



ICAO initiatives on Sustainable Aviation Fuels

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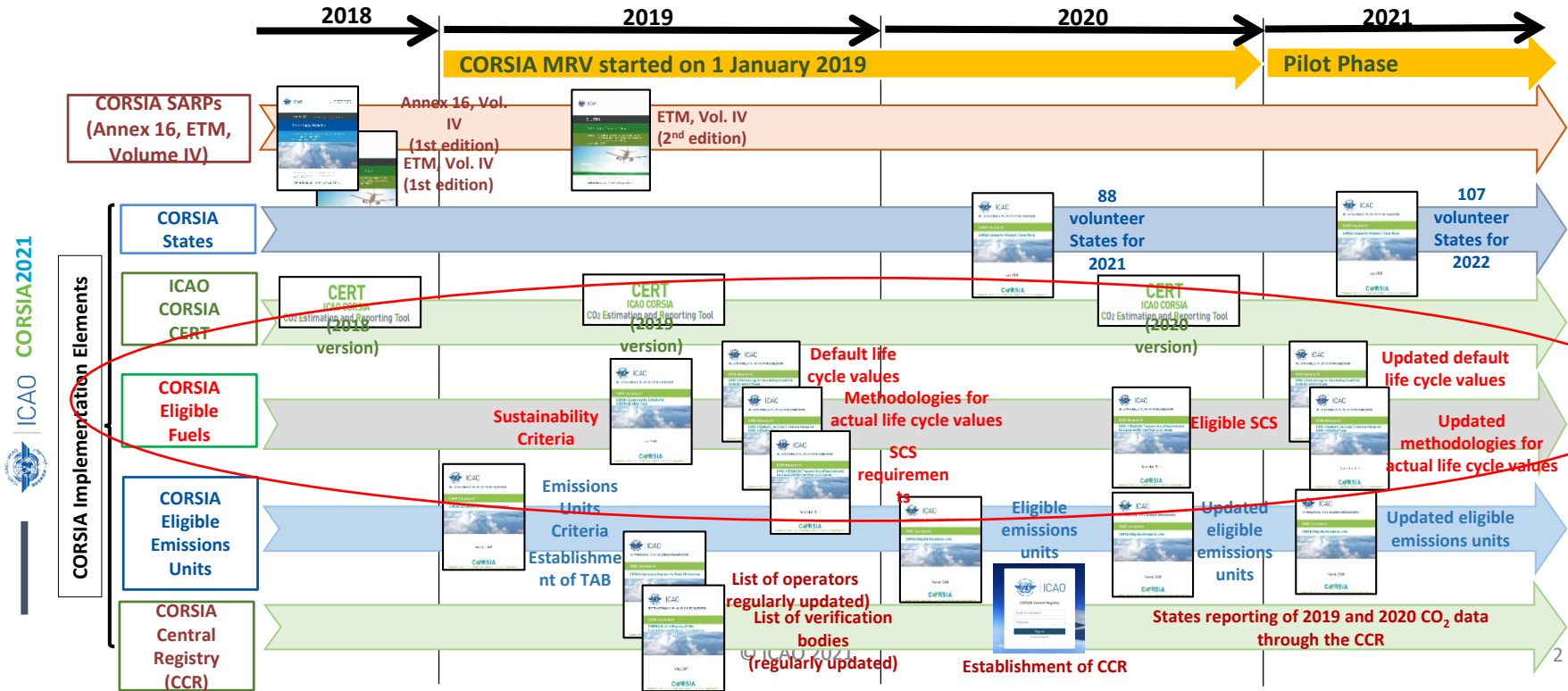
Environmental Officer

International Civil Aviation Organization (ICAO)

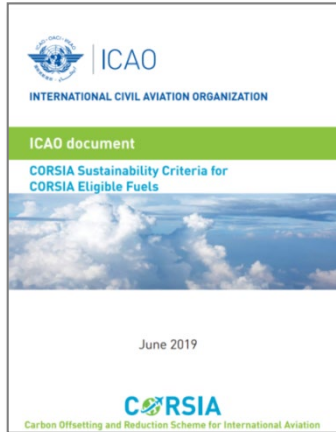


CORSIA and Fuels

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



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



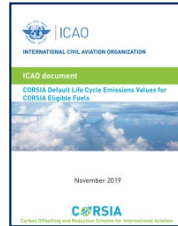
Sustainability Themes
1. Greenhouse Gases (GHG)
2. Carbon stock
3. Water
4. Soil
5. Air
6. Conservation
7. Waste and Chemicals
8. Human and labour rights
9. Land use rights and land use
10. Water use rights
11. Local and social development
12. Food security

Carbon-reduction themes
(CORSIA pilot phase, 2021-2023)

Environmental and socio-economic Themes for SAF
Adopted by the ICAO Council for next CORSIA Phases*
(10/Nov/2021)

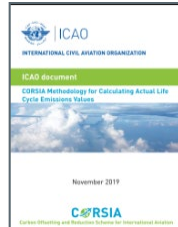
In CORSIA, there are two options to obtain the life cycle emissions of SAF.

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
Latest values (March 2021): HEFA Brassica Carinata, and ETJ agricultural residues, forestry residues, Miscanthus, and Switchgrass

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



Allows calculation of specific emissions values for a given SAF

These documents are being updated on a yearly basis

First Global Approach to Life Cycle Assessment

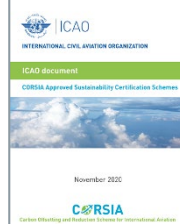
*Work is ongoing on LCA methodologies for LCAF (expected conclusion: CAEP/12 Meeting – February 2022)

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



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





SAF tracker tools

SAF Tracking tools (click on the drops for details)



- Prestocktaking Webinar covered synthetic fuels (PtL)
- Main event - 1 Specific session on Fuels (8 speakers)
- SAF mentioned all over the event (policies, goals, partnerships, infrastructure, roadmaps...)
- Presentations available at ICAO.TV

- Updated daily
 - **10/Nov/2021 – 20 billion liters of offtake agreements reached (Velocys/Southwest announcement)**
- Transparent – all data available for consultation
- **New tool – SAF production facilities map**



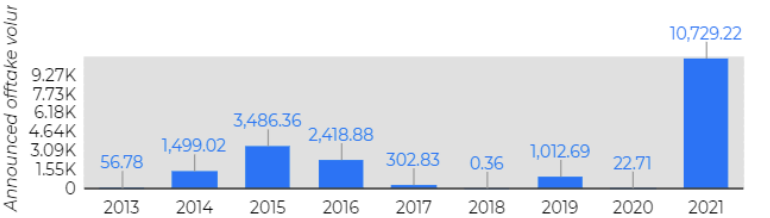
<https://www.icao.int/Meetings/Stocktaking2021/>

<https://www.icao.int/environmental-protection/pages/SAF.aspx>
(or google it “Sustainable Aviation Fuels, first hit”)

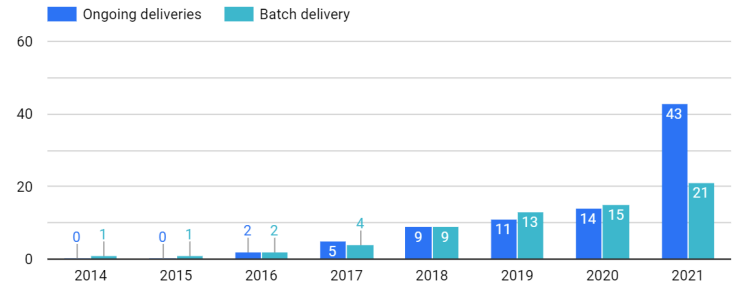


2021 is the year of SAF

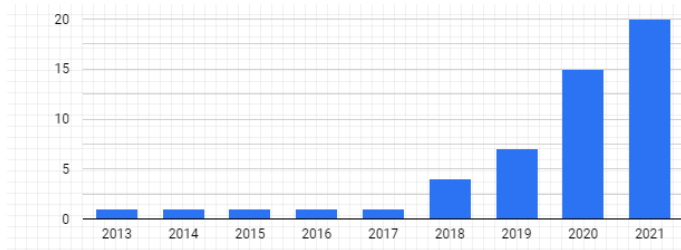
Offtake agreements



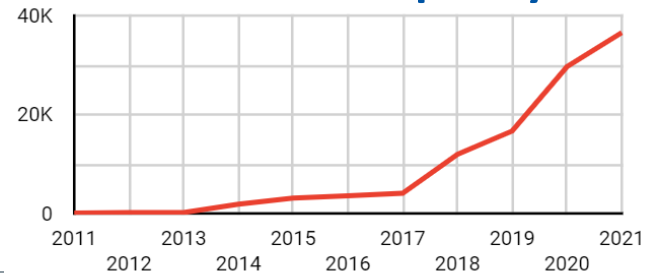
Airports



Policies



Production capacity





ICAO resolution A40-18 (2019) requested the LTAG work

Task

The Assembly... Requests the Council to continue to explore the feasibility of a long term global aspirational goal for international aviation,

How to do the task

through conducting detailed studies assessing the attainability and impacts of any goals proposed, including the impact on growth as well as costs in all countries, especially developing countries,

Timeline

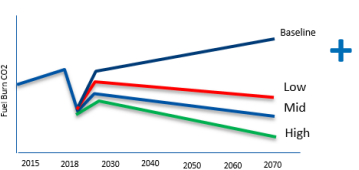
for the progress of the work to be presented to the 41st Session of the ICAO Assembly. [2022]

Consideration

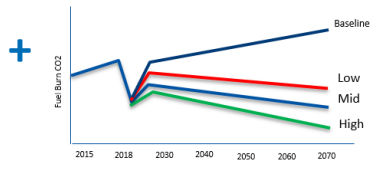
Assessment of long term goals should include information from member States on their experiences working towards the medium term goal.

ICAO work on a Long Term goal for international aviation

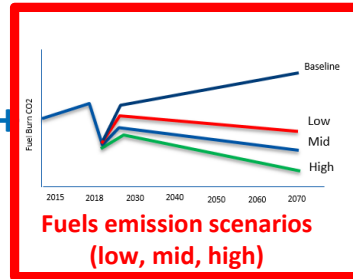
Modeling of effects of technology & operations & fuel



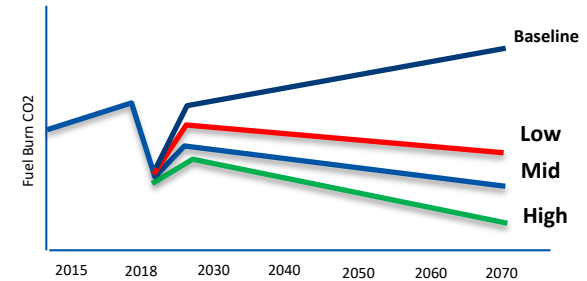
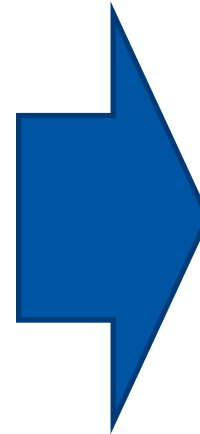
Technology emission scenarios
(low, mid, high)



OPS emission scenarios
(low, mid, high)



Fuels emission scenarios
(low, mid, high)



LTAG integrated in sector scenarios that represent a range of readiness and attainability



Fuels Subgroup objective - develop in-sector emissions reduction scenarios associated with identified fuel categories.

LTAG sustainable aviation fuels – *drop-in aviation fuels that get the carbon in their fuel from renewable or waste resources.*

Fuels made from biomass, solid/liquid/gaseous wastes (e.g. Municipal Solid Waste, CO/CO₂ waste streams), and atmospheric CO₂

LTAG lower carbon aviation fuels – *drop-in fuels that get the carbon in their fuel from petroleum resources and demonstrate a well-to-wake carbon intensity of <80.1 gCO_{2e}/MJ*

Fuels made from petroleum improvements to reduce lifecycle CO₂ emissions (e.g. reduced flaring, venting and fugitives, use of renewable energy, carbon capture)

Non drop-in fuels – aviation fuels that require changes to existing and legacy airframes and fueling supply infrastructure
Hydrogen and Electricity

ICAO
Documents



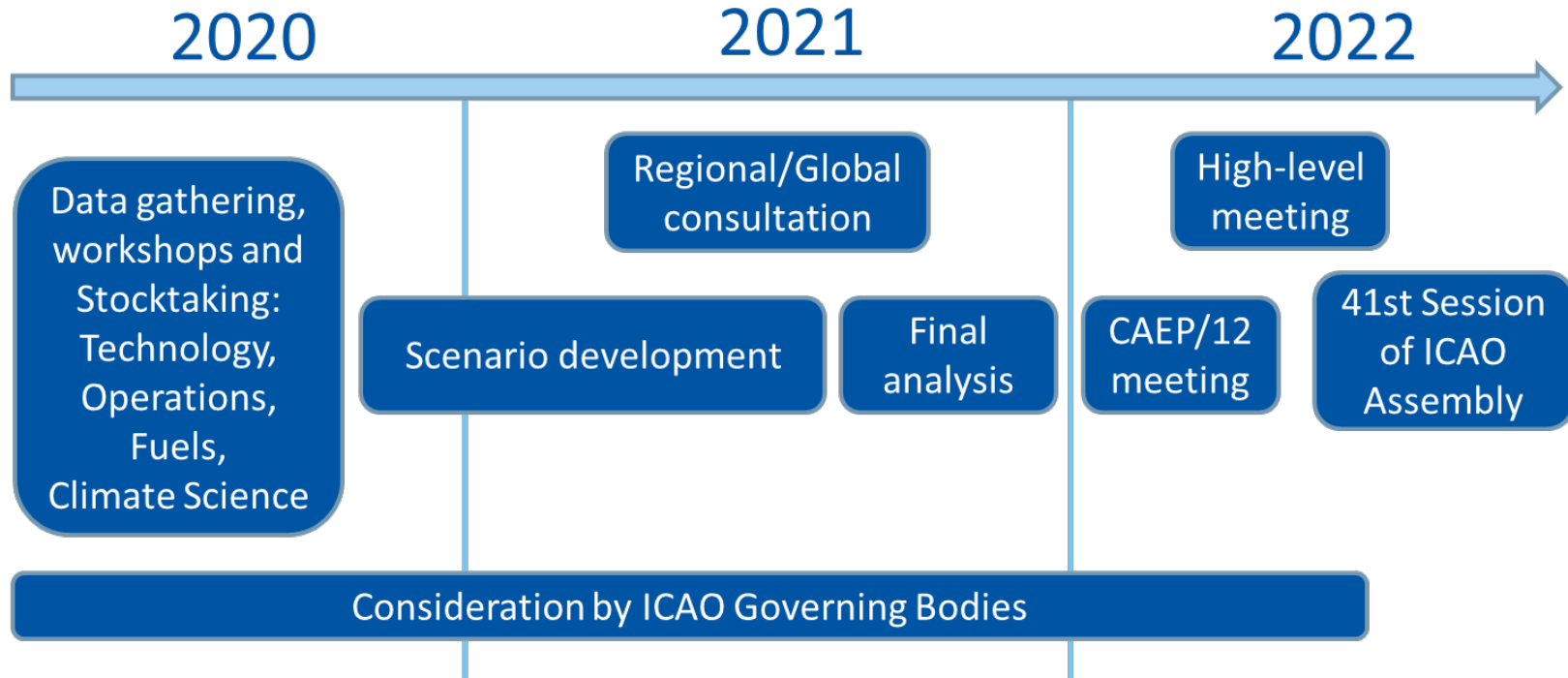
Stocktaking
Questionnaires



Data Input
Review

External
Sources







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