



| ICAO

# INTERNATIONAL CIVIL AVIATION ORGANIZATION

A UN SPECIALIZED AGENCY



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# ACT-SAF and Financing

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JOINT ICAO/SADC SASO ENVIRONMENTAL WORKSHOP FOR SADC MEMBER STATES

Swakopmund Plaza, Namibia: 11-13 November 2025

## ICAO ACT-SAF

ICAO Assistance, Capacity-building and Training for Sustainable Aviation Fuels

Launched on 1 June 2022, in an event  
Associated to the Stockholm+50  
Conference




## Promoting SAF together

- All stakeholders in collaboration to advance ACT-SAF efforts





Collective global aspirational Vision  
to reduce CO2 emissions in international aviation by  
5 % by 2030, through aviation cleaner energy use

A stylized graphic of a city skyline is located on the left side of the lower half of the slide. The buildings are rendered in various shades of green and blue, with some featuring unique architectural details like domes and spires. The skyline is set against a background of a blue sky with white clouds.

Each State's special circumstances and respective  
capability will inform its ability to contribute to the Vision

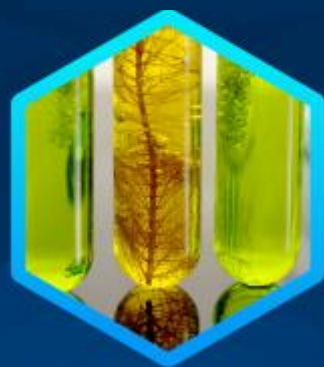


# ICAO Global Framework for SAF, LCAF and other Aviation Cleaner Energies

## Policy and Planning



## Regulatory Framework



## Implementation Support



## Financing



- Supports global scale up of aviation cleaner energies – Collective Vision to reduce 5% CO<sub>2</sub> by 2030
- Provides clarity, consistency and predictability to all stakeholders on 1) policy and planning, 2) regulatory framework, 3) implementation support, and 4) financing – 4 Building Blocks
- Monitors the implementation progress on emissions reductions and means of implementation
- Aspiring to have cleaner energy production facilities in all regions by CAAF/4 (no later than 2028)
- To update the Vision at CAAF/4 on the basis of market developments

# Project Context

## CAAF/3 Global Framework – 4 Building Blocks

### 1. Policy and Planning

- Global aspirational **Vision** to reduce international aviation CO<sub>2</sub> emissions by **5% by 2030**
- Each State's **special circumstances and respective capabilities**
- **CAAF/4** no later than 2028, with a view to update Vision
- **Collaborative effort** across different stakeholders, and encourage **State policies, action plans and roadmaps**
- Implementation **monitored** and periodically **reviewed**

### 2. Regulatory Framework

- **CORSIA eligibility framework as accepted basis** for SAF, LCAF and other aviation cleaner energies
- Increase the **number of SCS**, additional fuel production **pathways / life-cycle values**
- Parameters for **fuel accounting methodologies**, leveraging on CORSIA MRV system
- **Study of fuel accounting systems** to determine any possible ICAO role

### 3. Implementation Support

- **Robust, targeted and tailored** capacity -building and implementation support
- **Building on ACT-CORSIA and ACT-SAF programmes**
- Facilitate **partnerships**, and exchange of best practices
- Develop **policy toolkit/guidance** and support **State Action Plans**
- Support **feasibility studies, pilot projects**, which may facilitate access to investment
- Support **access to technology**

### 4. Financing

- **Advocacy and outreach** for greater investment in aviation cleaner energy projects, including UN and international financial community
- Welcome and request for **operationalization of ICAO Fininvest Hub** to facilitate better access to public fund / private investment, to respond to Resolution A41-21, para 18. a)
- Expedite work to **consider the establishment of a climate finance initiative or funding mechanism under ICAO**, to respond to A41-21, para 18. b)

## Partnership with the EU

- **Three Feasibility studies** (Ivory Coast, Rwanda, Zimbabwe) have been completed under ACT-SAF, funded by the EU, using the ACT-SAF “**Template for Feasibility Studies on Sustainable Aviation Fuels**” and contain:



- Information on the **specific situation of the State**
- Identification of **priority pathways for SAF production**
- Information on **implementation support and financing needs**
- **Recommendation of an Action Plan** aligned with the State’s governmental policies



Feasibility Studies available on the [ACT-SAF website](#)



# Project Context

## Announcements during CAAF/3

Projects coming to fruition thanks to the voluntary contributions:

- **EU** : Feasibility studies in 9 African States and India
- **France** : Business Implementation Studies in 3 African States
- **Netherlands** : Feasibility Studies in 3 States
- **Airbus** : 3 Feasibility Studies in South America
- **UK**: Feasibility Studies in 3 States, **including a Feasibility Study in Uganda**





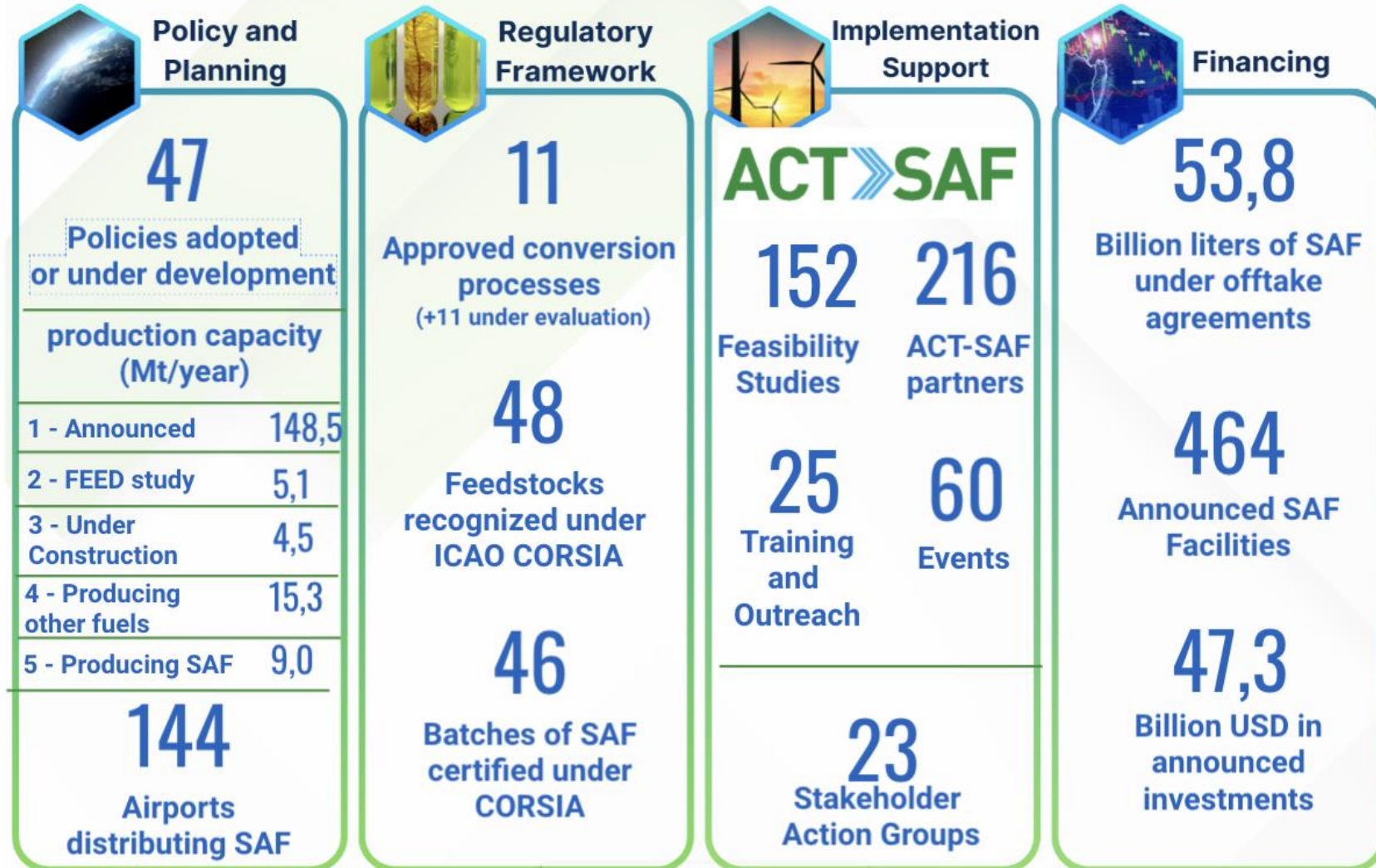
# Project Context

## ACT-SAF platform of implementation support initiatives

- Reach out to ICAO to have your initiative reflected in the platform

This aviation cleaner energy trackers monitors progress under the ICAO Global Framework on its four building blocks

(Click on each number to open the full Tracker)



## ACT-SAF newsletter to provide regular updates (training series, events, feasibility studies)



### ENVIRONMENT

## ACT-SAF Newsletter

January 2025



The "ICAO Assistance, Capacity-building and Training for Sustainable Aviation Fuels (ACT-SAF) programme" is supporting States to develop their full potential in SAF, through specific training activities, development of feasibility studies, and other implementation support initiatives, with a view to accelerate the deployment of aviation cleaner energies.

[For more details on ACT-SAF click here](#)

### ICAO ACT-SAF Projects

- In addition to 7 SAF feasibility studies already concluded with the contributions provided by the European Union, 20 more SAF feasibility studies and business implementation reports are currently being developed under the ACT-SAF programme, with the contributions provided by France, the Netherlands, United Kingdom and the European Union, and a planned contribution to be provided by Airbus. Work is also ongoing to structure projects with the resources offered by Austria and Côte d'Ivoire to ACT-SAF.
- ICAO has already engaged consultants to commence the feasibility studies/business implementation reports for Chile, Ethiopia, India, Jordan, South Africa and Zimbabwe, and the projects in Kenya and Rwanda are expected to kick off in early 2025.
- The status on all these projects is detailed in a new dashboard provided in the [ICAO ACT-SAF website](#).



### ICAO ACT-SAF Series

The ACT-SAF Series offers training sessions held on a monthly basis. It delivers comprehensive training to ACT-SAF Partners on an array of important SAF-related topics, ranging from sustainability, to policy, economics/financing certification and logistics.

**Upcoming ACT-SAF Series #17 –  
Examples in SAF development – from Vision to Reality –  
Sweden**

The upcoming ACT-SAF Series #17 (23 January 2025) will explore the Swedish experience on supporting implementation the development and production of SAF. ACT-SAF partners will be able to learn from the **Swedish Transport Agency, as well as the experience of two companies (ST1 and PREEM)**, who will provide a value chain perspective with topics such as investment decisions, business models, funding, new actor relations and value creation. In this session, barriers and drivers to producing SAF, as well as dos and don'ts, will be discussed through the actual experiences and insights of these two companies.

Sixteen ACT-SAF training sessions have been delivered to date, latest events are summarized below. The recordings of these sessions and the presentations are available at the [ACT-SAF Series website](#).


### Latest ACT-SAF Series

- ACT-SAF Series #14 Update on 100% SAF testing and recent achievements (September 2024)** - The event focused on most recent activities undertaken by aviation industrial actors regarding the technical work towards aircraft flying on 100% SAF. It dove deep into the technical work undertaken to carry out 100% SAF testing, challenges faced in the process and solutions found to date.
- ACT-SAF Series #15 - Coprocessing and revamping: how to use existing refineries to produce SAF (November 2024)** - This event provided thorough understanding on the co-processing SAF pathway. It explained the technical process to produce SAF via co-processing, the benefits and challenges associated with the pathway, and the CORSIA sustainability certification of co-processed SAF. It also covered the concept of revamping conventional refineries into SAF production facilities.
- ACT-SAF Series #16 - Aviation and Green Taxonomy (December 2024)**- The event delved into the intersection of aviation and sustainable finance, exploring how green taxonomy can drive environmentally responsible practices within the aviation industry.

Participation is open to all States and Organizations interested in further action on SAF following the acceptance of the ACT-SAF Terms and Conditions.

[Click here to join ACT-SAF](#)

### ACT-SAF now reaches 216 partners



ACT-SAF participation has now reached 216 partners, comprising 98 States and 118 Organizations, increasing its role in providing support for States to develop their full potential in SAF development and deployment.

Coordination is ongoing with ACT-SAF Partners aiming to identify potential assistance needs and projects. Beyond the ACT-SAF feasibility studies and business implementation reports, other types of support are also being provided as follows:

- support provided to Côte d'Ivoire regarding the inclusion of SAF on a national bioenergy code,
- ACT-SAF workshop delivered in Mexico, in coordination with the North American, Central American and Caribbean (NACC) Regional Office.

### ICAO Cleaner Energy Tracker Tools

### ICAO Cleaner Energy Tracker tools [\(click for details\)](#)

ICAO adopted a Vision to reduce CO<sub>2</sub> emissions in international aviation by 5 per cent by 2030 through the use of SAF, LCAF and other aviation cleaner energies. This requires 23 million tonnes (MT) of cleaner energies use in international aviation on 2030 (according to the LEAO report data).

This aviation cleaner energy trackers monitors progress under the ICAO Global Framework on its four building blocks.

**47**  
Policies adopted or under development

1 - Announced	59.2
2 - FEED study	4.0
3 - Under Construction	2.9
4 - Producing other fuels	15.1
5 - Producing SAF	8.3

**140**  
Airports distributing SAF

**11**  
Approved conversion processes (+11 under evaluation)

**48**  
Feedstocks recognized under ICAO CORSIA

**46**  
Batches of SAF certified under CORSIA

**69**  
Feasibility Studies

**215**  
ACT-SAF partners

**23**  
Training and Outreach

**60**  
Events

**23**  
Stakeholder Action Groups

**53.3**  
Billion liters of SAF under offtake agreements

**360**  
Announced SAF Facilities

**43.1**  
Billion USD in announced investments


- policy and planning
- regulatory framework
- implementation support
- financing.

It also features **implementation support initiatives** from ACT-SAF partners, which will further enhance outreach, and coordination of efforts across partners and stakeholders.

**Reach out to ICAO to have your initiative reflected in the tracker. Send an email to: [officeenv@icao.int](mailto:officeenv@icao.int)**

### SAF events


- The [SAF events tracker](#) is being constantly updated with various events being hosted by ACT-SAF partners and aviation stakeholders to discuss global challenges and solutions for further developing SAF.
- As of January/2025, **36 events have been identified for 2025**. The [tracker](#) provides a list of such events, together with links for further information regarding participation.



### Latest information captured in the ICAO Cleaner Energy Tracker Tools

#### ACT-SAF EU-Africa India Project (Part II)

- With close coordination with the European Union Aviation Safety Agency (EASA) in other EU funded ACT-SAF projects, a regional workshop on SAF direct supply lines was held from 30 September to 2 October 2024 in Mombasa, Kenya
- Ongoing discussions are underway on additional support



**Launch of Asia Sustainable Aviation Fuel Association (ASAF)**

# SAF-related guidance

## Resources for States and stakeholders available in ICAO web



## Guidance on potential policies and coordinated approaches for the deployment of SAF

- Developed by ICAO CAEP based on various studies since 2016
- Updated in March 2023



## SAF studies templates

- feasibility study template/guide (July 2023)
- SAF business implementation template (July 2024)



## SAF-related guides under ICAO-UNDP-GEF project

- Sustainable Aviation Fuels Guide
- Renewable Energy for Aviation
- Financing aviation emissions reductions



## SAF Rules of Thumb

- Order of magnitude estimations related to SAF costs, investment needs, and production potential
- Developed by CAEP experts

**Summary Table 1 - Feedstock Information**  
Technology, feedstock type and price, yield, total annual distillate scale, annual SAF production for both n<sup>th</sup> and pioneer facilities.

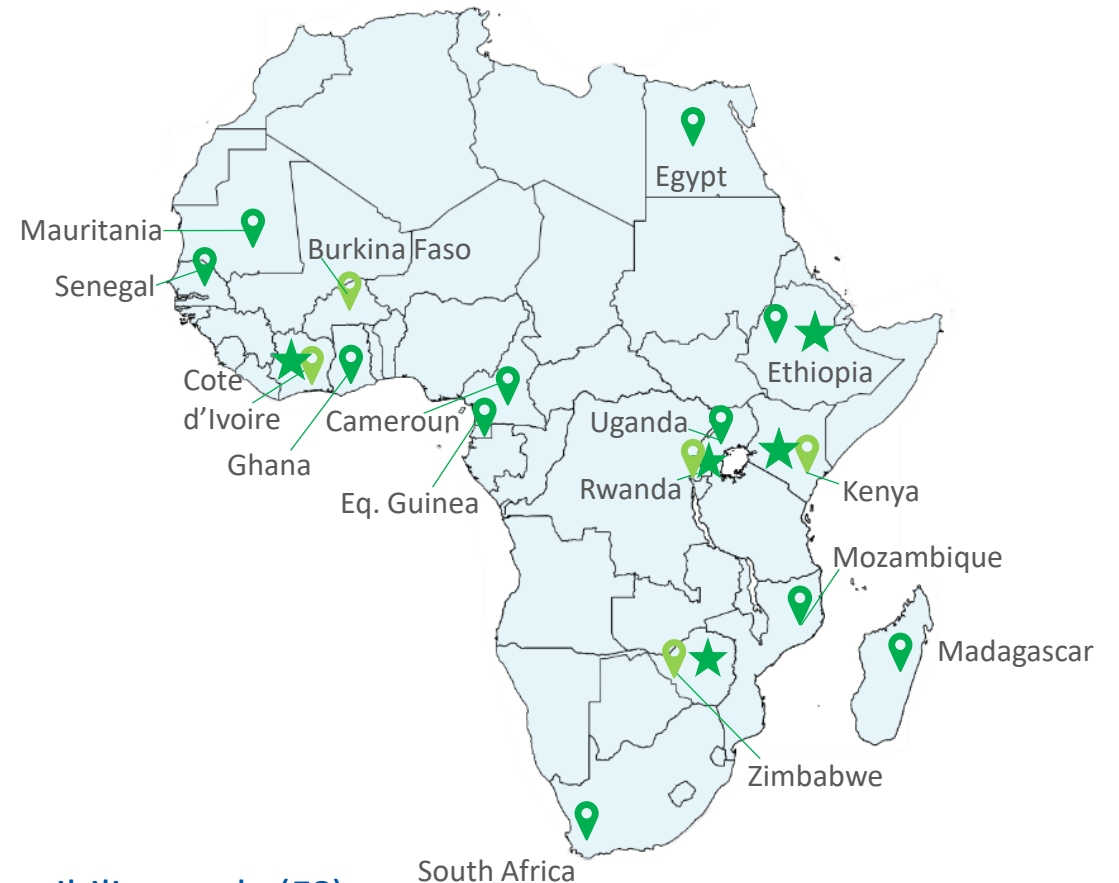
Processing Technology	Feedstock	Yield (ton distillate/ton feedstock)	Feedstock Price	Total Capacity (million L/year)		SAF production (million L/year)	
				n <sup>th</sup>	pioneer	n <sup>th</sup>	pioneer
FT*	MSW	0.31	\$30/ton	500	100	200	40
FT*	forest residues	0.18	\$125/ton	400	100	160	40
FT*	agricultural residues	0.14	\$110/ton	300	100	120	40
ATJ	ethanol	0.60	\$0.41/L	1000	100	700	70
ATJ	isobutanol-low	0.75	\$0.69/L	1000	100	700	70
ATJ	isobutanol-high	0.75	\$1.20/L	1000	100	700	70

**Summary Table 2 - SAF facilities information**  
Total capital investment (TCI), capital cost, and minimum selling price (MSP) for n<sup>th</sup> and pioneer facilities for each pathway.

Processing Technology	Feedstock	TCI (million \$)		Capital Cost (\$/L total distillate)		MSP (\$/L)	
		n <sup>th</sup>	pioneer	n <sup>th</sup>	pioneer	n <sup>th</sup>	pioneer
FT*	MSW	1428	813	2.9	8.1	0.9	2.1
FT*	forest residues	1618	1088	4.0	10.9	1.7	3.3
FT*	agricultural residues	1509	1267	5.0	12.7	2.0	3.8
ATJ	ethanol**	328	117	0.3	1.2	0.9	1.1
ATJ	ethanol, agricultural residues	581	170	0.6	1.7	2.2	2.5

# Planning of ICAO ACT-SAF studies

- **Already completed:** Burkina Faso (FS/EU), Cote d'Ivoire (FS/EU), Dominican Rep. (FS/EU), Kenya (FS/EU), Rwanda (FS/EU), Trinidad and Tobago (FS/EU), Zimbabwe (FS/EU)
- **2024:** Chile (FS/NL), Ethiopia (FS/EU), India (FS/EU), Jordan (FS/NL), South Africa (FS/EU), Zimbabwe (BI/UK).
- **2025 - 2026 :** Argentina (FS/Airbus), Cameroun (FS/EU), Côte d'Ivoire (BI/FR), Egypt (FS/EU), Equatorial Guinea (FS/EU), Ethiopia (BI/FR), Ghana (FS/UK), Kenya (BI/NL), Madagascar (FS/EU), Mauritania (FS/EU), Mozambique (FS/EU), + Panama (FS/Airbus), Peru (FS/Airbus), Rwanda (BI/FR), Senegal (FS/EU), Uganda (FS/UK), + 1 State TBC (FS/NL)



- 📍 Feasibility study (FS)
- ★ Business Implementation study (BI)

(Map not to scale)

# Policies for SAF and cleaner energies

- Policies for SAF and cleaner energies
  - The ICAO Global Framework on SAF, LCAF and other Aviation Cleaner Energies
  - The ICAO Guidance on Potential Policies and Coordinated Approaches for the deployment of SAF
  - Overview of global SAF policy frameworks
  - Common sustainability policy/regulatory framework

## 1. Policy and Planning

- Global aspirational **Vision** to reduce international aviation CO<sub>2</sub> emissions by **5% by 2030**
- Each State's **special circumstances and respective capabilities**
- **CAAF/4** no later than 2028, with a view to update Vision
- **Collaborative effort** across different stakeholders, and encourage **State policies, action plans and roadmaps**
- Implementation **monitored** and periodically **reviewed**

## Building Block 1 – Policy and Planning

5. States are encouraged to implement policies in support of the Vision, in a socially, economically and environmentally sustainable manner and in accordance with their special circumstances and respective capabilities.
6. In developing these policies, States are invited to consider the usefulness and benefits of the non-exhaustive and non-prescriptive list of potential policy components contained within the 'toolkit' in paragraph 18 below, noting that ICAO guidance provides further detail on these potential policy components and the guidance does not provide any endorsement of specific policies.
7. In developing and implementing their policies, States are encouraged to recognize:
  - a) the need for, and benefits of, a combination of policies under a coherent and coordinated national plan for the scale-up in production and deployment of SAF, LCAF and other aviation cleaner energies, noting that no one single policy is likely to deliver the best and most efficient outcomes and that the appropriate policy-mix will differ between States due to different national circumstances;
  - b) the need for policies to take into account cost impacts and affordability, and to avoid extraterritorial measures;
  - c) the need for policies to take into account the latest scientific and technological developments;
  - d) the importance of the policy's transparency, certainty and stability, for aircraft operators, feedstock producers, fuel producers, financial institutions and other relevant stakeholders; and
  - e) the need for policies to be applied in accordance with the Chicago Convention and its relevant instruments and any appropriate bilateral and multilateral agreements in place between States, with particular regard for the fundamental principles of non-discrimination, fair and equal opportunity; and the avoidance of market distortion.
8. States are encouraged to work together towards the harmonization of policies, to the extent possible and appropriate to circumstances, across States and regions as a longer-term objective.

### Policy and Planning



## Need for Policies on Aviation Cleaner Energies

- **Cleaner energy production is limited by a number of barriers**
  - Higher costs
  - Limited feedstock and fuel production infrastructure
  - Perceived financial risks
- **In the presence of such barriers, policy intervention is required to develop cleaner energy production.**
  - In general, a supporting policy framework is in place in those states where cleaner energy production has initiated
- **Constraints and opportunities are specific to each State**
  - Specific climates, agricultural systems, available resources, economic factors, political contexts, regulatory structures, etc.



# ICAO Guidance on Potential Policies and Coordinated Approaches for the deployment of SAF

- **Developed by CAEP based on studies performed since 2016**
- **A support reference for ICAO States to develop SAF production**
  - Insight on types of policy measures and their impacts
  - Examples of policies used or under preparation
  - Links to additional helpful resources
- **Completes a toolbox of guidance material for ICAO States**
- **Can be used in combination with the ICAO SAF Rules of Thumb**

<https://www.icao.int/environmental-protection/Documents/SAF/Guidance%20on%20SAF%20policies%20-%20Version%202.pdf>



## There are multiple policy options to support the development of a SAF market

- The most suitable SAF policies, can **vary for each country** according to their **geographic, economic, social and political characteristics**
- As such, there is not a single path to successful SAF policy implementation. Rather, a considered and customized strategy can be effective.

**ICAO Guidance provides details on various policy options, divided into 3 impact areas**

- ✓ Stimulate **SAF supply**,
- ✓ Stimulate **SAF demand**, and
- ✓ Enable **SAF markets implementation**

## ICAO Guidance provides details on various policy options, divided into 3 impact areas and 8 categories

Impact area: Stimulating Growth of SAF Supply			
1 Government funding for RDD	2 - Targeted incentives and tax relief to expand SAF supply infrastructure	3 - Targeted incentives and tax relief to assist SAF facility operation	4 - Recognition and valorization of SAF environmental benefits
<p>1.1 - Government R&amp;D</p> <p>1.2 - Government demonstration and deployment</p>	<p>2.1 - Capital grants ; 2.2 - Loan guarantee programs</p> <p>2.3 - Eligibility of SAF projects for tax advantaged business status ; 2.4 - Accelerated depreciation/‘bonus’ depreciation</p> <p>2.5 - Business Investment Tax Credit (ITC) for SAF investments 2.6 - Performance-based tax credit</p> <p>2.7 – Bonds / Green Bonds</p>	<p>3.1 Blending incentives: Blender’s Tax Credit</p> <p>3.2 – Production incentives: Producer’s Tax Credit</p> <p>3.3 - Excise tax credit for SAF</p> <p>3.4 - Support for feedstock supply establishment and production</p>	<p>4.1 – Recognize SAF benefits under carbon taxation</p> <p>4.2 - Recognize SAF benefits under cap and-trade systems</p> <p>4.3 - Recognize non-carbon SAF benefits: improvements to air quality</p> <p>4.4 - Recognize non-carbon SAF benefits: reduction in contrails</p>

Impact area: Creating Demand for SAF		
5- Creation of SAF mandates	6 - Update existing policies to incorporate SAF	7 – Demonstrate government leadership
<p>5.1 - Mandate renewable energy volume requirements in the fuel supply</p> <p>5.2 - Mandate reduction in carbon intensity of the fuel supply</p>	<p>6.1: Incorporating SAF into existing national policies</p> <p>6.2: Incorporating SAF into existing subnational, regional or local policies</p>	<p>7.1 Policy statement to establish direction</p> <p>7.2: Government commitment to SAF use, carbon neutral air travel</p>

Impact area: Enabling SAF Markets
8 - Market enabling activities
<p>8.1 - Adopt clear and recognized sustainability standards and life cycle GHG emissions methods for certification of feedstock supply and fuel production</p> <p>8.2 - Support development/recognition of systems for environmental attribute ownership and transfer</p> <p>8.3 - Support SAF stakeholder initiatives</p>

## Qualitative metrics for assessing policy effectiveness

1 - Flexibility	2 - Certainty	3 - Financial costs and benefits	4 - Price sensitivity to externalities
Can the policy be easily adjusted given evolving circumstances?	Certainty on timeframe, legal conditions and political decisions increase investor interest.	Policies should be assessed on the its costs benefits they deliver, including social ones.	Higher sensitivity, more unintended consequences. Floor/Ceiling prices can reduce volatility
5 - Ease of implementation	6 - Contribution to SAF deployment and GHG reduction	7 - Unintended consequences	8 - Robustness of policy
Administrative, governance and/or procedural complexity can hinder implementation.	Clear criteria on target quantity, sustainability, commercial parameters and timeframe improve results	Mechanisms to identify and mitigate unintended consequences (economic, environmental or social)	Regulating systems to ensure that policy objectives are achieved and procedures have been followed.

# SAF Estimates – “SAF Rules of Thumb”

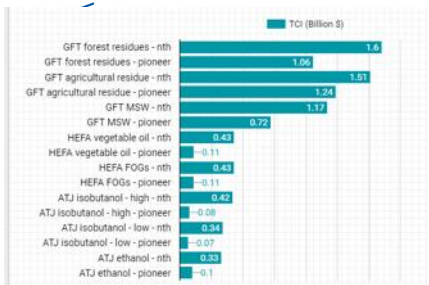
ICAO SAF Rules of Thumb - order of magnitude estimations on SAF costs, investment needs and production potential.

They can be used to inform policymakers and project developers.

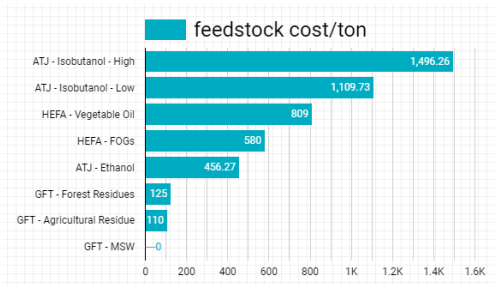
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ATJ	ethanol, agricultural residues	581	170	0.6	1.7	2.2	2.5
ATJ	isobutanol-low**	332	94	0.3	0.9	1.3	1.5
ATJ	isobutanol-high**	410	110	0.4	1.1	1.7	1.9
HEFA	FOGs	448	-	0.4	-	0.8	-
HEFA	vegetable oil	456	-	0.5	-	1.0	-
FT	DAC CO <sub>2</sub> , H <sub>2</sub>	3366	-	3.4	-	4.4	-
FT	waste CO <sub>2</sub> , H <sub>2</sub>	3209	-	3.2	-	3.5	-
Pyrolysis***	forest residues	1038	594	2.6	5.9	1.3	2.1
Pyrolysis***	agricultural residues	1084	619	2.7	6.2	1.3	2.2

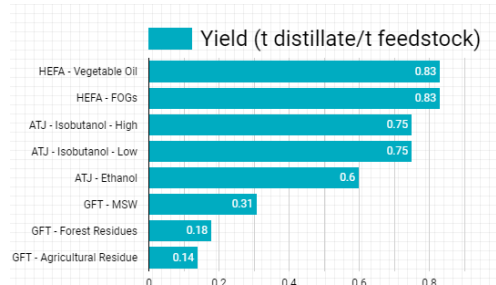
total capital investment (TCI)



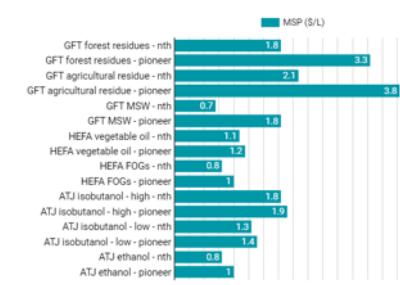
Feedstock costs



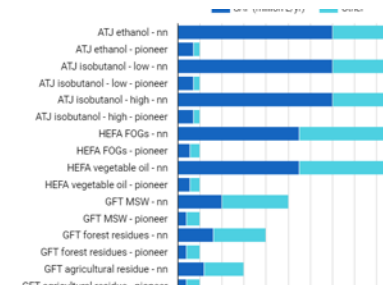
Feedstock Yield



Minimum Selling Price



Refinery capacity



# ICAO SAF Policies Tracker

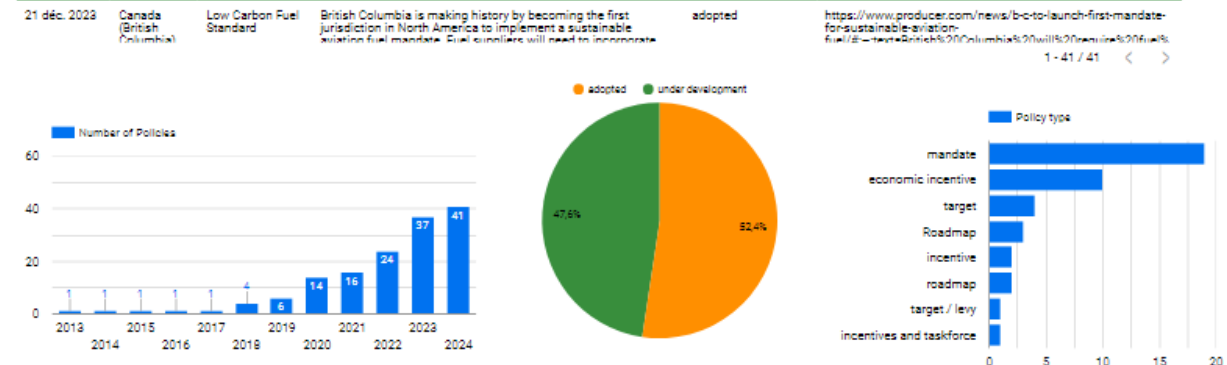
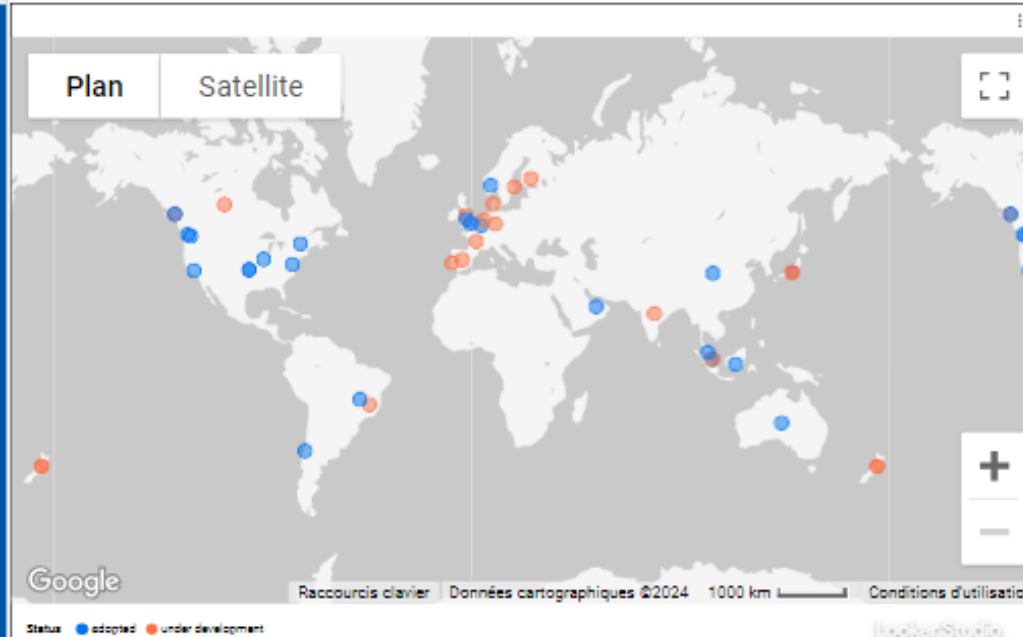


## Tracker of policies adopted or under development to foster SAF development

Date	State	Policy Title	Policy Description	Status	Source
22 mai 2024	United States	Nebraska production tax credit for SAF	Nebraska Gov. Jim Pillen has signed into law LB 927, which includes establishing a production tax credit for sustainable aviation fuel (NAF) in Nebraska. Ethanol and oils from corn and soybean processing serve as low-carbon, low-cost feedstocks for the production of SAF which can reduce emissions by more than 50 percent compared to conventional jet fuel, according to NEB. LB927 establishes an income tax credit for the production of SAF beginning in 2027.	adopted	<a href="https://www.wastetodaymagazine.com/news/nebraska-governor-signs-landmark-saf-legislation-into-law/">https://www.wastetodaymagazine.com/news/nebraska-governor-signs-landmark-saf-legislation-into-law/</a>
12 avr. 2024	Chile	SAF Roadmap 2030	Chile announced the country's sustainable aviation fuel (SAF) Roadmap 2030 with plans to begin production by 2030 while setting a target to use 50% of jet fuel made from oils, fats, and biological and municipal waste by 2050. The roadmap was announced by Fernanda Cabañas, program coordinator for Chile's public-private "Clean Flight" initiative, at an aviation conference in Santiago, Chile. The initiative is targeting to develop a large-scale SAF production facility operational by 2030.	adopted	<a href="https://www.safinvestor.com/news/144779/chile-announces-saf-roadmap-targets-production-facility-by-2030?utm_medium=email&amp;utm_source=2&amp;utm_campaign=AC57eEg0B5dbG3T9t0fzrFfWDYs4aLDFB9B8MJNk20fNhg7S1V6BkUJ3DzInlsV1e4Sy0AsuPAIXvXkXoNAPw&amp;utm_content=8593065&amp;utm_source=hs_email">https://www.safinvestor.com/news/144779/chile-announces-saf-roadmap-targets-production-facility-by-2030?utm_medium=email&amp;utm_source=2&amp;utm_campaign=AC57eEg0B5dbG3T9t0fzrFfWDYs4aLDFB9B8MJNk20fNhg7S1V6BkUJ3DzInlsV1e4Sy0AsuPAIXvXkXoNAPw&amp;utm_content=8593065&amp;utm_source=hs_email</a>
19 févr. 2024	Malaysia	National Energy Transition Roadmap	Malaysia has established an SAF blending mandate starting with 1%, according to the National Energy Transition Roadmap published by the government in 2023. It is targeting a 47% SAF blending mandate by 2050.	adopted	<a href="https://www.hydrocarbonprocessing.com/news/2024/02/asia-s-saf-projects-and-agreements/">https://www.hydrocarbonprocessing.com/news/2024/02/asia-s-saf-projects-and-agreements/</a>
19 févr. 2024	Singapore	Singapore Sustainable Air Hub Blueprint	To kickstart SAF adoption in Singapore, flights departing Singapore will be required to use SAF from 2026. We will aim for a 1% SAF target for a start, to encourage investment in SAF production and develop an ecosystem for more resilient and affordable supply. Our goal is to raise the SAF target beyond 1% in 2026 to 4 - 5% by 2030, subject to global developments and the wider availability and adoption of SAF. CAAS will introduce a SAF levy for the purchase of SAF to achieve the uplift target. As the market for the supply of SAF is still nascent and the price of SAF can be volatile, this approach will provide cost certainty to airlines and travellers.	adopted	<a href="https://www.caas.gov.sg/docs/default-source/default-document-library/annex-1-blueprint-report-exec-summary.pdf">https://www.caas.gov.sg/docs/default-source/default-document-library/annex-1-blueprint-report-exec-summary.pdf</a> <a href="https://www.businesstimes.com.sg/companies-markets/transport/logistical/outbound-travellers-singapore-pay-levy-2026-part-sustainable">https://www.businesstimes.com.sg/companies-markets/transport/logistical/outbound-travellers-singapore-pay-levy-2026-part-sustainable</a>
21 déc. 2023	Canada (British Columbia)	Low Carbon Fuel Standard	British Columbia is making history by becoming the first jurisdiction in North America to implement a sustainable aviation fuel mandate. Fuel suppliers will need to incorporate	adopted	<a href="https://www.producer.com/news/bc-to-launch-first-mandate-for-sustainable-aviation-fuel/">https://www.producer.com/news/bc-to-launch-first-mandate-for-sustainable-aviation-fuel/</a>

### Environmental Policies on Aviation Fuels

The following map and table provides a summary of the policies (adopted and under development) to foster the use of Sustainable Aviation Fuels and Lower Carbon Aviation Fuels.



# Policy examples

✓ Stimulate SAF supply →

Financing grant competitions for SAF production (USA, France)

ICAO ENVIRONMENT

## IRA SAF and Clean Technology Grant Program

**ACT>>SAF**

Support projects to rapidly scale-up domestic SAF production

**IRA FAST Grant Program**

- \$40007
- \$245 million competitive grant program
- Specifies consideration criteria and eligible entities
- FAST Meeting – Dec. 14, 2022



Text - H.R.5376 - 117th Congress (2021-2022): Inflation Reduction Act of 2022 | [Congress.gov](https://www.congress.gov) | [Library of Congress](https://www.libraryofcongress.gov)

2. French endeavour for SAF



Mid-2020 launched a **Call for Expression of Interest** to assess stakeholders' interest and needs

**July 2021: calls for proposal** to support the development of a French SAF production sector :

- 200 million € for pilot/demonstrator construction or engineering studies
- Closed in September 2022 – 5 winning projects to date

Concrete application via a mandatory incorporation mandate :

- January 2022: blending mandate of 1%** implemented
- Mid-2022** : launch of a working group to address the industrialization phase at government level
- December 2022** : study on PtL fuels potential in France



Direction générale de l'Aviation civile  
Direction du transport aérien

17

For details – ACT-SAF Series #12 Training – <https://www.icao.int/environmental-protection/Pages/ACT-SAF-Series.aspx>



# Policy examples

✓ Stimulate SAF supply →

Tax credits on SAF (USA, France)

ICAO ENVIRONMENT Inflation Reduction Act (IRA) - Production support through 2027 ACT>>SAF

**IRA Tax Credits**

**SAF Tax Credit §13203 - 2023-2024**

- Achieves 50% lifecycle GHG reduction
- \$1.25 with additional up to \$1.75 for additional lifecycle emissions reduction

**Production Credit §13704 - 2025-2027**

- Lifecycle GHG <50kg CO<sub>2</sub>e/MMBTU (Jet Baseline = 94kg CO<sub>2</sub>e/MMBTU)
- Enhanced value for SAF up to \$1.75 for 100% reduction

[Text - H.R.5376 - 117th Congress \(2021-2022\): Inflation Reduction Act of 2022 | Congress.gov | Library of Congress](#)

MINISTÈRE CHARGÉ DES TRANSPORTS dgac 2. French endeavour for SAF

## 2- Focus on French endeavour for SAF

**TIRUERT : an existing tax instrument**

- Incentive mechanism to encourage the blending of biofuels in diesel and gasoline, and now kerosene
- Set-up via the **budget law** & update annually
- To evolve over the coming years to match our SAF roadmap objectives

**Principles**

- Separate annual objective per type of fuel (non fungible)
- SAF blending mandate set at **1% since 2022** (in energy)
- Tax level of **168 € / hectolitres** (at present)

**Recent development**

- Mandate level raised to 1,5% in 2024
- **Upgrade of the biofuel management platform** developed by the French Energy Ministry

Direction générale de l'Aviation civile  
Direction du transport aérien 78



For details – ACT-SAF Series #12 Training – <https://www.icao.int/environmental-protection/Pages/ACT-SAF-Series.aspx>



# Policy examples

✓ Stimulate SAF demand →

SAF blending/use mandates in energy content or CO<sub>2</sub> emissions reductions (EU, Brazil, UK)

ICAO ENVIRONMENT ACT>>SAF

### ReFuelEU Aviation legislative proposal Design\*

**Ramp-up: binding minimum SAF shares in aviation fuel supplied in the EU:**

Total shares in the fuel mix (in %)	2025	2030	2035	2040	2045	2050
Sustainable Aviation Fuels (SAF) target	2	5	20	32	38	63
Synthetic aviation fuels <i>sub-target</i>	-	0.7	5	8	11	28

**Eligible SAF:**  
Sustainability framework of the Renewable Energy Directive

- Sustainable biofuels produced from waste and residues
- Synthetic aviation fuels produced from renewable sources

\* Subject to possible changes as a result of the legislative process.

ICAO ENVIRONMENT Latest news ACT>>SAF

### New policy – UK SAF mandate

- The mandate will start in 2025 at 2% of total UK jet fuel demand, increase on a linear basis to 10% in 2030 and then to 22% in 2040.
- From 2040, the obligation will remain at 22% until there is greater certainty regarding SAF supply.
- Supported by a detailed cost-benefit analysis
- <https://www.gov.uk/government/speeches/aviation-fuel-plan>

**Supporting the transition to Jet Zero: creating the UK SAF mandate**  
PDF, 1.99 MB, 137 pages  
This file may not be suitable for users of assistive technology.  
▶ [Request an accessible format.](#)

**UK SAF mandate: final stage cost benefit analysis**  
PDF, 982 KB, 87 pages  
This file may not be suitable for users of assistive technology.  
▶ [Request an accessible format.](#)

**UK SAF mandate: final stage cost benefit analysis dataset**  
ODS, 266 KB  
This file is in an [OpenDocument](#) format  
This file may not be suitable for users of assistive technology.  
▶ [Request an accessible format.](#)



For details – ACT-SAF Series #12 Training – <https://www.icao.int/environmental-protection/Pages/ACT-SAF-Series.aspx>



# Policy examples

✓ Stimulate SAF demand →

SAF blending/use mandates in energy content or CO<sub>2</sub> emissions reductions (EU, Brazil, UK)

The slide is titled "Public Policy for SAF" and features the ICAO logo, "ENVIRONMENT", and "ACT>>SAF". It lists several policy options under the heading "1 MANDATE":

- ESTABLISH A MANDATE TO REDUCE EMISSIONS FROM THE AVIATION INDUSTRY
- ALLOW ALL TECHNOLOGICAL ROUTES APPROVED BY ATRN AND ASP
- ALLOW DIFFERENT SAF LEVELS IN ANY PART OF THE NATIONAL TERRITORY
- CHIEF INTERNATIONAL ELEMENTS OF INTERNATIONAL FLIGHTS, RESPECTING THE SCOPE OF INTERNATIONAL AIR TRANSPORT AGREEMENTS
- PROVIDE FLEXIBILITY TO OPE
- ENABLE SUPPORT FOR THE USE OF SAF, CONSIDERING AS CRITERIA THE DEVELOPMENT OF SAF PRODUCTION AND LOGISTICS CHAINS, SUPPORT DEMAND AND THE AVAILABILITY OF RAW MATERIALS
- ENABLE THE APPLICATION OF "BOOK & CLARIF" FOR SPECIFIC CASES

A callout box on the right side of the slide contains the following text:

- No blending mandate or tax incentives – limited budget
- Alternative: a mandate of CO<sub>2</sub> emissions reduction (in %) by the use of SAF
  - Applied to airlines (thus not on SAF distribution).
  - Fosters competition for the use of the best technology available and the most efficient SAF



# Policy examples





## ✓ Stimulate SAF demand →

Defining SAF aspirational targets (Japan 10% SAF by 2030, USA 3 Billion gallons of SAF by 2030)

ICAO ENVIRONMENT U.S. SAF Grand Challenge ACT>>SAF

- Agreement by the Departments of Transportation, Energy and Agriculture
- Achieve 3 billion gallons of domestic SAF production in 2030 and put U.S. on trajectory to 35 billion gallons per year by 2050
- At least a 50% reduction in life cycle greenhouse gas emissions, as compared to conventional jet fuel
- Multi-agency roadmap to focus federal actions to support industry scale-up



32

ICAO ENVIRONMENT Public-Private Councils ACT>>SAF

- In Mar21, JCAB established “Study Group on CO2 Reduction in the Aircraft Operation Sector” which consists of air-carriers, academic experts etc.
- The study group established roadmaps for promotion of decarbonisation in aviation operation sector.  
*<Target> Replacing 10% of the fuel consumption by Japanese airlines with SAF in 2030*
- Accelerating actions in the roadmaps, JCAB has established public-private councils.

### Private-Public Councils for promotion of SAF deployment

**Purpose**

- ✓ Coordination of demand (airlines) and supply (oil companies) to facilitate the development and production of domestic SAF
- ✓ Construction of future supply chain including imported SAF

**Key actions**

- ✓ Coordinating of demand and supply of SAF
- ✓ Demonstration of imported neat SAF refueling in Japan
- ✓ Assistance of ICAO CEF certification

**Member**

- ✓ Private sector: Air-carriers, Airport company, Oil company, etc.
- ✓ Public sector: MAFF, METI, MLIT, MOE, NEDO(observer)



Vice-minister of MLIT, Mr. Nakayama at the 1<sup>st</sup> council



For details – ACT-SAF Series #12 Training – <https://www.icao.int/environmental-protection/Pages/ACT-SAF-Series.aspx>

# Policy examples



✓ Enable **SAF markets** implementation



Design of a national SAF roadmap (UAE, Japan)

ICAO ENVIRONMENT UAE SAF Roadmap ACT>>SAF

### 2022-2050: Key strategic points



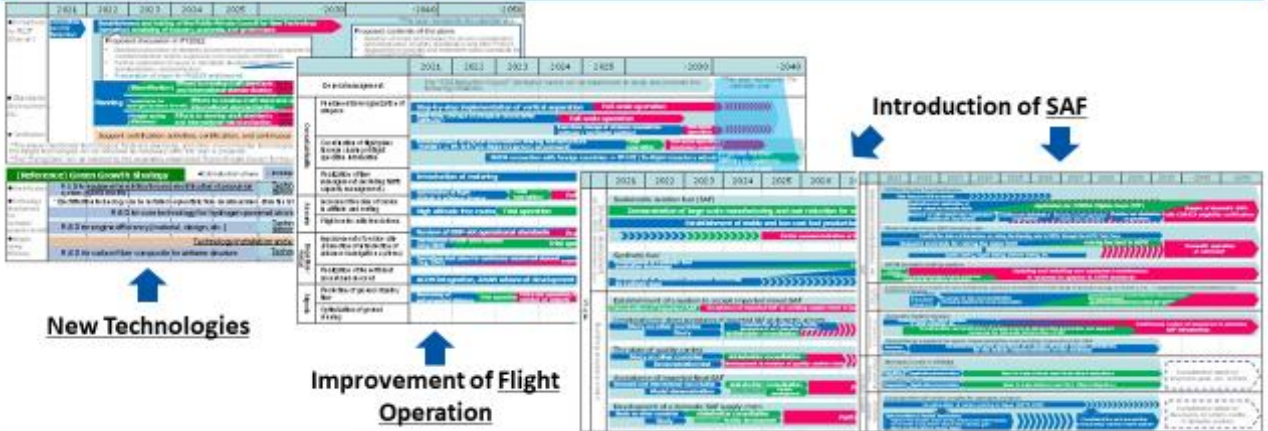
National Sustainable Aviation Fuel Roadmap of the United Arab Emirates  
2022-2050

5 Sustainable Aviation Fuel (SAF) principles are highlighted with the intent to accelerate the decarbonization of the UAE's aviation sector and transform it into a regional hub for low carbon aviation fuels

- Principle 1: Establishing the ambition
- Principle 2: Accelerating SAF Technology Deployment and Innovation
- Principle 3: Developing the National Regulatory Environment for SAF
- Principle 4: Building Local Capacity to Boost In-Country Value
- Principle 5: Leading International Collaboration

ICAO ENVIRONMENT SAF Roadmap and Utilization target in 2030 ACT>>SAF

- The roadmaps for promoting decarbonization in aircraft operation sector were established in 2021 and are shared among public/private parties in Japan.
- Two quantitative targets for decarbonization were established within roadmaps.
  - SAF: Replacing 10% of the fuel consumption by Japanese airlines with SAF in 2030
  - Operational improvement: Reducing CO2 emissions by about 10% through future efforts of improvement of flight operations by renovating air navigation services



New Technologies

Improvement of Flight Operation

Introduction of SAF

For details – ACT-SAF Series #12 Training – <https://www.icao.int/environmental-protection/Pages/ACT-SAF-Series.aspx>



# Policy examples

✓ Enable SAF markets implementation



Industry engagement (UAE, Japan “Act for Sky”, Singapore “Buyers club for SAF”)

ICAO ENVIRONMENT Participants ACT-SAF

The UAE SAF Committee

Emirates, ETIHAD AIRWAYS, DUBAI AIRPORTS, HSBC, BEEAH, ADNOC, bp, Shell, BOEING, SAFRAN, IATA, Khalifa University, Masdar

Knowledge Partner: ICF

ICAO ENVIRONMENT Private Initiative for SAF - Act for Sky - ACT-SAF

■ Establishment of “Act For Sky”  
On 2 March 2022, a voluntary organisation, “ACT FOR SKY”, was launched with JGC HD, Revo INTL, ANA and JAL as lead companies, with the aim of promoting and expanding domestic SAF.

◆ What is Act For Sky

◆ Member companies: 24 (as of February 2023)

JGC, ANA, IHI, JAL, Revo INTL

CONCEPT

ACT FOR SKY is an all-Japan initiative aiming to achieve carbon-neutral skies through the promotion and expansion of sustainable aviation fuel (SAF). We will create a movement that crosses the boundaries of the companies directly involved in domestic SAF and the companies and organizations required to build the supply chain, in order to realise the commercialization, diffusion and expansion of domestic SAF.

ICAO ENVIRONMENT Corporate Buyers' Club for SAF ACT-SAF

- Studying the feasibility and design of a corporate buyers' club to encourage early adopters to take collective action, to aggregate SAF demand and provide stronger demand signals for SAF production and scale-up
  - Tap on business travelers and air cargo users and encourage them to become first movers
  - Potential of collaborating with regional partners to expand the buyers' club to the broader ASEAN region
- As the buyers' club would be the first of its kind in Singapore, need careful assessment of its commercial viability and operating model
- Plan to commence study in second quarter of 2023, which will take around 3 months

For details – ACT-SAF Series #12 Training – <https://www.icao.int/environmental-protection/Pages/ACT-SAF-Series.aspx>



# Building Block 2 – Regulatory Framework

## 2. Regulatory Framework

- **CORSIA eligibility framework as accepted basis** for SAF, LCAF and other aviation cleaner energies
- Increase the **number of SCS**, additional fuel production **pathways / life-cycle values**
- Parameters for **fuel accounting methodologies**, leveraging on CORSIA MRV system
- **Study of fuel accounting systems** to determine any possible ICAO role

*Building Block 2 – Regulatory Framework:*

12. In the interests of providing regulatory transparency, certainty, stability and assurances of environmental integrity to feedstock producers, fuels producers and financial institutions, the CORSIA sustainability criteria, sustainability certification, and the methodology for the assessment of life cycle emissions used for ‘CORSIA eligible fuels’, should be used as the accepted basis for the eligibility of SAF, LCAF and other aviation cleaner energies used in international aviation.

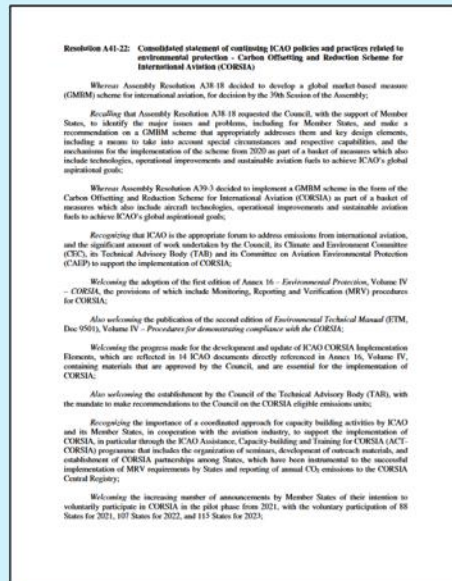
*All ICAO CORSIA documents related to CORSIA Eligible Fuels are available on the website, after the Council approval.*



# ICAO Regulatory Framework for CORSIA Implementation

## Assembly Resolutions in force (A41-22)

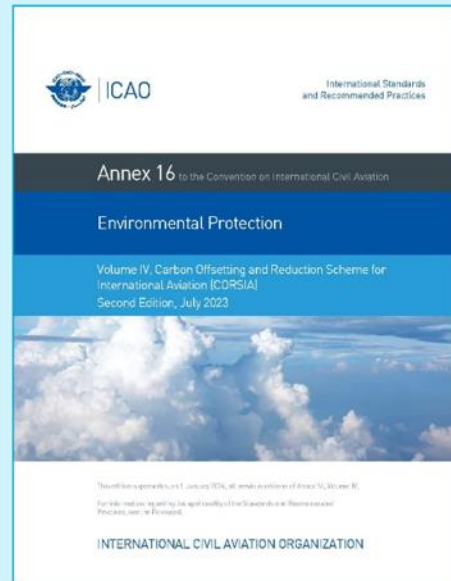
Adopted by 2022 Assembly



Overall ICAO policy on CORSIA

## Annex 16, Volume IV

2nd Edition  
Applicable from 2024



Standards and Recommended Practices (SARPs) on CORSIA

## Doc 9501 (ETM), Vol. IV

3rd Edition to support 2nd Edition of Annex 16, Volume IV



Overall ICAO policy on CORSIA

## CORSIA Implementation Elements and ICAO CORSIA documents

Regularly updated/approved by Council

CORSIA Implementation Elements referenced in Annex 16, Volume IV

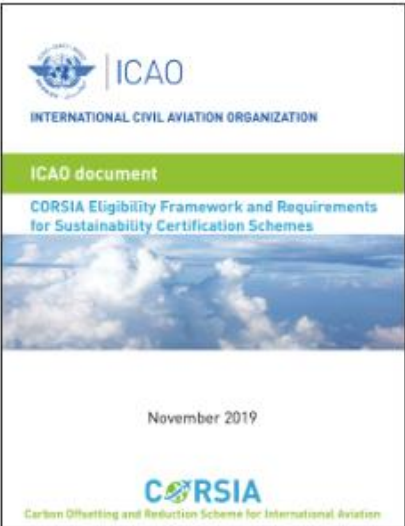

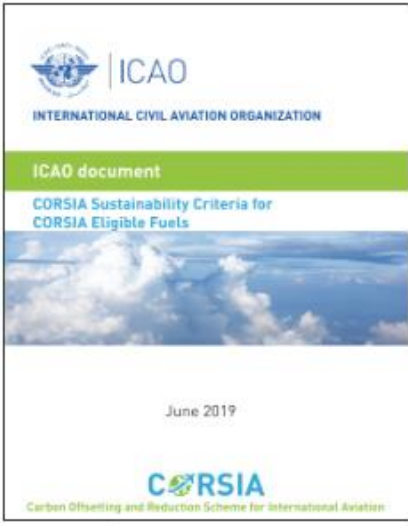
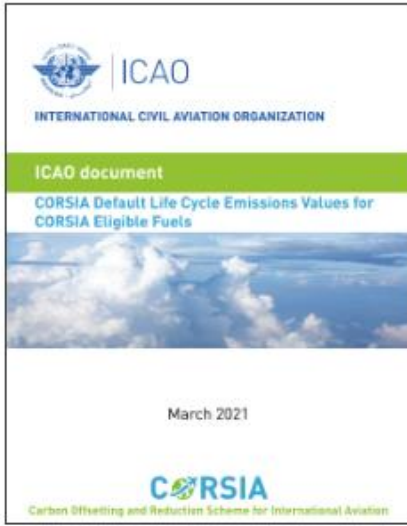
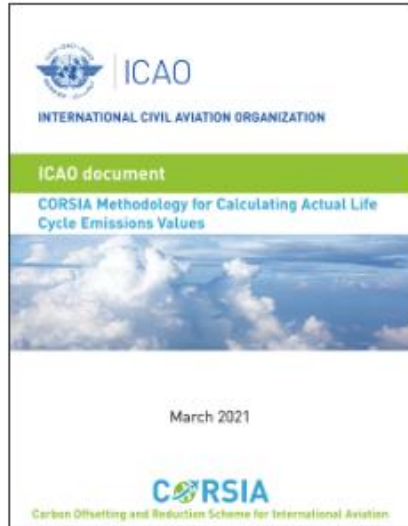
1 CORSIA States for Chapter 3 State Pairs	2 CORSIA CO <sub>2</sub> Estimation and Reporting Tool	3 CORSIA Eligible Fuels	4 CORSIA Eligible Emissions Units	5 CORSIA Central Registry
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December 2019

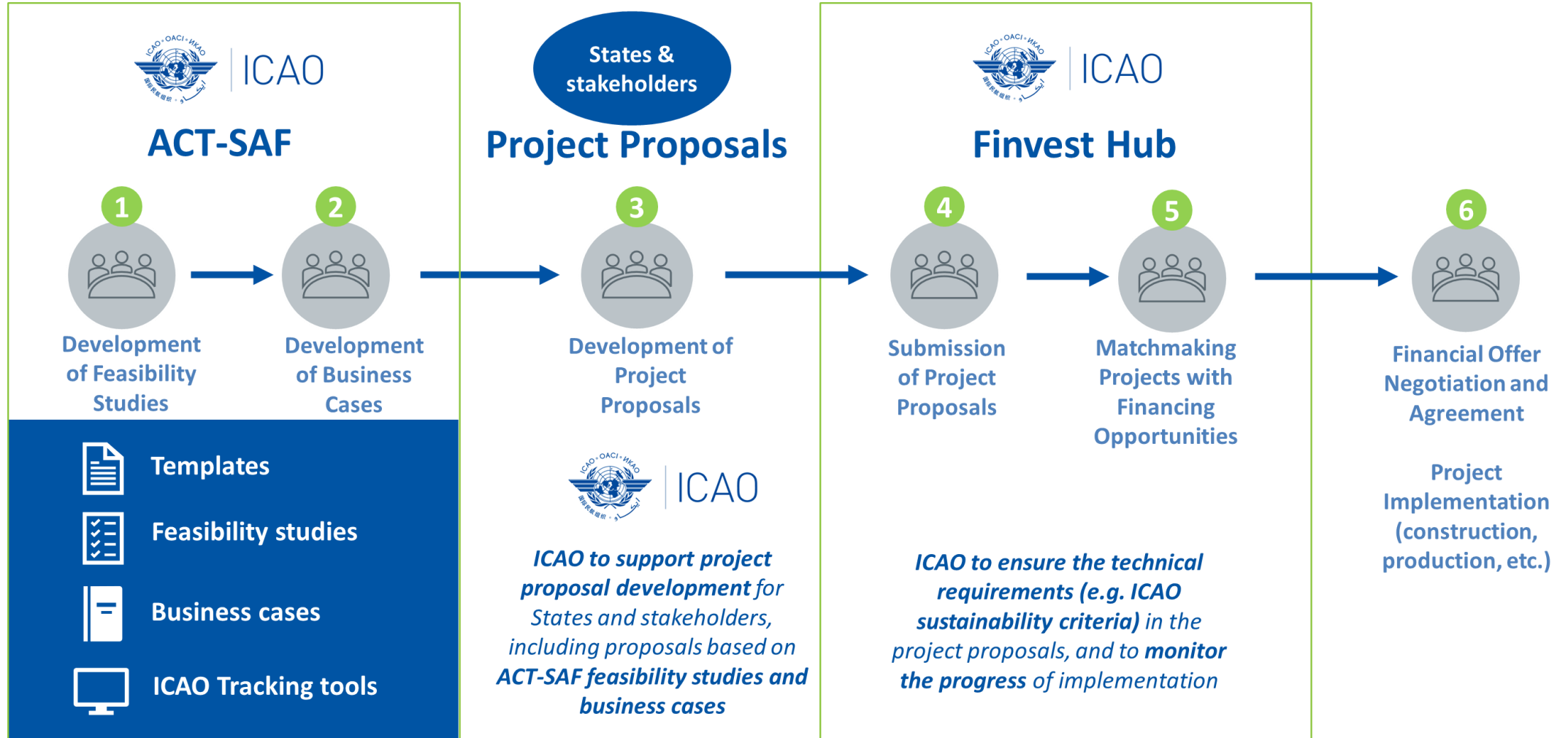
CORSIA Carbon Offsetting and Reduction Scheme for International Aviation

14 ICAO CORSIA documents directly referenced in Annex 16, Volume IV - Essential for CORSIA implementation

# ICAO Regulatory Framework for CORSIA Implementation

 <p>ICAO document CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes November 2019</p>	 <p>ICAO document CORSIA Approved Sustainability Certification Schemes November 2020</p>	 <p>ICAO document CORSIA Sustainability Criteria for CORSIA Eligible Fuels June 2019</p>	 <p>ICAO document CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels March 2021</p>	 <p>ICAO document CORSIA Methodology for Calculating Actual Life Cycle Emissions Values March 2021</p>
<p><b>CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes Third Edition, March 2024</b></p>	<p><b>CORSIA Approved Sustainability Certification Schemes* Second Edition, June 2023</b></p>	<p><b>CORSIA Sustainability Criteria for CORSIA Eligible Fuels** Third Edition, November 2022</b></p>	<p><b>CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels*** Fifth Edition, March 2024</b></p>	<p><b>CORSIA Methodology for Calculating Actual Life Cycle Emissions Values Fourth Edition, March 2024</b></p>

# ICAO FINVEST HUB





Welcome to  
**FINVEST Hub**



## ICAO's Finvest Hub



### Enabling Investment in Sustainable Aviation Fuel (SAF)

- An ICAO-led Initiative to enable and accelerate scaling of sustainable aviation fuel and other cleaner energies.
- FINVEST is an initiative of the International Civil Aviation Organization (ICAO) designed to **enable, facilitate, and connect Sustainable Aviation Fuel (SAF) projects with investment and financing opportunities.**
- As part of ICAO's commitment to decarbonizing international aviation, FINVEST aims to be a bridge between sustainable aviation fuel projects and the capital required to scale it globally.
- <https://www.icao.int/finvest> - *Let's take an overview of the site*

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# Questions?

Thank you...

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# Thank You

