



ICAO

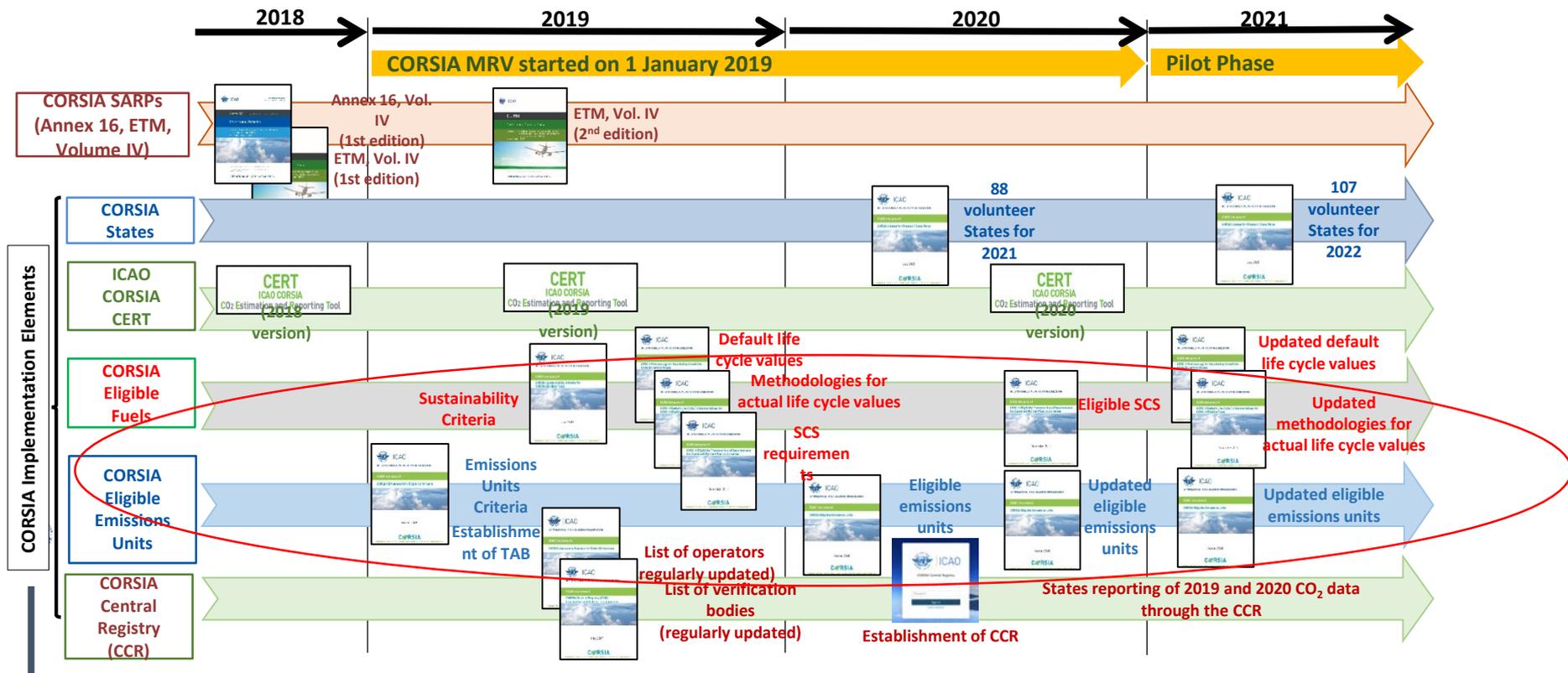
RECONNECTING THE WORLD



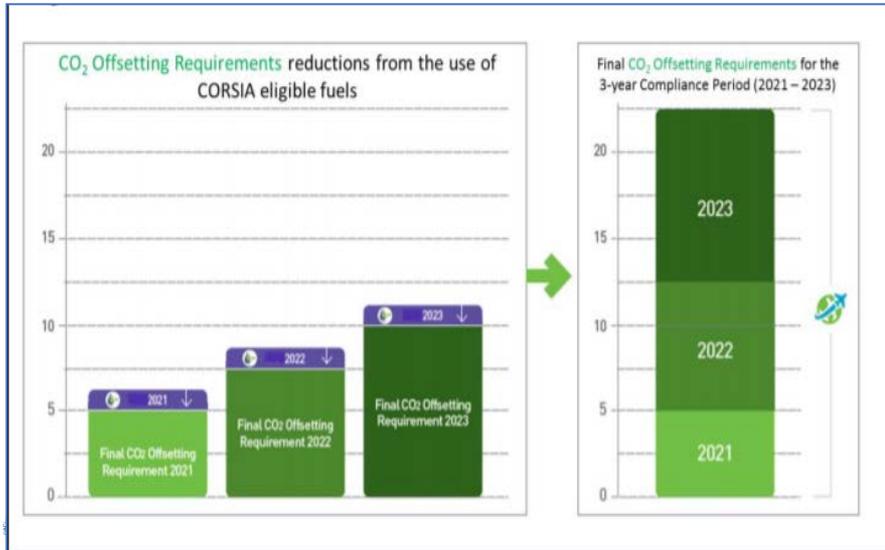
CORSIA and Fuels



CORSIA and Fuels



CORSIA Eligible Fuels



This figure provides an illustration of accounting the benefits from CORSIA Eligible Fuels

Annex 16, Volume IV provides the following definitions in this respect:

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

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

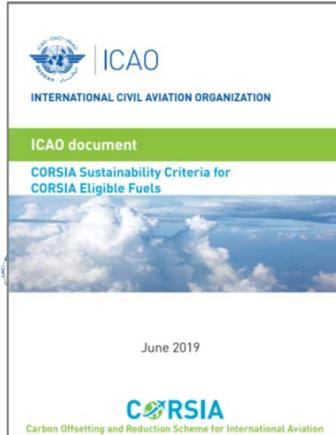
To be eligible for CORSIA, a fuel needs to meet the CORSIA Sustainability Criteria as certified by ICAO Council Approved Sustainability Certification Scheme (SCS)

$$Emissions\ Reduction = 3.16 * \left[\sum Neat\ Fuel\ Mass * \left(1 - \frac{Life\ Cycle\ Emissions}{89\ g\ CO2/MJ} \right) \right]$$

- ER_y = Emissions reductions from the use of CORSIA eligible fuels in the given year y (in tonnes);
- FCF = Fuel conversion factor, equal to 3.16 kg CO₂/kg fuel for Jet-A fuel / Jet-A1 fuel and 3.10 kg CO₂/kg fuel for AvGas or Jet-B fuel;
- MS_{f,y} = Total mass of a neat CORSIA eligible fuel claimed in the given year y (in tonnes), as described and reported in Field 12.b in Table A5-1 from Appendix 5;
- LS_f = Life cycle emissions value for a CORSIA eligible fuel (in gCO₂e/MJ); and
- LC = Baseline life cycle emissions values for aviation fuel, equal to 89 gCO₂e/MJ for jet fuel and equal to 95 gCO₂e/MJ for AvGas.

ICAO CORSIA allows airlines to claim the CO₂ benefits of Sustainable Aviation Fuels and Lower Carbon Aviation Fuels

ICAO document “CORSIA sustainability criteria for CORSIA eligible fuels”*



Agreed Sustainability Criteria for CORSIA Pilot Phase (SAF and LCAF)

- Net GHG emissions reductions of at least 10% on a life cycle basis.
- No feedstock from deforested areas.

For next CORSIA Phases

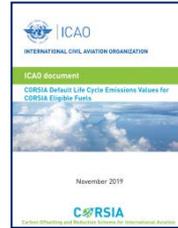
10 additional themes provisionally approved for SAF

Water; Soil; Air; Conservation; Waste and Chemicals; Human and labour rights; Land use rights and land use; Water use rights; Local and social development; and Food security.

Ongoing work on additional themes for LCAF

In CORSIA, there are two options to obtain the life cycle emissions of SAF.

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



Default emission values for a given SAF, as a function of the feedstock and conversion process

ICAO document
“CORSIA Methodology for
Calculating Actual Life Cycle
Emissions Values”



Allows calculation of specific emissions values for a given SAF

First Global Approach to Life Cycle Assessment

Life Cycle Values – Default Values

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

Table 1. CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels

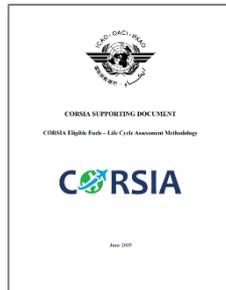
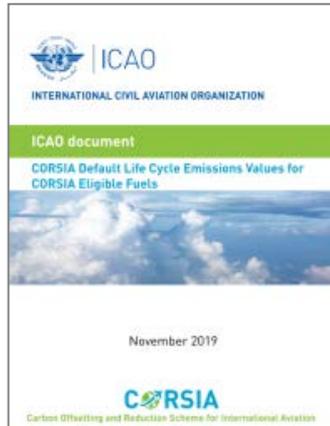
Fuel Conversion Process	Region	Fuel Feedstock	Core LCA Value	ILUC LCA Value	LS _F (gCO ₂ e/MJ)
	Global	Agricultural residues	7.7		7.7
	Global	Forestry residues	8.3		8.3

1) Core LCA - emissions associated with

- feedstock cultivation, harvesting, collection and recovery, processing and extraction, transportation to processing and fuel production facilities,
- feedstock to fuel conversion processes
- fuel transportation and distribution
- fuel combustion in an aircraft engine

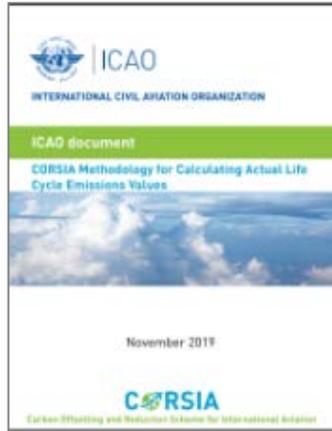
2) Induced land-use change (ILUC) emissions

- greenhouse gas released from conversion of natural vegetation (forest, other natural land), soil organic carbon, oxidation of peatlands, and sequestered biomass.
- These could occur where the production is taking place (**direct land use change**) but also in other locations due to the displacement of crops (or animals) for which the land was previously used (**indirect land use change**).



- Default values calculated by the CAEP Fuels Task Group
- More than 250 world experts, from States and Industry
- Decisions taken by consensus, supported by various models and publically available references.
- Values approved by CAEP and the ICAO Council before publishing.
- Details provided in the CORSIA Supporting Document “LCA methodologies”

**ICAO document
“CORSA Methodology
for Calculating Actual Life
Cycle Emissions Values”**



Actual LCA values using CORSA Methodology

- Airline operator / fuel producer can work with an eligible Sustainability Certification Scheme (SCS) to seek a core LCA value representative of their specific fuel production pathway
- SCS will need to prepare a technical report justifying actual LCA value
- Methodology uses attributional process with energy allocation of emissions among co-products to determine core LCA value
- Methodology provides a means to get an ILUC value of zero
- Methodology provides credits for Municipal Solid Waste Landfill and Recycling Emissions

ICAO-approved “Sustainability Certification Schemes (SCS) ” are responsible for:

- Ensuring compliance with the Sustainability Criteria
- Ensuring that the Life Cycle Emission value of the fuel has been applied/calculated correctly.

ICAO document
“CORSIA Eligibility
Framework and
Requirements for SCSs”

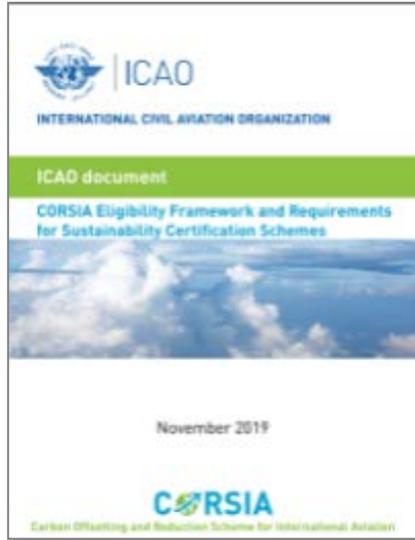
ICAO document “CORSIA
Approved SCSs”



Requirements that an SCS needs to meet.

List of approved SCSs under CORSIA.

Open invitation for SCSs to apply - www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-SCS-evaluation.aspx

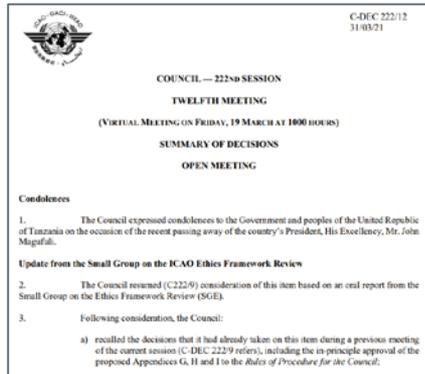


ICAO document
“CORSIA Eligibility
Framework and
Requirements for SCSs”

ICAO-approved SCS are required to:

- Comply with the Eligibility Framework criteria:
 - Applied to the SCS itself
 - That SCS applies to economic operators
 - That SCS applies to certification bodies.
- Certify CORSIA Eligible Fuels that only applies the CORSIA-approved sustainability criteria (SCSs can also offer an optional version with voluntary additional criteria).
- Have a grievance/complaint process that allows economic operators to contest decisions by the SCS.
- Report certification details to ICAO annually to enable cross-checking of claims.

***ICAO Council decision
(C-DEC) 222/12
Available at the ICAO
Council public website**



ICAO-approved SCS:

- Will not be responsible for evaluating social and economic sustainability criteria for standard CORSIA certification.*
- Should have open communication regarding “scheme-hopping.”

Guidance is in development by ICAO to enhance consistency of sustainability criteria application globally (Environment-related Themes 3-7).*

Open invitation for SCSs to apply - www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-SCS-evaluation.aspx

CORSIA Eligible Fuels

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

For all the details

<https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Eligible-Fuels.aspx>
(or Google it – “CORSIA eligible fuels”, first hit)

				
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

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

- Who's Reporting?
- What's Being Reported?
- How Does It All Work?

Who's Reporting?

Operators:

- If an operator wants to claim emissions reductions in CORSIA, it must report to its State.
- The airplane operator is the only obligated party under CORSIA, but it will need to work with others.

States:

- Emissions reductions from CEF are a key piece of information that States report to ICAO.
- Given the fungible nature of CEF and fuel infrastructure, some centralized data collection is important.

What's Being Reported?

Operators:

- Annex 16, Volume 4, Annex 5, Table A5-1 (Field 12)
- Annex 16, Volume 4, Annex 5, Table A5-2
- *Information must be reported fully to claim the emissions reductions.*

States:

- Annex 16, Volume 4, Annex 5, Table A5-6
- *Information reported to ICAO will enable tracking CEF use globally.*
- *Publication of the data will allow States to confirm that these fuels are only being claimed once.*

How Does It All Work?

Operator Includes CEF Data in Emission Report:

- Careful gathering and maintenance of tracking information.
 - This is the only “new” step.
 - Operator will work with fuel producer to ensure proper calculation of lifecycle emissions value and ensuring sustainability of the fuel.
- An extension of Emissions Report (no fundamental change to processes).

The State collects and aggregates verified information on CEFs from all airplane operators attributed to it and reports aggregated information to ICAO.



ICAO

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



THANK YOU