



Carbon Offsetting and Reduction
Scheme for International Aviation

ICAO CORSIA Forum – Session 2

CORSIA and Fuels

Jim Hileman

U.S. FAA

Co-rapporteur - CAEP
Fuels Task Group

Kristin Lewis

U.S. DOT Volpe Center

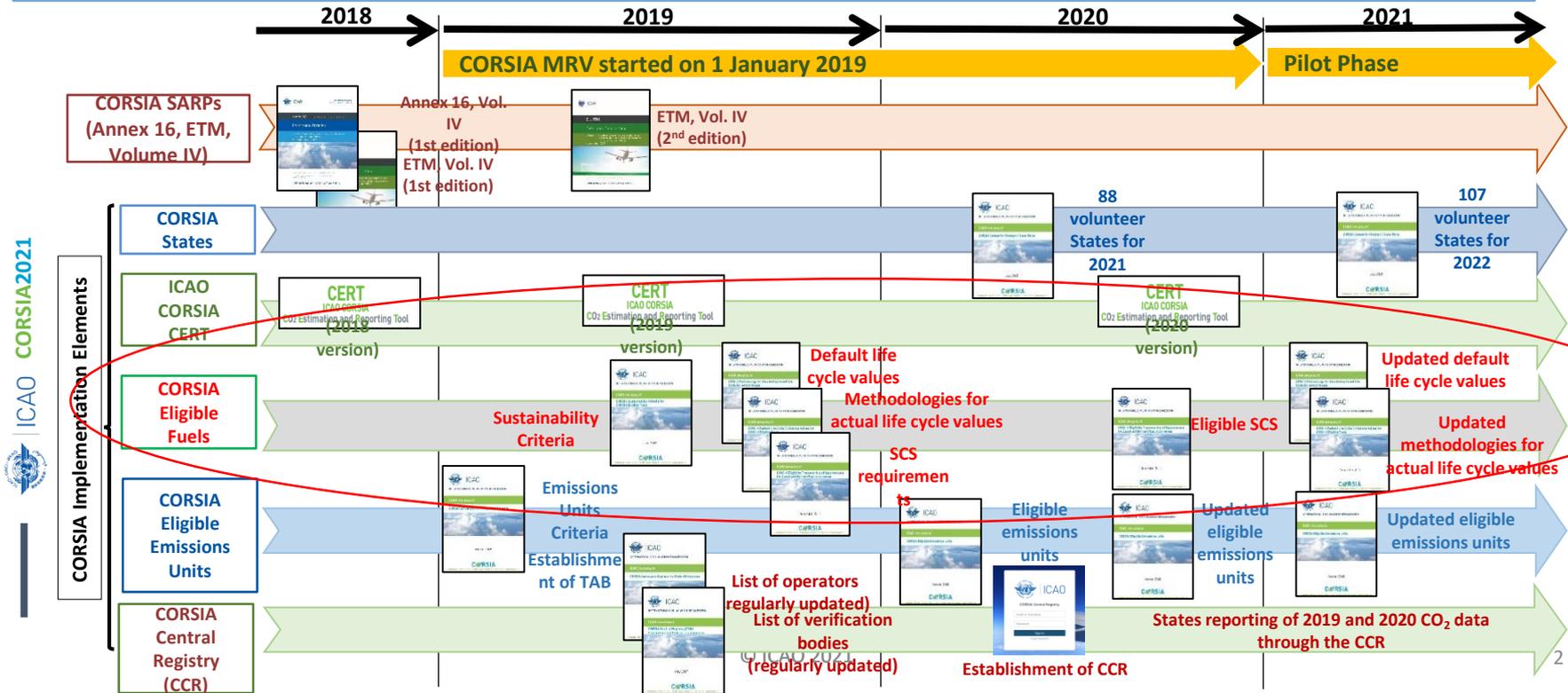
Co rapporteur - CAEP Sustainability
Certification Schemes Evaluation Group



CORSIA and Fuels

All essential elements for CORSIA implementation was finalized, ahead of CORSIA's pilot phase from 2021, and these elements are kept updated.

Focus of this presentation - CORSIA eligible fuels



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)

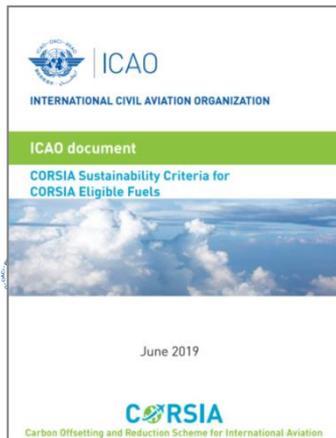
- “CORSIA Sustainable Aviation Fuel”: renewable or waste-derived fuel
- “CORSIA Lower Carbon Aviation Fuel”: fossil-based fuel

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

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

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

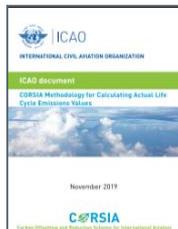
In CORSIA, there are two options to obtain the life cycle emissions of SAF.

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

*Work is ongoing on LCA methodologies for LCAF (expected conclusion: CAEP/12 Meeting – February 2022)

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

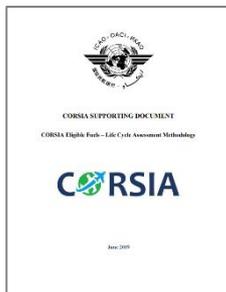
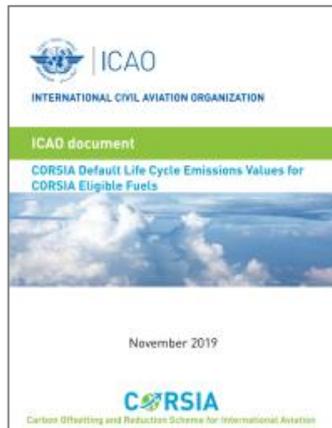
Fuel Conversion Process	Region	Fuel Feedstock	Core LCA Value	ILUC LCA Value	LSr (gCO ₂ e/MJ)
	Global	Agricultural residues	7.7		7.7
	Global	Forestry residues	8.3		8.3

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

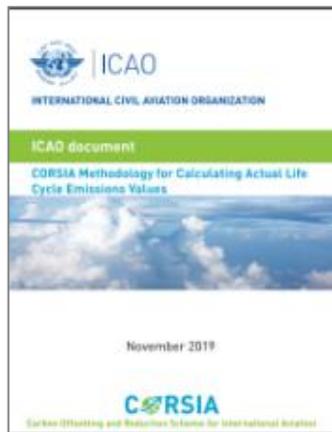
2) Induced land-use change (ILUC) emissions

- 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
“CORISIA Methodology
for Calculating Actual Life
Cycle Emissions Values”**



Actual LCA values using CORISIA Methodology

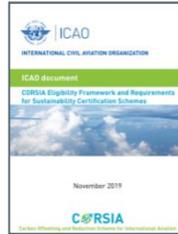
- Airline operator / fuel producer can work with an eligible Sustainability Certification Scheme (SCS) to seek a core LCA value representative of their specific fuel production pathway
- SCS will need to prepare a technical report justifying actual LCA value
- Methodology uses attributional process with 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”

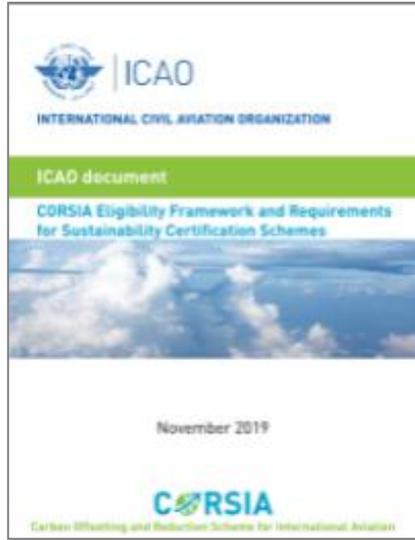
ICAO document “CORSIA
Approved SCSs”



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**

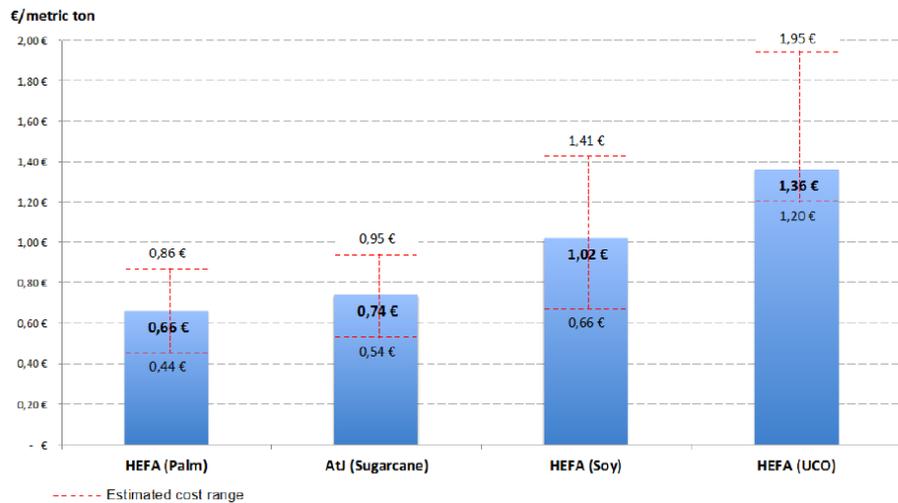


ICAO-approved SCS:

- 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).*

- Analysis conducted by ICAO based on literature review as well as actual experience from two SCS, which are now ICAO-approved.
- Cost of certification is approximately 0.1% of the cost of the finished fuel on a mass basis, encompassing all supply chain steps.



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



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