



CIVIL AVIATION REQUIREMENTS

SECTION 10 – AVIATION ENVIRONMENT PROTECTION SERIES ‘C’ PART I

CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)

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Director General of Civil Aviation
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RECORD OF REVISION

This CAR has been issued to formulate regulations towards MRV and offsetting requirements for all aeroplane operators based on International Civil Aviation Organization's International Standards and Recommended Practices (SARPs) as contained in Annex-16, Environmental Protection, Volume-IV "Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)". The CAR has been developed in line with the first edition of the offsetting requirements as proposed by Committee on Aviation Environmental Protection (CAEP) based on the deliberations held in various meetings and their final recommendations contained in the above ICAO Annex. The Record of Revisions to the aforesaid CAR will be mentioned as follows:

Sl. No.	Issue Number	Revision Number	Date	Remarks
1.	Issue - I	Revision - 0	XX/09/2018	Initial issue of CAR to adopt monitoring, reporting and verification (MRV) and offsetting requirements as contained in Annex-16, Volume-IV.

INTRODUCTION

Rule 29C of the Aircraft Rules, 1937 stipulates that the Director-General may lay down standards and procedures not inconsistent with the Aircraft Act, 1934 (22 of 1934) and the rules made thereunder to carry out the Convention and any Annex thereto. This Civil Aviation Requirements (CAR) is issued in compliance to Section 5A sub-section 1 of the Aircraft Act, 1934 in conjunction with rule 29C of the Aircraft Rules 1937.

This CAR stipulates the general requirements, procedures and practices to be adhered to by all stakeholders/organizations that are engaged in international operations which directly or indirectly impact climate change. The objective of this CAR is to manage the adverse impact of aviation activities on the atmosphere leading to sustainable growth of the industry by offsetting the carbon emissions generated due to international operations of their flights. With the objective of compliance with the above mentioned rules, CAR, Section-10, Series-C, Part-I has been developed based on the International Standards and Recommended Practices (SARPs) contained in ICAO Annex-16, Volume-IV.

This CAR is issued under the provisions of Rule 133A of the Aircraft Rules, 1937, for information, guidance and compliance by all such organizations who operates flights to international destinations or intend to operate flights to such international destinations in future under the provisions mentioned in this CAR.

The requirements contained in this CAR are in-line with the requirements as mentioned in ICAO Annex-16, Volume-IV. It prescribes applicability, monitoring, reporting and verification (MRV) of aeroplane operator annual CO₂ emissions, CO₂ offsetting requirements from international flights, emissions reductions from the use of sustainable aviation fuels, requirements for verification and verification bodies, purchase and cancellation of emissions units, and compliance procedure to the above requirements.

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CHAPTER – 1: INTRODUCTION.

1. Introduction to Carbon Offsetting and Reduction Scheme for International Aviation:

- 1.1 The 39th ICAO General Assembly, held in October 2016, concluded with the adoption of a global market-based measure scheme to address CO₂ emissions from international aviation, known as “**Carbon Offsetting & Reduction Scheme for International Aviation (CORSIA)**” which was approved by ICAO Council on 27th June, 2018. This market-based measure was adopted based on ICAO’s aspirational goal of Carbon Neutral Growth beyond 2020.
- 1.2 In 2010, ICAO set three aspirational goals to address its climate impact:
 - i) An annual improvement of 2% in fuel efficiency from 2009 until 2020,
 - ii) To achieve Carbon Neutral Growth from 2020 to stabilize the net CO₂ emissions, and
 - iii) Reduction of carbon emissions by 50% by 2050 compared to 2005 levels.
- 1.3 Under CORSIA, aeroplane operators are required to purchase and cancel “emissions units” to offset the increase in CO₂ emissions covered by the scheme. With the exceptions of humanitarian, medical and fire-fighting flights, all civilian international operations undertaken by aeroplane operators are covered by CORSIA. CORSIA aims to address any annual increase in total CO₂ emissions from international civil aviation above the baseline value (based on the average of 2019 and 2020 emissions levels) in order to avoid the impact of any unusual fluctuations in air traffic in 2020 levels.

2. CORSIA Design Elements:

- 2.1 CORSIA scheme has mainly two design elements, viz., Monitoring, Reporting & Verification (MRV) and Offsetting. MRV is a system to capture fuel consumptions from international operations by an operator and, to calculate the carbon emissions thereon for reporting to DGCA annually. Whereas, in offsetting, an operator is required to offset its carbon emissions from its international operations which is due to increase in emissions levels compare to the baseline emissions value.
- 2.2 **Monitoring, Reporting & Verification (MRV):** One of the main features of CORSIA is MRV system:
 - **Monitoring** of fuel use on each international flight and calculation of CO₂ emissions,

- **Reporting** of CO₂ emissions information between aeroplane operators, DGCA and ICAO, and
 - **Verification** of reported emissions data to ensure completeness and to avoid misstatements.
- 2.3 The foremost requirement under this scheme is to monitor, verify and report the fuel consumptions and emissions data from international routes. All operators, who are engaged in international operations, have to capture their fuel consumption and carbon emissions data annually, starting from 1st January, 2019 every year. Requirement for the MRV of CO₂ emissions is independent from participation in CORSIA offsetting. The emissions data calculated from fuel used on international routes by all operators globally for the year 2019 and 2020 will be used exclusively by ICAO to calculate the baseline emissions value which will be used in the subsequent years for calculation of growth in emissions levels for calculation of offsetting requirements.
- 2.4 **Offsetting Requirements:** While the reporting of emissions will take place on an annual basis, offsetting requirements will be aggregated by 3-year compliance period. For every compliance cycle, operators will need to offset and cancel a quantity of eligible emissions units corresponding to their offsetting requirements. DGCA will notify operators of their final offsetting requirements for each 3-year period by 30th November of the following year. Operators will, however, also be informed on an annual basis (also by 30th November) of the provisional offsetting requirements associated with each individual compliance year.
- 2.5 **Compliance Period:** The offsetting requirements need to be fulfilled by the operators during each compliance period which is of three years duration. There are five, 3-year compliance periods, as follows, starting from 2021:
- 2021-2023: Pilot phase,
 - 2024-2026: First phase, and
 - 2027-2029, 2030-2032, 2032-2035: Second phase.
- 2.6 **Allocation of Offsetting Requirements:** The allocation of offsetting requirements will evolve over time from a “sectoral” approach to a combination of a “sectoral” and an “individual” component. The sectoral component is based on the total CO₂ emissions of each operator. Each operator will have to offset a given percentage of its CO₂ emissions from flights subject to offsetting requirements. This percentage, the sector’s “growth factor”, will be the same for all operators and refers to the increase in CO₂ emissions divided by the total CO₂ emissions on routes covered by CORSIA in a given year.

- 2.7 **Phased Implementation:** In order to address the concerns of developing states and to take into account the special circumstances and respective capabilities of states, CORSIA will be implemented in phases. The phased implementation, however, only relates to offsetting requirements.
- 2.8 **Pilot Phase (2021-2023) and First Phase (2024-2026):** The Pilot and First phases are voluntary in nature and will apply to only those states that opt to participate in these phases. From 2021 until 2026, offsetting requirements will only apply to international flights between states that volunteer to participate in the pilot and/or first phase. Any operator flying between volunteering states will be subject to offsetting requirements, irrespective of participation of their State in the voluntary phases. All other international flights to and from states that have not volunteered; will be exempt from offsetting requirements.
- 2.9 **Second Phase (2027 – 2035):** The Second phase is mandatory in nature and will apply to all those states who meets the RTK criteria or the exempted states who volunteers to participate in the scheme. From 2027, offsetting requirements will apply to all international flights including those that did not volunteer to be part of the pilot/first phases.
- 2.10 The Second Phase of CORSIA applies to all ICAO Member States except to those States that meet the following aviation-related criteria:
- States with individual share of international aviation activities in Revenue Tonne Kilo meters (RTKs), in year 2018 below 0.5 per cent of total RTKs, and
 - States that are not part of the list of States that account for 90 per cent of total RTKs when sorted from the highest to the lowest amount of individual RTKs.
- 2.11 **Voluntary Participation:** States who wish to participate in CORSIA voluntarily, can decide to join the scheme at the beginning of any year, however, they shall communicate their decision to ICAO before 30th June of the preceding year. States who decide to participate in CORSIA on a voluntary basis may discontinue their voluntary participation from the scheme from 1st January of any given year, provided they inform ICAO not later than 30th June of the preceding year. The list of such participating States will be published on ICAO website who intend to voluntarily participate in CORSIA from its outset.
- 2.12 **Route-based Approach:** CORSIA shall apply to all international flights on the routes between two States participating in the CORSIA for offsetting requirements, in order to have complete emissions coverage and to minimizing market distortion.

CHAPTER – 2: ADMINISTRATION.

1. Attribution of international flights to an aeroplane operator:

- 1.1 As the scheme is applicable to international flights only, as a first step, all aeroplane operators have to identify their flights operating on international routes. For the purposes of this CAR, two or more consecutive international flights, operated under the same flight number, are considered as separate flights.
- 1.2 The aeroplane operators shall either use ICAO Designator or Registration Marks to determine the attribution of such international flights. In case, an international flight could not be identified based on its ICAO Designator or Registration Mark, that flight shall be attributed to the owner of the aeroplane.
- 1.3 The aeroplane operators shall provide a list of such identified international flights along with proper evidence of such identification to DGCA. DGCA shall perform the required order of magnitude checks to ensure correct attribution of all international flights to the respective aeroplane operators, if required.

2. Attribution of an aeroplane operator to a State:

- 2.1 The aeroplane operator shall also ensure correct attribution towards the State to which the aeroplane operator fulfils its operational requirements by using either ICAO Designator or Air Operator Certificate (AOC). In case, an aeroplane operator does not possess an ICAO Designator or Air Operator Certificate, the State where the aeroplane operator is registered as juridical person or reside, shall be considered for its attribution purpose.
- 2.2 In case, the aeroplane operator changes its ICAO Designator, AOC or place of juridical registration/residence and is subsequently attributed to a new State, but it is not establishing a new entity or a subsidiary, then the new State shall become the State to which the aeroplane operator fulfils its requirements under this CAR at the start of the next compliance period. Till such time, the aeroplane operator shall demonstrate compliance with the requirements of this CAR to DGCA only.
- 2.3 The aeroplane operator with a wholly owned subsidiary aeroplane operator that is legally registered with DGCA, can submit a request to DGCA for treating both the operators as a single entity for demonstrating compliance with the requirements of this CAR. DGCA may consider their request provided the aeroplane operator submits substantiation documents to demonstrate that the subsidiary aeroplane operator is wholly owned by the parent organization.

3. CORSIA Focal Point:

- 3.1 The aeroplane operator shall designate a Focal Point in their respective organizations duly approved by their management. Names and Contact details of such Focal Points shall be submitted to DGCA for approval.
- 3.2 The Focal Point should possess sound knowledge of CORSIA and related environmental protection matters.
- 3.3 The Focal Point shall act as the contact person for DGCA for all CORSIA related issues and shall be responsible for submission of all data, information, reports as and when required under CORSIA. The Focal Point shall be also responsible for demonstrating compliance to the requirements contained in this CAR.

4. Record Keeping:

- 4.1 The aeroplane operator, responsible for demonstrating compliance to the requirements contained in this CAR, shall maintain all relevant records pertaining to their fuel consumption and corresponding emissions data for at least 15 years.
- 4.2 The aeroplane operator should also maintain and keep all records relevant to its CO₂ emissions per State and Aerodrome pair submitted to DGCA for the 2019-2020 period for the purpose of calculating its offsetting requirements during the 2030-2035 compliance periods.

5. Compliance Periods and Timeline:

- 5.1 The aeroplane operators shall comply with the requirements as contained in this CAR and shall adhere strictly with the timeline provided by DGCA from time to time.

6. Equivalent Procedures: Reserved.

7. Oversight by DGCA:

- 7.1 DGCA may carry out oversight of the aeroplane operators regarding their correct attribution to the State and international flights, annual fuel and emissions related data from international operations, Emissions Monitoring Plan, Annual Emissions Report, Emissions Unit Cancellation Report, data management, data gaps and record keeping, as and when required. DGCA may, at any time, ask for additional substantiation data from the aeroplane operators in this regard.

CHAPTER – 3: MONITORING, REPORTING AND VERIFICATION (MRV) OF AEROPLANE OPERATOR ANNUAL CO₂ EMISSIONS.

1. Applicability of MRV Requirements:

- 1.1 The requirements of this chapter shall be applicable to all aeroplane operators including scheduled operators, non-scheduled operators and those operating under general aviation that produces annual CO₂ emissions greater than 10,000 tonnes from international operations using an aeroplane(s) with a maximum certificated take-off mass greater than 5,700 kg, on or after 1 January 2019 onwards.
- 1.2 The requirements of this chapter shall not apply to those aeroplane operator whose annual CO₂ emissions from international flights, is less than 10,000 tonnes. However, in order to monitor their annual emissions from international flights, the aeroplane operator shall submit relevant data pertaining to their fuel consumption from international operations to DGCA on annual basis as per the template provided by DGCA.
- 1.3 The requirements of this chapter shall not apply to international flights, preceding or following, a humanitarian, medical or fire-fighting flight provided such flights were conducted with the same aeroplane and were required to accomplish the related humanitarian, medical or fire fighting activities or to reposition thereafter the aeroplane for its next activity.
- 1.4 The aeroplane operator shall have to provide enough supporting evidence of such flights to DGCA and the verification body for verification purpose, in order to consider these flights exempted under MRV requirements.
- 1.5 The requirements of this chapter shall be also applicable to an aeroplane operator who starts its international operations after 1st January, 2019 (i.e., a New Entrant). However, a new entrant will be liable for monitoring, reporting and verification requirements from the 1st January of the next year after its annual CO₂ emissions from international operations exceeds 10,000 tonnes in the preceding year.
- 1.6 Aeroplane operator whose annual CO₂ emissions value is very close to the threshold value of 10,000 tonnes CO₂ emissions from international flights, should approach DGCA for further necessary guidance for demonstrating compliance to the aforesaid requirements..

2. Monitoring of CO₂ Emissions:

- 2.1 As a part of requirements, all aeroplane operators shall monitor their annual fuel consumption and emissions data from international operations from 1st January, 2019 onwards. For the monitoring purposes, the aeroplane operator has to establish a monitoring procedure and shall be properly document it in their Emissions Monitoring Plan (EMP) with reference to their internal document. The Emissions Monitoring Plan (EMP) containing necessary information about the monitoring and reporting about the fuel used and corresponding emissions data from all international flights, shall be submitted to DGCA for approval.
- 2.2 For the details of the information to be contained in the Emission Monitoring Plan, all aeroplane operators shall use the template developed by DGCA for preparing their EMP. The EMP shall be approved by DGCA and the aeroplane operators shall strictly follow the monitoring procedure as mentioned in their approved EMP.
- 2.3 The aeroplane operators whose annual carbon emissions is less than 10,000 tonnes, shall establish a simplified procedure to monitor their fuel consumption data from international operations and shall use a simplified EMP provided by DGCA and shall continue using the same template till their CO₂ emissions exceeds the threshold value of 10,000 tonnes annually.
- 2.4 **For 2019-2020 period:** The aeroplane operator with annual CO₂ emissions from international flights, greater than or equal to 5,00,000 tonnes shall use a Fuel Use Monitoring Method as prescribed in Chapter-1 of the Guidance Material on Civil Aviation Requirements (Document No. 02/2018/CORSIA).
- 2.5 The aeroplane operator with annual CO₂ emissions from international flights, less than 5,00,000 tonnes shall either use a Fuel Use Monitoring Method or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) which is described in Chapter-2 of the Guidance Material on Civil Aviation Requirements (Document No. 02/2018/CORSIA).
- 2.6 However, if the annual CO₂ emissions increases above the threshold of 5,00,000 tonnes during 2019, DGCA may allow the operator to continue with the use of CERT for 2020 also, based on a written request from the aeroplane operator.
- 2.7 The aeroplane operator should use the same monitoring method during the 2019-2020 period that it expects to use during the 2021-2023 period, taking into account the projected annual CO₂ emissions for the period 2021-2023. In case, the aeroplane operator desires to change its monitoring method, it will submit a

revised Emissions Monitoring Plan to DGCA by 30th September 2020 in order to implement the new monitoring method from 1st January 2021 onward.

- 2.8 In case, the aeroplane operator's Emissions Monitoring Plan is found to be incomplete and/or inconsistent with the eligible Fuel Use Monitoring Method, DGCA shall direct the aeroplane operator to resubmit the Emissions Monitoring Plan by amending the EMP with correct information.
- 2.9 DGCA may allow the operator to use CERT till 30th June 2019, in case, the aeroplane operator does not have sufficient information to select an appropriate Fuel Use Monitoring Method. However, the aeroplane operator shall submit an Emissions Monitoring Plan to DGCA within 30th June, 2019.
- 2.10 **For 2021-2035 period:** The aeroplane operator, with annual CO₂ emissions from international flights subject to offsetting requirements, greater than or equal to 50,000 tonnes, shall use a Fuel Use Monitoring Method for those flights. However, for international flights not subjected to offsetting requirements, the aeroplane operator shall either use a Fuel Use Monitoring Method or CERT.
- 2.11 The aeroplane operator, with annual CO₂ emissions from international flights subject to offsetting requirements, less than 50,000 tonnes, shall either use a Fuel Use Monitoring Method or CERT. However, if the aeroplane operator's annual CO₂ emissions from international flights subject to offsetting requirements, increases above the threshold of 50,000 tonnes in two consecutive years, the aeroplane operator shall submit a revised Emissions Monitoring Plan to DGCA by 30th September of the third year by indicating an appropriate Fuel Use Monitoring Method to be used from on 1st January of the fourth year onwards.
- 2.12 If the aeroplane operator's annual CO₂ emissions from international flights subject to offsetting requirements, decreases below the threshold of 50,000 tonnes in two consecutive years, the aeroplane operator may opt to change its monitoring method on 1st January of the fourth year. However, if the aeroplane operator chooses to change its monitoring method, an updated Emissions Monitoring Plan will be required to be submitted to DGCA by 30th September of the third year.

3. Emissions Monitoring Plan (EMP):

- 3.1 The aeroplane operator shall submit an Emissions Monitoring Plan (EMP) to DGCA for approval latest by 30th September, 2018 to be applicable from 1st

January, 2019 onwards. The EMP shall contain all relevant information as provided in the template issued by DGCA.

- 3.2 An aeroplane operator who starts international operations after 1st January, 2019, shall also submit an Emissions Monitoring Plan to DGCA within three months after it exceeds the threshold value of annual 10,000 tonnes of emissions.
- 3.3 The aeroplane operator shall resubmit the Emissions Monitoring Plan to DGCA whenever there is a significant change in the information contained in the earlier submitted Emissions Monitoring Plan. For this purpose, the definition of significant change shall be referred. The aeroplane operator shall also inform, in writing, to DGCA with valid justification, about the changes in the revised Emissions Monitoring Plan.
- 3.4 If the aeroplane operator's Emissions Monitoring Plan is determined to be incomplete and/or inconsistent with the Emissions Monitoring Plan template, DGCA shall summarily reject the EMP and shall direct the aeroplane operator to resubmit the EMP along with the requisite information.

4. Calculation of CO₂ emissions from aeroplane fuel use:

- 4.1 The aeroplane operator using a Fuel Use Monitoring Method, shall determine the CO₂ emissions from international flights using the following equation for both conventional and sustainable aviation fuel:

$$\text{CO}_2 \text{ Emissions (in tonnes)} = \sum \text{Mass of fuel (in tonnes)} \times \text{Fuel conversion factor}$$

For the purpose of calculating CO₂ emissions, the mass of fuel used includes all aviation fuels. An aeroplane operator shall use the following value of fuel conversion factor: for Jet-A fuel = 3.16 (in kg CO₂/kg fuel) and for AvGas or Jet-B fuel = 3.10 (in kg CO₂/kg fuel).

- 4.2 The aeroplane operator shall convert the volume (if the fuel uplift is measured in units of volume) of the fuel into mass by applying proper fuel density value before using the aforesaid formula.
- 4.3 The aeroplane operator shall use an actual fuel density provided by the fuel vendor. In case, an actual fuel density value is not available, the operator shall use the standard value of 0.8 kg per litre for operational and safety reasons. However, the operator shall mention about the use of actual or standard fuel

density in their Emission Monitoring Plan along with a reference to the relevant aeroplane operator's documentation.

5. Monitoring of CORSIA eligible fuels claims:

- 5.1 An aeroplane operator can reduce their emissions offset requirements by using CORSIA eligible fuels in place of conventional fuel. However, an aeroplane operator who intends to claim such emissions reductions shall use an ICAO approved CORSIA eligible fuel that meets the "CORSIA Sustainability Criteria" as prescribed at ICAO CORSIA website.
- 5.2 Further, the aeroplane operator shall only use CORSIA eligible fuels from fuel producers that are certified by an approved Sustainable Certification Scheme and meet the requirements of CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes as prescribed at ICAO CORSIA website.
- 5.3 However, the aeroplane operator has to provide evidences in respect of the CORSIA eligible fuels purchased that meet ICAO's sustainability criteria and certification scheme. In case, the aeroplane operator cannot demonstrate the compliance of the CORSIA eligible fuels with the sustainability criteria, then it shall be considered as conventional aviation fuel and no emissions reduction benefits shall be provided to the aeroplane operator.
- 5.4 The claims of emissions reductions from the use of CORSIA eligible fuels by an aeroplane operator shall be based on mass of CORSIA eligible fuels according to the available purchasing and blending invoices/records.
- 5.5 The emissions reductions from the use of a CORSIA eligible fuels are calculated based on the approved Life Cycle Emissions value (LS_i) of the CORSIA eligible fuels used by the operator. The aeroplane operator shall provide necessary information on emissions reductions from using CORSIA eligible fuel in their Emissions Report whenever such emissions reductions are availed.

6. Reporting of CO₂ emissions:

- 7.2 The aeroplane operator should use the standardised Emissions Report template provided by DGCA for demonstrating compliance with the CORSIA. The Emissions Report shall contain all the necessary information as per the template.
- 7.3 A copy of the duly verified Emissions Report and a copy of the associated Verification Report shall be submitted to DGCA at the end of each calendar year,

by the aeroplane operator within the specified time line prescribed by DGCA. The aeroplane operator shall include the number of international flights operated in that year, both at the level of State pair and Aerodrome pair in their respective Emissions Report.

- 7.4 While submitting the consolidated CO₂ emissions from international flights for the 2019-2020 period, including subsidiary aeroplane operators, the aeroplane operator shall ensure that the Emissions Report submitted to DGCA also include the disaggregated data relating to each subsidiary aeroplane operator.
- 7.5 In specific circumstances where an aeroplane operator having a very limited number of State pairs operations that are subject to offset requirements and/or not subject to offset requirements, the aeroplane operator may request in writing to DGCA that such data shall not be published at the aeroplane operator level explaining the reasons why such data shall not be disclosed with proper justification. Based on the justification provided by the aeroplane operator, DGCA may consider about the confidentiality of such data and disclosure of such data at aeroplane operator level. However, the annual CO₂ emissions of an aeroplane operator on a given State pair will be considered as commercially sensitive only if they are determined using a Fuel Use Monitoring Method.
- 7.6 In specific circumstances where aggregated State pair data may be attributed to an identified aeroplane operator as a result of a very limited number of aeroplane operators conducting flights on a State pair, that aeroplane operator may request in writing to DGCA that such data not be published at State pair level, explaining the reasons why disclosure would harm their commercial interests. Based on this request, DGCA shall determine whether this data is confidential.
- 7.7 All aeroplane operator data which is deemed confidential in accordance with paragraphs 6.4 and 6.5 above shall be aggregated without attribution to the specific aeroplane operator
- 7.8 DGCA will calculate and inform each of the aeroplane operators about their average total CO₂ emissions during the 2019 and 2020 period.
- 7.9 The aeroplane operator shall subtract CORSIA eligible fuels traded or sold to a third party from its total reported quantity of CORSIA eligible fuels.
- 7.10 The aeroplane operator shall also provide a declaration of all other GHG schemes, it participates in, where the emissions reductions from the use of CORSIA eligible fuels may be claimed, and a declaration that it has not made claims for the same batches of CORSIA eligible fuel under other schemes.

- 7.11 To claim emissions reductions from the use of CORSIA eligible fuels in the Emissions Report, the aeroplane operator shall provide the information to DGCA, within a given compliance period for all CORSIA eligible fuel received by a blender by the end of that compliance period. The information provided is through to the blend point, and includes information received from both the neat (unblended) fuel producer and the fuel blender.
- 7.12 The aeroplane operator should make CORSIA eligible fuel claims on an annual basis in order to ensure all documentation is dealt with in a timely manner. However, the aeroplane operator has the option to decide when to make a CORSIA eligible fuel claim within a given compliance period for all CORSIA eligible fuel received by a blender within that compliance period. However, for any blending that occurs in the second half of the final year of a compliance period, DGCA should determine whether any flexibility is needed to be provided to the aeroplane operator in terms of submitting reports.
- 7.13 If the aeroplane operator purchases fuel from a supplier downstream from the fuel blender (e.g., from a distributor, another aeroplane operator, or an aerodrome-based fuel distributor), this fuel supplier shall provide all of the requisite documentation in order for the emissions reductions from the use of CORSIA eligible fuels to be claimed by the aeroplane operator.

7. Verification of CO₂ emissions:

- 7.1 For the purpose of cross-check of annual reported data, the aeroplane operator should perform an internal pre-verification of its Emissions Report prior to submitting the same for verification to an external verifier. The aeroplane operator shall engage a verification body for the verification of its annual Emissions Report.
- 7.2 More details about a verification body and the relevant requirements about its accreditation is provided in details at Chapter-7 of this CAR.
- 7.3 The aeroplane operator and the verification body, shall both independently submit a copy of the Emissions Report and associated Verification Report to DGCA, within the stipulated timeline as communicated by DGCA.
- 7.4 Fuel purchases, transaction reports, fuel blending records and sustainability credentials shall constitute the documentary proof for the purpose of verification and approval of emissions reductions from the use of CORSIA eligible fuels.

7.5 The aeroplane operator shall ensure that it, or its designated representative, has audit rights of the production records for the sustainable aviation fuels that it purchases from a vendor.

8. Data gaps:

8.1 The aeroplane operator shall take utmost care to avoid any data gaps in their annual Emissions Report while submitting such reports to DGCA and the verification body. Data gaps in reported emissions-related data, can occur due to irregular operations, data feed issues, human error, critical system failures, etc. Any such data gaps that are identified by the verification body may lead non-compliance with the CORSIA requirements and ultimately could result in **Found unsatisfactory** of an Emissions Report by the verification body. A data gap could also be identified by DGCA in its review process of the verified Emissions Report.

8.2 The aeroplane operator using a Fuel Use Monitoring Method, shall fill data gaps using the ICAO CERT, provided that the data gaps during a compliance period do not exceed the following thresholds:

- i) **2019-2020 period:** 5 per cent of international flights.
- ii) **2021-2035 period:** 5 per cent of international flights subject to offsetting requirements.

8.3 The aeroplane operator shall correct issues identified with the data and information management system in a timely manner to mitigate ongoing data gaps and system weaknesses. If the aeroplane operator realizes it has data gaps and system weaknesses that exceed the threshold as mentioned in paragraph 8.2 above, it shall approach DGCA to take remedial action to address this.

8.4 When the threshold is exceeded, the aeroplane operator shall mention the percentage of international flights, for the 2019-2020 period, or flights subject to offsetting requirements, for the 2021-2035 period, that had data gaps, and provide an explanation to DGCA in their annual Emissions Report.

8.5 The aeroplane operator shall fill all data gaps and correct systematic errors and misstatements prior to the submission of the Emissions Report to DGCA. The aeroplane operator shall ensure that procedure for identifying and rectifying any data gaps is properly documented in their procedure manual which shall be referred by DGCA in case of rectification process of such data gaps.

CHAPTER – 4: CO₂ OFFSETTING REQUIREMENTS FROM INTERNATIONAL FLIGHTS.

1. Applicability of CO₂ offsetting requirements:

- 1.1 As such, the offsetting requirements are applicable from 1st January 2021 to 31st December 2035. However, for Indian scheduled operators with international operations from India to a State and back, the offsetting requirements of this CAR shall be applicable from 1st January 2027 onwards except the aeroplane operators having international operations between two States that have opted to participate in the voluntary phases of CORSIA also.
- 1.2 The requirements of this CAR shall not be applicable to a new entrant aeroplane operator for the first three years starting in the year when its annual CO₂ emissions from international operations exceeds 10,000 tonnes or until its annual emissions level exceeds 0.1 % of 2020 emissions level, whichever occurs earlier. The requirements of this CAR shall then be applicable from 1st January of the subsequent year.

2. CO₂ offsetting requirements:

- 2.1 The amount of CO₂ emissions of an aeroplane operator, required to be offset in a given year from 1st January 2021 to 31st December 2023 prior to consideration of the sustainable aviation fuels, shall be calculated as follows:

Operator's Offsetting Requirements in a given year = Operator's CO₂ emissions in that year X Sector's Growth Factor.

- 2.2 The Sector's Growth Factor applicable for a given year, will be published by ICAO and is defined as

SGF = [(Total sectoral CO₂ emissions in year Y - Average total annual sectoral CO₂ emissions during 2019 and 2020 in the given year) / Total sectoral CO₂ emissions in year Y]. Sectoral emissions in a given year do not include the CO₂ emissions from new entrants during their exception period.

- 2.3 As the participation of States in CORSIA change over time, the average of total sectoral CO₂ emissions during 2019 and 2020 covered by these State pairs in the given year Y will be recalculated by ICAO.

- 2.4 DGCA will calculate, for each of the aeroplane operators, the amount of CO₂ emissions required to be offset in a given year from 1st January 2024 to 31st December 2035 (without emissions reduction from use of CORSIA eligible fuels), every year as follows:

Aeroplane operator's offsetting requirements in the given year Y = Percent Sectoral in the given year Y X (Aeroplane operator's CO₂ emissions in the given year Y X Sector's Growth Factor) + Percent Individual in the given year Y X (Aeroplane operator's CO₂ emissions in the given year Y X Aeroplane operator's Growth Factor).

Where percent individual in the given year y = (100% - Percent Sectoral in the given year y). For the period 2021 to 2029, the values of Percent Sectoral and Percent Individual are 100% and 0% respectively and hence the last term in the above formula shall not be considered. However, from 2030 onwards, ICAO will specify exact values of Percent Sectoral and Percent Individual to be used.

The table below gives an overview of CO₂ offsetting requirements on a sectoral and individual basis during different compliance periods. However, the final value of percent individual in a given year (%O_y) will be determined by the ICAO in its future Assemblies. However, the tentative values are as shown below:

Year of applicability	%S _y	%O _y
1 January 2024 to 31 December 2029	100%	0%
1 January 2030 to 31 December 2032	(100% - %O _y)	A specified percentage of at least 20%
1 January 2033 to 31 December 2035	(100% - %O _y)	A specified percentage of at least 70%

- 2.5 ICAO will provide the applicable value of Sector Growth Factor on yearly basis.
- 2.6 DGCA will calculate the aeroplane operator's Growth Factor for a given year in accordance with the CO₂ emissions from the verified Emissions Reports submitted by aeroplane operators which is calculated as:

[(Total aeroplane operator's CO₂ emissions in the given year Y - Average total annual aeroplane operator's CO₂ emissions during 2019 and 2020 in the given year Y)/ Total aeroplane operator's CO₂ emissions in the given year Y].

- 2.7 DGCA will inform the aeroplane operator of its final offsetting requirements within the stipulated timeline upon calculating the final offsetting requirements for a given compliance period of each of the aeroplane operators.

CHAPTER – 5: EMISSIONS REDUCTIONS FROM THE USE OF SUSTAINABLE AVIATION FUELS.

1. Emissions reductions from the use of sustainable aviation fuels:

- 1.1 The aeroplane operator that intends to claim for emissions reductions from the use of CORSIA eligible fuels in a given year shall compute emissions reductions as follow:

Emissions reductions from the use of sustainable aviation fuels in the given year Y (in tonnes) = $[\sum \text{Total mass of a neat CORSIA eligible fuel claimed in the given year Y (in tonnes)} \times \{1 - (LS_f/LC)\}] \times \text{Fuel Conversion Factor.}$

The aeroplane operator shall use the value of fuel conversion factor for Jet-A fuel = 3.16 kg CO₂/kg fuel and for AvGas or Jet-B fuel = 3.10 kg CO₂/kg fuel.

The Emissions reduction factor (ERF_f) of a CORSIA eligible fuel is the ratio (1-LS_f/LC) where LS_f = Life cycle emissions value for a CORSIA eligible fuel (in gCO₂e/MJ) and LC = Life cycle emissions values for a conventional aviation fuel, equal to 89 gCO₂e/MJ for jet fuel and equal to 95 gCO₂e/MJ for AvGas.

- 1.2 For each of the CORSIA eligible fuels claimed, the total mass of the neat CORSIA eligible fuel claimed in the given year Y needs to be multiplied by its emissions reduction factor (ERF_f). Then the quantities are summed up for all CORSIA eligible fuels.
- 1.3 In order to use the value for both Default Life Cycle Emissions value and Actual Life Cycle Emissions value when used for the calculation of CORSIA eligible fuels, the aeroplane operator shall approach DGCA for the values to be used.
- 1.4 If an Actual Life Cycle Emissions value is used, then an approved Sustainability Certification Scheme shall ensure that the methodology used for calculating Actual Life Cycle Emissions values has been applied correctly.

2 Total final CO₂ offsetting requirements for a given compliance period with emissions reductions from the use of CORSIA eligible fuels:

- 2.1 The amount of CO₂ emissions required to be offset by the aeroplane operator, after taking into account emissions reductions from the use of CORSIA eligible fuels in a given year from 1st January 2021 to 31st December 2035, shall be calculated by DGCA as follows:

Aeroplane operator's total final offsetting requirements in the given compliance period = \sum Aeroplane operator's total offsetting requirements in the given years of the compliance period - \sum Emissions reductions from the use of CORSIA eligible fuels in the given years of the compliance period.

- 2.2 If the aeroplane operator's total final offsetting requirements during a compliance period is zero or negative, then the aeroplane operator has no offsetting requirements for that compliance period. However, the negative offsetting requirements shall not be carried forward to subsequent compliance periods.
- 2.3 The aeroplane operator's total final offsetting requirements during a compliance period shall be rounded up to the nearest tonne of CO₂.
- 2.4 After calculating the final offsetting requirements for a given compliance period of each of the aeroplane operators, DGCA will inform the aeroplane operator of their final offsetting requirements individually within the stipulated timeline.
- 2.5 The aeroplane operator shall then meet their offsetting requirements through CORSIA Eligible Emissions Units.

CHAPTER – 6: EMISSIONS UNITS.

1. Applicability of Emissions Units

- 1.1 The requirements of this chapter shall be applicable to an aeroplane operator who has to demonstrate compliance against its offsetting requirements by purchasing CORSIA Eligible Emissions Units.

2. Cancelling CORSIA Eligible Emissions Units:

- 2.1 The aeroplane operator shall meet its offsetting requirements by cancelling CORSIA Eligible Emissions Units in a quantity equal to the sum of its final offsetting requirements for a given compliance period. The CORSIA Eligible Emissions Units are those units which meet the ICAO approved CORSIA Emissions Unit Eligibility Criteria and can be used for demonstrating compliance to meet its offsetting requirements under CORISA.

- 2.2 To fulfil the provisions of paragraph 2.1 above, the aeroplane operator shall:

- a) Cancel such CORSIA Eligible Emissions Units within a registry designated by a CORSIA Eligible Emissions Unit Programme within the stipulated timeline, and
- b) Request each CORSIA Eligible Emissions Unit Programme registry to make visible on the registry's public website, information regarding cancelled CORSIA Eligible Emissions Units for a given compliance period of each aeroplane operator. Such information for each cancelled CORSIA Eligible Emissions Unit shall include the consolidated identifying information such as quantity of emissions units cancelled, Start of serial numbers, End of serial numbers, date of cancellation, Eligible emissions unit programme, Unit type, Host country, Methodology, Demonstration of unit date eligibility and aeroplane operator in whose name the units were cancelled.

- 2.3 "Cancel" means the permanent removal and single use of a CORSIA Eligible Emissions Unit within a CORSIA Eligible Emissions Unit Programme designated registry such that the same emissions unit may not be used more than once. This is sometimes also referred to as "retirement", "cancelled", "cancelling" or "cancellation".

3. Reporting emissions unit cancellation:

- 3.1 To meet its final offsetting requirements for a given compliance period, the aeroplane operator shall report to DGCA, the cancellation of CORSIA Eligible

Emissions Units carried out, by submitting to DGCA a copy of the verified Emissions Unit Cancellation Report for approval and a copy of the associated Verification Report.

- 3.2 The Emissions Unit Cancellation Report shall contain information such as quantity of emissions units cancelled, Start of serial numbers, End of serial numbers, date of cancellation, Eligible emissions unit programme, Unit type, Host country, Methodology, Demonstration of unit date eligibility, Programme-designated registry name, Unique identifier for registry account to which the batch was cancelled and aeroplane operator in whose name the units were cancelled and shall be submitted to DGCA within the stipulated timeline.
- 3.3 Once the information pertaining to emissions Units for a given compliance period is submitted to ICAO, DGCA may publish the following information for a given compliance period:
- a) Total final offsetting requirements over the compliance period for each aeroplane operators, and
 - b) Total quantity of emissions units cancelled over the compliance period by each aeroplane operator to reconcile the total final offsetting requirements, as reported by each aeroplane operator.

4. Verification of an Aeroplane Operator's Emissions Unit Cancellation Report

- 4.1 The aeroplane operator shall engage a verification body for the verification of its Emissions Unit Cancellation Report. The aeroplane operator may choose to use the same verification body engaged for the verification of its Emissions Report earlier.
- 4.2 Details about a verification body and its relevant requirements are mentioned in Chapter-7 of this CAR.
- 4.3 The aeroplane operator shall provide access to the verification body for all relevant information on the cancellation of emissions units.
- 4.4 The aeroplane operator and the verification body shall both independently submit a copy of the Emissions Unit Cancellation Report and associated Verification Report to DGCA within the stipulated timeline, following the verification of the Emissions Unit Cancellation Report by the verification body.

CHAPTER – 7: VERIFICATION BODY AND NATIONAL ACCREDITATION BODY.

1. Verification Body and National Accreditation Body:

- 1.1 The aeroplane operator shall engage a verification body for the verification of its annual Emissions Report and Emissions Unit Cancellation Report.
- 1.2 A verification body shall conduct the verification according to ISO 14064-3:20061, and the relevant requirements as mentioned in Chapter-3 of the Guidance Material on Civil Aviation Requirements (Document No. 02/2018/CORSIA).
- 1.3 A verification body shall be accredited to ISO 14065:20135 and the relevant requirements as mentioned in Chapter-3 of the Guidance Material on Civil Aviation Requirements (Document No. 02/2018/CORSIA), by a national accreditation body, in order to be eligible to verify the Emissions Unit Cancellation Report of an aeroplane operator.
- 1.4 A national accreditation body shall be working in accordance with ISO/IEC 17011:20046.
- 1.5 An operator may also engage a verification body accredited in other State for verification of CORSIA related tasks.
- 1.6 The verification body shall also possess sufficient knowledge of aviation industry and associated Greenhouse Gas inventory and the verification body.
- 1.7 A verification body can approach DGCA for their further training in order to qualify as a verifier under CORSIA.
- 1.8 The verification bodies to be empanelled with DGCA should be third party verification bodies accredited as per ISO 14065 for CORSIA scheme by National Accreditation Board for Certification Bodies (NABCB), of the Quality Council of India by Aug 2019.
- 1.9 DGCA will give provisional approval to verification bodies in case they have applied for NABCB accreditation by April 2019. However, Verification bodies have to ensure that they are accredited within six months of application”.

ANNEXURE -I

1. **Administrative partnership:** Delegation of administering tasks in this Volume from one State to another State(s).
2. **Aerodrome:** A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.
3. **Aerodrome pair:** A group of two aerodromes composed of a departing aerodrome and an arrival aerodrome.
4. **Aeroplane:** A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.
5. **Aeroplane owner:** Person(s), organization(s) or enterprise(s) identified via Item 4 (Name of owner) and Item 5 (Address of owner) on the certificate of registration of an aeroplane.
6. **Air operator certificate (AOC):** A certificate authorizing an operator to carry out specified commercial air transport operations.
7. **Conversion process:** A type of technology used to convert a feedstock into aviation alternative fuel.
8. **CORSIA eligible fuel:** A CORSIA sustainable aviation fuel or a CORSIA lower carbon aviation fuel, which an operator may use to reduce their offsetting requirements.
9. **CORSIA lower carbon aviation fuel:** A fossil-based aviation fuel that meets the CORSIA Sustainability Criteria under this Volume.
10. **CORSIA sustainable aviation fuel:** A renewable or waste-derived aviation fuel that meets the CORSIA Sustainability Criteria under this Volume.
11. **Feedstock:** A type of unprocessed raw material used for the production of aviation alternative fuel.
12. **Flight plan:** Specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft.
13. **Fuel uplift:** Measurement of fuel provided by the fuel supplier, as documented in the fuel delivery notes or invoices for each flight (in litre).

14. **Great Circle Distance:** The shortest distance, rounded to the nearest kilometre, between the origin and the destination aerodromes, measured over the earth's surface modelled according to the World Geodetic System 1984 (WGS84).
15. **International flights:** An international flight is defined as the operation of an aircraft from take-off at an aerodrome of a contracting State or its territories, and landing at an aerodrome of another contracting State or its territories.
16. **National accreditation body:** A body authorised by a State which attests that a verification body is competent to provide specific verification services.
17. **New entrant:** Any aeroplane operator that commences an aviation activity falling within the scope of this CAR 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.
18. **Notifying State:** The State that has submitted to ICAO the request for the registration of or change in the three-letter designator of an aeroplane operator over which it has jurisdiction.
19. **Operator:** The person, organization or enterprise engaged in or offering to engage in an aircraft operation.
20. **Pathway:** A specific combination of feedstock and conversion process used for the production of aviation fuel.
21. **Reporting period:** A period which commences on 1st January and finishes on 31st December in a given year for which an aeroplane operator or State reports required information. The flight departure time (UTC) determines which reporting period a flight belongs to.
22. **Significant changes to EMP:** A significant change to EMP shall be one that would affect the status or eligibility of the aeroplane operator for an option under the emissions monitoring requirements or that would otherwise affect the decision by DGCA with regard to whether the aeroplane operator's approach to monitoring conforms with the requirements.
23. **State pair:** A group of two States composed of a departing State or its territories and an arrival State or its territories.
24. **Verification of report:** An independent, systematic and sufficiently documented evaluation process of an emissions report and, when required, a cancellation of eligible emissions units report.

25. **Verification body:** A legal entity that performs the verification of an Emissions Report and, when required, an Emissions Units Cancellation Report, as an accredited independent third party.
26. **Verification team:** A group of verifiers, or a single verifier that also qualifies as a team leader, belonging to a verification body conducting the verification of an Emissions Report and, when required, an Emissions Units Cancellation Report. The team can be supported by technical experts.
27. **Verification report:** A document, drafted by the verification body, containing the verification statement and required supporting information.

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ABBREVIATIONS AND UNITS

Following is the list of abbreviations and symbols units used in this CAR. These abbreviations and units have the meanings as ascribed to them below:

Abbreviations	Meaning
ACARS	Aircraft Communications Addressing and Reporting System
AOC	Air operator certificate
CERT	ICAO's CO ₂ Estimation and Reporting Tool
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
GHG	Greenhouse gases
IAF	International Accreditation Forum
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
MRV	Monitoring, Reporting and Verification
MJ	Mega joule
RTK	Revenue Tonne Kilometres

Non-SI units:

The non-SI units listed below shall be used either in lieu of, or in addition to, SI units as primary units of measurement under this CAR.

Specific quantity	Unit	Symbol	Definitions (in terms of SI units)
Mass	Tonne	t	1 t = 10 ³ kg
Time	Hour	h	1 h = 60 min = 3600 sec
volume	litre	L	1 L = 1 dm ³ = 10 ⁻³ m ³
