

AVIATION CO₂ REDUCTIONS



STOCKTAKING SEMINAR

TECHNOLOGY · OPERATIONS · SUSTAINABLE AVIATION FUELS



Sustainable Aviation Fuels (SAF) – Introduction and Frequently Asked Questions

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CORSIA Eligible Fuels

ICAO “Carbon Offsetting & Reduction Scheme for International Aviation” (CORSAIA)



- CORSIA is a Global Carbon Offsetting Scheme
 - Offsetting to help international aviation meet Carbon Neutral Growth goal (relative to 2020 baseline)
 - Applies to Aircraft Operators, International Operations Only
 - Offsets required from 2021-2035 with an initial pilot phase from 2021-2023
- CORSIA Eligible Fuels (CEF) can be used by an airline to reduce their offsetting requirements
 - The ICAO Committee on Aviation Environmental Protection (CAEP) Fuels Task Group (FTG) is developing the rules for inclusion
 - FTG co-rapporteurs: Cesar Velarde (Spain) and Jim Hileman (US)

For additional information on CORSIA:

<https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx/>



Offsetting, Fuels, and CORSIA

Two means for an aeroplane operator to comply with CORSIA

1. Offsetting with Emissions Units
2. Claiming Emissions Reductions from CORSIA Eligible Fuels

Two types of CORSIA Eligible Fuels (CEF)

- “CORSIA Sustainable Aviation Fuel”: renewable or waste-derived fuel
- “CORSIA Lower Carbon Aviation Fuel”: fossil-based fuel

$$\text{Emissions Reduction} = 3.16 * \left[\sum \text{Net Fuel Mass} * \left(1 - \frac{\text{Life Cycle Emissions}}{89 \text{ g CO}_2/\text{MJ}} \right) \right]$$

To be eligible for CORSIA, a fuel needs to meet the CORSIA Sustainability Criteria as certified by ICAO Council Approved Sustainability Certification Scheme (SCS)

CORSIA Eligible Fuels - Key Documents

- There are a number of ICAO documents that contain information related to CORSIA Implementation
- Annex 16 Volume IV
- See: <https://www.icao.int/environmental-protection/CORSIA/Pages/SARPs-Annex-16-Volume-IV.aspx>
- CORSIA Implementation Elements
- See: <https://www.icao.int/environmental-protection/CORSIA/Pages/implementation-elements.aspx>
- Five ICAO documents relate to CORSIA Eligible Fuels
- See: <https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Eligible-Fuels.aspx>

ICAO / Environmental Protection / CORSIA / CORSIA Eligible Fuels

CORSIA Eligible Fuels

This ICAO CORSIA Implementation Element is reflected in five ICAO documents referenced in Annex 16, Volume IV. They are available for download below.

	<i>This ICAO document will become available following approval by the ICAO Council.*</i>			
CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes	CORSIA Approved Sustainability Certification Schemes*	CORSIA Sustainability Criteria for CORSIA Eligible Fuels	CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels**	CORSIA Methodology for Calculating Actual Life Cycle Emissions Values

**Sustainability Certification Schemes interested in being evaluated should follow the application process described [here](#).*

***The CORSIA Supporting Document "CORSIA Eligible Fuels - Life Cycle Assessment Methodology" provides technical information and describes ICAO processes to manage and maintain the ICAO document "CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels".*

CORSIA Eligible Fuels

Relationship among the CORSIA Eligible Fuel Documents and Annex 16 Volume IV

For additional information on CORSIA:
<https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx/>

Annex 16 Vol. IV References

2.2.4.1 The **aeroplane operator** that intends to claim for emissions reductions from the use of CORSIA eligible fuels shall use a CORSIA eligible fuel that meets the CORSIA Sustainability Criteria as defined within the **ICAO document entitled “CORSIA Sustainability Criteria for CORSIA Eligible Fuels”** that is available on the ICAO CORSIA website.

2.2.4.2 The **aeroplane operator** that intends to claim for emissions reductions from the use of CORSIA eligible fuels shall only use CORSIA eligible fuels from fuel producers that are certified by an **approved Sustainability Certification Scheme** included in the **ICAO document entitled “CORSIA Approved Sustainability Certification Schemes”**, that is available on the ICAO CORSIA website. Such certification schemes meet the requirements included in the **ICAO document entitled “CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes”**, that is available on the ICAO CORSIA website.

3.3.1 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 follows:

$$ER_y = FCF * \left[\sum_f MS_{f,y} * \left(1 - \frac{LS_f}{LC} \right) \right]$$

3.3.2 If a Default Life Cycle Emissions value is used, then the **aeroplane operator** shall use the **ICAO document entitled “CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels”** that is available on the ICAO CORSIA website for the calculation in 3.3.1.

3.3.3 If an Actual Life Cycle Emissions value is used, then an **approved Sustainability Certification Scheme** shall ensure that the methodology, as defined in the **ICAO document entitled “CORSIA Methodology for Calculating Actual Life Cycle Emissions Values”** that is available on the ICAO CORSIA website, has been applied correctly.

“ICAO Documents” Referenced in Annex 16 Vol. IV, and associated “Supporting Documents”

ICAO document
CORSIA Sustainability Criteria for CORSIA Eligible Fuels

ICAO document
CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes

ICAO document
CORSIA Approved Sustainability Certification Schemes

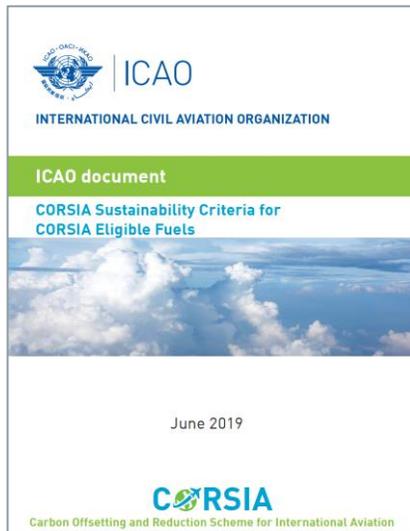
ICAO document
CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels

CORSIA Supporting Document
LCA Methodology

ICAO document
CORSIA Methodology for Calculating Actual Life Cycle Emissions Values

Sustainability Criteria for CORSIA Pilot Phase (until 12/31/23) – applies to SAF and LCAF

Compiled within the ICAO Document
“CORSIA Sustainability Criteria for
CORSIA Eligible Fuels”



To download CORSIA Sustainability Criteria for
CORSIA Eligible Fuels document:
[https://www.icao.int/environmental-
protection/CORSIA/Documents/ICAO%20document
%2005%20-%20Sustainability%20Criteria.pdf](https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO%20document%2005%20-%20Sustainability%20Criteria.pdf)

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Theme	Principle	Criteria
1. Greenhouse Gases (GHG)	Principle: CORSIA eligible fuel should generate lower carbon emissions on a life cycle basis.	Criterion 1: CORSIA eligible fuel shall achieve net greenhouse gas emissions reductions of at least 10% compared to the baseline life cycle emissions values for aviation fuel on a life cycle basis.
2. Carbon stock	Principle: CORSIA eligible fuel should not be made from biomass obtained from land with high carbon stock.	<p>Criterion 1: CORSIA eligible fuel shall not be made from biomass obtained from land converted after 1 January 2008 that was primary forest, wetlands, or peat lands and/or contributes to degradation of the carbon stock in primary forests, wetlands, or peat lands as these lands all have high carbon stocks.</p> <p>Criterion 2: In the event of land use conversion after 1 January 2008, as defined based on IPCC land categories, direct land use change (DLUC) emissions shall be calculated. If DLUC greenhouse gas emissions exceed the default induced land use change (ILUC) value, the DLUC value shall replace the default ILUC value.</p>

Potential Additional CORSIA Sustainability Criteria (post Pilot Phase)

Ongoing work within ICAO



Sustainable = environmental + **greenhouse gas (1) + carbon in the land (2) +**
 social +
 economic

water quality (?) +
 soil quality (?) +
 air quality (?) +
 conservation (?) +
 wastes and chemicals (?) +
 human and labor rights (?) +
 land use rights (?) +
 water use rights (?) +
local and social development (?) +
food security (?)

To download CORSIA Sustainability Criteria for CORSIA Eligible Fuels document:
<https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO%20document%2005%20-%20Sustainability%20Criteria.pdf>

Thank You



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