Overview of the CAEP/13 updates concerning CORSIA

By WG4 co-Rapporteurs

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CAEP's Working Group 4 (WG4) was established at the CAEP/11 Meeting in February 2019 as a successor to the Global Market-based Measures Technical Task Force (GMTF). WG4 focuses on the technical issues related to the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), a global market-based measure aiming to achieve carbon-neutral growth in aviation compared to 2019 levels. During the CAEP/13 cycle (2022-2025), the WG4 Work Programme consisted of a total of eight tasks (see Table 1).

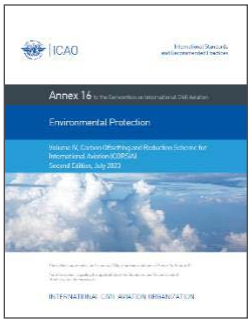
TABLE 1: CAEP/13 WG4 Work Programme

Task Number	Task Title
C.01	Maintenance of Annex 16, Volume IV and related guidance material
C.02	Development of further material on monitoring, reporting and verification (MRV) in CORSIA
C.03	Identification of CORSIA implementation issues and solutions
C.04	EUC Management
C.05	Work on the ICAO CORSIA CO_2 Estimation and Reporting Tool (CERT)
C.06	Supply, Demand and Price of Units
C.07	Technical Analysis Support
C.08	Support Council on the 2025 CORSIA periodic review

Work was concluded at the CAEP/13 Meeting (Montreal, Canada, 17 to 28 February 2025) with the presentation of the final outcomes for each work item. The meeting agreed that WG4 had satisfactorily fulfilled the Work Programme of WG4 for the CAEP/13 cycle. This article will present the main outcomes of CAEP's work on CORSIA during the CAEP/13 cycle.

CORSIA SARPs and related guidance material

Annex 16, Volume IV provides the Standards and Recommended Practices (SARPs) for CORSIA implementation. CAEP ensures that the SARPs remain up-to-date by incorporating the technical recommendations from the group into proposed amendments to the SARPs. The ICAO Council adopted the first edition of the CORSIA SARPs in 2018 for applicability from 1 January 2019. The second edition of the SARPs was adopted in 2023 and has been applicable to support CORSIA's first phase since 1 January 2024.



During the CAEP/13 cycle, amendments were agreed to the SARPs to provide further clarification on fuel monitoring and data gap filling, i.e., to clarify that there is no restriction to the use of the ICAO CORSIA CO_2 Estimation and Reporting Tool (CERT) to fill data gaps in the case of CO_2 emissions from international flights not subject to offsetting requirements.

The Environmental Technical Manual (ETM), Volume IV includes the guidance material supporting the implementation of the CORSIA SARPs. Further guidance agreed

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FIGURE 1: Distribution of CORSIA verification bodies offering CORSIA accreditation[2]

during the CAEP/13 cycle focused on matters related to CORSIA eligible fuels (CEFs), including new guidance on verification of emissions reduction claims from CEFs, a new section on CEFs in the States' Order of Magnitude checklist, restructuring of the CEF claims template to increase user-friendliness, and updating the Verification Report template to facilitate the review of CEF claims.

Updates to the CORSIA Monitoring, Reporting and Verification (MRV) system

Under CORSIA's MRV system, since 2019, aeroplane operators and States have been reporting robust and verified CO_2 information for international flights on an annual basis. This mechanism ensures that ICAO is aware of the level of international aviation CO_2 emissions and is able to calculate the Sector's Growth Factor, which in turn is an essential component of the formula to calculate each aeroplane operator's CORSIA offsetting requirements. CAEP is constantly reviewing the functioning of CORSIA's MRV system to ensure that the regulatory framework remains up to date.

In addition to the amendments to the CORSIA SARPs and guidance material, CAEP work on the monitoring of fuel use resulted in additional clarifications included in the CORSIA Frequently Asked Questions (FAQs) that are available on the ICAO CORSIA webpage, and the work on verification resulted in developing a map displaying the regional distribution of CORSIA-accredited verification bodies (see Figure 1).

CAEP has also continued its work on the definition of baseline options for new entrant aeroplane operators to be applied once the aeroplane operator Individual Growth Factor is introduced in the formula to calculate operators' CORSIA offsetting requirements for the 2033-2035 compliance cycle. CAEP considered two options for the new entrants' baseline, while noting that such a decision was to be made no later than in 2027 to allow for sufficient time to integrate its outcome into the CORSIA SARPs and national regulations before the applicability and use of the new entrants' baseline in 2033.

Management of CORSIA Emissions Unit Criteria (EUC)

The CORSIA EUC consists of a set of principles by which the emissions unit programmes are assessed for the eligibility to supply emissions units to CORSIA. The CORSIA Emissions Unit Eligibility Criteria were approved by the ICAO Council in 2019. Eligible emissions unit programmes shall meet the Program Design Elements Criteria and the Carbon

2 Based on the 11th edition of Part I of the ICAO document "CORSIA Central Registry (CCR): Information and Data for Transparency" (approved 21 December 2023).

CORSIA | CO_2 ESTIMATION & REPORTING TOOL (CERT)

Offset Credit Integrity Assessment Criteria to ensure the environmental and social integrity of the CORSIA Eligible Emissions Units. The CORSIA Eligible Emissions Units are approved by the Council, based on recommendations of the Council's Technical Advisory Body (TAB).

CAEP work on the EUC during the CAEP/13 cycle was prioritized on measures to operationalize the avoidance of double counting, notably in the light of relevant decisions under the Paris Agreement Article 6. This work led to an agreement on recommendations in relation to the Guidelines for Criteria Interpretation related to various criteria included in the EUC, including on avoidance of double counting, issuance and claiming and on permanence requirements of the CORSIA Eligible Emissions Units. Following Council's approval of the recommendations, those will now be applied by the TAB for its re-assessment of emissions unit programmes seeking CORSIA eligibility beyond CORSIA's first phase.

ICAO CORSIA CO_2 Estimation and Reporting Tool (CERT)

The ICAO CORSIA CERT, referenced in Annex 16, Volume IV, is one of the five implementation elements of CORSIA. It is used to facilitate the implementation of simplified monitoring and reporting requirements in accordance with the CORSIA SARPs. States and aeroplane operators can use the ICAO CORSIA CERT to support an assessment of whether the operator is within the applicability scope of the CORSIA MRV requirements, and to assess the operator's eligibility to use the ICAO CORSIA CERT as its CO_2 estimation method. Operators can also use the ICAO CORSIA CERT to fulfil their simplified monitoring and reporting requirements by filling-in the standardized Emissions Monitoring Plan and Emissions Report templates, and to fill any CO_2 emissions data gaps. In addition, States can use the ICAO CORSIA CERT to fill-in CO_2 emissions gaps in case an operator is not able to submit an annual Emissions Report.

The first version of ICAO CORSIA CERT was published in 2018, and the tool has been updated annually by CAEP since then to reflect the latest trends in terms of aeroplane fuel burn, and to update the names of States defining the routes subject to offsetting requirements every year from 2021. The statistical method underpinning the ICAO CORSIA CERT is referred to as the ICAO CO_2 Estimation Models (CEMs), which make use of actual historic fuel burn data, provided by aeroplane operators, to convert the user's input (i.e., aircraft type, aerodromes of origin and destination, Block Time) into estimated CO_2 emissions.

During the CAEP/13 cycle, three versions (for reporting years 2022, 2023 and 2024 respectively) of the ICAO CORSIA CERT were developed and published on ICAO's webpage. Two improvements were also incorporated into the process of developing the annual version of the CERT: streamlining of the process for the review of the CEMs within CAEP, and developing a "hybrid" approach for the Aerodrome Database embedded in the ICAO CORSIA CERT, wherein the information from ICAO eDoc 7910 applicable for a given version of the tool would be complemented with a table of airports put together by CAEP to cover gaps in the coverage and accuracy of ICAO eDoc7910 — *Location Indicators*.

CORSIA Analysis and support to the 2025 CORSIA periodic review

Throughout the past three years, CAEP has continued to provide regular technical support to the ICAO Council on the 2025 CORSIA periodic review. Following the Council's requests to CAEP at its 228th Session in March 2023, CAEP updated its analytical work on CORSIA as an input to the Council. Updates covered by the analysis included: estimates of offsetting requirements, including distribution by ICAO Regions; estimates of demand of CORSIA Eligible Emissions Units considering potential emissions reductions from CEF; estimates of prices of emissions units and related costs associated with offsetting requirements; assessment of CORSIA's impact on aeroplane operators; and projections

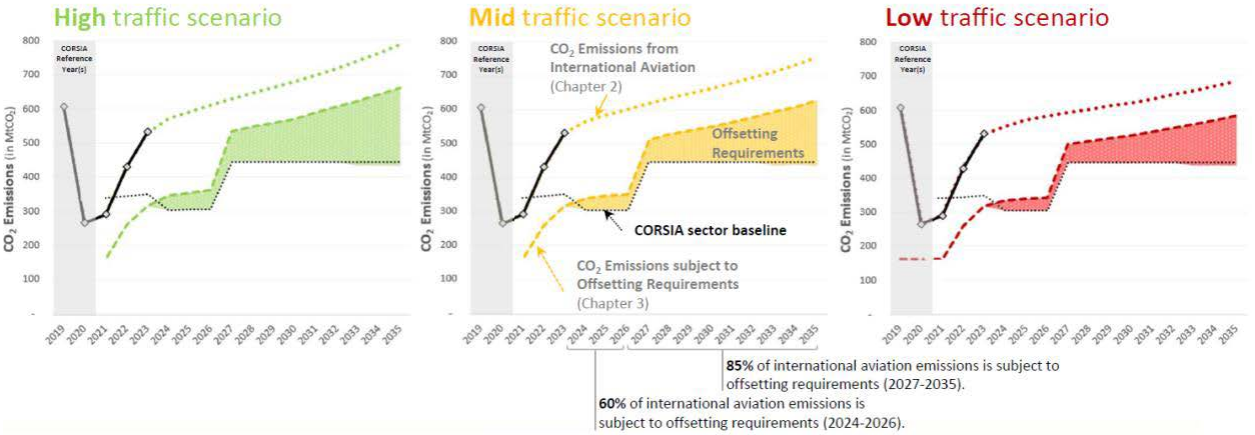

FIGURE 2: Estimation of CORSIA Offsetting Requirements[3]

of net CO_2 emissions through 2035. An initial update of CORSIA Analyses was presented at the 232nd Session of the Council in June 2024, and interim assessments in support of the 2025 CORSIA Periodic Review were presented at the 234th Session in March 2025.

Based on CAEP's interim assessments at the time of writing this article, given amended CO_2 emissions forecasts and the decision of the 41st ICAO Assembly to use 85% of 2019 CO_2 emissions as the CORSIA baseline for the period of 2024-2035, offsetting requirements are expected to start in 2024 under all CAEP/13 traffic scenarios (see Figure 2).

The cumulative offsetting requirements from CORSIA could range from 980 to 1500 $MtCO_2$ from 2024 to 2035 and from 100 to 150 $MtCO_2$ during CORSIA's first phase (2024–2026). In terms of costs associated with addressing offsetting requirements, in the period of 2024-2026, the total cost could range from ≈ USD 1.3 billion using CORSIA Eligible Emissions Units only to ≈ USD 8.4 billion using a mix of CORSIA Eligible Emissions Units and emissions reductions from CEF given a scenario that accounts for the CAAF/3 vision. Such costs could represent around 0.07% to 0.46% of international aviation revenue from 2024 to 2026. Based on these estimations, the future demand for CORSIA offsetting requirements and associated costs for the industry are expected to remain within the estimates of previous assessments.

At the time of writing this article, the Council continues its work on the 2025 CORSIA periodic review, and CAEP is preparing to present its final technical assessment in support of the review at the 235th Session of the Council in June 2025. Based on all inputs received, the Council will produce a report that will be presented to 42nd Session of the ICAO Assembly.

Conclusion

As CORSIA is expected to generate offsetting requirements in connection with 2024 CO_2 emissions, it is imperative to ensure the effectiveness of the scheme through continuous maintenance of the CORSIA SARPs and guidance material, constant review and updates of the MRV system, technical management of the EUC, including alignment with the UNFCCC Paris Agreement developments, and continued support to the Council on the 2025 CORSIA periodic review. CAEP will continue to review and support the implementation of CORSIA during the CAEP/14 cycle (2025-2028).

3 As presented to the 234th Session of the ICAO Council