SAF accounting and reporting

12 March 2025

Agenda

1. Aviation's Net Zero 2050 target
2. SAF accounting overview and resources
3. Sustainability certification
4. SAF accounting and reporting
5. SAF Registry

1. Aviation's Net Zero 2050 target

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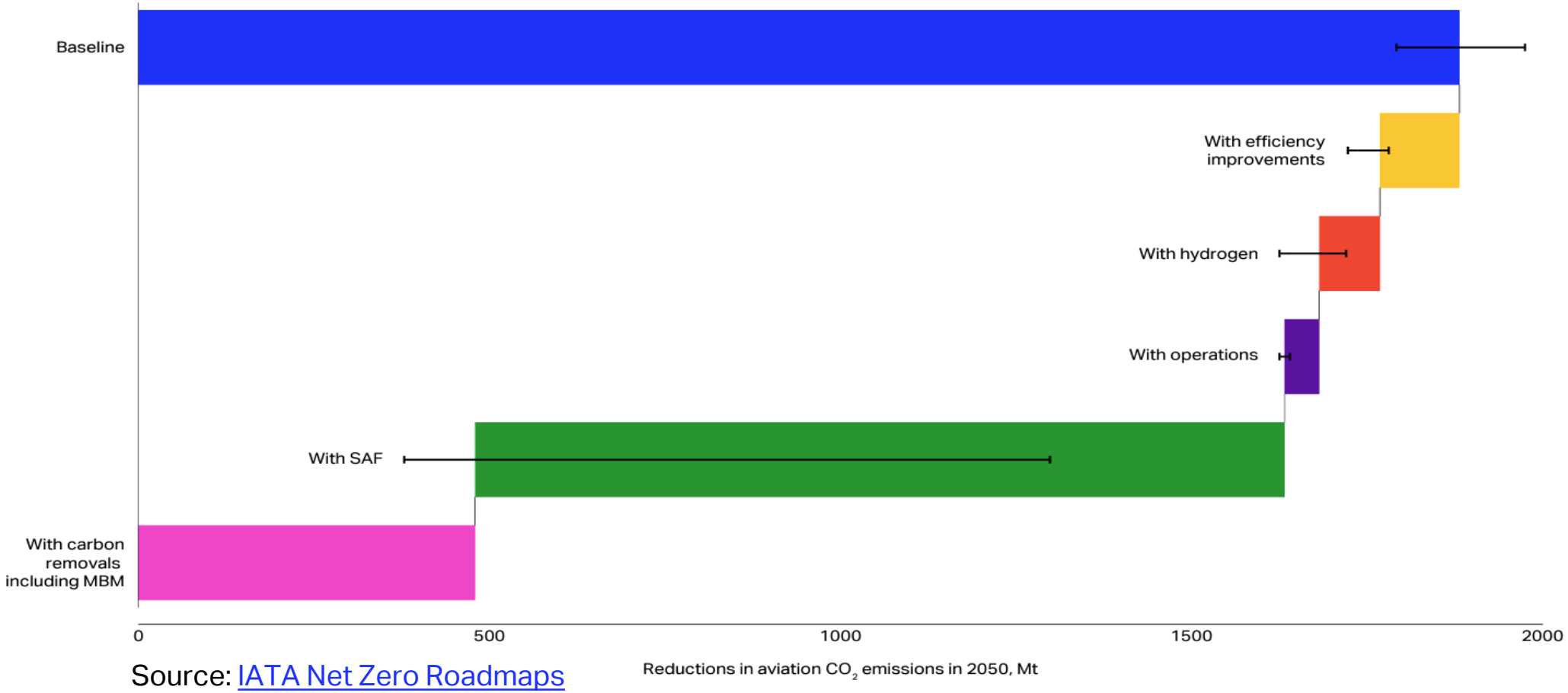
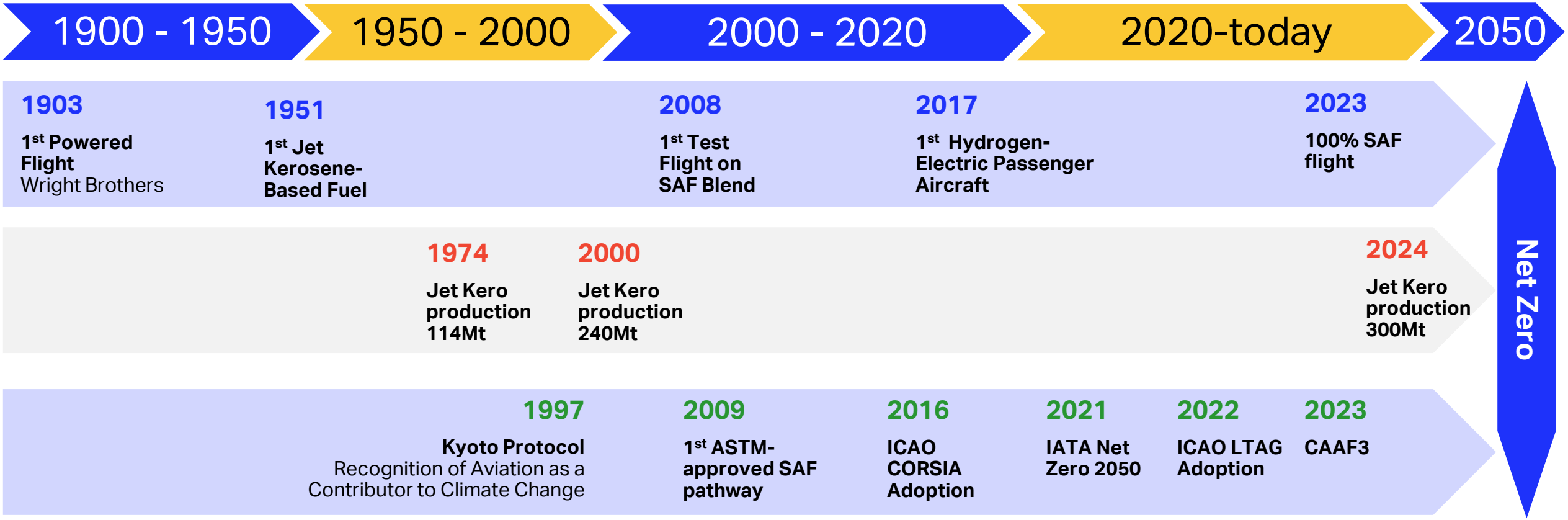
Key enablers to help aviation industry achieve net zero CO_2 emissions by 2050 – SAF is a significant lever

Reductions in aviation CO_2 emissions in 2050, by source, Mt



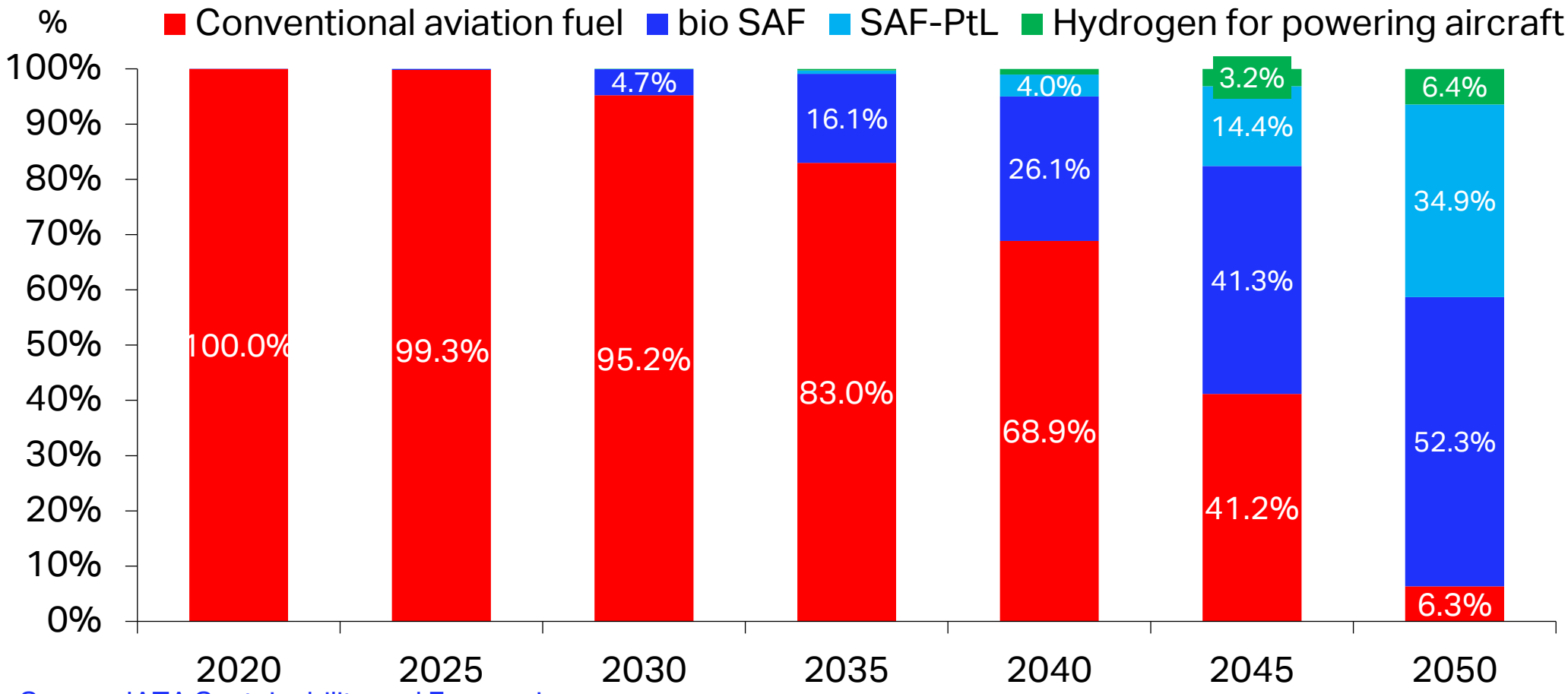
Source: IATA Net Zero Roadmaps

Looking back: Energy transition in the aviation industry



Looking forward: Aviation industry energy transition requirements to meet 2050 net zero CO_2 target

Share of in-flight energy demand by energy sources under the IATA Net Zero CO_2 Roadmap



Source: IATA Sustainability and Economics

2. SAF accounting overview and resources

Daniel Chereau

Head Fuel

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SAF accounting overview and resources

SAF certification

IATA

IN-DEPTH

Understanding SAF Sustainability Certification

Guidance document on requirements and criteria for sustainability certification

June 2024

This document aims to provide clear guidance on the requirements and criteria for SAF sustainability certification, in the interest of promoting consistency in the interpretation and application of sustainability standards across different stakeholders and facilitating the certification process.

This document was developed in collaboration with the following organizations:

RSB

ISCC

1 Understanding SAF Sustainability Certification

1

SAF accounting principles

IATA

POLICY

SAF accounting based on robust chain-of-custody approaches

A must-have for SAF deployment and its commercial viability

It is widely recognized that a robust Sustainable Aviation Fuel (SAF) accounting framework, based on trusted chain-of-custody approaches, is necessary to support the global aviation industry's goal to reach net-zero carbon emissions by 2050. It is needed to ensure a cost-effective and environmentally efficient way to incentivi... up of all technologies, feedstocks, methods, and approaches requi... lifecycle greenhouse gas (GHG) emissions across the SAF supp... rendering immaterial the physical matching of SAF supply and dem... geographic location.

BACKGROUND INFORMATION

Sustainable aviation fuel is produced from non-fossil fuel sources, resulting in lower GHG ... than conventional jet fuel on a lifecycle basis. It is the most expedient lever for decarbonizing aviation because it is a

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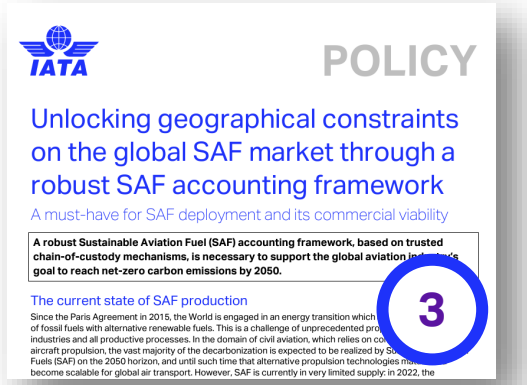
SAF accounting benefits



IATA

POLICY

Unlocking geographical constraints on the global SAF market through a robust SAF accounting framework

A must-have for SAF deployment and its commercial viability

A robust Sustainable Aviation Fuel (SAF) accounting framework, based on trusted chain-of-custody mechanisms, is necessary to support the global aviation ind... goal to reach net-zero carbon emissions by 2050.

The current state of SAF production

Since the Paris Agreement in 2015, the World is engaged in an energy transition which ... of fossil fuels with alternative renewable fuels. This is a challenge of unprecedented pro... industries and all productive processes. In the domain of civil aviation, which relies on co... aircraft propulsion, the vast majority of the decarbonization is expected to be realized by S... Fuels (SAF) on the 2050 horizon, and until such time that alternative propulsion technologies m... become scalable for global air transport. However, SAF is currently in very limited supply: in 2022, the

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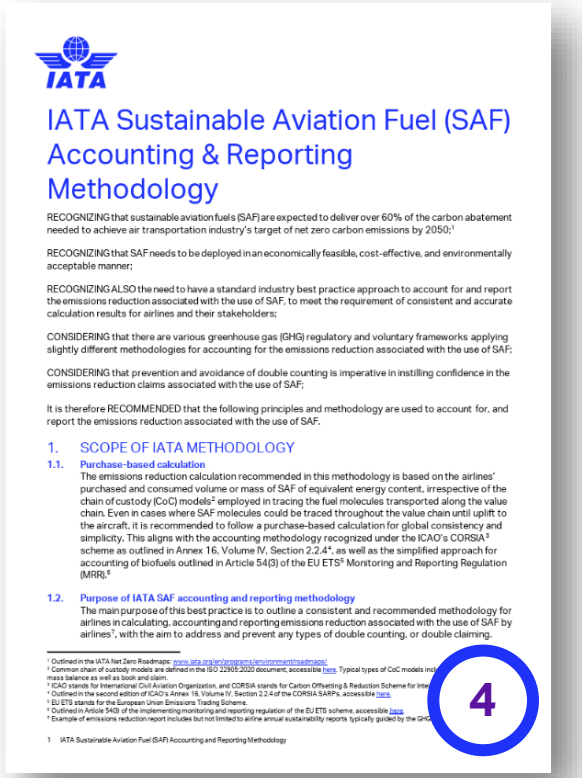
IATA SAF Accounting & Reporting Methodology



IATA

IATA Sustainable Aviation Fuel (SAF) Accounting & Reporting Methodology

RECOGNIZING that sustainable aviation fuels (SAF) are expected to deliver over 60% of the carbon abatement needed to achieve air transportation industry's target of net zero carbon emissions by 2050;[1]

RECOGNIZING that SAF needs to be deployed in an economically feasible, cost-effective, and environmentally acceptable manner;

RECOGNIZING ALSO the need to have a standard industry best practice approach to account for and report the emissions reduction associated with the use of SAF, to meet the requirement of consistent and accurate calculation results for airlines and their stakeholders;

CONSIDERING that there are various greenhouse gas (GHG) regulatory and voluntary frameworks applying slightly different methodologies for accounting for the emissions reduction associated with the use of SAF;

CONSIDERING that prevention and avoidance of double counting is imperative in instilling confidence in the emissions reduction claims associated with the use of SAF;

It is therefore RECOMMENDED that the following principles and methodology are used to account for, and report the emissions reduction associated with the use of SAF.

1. SCOPE OF IATA METHODOLOGY

1.1. Purchase-based calculation

The emissions reduction calculation recommended in this methodology is based on the airlines' purchased and consumed volume or mass of SAF of equivalent energy content, irrespective of the chain of custody (CoC) models[2] employed in tracing the fuel molecules transported along the value chain. Even in cases where SAF molecules could be traced throughout the value chain until uplift to the aircraft, it is recommended to follow a purchase-based calculation for global consistency and simplicity. This aligns with the accounting methodology recognized under the ICAO's CORSIA[3] scheme as outlined in Annex 16, Volume IV, Section 2.2.4[4], as well as the simplified approach for accounting of biofuels outlined in Article 54(3) of the EU ETS[5] Monitoring and Reporting Regulation (MRR).[6]

1.2. Purpose of IATA SAF accounting and reporting methodology

The main purpose of this best practice is to outline a consistent and recommended methodology for airlines in calculating, accounting and reporting emissions reduction associated with the use of SAF by airlines[7], with the aim to address and prevent any types of double counting, or double claiming.

1 Outlined in the IATA Net Zero Roadmaps: www.iata.org/en/programs/environment/roadmaps/
2 Common chain of custody models are defined in the ISO 22095:2020 document, accessible here. Typical types of CoC models inclu... mass balance as well as book-and-claim.
3 ICAO stands for International Civil Aviation Organization, and CORSIA stands for Carbon Offsetting & Reduction Scheme for Inter...
4 Outlined in the second edition of ICAO's Annex 16, Volume IV, Section 2.2.4 of the CORSIA SARPs, accessible here.
5 EU ETS stands for the European Union Emissions Trading Scheme.
6 Outlined in Article 54(3) of the implementing monitoring and reporting regulation of the EU ETS scheme, accessible here.
7 Example of emissions reduction report includes but not limited to airline annual sustainability reports typically guided by the GHG...

1 IATA Sustainable Aviation Fuel (SAF) Accounting and Reporting Methodology

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5 IATA SAF Registry

IATA

3. Sustainability Certification

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IATA

IN-DEPTH

Understanding SAF Sustainability Certification

Guidance document on requirements and criteria for sustainability certification

June 2024

This document aims to provide clear guidance on the requirements and criteria for SAF sustainability certification, in the interest of promoting consistency in the interpretation and application of sustainability standards across different stakeholders and facilitating the certification process.

This document was developed in collaboration with the following organizations:

RSB
Roundtable on Sustainable Biomaterials
www.rsb.org

ISCC
International Sustainability & Carbon Certification

1 Understanding SAF Sustainability Certification

How is the guidance document structured?

Five main chapters answering important questions on SAF Sustainability certification

1. What is sustainability certification?
2. Who provides SAF sustainability certification?
3. Who needs to be certified?
4. What activities can a certified entity perform?
5. How does an entity become certified?

Frequently Asked Questions

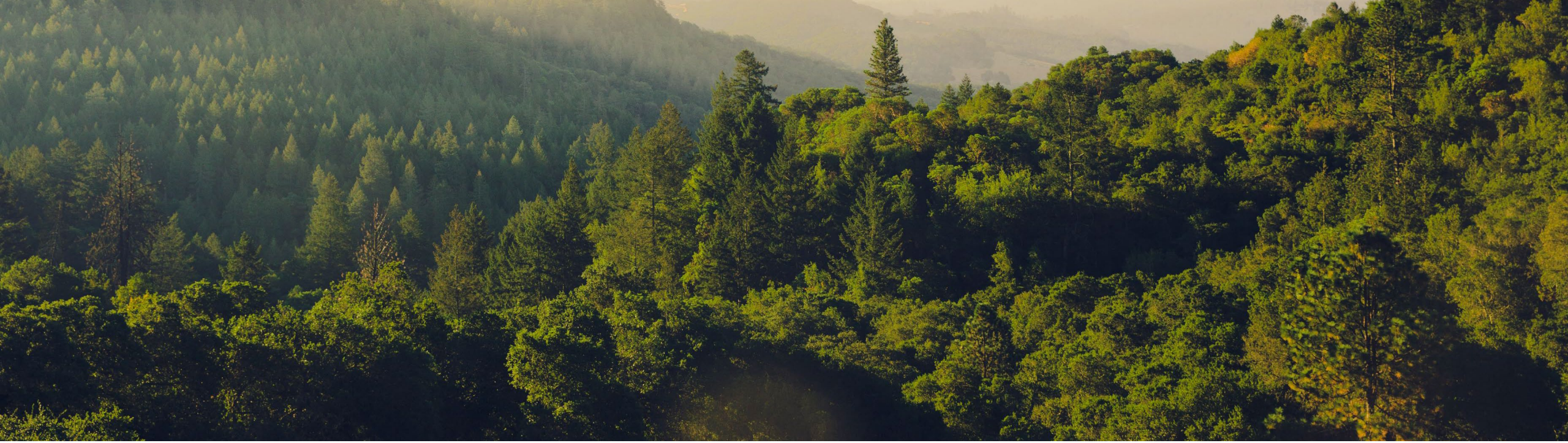
For more specific and specialized questions

Glossary

Definitions of terms relevant to sustainability certification

Appendices

Include samples of completed Proof of Sustainability documents

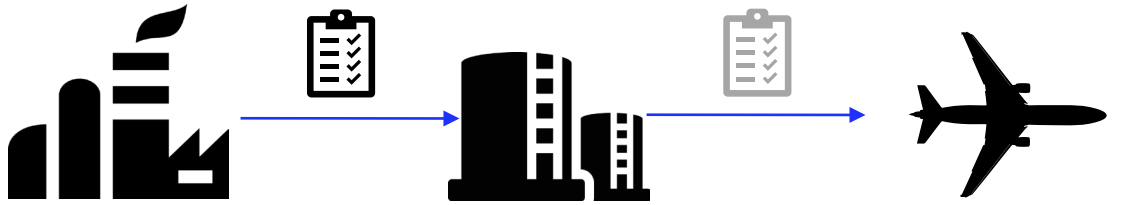


Sustainability certification assesses a product, service or organization to determine its environmental, social and economic sustainability performance against a set criteria or standard

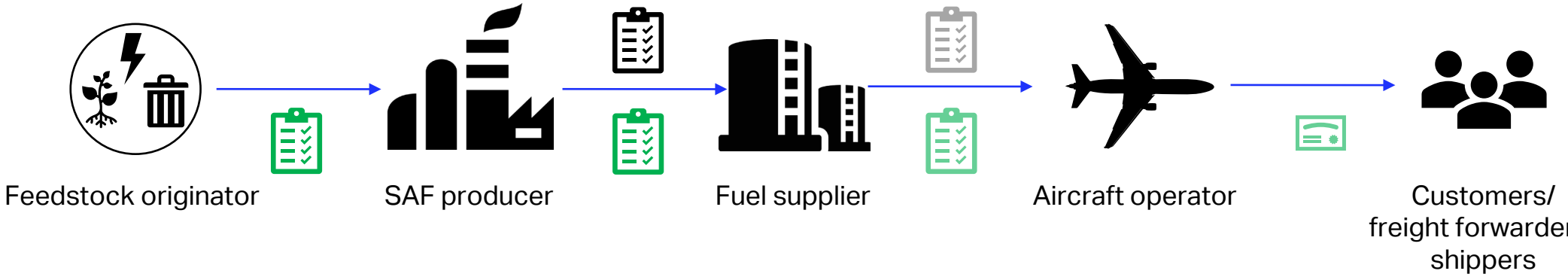
Why is Sustainability Certification Important?

- To ensure certified products are ***better for the environment*** than fossil-based products
- To guarantee sustainability claims are independently verified
- To increase the confidence of investors and stakeholders
- To gain support from civil society and the public
- To meet market demand
- To meet regulatory requirements

Making sure that the fuel is fuel



Making sure that the SAF is sustainable



CERTIFICATION ECOSYSTEM

Recognition

Oversight Body

Accreditation Body

Accreditation and Surveillance

RSB

ISCC
International Sustainability & Carbon Certification

Surveillance and oversight

Certification Body

Reporting

Implementation of standards and requirements

Certification and verification

Feedstock sustainability

Traceability and chain-of-custody

GHG emissions

RSB CERTIFIED

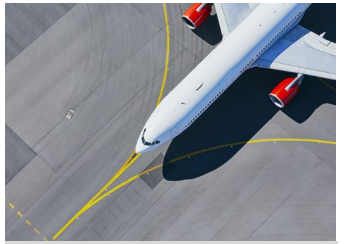
ISCC CERTIFIED Certified GHG Savings

Farm or point of origin

First collector

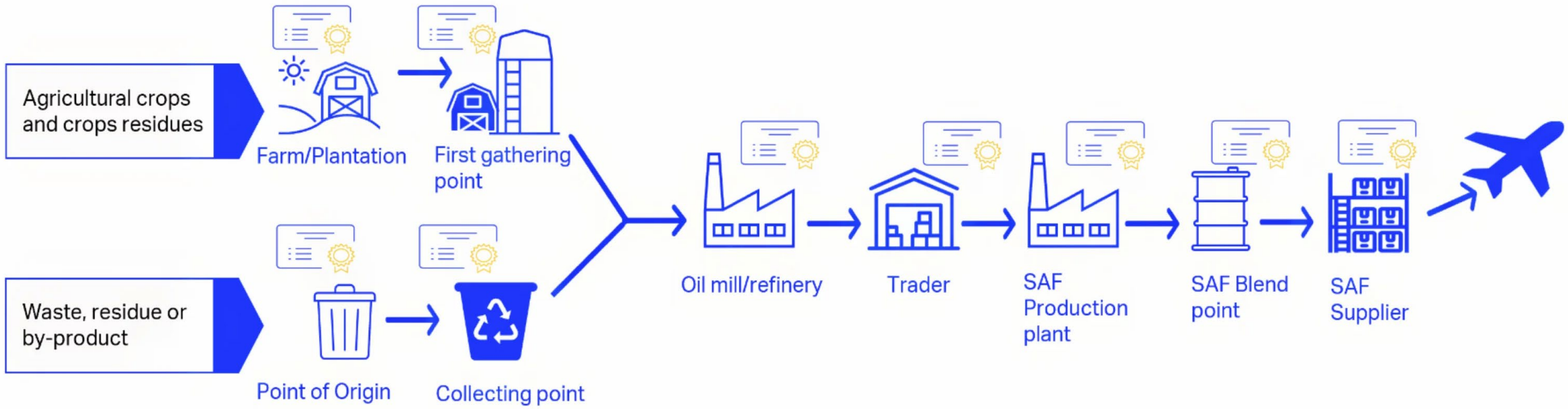
Refinery

Fuel supplier



Final fuel user

Any economic operator along the supply chain who makes changes to the SAF (chemical change or change to the GHG emission factor) or takes legal ownership of the SAF feedstock or SAF, must be certified



Source: Adapted from ISCC

4. SAF accounting and reporting

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Head Fuel

IATA

SAF accounting – current initiatives

Smart Freight Centre

Aviation Initiative for
Renewable Energy in Germany e.V.

The must-have SAF accounting principles

What are the SAF accounting principles? – The necessary set of accounting rules required to be adopted by the industry to ensure high integrity of SAF transactions, **preventing of any type of double counting**

Full alignment	Room for interpretation
✓ Immutable tracking	✓ Additionality
✓ Prevention of double counting	✓ Stackability
✓ Interoperability	✓ Vintage period
✓ Verifiability	
✓ Neutrality	
✓ Divisibility	
✓ Permanence	
✓ Transparency	

Note: Detailed explanation with examples included in the appendix

Accounting based on chain-of-custody approaches

What is a Chain of Custody (CoC)?

Process by which inputs and outputs and associated information are transferred, monitored and controlled as they move through each step in the relevant supply chain *(Source: ISO 22905:2020)*

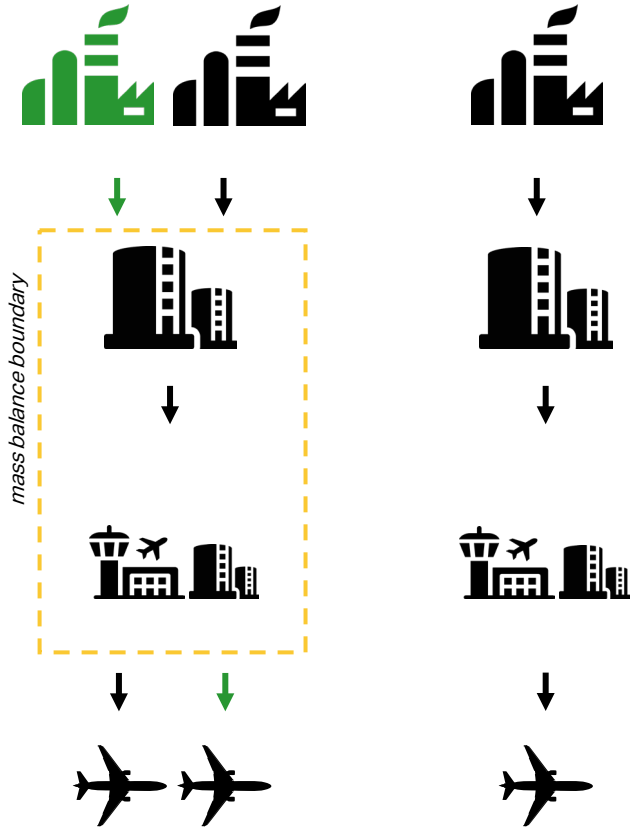
Main CoC models for SAF:

Physical Segregation	Mass Balance	Book and Claim
CoC model whereby materials or products originate from a single source and their specified characteristics are maintained throughout the supply chain	CoC model that requires the documentation of the amount of SAF at each stage of the aviation fuel distribution network. (V_{in}=V_{out})	CoC model that decouples SAF's environmental benefits from the physical molecules along the supply chain.

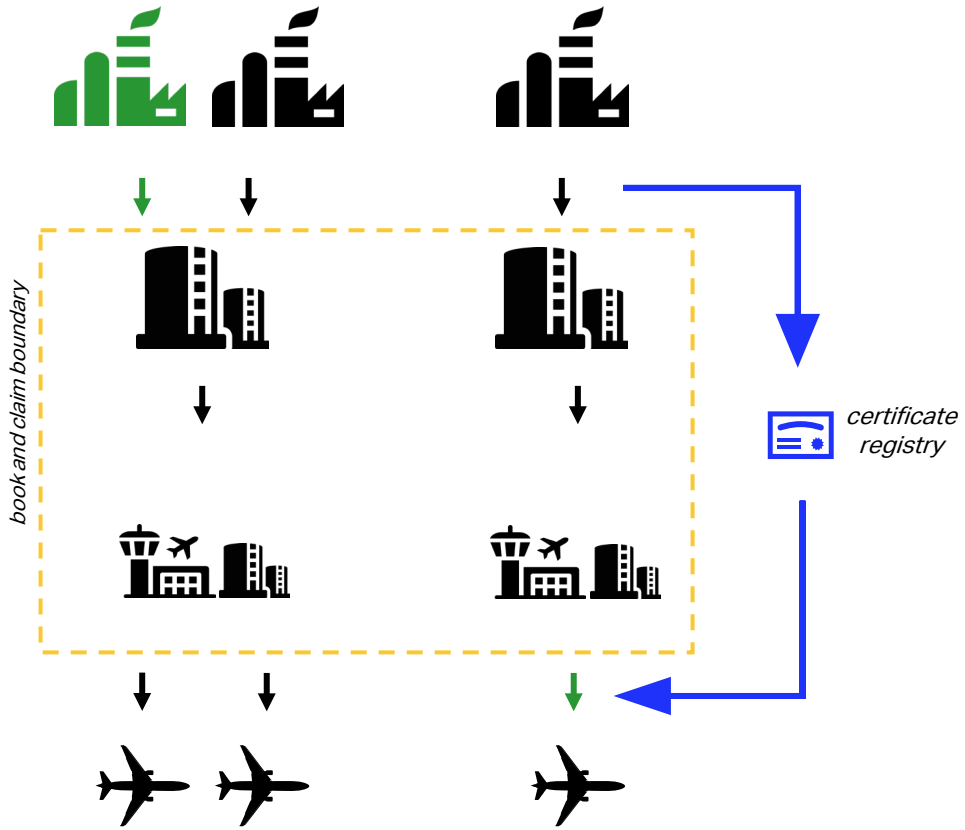
Overview of CoC approaches – proven concepts

Physical segregation

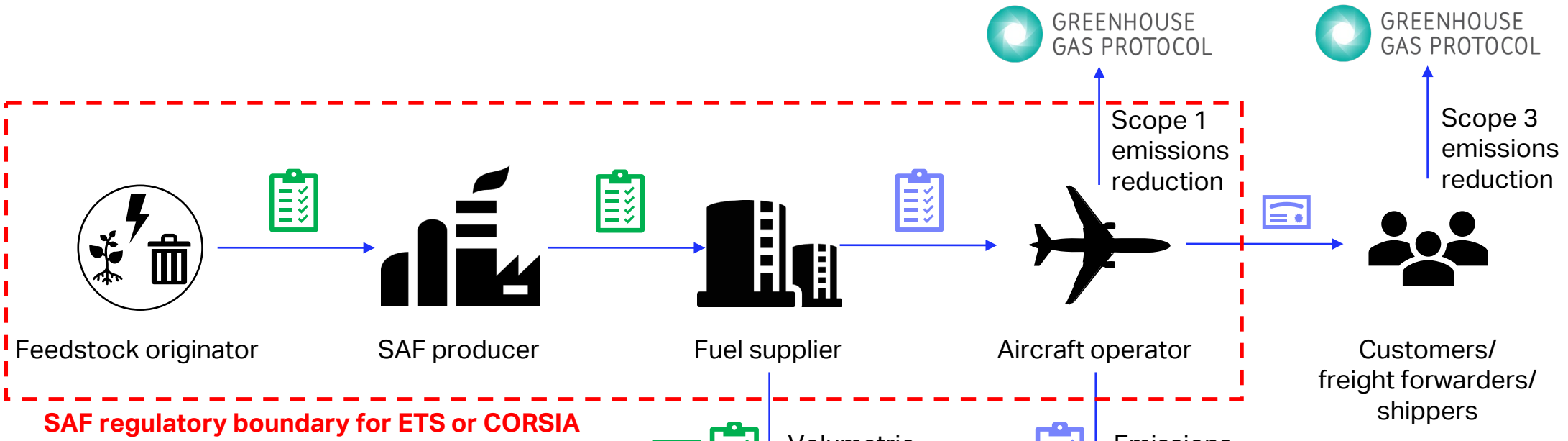
Mass balance



Book and Claim



SAF use-cases along the aviation value chain



Legends:

- Proof of Sustainability (PoS)
- Proof of Sustainability (PoS), Proof of Conformance/Compliance (PoC) or Product Transfer Document (PTD)*
- Ticket/excerpt for proof of incentive eligibility or mandate compliance
- Voluntary SAF certificates, certified by relevant 3rd independent body

**The use of PTD or PoC must be assessed on a case-by-case basis*

IATA

Different type of SAF sustainability documentation exist. Question – what should airlines use to claim SAF?

Proof of Sustainability (PoS)	Proof of Conformance/ Compliance (PoC)	Compliance ticket/excerpt	Product Transfer Document (PTD)	Voluntary SAF Certificates
A delivery document issued by a producer/ supplier/ trader certified under a relevant certification scheme containing sustainability information on the sustainable material	A delivery document issued by a fuel supplier certified under relevant certification scheme* containing sustainability information on the sustainable material, in a situation whereby the associated PoS document is required to be surrendered to the relevant regulatory authority.	A document issued by the relevant regulatory authority or registry operator to prove compliance under the relevant regulatory framework, or to corroborate SAF transaction in a registry.	A delivery document that authenticates the transfer of ownership of the Sustainable Aviation Fuel from the Seller to the Buyer.	A certificate issued by airlines to allow claiming of voluntary of Scope 3 by corporate customers and must be verified by an external, and independent 3rd party.

Note:

- In the case of claiming under a relevant regulatory framework, airlines need to verify that PTDs are acceptable for claiming the environmental attributes under specific regulatory schemes in a particular jurisdiction.

SAF accounting based on chain of custody approaches is a **must-have** for SAF deployment and its commercial viability

- ✓ Enabling and promoting SAF production where it is most efficient.
- ✓ Stimulating SAF uptake where demand would not justify local SAF production (i.e., notably in smaller airports and remote locations), or where physical supply is too expensive or otherwise impeded.
- ✓ Minimizing the costs of logistics, such as transport and use of intermediate storage facilities.
- ✓ Avoiding adding GHG emissions from transportation of SAF.
- ✓ Expanding the customer base compared to physically matching supply and demand, thus providing a clear market signal favoring the ramp-up of SAF production.
- ✓ Promoting competition in a broader marketplace.
- ✓ Facilitating compliance with mandatory as well as voluntary emissions-reduction schemes.

5. SAF Registry

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What is the SAF Registry?

Immutable tracking, recording, and accounting of SAF

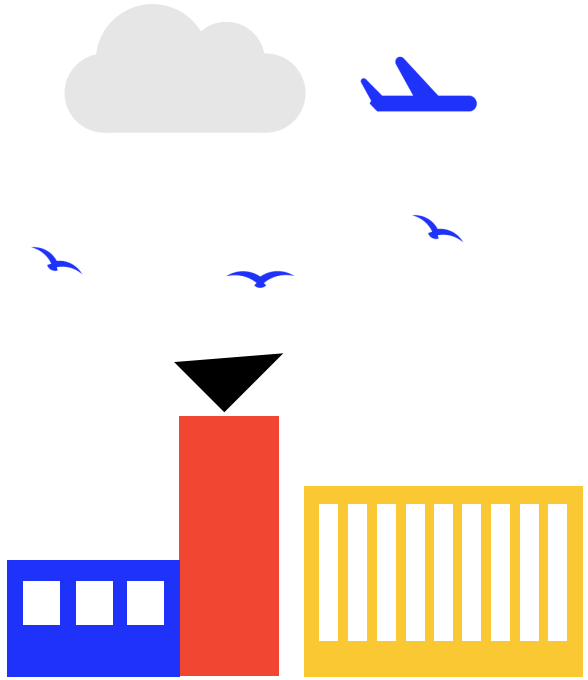
Design principles:

- Follows the **natural SAF value chain** in accordance with the GHG Protocol philosophy
- Enable "**Book & Claim**" reporting as well as **Mass Balance** accounting of aviation fuel uplift at departure airports
- Ability to **support existing regulations** & enable authorities to verify compliance
- **Flexibility in SAF transactions** without imposing restrictions on specific transactions observed in the market
- **Minimize costs** and administrative burden and anticipate interests of all users throughout the SAF value chain
- **Interoperability** and coordinated data transfer with other registries to prevent double-counting

65%

of aviation emissions expected to be abated using SAF by 2050

Source: IATA Net Zero Roadmaps



SAF Rulebook & Registry Development

Foundation Layer

- ✓ SAF accounting principles
- ✓ SAF accounting benefits
- ✓ Understanding SAF sustainability certification

Available on IATA.org

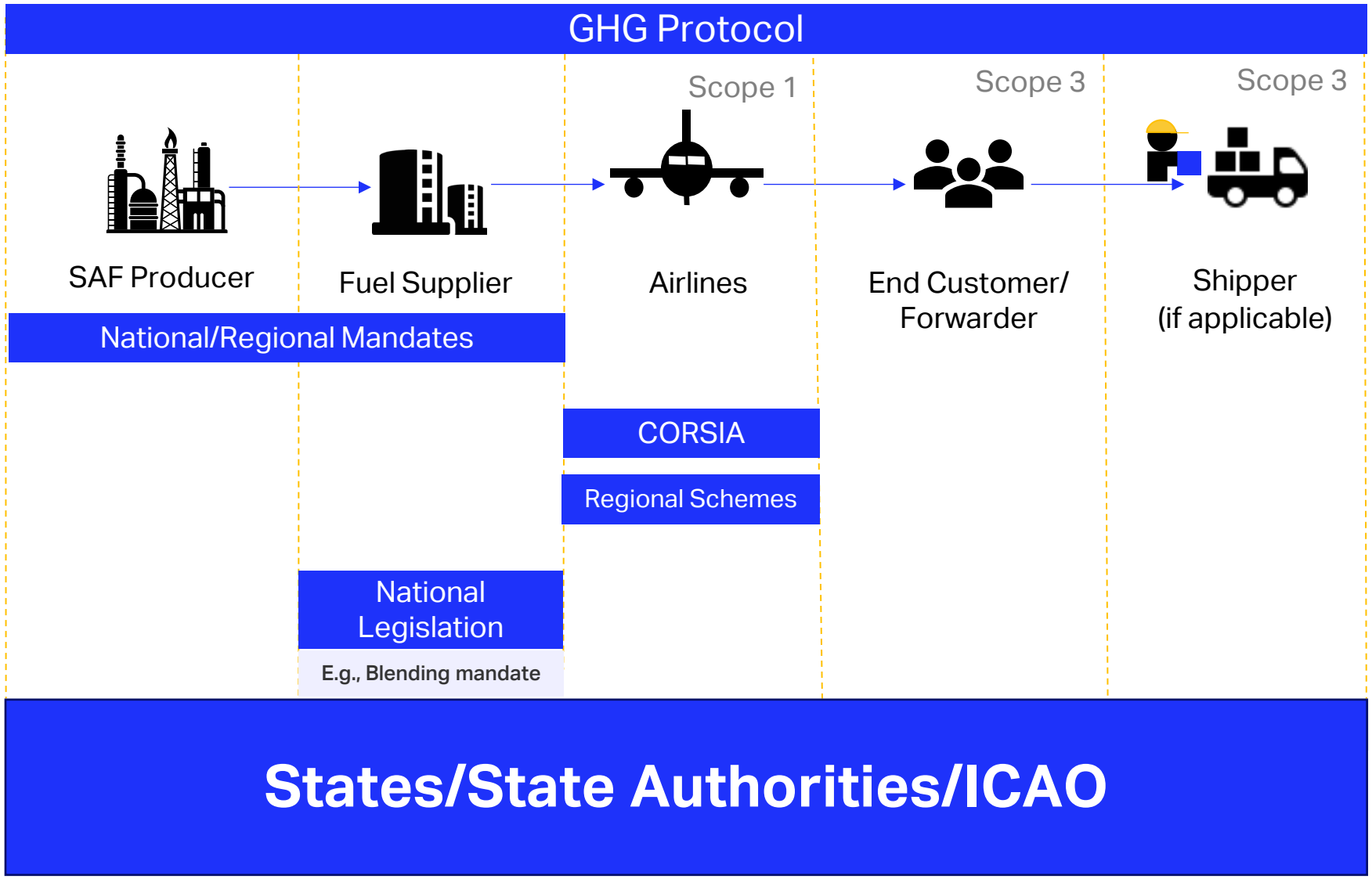
SAF Accounting & Reporting Methodology

SAF Registry Platform:

- ✓ SAF Manual - System Conceptualized
- ✓ Business Requirements Document
- ✓ Ad-hoc support group meetings
- ✓ 1:1 session with SAF key stakeholders
- ✓ Prototype and pilot

System Development (in progress)

High Level Overview



Transactional Integrity

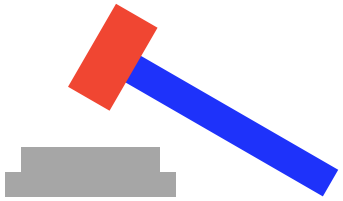
- Record transactions and sustainability attributes of SAF
- Ensure immutable tracking of SAF batches and related certificates

Reporting Integrity

- Facilitate Scope 1 and Scope 3 claims following GHGP
- Enable airlines to comply with regulatory frameworks (e.g. **CORSIA**, or other regional schemes)

Potential Use Cases for ICAO and States

- **Access information** related to SAF investment and use in different states.
- **Validate and accept** environmental claims by airlines and other stakeholders under different regulatory frameworks, e.g. ETS.
- **Compile** SAF claims under **CORSIA.**
- **Track LTAG progress of CEF** and SAF claims certified under other schemes.
- Support **ICAO State Action Plans**
- **Update** national inventories of emissions
- **Reconcile** information with domestic frameworks that may emerge.



Status of Development

Dec 2023
Project **Approved**

Jan 2024
Project **Kick-off**

Q2 2024
RP SAF Accounting & Reporting
SAF **Manual** Finalized
Detailed **BRD**

June 2024
AGM announcement

July 2024
System development
and wireframes

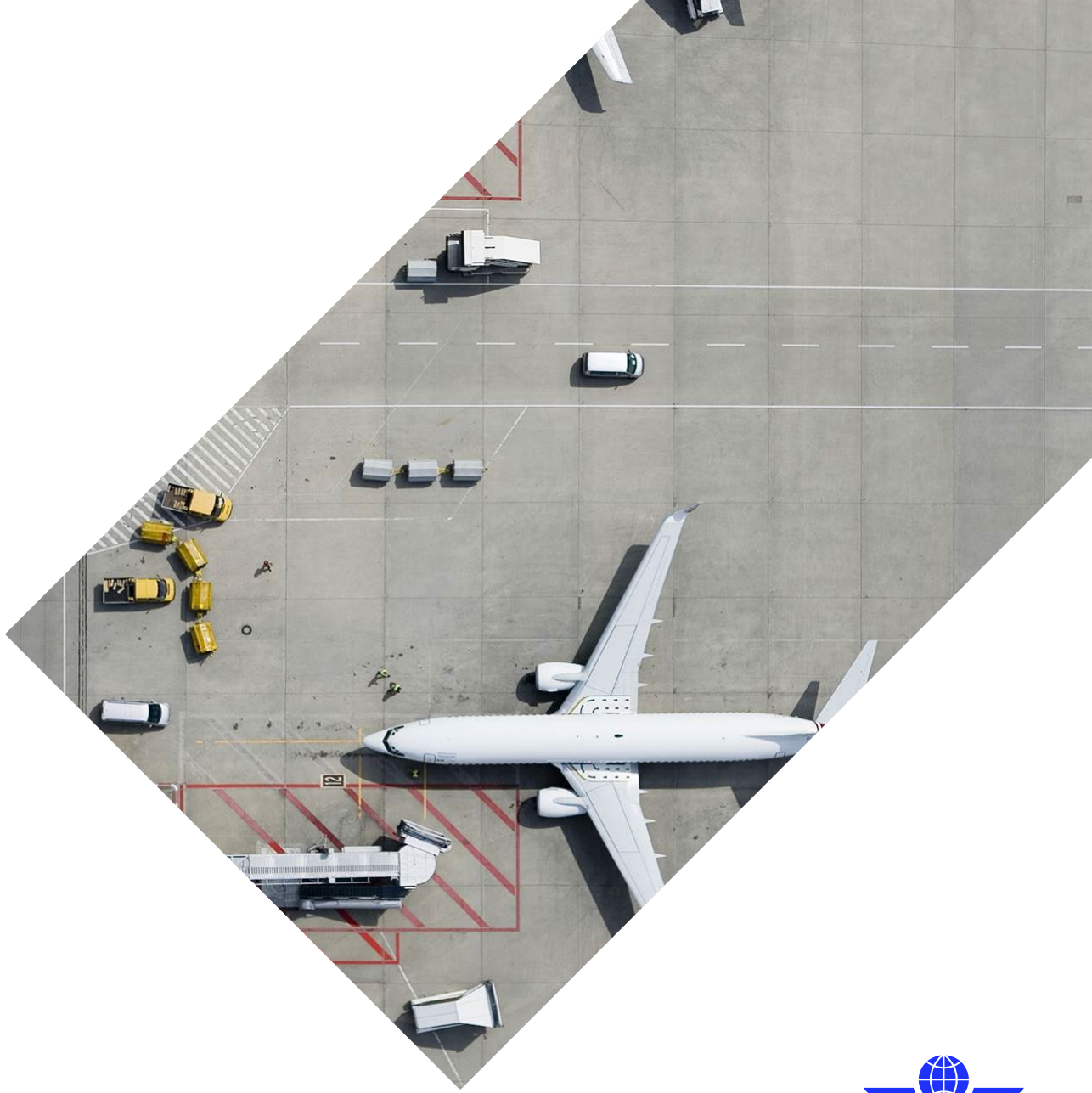
November 2024
Pilot: Test scenarios for airlines and fuel producers/suppliers

April 2025
Full System

In progress:

- Refining of business requirements
- Additional stakeholder sessions
- Progress on interoperability

Appendices



Key principles of SAF accounting (1/2)

#	Principle	Description	Example
1	Immutable tracking	Prescribing a method for achieving immutable tracking so that once data is registered into the system, it cannot be altered or edited, thereby preserving data integrity while tracking it securely throughout the supply chain.	Using blockchain technology, cloud database or centralized electronic ledgers.
2	Transparency	Achieving the level of transparency needed to provide confidence and clarity for SAF use and adoption, while allowing data protection and security to safeguard commercially sensitive data and to avoid market distortion.	Providing different access levels for different parties/entities on a need-to-know basis only. Batch of SAF claimed under a certain incentives/subsidies shown as a tick box without specifying specific pricing information.
3	Verifiability	Incorporate procedures for certifying and auditing environmental attribute claims and maintaining transaction processes to include the retirement of credits and eliminate the possibility of double counting.	Prescribe the RSB, ISCC or CoSAFA, etc. SAF accounting methodology.
4	No double claiming	The emissions reduction from the same batch of SAF cannot be claimed more than once under the same scope.	The same emissions reduction under the same scope risks being used to meet both domestic and international targets simultaneously.
5	No double issuance	More than one emissions reduction cannot be issued from the same batch of SAF.	The emissions reduction from the same batch of SAF risks being issued in more than one operating registries.
6	No double usage	The emissions reduction from the same batch of SAF cannot be used more than once.	The same emissions reduction from the same batch of SAF risks being used in two different registries.

Key principles of SAF accounting (2/2)

#	Principle	Description	Example
7	Inter-operability	Interoperability between registries so that unique IDs can be identified for specific batches of SAF within different operating systems to ensure no double issuance, usage, and claiming.	Emissions reduction from the same batch of SAF is recognizable in all operating SAF accounting platforms/registries.
8	Neutrality	The ability to consider different types of SAF feedstocks and production pathways as well as evolving voluntary and regulatory GHG frameworks would allow claiming to take place safely, securely, and in accordance with internationally recognized standards or best practices.	Ability to prescribe the appropriate chain-of-custody accounting methods for different types of SAF or low carbon fuels and consider different sustainability requirements for different regulatory or voluntary GHG frameworks.
9	Stackability	The environmental attributes could be used to comply with different obligations and commitments if these mutually allow such claims/reporting and with an adequate level of transparency.	To use SAF to meet any volumetric-based mandate for CORSIA or EU ETS as long as allowed by the authority, and no double counting of the same scope happens.
10	Divisibility	The ability to split the environmental attributes of the same batch of SAF between multiple entities/buyers.	The same batch of SAF certified under the same certificate and delivered to the same airport, could be split between two or more different buyers.
11	Permanence	Once the emissions reduction has been allocated to the rightful buyer, the transaction is considered as permanent and irreversible.	Once retired, the emissions reduction from the same batch of SAF cannot be unclaimed/put back into a registry for another claim.
12	Vintage Period	SAF vintage refers to the year that its associated emissions reduction occurred, i.e., the year when the SAF is being produced/uplifted/combusted.	At current time, there are no specific restrictions on SAF vintage under aviation regulatory frameworks such as CORSIA and EU ETS, but this is currently being considered and discussed under voluntary frameworks.