

SUSTAINABLE AVIATION FUEL CLAIMS: Eight Key Considerations

By 123Carbon, AllChiefs, Smart Freight Centre & Verifavia



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Centre



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Introduction

The aviation industry currently accounts for 2% - 3% of global CO₂ emissions, a figure set to rise without proper intervention. Sustainable Aviation Fuel (SAF) offers a promising solution, reducing emissions by up to 80% (depending on the feedstock) compared to conventional jet fuel. It can seamlessly be integrated as a drop-in fuel, requiring no engine modification. Hence, SAF is crucial in achieving net zero carbon emissions by 2050 [2].

In the voluntary carbon market, SAF is typically acquired using a book and claim chain of custody system. This approach is primarily driven by two key factors: difficulties in how fuel is transported to the aircraft's wings, which can hinder the smooth refueling of the plane, and the uneven availability of SAF at airports. For example, in this process, SAF can be introduced into the fuel infrastructure at an airport near the SAF production facility, after which the carbon footprint of the fuel (measured in verified volumes using carbon emission factors) is attributed to the airlines, LSPs, or cargo owners that cover the price premium through a SAF-certificates (SAFc).

This system not only supports sustainability goals but also aligns financial incentives with environmental benefits, driving the shift towards a greener aviation industry while allowing scalability by opening access to the benefits of SAF.

Several organizations within the industry have been actively addressing the key components necessary for establishing a trustworthy SAF book and claim system. These ongoing initiatives have encouraged regulatory authorities to consider incorporating the book and claim method for compliance.

While these initiatives provide valuable insights, businesses procuring and trading SAF certificates seek alignment between the different methodologies. This helps in establishing a comprehensive and auditable internal book and claim process. This whitepaper aims to bridge this gap by offering insights into the current challenges and recommendations for a credible book and claim process in the value chain.

General

SAF Market

The SAF market has experienced substantial growth over the past decade, driven by regulatory mandates (e.g., CORSIA) and a growing voluntary commitment within the industry to reduce the aviation carbon footprint (e.g., Science Based Target initiative (SBTi)). Key stakeholders in the SAF market include traditional petroleum refiners, biofuel producers, airlines, logistics service providers, and large corporations. While major petroleum companies have ventured into SAF production, a growing number of specialized biofuel producers have emerged, focusing exclusively on

developing and distributing SAF. Airlines, recognizing the urgency of reducing their scope 1 emissions, have made substantial commitments to integrate SAF into their operations and now seamlessly offer it as part of the booking process, both for passenger and cargo transport. Logistics service providers actively seek out SAF options for their customers, and large corporations prioritize the procurement of SAF to reduce their scope 3 emissions linked to their logistics and business travel.

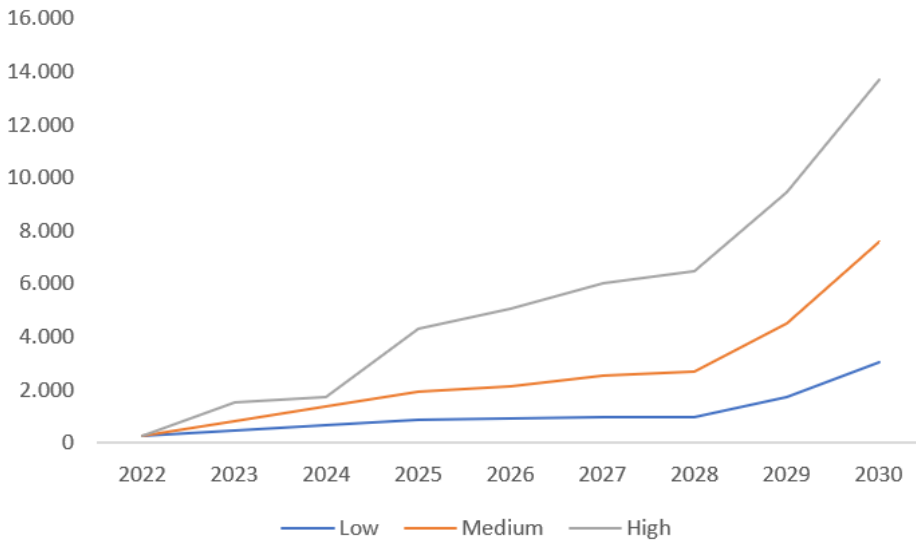


Figure 1: Global predicted SAF volumes in KT [3]

Implementation through book and claim

In the voluntary market, SAF is generally procured through a book and claim system. This chain of custody model decouples SAF production, consumption, and emission reduction claims. SAF is mainly produced and distributed only to a few geographical areas, currently, such as Europe and North America [3]. However, numerous efforts exist to expand to further geographies. SAF environmental benefits (another common name for SAFc) are sold to recover the current production cost premiums and purchased to abate emissions. This system

reduces costs and risks for carriers and forwarders, ensures actual emissions reductions, and facilitates cost-sharing among stakeholders, making sustainable aviation more accessible and practical. Additionally, it offers flexibility and scalability beyond the traditional value chain, making it one of the few solutions to accelerate the voluntary adoption of SAF and the decarbonization of air transport.

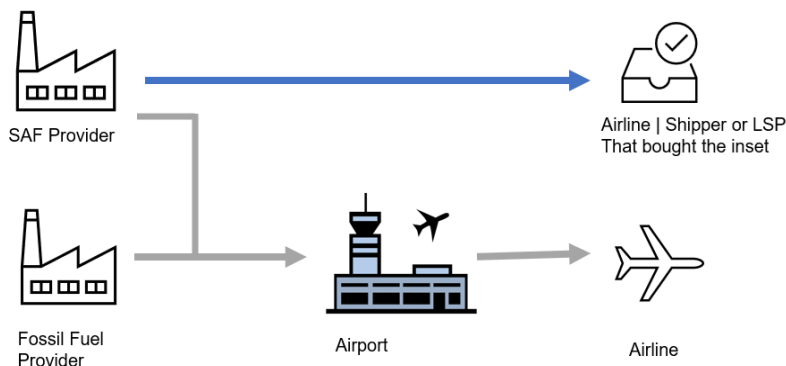


Figure 2: Depiction of physical and environmental benefits flow of SAF [5]

Developments of credible SAF book and claim

Multiple parties in the sector are working on the elements required to support the book and claim and ensure trustworthiness. Smart Freight Centre (SFC) has recently published a framework that helps supply chain participants account for and allocate the environmental attributes from voluntary book and claim activity across all modes of transport, including SAF [6]. The Roundtable on Sustainable Biomaterials Association (RSB) [7] and the International Sustainability and Carbon Certification (ISCC) [8] have also developed their own methodologies for establishing and tracking the sustainability profile of fuels as well as the transfer of such sustainability profiles through a registry, for example. Drawing from the frameworks provided by these organizations, various other organizations have introduced

registries dedicated to the generation and allocation of SAF certificates, in addition to fuels for other modes of transportation. When one looks at the regulatory space, discussions are also in progress that could leverage a book and claim approach. For example, the European Commission is working on the rules to use biofuel under EU ETS. MRR (Monitoring and Reporting Regulation) was recently published [13], and additionally, the aviation industry has been actively engaged in piloting the flexible use of SAF under CORSIA [14].

“It's crucial to recognize that the responsibility for credible SAF certificates doesn't solely lie with the SAF producer. While they play an important role in demonstrating the sustainability of SAF and the legitimacy of the reduction, airlines and logistics service providers involved in buying and selling certificates also have a responsibility to adhere to established guidelines and avoid double claiming of the same fuel.”

Inge Tanke, AllChiefs

Recommendations for improved harmonization

While positive strides are being made in SAF adoption, practical guidance is crucial. Companies are actively working with SAF certificates to reduce aviation emissions -

underscoring the importance of addressing implementation - and are looking for harmonization in the following areas:

Regulation

1. Clearing the path for regulatory certainty

Book and claim systems provide airlines with the advantage of buying and selling SAF and its associated environmental benefits through SAF credits. This is particularly useful for airlines located in regions with no SAF infrastructure to efficiently reduce their carbon emissions. Claiming SAF reductions as scope 1 via book and claim is however still under review for compliance schemes such as EU ETS, UK ETS and CORSIA.

Growing reporting demands from various compliance schemes, like EU ETS and CORSIA, have led to increased complexity. Ensuring clear SAF claims for routes meeting both schemes' sustainability criteria remain an ongoing process.

Recommendation 1: *Airlines should stay informed. This includes evolving regulations and familiarizing themselves on how book and claim allowances work. This proactive approach ensures compliance and equips them to effectively leverage SAF in reducing scope 1 emissions.*

Methodologies

2. Embracing unified methodologies

In voluntary schemes, book and claim methods are widely embraced, demonstrating the industry's proactive stance. Furthermore, various normative documents like SFC [6], RSB [7] and ISCC [8] have been introduced to effectively manage both claims and registries, providing a solid foundation for progress. While adoption is a positive step, further finetuning and specification of deliverables by actors along the chain of custody is required.

For example, the trading of SAF interventions often follows a model where one tonne of carbon dioxide equivalent (tCO₂e) reduced equates to one credit, a practice seen in other carbon emission-related transactions, such as offsets. The

purchased 1 tCO₂e of reduction is then deducted from the generated total emissions. Book and claim presents an opportunity to tie the transaction more closely to the transportation activity itself. The SFC accounting framework offers such an approach, where an emission profile in grams of CO₂e per tonne-km, for example, is acquired via a book and claim system and claimed in the place of the participant's actual fossil fuel transport activity. This enables the triangulation of fuel volumes and related attributes, the transport activity covered by such volumes and the final carbon reduction associated compared to a baseline scenario.

In the market, the concept of additionality is gaining traction. Although still in its early stages, there is a positive move towards a standardized definition introduced by SFC [6]. This development holds promise for

accurately assessing the environmental benefits gained from SAF.

Recommendation I: *All actors should employ a consistent methodology. This entails a thorough understanding of the various methodologies involved. Ensuring the integrity of emissions reduction methods in the book and claim system is paramount. It is essential to transparently define underlying assumptions in calculations and clearly state source data and reference values.*

Recommendation II: *All actors should promote additionality transparency: Within aviation, the concept of additionality is relatively new. To enhance transparency, include a statement affirming additionality and its implications.*

“We need to find the right balance between creating a practical carbon instrument that allows scaling of low emission transportation services and the compliance with existing carbon accounting standards (such as ISO 14083, CountEmissions EU etc.) and emerging legislation.”

Andrea Schoen, SFC

3. Uncertain recognition by GHG protocol

One of the primary hurdles is the formal recognition of book and claim systems as a legitimate measure for emissions reduction by GHG Protocol. Seeking recognition from

influential organizations like GHG Protocol and SBTi is an ongoing process that could instill confidence and expedite industry standardization.



With the recent publication of the MBM framework, we delivered basic accounting principles for book and claim chain of custody models, which can be used across the transport supply chains for all modalities. Despite the need to align with other book and claim guidelines, the key challenge for the adoption of book and claim concepts is their recognition in the carbon accounting standards such as GHG Protocol and SBTi. We are working with these organizations to ensure that buyers can safely purchase environmental attributes and report them as actual reductions in their corporate inventories.

Andrea Schoen, SFC

Registries

4. Creating unified registries and verification protocols

The market is populated with a multitude of registries for the tracking and trading of SAF certificates [9]. These registries can be at an individual stakeholder level (e.g., Avelia (Shell)) [12], independent organization level (e.g., 123Carbon) [11], emerge from the sustainability certification nexus (e.g., ISCC, RSB) [10], or focus on regulatory transactions (e.g., Nabisy). This diversity means that we need to ensure harmonization across registries. This harmonization applies to data taxonomy and storage, interoperability that prevents registering the same book and claim unit in multiple registries, and the possibility to exchange certificates from one registry to the next.

Additionally, a potential challenge arises when considering the diverse modes of transport. Certificate buyers, including logistics service providers and large corporations, often rely on a combination of modes, such as ships, trucks, and airplanes. This necessitates a multi-modal approach, where possible, to ensure certificate buyers can harmonize their low-carbon service to customers regardless of the customer's transport mode.

Understanding and aligning with these registries and verification processes are crucial to ensure conformity and credibility in the book and claim market.

“As one of the first operational registries for air, sea and road transport, we need to bring transparency, accountability and trust to the market. As different registries are emerging, we need to recognize their individual contribution to the market. However, alignment is required not only to avoid double counting, but also to ensure registries share the same quality standards.”

Jeroen van Heiningen, 123Carbon

Recommendation I: All actors should use a registry. All actors should use a registry where incoming and outgoing SAF volumes are accurately and securely registered, preventing discrepancies or errors. It is recommended to align the registry with one of the prevailing methodologies and protocols, allowing for solid third-party verification.

“We strongly believe that the role of a high-quality registry should be much broader than the avoidance of double counting and the allocation of certificates. We need to be involved in data quality, document management and accountability to ensure we can also play our role in any potential dispute resolution.”

Jeroen van Heiningen, 123Carbon

Documentation

5. Enhancing documentation clarity

The absence of proper feedstock documentation necessary for confirming the environmental attribute and associated emission reductions to the fossil reference fuel presents a challenge. SAF producers often do not provide Proof of Sustainability (POS) documents, leading airlines to rely on

alternatives, such as Product Transfer Documents (PTDs), that may include limited sustainability certification references. Ensuring the authenticity of these documents is vital, underlining the significance of common registries.

Recommendation 1: *Airlines should ensure the receipt of verified documentation. They must ensure all pertinent documents align with requirements. POS from bodies like ISCC or RSB is optimal. In cases where this is unavailable, credible alternatives like Product Transfer Documents (PTDs) are accepted only if it has the relevant information to support the environmental attribute.*

6. Streamlining certification and registration

Multiple organizations or standards may certify SAF, each with a unique carbon reduction claim, resulting in dual POS documentation for the same fuel volume.

To avoid the risk of a user inadvertently transacting the same fuel in multiple schemes, well-defined procedures are crucial to guide verification parties.

Recommendation 1: *All actors need to avoid double claiming. Robust internal procedures should be implemented to mitigate this risk.*

7. Safeguarding scope 3 rights

The book and claim system allows fuel providers to transfer a scope 3 footprint to companies in the value chain. This would, for example, empower them to sell SAF to airlines at fossil fuel prices while selling the green premium to large corporations or logistical service providers. In this scenario,

airlines can buy and report the SAF scope 1 emissions but must prevent their customers from making claims regarding scope 3. To uphold market credibility, airlines must verify their fuel acquisition with scope 3 rights if they intend to pass it on to their customers.

Recommendation I: Airlines should contractually secure scope 1 and 3 rights. They should establish contractual agreements to ensure scope 1 (for airlines only) and scope 3 rights (for forwarding in the value chain). These agreements should outline the responsibilities of all parties involved.

8. Ensuring legal documentation

The level of legal certainty provided can differ. Imagine if, further down the value chain, an incorrect certificate arises due to double claims, inaccurate emission factors, or the absence of actual SAF delivery.

Legal documentation can help ensure that every participant in the value chain operates with awareness and safeguards all parties in case of any mistakes.

Recommendation I: All actors should ensure credibility through third party verification. The implementation of third-party verifications is crucial for the legitimacy of SAF certificates. We suggest collaborating with accredited verification bodies that have been recognized by authoritative organizations such as SFC, RSB or ISCC, following pre-defined verification protocols.

Recommendation II: All actors should establish a legal framework. To prevent potential issues arising from book and claim practices and to avoid double accounting with the regulatory market, all stakeholders must establish a solid legal framework. Having all the necessary legal documentation ready can serve as a safety net in case discrepancies occur with parties further down the value chain



Conclusion

Incorporating SAF into airline operations presents a pivotal step towards achieving a more sustainable aviation sector. The book and claim system extends the boundaries of the SAF market beyond the constraints of physical infrastructure.

Addressing the unique challenges for both regulatory compliance and the voluntary market provides stakeholders with the opportunity to pave the way for a transparent, efficient, and conscious SAF ecosystem.

“Buying and selling SAF certificates sounds straightforward, but the devil is in the details. With the growing practice, we recommend companies to build a book and claim capability. This involves setting up and equipping a cross-functional team, creating clear processes with supporting policies that can be followed by the auditing party and selecting the right tools or registries to support you in this journey.”

Inge Tanke, AllChiefs

Collaboration between regulatory bodies, industry organizations, and businesses will be necessary. Many initiatives are starting up, but uniformity has not yet been reached. Until that time, it is up to every party in the value chain to be aware of the potential risks and to set up internal policies and procedures to manage operations

consistently and seek alignment. Our collective efforts make a significant impact. With the numerous sector initiatives already in place, we are confident that we will make substantial progress in normalizing the transportation industry's book and claim activity!

“The world is shifting towards a new normal, focusing on reducing emissions in aviation and logistics. Industry leaders need innovative solutions to cut environmental impact. While biofuels and SAF are gaining traction, a clear global framework is lacking. Establishing transparent solutions is crucial. Verifavia is dedicated to supporting decarbonization pioneers for a sustainable future.”

Nicolas Duchene, Verifavia

About the Authors

Verifavia

Verifavia, part of the Normec Group, is a worldwide independent environmental accredited verification, certification and auditing body for aviation, airports and maritime transport. Verifavia performs independent emissions verification audits for ICAO's CORSIA, EU ETS, UK ETS, Swiss ETS and ACA to aircraft operators & airports worldwide. Verifavia is the world's leading verification body for aviation with a portfolio of 330+ airline clients and 150+ airports.

By combining its innovative approach and streamlined procedures with the technical expertise and industry knowledge of its team, Verifavia provides a smooth, flexible and competitive service, enabling customers to navigate compliance effectively and efficiently.

Verifavia was the first independent verifier to provide SAF Program Audit to the aviation

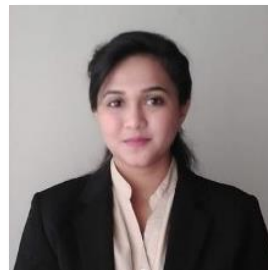
industry. Verifavia also audit GHG reduction in logistics (air, sea, rail, road) as well as various industries like battery recycling or electronics reconditioning. Verifavia is committed to adapt its auditing services for the rapidly evolving decarbonization landscape. Verifavia is approved under various framework (such as the Global Logistics Emissions Council GLEC, Riverse, Climate Dividends,) and was the first independent verifier to tokenize emission reductions from maritime low carbon interventions on 123 carbon platform.

For more information about Verifavia, visit <http://www.verifavia.com> and <http://www.verifavia-shipping.com>.

For up-to-date information and news, follow <http://twitter.com/Verifavia> and <http://twitter.com/VerifaviaMarine>.



Himanshu Rai Sharma
himanshu.sharma@verifavia.com



Melissa D'souza-Salin
melissa.dsouza@verifavia.com



Nilay Warkhedkar
nilay.warkhedkar@verifavia.com



Shreya Khanna
shreya.khanna@verifavia.com

About the Authors

AllChiefs

AllChiefs is a B-Corp consultant specialised in sustainable logistics. It has the ambition to accelerate the path towards net-zero logistics by helping companies from strategy to execution. It strongly believes that people are the key to the success in this journey. It brings people together, challenges, supports, and accelerates.

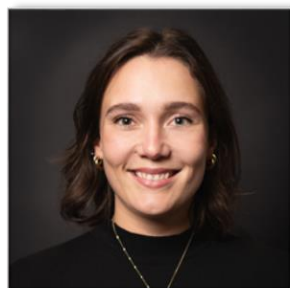
AllChiefs supports companies in logistics emissions calculation and reporting, logistics sustainability strategy and target setting, roadmap creation, change management programs and carbon insetting (book and claim). It is an implementation partner of the Smart Freight Centre (SFC), EcoTransIT World and 123Carbon. Click [here!](#)



Inge Tanke
Inge.tanke@allchiefs.nl



Bonne Goedhart
Bonne.goedhart@allchiefs.nl



Franziska Weber
franziska.weber@allchiefs.nl

About the Authors

Smart Freight Centre

Smart Freight Centre (SFC) is an international non-profit organization focused on reducing greenhouse gas emissions from freight transportation. Our goal is to guide the global logistics industry to track and reduce its GHG emissions to reach net zero by 2050

or earlier. We collaborate with multinational partner organizations to quantify impacts, identify solutions, and advocate logistics decarbonization strategies.

www.smartfreightcentre.org



Andrea Schoen
andrea.schoen@smartfreightcentre.org

123Carbon

123Carbon was founded to accelerate the decarbonization of transportation. The industry needs to be able to make investments in carbon reduction projects on behalf of customers and beyond and allocate the resulting carbon reductions to organizations wishing to pay for their transportation emissions. That solution is called carbon insetting.

Developed collaboratively with the industry for the industry, 123Carbon's platform is the first independent one-stop shop for carbon insetting, empowering organizations to own, manage, allocate or buy verified CO2 reductions within their supply chain, supported by a blockchain-based registry.

For more information visit:
<https://www.123carbon.com/>



Jeroen van Heiningen
jeroen@123Carbon.com

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