

# Developments in CORSIA Eligible Fuel

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## Introduction

As defined in Annex 16 Volume IV, CORSIA allows aeroplane operators to reduce their offsetting requirements through the use of CORSIA Eligible Fuels (CEF), which comprises CORSIA sustainable aviation fuels (SAF) and CORSIA lower carbon aviation fuels (LCAF).

Annex 16 Volume IV also lists a series of ICAO documents that are essential to the implementation of the CORSIA. Five of these documents are related to CEF. They provide the necessary technical elements that allow claiming the benefits of CEF under the scheme.

Based on the work from the CAEP Fuels Task Group (FTG) and CAEP Sustainability Certification Schemes Evaluation Group (SCSEG), extensive progress was reached on the development and approval of these documents over the last three years. This article describes these milestones, and the future work to keep these documents up to date with the developments of the SAF and LCAF industries.

## CORSIA Eligible Fuel (CEF) definitions

Annex 16, Volume IV provides the following definitions regarding CEF:

- *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.

- *CORSIA lower carbon aviation fuel*. A fossil-based aviation fuel that meets the CORSIA Sustainability Criteria under this Volume.
- *CORSIA sustainable aviation fuel*. A renewable or waste-derived aviation fuel that meets the CORSIA Sustainability Criteria under this volume.

## CORSIA Implementation Element for CORSIA Eligible Fuel (CEF)

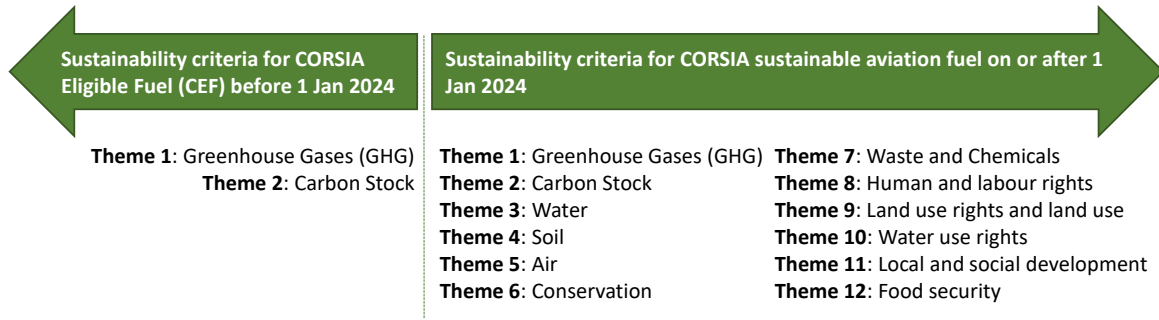
The procedures and requirements for a CEF to be considered under CORSIA are defined under five ICAO documents referenced in Annex 16, Volume IV. These documents are described in further detail below:

### 1. ICAO Document - CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes (SCS)<sup>2</sup>.

This ICAO document, approved in November 2019 and kept updated thereafter, sets out the framework and eligibility requirements that SCS need to comply with, which also includes SCS' requirements on economic operators (i.e., feedstock producers, processing facilities, and traders) and certification bodies.

The approval of SCSs is carried out by the ICAO Council, with the technical contribution of CAEP, which will assess the compliance of the SCS with the

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2 <https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO%20document%2003%20-%20Eligibility%20Framework%20and%20Requirements%20for%20SCS.pdf>



**FIGURE 1:** CORSIA sustainability criteria for CORSIA Eligible Fuel

framework and eligibility requirements listed. Only the SCS that fulfills all the framework and eligibility requirements are included in the list of approved SCS.

**2. ICAO Document - CORSIA Approved Sustainability Certification Schemes (SCS)<sup>3</sup>.**

This ICAO document, approved in Nov 2020, provides the list of SCS that are approved by the ICAO Council as meeting the framework and eligibility requirements set out in ICAO document. They are eligible to certify fuel producers for compliance with the applicable CORSIA requirements. As of March 2022, two SCSs have been approved:

- International Sustainability and Carbon Certification (ISCC); and,
- Roundtable of Sustainable Biomaterials (RSB).

Applications by new SCSs will be reviewed on an ongoing basis. In that regard, SCSs around the world are invited to apply for approval by following the process contained in the ICAO public website<sup>4</sup>.

**3. ICAO Document - CORSIA Sustainability Criteria for CORSIA Eligible Fuels (CEF)<sup>5</sup>**

This ICAO document, first approved in Jun 2019, sets out a list of sustainability themes, and associated principles and criteria, that applies to CEF until 31 Dec 2023 (end of the CORSIA pilot phase). The 2<sup>nd</sup> Edition was subsequently approved in November 2021 setting

out the expanded sustainability criteria for CORSIA sustainable aviation fuel that apply on or after 1 Jan 2024. Compliance with the sustainability criteria will be ensured by an approved SCS as reflected in the ICAO document. Aeroplane operators that intend to claim emissions reductions from the use of CEF will be required to provide evidence of the SCS' certification in their emissions reports in accordance with Annex 16, Vol IV.

The sustainability themes and their applicability timeframe can be found in Figure 1.

The supporting document '*Guidance to Sustainability Certification Schemes (SCS) for application of CORSIA Sustainability Criteria, Themes 3 to 7, for CORSIA Sustainable Aviation Fuel produced on or after 1 January 2024<sup>6</sup>*', approved in November 2021, provides guidance to SCSs to support the globally uniform application of the sustainability criteria, including potentially applicable parameters to support the certification of CORSIA sustainable aviation fuel.

As a recent development, the CAEP/12 meeting, in February 2022, agreed to recommend amendments to this document, in order to include the sustainability criteria for CORSIA lower carbon aviation fuels (LCAF) that apply on or after 1 Jan 2024. These will be published following Council approval.

3 <https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO%20document%2004%20-%20Approved%20SCSs.pdf>  
 4 <https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-SCS-evaluation.aspx>  
 5 <https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO%20document%2005%20-%20Sustainability%20Criteria%20-%20November%202021.pdf>  
 6 <https://www.icao.int/environmental-protection/CORSIA/Documents/Guidance%20on%20Sustainability%20Themes%203-7.pdf>

**4. ICAO Document - CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels (CEF)<sup>7</sup>**

This ICAO document, first approved in November 2019, provides a list of CORSIA default life cycle emissions values (incorporating core life cycle assessment (LCA) and induced land use change (ILUC) values) that may be used by an aeroplane operator to claim emissions reductions from the use of CEF. More details on the methodologies used to obtain these default values are provided in Chapter 7.

The 2<sup>nd</sup> and 3<sup>rd</sup> Editions were subsequently approved in March and November 2021 respectively, which included new default life cycle emissions values and specifications for additional CORSIA sustainable aviation fuel conversion pathways and feedstock. Currently, these default life cycle emissions values are sorted into various fuel conversion pathways, feedstocks and production regions, as listed in Table 1. The supporting document ‘*CORSIA Eligible Fuels – Life Cycle Assessment Methodology*<sup>8</sup>’ provides technical information and describes ICAO processes to manage and maintain this ICAO document. The latest editions of this supporting document included documentation on the calculation of new default core LCA and ILUC values, as well as details on the process to add new default life cycle emissions values and related guidance for submission of LCA data to ICAO.

**5. ICAO Document - CORSIA Methodology for Calculating Actual Life Cycle Emissions Values<sup>9</sup>**

This ICAO document, first approved in November 2019, explains the methodology and processes whereby a CEF producer can demonstrate lower actual core life cycle emissions than the default core life cycle emissions values as reflected in ICAO document. It also allows obtaining life cycle emission values for pathways that do not yet have a default life cycle emissions value. The LCA values obtained with these methodologies should be certified by an approved

**TABLE 1:** Feedstocks, conversion processes, and regions with default LCA values

Feedstocks	Conversion processes	Regions
Agricultural Residues*	Fischer-Tropsch	Global*
Forestry Residues*	Hydroprocessed Esters and Fatty Acids (HEFA)	Brazil USA
Municipal Solid Waste (MSW)*	Alcohol (isobutanol) to jet (ATJ)	Malaysia and Indonesia
Poplar		European Union
Miscanthus	Alcohol (ethanol) to jet (ETJ)	
Switchgrass		
Tallow*	Synthesized iso-paraffins (SIP)	
Used Cooking Oil*	Coprocessed HEFA at petroleum refineries	
Palm Fatty Acid Distillate (PFAD)*		
Corn Oil		
Soybean Oil		
Rapeseed Oil		
Palm Oil		
Brassica Carinata		
Sugarcane		
Corn Grain		
Waste gases*		
Sugar beet		

\*global values are only applicable to feedstocks defined as wastes, residues, or by-products. The CAEP/12 meeting, in February 2022, agreed to recommend a set of global values that encompass most of the other feedstocks in this list; these will be published following Council approval.

SCS before being claimed in CORSIA, to ensure that the methodology has been applied correctly.

The 2<sup>nd</sup> Edition of the document, approved in March 2021, provided clarifications to consider possible direct land use change emissions associated with the conversion of high carbon stock ecosystems, as well as amendments that allow feedstocks produced with low land use change (LUC) risk practices to be considered in CORSIA without the inclusion of a specific ILUC value in the ICAO document.

7 <https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO%20document%2006%20-%20Default%20Life%20Cycle%20Emissions%20-%20November%202021.pdf>  
 8 [https://www.icao.int/environmental-protection/CORSIA/Documents/CORSIA\\_Supporting\\_Document\\_CORSIA%20Eligible%20Fuels\\_LCA\\_Methodology\\_V3.pdf](https://www.icao.int/environmental-protection/CORSIA/Documents/CORSIA_Supporting_Document_CORSIA%20Eligible%20Fuels_LCA_Methodology_V3.pdf)  
 9 <https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO%20document%2007%20-%20Methodology%20for%20Actual%20Life%20Cycle%20Emissions%20-%20March%202021.pdf>



As a recent development, the CAEP/12 meeting, in February 2022, agreed to recommend amendments to this document, in order to include life cycle assessment methodologies for CORSIA lower carbon aviation fuels (LCAF). These will be published following Council approval.

## **Conclusion**

The developments described in the article highlight the extensive progress made on CEF consideration under CORSIA implementation, with globally harmonized sustainability criteria and life cycle emissions methodologies that allow CEF to reduce airlines' offsetting requirements in CORSIA.

The ICAO documents on CEF will be updated regularly. For example, CAEP/12 meeting in February 2022 agreed to recommend further amendments to four of these ICAO documents, including landmark agreements on the LCA methodologies and Sustainability Criteria for CORSIA lower carbon aviation fuels. These will be incorporated into future editions of the ICAO documents, following approval by the ICAO Council. Work will continue in ICAO to further progress CEF developments, in support of ICAO's goals on climate change.