Sustainability and Reporting under CORSIA

Second Phase of the ICAO Assistance Project with the EU Funding :
"*Capacity Building for CO_2 Mitigation from International Aviation*

3 to 5 April 2023
Harare, Zimbabwe

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Agenda

1. The sustainability criteria for CORSIA eligible fuels
2. The sustainability certification process and the role of SCS
3. The CORSIA life cycle emissions methodology
4. Reporting of the use of CORSIA Eligible Fuels
5. Documents Required for a SAF claim
6. Conclusion

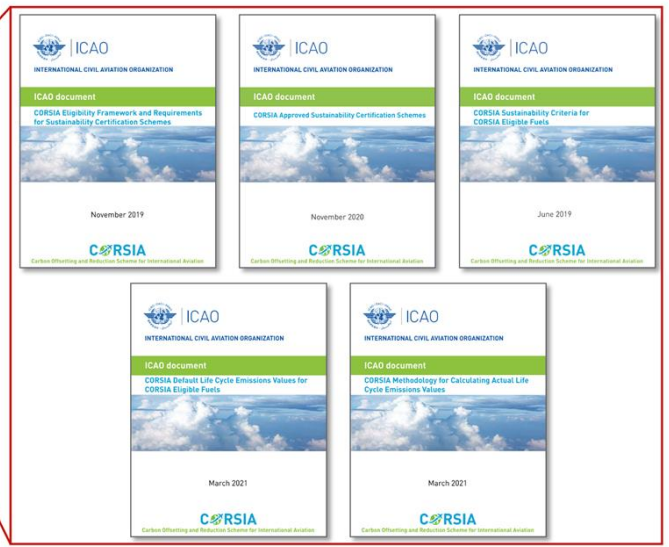
The sustainability criteria for CORSIA Eligible Fuels

CORSIA Implementation Element on CEFs

ICAO has published five key documents that contain all relevant requirements and procedures for CORSIA eligible fuels

ICAO CORSIA Implementation Elements	ICAO documents
CORSIA States for Chapter 3 State Pairs	1. CORSIA States for Chapter 3 State Pairs
ICAO CORSIA CO_2 Estimation and Reporting Tool (CERT)	2. ICAO CORSIA CO_2 Estimation and Reporting Tool
CORSIA Eligible Fuels	3. CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes 4. CORSIA Approved Sustainability Certification Schemes 5. CORSIA Sustainability Criteria for CORSIA Eligible Fuels 6. CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels 7. CORSIA Methodology for Calculating Actual Life Cycle Emissions Values
CORSIA Eligible Emissions Units	8. CORSIA Eligible Emissions Units 9. CORSIA Emissions Unit Eligibility Criteria
CORSIA Central Registry (CCR)	10. CORSIA Central Registry: Information and Data for the Implementation of CORSIA 11. CORSIA Aeroplane Operator to State Attributions 12. CORSIA 2020 Emissions 13. CORSIA Annual Sector's Growth Factor (SGF) 14. CORSIA Central Registry (CCR): Information and Data for Transparency

The five ICAO CORSIA Implementation Elements listed below are reflected in 14 ICAO documents approved by the ICAO Council for publication. These ICAO documents are directly referenced in Annex 16, Volume IV and are essential for the implementation of the CORSIA.



CORSIA Sustainability Themes

CORSIA sustainability criteria for CORSIA eligible fuels
First global approach to sustainability for an industry sector

Sustainability Themes	
1. Greenhouse Gases (GHG)	Carbon-reduction themes (CORSIA pilot phase, 2021-2023)
2. Carbon stock	
3. GHG reduction permanence	Environmental and socio-economic Themes for CEF (after CORSIA pilot phase, from 2024)
4. Water	
5. Soil	
6. Air	
7. Conservation	
8. Waste and Chemicals	
9. Seismic and Vibrational Impacts (only for LCAF)	
10. Human and labour rights	
11. Land use rights and land use	
12. Water use rights	
13. Local and social development	
14. Food security	

Carbon Reduction Themes

Theme 1: Greenhouse gases

- CORSIA eligible fuel should generate lower carbon emissions on a life cycle basis

Theme 2: Carbon stock

- CORSIA eligible fuel should not be made from biomass obtained from land with high carbon stock

Environmental Themes

Theme 3: GHG emissions reductions permanence

- Emissions reductions attributed to CORSIA CEF should be permanent.

Theme 4: Water

- Production of CORSIA CEF should maintain or enhance water quality and availability

Theme 5: Soil

- Production of CORSIA CEF should maintain or enhance soil health

Theme 6: Air

- Production of CORSIA CEF should minimize negative effects on air quality

Theme 7: Conservation

- Production of CORSIA CEF should maintain biodiversity, conservation value and ecosystem services

Theme 8: Waste and chemicals

- Production of CORSIA CEF should promote responsible management of waste and use of chemicals

Theme 9: Seismic and Vibrational Impacts (applicable to LCAF only)

- Production of CORSIA LCAF should minimize seismic, acoustic, and vibrational impacts

Socio-economic Themes

Theme 10: Human and labour rights

- Production of CORSIA CEF should respect human and labour rights

Theme 11: Land use rights and land use

- Production of CORSIA CEF should respect land and land use rights including indigenous and/or customary rights

Theme 12: Water use rights

- Production of CORSIA CEF should respect prior formal or customary water use rights

Theme 13: Local and social development

- Production of CORSIA CEF should contribute to social and economic development in regions of poverty

Theme 14: Food security

- Production of CORSIA CEF should promote food security in food insecure regions

The sustainability certification process and the role of Sustainability Certification Schemes (SCS)

Certification of CORSIA Eligible Fuels for use in CORSIA

An 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**.
  - Organizations that *certify economic operators* against the sustainability criteria
  - ensure that economic operators calculate actual life cycle emissions values (if default values are not applied) using the agreed methodology
  - *define sustainability certification requirements*, set requirements for certification bodies, auditors and accreditation bodies
  - monitor effectiveness of the assurance system.

ICAO Council approved SCS:

- included in the ICAO document entitled "*CORSIA Approved Sustainability Certification Schemes*"
  - available on the ICAO CORSIA website
  - approved by the ICAO Council.

Currently approved SCS by the ICAO Council

The ICAO Council approves SCS for certifying CORSIA Eligible fuels

- **Sustainability Certification ensures:**
  - Sustainability in feedstock production
  - Traceability of sustainable materials through the supply chain
  - Verified reduction of life cycle emissions

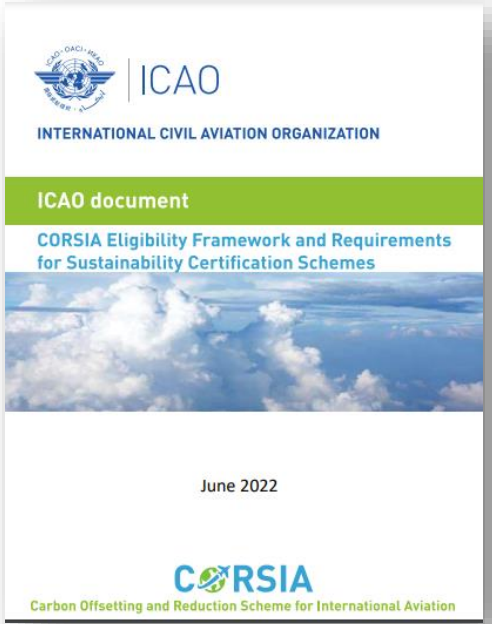
Name of the Sustainability Certification Scheme	Date of approval	Website	Applications and other Supporting Information	Application date
International Sustainability and Carbon Certification (ISCC)	18/Nov/2020	https://www.iscc-system.org/	https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-SCS-evaluation-ISCC.aspx	30/Apr/2020
Roundtable on Sustainable Biomaterials (RSB)	18/Nov/2020	https://rsb.org/	https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-SCS-evaluation-RSB.aspx	30/Apr/2020

Since November 2020, economic operators can **demonstrate compliance with the CORSIA Sustainability Criteria for CORSIA Eligible Fuels** by applying the ICAO-approved sustainability certification schemes (SCS)

Requirements for Sustainability Certification Schemes

Sustainability Certification Schemes must meet the requirements:

- included in the ICAO document entitled *"CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes"*,
  - available on the ICAO CORSIA website
  - approved by the ICAO Council.



Examples of SCS approval requirements

General requirements for SCS

- Documentation management
- Audit competencies
- Monitoring and system review
- Transparency
- Annual reporting to ICAO

Requirements set by SCS for economic operators

(include feedstock producers, processing facilities and traders)

- Documentation management
- Transparency on other SCS participation by economic operators
- CORSIA certification requirements

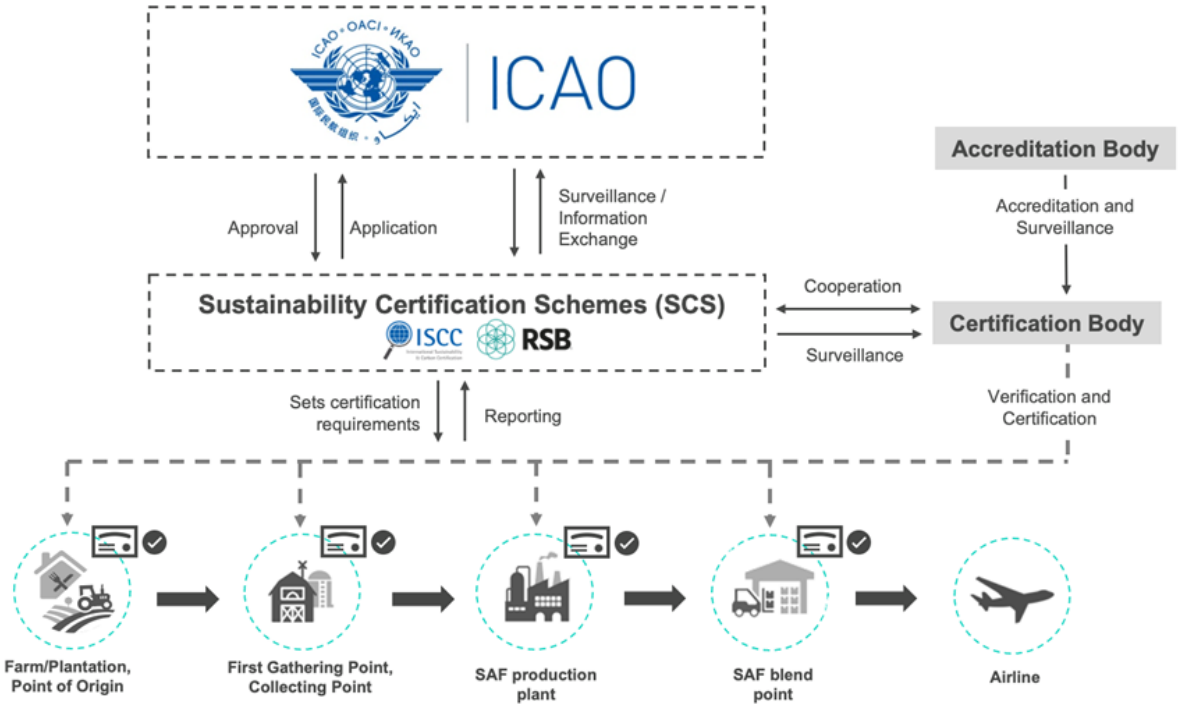
Requirements set by SCS on Certification Bodies

(Third-party conformity assessment bodies (ISO 17065:2012) making certification decisions and issuing certificates)

- Accreditation and Auditing standards
- Audits
- Certificate issuance

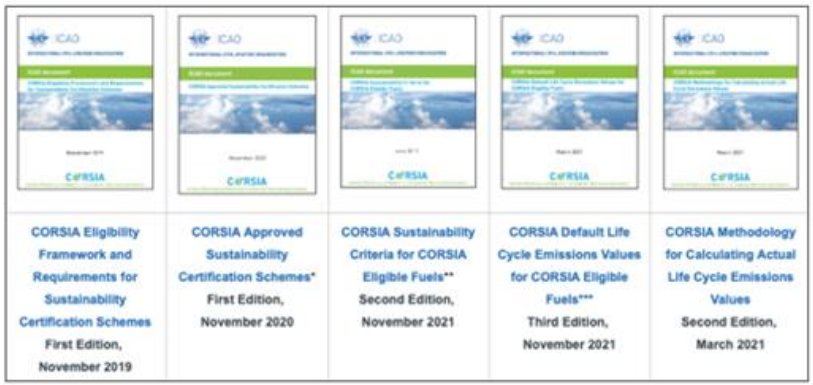
The certification 'ecosystem' for CORSIA eligible fuels

(key role players and activities involved)



How does sustainability certification work?

- The System Documents
  - **translate the relevant regulatory requirements** into the scheme's requirements and processes "on the ground"
  - lay down all relevant **certification requirements and processes** for Certification Bodies and System Users (i.e. certified companies)
  - are **publicly available** on the SCS' websites

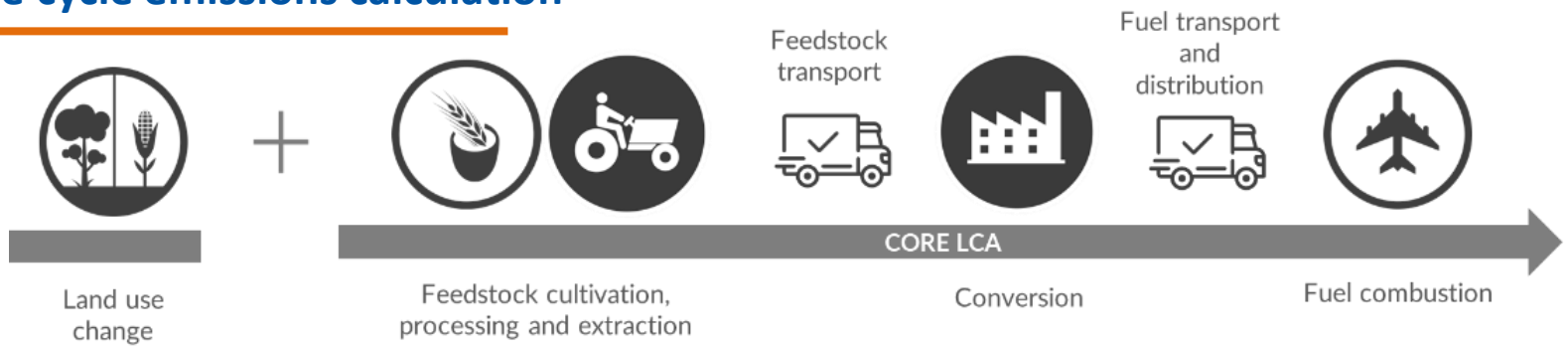


CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes	CORSIA Approved Sustainability Certification Schemes*	CORSIA Sustainability Criteria for CORSIA Eligible Fuels**	CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels***	CORSIA Methodology for Calculating Actual Life Cycle Emissions Values
First Edition, November 2019	First Edition, November 2020	Second Edition, November 2021	Third Edition, November 2021	Second Edition, March 2021

Example

The CORSIA life cycle emissions methodology

Life cycle emissions calculation



Recap: Annex 16, Vol IV (*calculation of the CEF emissions reductions (ERy) by operators*):

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

Where:

- ER_y= emissions reductions from the use of CORSIA eligible fuels in the given year y (tonnes);
- FCF= fuel conversion factor, equal to 3.16kg CO_2 /kg fuel for Jet-A / Jet-A1 fuel and 3.10kg CO_2 /kg fuel for AvGas / Jet-B fuel;
- $MS_{f,y}$= Total mass of a neat CEF claimed in the given year y by fuel type f (in tonnes);
- LS_f= Life cycle emissions value for a CORSIA eligible fuel (in gCO_2e /MJ); and
- LC = Baseline life cycle emissions values for aviation fuel, fixed value, 89 for jet fuel or 95 for AvGas [gCO_2e/MJ].

Life cycle emissions reductions of at least 10% (ILUC + Core LCA)

Main elements constituting the life cycle emission value of a CORSIA Eligible Fuel

Core Life Cycle Assessment (LCA) emissions

include the emissions associated with processes from

feedstock cultivation, harvesting, collection and recovery *to*

fuel combustion in an aircraft engine

Induced land-use change (ILUC) LCA emissions

includes both Direct & Indirect Land Use Change

Core LCA value can be determined either on the basis of default values or calculated actual LCA values.

ILUC value must be determined on the basis of default values, unless ILUC is considered as zero.

DLUC value must be determined on the basis of context specifics, in line with the CORSIA methodology for land use changes.

Example: Life cycle emission calculation

	Option 1	Option 2
Core LCA	25	45
CORSIA ILUC value	39.1	39.1
Total life cycle emissions (Core LCA+ILUC value)	**64.1**	**84.1**
CORSIA baseline	**89**	**89**
Total saving **Core LCA only (baseline - Core LCA)**	64	44
Total saving **Core LCA + ILUC (baseline - total life cycle emissions)**	24.9	4,9
% emissions reductions **Core LCA only**	**72%**	**49.4%**
% emissions reductions **Core LCA + ILUC**	**28%**	**5.5%**
CORSIA eligible? >10%		

Values in g CO2 eq / MJ

Life cycle emission calculation: Default values

SAF producer can use the default values published in the ICAO document entitled:

"CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels"

- Can only use the default life cycle emission values if the fuel supply chain matches with the information given in the table for the fuel conversion process;
  - Region
  - Type of feedstock
  - Pathway specification

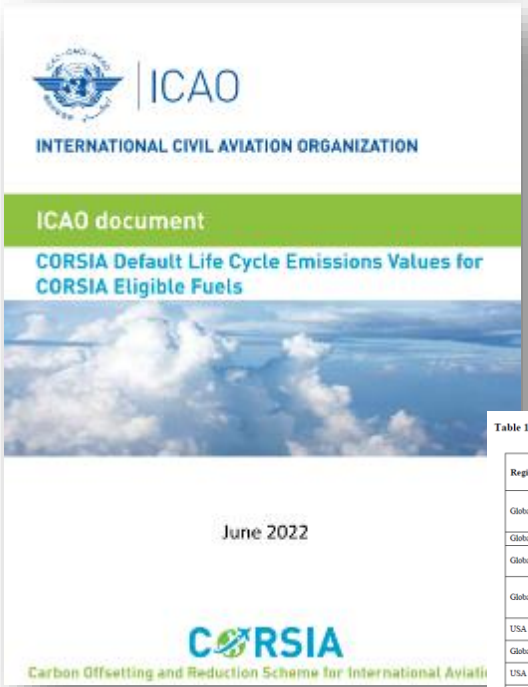


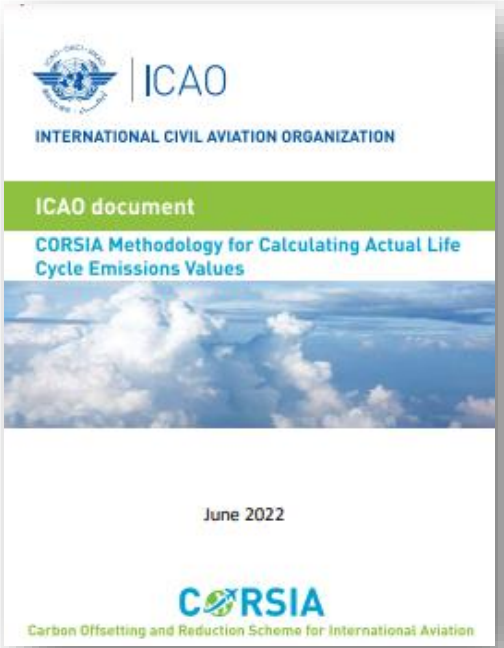
Table 1. CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels produced with the Fischer-Tropsch Fuel Conversion Process

Region	Fuel Feedstock	Pathway Specifications	Core LCA Value	ILUC LCA Value	LSr (gCO2e/MJ)
Global	Agricultural residues	Residue removal does not necessitate additional nutrient replacement on the primary crop	7.7	0.0	7.7
Global	Forestry residues		8.3		8.3
Global	Municipal solid waste (MSW), 0% non-biogenic carbon (NBC)		5.2		5.2
Global	Municipal solid waste (MSW) (NBC given as a percentage of the non-biogenic carbon content)		NBC*170.5 + 5.2		NBC*170.5 + 5.2
USA	Poplar (short-rotation woody crops)		12.2	-5.2	7.0
Global	Poplar (short-rotation woody crops)		12.2	8.6	20.8
USA	Miscanthus (herbaceous energy crops)		10.4	-32.9	-22.5
EU	Miscanthus (herbaceous energy crops)		10.4	-22.0	-11.6
Global	Miscanthus (herbaceous energy crops)		10.4	-12.6	-2.2

Life cycle emission calculation: Actual values

The economic operator (feedstock producer, fuel producer, fuel trader) shall ensure that the system used to calculate emissions for actual LCA values follows the **CORSIA LCA methodology**.

- The calculation shall include emissions from:
  - ongoing operational activities
  - material and utility inputs
- *Emissions generated during one-time construction or manufacturing activities (e.g. fuel production facility construction, equipment manufacturing) shall not be included.



Reporting on the use of CORSIA Eligible Fuels

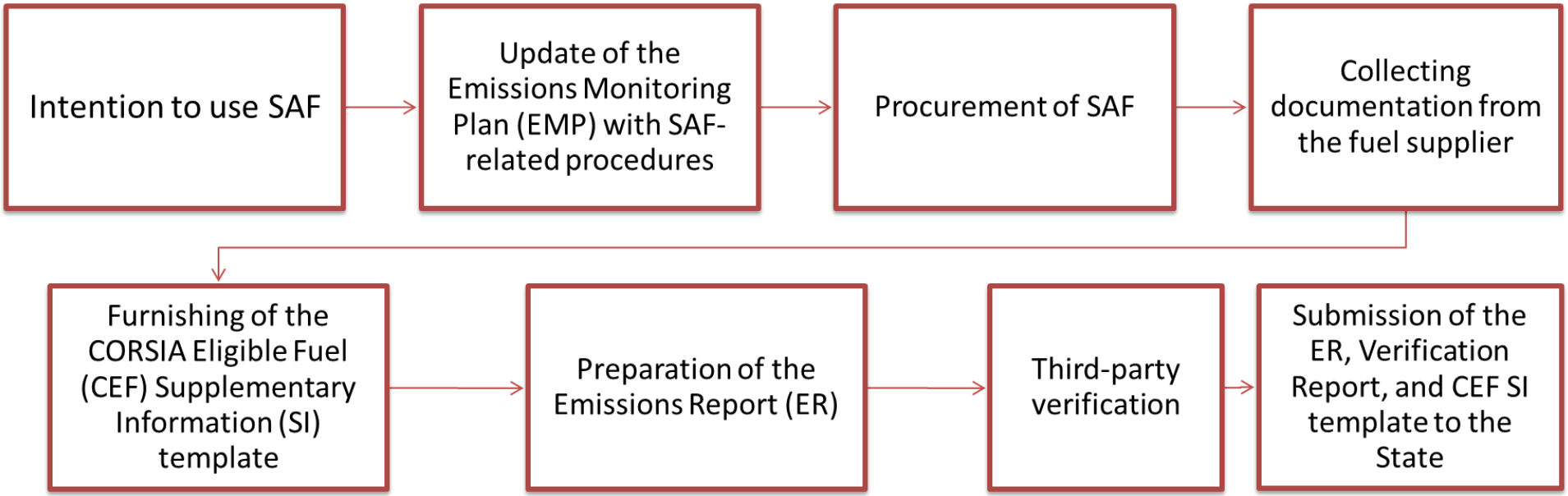
Reporting of SAF in CORSIA

- Reporting of use of SAF and claiming reductions:
  - governed by CORSIA SARPs and the Environmental Technical Manual (ETM)
- All pertinent documents to be retained for **at least 10 years**
- Proof of sustainability must come from sustainability certification schemes recognized by ICAO to claim Emissions Reductions
  - (currently only ISCC & RSB)
- CORSIA Eligible Fuels Supplementary Information template
  - must be completed and submitted to the verifier

Reporting of SAF in CORSIA

- 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.
- For blending that occurs in the second half of the final year of a compliance period,
  - the aeroplane operator and the State to which it is attributed should determine what, if any, flexibility is needed in terms of submitting reports

Reporting of SAF in CORSIA



Updates to the EMP

The EMP shall be updated with relevant procedures of handling and monitoring CORSIA Eligible Fuels.

5. DATA MANAGEMENT, DATA FLOW, CONTROL SYSTEM, RISK ANALYSIS AND DATA GAPS

(Annex 16, Volume IV, Appendix 4, 2.4)

a) Description of data management

Please provide a description of each step in the data flow and data processing, including controls to assure data quality, beginning with the source data up to the Emissions Report. Please reference the responsible departments. Please attach a data flow chart to the Emissions Monitoring Plan summarizing the systems used to record, store and control the quality of data associated with the monitoring and reporting of emissions.

CORSIA eligible fuel Supplementary Information Template

AEROPLANE OPERATOR IDENTIFICATION AND REPORTING INFORMATION

a) Name of aeroplane operator

Please enter the name of the aeroplane operator. This name should be the legal entity carrying out the aviation activities.

a1) Address of the aeroplane operator

Please enter the address of the aeroplane operator.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

b) Reporting year

CORSIA eligible fuel Supplementary Information Template

CORSIA ELIGIBLE FUEL CLAIM FORM

Note: for each claim of emissions reductions from the use of CORSIA eligible fuels, please replicate this form and fill separately.

Fuel Claim #:

a) Purchase date

Please enter the date when the neat CORSIA eligible fuel was purchased. Use the format yyyy-mm-dd.

b) Identification of the producer of the CORSIA eligible fuel

b1) Name of producer of the neat CORSIA eligible fuel

Please enter the name of the fuel producer.

b2) Address of the producer of the neat CORSIA eligible fuel

Please enter the address of the producer of the neat CORSIA eligible fuel.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

CORSIA eligible fuel Supplementary Information Template

c) Fuel production

c1) Date of production of the neat CORSIA eligible fuel

Please enter the date of production of the neat CORSIA eligible fuel. Use the format yyyy-mm-dd.

c2) Location of the production of the neat CORSIA eligible fuel

Please enter the address of the production of the neat CORSIA eligible fuel.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

c3) Batch identification number:

c4) Mass of each batch of neat CORSIA eligible fuel produced

Please enter the total mass of each batch of neat CORSIA eligible fuel produced (in tonnes).

CORSIA eligible fuel Supplementary Information Template

d) Fuel type

d1) Type of fuel

Please enter the type of fuel (i.e., Jet-A, Jet-A1, Jet-B, AvGas) for the purpose of computation of Life Cycle Emissions factors.

d2) Feedstock type

Please enter the information on the feedstock used to create the neat CORSIA eligible fuel.

d3) Conversion process

Please enter the conversion process (i.e., a type of technology used to convert a feedstock into neat CORSIA eligible fuel).

e) Portion of batch purchased (if needed)

e1) Percentage

If less than an entire batch of neat CORSIA eligible fuel is purchased, please enter the proportion of neat CORSIA eligible fuel batch purchased (in percentage terms).

e2) Mass of batch purchased

Please enter the mass of CORSIA eligible fuel batch purchased (in tonnes).

f) Mass of neat CORSIA eligible fuel

Please enter the total mass of all batches of neat CORSIA eligible fuel included in the claim (in tonnes).

CORSIA eligible fuel Supplementary Information Template

g) Sustainability documentation

Please provide evidence that the fuel satisfies the CORSIA Sustainability Criteria i.e., reference of attached valid certification document.

h) Life Cycle Emissions Values of the CORSIA eligible fuel

h1) Default or Actual Life Cycle Emissions value (LS_f)

Please enter the Life Cycle Emissions value (in gCO_2e/MJ).

h2) Default or Actual Core Life Cycle Assessment (LCA) value

Please enter the Core Life Cycle Assessment (LCA) value (in gCO_2e/MJ).

h3) Default Induced Land Use Change (ILUC) value

Please enter the Induced Land Use Change (ILUC) value (in gCO_2e/MJ).

CORSIA eligible fuel Supplementary Information Template

i) Intermediate purchaser 1 (if needed)

If the aeroplane operator claiming emissions reductions from the use of CORSIA eligible fuels is not the original purchaser of the fuel from the producer (e.g., the aeroplane operator purchased fuel from a broker or a distributor), include the identity and contact information of these purchaser(s).

i1) Name of the intermediate purchaser 1.

Please enter the name of the intermediate purchaser 1.

i2) Address of the intermediate purchaser 1.

Please enter the address of the intermediate purchaser 1.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

CORSIA eligible fuel Supplementary Information Template

k) CORSIA eligible fuel shipper

k1) Name of the CORSIA eligible fuel shipper.

Please enter the name of the party responsible for shipping of the neat CORSIA eligible fuel to the fuel blender.

k2) Address of the CORSIA eligible fuel shipper.

Please enter the address of the party responsible for shipping of the neat CORSIA eligible fuel to the fuel blender.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

CORSIA eligible fuel Supplementary Information Template

l) Fuel blender

l1) Name of the fuel blender

Please enter the name of the party responsible for blending neat CORSIA eligible fuel with aviation fuel.

l2) Address of the fuel blender

Please enter the address of the party responsible for blending neat CORSIA eligible fuel with aviation fuel.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

m) Location of blending

Please enter the location where the neat CORSIA eligible fuel is blended with aviation fuel.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

CORSIA eligible fuel Supplementary Information Template

n) Neat CORSIA eligible fuel received

n1) Date the neat CORSIA eligible fuel was received

Please enter the date the neat CORSIA eligible fuel was received by blender. Use the format yyyy-mm-dd.

n2) Mass of neat CORSIA eligible fuel received

Please enter the mass of neat CORSIA eligible fuel received (in tonnes).

o) Blend ratio of neat CORSIA eligible fuel and aviation fuel

Please enter the blend ratio of neat CORSIA eligible fuel and aviation fuel.

p) Documentation demonstrating blending

Please provide documentation demonstrating that the batch or batches of CORSIA eligible fuel were blended into aviation fuel (e.g., the subsequent Certificate of Analysis of the blended fuel).

q) Mass of neat CORSIA eligible fuel claimed

Please enter the mass of neat CORSIA eligible fuel claimed (in tonnes).

CORSIA eligible fuel Supplementary Information Template

SUMMARY OF CORSIA ELIGIBLE FUELS INFORMATION

a) Summary of CORSIA eligible fuels (by fuel claim #)

Please provide a summary of the CORSIA eligible fuels claimed for the reporting year.

Fuel claim #	Fuel type			Total mass of neat CORSIA eligible fuel claimed (in tonnes)	Life cycle emissions values of the CORSIA eligible fuel	Emissions reduction from CORSIA eligible fuels claimed (in tonnes)
	Type of fuel	Feedstock type	Conversion process			
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

b) Summary of information of CORSIA eligible fuels claimed

b1) Total of emissions reduction from CORSIA eligible fuels claimed (in tonnes)

Please enter the sum of the values included in column "Emissions reduction from CORSIA eligible fuels claimed (in tonnes)" of the table above.

Documents required for a SAF claim

Key Documents required for a SAF claim

- All these documents need to be provided by the aeroplane operator using SAF:
  - Processes and procedures related to the use of SAF
    - shall be included in the approved (Annual) Emissions Monitoring Plan
  - 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 these other schemes.
  - Purchase records/invoices for the full amount of SAF claimed
  - Sale records/invoices for any SAF sold to third parties
  - Sustainability Credentials/Proof of Sustainability
  - Fuel uplift records/fuel slips **Recommended**

Conclusion

- CORSIA eligible fuels must meet the sustainability criteria approved by the ICAO Council
- Sustainability Certification Schemes for certifying CORSIA eligible fuels must be approved by the ICAO Council
- The life-cycle emissions values of a CORSIA Eligible Fuel is composed of Core Life Cycle Assessment (LCA) emissions and Induced land-use change (ILUC) emissions
- Reporting of the use of CORSIA Eligible Fuels and claiming reductions is governed by CORSIA SARPs and the Environmental Technical Manual (ETM)
- Documents Required for a SAF claim are outlined in Annex 16:Vol IV


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
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THANK YOU