EASA
European Union Aviation Safety Agency

EUROPEAN UNION

Overview of MRV Requirements

Working for quieter and cleaner aviation.

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SARPs ANNEX 16, VOLUME IV, CHAPTER 2

CHAPTER 2. — MONITORING, REPORTING AND VERIFICATION (MRV) OF AEROPLANE OPERATOR ANNUAL CO_2 EMISSIONS

- **Applicability of MRV Requirements:** Which operators are affected by MRV requirements?
- **Monitoring of CO2 Emissions:** What data has to be monitored, and how?
- **Reporting of CO2 Emissions:** How to report the data and for what purpose?
- **Verification of CO2 Emissions:** What has to be verified and how?
- **Data Gaps:** How to solve missing data?
- **Error Correction to Emissions Reports:** Final State's responsibility to ensure accuracy

SARPs ANNEX 16, VOLUME IV, CHAPTER 2

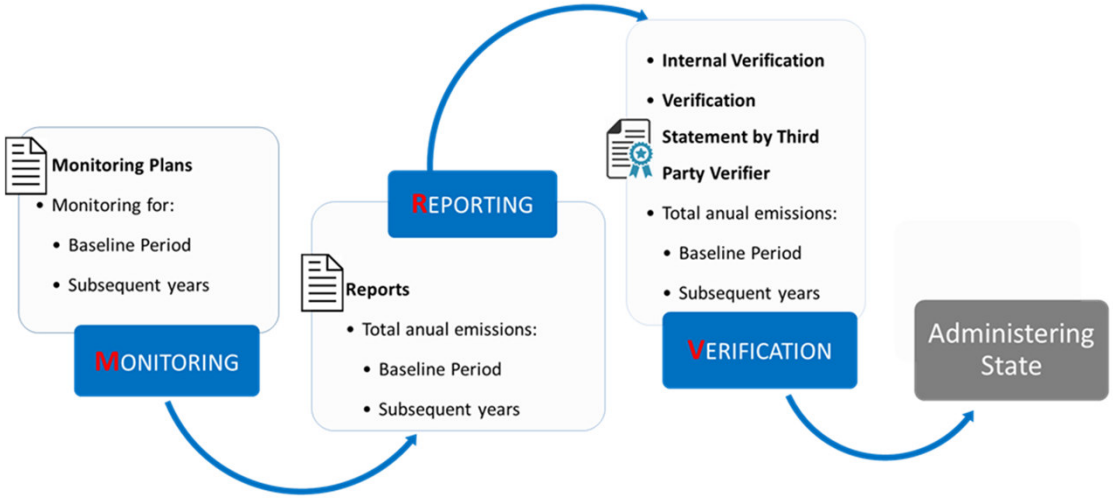
→ Essential to fulfil the requirements from Chapter 3: “CO2 offsetting requirements from international flights and emissions reductions from the use of CORSIA eligible fuels”

CHAPTER 3. — CO_2 OFFSETTING REQUIREMENTS FROM INTERNATIONAL FLIGHTS AND EMISSIONS REDUCTIONS FROM THE USE OF CORSIA ELIGIBLE FUELS

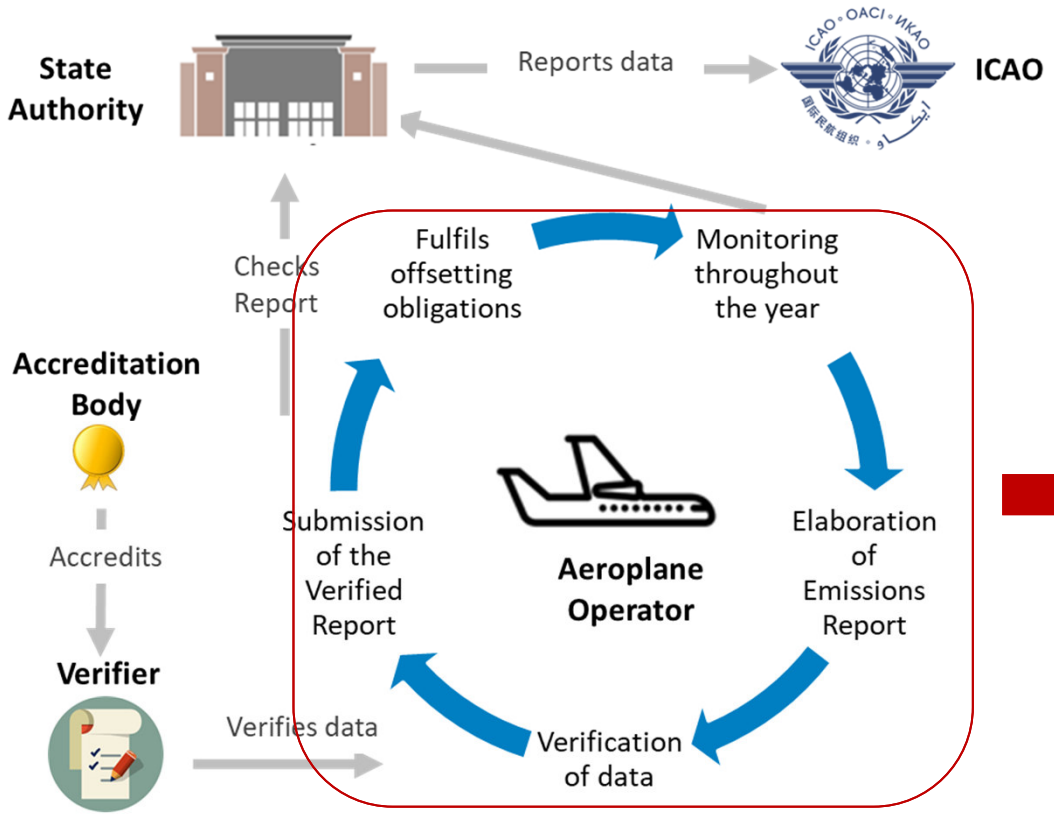
MRV in general

→ A key component of CORSIA implementation

- → Needed to determine the CORSIA baseline
- → Needed to collect information on international aviation CO2 emissions on an annual basis and compare emissions from 2021 against the baseline emissions. Not all flights subject to offsetting requirements



Applicability of MRV Requirements



Who??

Applicability of MRV Requirements

→ MRV requirements apply to aeroplane operators that:

→ Use of airplane with Max. Certified take-off mass of 5,700 Kg.

Flights performed with smaller aircraft not accounted for.

All helicopters + aeroplanes with MTOM ≤ 5,700kg excluded

→ Performs international flights on or after 1/1/2019

Applicability of MRV Requirements

→ Excluding humanitarian, medical & firefighting

(Also the preceding or following flight if performed with same aeroplane and was required the humanitarian, medical or firefighting flight or to reposition the aeroplane for its next activity)

Civil operations: Scheduled flights, Non-scheduled flights, Cargo, Business aviation, General aviation are covered

Heads of State flights, Military, Customs and police not covered

→ **Considering all the above, it produces > 10,000 tonnes of CO2**

Equivalent to aprox. 4 million litres of fuel

Applicability of MRV Requirements

Attachment B-1
Annex 16 Volume IV

Illustration of the process for determination of the applicability of MRV requirements

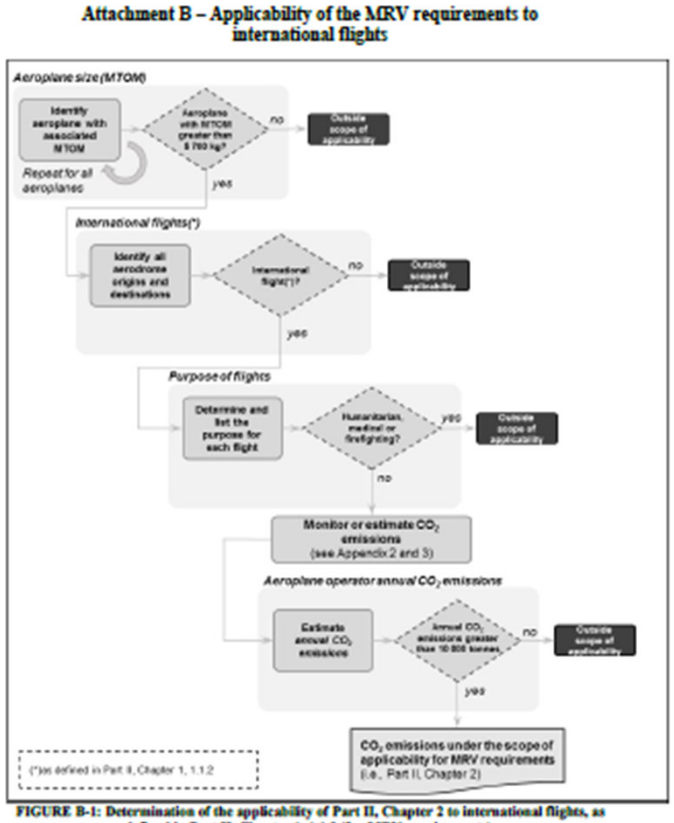


FIGURE B-1: Determination of the applicability of Part II, Chapter 2 to international flights, as defined in Part II, Chapter 1, 1.1.2 (for MRV requirements).

Guidance in chapter 2.1 of the ETM Doc 9501

Monitoring of CO2 Emissions

- → All aeroplane operators with CORSIA MRV requirements are required to monitor, report and verify CO2 emissions from international flights every year starting on 1 January 2019
- → The aeroplane operator **monitors and records fuel use** from international flights
- → Requirement for the MRV of CO2 emissions is independent from CORSIA offsetting

Monitoring of CO2 Emissions

- **Who monitors?:** The aeroplane operator
- **When?:** Every year. Starting in 2019
- **How?:** According to a CORSIA Fuel Monitoring Method or CORSIA Estimation Tool
- **Tool:** Emissions Monitoring Plan
- **Where to look:**
  - Annex 16 Volume IV Chapter 2 2.1-2.2. Appendix 2,3 and 4. Attachment B-2, Attachment B-3, Attachment C
  - ETM Doc 9501 Chapter 3.1 and Appendix 1.1

Applicability of MRV Requirements

→ MRV requirements apply to **new entrants** the year after it reaches the 10,000 tCO2 threshold

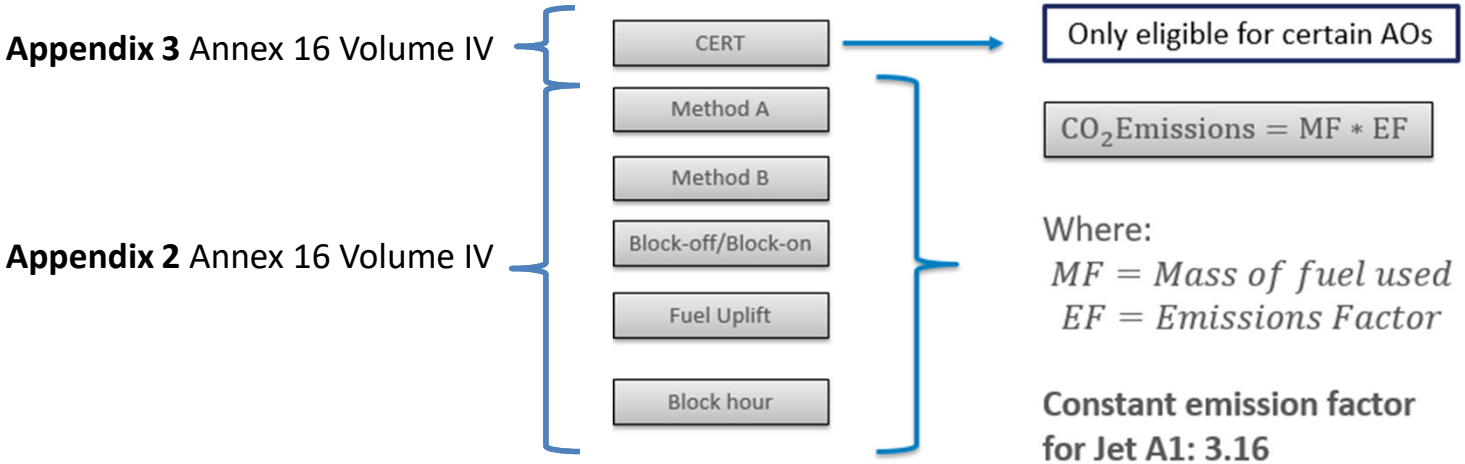
What is a new entrant? ➡ Any aeroplane operator that commences an aviation activity falling within the scope of CORSIA on or after its entry into force and whose activity is not in whole or in part a continuation of an aviation activity previously performed by another aeroplane operator

Monitoring of CO2 Emissions

→ Two possible ways of monitoring, depending on volume of emissions of the operator:

→ Using one of the five CORSIA Fuel Use Monitoring Methods and then calculating CO2 emissions from the fuel use.

→ ICAO CORSIA CO2 Estimation and Reporting Tool (CERT)



Monitoring of CO2 Emissions

→ In periods 2019-2020 and 2021-2035, the criteria to determine the method, is different:

→ **2019-2020 (baseline period *)** : An aeroplane operator with annual CO2 emissions from international flights ≥ 500,000 tCO2 are required to choose one of the five eligible “Fuel Use Monitoring Methods”.

If < 500,000 tCO2, operators can use the ICAO CORSIA CERT for estimating and reporting its CO2 emissions under CORSIA

If it overpasses the threshold, the State shall permit using the same method

* ICAO Council decided in June 2020 that the value of 2019 emissions shall be used for 2020 emissions in the baseline calculation

Monitoring of CO2 Emissions

→ In periods 2019-2020 and 2021-2035, the criteria to determine the method, is different:

→ **2021-2035** The eligibility threshold changes!: An aeroplane operator with annual CO2 emissions from international flights **subject to offsetting requirements** ≥ 50,000 tCO2 is required to choose one of the five eligible "Fuel Use Monitoring Methods". However, it can still use the ICAO CORSIA CERT to estimate and report the CO2 emissions from international flights **not covered by offsetting requirements**.

If < 50,000 tCO2, the operator can use the ICAO CORSIA CERT for estimating and reporting its CO2 emissions under CORSIA

If it passes the threshold, it shall change to one of the Fuel Monitoring Methods.

Monitoring of CO2 Emissions

- The operator **must use the same eligible Fuel Use monitoring method for the entire compliance period**. It can use different Monitoring Methods for different aeroplane types included in its fleet
- It is recommended to use the same monitoring method for the 2019 – 2020 period that it expects to use during the 2021 – 2023 period
- Each method uses different fuel measurement points

Monitoring of CO2 Emissions

Attachment B-2
Annex 16 Volume IV

Illustration of the process for determination of eligible Fuel Use Monitoring Method during 2019-2020

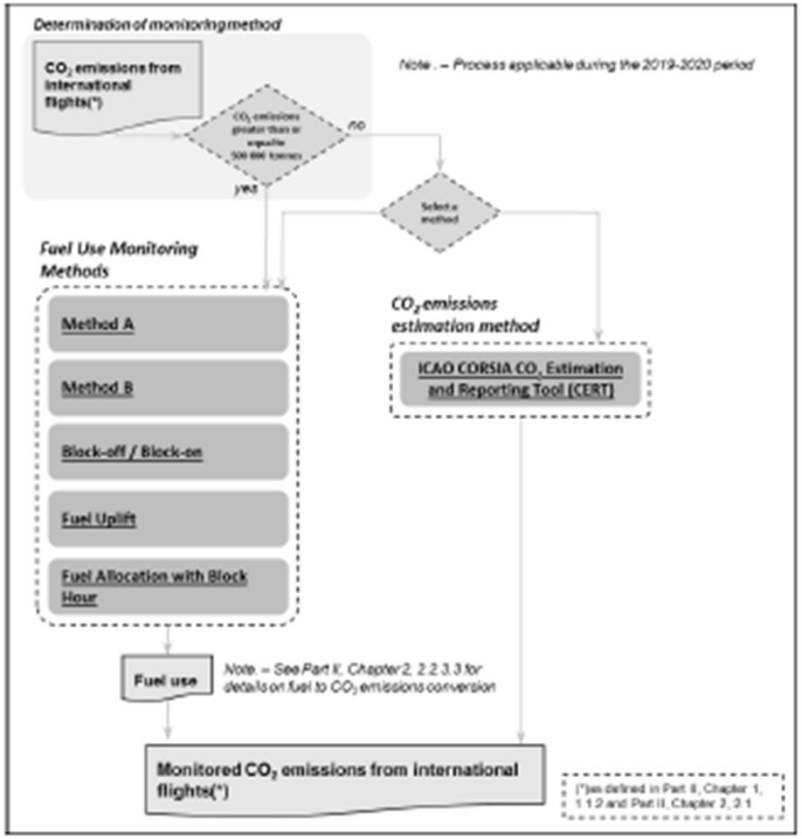


FIGURE B-2: Determination of eligible Fuel Use Monitoring Methods during the 2019-2020 period

Monitoring of CO2 Emissions

Attachment B-3
Annex 16 Volume IV

Illustration of the process for determination of eligible Fuel Use Monitoring Method during 2021-2035

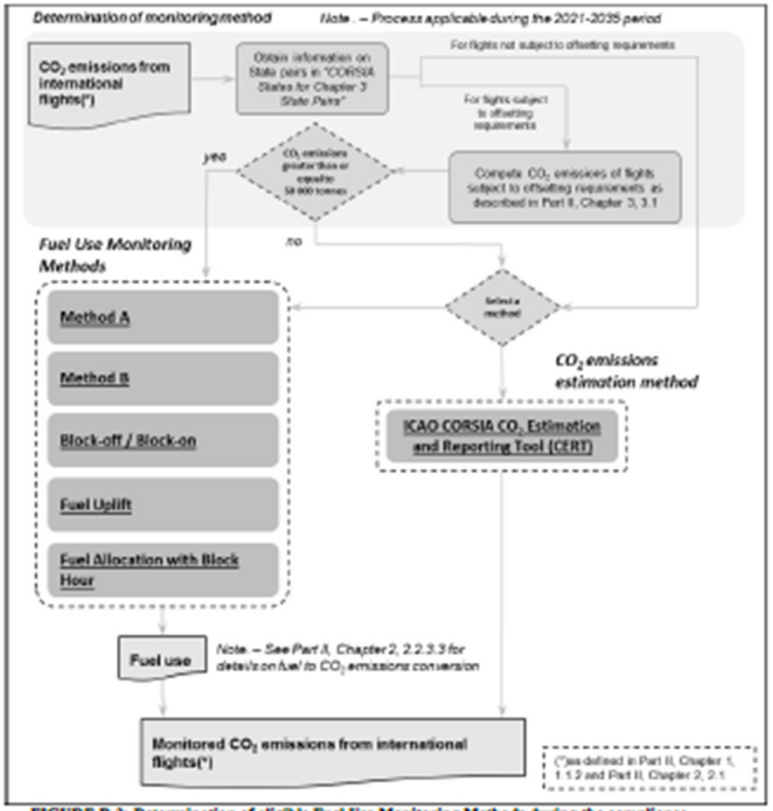


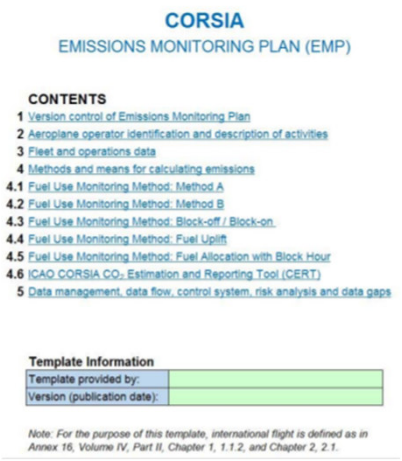
FIGURE B-3: Determination of eligible Fuel Use Monitoring Methods during the compliance periods (2021-2035)

Emissions Monitoring Plan (EMP)

What is a Monitoring Plan?

Tool by which the operator identifies the most appropriate means and methods for CO2 emissions monitoring and record of fuel use

- → The aeroplane operator has to to submit an Emissions Monitoring Plan to the State to which it is attributed. First submission deadline was 28 February 2019. In case of a new entrant, within three months of falling within the MRV requirements.
- → The State had to approve it by 30 April 2019



CORSIA

EMISSIONS MONITORING PLAN (EMP)

CONTENTS

Template Information

Template provided by:	
Version (publication date):	

Note: For the purpose of this template, international flight is defined as in Annex 16, Volume IV, Part II, Chapter 1, 1.1.2, and Chapter 2, 2.1.

Emissions Monitoring Plan (EMP)

- → It shall contain the information as detailed in Appendix 4 of Annex16 Volume IV
- → Guidance material on Emissions Monitoring Plans is included in the Environmental Technical Manual (ETM), Volume IV
- → To be submitted only once unless there are material changes to the operator's procedures. In that case the operator will have to re-submit the Emissions Monitoring Plan to the State Authority for approval
  - → Example of Material changes:
  - A change that would affect the eligibility of an aeroplane operator for an option under the emissions monitoring requirements;
  - A change in the identifying information for attributing the aeroplane operator to a State, or a change in the means for having international flights attributed to the operator.
- → The aeroplane operator shall also inform the State of changes that would affect the State's oversight, for example a change of name or address

Monitoring of Fuel Density

- The operator has to apply Fuel Density Factor to calculate fuel mass
- Fuel density value may be:
  - An actual value
  - A standard value of 0.8 kg per litre
- Guidance material on Fuel Density is included in the Environmental Technical Manual (ETM), Volume IV
- Calculation:

$$CO_2 = \sum_f M_f * FCF_f$$

where:

CO_2 = CO_2 emissions (in tonnes);

M_f = Mass of fuel f used (in tonnes); and

FCF_f = Fuel conversion factor of given fuel f, equal to 3.16 (in kg CO_2/kg fuel) for Jet-A fuel / Jet-A1 fuel and 3.10 (in kg CO_2/kg fuel) for AvGas or Jet-B fuel.

Monitoring of CORSIA Eligible Fuels

- Apart from Jet-A, Jet-A1 and AvGas or Jet-B Fuel, the operator can use alternative **Eligible Fuels** and claim the emission reductions as long as they comply with the CORSIA sustainability criteria. These fuels must be from producers that are certified by an ICAO approved Sustainability Certification Scheme
- As these fuels might not be physically used in the aeroplane of the operator, monitoring will be based on purchasing and blending records

Reporting of CO2 Emissions

- **Who reports?:** The aeroplane operator and the State
- **When?:** Every year. Starting in 2020 (for 2019 data)
- **Tool:**
  - Aeroplane Operator Emissions Report
  - State Report
- **Guidance:**
  - Annex 16 Volume IV Chapter 2 2.3-2.2. Appendix 5.
  - ETM Doc 9501 Chapter 3.2 and Appendix 1.2

Reporting of CO2 Emissions

- → Starting in 2020 the operator had to submit to the State a copy of a Verified Emissions Report and a copy of an associated Verification Report by 31 May (From 2022 it should be by 30 April)
- → Based on the State's decision, the operator will report on State pair basis (e.g.: France-Senegal) or aerodrome país basis (e.g: Paris-Dakar)
- → If the operator reports consolidated data from its subsidiaries, it has to append disaggregated data
- → The aeroplane operator may request to its State of not to publish data

Verification of CO2 Emissions

- **Who verifies?:** The aeroplane operator (recommended) , a Verification Body and the State
- **When?:** Every year. Starting in 2020 (for 2019 data), now 2021 for 2020 data
- **Tool:**
  - Emissions Report and Verification Report (contains the verification statement and required supporting information)
  - Emission Cancellation Reportand Vertification Report
- **Guidance:**
  - Annex 16 Volume IV Chapter 2 2.4. Appendix 6.
  - ETM Doc 9501 Chapter 3.3
  - ISO 14064-3:2006, ISO 14065:2013

Verification of CO2 Emissions

- Verification of CO2 emissions is to ensure that the data is accurate and free of errors
- The operator shall engage a VB, from the list of accredited bodies, within the ICAO document “CORSIA Central Registry (CCR): Information and Data for Transparency”, latest Version, June 2021
- The aeroplane operator is recommended to conduct a verification of its data before submitting it to the VB. It does not replace the requirement for third-party verification.
- The verification body must be accredited to ISO Standard 14065:2013 (Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition) and additional CORSIA-specific requirements.

Verification of CO2 Emissions

- The VB must be Accredited by a National Accreditation Body (NAB), who shall be working in accordance with ISO/IEC 17011 (Conformity assessment — Requirements for accreditation bodies accrediting conformity assessment bodies)

- The VB is required to conduct the verification according to ISO Standard 14064-3:2006

- The State has to perform an order of magnitude check of the Emissions Report, starting in 2020, from June to August.

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