



## 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 incentivize the scaling-up of all technologies, feedstocks, methods, and approaches required for reducing lifecycle greenhouse gas (GHG) emissions across the SAF supply chain, and for rendering immaterial the physical matching of SAF supply and demand in any specific geographic location.**

### BACKGROUND INFORMATION

Sustainable aviation fuel is produced from non-fossil fuel sources, resulting in lower GHG emissions than conventional jet fuel on a lifecycle basis. It is the most expedient lever for decarbonizing aviation because it is a drop-in fuel: when blended with conventional jet fuel, SAF is approved for use with existing fuelling systems, aircraft, and infrastructure. SAF can be used to decarbonize aviation immediately, without the need for expensive aircraft and infrastructure changes or the constraints on flight range typically associated with alternative forms of propulsion.

Once SAF enters the jet fuel supply chain and becomes fungible with conventional jet fuel, it is imperative to have a robust accounting mechanism in place for airlines to be able to track and claim the environmental benefit of their SAF purchases against their various decarbonization obligations. Moreover, such an accounting system will enable the separation of the environmental claims from the physical journey of the fuel – a critical element for the scaling up of SAF. Such SAF accounting will also allow aircraft operators and their customers to address their shared emissions responsibility together, while avoiding double counting and double claiming of emissions reductions thanks to transparent and credible registry systems.

### Tracking SAF environmental attributes

To ensure that the sustainability attributes of SAF are appropriately accounted for, traced, transmitted, and communicated, a tracking mechanism is required. This is necessary because SAF is only approved for use blended with conventional aviation fuel (CAF), and once SAF is co-mingled with CAF and used in existing distribution and fuelling infrastructure along the supply chain, it can no longer be traced. The sustainability attributes can only be ascertained if the SAF remains physically segregated from the CAF, from the point of origin to the wing of the aircraft. Hence, the emissions reductions associated with SAF need to be accounted for separately from the physical product, while remaining allocated to their rightful owner (i.e., airlines and their customers). This can be ensured and safeguarded with a robust SAF accounting mechanism.

## KEY CONSIDERATIONS FOR POLICYMAKERS

### Common principles of a robust SAF accounting approach

A sound SAF accounting approach with global applicability must fulfil various requirements, especially the safeguarding against double counting and the prevention of errors, duplication, and fraud. The core principles that a high-integrity SAF accounting mechanism need to feature are presented in Appendix A. These principles are formulated based on IATA's discussion with all active industry participants in SAF accounting. IATA is currently developing, together with this group of stakeholders, a joint guidance document which outlines a harmonized SAF accounting approach and principles. These principles must be adhered to by all present and future SAF accounting mechanisms to achieve the necessary functionality of a global, interoperable SAF accounting framework.

### SAF accounting under the CORSIA framework

The CORSIA Standards and Recommended Practices (SARPs) outline the conditions for aircraft operators to use CORSIA Eligible Fuels (CEF) in reducing their offsetting obligations related to their international aviation emissions. This is managed through the purchase records of the CEF, independent of the chain-of-custody accounting model used, the physical location where the fuel is uplifted, and whether the fuel is used for domestic or international flights.

ICAO - or States - do not need to establish an independent accounting platform to monitor the use of the CEF. Current CORSIA SARPs already describe the necessary procedures to monitor the use of CEF under the scheme. However, the adoption and recognition of a SAF accounting approach, backed by robust transaction principles and methodology, would facilitate the scale-up of CEF.

### Necessary attributes

Operationally, the steps in the supply chain, together with their corresponding accounting elements, need to encompass (Figure 1):

- **SAF production:** SAF environmental attributes are certified under a recognized Sustainability Certification Scheme (SCS), such as RSB<sup>1</sup> or ISCC<sup>2</sup>. Proof of Sustainability (PoS)<sup>3</sup> is then issued.
- **Fuel tracking:** The PoS must be updated at every step in the supply chain (regardless of the chain-of-custody model used for accounting) to reflect the final life-cycle emissions of the SAF. Once SAF has been uplifted to one or multiple aircraft, it is considered "used", and the sustainability information from the PoS enters a master registry. At this point, the claiming and reporting process may start.
- **Registry:** A master registry, or a group of interoperating registries, will ensure that no double counting occurs for claims under the same emissions scope<sup>4</sup>.
- **Claiming and reporting:** After SAF use is proven, stakeholders along the value chain can start their claiming and reporting processes in accordance with the rules set by each regulatory or voluntary framework.

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<sup>1</sup> RSB stands for the Roundtable for Sustainable Biomaterials, one of the SCS approved by the ICAO Council under the CORSIA scheme.

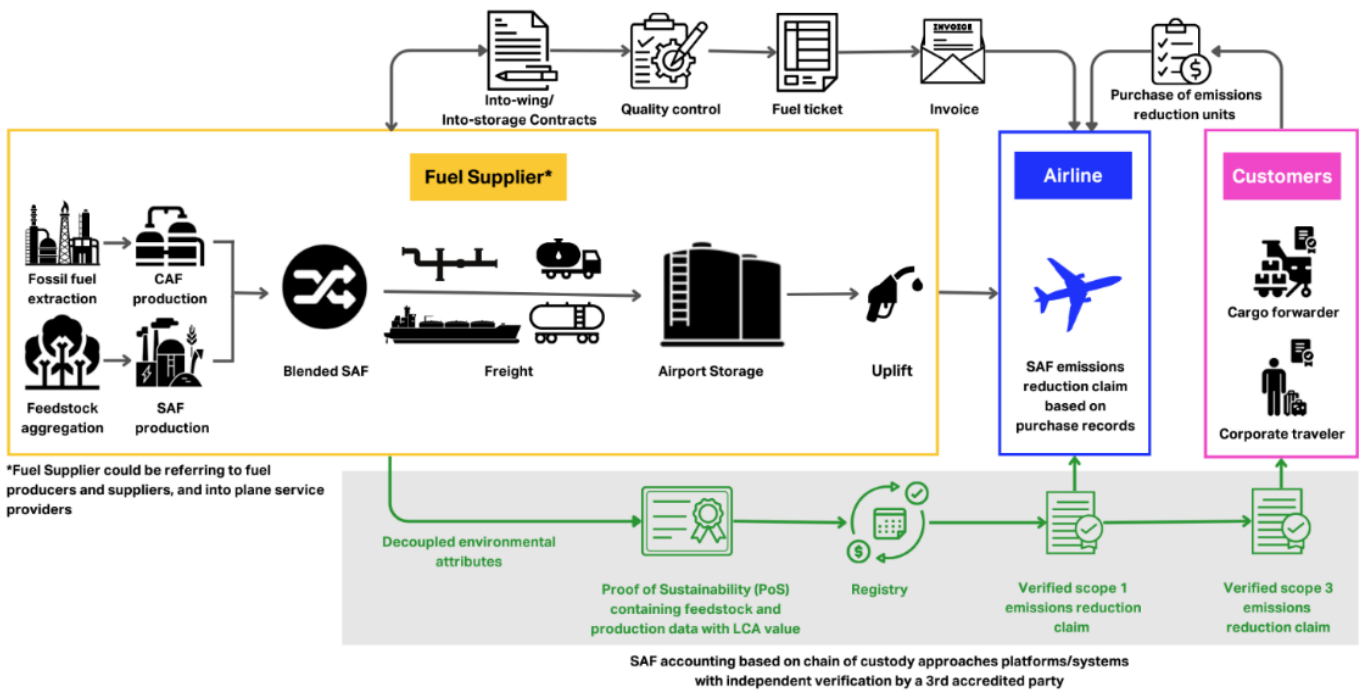
<sup>2</sup> ISCC stands for the International Sustainability & Carbon Certification, one of the SCS approved by the ICAO Council under the CORSIA scheme.

<sup>3</sup> PoS refers to a delivery document issued by a SAF supplier certified under a relevant SCS, such as through a CORSIA Approved Sustainability Certification Scheme or European Union RED II Sustainability Certification Scheme, including but not limited to ISCC and RSB for each delivery of SAF.

<sup>4</sup> Direct emissions from combustion which airlines can claim against their decarbonization obligations are called Scope 1 emissions. Indirect emissions, notably in the downstream supply chain (passenger and cargo), are called Scope 3 emissions. A quantity of SAF could be claimed by an airline under Scope 1 and by a customer, such as a corporation, under Scope 3 and is not considered as double counting by the Greenhouse Gas Protocol (GHGP).

2 SAF accounting based on robust chain-of-custody approaches

Figure 1: Generic SAF accounting sample transaction



## The benefits of a robust SAF accounting approach

With SAF recognized as an insetting decarbonization lever as compared to carbon offsets (and CORSIA as an interim market-based measure), a SAF accounting framework is an indispensable part of market functions which, together with a basket of essential initiatives (including harmonized governmental support, [policies and incentives](#)), will enable global SAF deployment.

Adopting this approach to account for the environmental benefits of SAF would facilitate and accelerate SAF production and uptake by:

- 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 if 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.

## Conclusions

The acceptance of robust SAF accounting and reporting mechanisms is essential for SAF deployment and uptake worldwide. While this chain-of-custody approach does not require additional infrastructure for handling fuel, SAF accounting principles, guidelines and systems do require immutable safeguards against duplication, double counting, error, or fraud. Key common principles as laid out in Appendix A must be adhered to in order to achieve the necessary functionality of a global, interoperable SAF accounting framework. Modern digital technology and recognized tracking and verification systems that facilitate the auditing of SAF environmental attributes can provide the necessary assurance.

The development and adoption of accounting and reporting mechanisms for SAF will require active collaboration among stakeholders across the supply chain, corporate users, and regulators.

## Appendix A: Key common principles of a robust SAF accounting approach

	Key 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 pricing information.
3	Verifiable environmental attributes	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.
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	Agnostic	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	Stacking	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	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.