ICAO

RECONNECTINGTHEWORLD

ICAO AFI Seminar on SAF and CORSIA ESAF and WACAF regions

ICAO's work on SAF CORSIA Eligible Fuels

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History on ICAO and SAF

13 years ago

- **Technical feasibility and safety under consideration**
- **No certified conversion processes**
- **Very few demonstration flights**
- **Then, in 2009, the First Conference on Aviation and Alternative Fuels (CAAF/1) was convened in Rio de Janeiro and recommended:**
  - the use of SAF as a means to reduce aviation emissions;
  - the establishment of the ICAO Global Framework for Aviation Alternative Fuels (GFAAF);
  - the development of life cycle analysis methodologies;
  - the development of a common definition of Sustainability requirements

GFAAF
Global Framework for Aviation Alternative Fuels

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History on ICAO and SAF

Over the past 10 years…

- 2010 – Inclusion of SAF as a measure to reduce aviation CO_2 emissions (ICAO Resolution A37-17)
- **2012 – Rio + 20 conference – SAF flight from Montréal to Rio with then ICAO Secretary General**
- 2017 – ICAO Second Conference on Aviation and Alternative Fuels (CAAF/2) – 2050 ICAO Vision
- 2018 – CORSIA adoption (including SAF provisions)

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ICAO Activities on SAFs

ICAO is facilitating SAF development and deployment by:

1) Establishing **Policies, measures and goals**

2) Developing globally-accepted **Standards**, **sustainability criteria,** and **life cycle methodologies for SAF use in CORSIA.**

3) Organizing **events** for information-sharing and outreach

4) Sharing **information and best practices**

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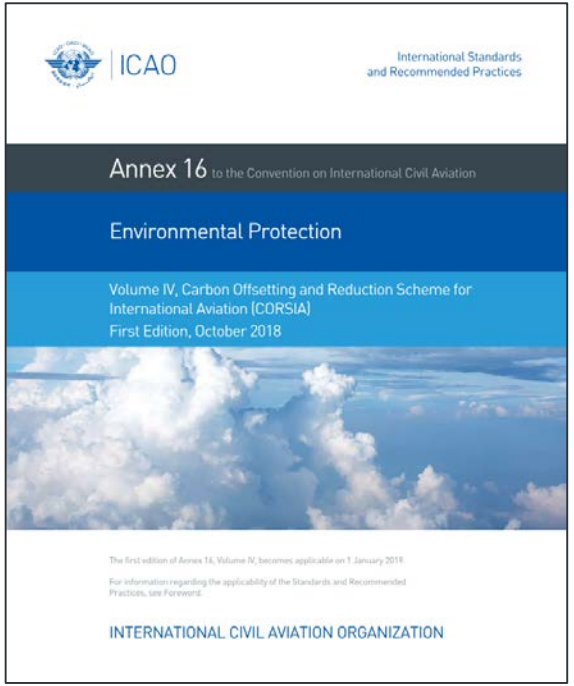
What is SAF?

Annex 16 Vol IV definitions

- ***Feedstock***. A type of unprocessed raw material used for the production of aviation fuel.
- ***Conversion process.*** A type of technology used to convert a feedstock into aviation fuel.
- ***Pathway***. A specific combination of feedstock and conversion process used for the production of aviation fuel.
- ***CORSIA Sustainable Aviation Fuel -*** a renewable or waste derived aviation fuel that meets the CORSIA Sustainability Criteria under this Volume.



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Conversion processes and feedstocks

To date, 9 conversion processes have been approved by ASTM to produce SAF.

Most commonly used are:

Hydroprocessed esters and fatty acids (HEFA)*	Fischer Tropsch (FT)*	alcohol-to-jet (ATJ)
animal tallow 	forestry residues 	waste gases (e.g. steel mill) 
Vegetable oils 	used cooking oil 	miscanthus 
	Municipal solid waste (MSW) 	Sugarcane 
		Crop residues 

HEFA and FT can also be co-processed at conventional petroleum refineries

For details on all conversion processes:

https://www.icao.int/environmental-protection/GFAAF/Pages/Conversion-processes.aspx

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ICAO Outreach activities

- 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

ICAO TV

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

SAF tracker tools

- Updated daily

29 mars 2022- British Airways takes first delivery of Sustainable Aviation Fuel from Phillips 66

28 mars 2022- AECOM Partners with Genifuel to Transform Algae and Wastewater Solids into SAF

- Transparent – all data available for consultation
- **New tool – SAF production facilities map**

https://www.icao.int/environmental-protection/pages/SAF.aspx
(or google it "Sustainable Aviation Fuels")

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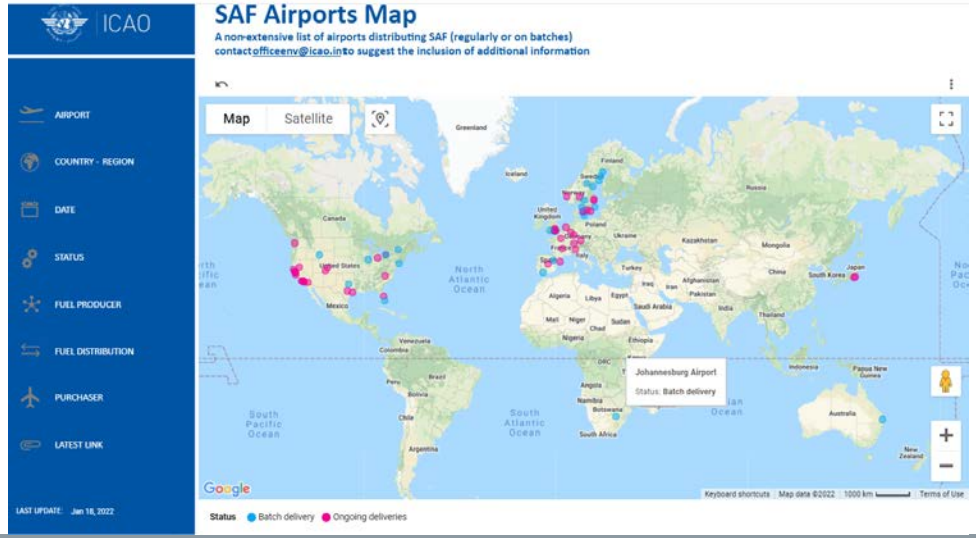
Airports tracker

46 airports distributing SAF

- Tracker of airports offering Sustainable Aviation Fuels, either continuously or in batches



	Date	Airport	Status	Source
1..	2 mars 2022	Izmir Adnan Menderes Airport	Ongoing deliveries	https://www.raillyne...
2..	16 févr. 2022	Singapore Airport	Batch delivery	https://www.reuters...
3..	18 janv. 2022	Jacqueline Cochran Regional Airport	Ongoing deliveries	https://www.hydroc...
4..	28 déc. 2021	Milan Linate Airport	Ongoing deliveries	https://www.ainonli...
5..	12 nov. 2021	Dallas Fort Worth Airport	Batch delivery	https://www.aviatio...
6..	24 oct. 2021	Gatwick Airport	Batch delivery	https://www.kuna.n...
7..	13 oct. 2021	Ängelholm Airport	Batch delivery	information receive...
8..	13 oct. 2021	Skellefteå Airport	Batch delivery	information receive...

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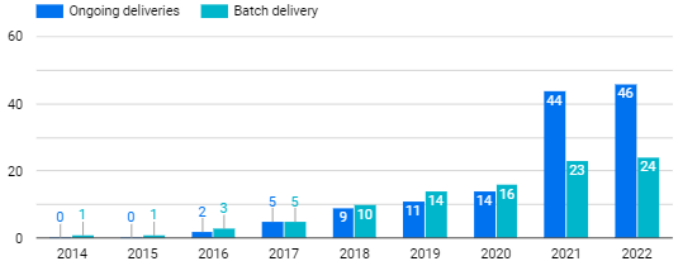

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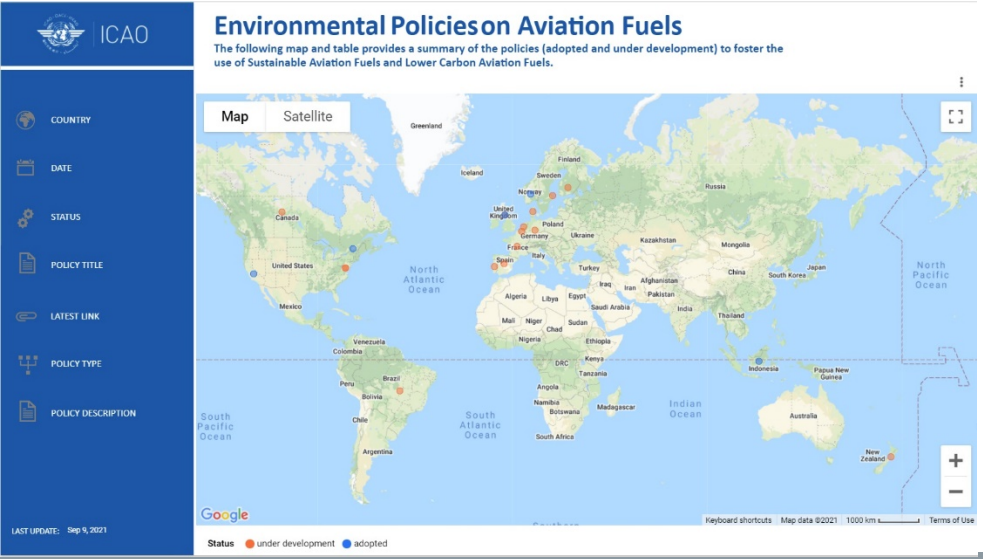
Policies tracker

- Tracker of Policies adopted or under development to foster SAF development



Date	State	Policy Title	Policy Description	Status	Source
Jan 2, 2022	Denmark		Denmark Targets 2030 For Fossil Fuel-Free Domestic Flights	under development	https://simpleflying.com/denmark-fossil-fuel-free-flights/
Dec 10, 2021	Japan		Japanese government officials are working on plans to slash carbon emissions by the country's airlines. They say that by 2030, their planes should be powered by 10 percent biofuel.	under development	https://www3.nhk.or.jp/nhkworld/en/news/20211210_30/
Sep 9, 2021	United States	Sustainable Aviation Tax Credit	Sustainable Aviation Fuel tax credit as part of the Build Back Better Agenda. This credit will help cut costs and rapidly scale domestic production of sustainable fuels for aviation. The proposed tax credit requires at least a 50% reduction in lifecycle greenhouse gas emissions and offers increased incentive for greater reductions.	under development	https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/09/fact-sheet-biden-administration-advances-the-future-of-sustainable-fuels-in-american-aviation/
Jul 23, 2021	United Kingdom		Proposes the introduction of an obligation on fuel suppliers to reduce the carbon footprint of jet fuel used in the UK, to be achieved through greater use of sustainable aviation fuels. UK is seeking comments on the: need for a SAF mandate high-level ambition and design of the proposed SAF mandate fuel eligibility criteria interactions between SAF and other domestic and international policy compliance, reporting and verification principles that will steer the creation of the scheme	under development	https://www.gov.uk/government/consultations/mandating-the-use-of-sustainable-aviation-fuels-in-the-uk
Jul 16, 2021	Regional (European Union)	ReFuelEU	proposed mandate of SAF use, starting from 2% in 2025 up to 63% in 2050	under development	https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12303-ReFuelEU-Aviation-Sustainable-Aviation-Fuels_en https://ec.europa.eu/info/sites/default/files/refueleu_aviation_-_sustainable_aviation_fuels.pdf
Jun 13, 2021	New Zealand	Sustainable Biofuels Mandate	Proposed policy requires fuel suppliers to reduce the GHG emissions from transport fuels by a defined percentage each year. It applies to all transport fuels, including domestic aviation fuel, and requires biofuels to meet sustainability criteria to certify that they do not impact on food production or indigenous	under development	https://www.transport.govt.nz/area-of-interest/environment-and-climate-change/biofuels/

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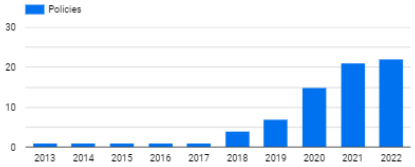

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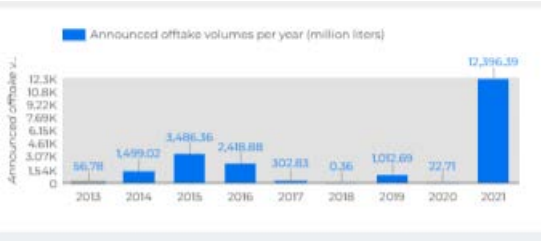
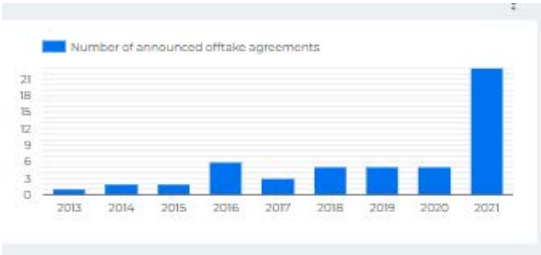
Offtake Agreements tracker

- information on SAF purchase agreements





	Date	Fuel producer	Fuel Supplier	Fuel User / Purchaser	total offtake volume (million liters)	Length of offtake agreement (years)	Source
1.	Dec 14, 2021	BP		Qantas	30	3	https://www.qantas.com/agencyconnect/au/en/agency...
2.	Dec 4, 2021	OMV		Austrian Airlines	1.9	1	https://simpleflying.com/austrian-airlines-to-take-1500...
3.	Dec 2, 2021	Philips 66		British Airways			https://www.businesswire.com/news/home/20211202000...
4.	Dec 1, 2021	Aemetis		American Airlines	424	7	https://news.aa.com/news/news-details/2021/American...
5.	Dec 1, 2021	Aemetis		oneworld	106	7	https://www.airport-technology.com/news/aemetis-airli...
6.	Nov 12, 2021	Neste		Deutsche Post DHL			https://www.environmentalleader.com/2021/11/deutsch...
7.	Nov 10, 2021	Velocys		IAG	276.3	10	https://www.velocys.com/2021/11/10/saf-offtake-with-iag/
8.	Nov 10, 2021	Velocys		Southwest Airlines	829	15	https://www.prnewswire.com/news-releases/southwest...
9.	Oct 4, 2021	Atmosfair		Lufthansa Cargo / Ku...	0.1	5	https://newsroom.kuehne-nagel.com/kuehnenagel-an...

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Summary per fuel producer

	Fuel producer	Total offtake volume (million liters)	Number of offtake agreements
1.	Fulcrum	6,719.1	3
2.	Alder Fuels	5,678.12	1
3.	SG Preston	2,536.22	1
4.	Aemetis	1,476.31	3
5.	Velocys	1,105.34	2
6.	ECB Group	1,050.08	2
7.	SkyNRG	936.98	1
8.	SG Preston	677.58	2
9.	Wastefuel	378.54	1
10.	Gevo	208.2	4
11.	RedRock	158.99	2
	Grand total	21,196.02	52

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Summary per fuel purchaser

	Fuel purchaser	Total offtake volume (million liters)	Number of offtake agreements
1.	United Airlines	9,779.62	4
2.	Jet Blue	2,991.83	3
3.	AirBP	2,192.71	2
4.	Cathay Pacific	1,419.53	1
5.	Delta	985.34	6
6.	KLM	937.04	4
7.	Southwest Airlines	829	1
8.	Shell	750.08	1
9.	American Airlines	495.89	3
	Grand total	21,196.02	52

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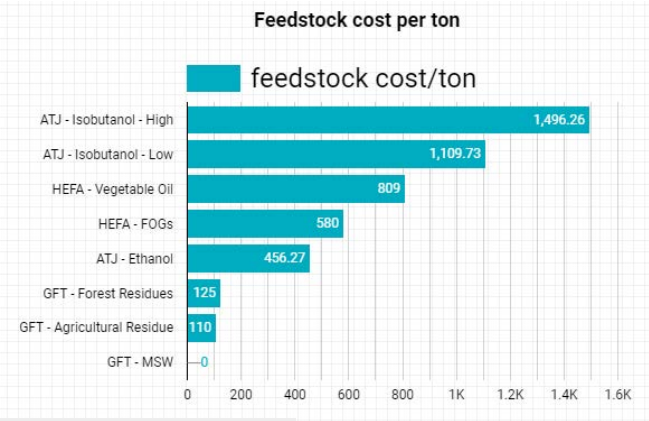
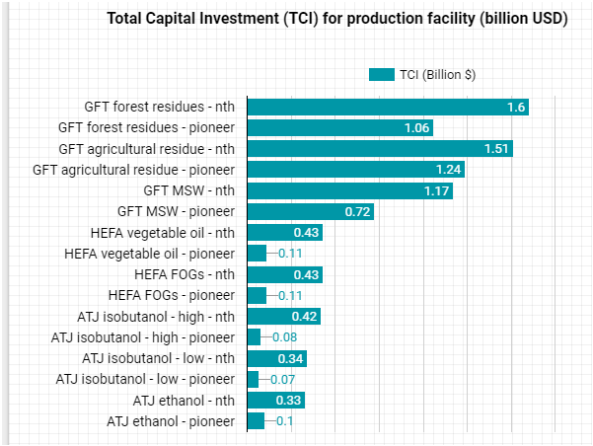
SAF high-level numbers

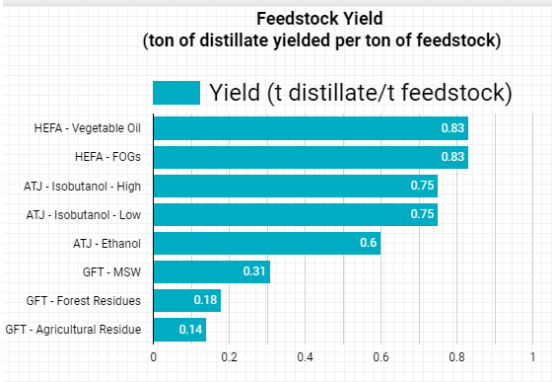
Estimations related to SAF, including:

- yield per feedstock type
- Investments needed for SAF facilities
- Feedstock costs

Allows to estimate tradeoffs between variables.







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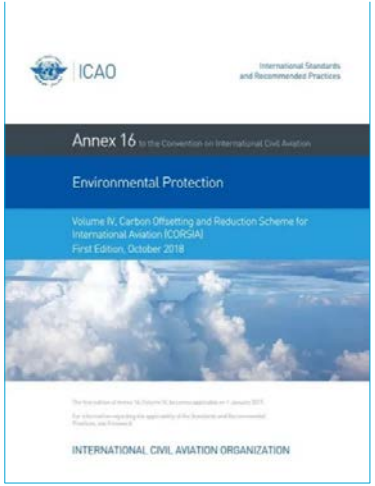
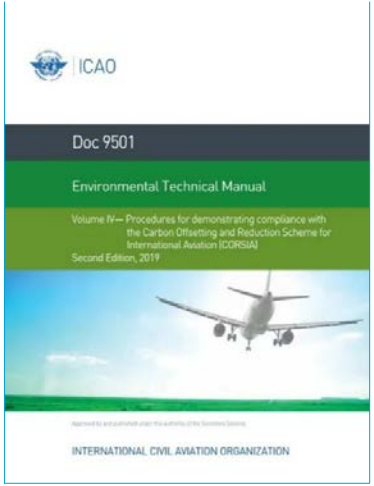
CORSIA and SAF

- The CORSIA Implementation Package

Res. A40-19



Annex 16, Volume IV (CORSIA SARPs)



ETM Volume IV
(2nd edition)

CORSIA Implementation Elements
(ICAO documents)

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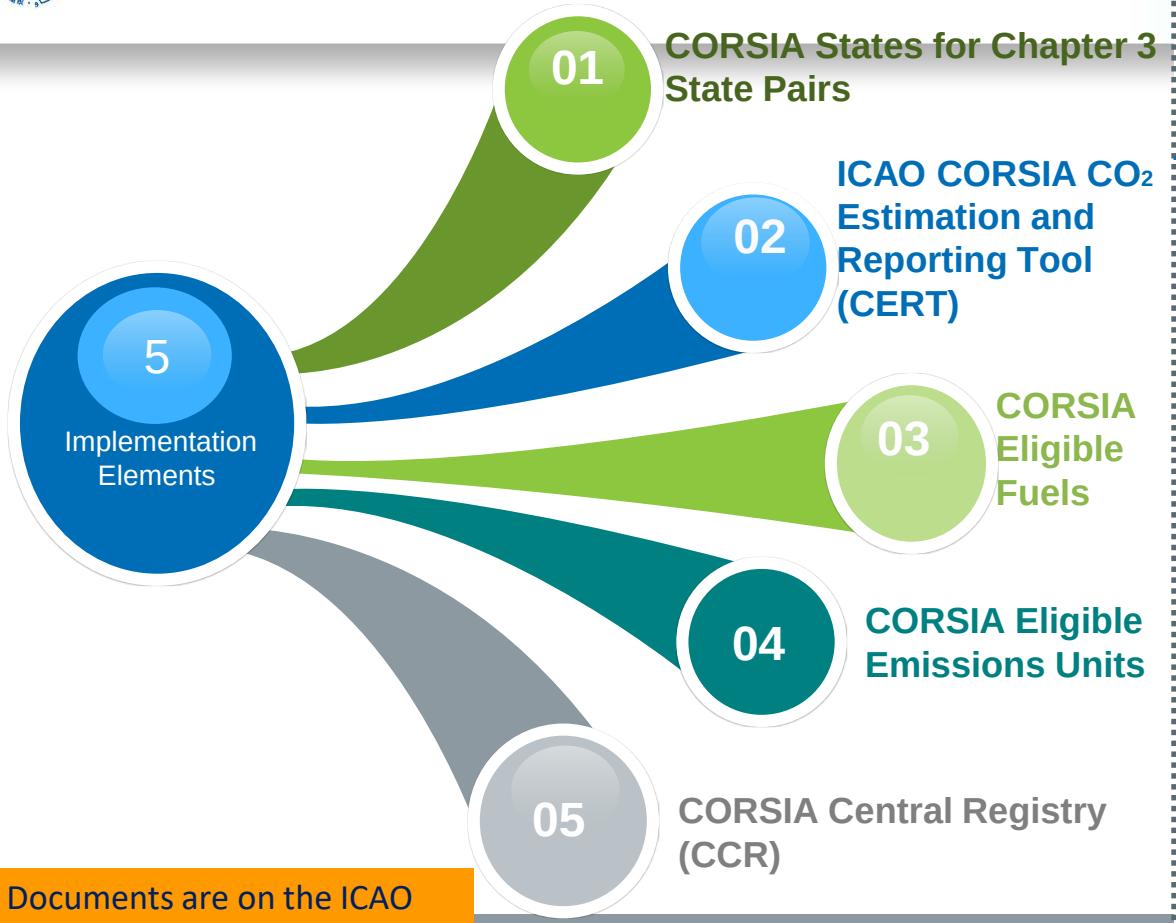

ICAO Documents

1. *CORSIA States for Chapter 3 State Pairs*

2. ICAO CORSIA CO_2 Estimation and Reporting Tool

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

8. CORSIA Eligible Emissions Units
9. CORSIA Emissions Unit Eligibility Criteria

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

All Documents are on the ICAO CORSIA Website www.icao.int

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CORSIA Eligible Fuels

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

This chart presents the relation between these 5 CORSIA Eligible Fuels documents and the respective Annex 16 Vol. IV references

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CORSIA

CORSIA Eligible Fuels

Two ways for an aeroplane operator to comply with CORSIA:

- Offsetting with CORSIA Eligible Emissions Units

- **Claiming Emissions Reductions from CORSIA Eligible Fuels**

All Documents are on the ICAO CORSIA Website www.icao.int

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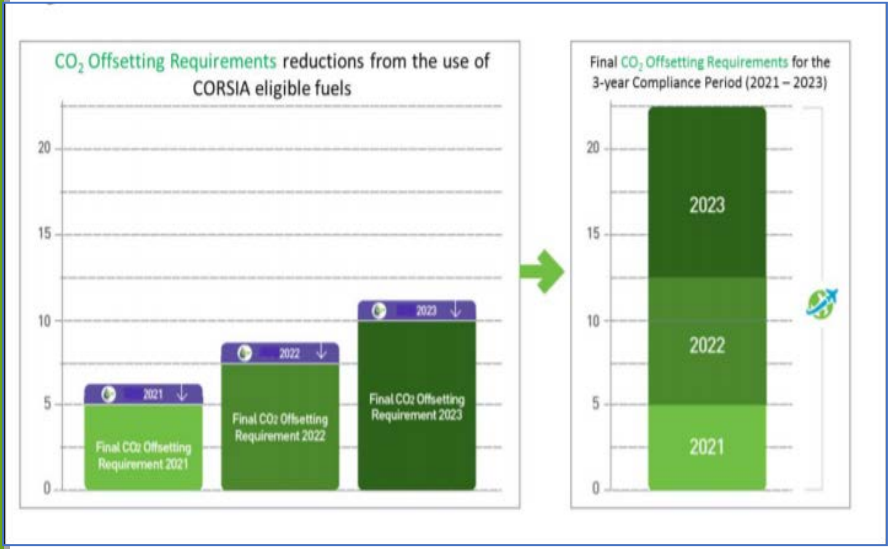
CORSIA Eligible Fuels



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."

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CORSIA Eligible Fuels

First Global approaches for an industry sector

Sustainability certification Schemes

Sustainability criteria for the fuels

Life cycle Assessment of fuels

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

For all the details
https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Eligible-Fuels.aspx

(*or Google it – "CORSIA eligible fuels"*)

Available on the ICAO CORSIA website

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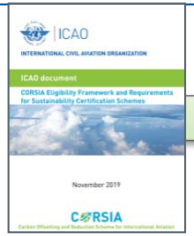
Sustainability Certification

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

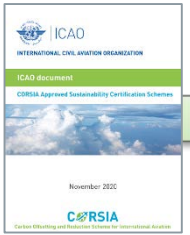
- Ensuring compliance with the Sustainability Criteria
- Ensuring that the Life Cycle Emission value of the fuel has been applied/calculated correctly.

ICAO document "CORSIA Eligibility Framework and Requirements for SCSs"



Requirements that an SCS needs to meet.

ICAO document "CORSIA Approved SCSs"



List of approved SCSs under CORSIA.
Currently two approved SCSs:
-ISCC
-RSB

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

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CORSIA Eligible Fuels

Sustainability Criteria

CORSIA Sustainability Criteria for CORSIA Eligible Fuels

Two agreed initial Sustainability Criteria for the CORSIA Pilot Phase (SAF and LCAF)

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

CORSIA SUSTAINABILITY CRITERIA FOR CORSIA ELIGIBLE FUELS

Theme	Principle	Criteria
1. Greenhouse Gases (GHG)	Principle: CORSIA eligible fuel should generate lower carbon emissions on a life cycle basis.	Criterion 1: CORSIA eligible fuel shall achieve net greenhouse gas emissions reductions of at least 10% compared to the baseline life cycle emissions values for aviation fuel on a life cycle basis.
2. Carbon stock	Principle: CORSIA eligible fuel should not be made from biomass obtained from land with high carbon stock.	Criterion 1: CORSIA eligible fuel shall not be made from biomass obtained from land converted after 1 January 2008 that was primary forest, wetlands, or peat lands and/or contributes to degradation of the carbon stock in primary forests, wetlands, or peat lands as these lands all have high carbon stocks.
		Criterion 2: In the event of land use conversion after 1 January 2008, as defined based on IPCC land categories, direct land use change (DLUC) emissions shall be calculated. If DLUC greenhouse gas emissions exceed the default induced land use change (ILUC) value, the DLUC value shall replace the default ILUC value.

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CORSIA Eligible Fuels

Sustainability Criteria

CORSIA Sustainability Criteria for CORSIA Eligible Fuels

CORSIA SUSTAINABILITY CRITERIA FOR CORSIA ELIGIBLE FUELS

Theme	Principle	Criteria
1. Greenhouse Gases (GHG)	Principle: CORSIA eligible fuel should generate lower carbon emissions on a life cycle basis.	Criterion 1: CORSIA eligible fuel shall achieve net greenhouse gas emissions reductions of at least 10% compared to the baseline life cycle emissions values for aviation fuel on a life cycle basis.
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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

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Sustainability Certification

CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes

Sustainability Certification Schemes (SCS): Organizations that

1. Certify economic operators against the sustainability criteria and
2. Ensure that economic operators calculate actual life cycle emissions values using the agreed methodology.

SCS define sustainability certification requirements, set requirements for certification bodies, auditors and accreditation bodies, and monitor effectiveness of the assurance system.

The approval of SCS is exclusively carried out by the ICAO Council with the technical assistance of CAEP, which assesses the compliance of the SCS with the eligibility requirements listed in this ICAO document.

Only the SCS that meet all the eligibility requirements will be included in the list of approved SCS.

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Sustainability Certification

CORSIA Approved Sustainability Certification Schemes

The **Sustainability Certification Schemes** are approved by the ICAO Council as meeting the requirements included in the first edition of the ICAO document "*CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes*"

- The SCS listed **are eligible to certify CORSIA eligible fuel producers (economic operators) for compliance** with the ICAO document "*CORSIA Sustainability Criteria for CORSIA eligible fuels*", and
- They **ensure that the methodology** defined in the ICAO document "*CORSIA Methodology for Calculating Actual Life Cycle Emissions Values*" **has been applied correctly**

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

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Life Cycle Assessment of fuels

The emissions reductions from its use in a given year are **based on their life cycle emission values, which depend on the feedstock, conversion process, and region where the fuel was produced.**

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

This document is updated on a yearly basis

ICAO document "CORSIA Methodology for Calculating Actual Life Cycle Emissions Values"

Allows calculation of specific emissions values for a given SAF

CORSIA Eligible Fuels

Life Cycle Assessment of fuels

CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels

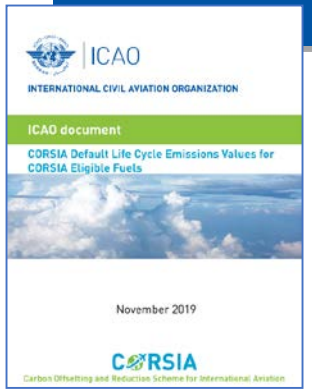

Table 1. CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels

Fuel Conversion Process	Region	Fuel Feedstock	Core LCA Value	ILUC LCA Value	LS_f (gCO_2e/MJ)
Fischer-Tropsch (FT)	Global	Agricultural residues	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
	USA	Miscanthus (herbaceous energy crops)	10.4	-32.9	-22.5
	EU	Miscanthus (herbaceous energy crops)	10.4	-22.0	-11.6
	USA	Switchgrass (herbaceous energy crops)	10.4	-3.8	6.6
Hydroprocessed esters and fatty acids (HEFA)	Global	Tallow	22.5	0.0	22.5
	Global	Used cooking oil	13.9		13.9
	Global	Palm fatty acid distillate	20.7		20.7
	Global	Corn oil (from dry mill ethanol plant)	17.2		17.2
	USA	Soybean oil	40.4	24.5	64.9
	Brazil	Soybean oil	40.4	27.0	67.4
	EU	Rapeseed oil	47.4	24.1	71.5
	Malaysia & Indonesia	Palm oil – closed pond	37.4	39.1	76.5
	Malaysia & Indonesia	Palm oil – open pond	60.0	39.1	99.1
Alcohol (isobutanol) to jet (ATJ)	Global	Agricultural residues	29.3	0.0	29.3
	Global	Forestry residues	23.8		23.8
	Brazil	Sugarcane	24.0	7.3	31.3
	USA	Corn grain	55.8	22.1	77.9
	USA	Miscanthus (herbaceous energy crops)	43.4	-54.1	-10.7
	EU	Miscanthus (herbaceous energy crops)	43.4	-31.0	12.4
	USA	Switchgrass (herbaceous energy crops)	43.4	-14.5	28.9
Alcohol (ethanol) to jet	Brazil	Sugarcane	24.1	8.7	32.8
	USA	Corn grain	65.7	25.1	90.8

The CORSIA Supporting Document "***CORSIA Eligible Fuels - Life Cycle Assessment Methodology***" describes the methodologies used by ICAO to calculate these Default Life Cycle Emissions Values, as well as the process for requesting the inclusion of a new conversion process, feedstock, and/or region on this table

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Life Cycle Assessment of fuels

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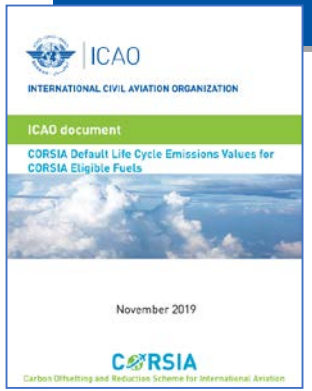
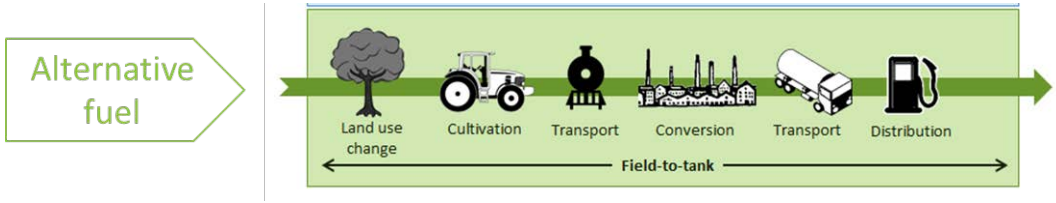


The **life-cycle emissions values of a CORSIA Eligible Fuel** is composed of two main elements:

1) **Core Life Cycle Assessment (LCA) emissions**, which include the **emissions associated** with: feedstock cultivation, feedstock harvesting, collection and recovery, feedstock processing and extraction, feedstock transportation to processing and fuel production facilities, feedstock to fuel conversion processes, fuel transportation and distribution, and fuel combustion in an aircraft engine



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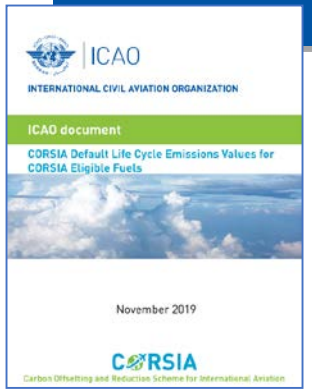
Life Cycle Assessment of fuels

CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels



The **life-cycle emissions values of a CORSIA Eligible Fuel** is composed of two main elements:

2) **Induced land-use change (ILUC) emissions** – CORSIA Eligible Fuel production may require some additional land to be used, and generate land use change GHG emissions.

These could occur where the new CORSIA Eligible Fuel 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)

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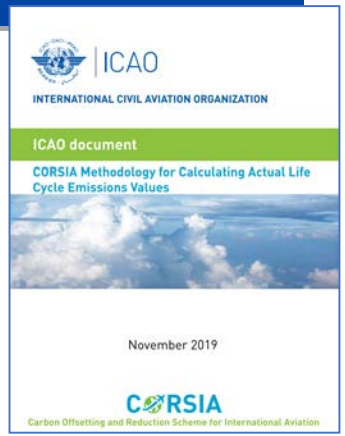
Life Cycle Assessment of fuels

CORSIA Methodology for Calculating Actual Life Cycle Emissions Values



Allows calculation of specific emissions values for a given SAF

Sustainability Certification Schemes (SCS) need to **ensure that the methodology has been applied correctly**

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FAQs

Who certifies CORSIA Eligible Fuel in order to be used 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.**

Where can one find a list of approved Sustainability Certification Schemes?

- in the ICAO document entitled “CORSIA Approved Sustainability Certification Schemes”, which is available on the ICAO CORSIA website.

Which life cycle emissions values will be used for calculating the emissions reductions from CORSIA Eligible Fuels?

There are two possibilities to obtain the life cycle emission value of a given CORSIA Eligible Fuel:
An aeroplane operator can use a "**default life cycle emissions value"** from the ICAO Document entitled "CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels"; or:

An operator can use an "**actual life cycle emissions value**", based on the methodologies defined in the ICAO document entitled "CORSIA Methodology for Calculating Actual Life Cycle Emissions Values". In this case, an approved Sustainability Certification Scheme shall ensure that the methodology has been applied correctly.

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ICAO Capacity building activities

ICAO SAF Feasibility studies - 4 feasibility studies were developed as part of the ICAO assistance project with EU funding "Capacity building for CO2 mitigation from international aviation".

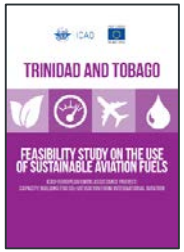
Feasible feedstocks identified :

- Tropical grasses like elephant grass
- Agricultural residues from sorghum
- Jatropha
- Municipal Solid waste (MSW)
- Cashew and shea nutshell oil
- Waste animal fats (tallow)

Feasible feedstocks identified :

- used cooking oil (UCO)
- municipal solid waste (MSW)
- sugarcane byproducts (cane tops)
- water hyacinth

Sugarcane-based SAF could be economically feasible



- SAF economically unviable (lack of quantity of locally sourced feedstock)
- Suitable options identified for ground support equipment: biodiesel and natural gas

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https://www.icao.int/environmental-protection/pages/SAF.aspx

ICAO Capacity building activities

ICAO SAF Guide

information on how sustainable aviation fuels can be produced, description of fuel production pathways, usage constraints, environmental and other benefits, and policy perspectives on the use and development of SAF.

https://www.icao.int/environmental-protection/pages/SAF.aspx
(or google it "Sustainable Aviation Fuels")

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ICAO is working to define quantified goals for SAF

2050 ICAO Vision for Sustainable Aviation Fuels	ICAO work on a long term global aspirational goal for international aviation (LTAG)
Calls for a **significant proportion of SAF use by 2050,** and a **level-playing field with other sectors**	combined scenarios of **technology, operations, and fuels**, in terms of timing, readiness, attainability and CO_2 reductions.
A quantified long-term goal for SAF to be defined in CAAF/3 (by 2025)	Results to be presented to the next ICAO Assembly (2022).

Stocktaking process to support the definition of these goals

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RECONNECTING THE WORLD Conclusions

- **Sustainable Aviation Fuels are a reality – technology and supporting policies are ready**
- **Opportunities exist for States in developing this new industry**
- **Leadership from States will be of paramount importance to drive the CO_2 reductions from SAF**
- **Challenges remain for further deployment**
  - Further policies are needed to drive cost down and increase volumes
  - Level playing field with ground transportation
  - Harmonized approach

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Thank you

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