

**CAEP INPUTS TO THE 225TH SESSION OF THE ICAO COUNCIL
ON THE 2022 CORSIA PERIODIC REVIEW**

— EXECUTIVE SUMMARY —

Note — This Executive Summary reproduces the contents of paragraph 2 of C-WP/15326, and includes the key takeaway messages contained in the CAEP inputs to the 2022 CORSIA periodic review as presented to the Council at its 225th Session.

A. Focus on COVID-19 pandemic impacts on CORSIA and its baseline

(Reference: Part I — Further assessment of COVID-19 impacts on CORSIA and its baseline)

1.1 **Council request** (C-DEC 222/12, paragraph 10 f) ii.): Further assessment of the impact of COVID-19 on CORSIA, including inter alia, its impact on the baseline beyond the pilot phase, on the different phases of CORSIA implementation, and on the growth factors.

1.2 **CO₂ emissions not emitted compared to 2019 level**

1.2.1 Based on updated recovery scenarios, 2020 CO₂ emissions have been lower than anticipated previously. Based on updated scenarios, they dropped by approximately 59% from 2019 to 2020, instead of 54% as reported to C223 (see slide 6).

1.2.2 Estimated CO₂ emissions not emitted until 2035 compared to 2019 level could range from 780 to 1800 MtCO₂, depending on the rate of recovery. In 2016 when CORSIA was agreed, offsetting requirements from 2021-2035 were estimated at approximately 2,500 MtCO₂ (see slide 8).

	CAEP10 (2016)	CAEP/11 (2019)	Reported to C222	Reported to C223	Reported to C225
2020 emissions estimate (in MtCO ₂)	680	570	320	280	250
Change from 2019 to 2020	+ 4.5%	+ 2.6%	- 47%	- 54%	- 59%
CO ₂ emissions not emitted below 2019 level (in MtCO ₂)	n/a	n/a	530 – 1100	540 – 1200	780 – 1800

Key takeaway: Emissions not emitted compared to 2019 level could represent a significant portion of the 2016 estimated offsetting requirements (as reported to C223).

1.3 **Estimated demand for offsets**

1.3.1 In the case of the 2019 (only) baseline during 2021–2023 and a 2019-2020 average baseline during 2024-2035, the estimated demand for offsetting requirements in CORSIA could range from 1200 to 2900 MtCO₂. In the case the 2019 (only) baseline during 2021-2023 is maintained for 2024-2035, demand for offsetting requirements is reduced to a range of 310 to 1400 MtCO₂ (see slides 9 to 12).

Baseline	Estimated offsetting requirements		
	Reported to C222	Reported to C223	Update for C225
- 2019 (only) <i>for 2021–2023</i> - 2019–2020 average <i>for 2024 – 2035</i>	1300 to 2500 MtCO ₂	1600 to 3200 MtCO ₂	1200 to 2900 MtCO ₂
- 2019 (only) <i>for 2021–2035</i>	400 to 1300 MtCO ₂	230 to 1700 MtCO ₂	310 to 1400 MtCO ₂

Key takeaway: Total offsetting requirements are influenced by the impact of the COVID-19 pandemic in 2020, the rate of recovery and the choice of baseline (as reported to C223).

1.4 Regional breakdown

Key takeaways:

Demand by CAEP FESG route groups (see slide 14):

- Impact of the COVID-19 pandemic in 2020 estimated to result in a drop in CO₂ emissions from international aviation from -24% to -68%;
- Recovery to pre-COVID-19 pandemic CO₂ emissions from international aviation in 2019 could be reached by 2023 for some routes. CO₂ emissions may remain below 2019 level for 5 routes; and
- By 2035, CO₂ emissions from international aviation could grow by a factor of 0.95 to 2.5 across route groups relative to 2019.

Offsetting requirements by ICAO Region (see slides 16 to 20 – no change on observations from C223):

- All regions show similar relative changes in between 2021 and 2035 compared to pre-COVID-19 pandemic (i.e., all regions are expected to be affected by COVID-19 in a similar manner).
- The percent of CO₂ emissions to offset, which is driven by the participation of States in CORSIA, the CORSIA baseline and the expected overall growth between 2021 and 2035 on the 40 FESG route groups, is also similar across all regions, except certain regions where there is a relatively higher number of States that are exempted and not voluntarily participating which results in lower percent of CO₂ emissions offset through 2035.

1.5 **Contribution from fuels towards emissions reductions:** The estimated emissions reductions from potential CORSIA Eligible Fuels (CEF) range from 190 to 1560 MtCO₂, which could represent a significant portion of final offsetting requirements. Under a 2019 baseline scenario, all obligations could be met through emissions reductions from CEF if those are claimed by airlines towards CORSIA (see slide 22).

B. Focus on costs to States and operators¹

(Reference: Part II — Further assessment of costs of CORSIA implementation on States and aeroplane operators)

1.6 **Council request** (C-DEC 222/12 para. 10 f) iii.): Analysis of forecast prices for CORSIA eligible emissions units through 2026, while drawing upon input from the Technical Advisory Body (TAB) on unit supply.

1.7 **Emissions Unit Costs:** Cumulative costs for operators from emissions units from 2021 to 2026 under a mid-price scenario could range from \$0.1 to 1.8 billion to \$0 to 0.4 billion under an average 2019-2020 baseline and 2019 baseline respectively. Total cost can vary due to price of emissions units and be reduced by \$80 – 530 million if CEF are claimed. For context, the global airline industry cumulative revenues during 2015 – 2020 was approximately \$3,700 billion (see slides 5 to 8).

¹ \$ refers to USD throughout this paper.

1.7.1 Cumulative estimated costs for emissions units from 2021 – 2026 (mid-price scenario):

Baseline	Reported to C223	Reported to C225
2019 – 2020 average <i>for 2024 – 2035</i>	\$0.8 to 2.3 billion	\$0.1 to 1.8 billion
2019 (only) <i>for 2024 – 2035</i>	\$0 to 0.8 billion	\$0 to 0.4 billion

Key takeaway: Costs for operators could be significantly lower than the 2016 estimates (as reported to C223).

1.8 **Emission Units Price:** Estimated for 2021 – 2026

	CAEP/10 (2016)	Reported to C223	Reported to C225
High	\$20 - \$27.8	\$9.30 - \$15.00	\$21.00 - \$32.00
Medium (low in 2016)	\$8.7-\$12.2	\$3.57 - \$5.62	\$3.10 - \$4.90
Low (alternative low in 2016)	\$6.4 - \$8.4	\$0.90 - \$1.45	\$1.20 - \$1.90

Key takeaway: Prices estimated are generally lower than those estimated in 2016.

1.9 **Council requests** (C-DEC 222/12 para. 10.g.ii and 10.f.i): (1) CAEP’s analysis of administrative costs for the implementation of CORSIA, for aeroplane operators and States [...]. (2) Assessment of CORSIA’s [...] cost impact on States and aeroplane operators and on international aviation [...].

1.10 **Costs for Aeroplane Operators and States:** Total Monitoring, Reporting and Verification (MRV) and Registry costs for all Aeroplane Operators and States could be approximately \$430 million from 2018 – 2035 (with a range from \$170 to \$700 million). Aeroplane operators bear most of the total MRV costs (63% to 78%). Mid- and large-size aeroplane operators account for approximately 70% of total MRV and Registry costs for operators, with verification and monitoring being the dominant costs. Verification is the dominant cost for aeroplane operators eligible to use simplified procedures (see slides 13 to 16).

	Costs to operators	Costs to States	Total
Cumulative MRV costs <u>through 2035</u>	\$325 million (range \$110 to \$540 million)	\$105 million (range \$65 to \$150 million)	\$430 million (range \$170 to \$700 million)
Cumulative costs from offsetting requirements <u>from 2021 to 2026 only</u>	\$0 to 1.8 billion		

Key takeaway: Costs to operators are largely driven by offsetting requirements, and to a lesser extent MRV. Costs to States are solely from MRV.

C. Review of analysis of possible market distortion

(Reference: Part III — Review of the analysis of possible market distortions (in the context of CORSIA design elements) presented to the Council at its 224th Session)

1.11 **Council request** (C-DEC 222/12, paragraph 10 f) i.): Assessment of CORSIA's market [...] impact on States and aeroplane operators and on international aviation, including analysis of possible market distortions.

1.12 As requested by the Council, CAEP undertook the analysis on this question, which was reported to C224 session, and further explanations will be provided during the C225 session.

Key takeaway: Total offsetting requirements and differences across aeroplane operators evolve over time and are driven by (1) the phased implementation of CORSIA (i.e., changes in States participation throughout), (2) the Sector Growth Factor (e.g., emissions forecasts, CORSIA baseline from 2024) and (3) the transition to the individual approach from 2030.

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