COMMITTEE ON AVIATION ENVIRONMENTAL PROTECTION (CAEP) ANALYSES IN SUPPORT OF THE 2022 CORSIA PERIODIC REVIEW

Executive Summary

1. INTRODUCTION

1.1 This document is an Executive Summary of the presentation material "Analyses in Support of the 2022 CORSIA Periodic Review" recommended by the ICAO Council's Committee on Aviation Environmental Protection (CAEP) on 9 September 2021, for consideration by the 224th Session of the ICAO Council (referenced in C-WP/15261). The supporting paper considered by CAEP is available as a separate document on the Council Secure Portal. This interim analyses is provided in support of the 2022 CORSIA Periodic Review by responding to the requests from C-DEC 222/12 paragraph 10 (f) for the ICAO Council's 224th Session. It is considered work in progress as further information on updated forecasts and emission scenarios is expected in October 2021 and further analyses will be provided for the Council's 225th Session. In addition, please note that the requested work to assess the impacts on States would benefit from any relevant information gathered as part of the recent State letter process on implementation of Monitoring, Reporting and Verification (MRV).

2. IMPACT OF COVID-19 ON CORSIA BASELINE, PHASES AND GROWTH FACTORS

Council requests:

Question 1 (*C-DEC 222/12 item 10. f ii.)*: Further assess 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, as set out in paragraph 5(e) of C-DEC 220/13; and

Question 2 (*C-DEC 222/12 item 10. f iii.)*: Analyse forecast prices for CORSIA eligible emissions units through 2026, while drawing upon input from TAB on unit supply.

2.1 **Response**: Not yet available. To be based on the next update of the forecast CO_2 emissions from international aviation, and any relevant and applicable CO_2 emissions scenarios from the Long-Term Aspirational Goal (LTAG) analyses, both of which are expected in October 2021.

2.2 **Key takeaways**: To be presented at the 225th Session of the Council.

3. IMPACT OF CORSIA ON STATES, AEROPLANE OPERATORS AND INTERNATIONAL AVIATION

Council request: Question 3 (*C-DEC 222/12 item 10. f i.)*: Assess CORSIA's market and cost impact on States and aeroplane operators and on international aviation, including analysis of possible market distortions.

3.1 CAEP built on the work provided in C-WP/15209, Appendix B, slides 17-20. In the absence of information on the costs of implementing MRV, which will be available from the State letter process, the current analysis is focused on the cost of offsetting requirements from 2021 to 2026, which will be extended from 2027 to 2035 as part of the next analysis update, for consideration by the 225th Session of the Council. Market distortion has been evaluated by analysing differences in these offsetting requirements across aeroplane operators.

Impact on International Aviation

3.2 **Key takeaways**: Potential incremental costs from CORSIA during the period from 2021 to 2026 may represent 0% to 0.1% of potential future revenue from international aviation.

Impact on Aeroplane Operators

3.3 **Response:** A scenario based analysis was undertaken on different types of operators including (1) those that are in scope during the reference year(s) 2019-2020; (2) new entrants and (3) new operators (subsidiaries) who were operators not in scope during the reference years and do not meet the definition of new entrants. Operators that are in scope during the reference years and subsequently remained in scope throughout the 2021 to 2035 period contribute to 89% of total emissions, while operators that dropped out of scope contributed to 2.5% of total emissions. Likewise, new entrants and new operators (subsidiaries) contributed 5.2% and 1.3% respectively, while those that dropped out of scope represented 1.4% and 0.4% respectively. Note that work on potential new entrant baselines is work in progress by CAEP. In this analysis, the baseline for new entrants defined as per one of six options currently considered by CAEP (average of emissions in years 1 and 2) and is not intended to prejudge that work.

3.4 The offsetting requirements of aeroplane operators' with various characteristics were modelled in the context of their individual total CO_2 emissions, their individual growth rate and the % CO_2 emissions to offset as a proportion of their total CO_2 emissions from international aviation (aka Chapter 2) during 2021 to 2035.

3.5 The variability in percent of CO_2 emissions to offset (i.e., proxy for market distortion) is driven by (1) the phased implementation of CORSIA (i.e., State participation), (2) the Sector Growth Factor (e.g., CORSIA baseline) and (3) the transition to individual approach from 2030.

Overview of variation in offsetting by phase of CORSIA

Pilot Phase (2021-2023)	All operators offset 0% as the Sector Growth Factor is expected to be 0. This phase could represent 15% of CO_2 emissions and 0% of offsetting requirements from 2021-2035.
1st Phase (2024-2026)	Where the Sector Growth Factor is positive, operators offset 0 to 30% of their CO_2 emissions. The range reflects the 100% sectoral approach and state participation, with higher percentage offset by operators with more flights on participating routes. New entrants benefit from three year grace period. This phase could represent 19% of CO_2 emissions and 12% of offsetting requirements from 2021-2035.
2nd Phase (2027-2029)	Overall offsetting increases due to higher Sector Growth Factor and more participating states. Operators with no flights between participating states still offset zero. This compliance cycle could represent 20% of CO_2 emissions and 23% of offsetting requirements from 2021-2035.
2nd Phase (2030-2032)	Influence of individual approach on operators starts to be seen with a pivot point at an individual growth rate of 2%. Operators with high growth rates start to have a higher relative increase in offsetting requirements. This compliance cycle could represent 22% of CO_2 emissions and 29% of offsetting requirements from 2021-2035.
2nd Phase (2033-2035)	Influence of individual approach is more pronounced, due to the higher weight on the use of an individual growth rate. This compliance cycle could represent 24% of CO_2 emissions and 36% of offsetting requirements from 2021-2035.

3.6 **Key takeaways**: 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. All else being equal, the aeroplane operator size (in terms of CO_2 emissions) does not influence their offsetting emissions.

4. INITIAL ASSESSMENT ON THE IMPLEMENTATION OF CORSIA BY STATES

Council request:

Question 4 (*C-DEC 222/12 item 10. f iv.)*: CAEP's initial assessment on the implementation of CORSIA by States, particularly the functioning of MRV provisions and the effectiveness of monitoring methods, based on lessons learned from implementation since 1 January 2019, and CAEP's initial suggestions for improvements to the scheme

4.1 **Response**: In accordance with its Work Programme, CAEP is working on proposed amendments to Annex 16 Volume IV and the related Environmental Technical Manual, Volume IV. These proposed improvements to date include minor editorial improvements, additional guidance and templates, technical clarifications to the applicability scope and practical implementation of the CO_2 monitoring methods as well as to the CORSIA reporting requirements. The verification-related standards and recommended practices were also aligned with the latest ISO standards. The edits are to be compiled into a track change version for approval at the CAEP/12 Meeting (7-18 February 2022).

4.2 **Key takeaways**: CAEP's technical work this cycle will be compiled at the CAEP/12 Meeting, and a summary of the proposed amendments to the Annex 16, Volume IV will be brought to attention of the Council.

5. NEXT STEPS

5.1 In line with C-DEC 222/12, CAEP will provide further input for the Council's 225th Session. This will include, inter alia:

- updates to CO_2 emissions forecasts and assessment of the impact of COVID-19 on CORSIA based on CAEP/12 Trends and relevant (and applicable) information from LTAG scenarios;

- updates on the supply and price of Emissions Units towards the analysis of the cost implications of CORSIA offsetting requirements; and

- include costs associated with the implementation of the Monitoring, Reporting and Verification (MRV) costs (pending availability of data from State letter).

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