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# Aviation and Climate Change

## Law & Policy

September 2016

## The 39th Assembly of the International Civil Aviation Organization: Regulation (from 2020) of Aviation Emissions

**INSIDE THIS ISSUE:**



This Newsletter aims to provide a background to the 39th Assembly of the International Civil Aviation Organization (ICAO) (taking place 28 September – 7 October at the organization's headquarters in Montreal, Canada) as well as an outline of aircraft emissions-related issues to be addressed at that Assembly. It then examines and assesses a number of concerns that arise from the likely "solution" to be proposed by the Assembly – an international offsetting scheme for application to international civil aviation. In other words, can ICAO convince the world to secure a global aviation agreement on Market-Based Measures (MBMs) to reduce carbon dioxide (CO2) emissions from international aviation?

A second Newsletter next month (October 2016) will review and analyze the outcomes of the 39th ICAO Assembly, as well as the text of the Assembly decision.

The latest draft text of the ICAO Assembly decision (A39-WP/52) is available online at http://www.icao.int/Meetings/a39/Documents/WP/wp_052_en.pdf.

## The Aviation Emissions Problem that ICAO Seeks to Tackle


The International Civil Aviation Organization (ICAO) headquarters in Montreal

### Aviation Remains a Fast Growing Source of Emissions

As we have noted before, aviation remains a fast growing source of emissions, yet these emissions remain largely unregulated. Essentially, unregulated carbon emissions from the aviation sector are increasing against a background of emissions regulation from many other industry sectors.

Based on IPCC (Intergovernmental Panel on Climate Change) calculations, aviation's contribution to worldwide annual emissions (estimated at 3%), could be as low as 2% or as high as 8%.[1] ICAO forecasts significant further emissions growth – against a 2006 baseline, with an increase of 63% to 88% by 2020 and 290% to 667% by 2050[2] (this without accounting for the impact of alternative fuels).

In 2013, a Manchester Metropolitan University (MMU) report looking at the future of aviation emissions and potential schemes for carbon reduction found that total aviation emissions in 2006 were 630 Mtonnes of CO2 and that by 2050 those emissions are projected to be between 1,000 to 3,100 Mtonnes depending on growth and the level of mitigation assumed.[3] Mitigation essentially involves improved and advanced technology, more efficient operations, MBMs, and the use of biofuels to eliminate or reduce the long-term risk and hazards of climate change to human life and property.

At a constant emissions rate, MMU's research found that radiative forcing (the metric used by climate scientists to measure climate impact) continues to increase for a constant emissions rate since CO2 is accumulating much faster in the atmosphere than it is removed. Additionally, the longevity of CO2 in the atmosphere (if a tonne of CO2 is released, 30% is removed in a few decades, 50% over a few centuries, and the remaining 20% over millennia) means that without effective regulatory intervention, the warming impact on the climate of aviation emissions will continue to grow relative to other sources.

If global aviation was a country its emissions would be ranked 7th, between Germany and South Korea, based on CO2 alone.[4] Air travel itself continues to show robust and sustained growth of 4-5% a year.[5]

## Current Aviation Emissions Regulation and the 2015 Paris Agreement


### Some Background

The International climate change legal framework consists of the United Nations Framework Convention on Climate Change (UNFCCC), its Kyoto Protocol and the Paris Agreement.[6]

A crucial theme in the UNFCCC is that developed and developing parties have "common but differentiated responsibilities and respective capabilities" in dealing with climate change. Developed countries "should take the lead in combating climate change" and its effects. It is a type of "polluter pays" principle – if one causes the damage, then one should pay for the clean up.

The Kyoto Protocol[7] to the UNFCCC was adopted in 1997 and entered into force in 2005. It placed quantifiable obligations upon developed States to decrease their levels of emissions in a period from 2008-2012 and, in a much more limited way, for the period from 2012-2020.

Article 2(2) of the Kyoto Protocol provides that developed States

> shall pursue limitation or reduction of emissions ... from aviation … through the International Civil Aviation Organization.[8]

Aviation – by virtue of the Kyoto Protocol – is excluded from the international climate change regime. The Kyoto Protocol leaves the problem up to ICAO and it does so largely because of attribution and jurisdictional issues. An aircraft, for example, can be manufactured by a company in country A, owned by a company in country B, leased to a country C entity and operated by a company registered in country D. That aircraft may depart country E, fly over countries F to H, and land at an airport in country I.

The issue and the problem, then, is this: *Who should be responsible for that aircraft's emissions?*

### The Paris Agreement

December 2015 in Paris at the 21st session of the Conference of the Parties (COP21) – the largest international diplomatic conference ever organized by France – 195 States together (both developed and developing) agreed to an ongoing process to make commitments to reduce greenhouse gas emissions through the 12-page "Paris Agreement."

The Paris Agreement does not refer to aviation emissions because it does not need to. State parties had previously agreed through the Kyoto Protocol that developed States "shall pursue limitation or reduction of emissions ... from aviation" through ICAO. The aviation exclusion from the international climate change regimes (from the Paris Agreement and from the UNFCCC) and the Kyoto Protocol for all practical purposes, expires in 2020.

What the COP21 Paris Agreement does do is eliminate the developed and developing State divide. While there are references still to "common but differentiated responsibilities," that divide in terms of emissions reductions is eliminated. But critically, not for regulating aviation emissions. ICAO still maintains that distinction (unlike the Paris Agreement), in particular through paragraphs 6, 7 and 8.

This has implications for all States, as well as for airlines – to their costs and margins.

## The ICAO Assembly

In 2013, the ICAO Assembly reached a consensus agreement[9] to proceed with a roadmap towards a decision to be taken on a global Market-Based Mechanism (MBM) at the 2016 ICAO Assembly for implementation in 2020.

Specifically, the Assembly:

- decided to develop a global MBM for international aviation;
- resolved to make a recommendation on a global MBM scheme that appropriately addresses key design elements, including a means to take into account the special circumstances and respective capabilities of States, and the mechanisms for the implementation of the scheme from 2020; and
- agreed to report the results of this work for decision by the ICAO Assembly in 2016.

## Market-Based Mechanism?


MBMs, as a mitigation tool, would involve reducing emissions to reduce the rate and magnitude of global warming. The main economic factor for effective mitigation is to put a price on carbon.

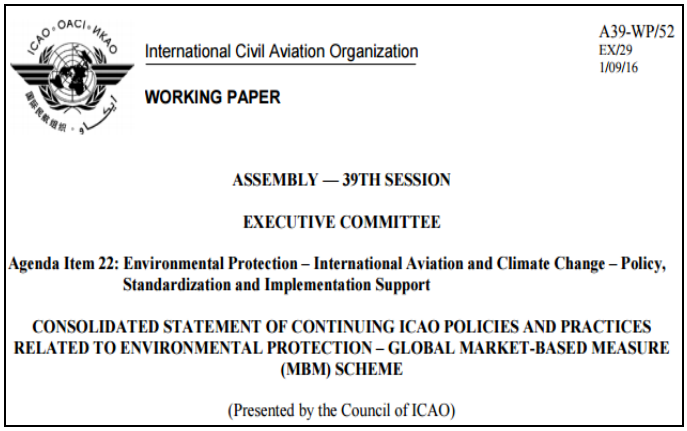
As one economist puts it, we need to ensure

> that all people, everywhere, and for the indefinite future face a market price for the use of carbon that reflects the social costs of their activities. [So governments, corporations, individuals] … need to face realistic prices for the use of carbon if their decisions about consumption, investment, and innovation are to be appropriate.[10]

The question in terms of any MBM is whether to rely on quantity-based or price-based instruments. A quantity-based instrument is an emissions trading scheme (or ETS), the most common example of which is a cap-and-trade system. A price-based instrument is a carbon tax. A tax sets a price on carbon, and emitters choose how much to emit. An ETS sets a total quota for emissions; emitters – the market – work out the price.

Most economists prefer a tax. Most States – most countries – do not, perhaps for obvious domestic political reasons. However, ICAO has chosen an MBM based on mandatory carbon offsets, with all of their attendant problems.

## Draft ICAO Resolution – September 2016: Carbon Offsetting



International Civil Aviation Organization

A39-WP/52
EX/29
1/09/16

**WORKING PAPER**

**ASSEMBLY — 39TH SESSION**

**EXECUTIVE COMMITTEE**

**Agenda Item 22: Environmental Protection – International Aviation and Climate Change – Policy, Standardization and Implementation Support**

**CONSOLIDATED STATEMENT OF CONTINUING ICAO POLICIES AND PRACTICES RELATED TO ENVIRONMENTAL PROTECTION – GLOBAL MARKET-BASED MEASURE (MBM) SCHEME**

(Presented by the Council of ICAO)

This September ICAO's governing Council released a final draft text of a Resolution to be put before the UN agency's 39th triennial Assembly. At the Assembly, Member States will vote on the climate scheme (which was created through intense negotiations spanning the past six years). If adopted by the 191 ICAO Member States, the scheme – known as CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation) – would be the first-ever global agreement covering international emissions from an entire industry sector.


*"I am optimistic that we are on the brink of a historic agreement—a first for an industry sector at the global level. The aviation industry would have preferred a more ambitious timeline than is currently outlined in the draft text. However, what is most important is that the substance of the negotiating text will allow for meaningful management of aviation's carbon footprint. Airlines support it and urge governments to agree when they meet at ICAO," said Alexandre de Juniac, IATA's Director General and CEO.*[11]

In paragraph 4 of its final draft Resolution (*Assembly Resolution A39-WP/52: Consolidated statement of continuing ICAO policies and practices related to environmental protection – Global Market-based Measure (MBM) scheme*), ICAO decided to

> implement a GMBM scheme in the form of the Carbon Offsetting Scheme for International Aviation (CORSIA) to address any annual increase in total CO2 emissions from international aviation (*i.e.*, flights that depart in one country and arrive in a different country) above the 2020 levels, taking into account [States'] special circumstances and respective capabilities …[12]

Paragraph 6 of the draft Resolution acknowledges the

> special circumstances and respective capabilities of States, in particular developing States, in terms of vulnerability to the impacts of climate change, economic development levels, and contributions to international aviation emissions, among other things, while minimizing market distortion …

In this regard, ICAO advocates "the use of a phased implementation for the CORSIA to accommodate the special circumstances and respective capabilities of States, in particular developing States, while minimizing market distortion" (paragraph 7).

Specifically, paragraph 7 a) provides that a

> [p]ilot phase applies from 2021 through 2023 to States that have volunteered to participate in the scheme. States participating in this phase may determine the basis of their aircraft operator's offsetting requirements from paragraph 9e) i) …

The first phase will

> [apply] from 2024 through 2026 to States that voluntarily participate in the pilot phase, as well as any other States that volunteer to participate in this phase, with the calculation of offsetting requirements in paragraph 9a) ….

ICAO then allows for a second phase which

> applies from 2027 through 2035 to all States that have an individual share of international aviation activities in RTKs [revenue tonne-kilometre] in year 2018 above 0.5 per cent of total RTKs or whose cumulative share in the list of States from the highest to the lowest amount of RTKs reaches 90 per cent of total RTKs, except Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs) unless they volunteer to participate in this phase …

Paragraphs 7(a), (b) and (d), then, provide that – in part to accommodate developing States – a pilot phase would apply from 2021 (five years away) to 2023 on a voluntary basis, and a first phase would apply from 2024 to 2026 to States that voluntarily participate in the pilot phase, as well as any other States that volunteer to participate.

Under paragraph 8, the CORSIA applies to all aircraft operators on the same routes between States with a view to minimizing market distortion, as follows:

a) all international flights on the routes between States, both of which are included in the CORSIA by paragraph 7 above, are covered by the offsetting requirements of the CORSIA;

b) all international flights on the routes between a State that is included in the CORSIA and another State that is not included in the CORSIA by paragraph 7 above are exempted from the offsetting requirements of the CORSIA, while retaining simplified reporting requirements; and

c) all international flights on the routes between States, both of which are not included in the CORSIA by paragraph 7 above, are exempted from the offsetting requirements of the CORSIA, while retaining simplified reporting requirements

The amount of emissions required to be offset by an aircraft operator in a given year from 2021 is calculated every year as follows:

a) an aircraft operator's offset requirement = [% Sectoral × (an aircraft operator's emissions covered by CORSIA in a given year × the sector's growth factor in the given year)] + [% Individual × (an aircraft operator's emissions covered by CORSIA in a given year × that aircraft operator's growth factor in the given year);

b) where the sector's growth factor = (total emissions covered by CORSIA in the given year – average of total emissions covered by CORSIA between 2019 and 2020) / total emissions covered by CORSIA in the given year;

c) where the aircraft operator's growth factor = (the aircraft operator's total emissions covered by CORSIA in the given year – average of the aircraft operator's emissions covered by CORSIA between 2019 and 2020)/ the aircraft operator's total emissions covered by CORSIA in the given year;

d) where the % Sectoral = (100% – % Individual) and;

e) where the % Sectoral and % Individual will be applied as follows: (i) from 2021 through 2023, 100% sectoral and 0% individual, though each participating State may choose during this pilot phase whether to apply this to a) an aircraft operator's emissions covered by CORSIA in a given year, as stated above, or b) an aircraft operator's emissions covered by CORSIA in 2020; (ii) from 2024 through 2026, 100% sectoral and 0% individual; (iii) from 2027 through 2029, 100% sectoral and 0% individual; (iv) from 2030 through 2032, at least 20% individual, with the Council recommending to the Assembly in 2028 whether and to what extent to adjust the individual percentage; (v) from 2033 through 2035, at least 70% individual, with the Council recommending to the Assembly in 2028 whether and to what extent to adjust the individual percentage;

f) the aircraft operator's emissions and the total emissions covered by CORSIA in the given year do not include emissions exempted from the scheme in that year;

g) the scope of emissions in paragraphs 9 b) and 9 c) above will be recalculated at the start of each year to take into account routes to and from all States that will be added due to their voluntary participation or the start of a new phase or compliance cycle.

## ICAO Resolution – Possible Pitfalls

ICAO president Olumuyiwa Benard Aliu, addresses the opening session of the 39th assembly of UN aviation agency in between Transport Minister Marc Garneau, left, and Quebec Premier Philippe Couillard on Tuesday. (Ross Marowits/Canadian Press)

Representatives from 191 countries and nearly 1,400 airlines are attending the 11-day 39th Assembly in Montreal. The delegates will vote to determine the final form of the scheme to reduce greenhouse emissions from the aviation industry. The meeting – the latest in a series of three-yearly meetings held by ICAO – is poised to decide on a scheme that would ultimately make it mandatory for most airlines from member countries to buy carbon offsets for their flights.

In its current form, the scheme raises questions as to its effectiveness, not the least because it will not become mandatory until 2027 – and even then not for all carriers. And yet, these loopholes make it more likely that the plan will be adopted.

The planned carbon offsetting scheme set out in the Draft Resolution would begin with a pilot phase running from 2021 to 2023, involving States that have volunteered to participate. These States will have some flexibility in determining the basis of their aircraft operators' offsets.

The purpose of this pilot phase is not really clear. A first, "formal" phase from 2024 to 2026 would apply to States that voluntarily participate in the pilot phase, and again would offset with reference to options in the resolution text. The main difference between the pilot and first phases is that, for the pilot phase, States can determine the applicable baseline emissions year.

A second, mandatory phase would only operate for 8 years (from 2027 to 2035) and would exempt the least developed countries and those with the smallest proportion of international air travel.

There are also exemptions based on the routes themselves. While the rules would apply to all flights between countries covered by the offsetting requirements, they will not apply to flights that take off or land in a non-member State.

## Carbon Offsets for the Aviation Industry

There are also problems associated with carbon offsetting. Most countries, and groups of countries (and ICAO is a group of countries) have ignored offsets in favour of mechanisms such as emissions trading schemes or carbon taxation – and, in our view, with good reason.

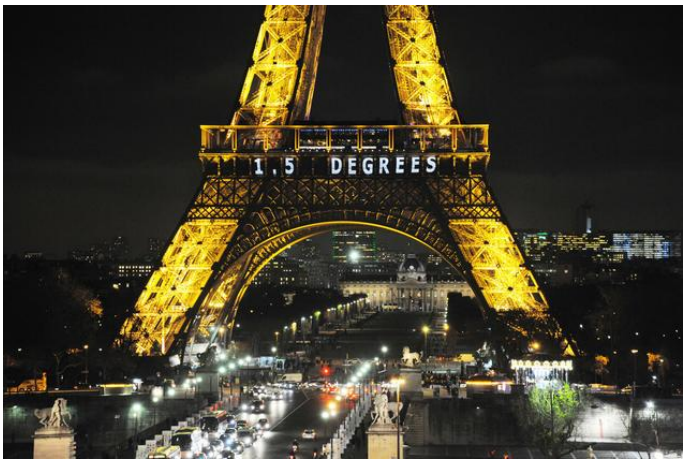

Offsets, which by definition simply move emissions from one source to another, have little net effect on emissions. As such, offsets can have the effect of undermining the regulations that genuinely encourage emissions reduction, such as carbon pricing. The Paris Agreement does not directly rely on offsets because all governments recognize that it is collective, substantive action that counts.

It could be argued that what is really needed is a policy that motivates major industrial sectors – aviation included – to cut emissions and use resources more efficiently. MBMs appear to offer the best way to apply the price pressure needed to drive such a change.

Again, the question in designing any MBMs is whether to base it on quantity or price. A quantity-based instrument is an ETS, the most common example of which is a cap-and-trade system; a price-based instrument is a carbon tax.

As discussed, ICAO has chosen neither of these options. Instead, it has chosen a system of voluntary and then mandatory carbon offsets, a system rife with issues.

## Other Issues




An analysis by the publication Carbon Brief has found[13] that even if the aviation industry meets all of its emissions targets, by 2050 it will still have consumed 12% of the global carbon budget for limiting global warming to 1.5C. This could increase to as much as 27% if the industry misses its targets.

Meanwhile, airlines estimate that air travel will grow by an average of almost 5% each year until 2034, in an industry where low-carbon alternatives are difficult to find.[14]

It is perhaps good news, then, that three weeks ago 49 States indicated[15] they were willing to opt into the ICAO's offsetting scheme in its earliest phase. The following week, in a joint statement,[16] the European Union, Mexico and the Marshall Islands said they would join the scheme. In addition, at G20 talks held on 4–5 September 2016 in the city of Hangzhou, Zhejiang, China and the U.S. offered support.[17] (The 2016 G20 Hangzhou summit was the eleventh meeting of the Group of Twenty (G20) and the first G20 summit to be hosted in China).


Brazil, one of the fastest-growing aviation markets, said, however, that it will not join until the mandatory scheme begins in 2027.[18]

Notwithstanding substantive draft texts prepared before the Assembly, much negotiation lies ahead before the final form of the Assembly resolution is known. The question remains: *Is the world's first climate deal governing the aviation sector on the cusp of being ratified?*

A second Newsletter will review and analyze the outcomes of the 39th ICAO Assembly, as well as the text of the Assembly decision.

1 U.S. GAO, "Aviation and Climate Change – Aircraft Emissions Expected to Grow, but Technological and Operational Improvements and Government Policies Can Help Control Emissions," June 2009, available at http://www.gao.gov/new.items/d09554.pdf.

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4 Transport & Environment, "Global Deal or No Deal? Your free guide to ICAO's 38th Triennial Assembly, 2013, available at https://www.transportenvironment.org/sites/te/files/publications/2013%2009%20Your%20Guide%20to%20ICAO_final.pdf.

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6 United Nations, "Paris Agreement," Conference of the Parties Twenty-first session Paris, 30 November to 11 December 2015, available at https://unfccc.int/resource/docs/2015/cop21/eng/l09.pdf.

7 United Nations, Kyoto Protocol, available at http://unfccc.int/kyoto_protocol/items/2830.php.

8 Ibid.

[9] ICAO, "Report of the Executive Committee on Agenda Item 17 (Section on Climate Change," Assembly – 38th Session, 24 September to 4 October 2015, available at http://www.icao.int/Meetings/a38/Documents/WP/wp430_en.pdf.

[10] William D. Nordhaus, "Economic Issues in Designing a Global Agreement on Global Warming," 10-12 March 2009, available at http://www.econ.yale.edu/%7Enordhaus/homepage/documents/Copenhagen_052909.pdf.

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[13] Carbon Brief, "Analysis: Aviation could consume a quarter of 1.5C carbon budget b 2050," 8 August 2016, available at https://www.carbonbrief.org/aviation-consume-quarter-carbon-budget.

[14] Ibid.

[15] Carbon Pulse, "49 Nations say they will opt-in early to aviation carbon market," 5 September 2016, available at http://carbon-pulse.com/23898.

[16] Climate Change News, "EU, Mexico, Marshall Islands back UN Aviation pact," 16 September 2016, available at http://www.climatechangenews.com/2016/09/16/eu-mexico-marshall-islands-back-un-aviation-pact.

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Aviation and Climate Change – Law & Policy is a collaborative effort of the firms of Condon & Forsyth LLP and HodgkinsonJohnson Pty Ltd. to address and analyze current topics related to the issue of aviation and climate change. Each edition aims to familiarize the reader with important climate change issues facing the aviation industry, serving as a resource for comprehensive analysis of potential solutions.

*For more information or questions about the topics presented in this Newsletter, please contact us.*

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