Transport and Infrastructure Net Zero Consultation Roadmap

Take the survey

Department of Climate Change, Energy, Environment and Water

Response received at:
August 6, 2024 at 1:51 PM GMT+10

Response ID:
sbm2fbbe850dd9c14041d8c1

1 Confirm that you have read and understand this privacy notice.
Yes

2 Please indicate how and if you want your submission published.
Public

3 Published name
International Air Transport Association

4 Confirm that you have read and understand this declaration.
Yes

5 First name
Not answered

6 Last name
Not answered

7 Email
Not answered

8 Phone

Not answered

9 Who are you answering on behalf of?

Organisation

10 Organisation name

International Air Transport Association

11 What best describes you or your organisation?

Not answered

12 What sector do you represent?

Other: "Aviation"

13 What state or territory do you live in?

New South Wales

14 Postcode

2020

15 What area best describes where you live?

City

16 1. Do you support the proposed guiding principles?

Not answered

17 1.1 Please add details to your response.

Not answered

18 2. Do you support the use of the avoid-shift-improve framework as a tool to identify opportunities for abatement?

Not answered

19 2.1 Please add details to your response.

Not answered

20 3. Do you agree the development of a national policy framework for active and public transport will support emissions reduction?

Not answered

21 3.1 Please add details to your response.

Not answered

22 4. What should be included in a national policy framework for active and public transport and how should it be developed?

Not answered

23 5. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the movement of people contributes to transport emissions reduction?

Not answered

24 6.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure that the movement of goods contributes to transport emissions reduction?

Not answered

25 6.2. How would these actions address the identified challenges and opportunities for emissions reduction in the movement of goods?

Not answered

26 7. Do you agree with the proposed net zero pathway for light road vehicles?

Not answered

27 7.1 Please add details to your response.

Not answered

28 8. The Australian Government is currently developing an Australian New Vehicle Efficiency Standard and has already begun to implement actions in the National Electric Vehicle Strategy.8.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce light vehicle emissions?

Not answered

29 8.2 How would these actions address the identified challenges and opportunities to reduce light vehicle emissions?

Not answered

30 9. Do you agree with the proposed net zero pathway for heavy road vehicles?

Not answered

31 9.1 Please add details to your response

Not answered

32 10. The proposed pathway for heavy road vehicles relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels.Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.

Not answered

33 10.1 Please add details to your response. Why did you rank them in that order?

Not answered

34 11. What role should low carbon liquid fuels play in the heavy vehicle

decarbonisation?

Not answered

35 12. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce heavy vehicle emissions?

Not answered

36 13. Do you agree with the proposed net zero pathway for rail?

Not answered

37 13.1 Please add details to your response.

Not answered

38 14. The proposed pathway for rail relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels.Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.

Not answered

39 14.1 Please add details to your response. Why did you rank them in that order?

Not answered

40 15. What role should low carbon liquid fuels play in rail decarbonisation?

Not answered

41 16. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce rail emissions?

Not answered

42 16.1 How would these actions address the identified challenges and

opportunities to reduce rail emissions?

Not answered

43 17. Do you agree with the proposed net zero pathway for maritime?

Not answered

44 17.1 Please add details to your response.

Not answered

45 18. The Australian Government is engaging in consultation as part of the development of the Maritime Emissions Reduction National Action Plan and those consultations will also inform the final Roadmap and Action Plan. 18.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce maritime emissions?

Not answered

46 18.2 How would these actions address the identified challenges and opportunities to reduce maritime emissions?

Not answered

47 19. Do you agree with the proposed net zero pathway for aviation?

Not answered

48 19.1 Please add details to your response.

Not answered

49 20. The Australian Government has already engaged in consultation on aviation decarbonisation through the development of the Aviation White Paper and those consultations will also inform final Roadmap and Action Plan.

Not answered

50 20.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce aviation emissions?

Not answered

51 21. Do you agree with the proposed net zero pathway for transport infrastructure?

Not answered

52 21.1 Please add details to your response.

Not answered

53 22. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce transport infrastructure emissions and ensure that transport infrastructure is ready for and enables low-emission transport modes?

Not answered

54 22.1 How would these actions address the identified challenges and opportunities to reduce transport infrastructure emissions?

Not answered

55 23. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the energy mix is ready to support transport emissions reduction?

Not answered

56 24. How should the use of low carbon liquid fuels (LCLFs) be prioritised across different transport modes over time to achieve maximum abatement?

Not answered

57 25. What are the best ways for the Australian Government to work collaboratively with industry, business, governments and communities to implement the proposed pathways?

Not answered

58 25.1 What are good domestic or international examples of partnership and collaboration on transport and transport infrastructure emissions reduction that could inform the final Roadmap and Action Plan?

Not answered

59 25.2 What opportunities can Government leverage to show leadership in Australia and internationally?

Not answered

60 26. What measures and metrics should be used to evaluate the final Transport and Infrastructure Net Zero Roadmap and Action Plan?

Not answered

61 26.1 What other data and evidence could governments use and how could this offer further insights on the pace, scale and location of transport emissions reduction pathways?

Not answered

62 27. Do you have any feedback on the proposed review process?

Not answered

63 28. Do you have any further feedback on the Consultation Roadmap and proposed pathways?

Not answered

64 28.1 Is there anything missing? Are the sections appropriately integrated? Is the Roadmap appropriately ambitious?

Not answered

65 29. Is there any further information or documentation that you wish to be considered with your submission?

Not answered

66 Would you like to upload a document?

Yes

67 Have you removed any identifying information from your submission?

Yes

68 Upload a submission

IATA_AU_DCCEEW_submission.14d34c44.pdf

69 Upload a submission

IATA - AU Infrastructure Net Zero Roadmap submission 060824.pdf

70 Upload supporting file

IATA - AU LCLF submission and response to Aviation Green Paper.pdf

71 Upload supporting file

IATA - saf-accounting-benefits and policy paper.pdf

6 August 2024

Dept. of Infrastructure, Transport, Regional Development, Communications and the Arts
GPO Box 594
Canberra ACT 2601
AUSTRALIA

Dept. of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601
AUSTRALIA

By email: netzero@infrastructure.gov.au

IATA Response to Transport and Infrastructure Net Zero Consultation Roadmap

As the global trade association for the world's airlines, the International Air Transport Association (IATA) supports many areas of aviation activity and helps formulate industry policy on critical issues. As the Department would be aware through our numerous engagements and submissions, including on the Aviation Green Paper, Electricity and Energy Sector Plan, and Low Carbon Liquid Fuels (LCLF) consultations (all attached), one of IATA's priorities is to accelerate the move towards a more sustainable aviation sector. For this reason, we are grateful for being invited to contribute to this consultation and welcomes the comprehensive consultation process that is undertaken by the Australia government.

As can be expected, while this roadmap is looking at the broader needs of the transport and infrastructure sectors, this submission will be focused on matters pertaining to aviation. We further acknowledge the five guiding principles outlined in the consultation paper (maximise emissions reduction; value for money; maximise economic opportunity; inclusive and equitable; and evidence-based) as being appropriate for the development of the final roadmap.

Aviation's role in the Australian economy

The aviation sector is of critical importance to Australia's economy both due to the geographical spread of its population and the remoteness of Australia in relation to its key trading partners. Australia's geography and lack of viable alternate transport options, such as high-speed rail or low emissions road transport, mean that the sector will continue to be critical in providing connectivity to the people and economy of Australia in the foreseeable future.

As outlined in Air Transport Action Group's *Aviation Benefits Beyond Borders* report, Australia's aviation sector in 2019 directly contributed around 170,000 jobs and represented AUD17.9 billion of Gross Domestic Product (GDP) in Australia. When further including the indirect and induced contributions of the aviation sector and the tourism catalytic impacts, the sector supported 770,000 jobs and almost AUD80 billion of GDP in the country. These figures highlight the key enabling role that aviation plays for Australian economy. IATA is presently working on updated analysis on the value of aviation to Australia, taking into account the latest developments in the industry, and will share these with the Department when available.

Given the importance of the sector, its decarbonisation is key to ensuring a more sustainable future for the industry and hence the wider economy. IATA supports the Department's view that aviation is far more difficult to decarbonise than other sectors in the roadmap, and thus it is our position that adequate attention and resources should be provided to ensure that the aviation sector is able to meet its decarbonisation targets. It is also key that various decarbonisation pathways be considered and introduced - we note the range of pathways being included to reduce aviation emissions, including the adoption of more nascent technologies such as electric and hydrogen aircraft, and agree that these will play important roles in the decarbonisation of the sector. IATA further supports the timeline of the transport decarbonisation technology pathways.

IATA Net Zero Carbon roadmaps

We feel it pertinent as a starting point in our response to share IATA's own net zero carbon roadmaps. This series of roadmaps were unveiled at the IATA 2022 Annual General Meeting and are aimed at providing step-by-step detailing of critical actions and dependencies for aviation to achieve net zero carbon emissions by 2050. These roadmaps address aircraft technology, energy infrastructure, operations, finance, and policy considerations leading to net zero carbon emissions. They are the first detailed assessment of the key steps necessary to accelerate the transition to net zero carbon emissions by 2050. We are pleased to note that in areas related to aviation, the Department's path forward broadly aligns with IATA's. The Department may find that the IATA roadmaps provide useful guidance in these areas.

In addition, IATA has just released a new analysis of policies used to support new renewable energy markets, which we hope will be useful in the context of the Department's consultation. The report provides a number of compelling outcomes to consider for aviation's own energy transition. Specifically looking at the solar and wind industry, the case studies have provided a basis for recommending approaches to scale up SAF, even though sector-specific and local considerations will always play critical roles.

SAF policy in Australia: policy should focus, first, on boosting SAF supply

As outlined in IATA's response to the recent consultation on LCLF, Australia is in a prime position to develop its SAF industry. While the nation lags behind others with more advanced SAF industries, the abundance of feedstock on Australian shores presents a valuable economic opportunity. It is crucial that, in the Department's aims to achieve net zero carbon emissions, the appropriate strategic mix of SAF policies is employed and at the right pace.

Policy priority should be placed on supporting the development of SAF supply. Indeed, only when a strong supply of SAF is established will the target indicated in the consultation paper of most aviation fuel in 2040-2050 being SAF be achievable.
IATA had previously provided comments on our views on supply side measures to increase SAF production, most recently in our response to the LCLF consultation. As highlighted in the IATA submission, a combination of tax incentives, Contract for Difference (CfD) scheme and grant-based funding are great (non-exhaustive) examples of supply side measures to achieve the most desirable outcome for SAF production. The US Grand Challenge and the USD3 billion of investments it supports is an example of a clearly articulated policy.

A short-term measure may also include the shift of existing production fuel capacity. Concretely, it means, for instance, facilitating, through different policy instruments such as public promotion campaign and the implementation of a revenue certainty mechanism, the co-processing of SAF in existing fuel facilities which would allow the industry to get a foothold in the Australian market. Then, once steady production of SAF within Australia is achieved, demand-side policies can be introduced if market dynamics show negative demand signals, as long as supply-side incentives remain. IATA would like to emphasise that penalties imposed by the government on the airlines for non-compliance of any mandate must be avoided, as well as penalties or buy-out fees imposed on fuel suppliers that would then be passed on to airlines, particularly if the underlying cause is outside of the airlines' control, e.g., lack of SAF supply.

A failure to take this strategic approach in the implementation of a comprehensive set of policies has the potential to cause unwieldly financial burden on various parts of the supply chain, whether these be airlines or fuel suppliers. Through the introduction of a strategic mix of policy levers, the industry will have the support it needs to grow, while hard-to-abate sectors, including aviation, have the impetus to utilise these fuels.

SAF policy in Australia: the importance of SAF certification, accounting framework, and tracking mechanism

A recognition of a robust SAF accounting framework is a critical part of the market development of SAF – it will enable global SAF deployment and a robust SAF industry in Australia. SAF accounting principles will facilitate the purchase and claiming of environmental attributes from users and safeguard the environmental integrity of the emissions reduction claims. SAF accounting will also allow SAF to be deployed in a manner that is both environmentally and financially sustainable, while giving the SAF industry in Australia wider market access to scale up production more quickly. Given Australia's geography, IATA expects that

SAF Accounting will be particularly relevant and useful for remote airports where it is more challenging to deliver fuel. In addition, the government should also facilitate the full transfer of Proof of Sustainability documentation from fuel producers/suppliers to airlines, both to enable airlines to report their emissions reductions, and subsequently pass on scope 3 reductions to customers as needed. Enclosed with this submission are IATA papers on "SAF accounting based on robust chain-of-custody approaches" and "Unlocking geographical constraints on the global SAF market through a robust SAF accounting framework" which will provide further information.

IATA would also like to express support for the Australian Government delivering certification arrangements of some production pathways by mid-2028 and aligning the certification arrangements with international schemes such as CORSIA. Any SAF that meets the criteria of such international schemes should qualify for the incentives introduced by the Government.

There is also a need for consistent methodology and reporting mechanisms to track progress towards the net zero carbon emissions by 2050 goal. To this end, IATA had organised an industry support group, called TrackZero 2050, to leverage our members' expertise and focus on creating an industry-wide consistent net zero carbon tracking methodology and mechanism, which can be found here. IATA welcomes the Department to refer to the methodology for your own net zero carbon tracking.

Need to scale up supply of CORSIA EEUs

As identified in the consultation paper, CORSIA is a key global market-based measure that will help the sector reach its decarbonisation targets. There is an urgent need to scale up the supply of CORSIA EEUs for the 1st phase of CORSIA, and a need for proper and timely implementation of corresponding adjustments to avoid double claiming under CORSIA. IATA recently participated in the Paris Agreement Article 6 Implementation Partnership, which Australia is part of. IATA encourages the Australian Government to continue its active participation in Paris Agreement Article 6 discussions, especially on issuance of Letters of Authorisation, and welcomes the opportunity to provide more guidelines to the Australian Government on this topic.

IATA welcomes any further discussions on the above recommendations and invites the Government to tap into IATA's global expertise and knowledge of policy and regulatory frameworks worldwide. Should you require additional information, please do not hesitate to contact me at zanarinim@iata.org.

Sincerely yours,

Matteo Zanarini
Area Manager South West Pacific

POLICY

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

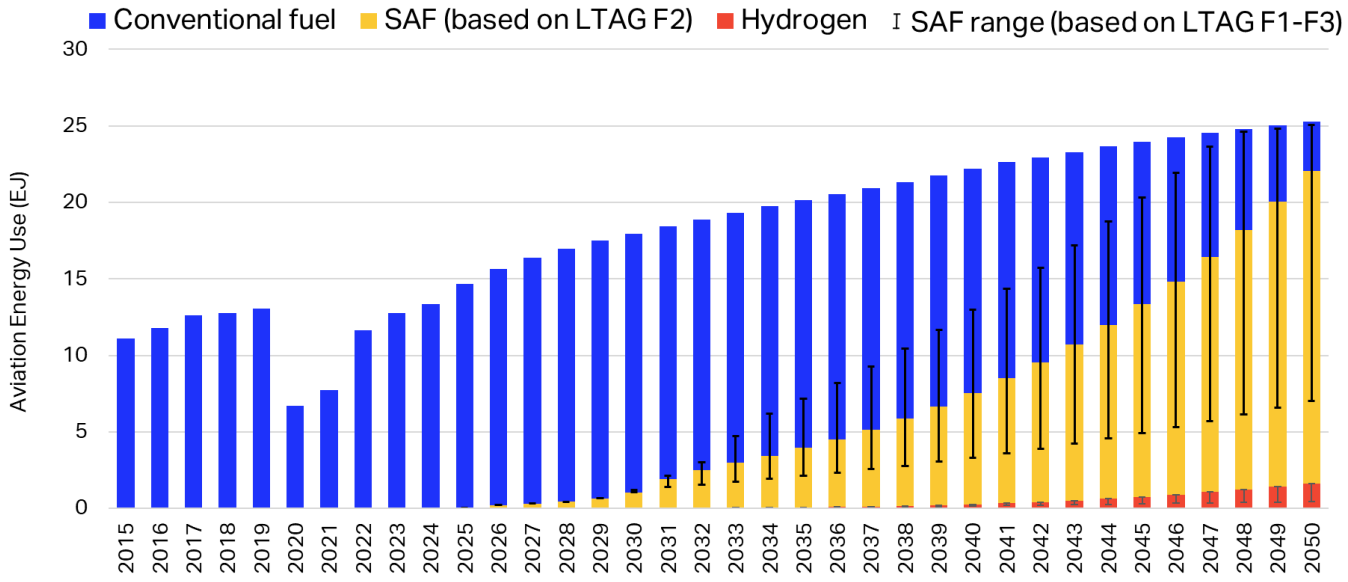
A must-have for SAF deployment and its commercial viability

A robust Sustainable Aviation Fuel (SAF) accounting framework, based on trusted chain-of-custody mechanisms, is necessary to support the global aviation industry's 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 aims to replace the use of fossil fuels with alternative renewable fuels. This is a challenge of unprecedented proportions, affecting all industries and all productive processes. In the domain of civil aviation, which relies on combustion of fuel for aircraft propulsion, the vast majority of the decarbonization is expected to be realized by Sustainable Aviation Fuels (SAF) on the 2050 horizon, and until such time that alternative propulsion technologies mature and become scalable for global air transport. However, SAF is currently in very limited supply: in 2022, the production of SAF amounted to less than 0.1% of civil aviation's global jet fuel consumption.

Figure 1: Aviation's energy transition to 2050.



Source: IATA Net Zero Roadmaps

With fuel demand set to rise from 225 Mt in 2022[1] to 500 Mt in 2050, and the mission to replace most of that fuel demand with SAF by 2050, the need for developing SAF production is formidable. Today the dominant pathway is HEFA, which refines vegetable oils, waste oils, or fats into SAF through a process that uses hydrogen (hydrogenation). This pathway will not be able to meet demand on the 2050 horizon and it is important that research and development continues regarding all existing and future viable pathways and feedstocks for SAF production.

Given IATA's 2021 commitment to achieving net-zero CO_2 emissions by 2050, and ICAO's (the International Civil Aviation Organization) 2022 commitment to the same objective, it is necessary to unite all efforts in the mission to accelerate and maximize the production of SAF. In spite of the strong favourable price signal in the SAF market, as SAF costs 2-5 times more than jet fuel, the scaling up of production still falls short of demand. Unless supply constraints are eased, the price is likely to remain high or increase further, inherently favouring the fossil fuel market. The fact that the price signal is insufficient in today's SAF market to bring about the necessary increase in production points to deficiencies in its structure which can be attributed to the developing nature of the market.

Currently, there are only a few boutique producers at select locations and geographies. To facilitate further deployment, it is necessary to provide the frameworks and policies required for the nascent SAF market to mature and operate on market-based principles, where supply and demand is balanced by competitive and transparent pricing, thanks to reduced market fragmentation. One such essential instrument is a SAF accounting system, based on trusted chain-of-custody mechanisms.

The importance of SAF accounting

A fit-for-purpose SAF accounting framework would enable airlines to claim the environmental benefits from SAF purchases to meet or reduce their regulatory obligations and fulfil additional commitments. A robust SAF accounting system – or network of interoperable systems – offers the following benefits:

- Ensures **immutable tracking** of the environmental attributes, to **enable verification**.
- Provides **full transparency** of the claims made over any specific batch of SAF.
- **Prevents double counting** from double issuance, usage, or claiming.
- Allows **stacking of incentives** to maximize opportunities to fund SAF's higher prices.

The utilization of flexible and trusted chain-of-custody mechanisms such as mass balance or book and claim[2], unlocks additional benefits for increased efficiency in SAF production and transport:

- Enables SAF production where it is **most efficient**.
- Provides **increased demand** for production facilities geographically distant from larger airports.
- **Avoids unnecessary transport** of SAF and feedstocks, minimizing cost and the associated incremental emissions, enabling efficient deployment.
- Promotes **competition.**

SAF accounting under the CORSIA framework

The provisions in CORSIA Standard and Recommended Practices (SARPs) recognize that jet fuel and SAF are not segregated at airports but are instead typically co-mingled. CORSIA eligible fuels (CEF) can be mingled in fuel pipelines, storage terminals, and in airport storage systems, all upstream from its use in aircraft. The CEF purchased by a particular airline may not be physically used in its aircraft, and it will not be feasible to determine the specific CEF content at the point of uplift in an aircraft, given the nature of the upstream supply chain. Claims of emissions reductions from the use of CEF by airlines are hence based on mass of CEF according to purchasing and blending records[2]. Furthermore, according to ICAO Doc 9501 - Environmental Technical Manual, Volume IV, the CEF can be produced and uplifted anywhere in the world, as long as they satisfy CORSIA reporting requirements in accordance with the CORSIA SARPs[3].

[1] IATA Global Outlook for Air Transport, June 2023
[2] As defined by the ISO 22905:2020 – Chain of custody general terminology and models
[3] Note 1, Clause 2.2.4 of ICAO CORSIA SARPs, Annex 16 Vol IV, Part II, Monitoring of CORSIA eligible fuels claims
[4] Clause 3.3.5.5 ICAO Doc 9501, Environmental Technical Manual, Volume IV, Use of CORSIA eligible fuels

Promoting competition

As long as SAF supply remains restricted, only airlines operating at the few airports fortunate enough to benefit from such supply will be able to purchase SAF. This will slow the energy transition for the aviation industry while also potentially creating market distortions since market access to SAF is not granted equally to all airlines in the world.

A SAF accounting framework enables separation of the environmental attributes of the SAF purchased from the physical delivery of that SAF. This would allow any airline in the world to engage in SAF purchases, irrespective of the supply, or lack thereof, in that airline's operating location. In this manner, all airlines would have equal access to one global market for SAF, and while this is optimal for all kinds of markets, it is essential in a supply-constrained market where airlines are subjected to decarbonization obligations. All airlines must have equal opportunity to meet such obligations, and all airlines must have equal opportunity to realize the airline industry's commitment to achieving net-zero CO_2 emissions reductions by 2050.

While CORSIA SARPs already allow airlines to claim emissions reduction from the use of SAF via purchase and blending records, the lack of broad recognition from policy makers of such systems limits the airlines' ability to conduct their claims in a consistent and harmonized manner. Additional requirements from voluntary schemes may also prevent corporate customers from contributing to the unlocking of further investments and financing that is much needed to increase SAF production. Explicit recognition from policy makers of airlines' ability to stack the environmental attributes from the use of SAF would help to address this.

"Stacking" of incentives versus double counting: different scopes of emissions

Stakeholders in the aviation value chain may be subject to multiple regulations or commitments affecting the same emissions. For instance, a batch of SAF sold in the US could benefit from production incentives claimed by the producer; the airline may decide to use the environmental attributes to reduce their CORSIA obligation **(scope 1, direct)**; and a corporate customer could include the associated emissions reduction in their annual reports **(scope 3, indirect)**.

The framework defined by the Greenhouse Gas Protocol (GHGP) allows for multiple claims under different scopes, and SAF accounting frameworks must support such **stacking** of claims by different stakeholders pertaining to the same batch of SAF. The GHGP[5] considers that accounting for the same emissions under different scopes **does not constitute double counting**, and instead regards it a common and expected practice.

Enabling SAF production in developing aviation markets

The investment proposition for investors and SAF production entrepreneurs is currently at the very early stages of innovation and technological development. It is a stage where all the risks are shouldered by the investors, and the dominant future technology is still unknown. Many measures can be taken to improve the investment proposition and spread the risk-taking more broadly. Nevertheless, a fundamental element in assessing the potential success of any such investment is the estimated market size and the access to that market. Similarly, the location of raw material inputs in the production process and access to such inputs will be a determining factor in investment decisions.

Many of the current and potential future feedstocks likely to be important in SAF production will probably be predominantly located in areas which represent a limited share of global aviation traffic. It would go counter to the objective of decarbonization to have the global SAF market rely on sourcing of inputs from distant locations for production in areas with greater air transport density. Instead, it is important to give feedstock-rich areas access to the global aviation market, while freeing those locations from local demand constraints.

[5] Corporate Accounting and Reporting Standard, Chapter 4

A SAF accounting framework aligned with the CORSIA SARPs would give all SAF producers access to global airline demand for SAF, making the case for new SAF production capacity much more attractive in markets where local SAF demand would not otherwise justify the necessary investments. Ultimately, this would open the SAF market to global competition, drive innovation, reduce market fragmentation, and ensure competitive prices.

Fuel accounting based on trusted Chain-of-Custody (CoC) mechanisms

Fuel supply chains may be configured differently. Consequently, different CoC approaches exist that seek to ensure accurate accounting in each case. CoC relates to the process by which inputs and outputs, as well as associated information are transferred, monitored, and controlled at each step in the relevant supply chain. The 3 most used CoC models are:

- **Physical segregation:** materials or products originate from a single source and their specified characteristics are maintained separately from any other throughout the supply chain. This is the case when SAF is supplied to the end users via a dedicated infrastructure, as has been seen in specific SAF demonstration flights.
- **Mass balance:** this is the tracking of SAF inputs at each stage of the aviation fuel distribution network, requiring documentation checks of the amount of SAF at every junction. This is commonly used when SAF is blended late in the supply chain, notably at existing fuel facilities which are shared by multiple fuel suppliers at airports.
- **Book and claim** enables the decoupling of SAF's environmental attributes from the physical molecules upstream in the supply chain, and does not require physical uptake of any portion of the SAF by the buyer, as long as the product's use by other airlines can be proven.

KEY CONSIDERATIONS FOR POLICYMAKERS

A SAF accounting framework is a necessary but not sufficient condition for accelerating and maximizing SAF production. It will not deliver all the expected results in any immediate way, as it will remain dependent upon complementary frameworks and policies. Important considerations are included in the recommended principles for SAF accounting frameworks, as presented in IATA's Policy paper on SAF accounting.

The use of a trusted accounting framework for SAF will help unlock the geographical constraints currently faced by SAF producers. It would also have a positive impact on local feedstock production capabilities which, in turn, could bring economic benefits to States.

ICAO member States are encouraged to recognize and adopt SAF accounting methodologies for international aviation to enable:

- The claiming of emissions reductions from SAF use towards different regulatory schemes (e.g., CORSIA).
- The tracking of the sustainability attributes and life-cycle emissions linked to the feedstock across geographies, production pathways, transportation, and use of SAF.
- The different stakeholders to claim a SAF purchase against their specific emissions scopes while avoiding same-scope double claiming of any given batch of fuel.

Governance and delivery

The delivery of SAF accounting systems and their operations can be ascertained by industry and private sector organizations. There are already multiple private sector actors operating in the SAF accounting area. IATA and other organizations are currently collaborating to establish common principles for the interoperability of such platforms. IATA could develop an industry solution for SAF accounting to facilitate airlines' tracking of SAF's environmental attributes and their claiming under different frameworks. Any IATA solution would be on a not-for-profit basis, in order to prevent such a system from adding further costs to the price of SAF.

States in ICAO should assess the robustness of the outcome of private initiatives and recognize their use for regulatory compliance.

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 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.

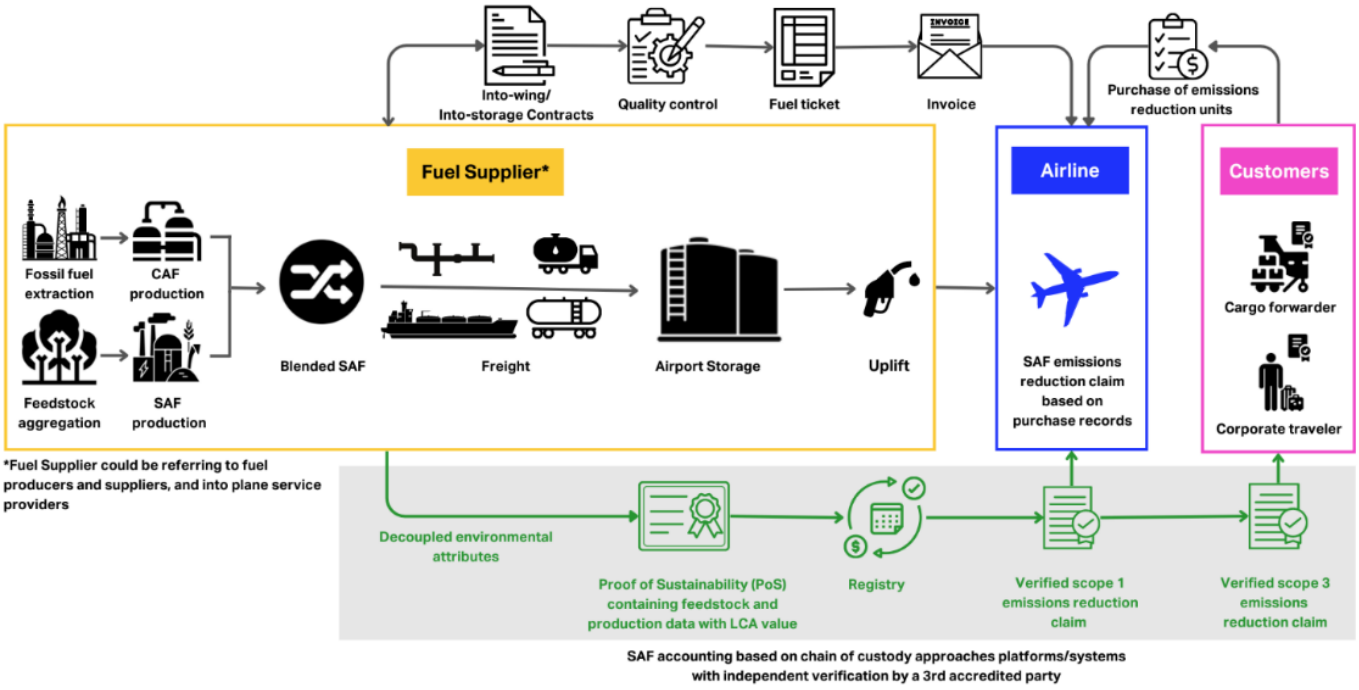
Necessary attributes

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[1] or ISCC[2]. Proof of Sustainability (PoS)[3]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[4].
- **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.

[1] RSB stands for the Roundtable for Sustainable Biomaterials, one of the SCS approved by the ICAO Council under the CORSIA scheme.
[2] ISCC stands for the International Sustainability & Carbon Certification, one of the SCS approved by the ICAO Council under the CORSIA scheme.
[3] 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.
[4] 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).

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.