



ICAO

ENVIRONMENT

ICAO Secretariat

Session 3 – Implementation Support (ACT-SAF Programme)

Agenda

Implementation Support



Session 3 : Implementation Support – ACT SAF Programme

- **CAAF/3 Global Framework: Building Block 3**
 - Introduction to Building Block 3 on Implementation Support
 - Update on ICAO ACT-SAF Programme
 - Feasibility Studies and Business Implementation Reports
- **States and stakeholders' presentations and views**
- **Q&A session**

ICAO Resolution A41-21 on Climate Change



“Means of implementation commensurate to the level of ambition, including financing, will promote the achievement of the LTAG” (A41-21, para. 17)





ICAO Resolution A41-21 on Climate Change

Relevant provisions from A41-21 on assistance, capacity building, and other means of implementation

Para. 12: ... share information ...

Para. 13: ... dissemination of economic and technical studies ...

Para. 17: ... means of implementation ...

Para. 18.a: ... facilitate... access to private investment capacities...

Para. 18.b: ... climate finance initiative or funding mechanism under ICAO ...

Para. 18.c: ... assistance and cooperation programme dedicated to LTAG ... ACT-SAF

Para. 18.d: **promote the voluntary transfer of technology...**

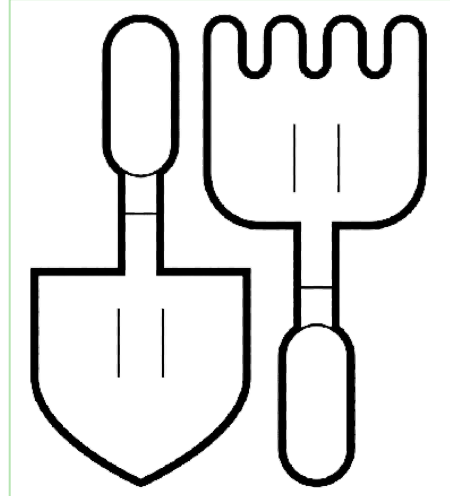
Para. 18.e: ... regular and substantial contributions to the ICAO Environment Fund...

Para. 20.d: ... assist Member States with studies, evaluations and development of procedures ...

Para. 21: ... to work together with relevant organizations ... recognizing ... largest ... CO2 emissions reduction **will come from fuel-related measures**

Para. 27.b: ... **consider the use of incentives to ... cleaner and renewable energy sources** ...

Para. 28: ... **facilitate the establishment of partnerships and the definition of policies** ...





ICAO Global Framework on 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% CO₂ 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

CAAF/3 Global Framework – 4 Building Blocks

1. Policy and Planning

- Global aspirational **Vision** to reduce international aviation CO₂ 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 Finvest 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)

Building Block 3 – Implementation Support



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**

Building Block 3 – Implementation Support

17. All States should have access to the means to participate across all stages of the development and deployment of SAF, LCAF and other aviation cleaner energies, and all States and regions are encouraged to work together in a spirit of solidarity to ensure there is a truly global effort to contribute to, and benefit from, the work to reduce emissions from such aviation cleaner energies.

18. The global scale-up in production of SAF, LCAF and other aviation cleaner energies requires a robust and substantial capacity-building and implementation support programme. States, ICAO, industry, academia and other relevant stakeholders are encouraged to work together to deliver such a programme that:

- a) recognizes the need for an expanded, robust, targeted and tailored support to account for the various stages of readiness across the entire SAF/LCAF value chain, taking into account different circumstances across States and regions;
- b) facilitates partnerships, alliances and cooperation between States and all relevant stakeholders, including regional collaborations that may result in regional solutions that produce fuels efficiently;
- c) includes exchange of information, sharing of best practices and technological developments among States, for which ICAO should provide a platform to facilitate this exchange and track progress;
- d) supports States in their planning, development and implementation of national and regional policies that can be applied across all stages of fuel supply-chain, including the following potential policy components that form part of a non-exhaustive ‘toolkit’ (referred to paragraph 6 above):

20. The ICAO capacity-building and implementation support should be delivered in an efficient, effective and coordinated manner under the ‘one-ICAO’ approach, incorporating support for all stages of SAF, LCAF and other aviation cleaner energies development and deployment, and building upon the success of the ACT-CORSIA and ACT-SAF programmes. States are also encouraged to develop specific projects under the ICAO Technical Cooperation Programme.



Background to ICAO ACT-SAF Programme

ICAO Assistance, Capacity-building and Training (ACT-SAF) programme was launched in June 2022, prior to the LTAG agreement by 41st Assembly:

- Building upon the ICAO ACT-CORSIA experience, through **partnerships and cooperation**
- **Welcomed** and further action requested by 41st Assembly (*A41-21, para 18. c)*)
- Referenced in CAAF/3 Global Framework, **Building Block 3 – Implementation Support**
- In line with ICAO ***No Country Left Behind*** initiative



ACT-SAF objectives:

- **Create opportunities for States to develop full potential in SAF development / deployment**
- **Tailored support** for States in various stages of SAF development / deployment
- **Facilitate partnerships and cooperation**
- **Foster knowledge sharing and recognition of SAF initiatives around the world**

Overview of ACT-SAF Programme

ACT»SAF



A wide scope of initiatives under the ACT-SAF programme, aligned with ICAO Global Framework for SAF, LCAF and other Aviation Cleaner Energies – *Building Block 3*



ACT-SAF Partners

More than 153 States and Organizations have become ACT-SAF partners



How to become an ACT-SAF partner?

- ICAO issued an invitation State Letter ENV 9/1 – 22/56 (May 2022)
- Participation from States, academia, aviation industry, financial institutions, civil society organizations, etc. is welcomed
- Becoming partners by agreeing to the **ACT-SAF Terms and Conditions**



APAC

ACT-SAF Partners



More than 153 States and Organizations have become ACT-SAF partners



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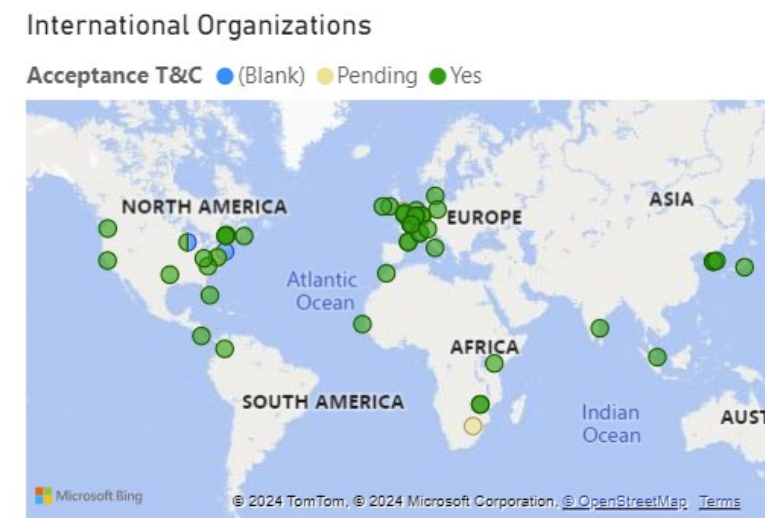


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90
States

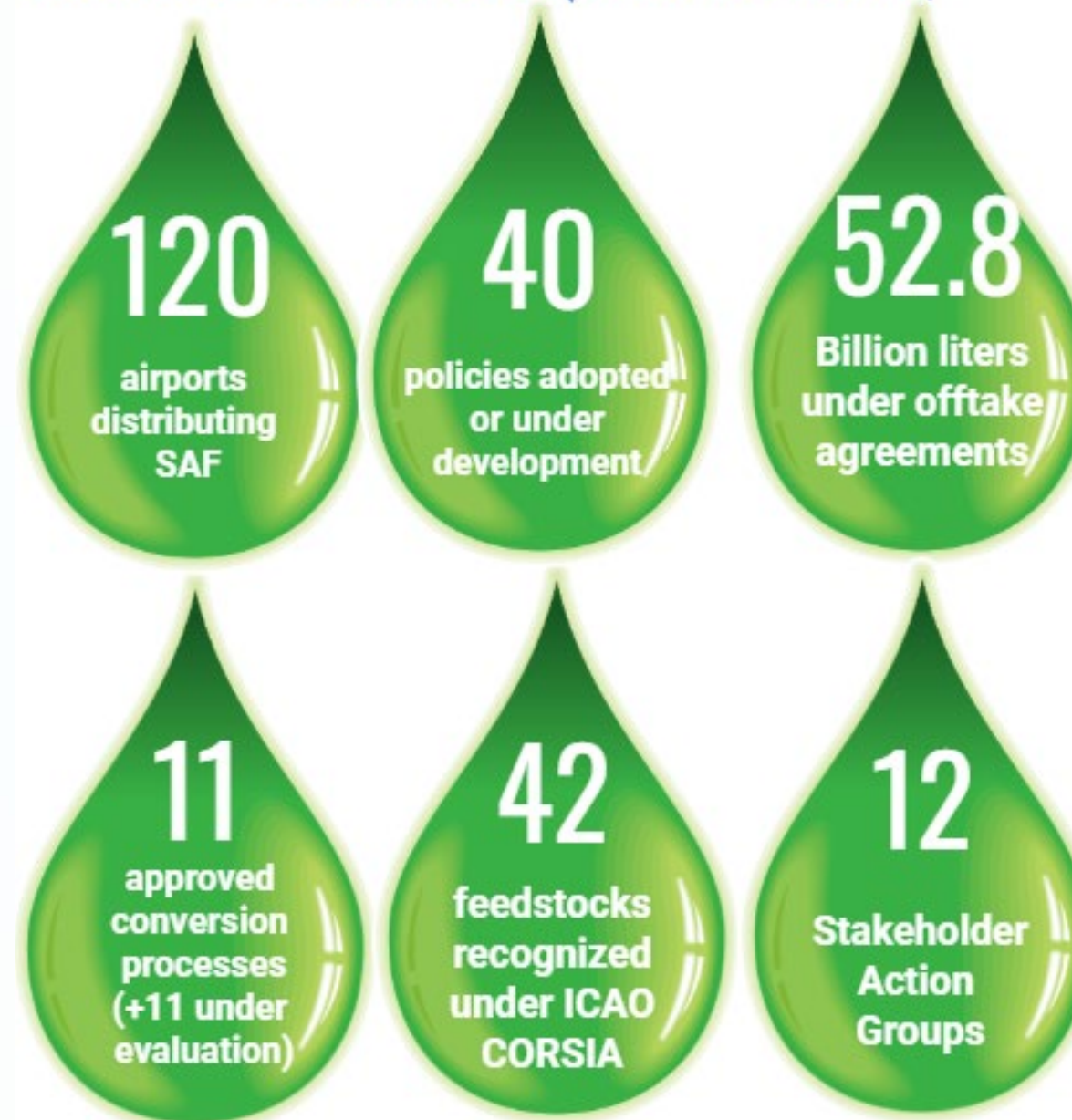


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ICAO Tracker Tools and ACT-SAF Platform for Monitoring Progress



ICAO SAF Tracker tools (click for details)



Latest news (click for details)

Search

Filter by State








Date ▾	Link
Apr 15, 2024	Neste to supply sustainable aviation fuel to Air New Zealand at Los Angeles International Airport
Apr 13, 2024	Harwich factory to make jet fuel out of faeces in world first – Sustainable Aviation Fuel
Apr 12, 2024	Chile announces SAF roadmap, targets production facility by 2030



ICAO tracker of SAF facilities

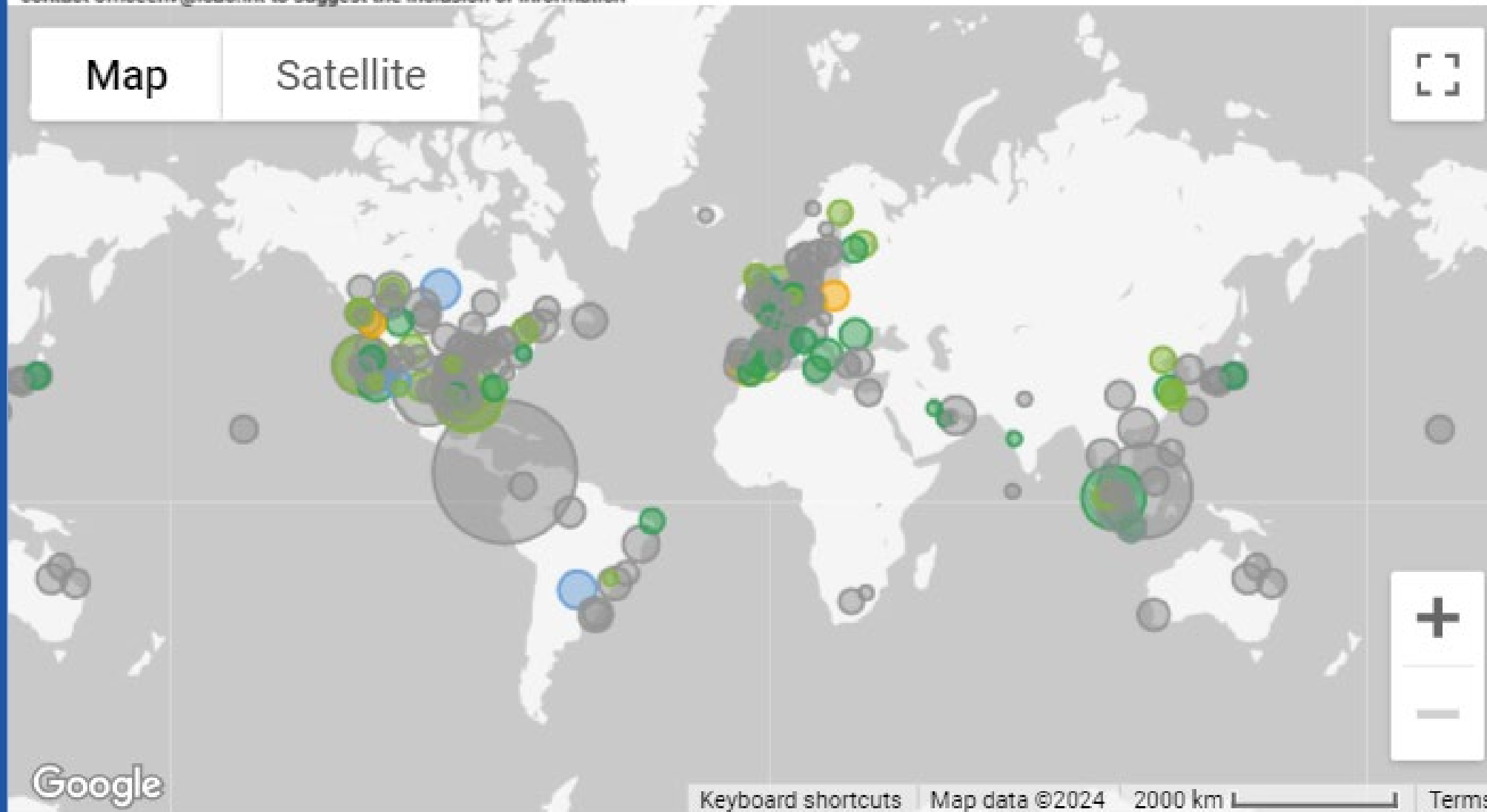
This tracker provides information on facilities (existing and announced) that could produce Sustainable Aviation Fuels.

Note: capacity numbers refer to total capacity, including SAF and other renewable fuels. ICAO does not actively verify the status of announcements made in the past. contact officeenv@icao.int to suggest the inclusion of information

-  COMPANY
Gunvor
-  COUNTRY
United Kingdom
-  ENTRY TO SERVICE
-  FEEDSTOCK
-  ASTM
-  CAPACITY - ML
93.8
-  LATEST LINK

<https://gunvorgroup.com/ne...>

LAST UPDATE: Feb 28, 2024



Capacity (ML/year)
0.0 + ● 9.8K

Facility Status
 1 - Initial Announcement 4 - In service - producing other renewable fuels 5 - In service - producing SAF 2 - Front End Engineering Design (FEED)
 3 - Under construction

Number of facilities
291

Announced capacity (billion liters/year)
97.7

Announced Capacity (kt)
78,241.69

Filter by

Status

Country

Company

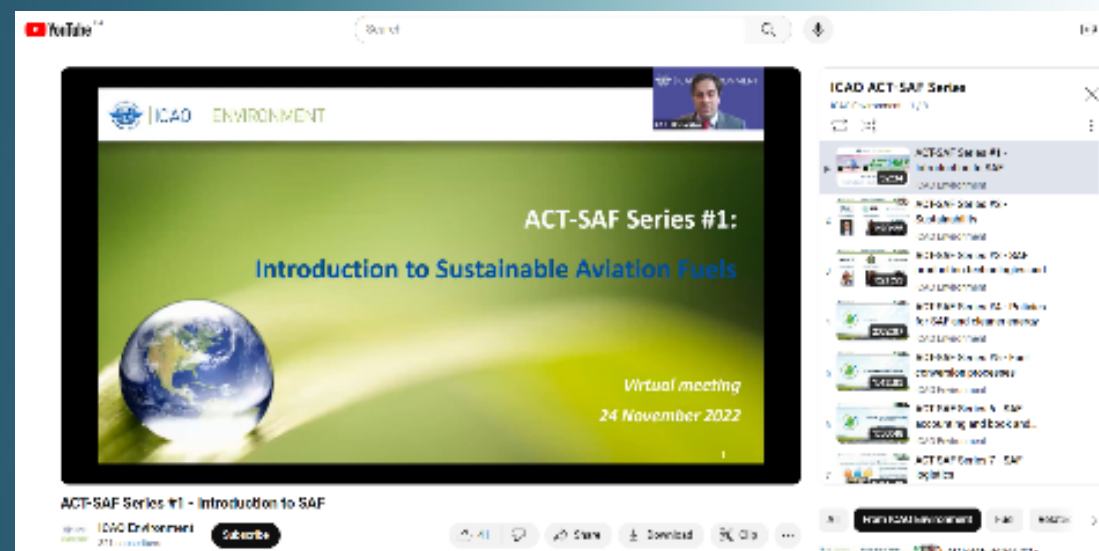
Announcement Date	Entry in Service	Company	Country	City	projected capacity (Million liters/year)
Feb 28, 2024	2025	Twelve	United States	Moses Lake, WA	0.2
Feb 28, 2024	No data	Verso Energy	France	Tartas	No data
Feb 27, 2024	No data	Avioxx	United Kingdom	No data	6.8
Feb 23, 2024	2026	Cepsa	Spain	Palos de la Frontera	624.7
Feb 23, 2024	2026	ANRPC	Egypt	Alexandria	150
Feb 20, 2024	2022	Marathon/Neste	United States	Martinez, CA	2768.8
Feb 16, 2024	2026	Velocys	United States	Natchez, MS	182.5

ACT-SAF Training Series

ACT-SAF series offer comprehensive training to partners on an array of important SAF-related topics



- Online training, supported by experts from partner States and Organizations
- Partners benefit from immediate interactions with speakers, Q&A
- 13 sessions have been completed – more than 100 participants per session
- Training materials available in ICAO TV, YouTube and ICAO ACT-SAF website





ACT-SAF Series

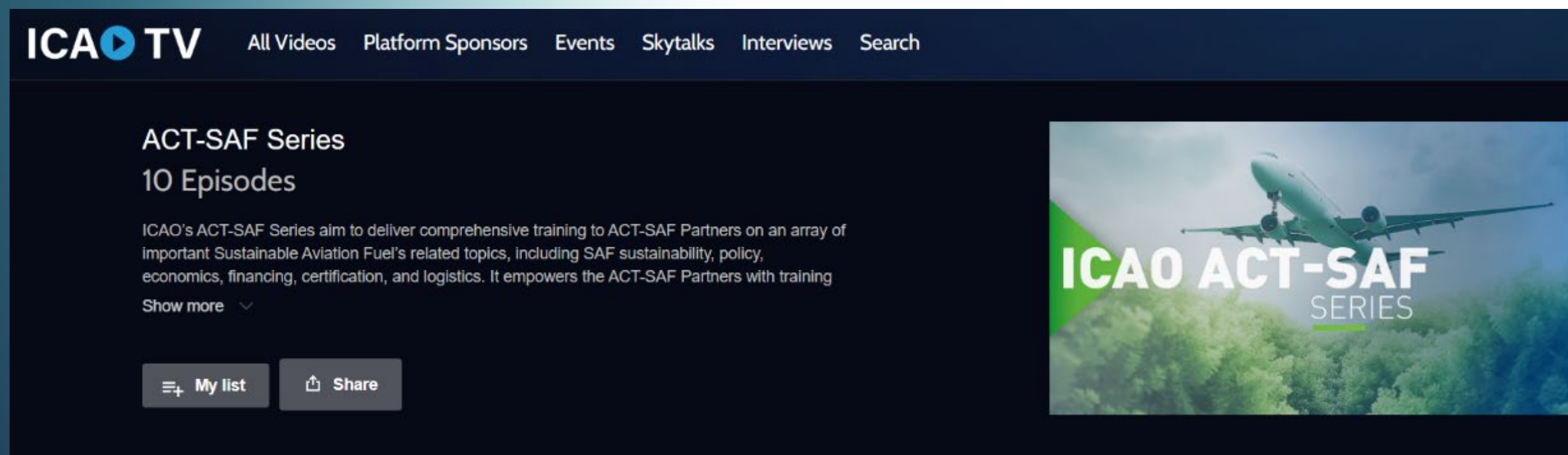
Coordination with ACT-SAF partners identified that many States need conceptual training on SAF.

To address that, ICAO is developing the ACT-SAF Series of training sessions, to be held on a monthly basis. This will allow delivering comprehensive training to ACT-SAF Partners on an array of important SAF-related topics, ranging from sustainability, to policy, economics/financing certification and logistics.

The ACT-SAF Series will empower the ACT-SAF Partners with training material designed with the support of Supporting States and Organisations from the air transport, fuels and finance sectors, as well as academics and actors with niche expertise such as SAF reporting under CORSIA.

Want to participate on the ACT-SAF Series? Join ACT-SAF now ([click here to access the ACT-SAF Terms and Conditions](#)). Participation is open to all States and Organizations interested in further action on SAF.

ACT-SAF Series	Date	Topics	Contributor(s)	Abstract	Video and Presentation
#1	25 November 2022	An introduction to SAF	ICAO	<ul style="list-style-type: none"> Introduction to ACT-SAF Basics of SAF 	 Download Presentation
#2	25 January 2023	SAF sustainability and reporting under CORSIA	ISCC RSB Verifavia	<ul style="list-style-type: none"> process for sustainability certification of SAF Reporting and verification of SAF Claims under CORSIA 	 Download Presentation



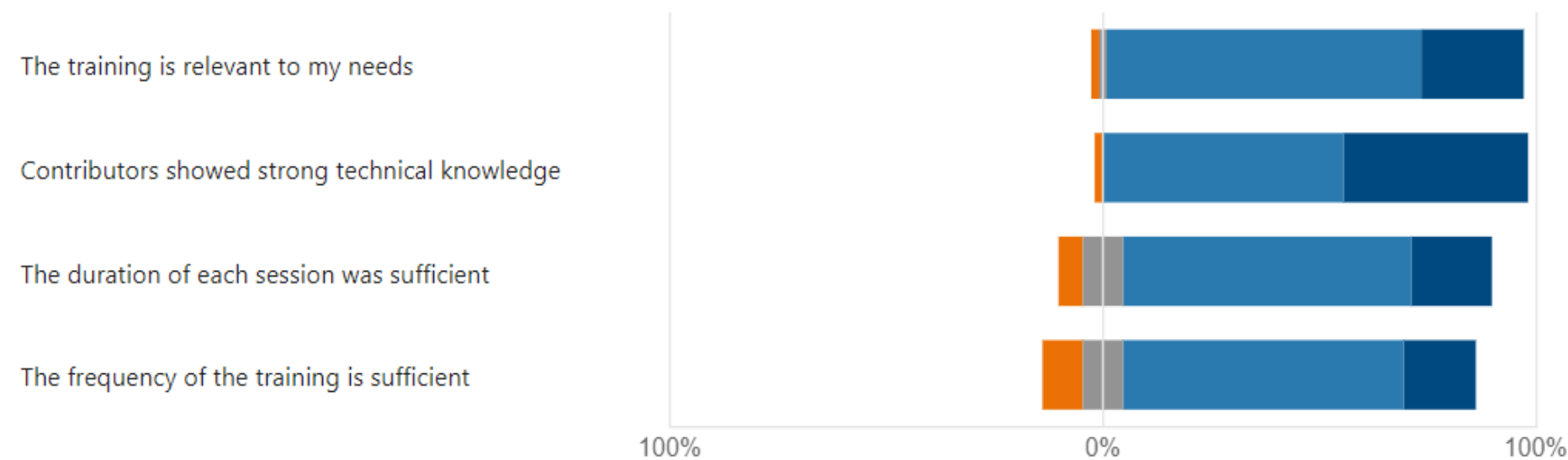
ACT-SAF Training Series



Satisfaction with ACT-SAF series:

- Survey conducted in Dec 2023 to gather **feedback and views** of ACT-SAF partners, and to address their needs and expectations
- **91% expressed that ACT-SAF series are meeting their expectations**
- **Feedback on the future contents** will shape upcoming ACT-SAF series.

■ Not Applicable ■ Strongly Disagree ■ Disagree ■ Agree ■ Strongly Agree



Impact assessments of policy options
SAF production pathways and feedstocks by region
Considerations surrounding SAF production
Claim of SAF environmental attributes for Scope 5 vs CORSIA
Highlighting examples of successful SAF flights
Finance
Life cycle assessments
Assessment on feedstock availability
Technical content on certification, chain of custody, SAF project design
Fuel composition and emissions
Translating SAF requirements for the newly adopted CAAF/3 framework
Detailed information on SAF blending infrastructure
SAF roadmaps
Regulatory aspects
SAF conversion pathways
SAF technology adoption and SAF investment analysis
Considerations for States where SAF production is not feasible

Beyond ACT-SAF Training Series



Identifying opportunities to enhance support:

- **Limitations of online training** – challenges in reaching all regions
- While it addresses general needs, **localized and tailored in-person training** can better address region/State specific needs, and increase opportunities for exchanges of information and best practices
- ICAO working on developing **training on specific topics** in collaboration with ACT-SAF partners, **seminars** with support of Regional Offices, and **updating materials based on past ACT-SAF training series**
- Additional contribution for collaborations are welcome





ACT-SAF feasibility studies



SAF feasibility studies provide States with the basis for SAF development/deployment

- To date, **7 SAF feasibility studies have been completed**
 - Burkina Faso, Dominican Republic, Kenya, Trinidad and Tobago (ICAO-EU project Phase I)
 - Cote d'Ivoire, Rwanda, Zimbabwe (ICAO-EU project Phase II)



Each feasibility study provides:

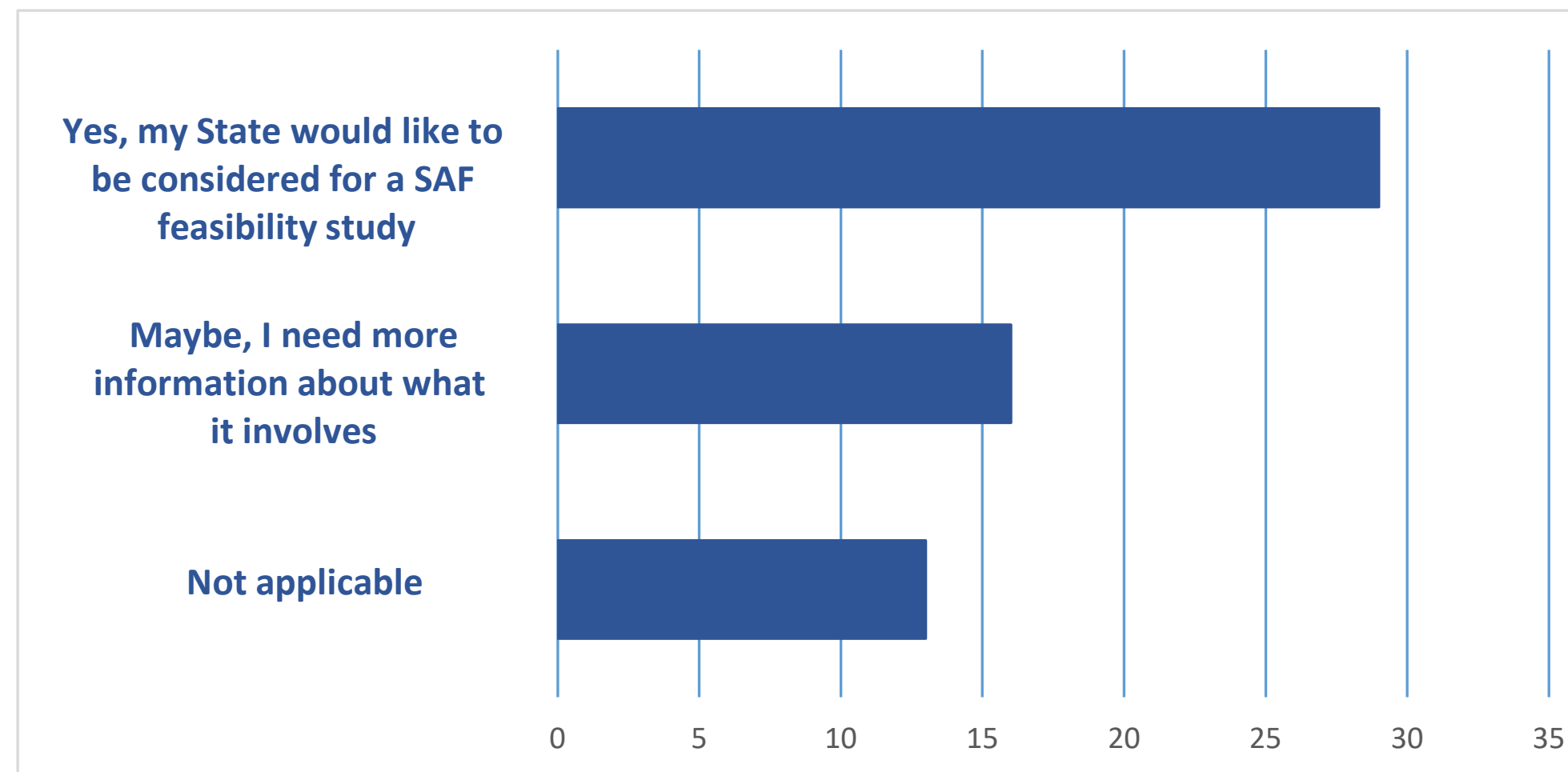
- Identification of **priority SAF pathways**, according to the **State's circumstances**
- Assessment of **implementation support** and **financing needs**
- Recommendation of an **Action Plan** aligned with the State's governmental policies related to SAF

ACT-SAF Feasibility Studies



Strong need for support in SAF feasibility studies (ACT-SAF survey, Dec 2023)

- Half (50%) wanted to be considered for SAF feasibility studies, with additional follow up support (e.g. business case development) where applicable
- Others (28%) wanted more information before committing to a request
- Remainder (22%) expressed that this was not applicable
 - Responses mainly from organizations, States which have already completed feasibility studies
- **Implementation** of feasibility studies will be a key item on the agenda for ICAO in 2024





ACT-SAF Feasibility Studies and business cases

- **Need to scale up SAF feasibility studies by 2025 and beyond**
- **Further need to develop SAF business cases** (assessment of SAF project viability) to facilitate investment decisions for commencement of concrete SAF projects

Upcoming SAF feasibility studies & business cases (2024 - 2026) with contributions to ENV Voluntary Fund

European Union	France	United Kingdom
<ul style="list-style-type: none">• Support 10 SAF feasibility studies for African States and India• 1st project kick-off meeting in April 2024	<ul style="list-style-type: none">• Support 3 SAF feasibility and business implementation studies, focused in African States	<ul style="list-style-type: none">• Support 3 SAF feasibility and business implementation studies, focused in African States
Netherlands	Austria	Airbus
<ul style="list-style-type: none">• Support 3 SAF feasibility studies, for States in various regions	<ul style="list-style-type: none">• Support SAF feasibility studies (TBD)	<ul style="list-style-type: none">• Support SAF feasibility studies (TBD)

- **Targeting ACT-SAF feasibility studies & business cases in 20 States by 2025, and 50 States by 2028**
- **More contributions are required for additional studies (app. USD 150K for each study)**

ACT-SAF Feasibility Studies

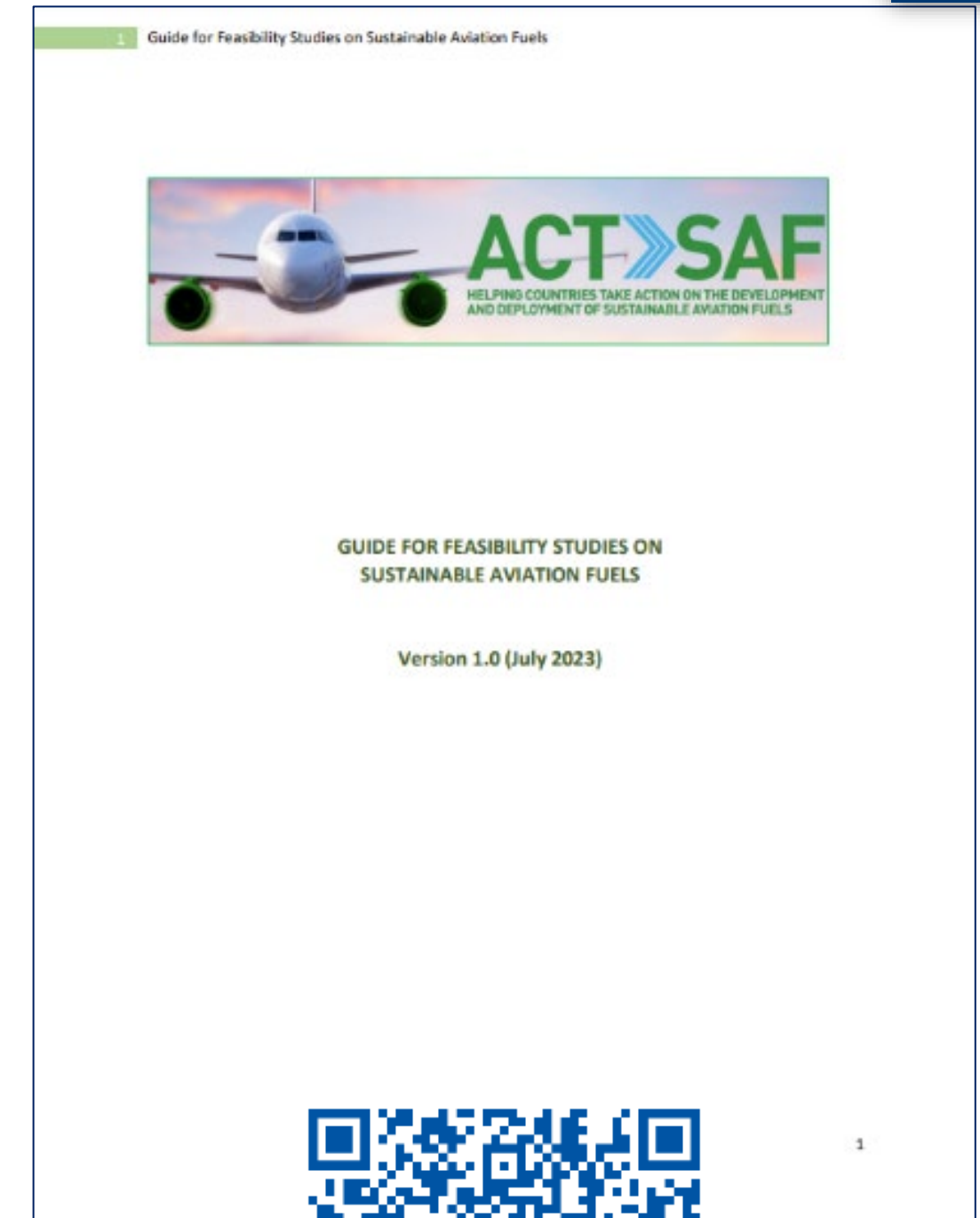


Template/Guide for ACT-SAF Feasibility Studies



July 2023 – SAF feasibility study template/guide:

- **Template** to highlight key features (State's circumstances of State, priority pathways, identifying implementation support, and action plan) and to ensure consistency of information across different feasibility studies
- **Guide** to include examples of feasibility study results, showing practical approaches across various publicly available feasibility studies
- **Feasibility studies under ACT-SAF** are expected to adhere the template/guide



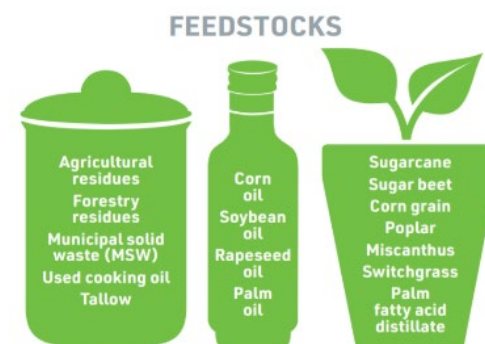
Template for SAF Business Implementation Report



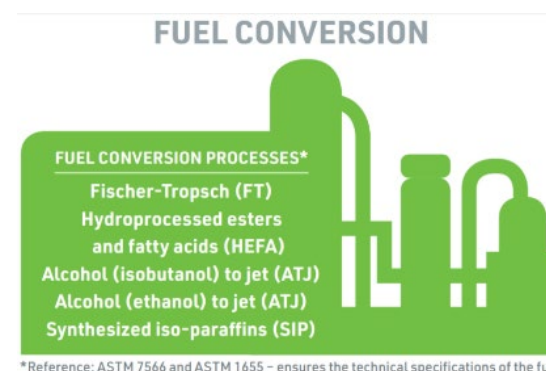
Background: SAF business implementation report template

- As a follow up to the SAF feasibility study template/guide, ICAO has prepared a draft template to support SAF business implementation
 - Provides follow up support to States where preceding studies have already identified SAF feedstock/pathway prospects

Feedstock availability



Production pathway



SAF market



- Received support from Kenya, Spain, Airbus, IATA, Oneiros Aerospace Limited, SAF Investor, SFS Ireland, and other individual contributors who participated in calls, and/or provided written inputs to progress the template

Template for SAF Business Implementation Report



Key elements:

1) Market analysis (scenario and assumptions)

- Deep dive into at least one shortlisted feedstock / pathway
- Setting out of the valuation model (e.g. discounted cashflow), and key outputs (e.g. NPV, MFSP)
- Provides technical information and assumptions, on SAF production facilities, with explanations
 - Location, supply chain, scale (e.g. energy infrastructure, demand)
 - General facility inputs (e.g. timeframes, capacities, lifespan)
 - Process and energy/utility inputs
 - Financial inputs (e.g. cost of capital, depreciation, IRR)



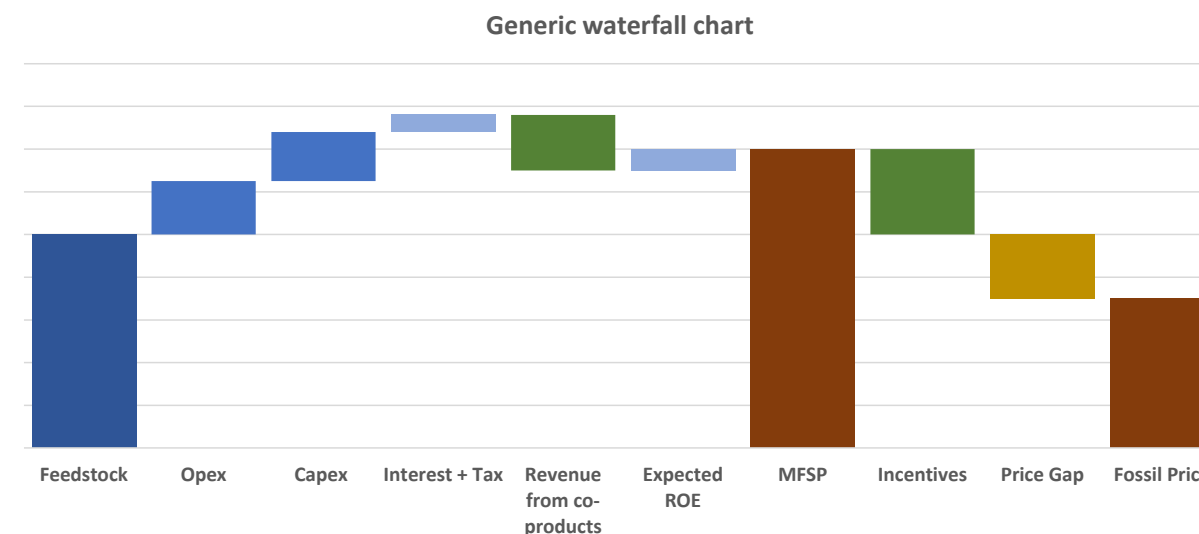
Template for SAF Business Implementation Report



Key elements:

2) Techno-economic assessment and results

- Applies input parameters from preceding section, to assess viability of SAF project in question
- Typically incorporates a waterfall chart with key outputs such as MFSP, price gaps, and CO2 abatement costs
- Sensitivity analysis to account for bear/bull variations in each input parameter – deviations from base scenario have to be explained
- Description of potential policies to address the price gap, if necessary



Template for SAF Business Implementation Report



Key elements:

3) Financial and operational assessment of the project

- **Development of the business case**, defining the economic and operational potential
- Operational assessments may provide information on
 - Facility general plot plans
 - Development timelines
 - Availability of local resources (incl impact on jobs)
- Assessments in cases of positive NPV (most ideal scenario), vis-à-vis negative NPVs (consideration of supporting policy)
- Assessments on potential regulatory issues (e.g. permits, expected timelines)
- Review of sustainability assessments, aligned with CORSIA eligible fuels
- Incorporate feedback from key stakeholders



Template for SAF Business Implementation Report



Key elements: 4) Risk assessment

- **Highlights challenges and barriers** that need to be addressed in order to realize SAF opportunities, with a focus on risks
- Common challenges include:
 - Scalability
 - Feedstock supply (seasonal variations, regional availability)
 - Technology risks
 - Competition with other refinery outputs
- Challenges may be evaluated in terms of probability, as well as impact to project success
- Mitigation means to address risks/challenges



Template for SAF Business Implementation Report



Key elements:

5) Business Implementation recommendations

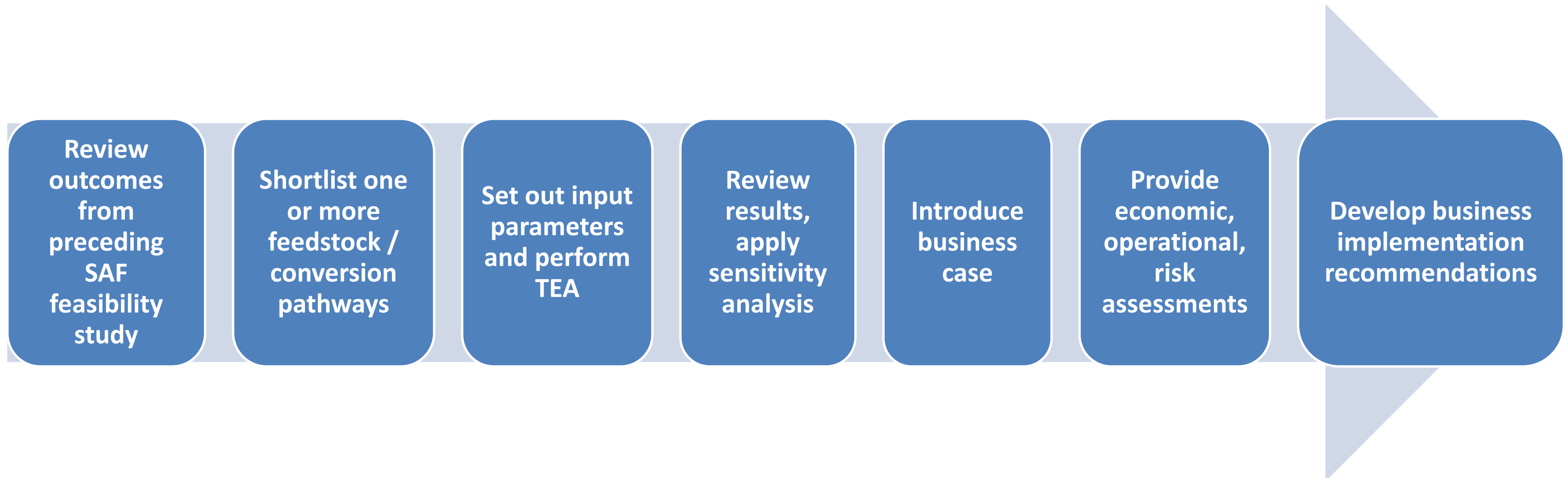
- **Explores final recommendations for the business case**
- Should aim to identify interested project partners – support towards setting out implementation structure
- Identification of potential financing, together with strategies for securing project finance
- Action plan to be aligned with the State's existing and planned policies related to clean energy/SAF development, as with linkages to the ICAO State Action Plan processes to support LTAG monitoring



Template for SAF Business Implementation Report







**Overall flow of the development of a business
implementation project**



ACT-SAF Newsletter

- Latest training series
- Latest feasibility studies
 - Latest SAF projects
 - Latest news on SAF
- Events





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.

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

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.

Twelve ACT-SAF training sessions have been delivered to date, and are available at the [ACT-SAF Series](#) website.

ACT-SAF Series #12

The twelfth event of the ACT-SAF Series, held on 6 June 2024, focused on providing participants with presentations of ICAO State Action Plans and the inclusion of SAF, which covered the following aspects:

- Latest developments on ACT-SAF
- ICAO presentation on State Action Plans, including updates to ICAO Doc. 9988
- Presentations on the incorporation of SAF into State Action Plans by:
 - o Civil Aviation Authority of Singapore;
 - o Climate Change Management Department, Zimbabwe;
 - o Autorité Nationale de l'Aviation Civile, Côte d'Ivoire; and
 - o Civil Aviation Bureau – Ministry of Land, Infrastructure, Transport and Tourism, Japan.

The recording of this session and the presentation are now available at the [ACT-SAF Series](#) website.

Upcoming ACT-SAF Series

The upcoming ACT-SAF Series (date: 3 July 2024) will focus on SAF business implementation (BI) studies, and on techno-economic assessment methodologies that will support the development of such studies. In particular, ICAO will present the BI template, having received comments and inputs from ACT-SAF partners across the past few months.

Stakeholders from across the aviation sector are invited to engage, learn and collaborate on advancing SAF initiatives, reinforcing the industry's united effort in reducing its carbon footprint and achieving sustainability targets.

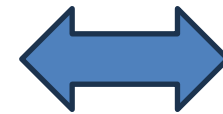
If you wish to receive regular updates and information on the ACT-SAF Series, participate in the events, and ask questions to our speakers, you can join the ACT-SAF programme now. Participation is open to all States and Organizations interested in further action on SAF following the acceptance of the [ACT-SAF Terms and Conditions](#) ([click here for more details](#)).





How can I contribute as ACT-SAF partner?

Contribute resources to support training, feasibility studies or business implementation report.



Inform ICAO ACT-SAF team if your States requests training, feasibility study or business implementation report.

- **Provide feedback on ACT-SAF, including proposals for new trainings**
- **Volunteer to contribute to an ACT-SAF training**
- **Provide feedback on the template/guide for feasibility studies**
- **Support the process for creating a template for business implementation reports (e.g. suggesting reference material)**
- **Contribute to the SAF trackers by informing the ACT-SAF team of recent developments**

Progress and evolution to ACT-LTAG



Sustainable resources required to ensure ACT-SAF progress and evolution

- **Training needs will evolve** towards tailored support to States in their varying stages of SAF, and with emerging topics
- Further enhancements to **tracker tools, guides/templates, outreach materials** to enhance outreach efforts
- Scaling-up of **SAF feasibility studies / business cases** by 2025 and beyond (with additional contributions to ENV Fund)
- Facilitating access to financing, with **close link with Finvest Hub**
- Ensure **adherence to ICAO technical requirements / criteria**
- **Increase participations** of States, industry, financial community, etc. with support of **Regional Offices**
- Future expansion to **ACT-LTAG programme**



ICAO Roadmap Building Block 3 – Implementation Support Planned Actions

ICAO Roadmap BB3 – Implementation Support (ACT-SAF and ACT-LTAG programmes)



Planned Actions



- To deliver a **robust, targeted and tailored** capacity-building and implementation support, to promote the development and production of SAF, LCAF and other aviation cleaner energies
- ACT-SAF programme, including **guidance and training, sharing of best practices, feasibility studies and business cases, supporting development of project proposals, and partnerships knowledge sharing and technical cooperation** amongst States, industry and other stakeholders
- To extend ACT-SAF to add other emissions reduction measures (e.g. aircraft technology, operation) as **ACT-LTAG programme**

36



36



Implementation Support Q&A Session

Next:



Session 3 - Implementation Support – ACT SAF Programme

States and stakeholders will share information on their feasibility studies and business cases under the ACT-SAF programme, as well as other capacity-building and assistance initiatives on SAF, LCAF and other aviation cleaner energies.

Thank You

