve essential environmental integrity called the ICSA checklist¹.

ICSA has also compared how the current draft of the GMBM agreement² matches with the checklist and have produced a progress report identifying which portions of the agreement text need to be strengthened to result in an environmentally-sound agreement.



CONTENTIOUS AREAS TO BE RESOLVED IN THE DESIGN OF THE GMBM

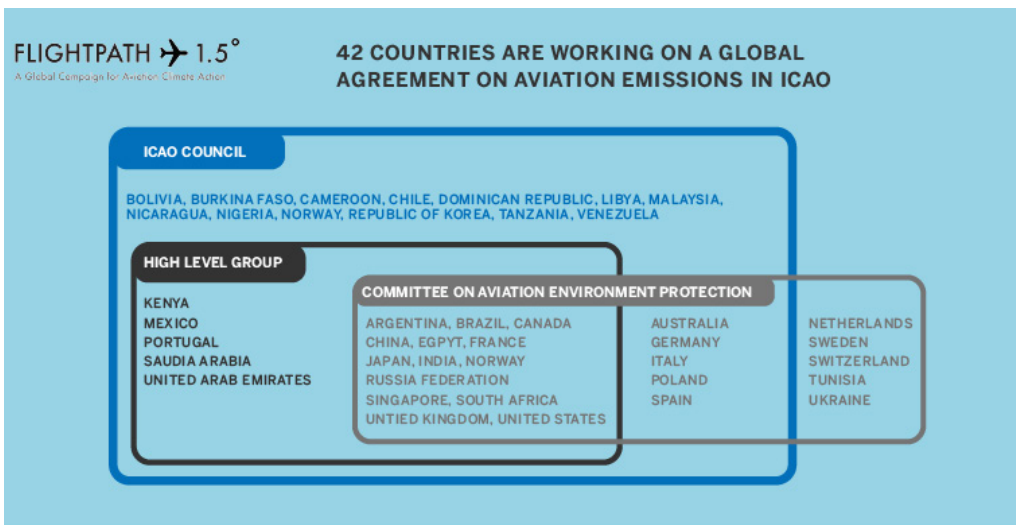
Two of the most contentious issues in the current negotiations around the design and coverage of the GMBM are on the amount of exemptions that will be allowed and how offset responsibilities will be distributed between developed and developing countries.

Exemptions

- The GMBM is being designed to occur in two phases.
- Not all countries will be expected to participate in the first phase of the market scheme, which will start in 2021 and continue to 2026.
- While the proportion of emissions that will be covered in the first phase is not yet settled, in the current Assembly resolution text between 30-50% of emissions above 2020 levels are exempt in the first period.
- Given ICAO's 2020 carbon neutral target, however, ICSA calls on ICAO member states to reduce the offsetting requirement exemptions granted to 10% or fewer for Phase 1.

Burden-sharing between developed and developing country air carriers

- A central challenge in the ICAO MBM talks is how to ensure that responsibilities for reducing and offsetting emissions are shared fairly.
- Distributing responsibility for offset credits could happen according to two formulas: 100% sectoral or 100% individual (defined below).
 - Under 100% sectoral - the amount of CO2 emissions required to be offset by an airline is calculated based on the annual percentage growth of international aviation emissions covered by Carbon Offsetting and Reduction Scheme for International Aviation (CORISA).
 - Whereas, under the 100% individual - each airline would be responsible for offsetting a percentage of its own annual growth.
- A 100% individual rationale is favored by the more mature and slower growing airlines of developed countries.



- Whereas, fast-growing air carriers of developing countries tend to prefer using a 100% sectoral formula.
- The landing zone on this question is likely to fall closer to 100% sectoral, but the issue has not yet been resolved.

However, since offsetting does not reduce emissions but only compensates for them elsewhere, there are limits to how much the GMBM can curb emissions.



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¹ ICSA's Checklist sets recommendations for the type of MBM ICAO Member States must adopt by October 7. This can be found at http://icsa-aviation.org/wp-content/uploads/2016/03/ICSA_ICSA_MBM_Checklist1.pdf.

² The most recent publicly available version of the Assembly Resolution text can be found at http://www.icao.int/Meetings/GMBMFP/Documents/Friends_MBM_Background.pdf.



ADDITIONAL SOLUTIONS TO REDUCE GREENHOUSE GAS EMISSIONS

There are other tools ICAO can deploy, including efficiency improvements, operational improvements, and the development of alternative fuels, in addition to the GMBM. These tools are summarized below.

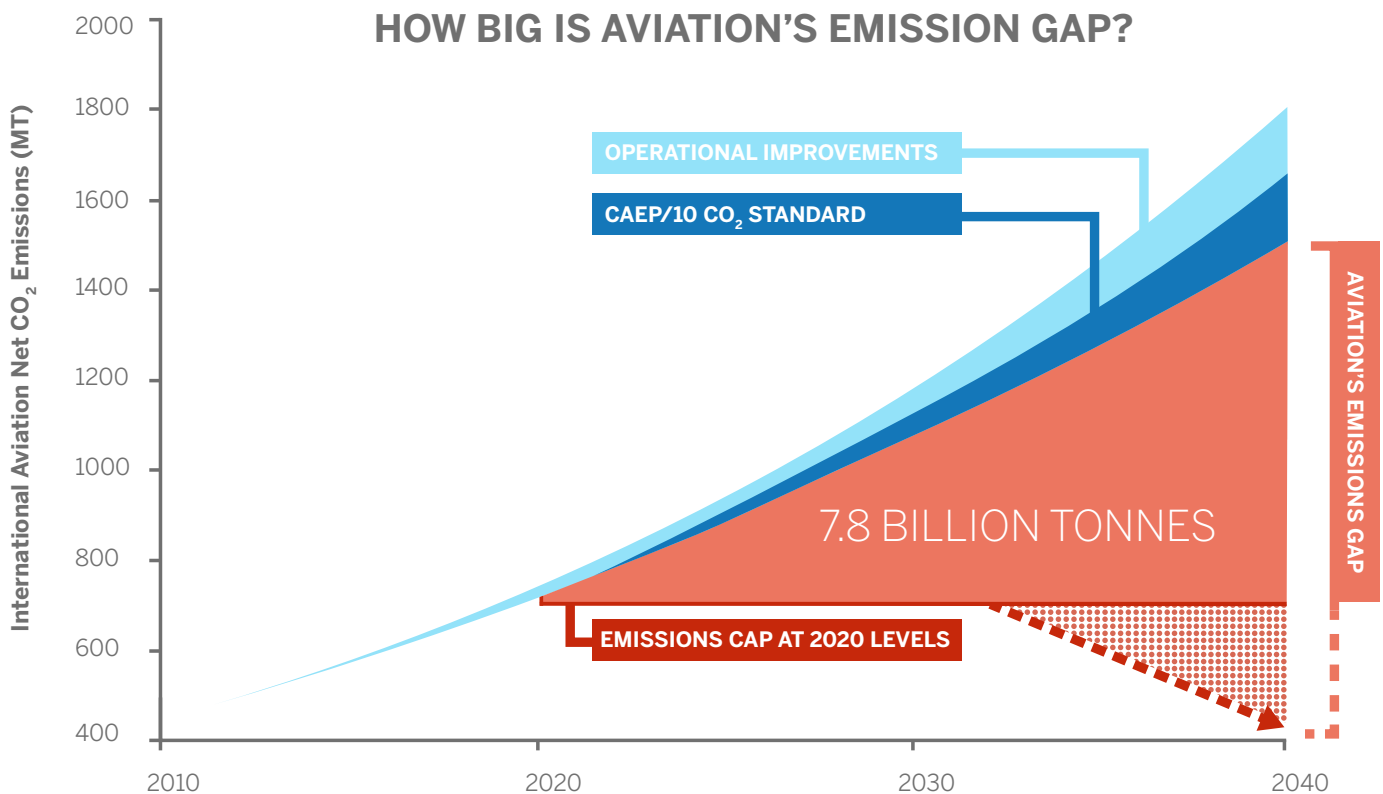
- **Efficiency Improvements:** In February 2016, ICAO's environmental protection committee (CAEP) finalized the first binding CO₂ standard for the sector. However, the CO₂ standard adopted is not strong enough to meaningfully reduce emissions¹. This standard won't come fully into effect until 2028, and the stringency of the standard is so low that most aircraft currently in production already meet it.
- **Operational Improvements:** In addition to changing how efficiently jet engines process and use fuel, changes can also be made to how efficiently planes are flown, the distance of the routes and speeds they use in takeoff and landing and while airborne. However, both ICAO and IATA are researching ways to further increase the operational efficiency of air

¹ Hemmings, Bill. "A flying fairy tale: Why aviation carbon cuts won't take off." Climate Home, 23/02/2016.
<http://www.climatechangenews.com/2016/02/23/a-flying-fairy-tale-why-aviation-carbon-cuts-wont-take-off/>.

carriers. While these changes can lead to measurable reductions in the emissions required to operate aircraft they have limited range and by themselves are insufficient to deliver the needed reductions in the sector to eliminate the emissions gap diagramed above.

- **Alternative Fuels:** The aviation industry sees sustainable biofuels as the key long-term technology for decarbonizing aviation. Sustainable biofuels have a role to play, but more immediate solutions that can be deployed at scale today are needed.

As the below graph makes clear, each of the policy options described above only accounts for a fraction of the emissions gap by themselves. Efficiency and operational improvements have limited power to make a dent in the emissions gap (the dark and light blue wedges respectively). Therefore, the bulk of the emissions gap will need to be closed by the development of alternative fuels, and the global market-based measure (combined effort needed to address the dark red portion of the graph). To bring emissions down to the dashed red arrow, along the lines of the Paris Climate Agreement will require even steeper reforms.



SOURCE: ICAO, "Overview of Environmental Work," Singapore GLADs, 2015."



HOW TO GAUGE SUCCESS AND MONITOR THE GENERAL ASSEMBLY

As a first step, the ICAO agreement in October 2016 must initially cap net total carbon emissions of international civil aviation at 2020 levels. At the same time, ICAO must launch a process to regularly review the 2020 cap. Over time, international aviation can be pressed to ratchet its emissions down in line with the Paris Agreement's goal of pursuing efforts to limit the increase in global temperatures to 1.5°C.

ICSA has been watching developments in the talks closely and will have both an on the ground and remote presence closely monitoring the negotiations and ready to share their observations and analysis.

EXPERTS AVAILABLE FOR COMMENT

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ADDITIONAL RESOURCES

ICAO Resources:

- ICAO's latest release of a Draft Resolution on a Market-Based Measure
- ICAO Environmental Report 2016

FlightPath 1.5 Resources:

- FlightPath 1.5 website:
<http://www.flightpath1point5.org/>
- ICSA Progress Report on the ICAO MBM (Summary)
- ICSA Progress Report on the ICAO MBM (Full)
- ICSA Checklist
- International Coalition for Sustainable Aviation (ICSA) website