



ICAO

RECONNECTING THE WORLD



Introduction to CORSIA Annex 16, Volume IV

ICAO Secretariat

The CORSIA logo, which includes a stylized globe with a blue airplane flying over it, followed by the letters 'CORSIA' in a bold, blue, sans-serif font.

CORSIA





- Two main parts to this presentation:
 - Overview of CORSIA
 - Introduction to Annex 16, Volume IV
- Objective:
 - Provide an overarching presentation of CORSIA and the CORSIA SARPs that Trainers could also use for the on-site training
 - Highlight key elements of CORSIA and Annex 16, Volume IV
 - Incorporate information from Frequently Asked Questions (FAQs) published on the CORSIA website



PART 1: OVERVIEW OF CORSIA

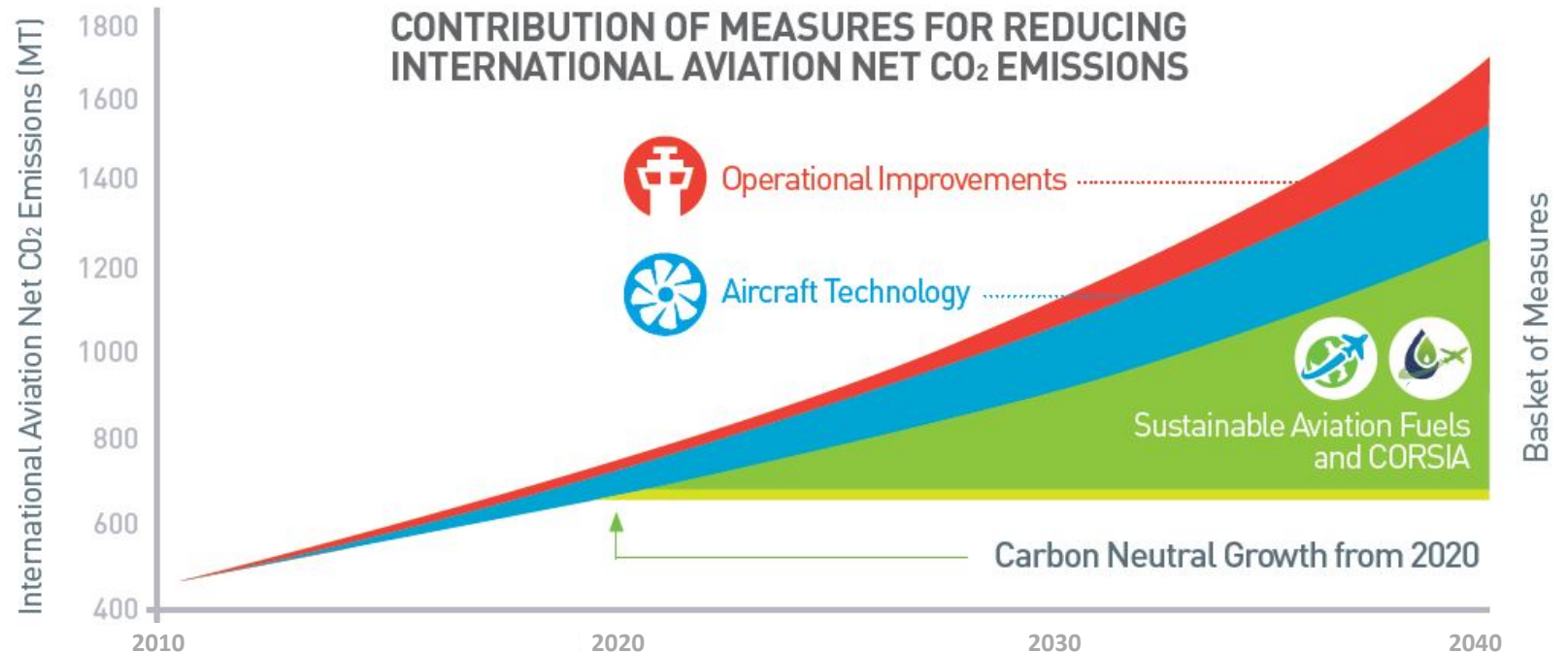


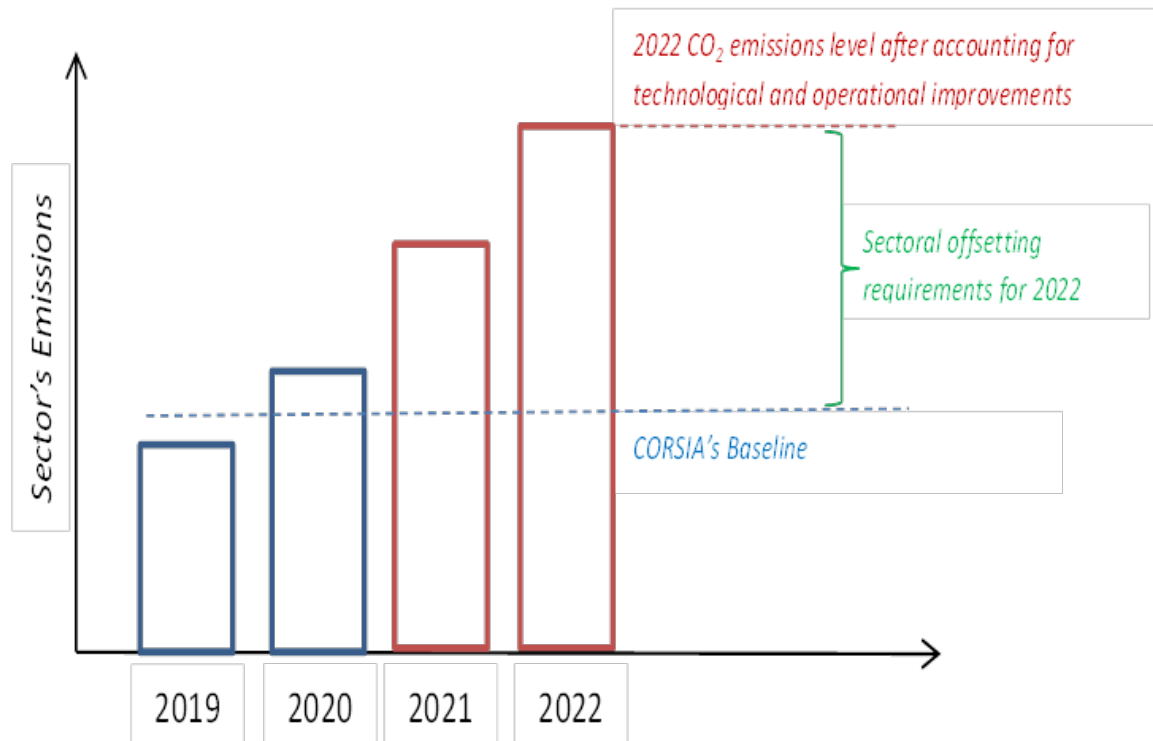
Adopted through Assembly Resolution 39-3

The **first global MBM scheme** for any industry sector

To achieve ICAO’s global aspirational goal of carbon neutral growth from 2020 (CNG 2020), CORSIA is **one complementary element in the basket of measures** to:

- aircraft technology
- operational improvements
- sustainable aviation fuels





The approach for CORSIA is based on comparing the total CO₂ emissions for a year (from 2021 onwards) against a baseline level of CO₂ emissions, which is defined as the average of CO₂ emissions from international aviation covered by the CORSIA for the years 2019 and 2020.



- Key design features of CORSIA:
 - Phased implementation (paragraph 9)
 - Emissions coverage: route-based approach (paragraph 10)
 - Offsetting requirements (paragraph 11)
 - New entrants (paragraph 12)
 - Technical exemptions (paragraph 13)
 - Review mechanism (paragraphs 9g and 18)
- CORSIA implementation features:
 - Monitoring, Reporting and Verification (paragraphs 15, 20a and 20b)



Second phase participation criteria:

- 90% of global RTK
- 0.5% of RTK

Exemptions:

- LDCs, LLDCs, SIDS

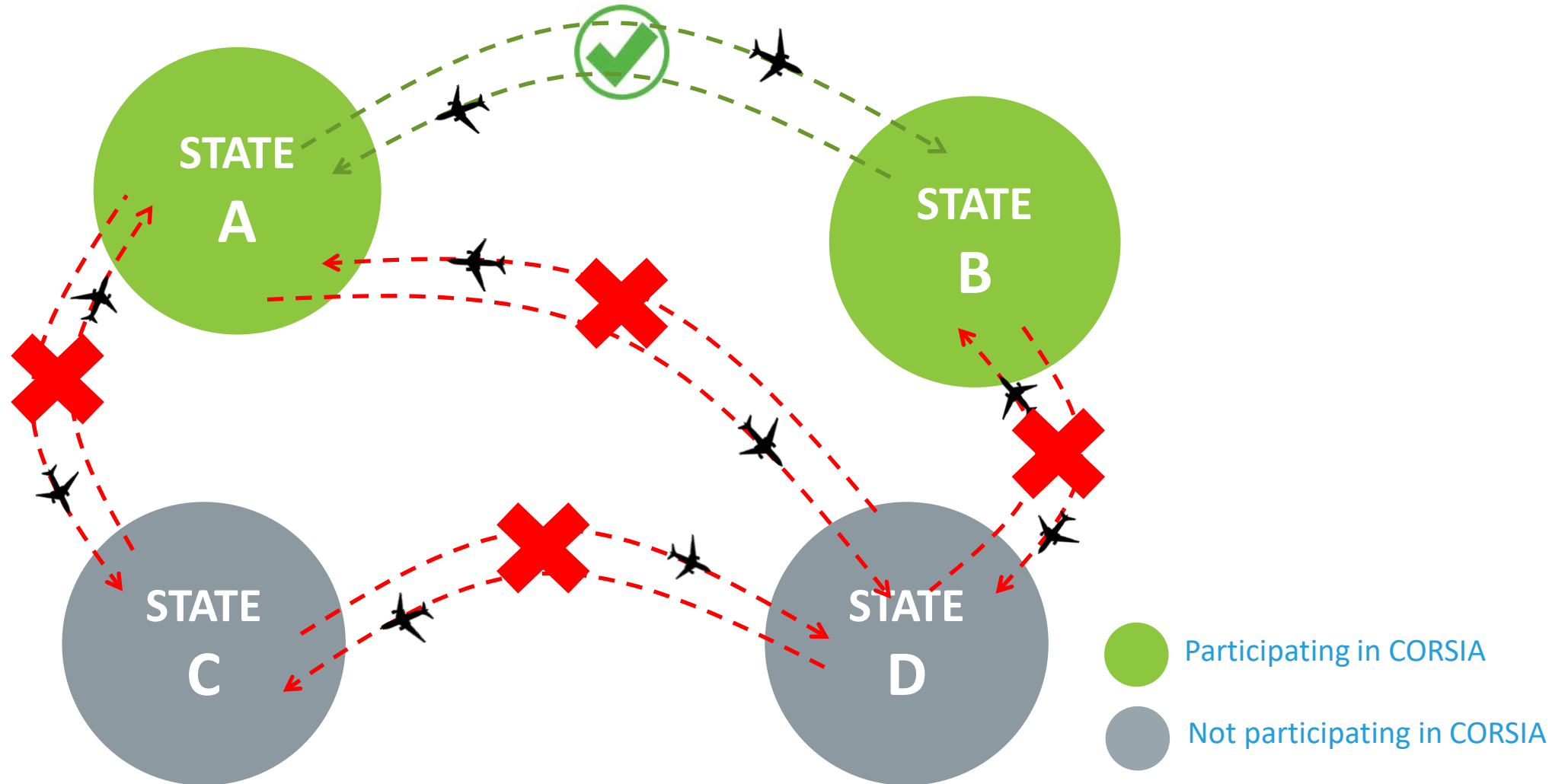
All Member States are encouraged to participate in the pilot and first phase of the CORSIA

Reference: Assembly Resolution A39-3, Paragraph 9



What is the difference between the pilot and the first phase?

- The requirements for the two phases are identical except for how the aircraft operator's offsetting requirements are determined by the State. Specifically:
 - For the pilot phase, States have two options to determine the basis of an aircraft operator's offsetting requirements:
 - Option 1: Use the aircraft operator's emissions covered by CORSIA in a given year (i.e. 2021, 2022 and 2023)
 - Option 2: Use the aircraft operator's emissions for the year 2020.
 - For the first phase, the calculation to determine an aircraft operator's offsetting requirements is based on the emissions in a given year (i.e. 2024, 2025 and 2026).



Reference: Assembly Resolution A39-3, Paragraph 10



Can the “covered” or “not covered” routes change over time?

- Paragraph 10 of the Assembly Resolution A39-3 determines the characterization of a route as “covered” or “not covered” by the CORSIA offsetting requirements, on the basis of whether the States connecting the route participates in CORSIA offsetting.
 - The voluntary participation of States in different phases of the CORSIA will determine the overall coverage of the scheme
 - Deadline of 30 June every year for States to notify ICAO of their intention to voluntarily participate in the scheme, or discontinue their participation, from 1 January of the following year



Do States and AOs that do not participate in the CORSIA offsetting have any requirements?

- According to paragraph 20 of the Assembly Resolution A39-3, all States whose aircraft operator undertakes international flights need to develop a monitoring, reporting and verification (MRV) system for CO₂ emissions from international flights starting from 1 January 2019.
 - The requirement to monitor, report and verify CO₂ emissions from international aviation is independent from the offsetting requirement.
 - The data reported by States will be used for the calculation of the CORSIA baseline, which is the average of 2019 and 2020 CO₂ emissions, as well as for the basis of calculating the aeroplane operators' offsetting requirements, where applicable.



What would happen if an AO of a non-participating State flies on covered routes?

- Because of the CORSIA's route-based approach, all routes between participating States would be subject to the coverage of emissions offsetting requirements under the CORSIA.
 - An operator of a non-participating State would be subject to offsetting requirements if it had a flight between two participating States.



What if a State without an AO undertaking international flights decides to participate?

- States without an operator flying international flights are encouraged to participate in all phases of the CORSIA.
 - If such a State decides to participate, flights to and from that State to other participating States are additionally included for the CORSIA's offsetting requirements, due to the route-based approach
 - The total international emissions covered by CORSIA offsetting would ultimately increase



What is offsetting and how does it work?

- Offsetting through the purchase and cancellation of emissions units:
 - Different sources of emissions reductions (mechanisms, programmes, projects)
 - Buying and selling of eligible emissions units through the carbon market
 - Price of the emissions units influenced by law of supply and demand
- “Cancelling” means the permanent removal and single use of an emissions unit.
 - Done after an aeroplane operator has purchased emissions units from the carbon market



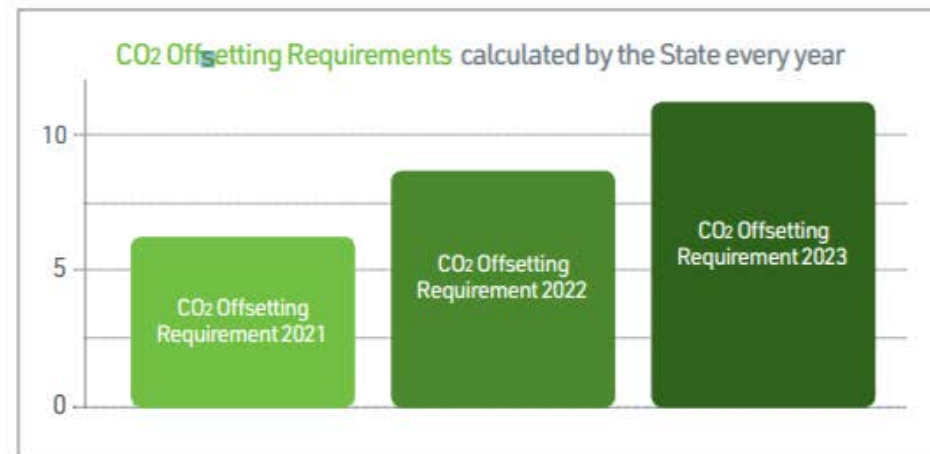
CORSIA OFFSETTING REQUIREMENT STEPS

- 1 The State calculates the offsetting requirements attributed to an aeroplane operator.

$$\text{Operator's annual emissions} \times \text{Growth Factor} = \text{CO}_2 \text{ offsetting requirements}$$

In a given year from 2021, the **Growth Factor** is the percent increase in the amount of emissions from the baseline, and is calculated by ICAO.

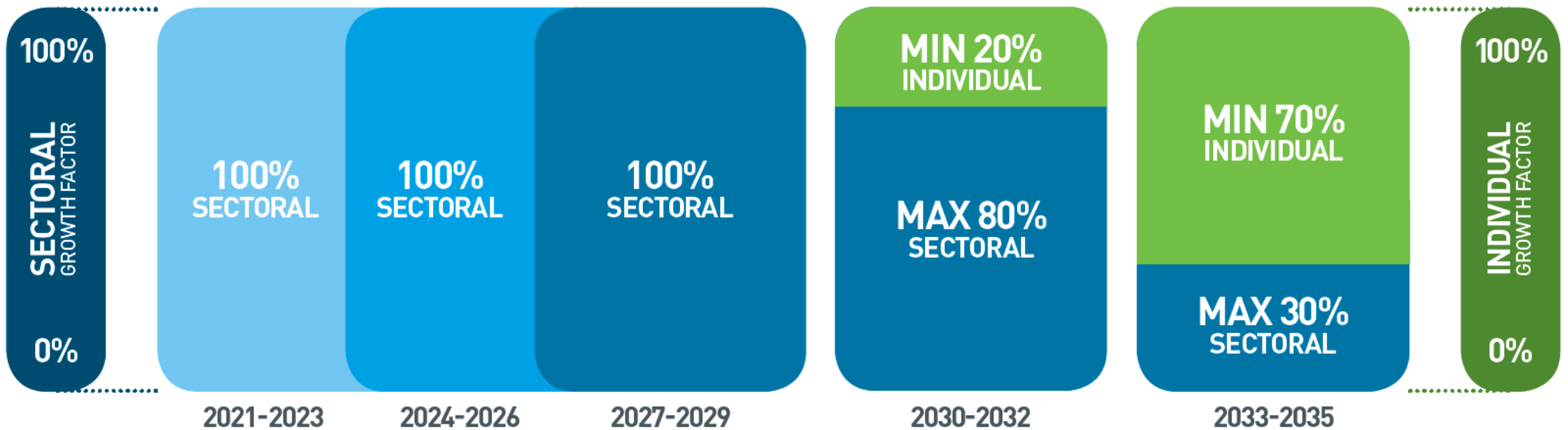
The **Growth Factor** changes every year taking into account both the sector's and the individual operator's emissions growth.





Operator's annual emissions X Growth Factor = CO₂ offset requirements

The Growth Factor changes every year taking into account both the sectoral and the individual operator's emissions growth. The Growth Factor is the percent increase in the amount of emissions from the baseline to a given future year, and is calculated by ICAO.



Reference: Assembly Resolution A39-3, Paragraph 11



What are CORSIA's baseline emissions?

- The sectoral baseline is defined as the average of total CO₂ emissions for the years 2019 and 2020 on the routes covered by CORSIA offsetting in a given year from 2021 onwards.
 - Paragraph 11(g) of the Assembly Resolution A39-3 notes that the sectoral baseline will be re-calculated when the routes included in the CORSIA change.
 - For example, when new States volunteer to participate or States decide to withdraw their participation.
 - Calculation of the baseline will be done by ICAO



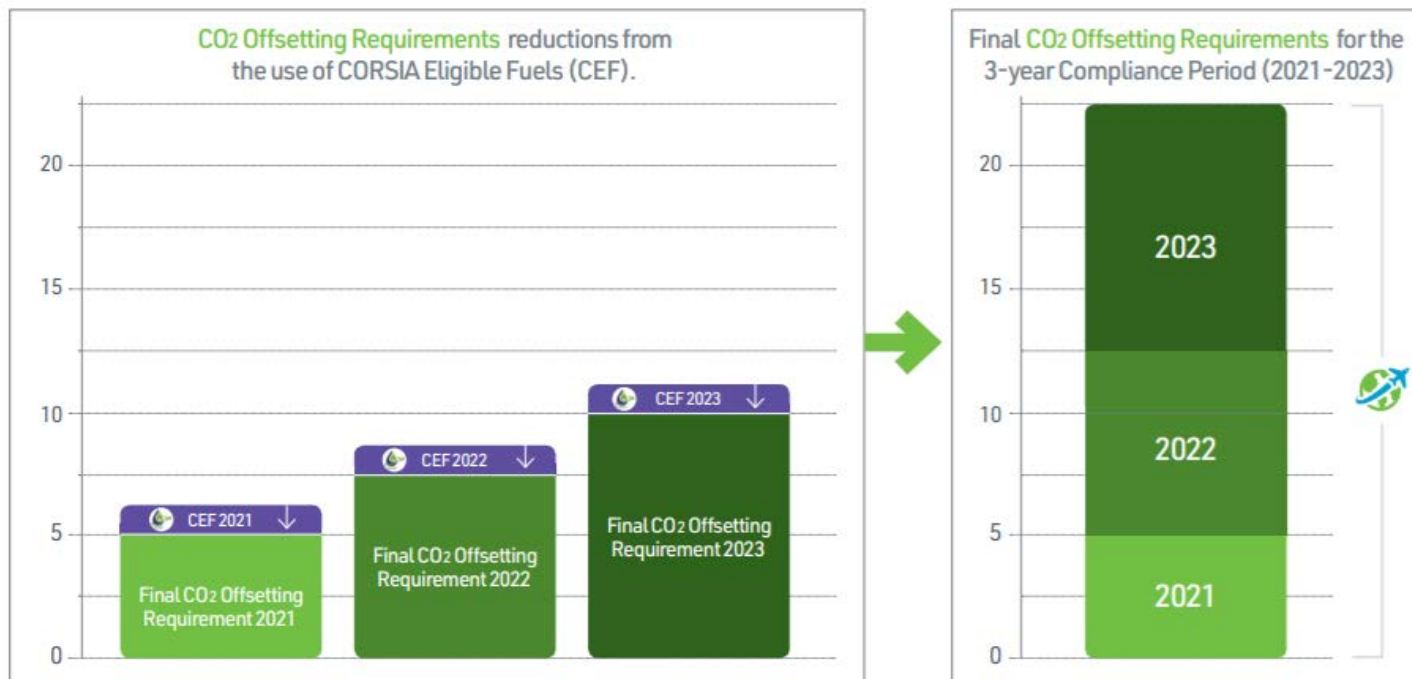
Can an aeroplane operator's CO₂ offsetting requirements be negative?

If an aeroplane operator's total final offsetting requirements during a compliance period are negative (i.e., the verified emissions reductions claimed by an operator from the use of CORSIA eligible fuels are more than its offsetting requirements), the operator has no offsetting requirements for the compliance period.

- Negative offsetting requirements will not be carried forward to a subsequent 3-year compliance period
- If an operator's offsetting requirements in a given year inside of a compliance period are negative, the operator will reduce its total final offsetting requirement for that three-year compliance period.



- 2** The operator reports the use of CORSIA Eligible Fuels (CEF) for a 3-year compliance period.
- 3** The State accounts for the benefits from the use of CEF and informs the operator of its final CO₂ offsetting requirements for a 3-year compliance period.





- New entrant (aeroplane operator) is exempted from CORSIA offsetting requirements for the first 3 years or until its annual emissions exceed 0.1% of total 2020 CO₂ emissions from international flights, whichever comes first.
- Example: Operators A and B start operations in year 2022 as shown in the table below. According to the paragraph above, Operator A will have offsetting requirements in 2025, and Operator B in 2024.

Operator	Emissions (% of total emissions in 2020)			
	2022	2023	2024	2025
A	0.02	0.04	0.06	0.08
B	0.06	0.11	0.16	0.21

Reference: Assembly Resolution A39-3, Paragraph 12



- **Outside CORSIA scope:**
 - Emissions from aeroplane operators emitting less than 10 000 metric tonnes of CO₂ emissions from international aviation per year
 - Emissions from aircraft with less than 5 700 kg of Maximum Take Off Mass (MTOM)
 - Emissions from humanitarian, medical and firefighting operations



- Periodic review will allow the Council to make informed recommendations to the Assembly on whether it is necessary to make adjustments to the next phases of the scheme
 - Periodic review of the CORSIA every three years starting in 2022
 - Special review by the end of 2032 on termination of the scheme, its extension or any other improvements of the scheme beyond 2035

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Phases	Pilot Phase (voluntary, 3 years)			First Phase (voluntary, 3 years)			Second Phase (all non-exempted States, 9 years)								
Compliance cycles	Cycle 1 (3 years)			Cycle 2 (3 years)			Cycle 3 (3 years)			Cycle 4 (3 years)			Cycle 5 (3 years)		
Periodic reviews		Review 1			Review 2			Review 3			Review 4	Special			Review 5
Assemblies		A41			A42			A43			A44				A45

Reference: Assembly Resolution A39-3, Paragraphs 9(g), 16 and 18



PART 2: INTRODUCTION TO ANNEX 16, VOLUME IV



Part I. DEFINITIONS, ABBREVIATIONS AND UNITS

Part II. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION

CHAPTER 1. Administration

CHAPTER 2. Monitoring, Reporting and Verification

CHAPTER 3. CO₂ Offsetting Requirements and Emissions Reductions from CORSIA Eligible Fuels

CHAPTER 4. Emission Units

APPENDICES

APPENDIX 1. Administrative Processes

APPENDIX 2. Fuel Use Monitoring Methods

APPENDIX 3. CO₂ Emissions Estimation and Reporting Methods and Tools

APPENDIX 4. Emissions Monitoring Plans

APPENDIX 5. Reporting

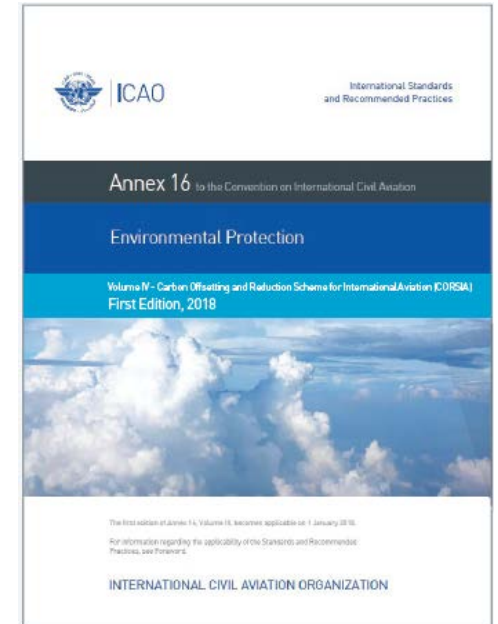
APPENDIX 6. Verification

ATTACHMENTS

Attachment A. Attribution Processes

Attachment B. Applicability of MRV Requirements to International Operations

Attachment C. Processes for Fuel Use Monitoring





CHAPTER 1. INTRODUCTION

CHAPTER 2. GENERAL GUIDELINES

2.1 Applicability of MRV of Annual CO₂ Emissions from an Aeroplane Operator

2.2 Applicability of CO₂ Offsetting Requirements

CHAPTER 3. GUIDELINES ON MONITORING, REPORTING AND VERIFICATION

3.1 Monitoring

3.2 Reporting

3.3 Verification

CHAPTER 4. GUIDELINES ON CALCULATION OF OFFSETTING REQUIREMENTS

4.1 Calculation of Offsetting Requirements During the 2021-2030 Period

4.2 Calculation of Offsetting Requirements During the 2031-2035 Period

4.3 Baseline Emissions from 2019-2020 for Calculation of Offsetting Requirement

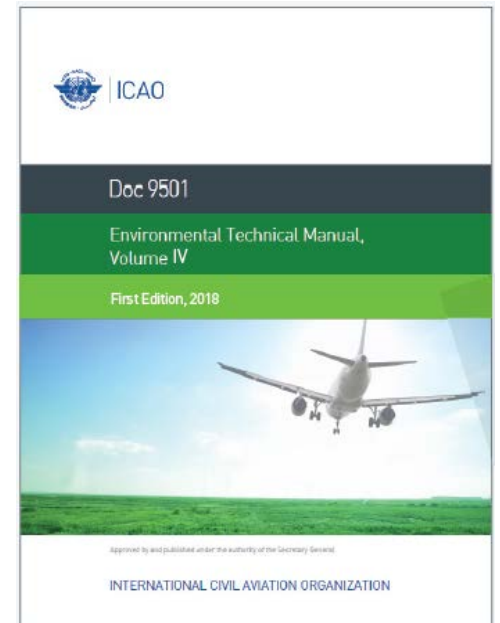
4.4 Sector Growth Factor

CHAPTER 5. ADMINISTRATIVE PARTNERSHIPS UNDER CORSIA

5.1 Example of a Bilateral Agreement

APPENDIX 1.

STANDARDIZED EMISSIONS MONITORING PLAN AND REPORTING TEMPLATES

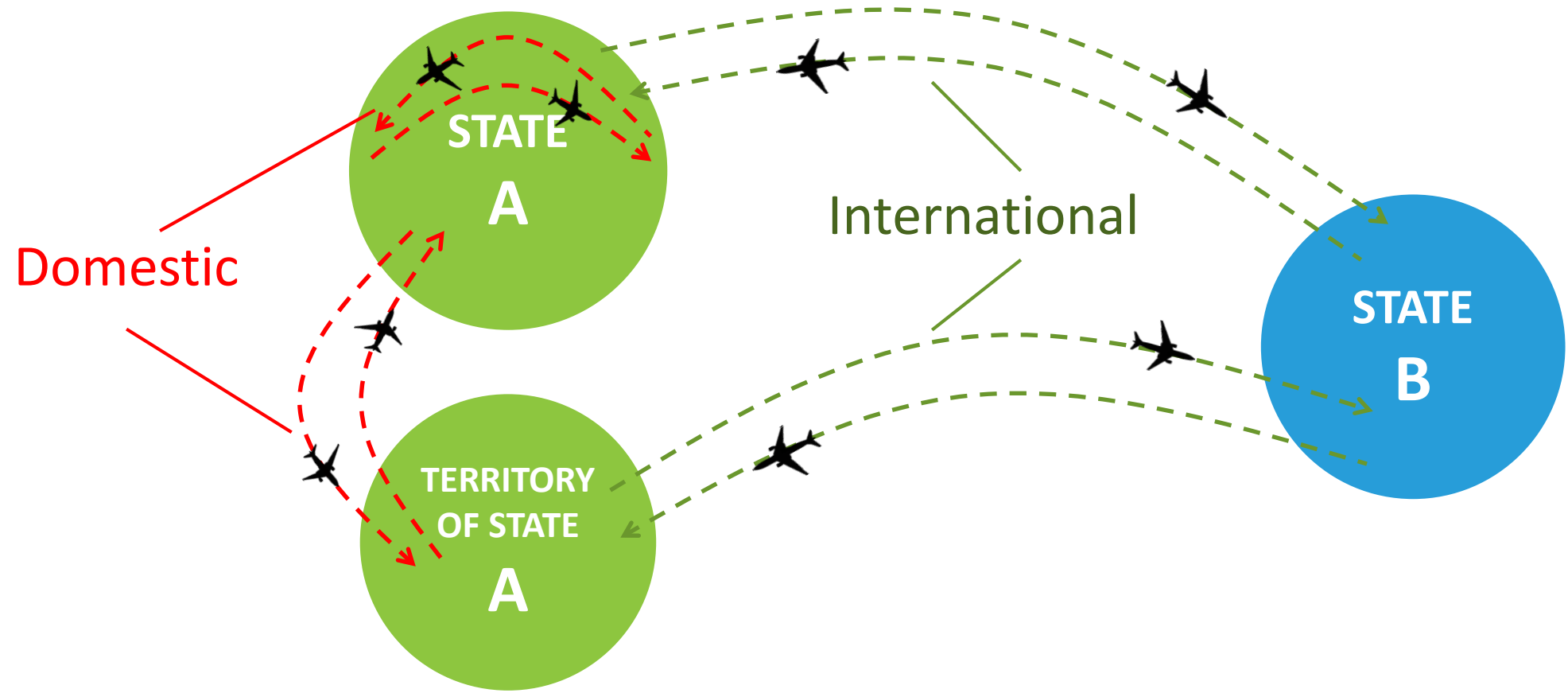




- The CORSIA Implementation Elements are available in separate documents, due to the following characteristics:
 - Nature of the information
 - Availability of the information at the time of adoption
 - Periodicity of the information updates
 - Users of the information
- Different Implementation Elements become available at different points in time:
 - For example, the 2021 version of the CERT became available in December 2021
- Once completed, they are considered for approval by the Council and made available on the ICAO CORSIA webpage



ADMINISTRATIVE ASPECTS



Reference: Annex 16, Volume IV, Part II, Chapter 1, paragraph 1.1.2



FAQ 3.4: How are diverted flights handled in CORSIA?

- Diversion of flights can lead to any of the following scenarios:
 - A flight originally subject to MRV requirements, which continues to be subject to such requirements as a result of the diversion;
 - A flight originally not subject to MRV requirements, which continues not to be subject to such requirements as a result of the diversion;
 - A flight originally subject to MRV requirements, which is no longer subject to such requirements as a result of the diversion; or
 - A flight originally not subject to MRV requirements, which is no longer subject to such requirements as a result of the diversion.
- In any of these scenarios, the actual aerodromes of departure and arrival for a flight, rather than the scheduled ones, will be taken as a reference to determine whether or not that flight is subject to MRV requirements.

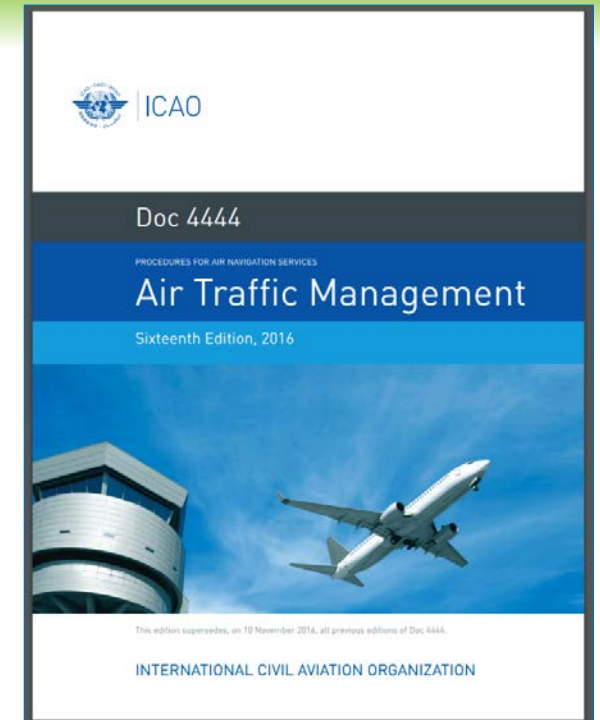


What does a “State pair” mean? Is it uni- or bidirectional?

- In CORSIA, a State pair is being defined as a group of two States composed of a departing State or its territories and an arrival State or its territories.
 - For example, in the CCR, when reporting CO₂ emissions from international flights between States A and B, an aeroplane operator will report both directions as separate State pairs (A-B and B-A).

Attribution based on information in the flight plan form (see Doc 4444, ICAO model flight plan item 7 – Aircraft identification):

- ICAO designator, or
- Registration marks



If none of the above, attribution to the aeroplane owner

ICAO model flight plan form

FLIGHT PLAN PLAN DE VOL			
PRIORITY Priorité FF →		ADDRESSEE(S) Destinataire(s)	
FILING TIME Heure de dépôt		ORIGINATOR Expéditeur	
SPECIFIC IDENTIFICATION OF ADDRESSEE(S) AND/OR ORIGINATOR Identification précise du(des) destinataire(s) et/ou de l'expéditeur			
3 MESSAGE TYPE Type de message (FPL)	7 AIRCRAFT IDENTIFICATION Identification de l'aéronef	8 FLIGHT RULES Règles de vol	TYPE OF FLIGHT Type de vol
9 NUMBER Nombre	TYPE OF AIRCRAFT Type d'aéronef	WAKE TURBULENCE CAT. Cat. de turbulence de sillage	10 EQUIPMENT Equipement
13 DEPARTURE AERODROME		TIME	

Reference: Annex 16, Volume IV, Part II, Chapter 1, paragraph 1.1.3



Attribution of an aeroplane operator based on:

- ICAO designator, or
- Air operator certificate (or equivalent), or
- Place of juridical registration

Reference: Annex 16, Volume IV, Part II, Chapter 1, paragraph 1.2.4

Each State shall submit to ICAO a list of aeroplane operators which are attributed to it – update regularly, as necessary

Reference: Annex 16, Volume IV, Part II, Chapter 1, paragraph 1.2.7

Recommendation: The State should use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions”

Reference: Annex 16, Volume IV, Part II, Chapter 1, paragraph 1.2.3

ICAO Doc 8585



- “Place of juridical registration” refers to the State in which the entity (company or person) is legally registered
 - Jurisdictional clarity in cases of enforcement, such as international court measures
 - The place of juridical registration may differ from the principal place of business
- “AOC (or equivalent)”, is used because in some States the AOC is named differently:
 - The “AOC” refers to an official document issued by a State that gives an aeroplane operator license to operate and that contains the identification of the aircraft operator and may also contain aircraft registration marks
 - The use of general aviation operating certificates and other certificates permitting non-commercial air transport could thus be appropriate as long as these certificates are issued/approved by a State



Who will ensure that aeroplane operators comply with the requirements of Annex 16, Volume IV?

- According to Assembly Resolution A39-3, paragraph 20 j), ICAO Member States will take necessary action to ensure that the national policies and regulatory framework be established for the compliance and enforcement of CORSIA
 - The State is primarily responsible for ensuring that the aeroplane operator complies with the CORSIA requirements



- An aeroplane operator :
 - With a wholly owned subsidiary aeroplane operator, and
 - Legally registered in the same Statecan be treated as a **single consolidated aeroplane operator** liable for compliance with the requirements of Annex 16, Volume IV, **subject to the approval of the State.**
- Evidence shall be provided in the aeroplane operator's Emissions Monitoring Plan to demonstrate that the subsidiary aeroplane operator is wholly owned
 - **The two operators will be administered as a single entity**, and their emissions aggregated. Therefore, the **applicability of the requirements of Annex 16, Volume IV will be based on their aggregated emissions** (*from FAQ 3.10*)

Reference: Annex 16, Volume IV, Part II, Chapter 1, paragraph 1.2.6

- Delegation of administrative processes
 - A State may delegate administration processes to another State through an Administrative Partnership based on a bilateral agreement among the respective States.
 - A State shall **not** delegate enforcement of the requirements in this Volume, or their administrative tasks towards ICAO, to another State.

- Administrative partnerships
 - A State providing capacity support shall notify ICAO about the contracting administrating authorities, affected aeroplane operators, scope and duration of the administrative partnership and a copy of the bilateral agreement.
 - A State receiving capacity support shall ensure that Aeroplane Operators are advised of the administrative arrangements prior to start of the Administrative Partnership and any potential changes thereafter.



- Chapter 5 of the ETM provides an example of a bilateral agreement on an administrative partnership (referred to as the BAAP)
 - Could be used as a template and adjusted, as appropriate
- Ten suggested sections covering all aspects of the cooperation:
 - a) Contracting administrative authorities
 - b) Guiding principles of cooperation
 - c) Basic principles
 - d) Legal grounds
 - e) Language, formalities, deadlines, failure of compliance
 - f) Scope
 - g) Duration
 - h) Notification on non-compliance
 - i) Termination
 - j) Protection of aeroplane operator data



- **Aeroplane Operator**
 - Keep relevant records for a period of 10 years

Recommendation: The aeroplane operator should keep records relevant to its CO₂ emissions per State pair during the 2019-2020 period in order to cross-check its offsetting requirements calculated by the State during the 2030-2035 compliance periods.

- **State**
 - Keep records relevant to the Aeroplane Operator's CO₂ emissions per State pair during the period of 2019-2020 in order to calculate the Aeroplane Operator's offsetting requirements during the 2030-2035 compliance periods.

Reference: Annex 16, Volume IV, Part II, Chapter 1, paragraphs 1.4.1, 1.4.2, 1.4.3



INTRODUCTION TO MONITORING, REPORTING AND VERIFICATION



Monitoring

Monitoring of CO₂ emissions is either based on a Fuel Use Monitoring Method, or the use of the ICAO CORSIA CERT. For the former, each operator has to collect accurate information on the fuel use for each flight and calculate CO₂ emissions by multiplying the amount of fuel used with a conversion factor representing the amount of tonnes of CO₂ produced per tonne of fuel.

Reporting

After monitoring and calculating CO₂ emissions, the necessary information will be reported from aeroplane operators to their State Authority, and from States to ICAO, by using harmonized templates and procedures. ICAO consolidates the CO₂ emissions data, calculates the annual sectoral growth factor, and communicates the growth factor to States.

Verification

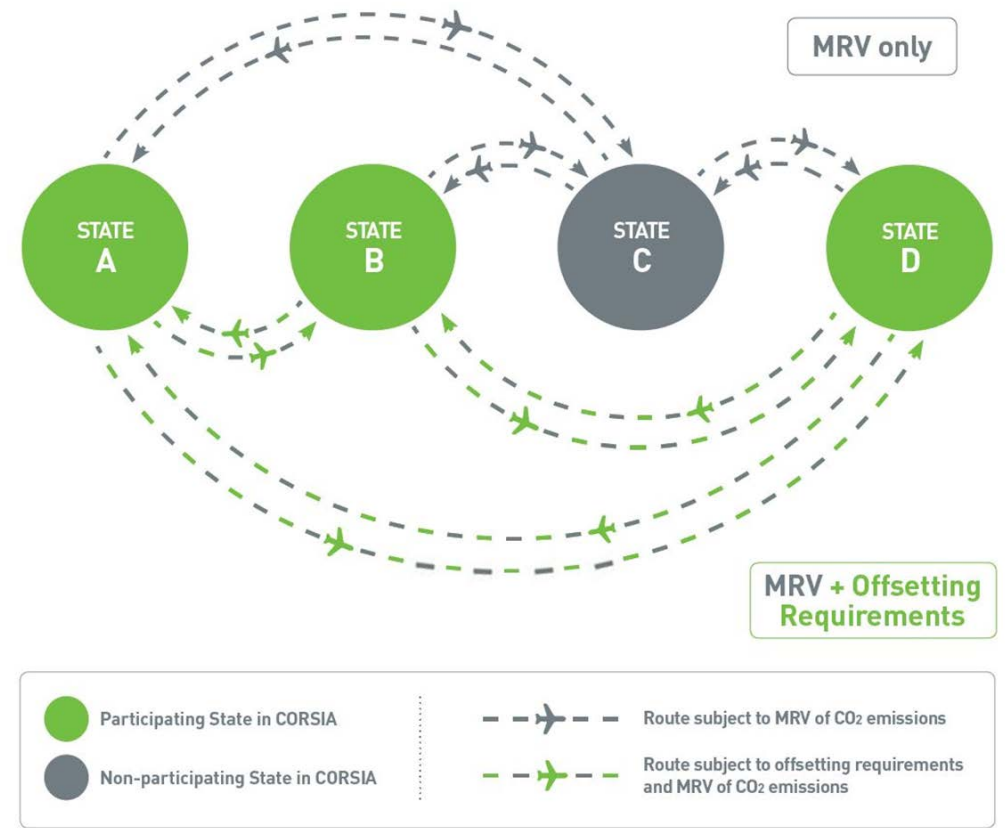
Verification of CO₂ emissions information is to ensure that the data are accurate and free of errors. A very basic idea of verification is that a third party (verification body) checks that everything has been done correctly. Similar to the accounting practices that are performed in the financial world.



- **Monitoring, Reporting and Verification (MRV) is the backbone for the successful implementation of CORSIA, which requires:**
 - Reliable information on CO₂ emissions, and on compliance with offsetting requirements

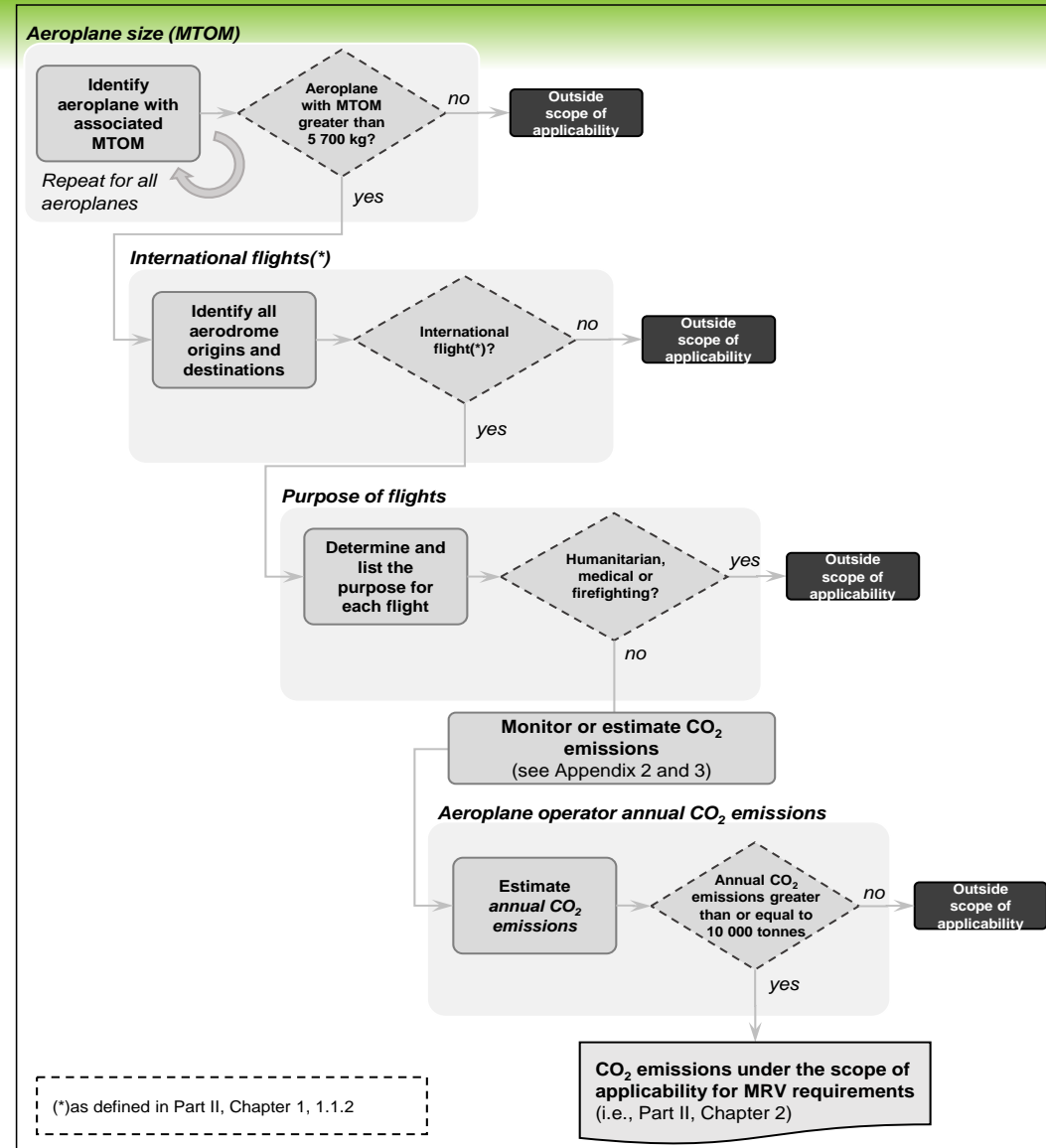
ALL ICAO MEMBER STATES with aeroplane operators conducting international flights are required to monitor, report and verify CO₂ emissions from these flights every year from 2019, independent of their participation in CORSIA.

ICAO MEMBER STATES PARTICIPATING IN CORSIA need to ensure that their aeroplane operators comply with the CORSIA offsetting requirements every three years (starting in 2021), in addition to annual CO₂ MRV.





- From the use of an aeroplane with a maximum certificated take-off mass of greater than 5,700 kg
- Conducting international operations on or after 1 January 2019
- With the exception of:
 - Humanitarian, medical and firefighting operations
 - An operator that produces annual CO₂ emissions greater than 10,000 tonnes



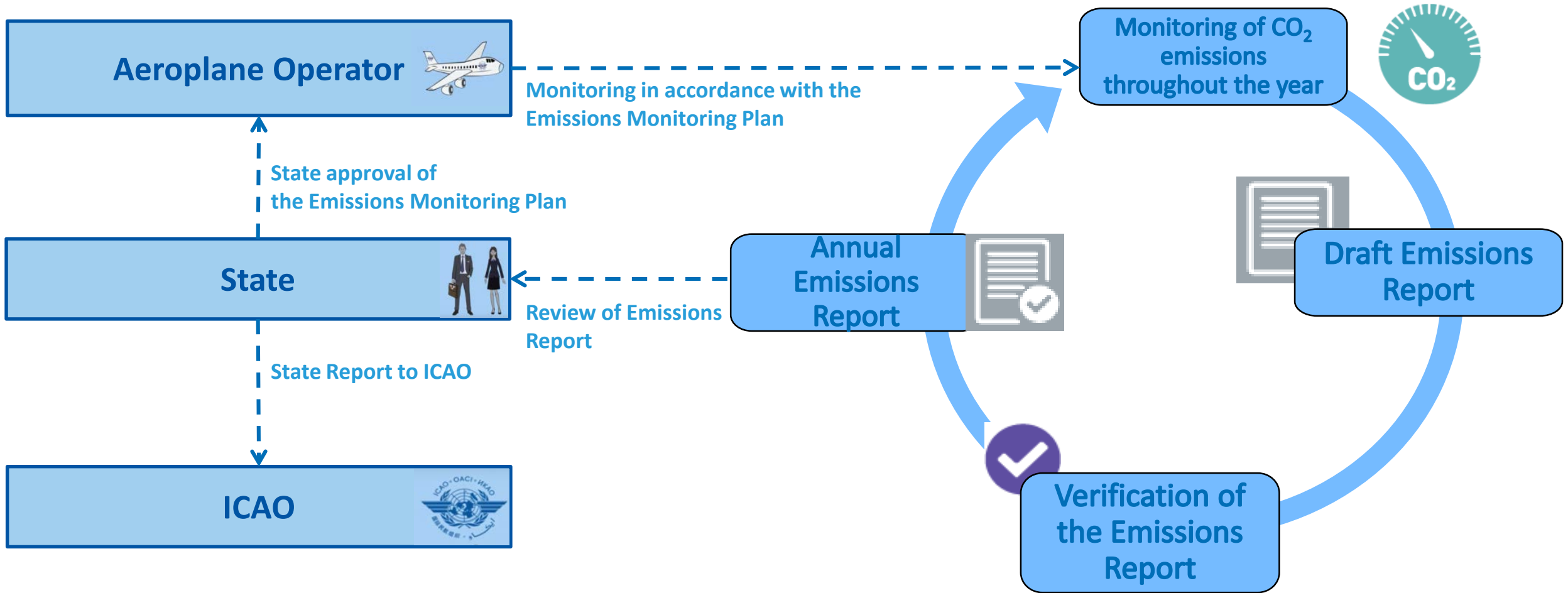
Reference: Annex 16, Volume IV, Part II, Chapter 2, 2.1



FAQ 3.15: Can an aeroplane operator with emissions of less than 10 000 tonnes of CO₂ per year be included in CORSIA?

- If an aeroplane operator below the threshold of 10 000 tonnes of CO₂ is wholly-owned by and legally registered in the same State as another aeroplane operator, the two aeroplane operators can request to be treated as a single operator.
 - In this case the combined emissions of both aeroplane operators could exceed this threshold and become subject to the applicability of the MRV requirements of CORSIA.

- CO₂ emissions from the following are not covered under CORSIA:
 - Aeroplane manufacturers and airports
 - Flights preceding or following a humanitarian, medical or firefighting flights
 - If required to accomplish the humanitarian, medical or firefighting activities or to reposition the aeroplane thereafter. The operator will have to be able to provide evidence of the nature of such flights
 - Helicopter operations
 - International flights from police, military, customs and State aircraft
 - These flights are excluded from the Chicago Convention as per Article 3, and thus are excluded from the scope of CORSIA.





QUESTIONS?



North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



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THANK YOU