25 July 2024

Consultation on Future Made in Australia
Unlocking Australia's Low Carbon Liquid Fuel Opportunity
Department of Infrastructure, Transport, Regional Development, Communications and the Arts
By email: lclfconsultation@infrastructure.gov.au

Qantas Group submission to the Future Made in Australia: Unlocking Australia's Low Carbon Liquid Fuel Opportunity consultation

The Qantas Group ('the Group') thanks the Department of Infrastructure, Transport, Regional Development, Communications and the Arts ('the Department') for the opportunity to respond to the consultation on *Future Made in Australia: Unlocking Australia's low carbon liquid fuel opportunity*.

The establishment of a domestic SAF industry is the highest priority for the aviation sector in achieving net zero and will be critical to Australia's efforts in achieving its decarbonisation ambition. As outlined in the Group's submission to the Aviation Green Paper, modelling and analysis developed by ICF emphasises the opportunities a SAF sector would bring for decarbonisation, economic development, employment opportunities and enhancing fuel security and resilience.

The Group welcomed measures announced in the FY24-25 Federal Budget, including this consultation as an important next step given the criticality of supportive government policy to realise Australia's unique comparative advantages to scaling a domestic SAF sector.

Qantas and Airbus have prepared a joint-submission with Deloitte, which provides a comprehensive outline of the recommended policies needed to support the development of a SAF industry in Australia and an associated cost-benefit analysis of the implementation of essential, complementary levers such as a mandate and supply-side support.

The Group welcomes the Government's recognition of the role that low carbon liquid fuels will play in Australia's economic transition and look forward to continued engagement to policy development and integration to advance a domestic SAF industry.

Yours sincerely,

Andrew Parker
Chief Sustainability Officer
Qantas Group

OUR FUTURE – SAF MADE IN AUSTRALIA

Low Carbon Liquid Fuel Policy Consultation Response – Qantas and Airbus

EXECUTIVE SUMMARY

In response to the Future Made in Australia: Unlocking Australia's Low Carbon Liquid Fuels Opportunity consultation, Qantas Airways Limited ("Qantas") and Airbus SAS ("Airbus") jointly submit the case for policy intervention to support the development of a sustainable aviation fuel (SAF) industry in Australia.

Australia is expected to have a comparative advantage in SAF production due to the availability of feedstocks and renewable energy sources. However, government support is required to realise this advantage, both due to the more advanced levels of policy support in international jurisdictions impacting the competitive market, and due to the infancy of SAF production in Australia. Without intervention, SAF production opportunities are unlikely to be sufficiently de-risked to encourage investment decisions to be made in Australia.

To overcome these challenges, we recommend three policy considerations:

1. **Deploy a production incentive in the next 12-18 months** to encourage the first 2-3 producers to proceed to construction, **in addition to R&D grant support for investment in nascent technologies**.
    - This incentive should provide ongoing support for 10-15 years to enable these 2-3 producers to pay off their debt, adequately reduce the risk associated with SAF productions, and bridge the Australian SAF price to the international.
    - This incentive is designed to provide a high level of support to get the first 2-3 SAF producers to proceed to construction. Additional producers will be supported through longer-term supply side policy.
    - R&D grants should be introduced to mobilise the commercialisation of next generation SAF production technologies and improve the rate of innovation in Australia SAF production.
2. **Introduce a SAF demand mandate in the next 36 months** on a carbon emissions basis, increasing incrementally from 2030 onwards, and with a strong signal on mandate magnitude at deployment of the production incentive.
    - Emissions reductions targets should incrementally increase to reach key equivalent SAF blending milestones of 5% in 2030 and 28% or greater in 2040.
    - This mandate should prioritise alignment with CORSIA emissions reduction estimation, whilst balancing the need for an instrument fit for the Australian context.
    - Certificates should be awarded on the basis on compliance with the mandate. These certificates should be tradeable to enable producers that cannot meet the mandate to purchase certificates where available.
3. **Introduce longer-term supply-side support**, uniformly available to all SAF projects with an additional program for strategic production technologies with greater risk or higher cost
    - A technology agnostic production incentive of $0.442 per litre is recommended, with the support in place for a minimum of 15-20 years. This is equivalent to the fuel excise rebate already available to fossil fuel users in Australia.
    - For more nascent production methods or those with greater risk, a contract for difference (CFD) scheme should be introduced to bridge the higher cost of production to the SAF market price (post the introduction of the production credit), to enable these other technologies to mature and become more cost effective and to diversify Australia's production into advanced bio and eFuels.

These policy considerations will enable Australia to establish an internationally competitive SAF production industry to make substantial contributions to decarbonisation efforts, while also yielding immense economic benefits (in terms of value-added, jobs, potential exports and regional development) and building a more resilient and secure source of liquid fuels supply for Australia.

AUSTRALIA'S UNIQUE OPPORTUNITY TO DEVELOP A LOW CARBON LIQUID FUEL INDUSTRY

Australia has an opportunity to sit at the forefront of low carbon liquid fuel (LCLF) production, being uniquely positioned with agricultural feedstock availability and renewable energy capacity, which are key inputs into LCLF production. The availability of these two inputs at a low cost is almost exclusive to Australia, creating strong potential for Australia to have a comparative advantage in SAF production. However, the SAF industry is currently in its infancy and potential producers in Australia lack price and demand certainty to enable investment in the high capex refining infrastructure . This is where government support is key.

Australia has the resources and inputs to adopt several LCLF production techniques. The most technologically mature process is hydrotreated esters and fatty acids (HEFA), which Ampol and bp are leveraging in their proposed production facilities due to its relatively low-risk profile, having been deployed at scale in the US, Europe, China and Singapore. Other processes such as alcohol to jet (ATJ), and Fischer-Tropsch (FT) are currently more nascent technologies and would likely require a higher degree of government support. LanzaJet's Freedom Pines Project in Georgia, United States is the first commercial scale ATJ plant and is being used as a reference plant for Jet Zero's ATJ project in North Queensland.

These processes utilise several feedstocks, including tallow, sugarcane and agricultural waste, which are in abundance in Australia and provide opportunities to convert waste products into fuel. The value of these feedstocks has been recognised overseas, with Australia exporting 5.7 MT of canola and 518,000 tonnes of tallow in 2022-23[1], primarily for biodiesel and biofuel production in Europe, Singapore, and the US (these jurisdictions are more advanced than Australia in the production of SAF). Queensland alone offers over 1 billion litres of potential LCLF production capacity from sugarcane and wheat starch, with additional opportunities from novel crops such as pongamia and carinata.[2] Australia also has over 400 ML of existing ethanol production (from byproducts of wheat starch and sugar), with additional opportunity to produce ethanol from second generation processes such as lignocellulosic waste.

Further, LCLF production can support other clean energy industries establishing operations in Australia, including Australia's emerging green hydrogen industry as a source of domestic demand. Refining is already a significant consumer of hydrogen, and the requirement for increased emissions reduction in SAF and greater utilisation of hydrogen in ATJ and FT processes would increase green hydrogen demand. eFuel production, which effectively uses higher proportions of green hydrogen to boost the yield of SAF offers another avenue to drive scale of SAF and H_2 industries. Where the domestic H2 industry has struggled to develop because of limitations in end use markets, the SAF industry which requires no change to aircraft, offers a ready-made demand industry.

Recognising the global need for aviation sector decarbonisation, and the economic development opportunities afforded by domestic production, many foreign governments (particularly in large aviation markets) have started to enact policy to boost both supply and demand for LCLFs. Such policies include fuel or emissions reduction mandates, and low carbon fuel standards (LCFS) on the demand side and R&D funding, production incentives, or CFD schemes on the supply side. This stimulation provides international LCFL production with a competitive advantage in comparison to Australia.

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[1] Department of Agriculture, Forestry and Fishing, (2024), *Trade dashboard*, <https://www.agriculture.gov.au/abares/research-topics/trade/dashboard>.

[2] CSIRO, (2023), Sustainable Aviation Fuel Roadmap, <https://www.csiro.au/en/research/technology-space/energy/sustainable-aviation-fuel>.

In the absence of policy intervention and certainty, Australia runs the risk of foregoing the significant economic potential that could be realised through local LCLF production. In this scenario, the pace at which policy is being enacted overseas means Australian feedstocks are likely to be purchased for international LCLF production – particularly for HEFA production processes which utilise tallow and canola, agricultural commodities of which Australia is already a major exporter.. This would force hard to abate sectors, reliant on LCFLs to decarbonise, to import. Sending money overseas instead of supporting Australian industry and sovereign capability.

If instead, Australia can successfully leverage the LCLF production opportunity, there is potential to tap into growing international and domestic demand. A great deal of this international demand comes directly from Australia's most prominent trade partners in Asia, Europe, and North America. Locally, Australia is the eighth-largest consumer of aviation jet fuel in the world, demanding around 10 billion litres each year.[3] Additionally, Australia consumes over 30 billion litres of diesel fuel in the mining and transportation sectors. Much of this fuel supports industries heavily exposed to international markets where pressure to reduce emissions is becoming a requirement. Capitalising on this growing demand is expected to yield immense economic benefits, such as growth in GDP of $13 billion, approximately 18,000 jobs, increased exports, enhanced fuel security, and regional development.[4]

This opportunity can establish Australia's position as a significant, stable, and high-quality liquid fuel and energy provider into the future. Australia has a history of providing fuel and energy security to the Asia-Pacific region. Australia can strengthen its position by providing clean energy security to countries like Japan and Singapore, which are densely populated and face unique challenges such as land availability, feedstock, or renewable energy generation potential, as well as fuel security for the entire Pacific Island community, which do not have the economic resilience or resources to meet the demands of the energy transition (yet have the most to lose from the impacts of climate change). LCLF offers Australia an opportunity to strengthen existing political ties, establish clean energy trade relationships or be used in foreign aid.

To realise this opportunity, Australia needs to mobilise the first wave of LCLF producers in Australia in the next 12-18 months by de-risking production opportunities to encourage more producers to make a final investment decision. Beyond this immediate timeframe, Australia should establish long term policy measures aimed at expanding capacity and encouraging development of more advanced production technologies by providing certain, transparent and targeted production support.

This consultation response addresses the case for policy intervention to support the development of a sustainable aviation fuel (SAF) industry in Australia. Policy mechanisms designed for SAF will need to differ from mechanisms designed to support production and uptake of other LCLFs (refer Box 1). This response represents the views of Qantas and Airbus, supported by analysis conducted by Deloitte.

Box 1: SAF in a wider fuel decarbonisation context

SAF is one of several LCLFs being used to decarbonise hard to abate sectors and is, in many cases, made by the same facilities, from the same technology, and the same feedstock as other LCLFs including RD and Naphtha. While the production process may be largely shared, the end markets are not, and significant differences exist in the alternatives for decarbonisation. This creates disparity in the reliance on LCLFs for certain industries' decarbonisation. When compared to RD, which is used in heavy transport, mining and

[3] Beef Central, (2024), <https://www.beefcentral.com/carbon/the-new-local-crop-growing-jet-fuel/>.
[4] ICF, (2023), *Developing a SAF industry to decarbonise aviation*, <https://www.qantas.com/content/dam/qantas/pdfs/qantas-group/icf-report-australia-saf-policy-analysis-nov23.pdf>.

maritime, which have multiple options for decarbonisation, SAF is unique in being the only viable propulsion option across all aviation operations.

Policy therefore needs to consider the industries which can utilise LCLFs to decarbonise, the alternative fuels available to these industries, and the timing of their use – noting in some cases that it may be transitionary. Ideally this would extend to consideration of the optimal outcome from a broad perspective, rather than any one industry in isolation.

Different production technologies also have varying degrees of selectivity. ATJ production facilities can be designed to facilitate relative flexibility of switching between 90% SAF – 10% RD to 25% SAF, 75% RD, etc. More traditional crude and syngas hydrotreating (HEFA, for example) produce a product slate sometimes to the relative exclusion of SAF. Building flexibility is costly and retrofitting can be particularly expensive. In the context of a capex intensive and long-lived facility, it is particularly important to have consideration for what products may be valued in the future and prioritise production shares of different fuels accordingly.

Due to additional hydrotreating requirements, SAF is nominally more expensive to produce than renewable diesel (RD). Consequently, policy mechanisms that treat decarbonisation equally across the transport industry, such as the California LCFS, drive production of renewable diesel as the marginally lower cost form of abatement. This leaves aviation without a decarbonisation solution, and LCLF facilities potentially with a shorter productive window, as the transport sector moves to electrify. Instead, it is suggested a focus on the facility output and recognition of the relative imperative of SAF for aviation decarbonisation be considered in policy and, at a minimum, a sub mandate for SAF be implemented, with tradeable certificates to support efficiency and liquidity for producers.

Policy needs to be designed to achieve the right mix of individual fuels to support the decarbonisation requirements of different industries, including aviation. This policy design as critical, as aviation is reliant on SAF as the sole pathway for widespread industry decarbonisation for at least several decades to come.

THE NEED FOR POLICY SUPPORT

The ability of Australia to develop a commercially successful SAF industry is contingent on the government providing support to close the commercial gap between SAF and jet fuel in the short to medium term– particularly as a pathway to de-risking early projects, which tend to have a higher risk premium attached by investors. Government funded financial support is needed for the early stages of SAF industry development to support Australian producers competing with existing international producers, many of which are in heavily supported markets. The Government’s role in ensuring supply security and demand certainty encourages investment in the industry, which is expected to provide profitable opportunities as the industry matures, as suggested by the project pipeline. There are various ways the Government support the emerging SAF industry whilst simultaneously meetings its and investors objectives.

Australia’s comparative advantage in SAF production is expected to be realised over the longer-term, as the industry achieves scale and maturity. The relative infancy of SAF production technology and the cost of feedstocks, including green hydrogen, means that SAF is currently a more expensive alternative to jet fuel, even when pricing in the carbon abatement benefits. This cost is expected to fall over time (in real terms) as production processes become more efficient and cost of renewables and hydrogen continue to drop. For this to be true facilities need to be built and operated, investment flow to R&D and capacity scaled. . Ultimately, government intervention is required to reduce the overall risk profile associated with investment during these early stages of market development, particularly as market demand, prices, and technology evolution are uncertain. Long term, unambiguous, policy is critical to mitigating uncertainty and enabling investment.

To support the development of a competitive SAF industry in Australia, it is essential to implement supply-side and demand-side policies together. For Australian SAF to compete with international production, the Government needs to help de-risk demand for, and price competitiveness of, SAF.

Policy levers are needed to kick-start investment and inject confidence in Australia's SAF market in the short-term. There is evidence of a growing pipeline of SAF production projects across Australia, utilising different production technologies and feedstocks based on regional advantages. An example of this is Jet Zero, a company which is looking to utilise agricultural waste produce near their proposed production sites in Australia. This increasing base of SAF production projects suggests there is a commercial opportunity, underpinned by a reasonable share of the corporate community that is willing to pay a 'green premium' on air travel. However, with any infant industry there is a high level of risk and uncertainty that disincentivises producers from making a final investment decision.

Short term policy is also required to support the international competitiveness of Australian-produced SAF, which has the potential to supply a reasonable share of global (especially regional) SAF demand in addition to replacing Australia's 10 billion litres of consumption of jet fuel. Growing international demand, stemming from legislated mandates in the EU, UK, Singapore, Japan, and most recently, China, will mean those markets will be sourcing SAF in large quantities from their domestic markets and anywhere else producing SAF. Australian-made SAF has the potential to supply this demand, which can benefit producers as well as Australia's overall trade balance.

Medium term policy levers are needed to stabilise demand across a wider cross-section of the market and instil confidence that SAF production can generate long-term returns. Potential SAF producers will pay back debt and yield returns on their capital investment over a minimum 10-15 year timeframe and thus need confidence that demand and prices will sustain. The combination of supply and demand side levers can achieve these outcomes, more efficiently than one in isolation, as can be seen in the US which has substantial subsidies but lacks demand, or Europe which enforces demand but sees high prices and low investment from a lack of supply incentive. It is recommended that a demand mandate is introduced in the Australian market, with supply-side support to mitigate downside risk to fuel producers from larger price volatility.

PRIORITIES FOR THE NEXT 12-18 MONTHS

Recommended policy mechanism: Introduction of an incentive scheme that can be deployed in the short term to encourage the first 2 to 3 producers to construction.

This should involve an operational incentive to bridge the price gap of Australian SAF to jet fuel plus an appropriate carbon price. Additionally, the price of Australian SAF should be bridged to international prices for export to international markets; to incentivise early Australian SAF projects to make a final investment decision. This incentive needs to provide ongoing support for 10-15 years to enable producers to pay off their debt and adequately reduce the risk associated with SAF production in a market that is yet to implement a demand mandate.

R&D grants should be introduced to mobilise the commercialisation of next generation SAF production technologies. These grants will improve the rate of innovation in SAF production in Australia and better place the nation as a global leader in SAF production.

Introduction of the incentive should be paired with a strong signal on demand including, including magnitude and strategic priorities for production type, to ensure projects not funded can continue to develop with some awareness of future policy settings.

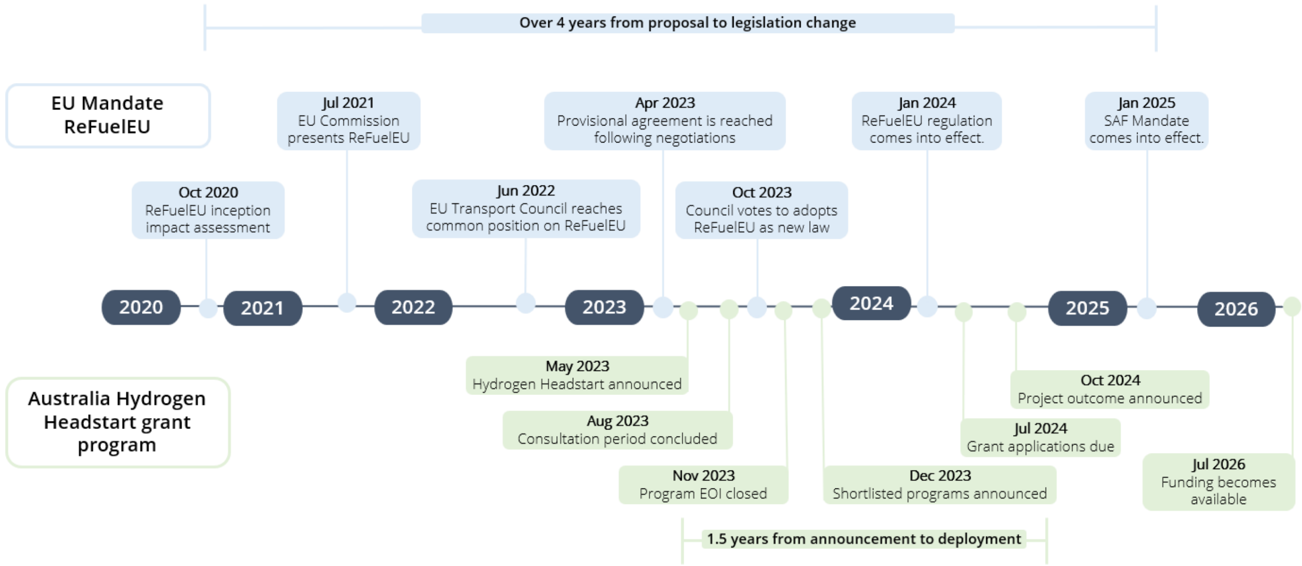
Australia should develop policy to support the establishment of the first wave of SAF producers in Australia. Establishing this capability in the short term is important for establishing Australia's position as a global SAF producer, for securing contracts for local feedstocks before global demand consumes Australian supply, and for developing the local knowledge base in SAF production techniques to enable the next generation of Australian SAF producers to achieve greater efficiencies.

To incentivise the development of a SAF production ecosystem locally, Australia should introduce a production incentive on SAF in the short-term. This incentive should be designed to bridge the cost of Australian SAF to substitute products such as jet fuel in Australia and internationally produced SAF on the export market. The introduction of this type of incentive will provide revenue certainty for producers, reduce financing costs, and encourage Australian SAF producers to make a final investment decision, and provide SAF to help meet Australia's decarbonisation targets. Providing this support will help to get the first 2-3 SAF producers operating in Australia, crowding in new investment and encouraging others to stand up the industry and eliminate risks associated with introducing a demand mandate around the availability of sovereign SAF supply. The joint approach will supply SAF, that will have an end-market created through a demand mandate, delivering decarbonisation benefits, economic opportunity, and fuel resilience.

Ultimately, the size and speed of government support matters when building industry capability for a nascent technology like SAF, particularly in a global environment where other jurisdictions have already implemented or are implementing policy support. To strengthen final investment decisions, potential producers need clarity on the amount of government support and the timeframe that they can receive this support – while their investors look for policy certainty and stability over the long term to justify investments that have long horizons.

The Government has previously used short-term production incentives as an immediate solution, namely the $2 billion Hydrogen Headstart program. Like the proposed SAF production incentive scheme, Hydrogen Headstart provides production credits to renewable hydrogen projects, closing the gap between the cost of renewable hydrogen production (including a justifiable return on capital) and the price of the hydrogen to offtakers. Hydrogen Headstart progressed from policy announcement to project outcomes in just 18 months (Figure 1), which depicts the merit of introducing a similar incentive scheme for SAF in the short term.

Figure 1: Timeline of deployment for Hydrogen Headstart program, compared to ReFuelEU mandate – note both the short time for implementation of Hydrogen Headstart and the steps and signalling during the development of the EU Mandate.



When designing an appropriate SAF production incentive scheme, varying levels of support should be provided to support domestic consumption of SAF and international exports of SAF. The domestic and international markets for SAF are not yet competing with like-for-like products due to the presence of SAF demand mandates in other jurisdictions. Together with the fact that exported SAF does not contribute to Australian aviation's own decarbonisation journey, policy support for SAF produced in Australia for domestic and international markets should be priced differently. To maximise the SAF export opportunity while establishing a foundation for domestic SAF usage, analysis is presented of an example incentive program that assumes 75% of the total SAF produced will be exported and 25% of SAF production will be consumed domestically. This is an assumption for modelling purposes and there is potential to adjust this share when designing policy.

To remain competitive with jet fuel in the absence of a demand mandate, SAF produced for domestic consumption should be bridged to the price of jet fuel in addition to an Australian Carbon Credit Unit (ACCU)[5], for every tonne of carbon produced. SAF produced for export, on the other hand, is largely contending with SAF produced elsewhere, which is often subsidised by foreign governments. As such, SAF produced for export should only be bridged to international SAF prices. This also has the effect of preserving government's limited financial resources to weight support for domestic use (further justified by the significant public policy objective of achieving emissions reduction to count to Australia's reduction targets).

These relative price gaps are demonstrated for indicative HEFA (Chart 1) and ATJ (Chart 2) SAF production processes. As international SAF production facilities are at a larger scale than the modelled facilities for Australia, neither Australia-made HEFA or ATJ SAF are expected to be cheaper than international SAF prices in the short term. This is expected to create reliance on subsidies in the export market in additional to domestically, in the short-term.

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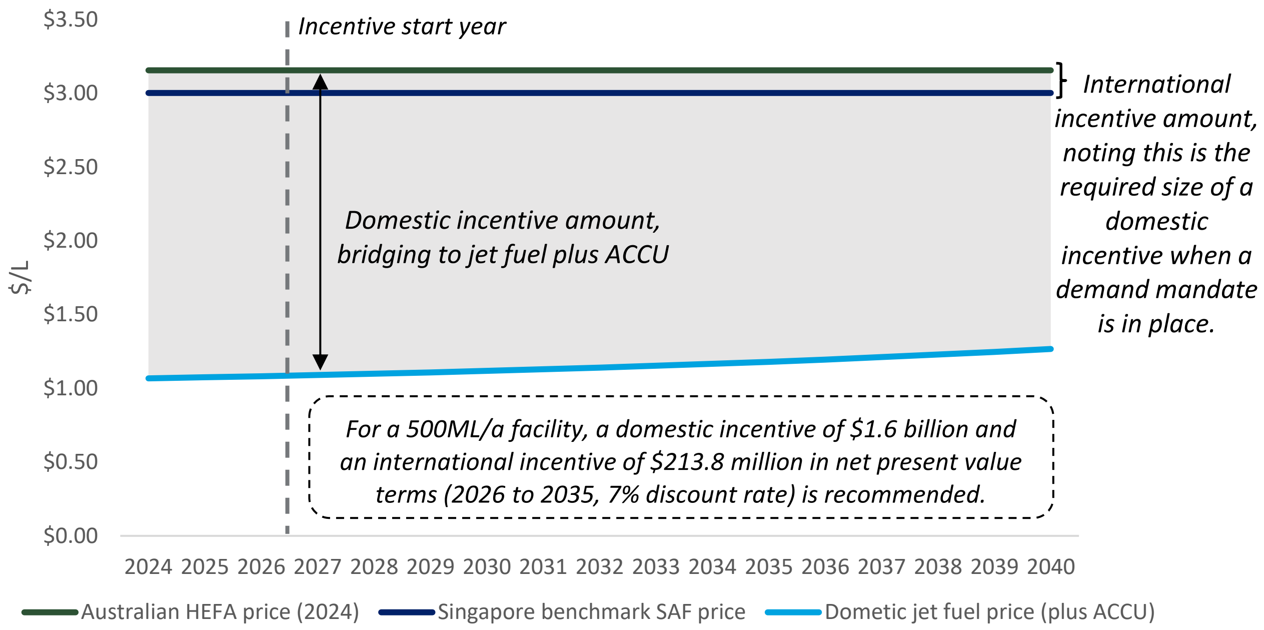
[5] A spot price of $33 per tonne of CO_2e was adopted for 2024, with this value increasing over time to reflect a growing cost of carbon. Growth was assumed to occur at a rate of 7% per annum until 2042 when the safeguard cap on ACCU prices was reached ($75 per tonne from 2025, growing at a maximum of 2% per annum). From 2043 onwards, 2% growth in ACCU prices was assumed as per the safeguard cap.

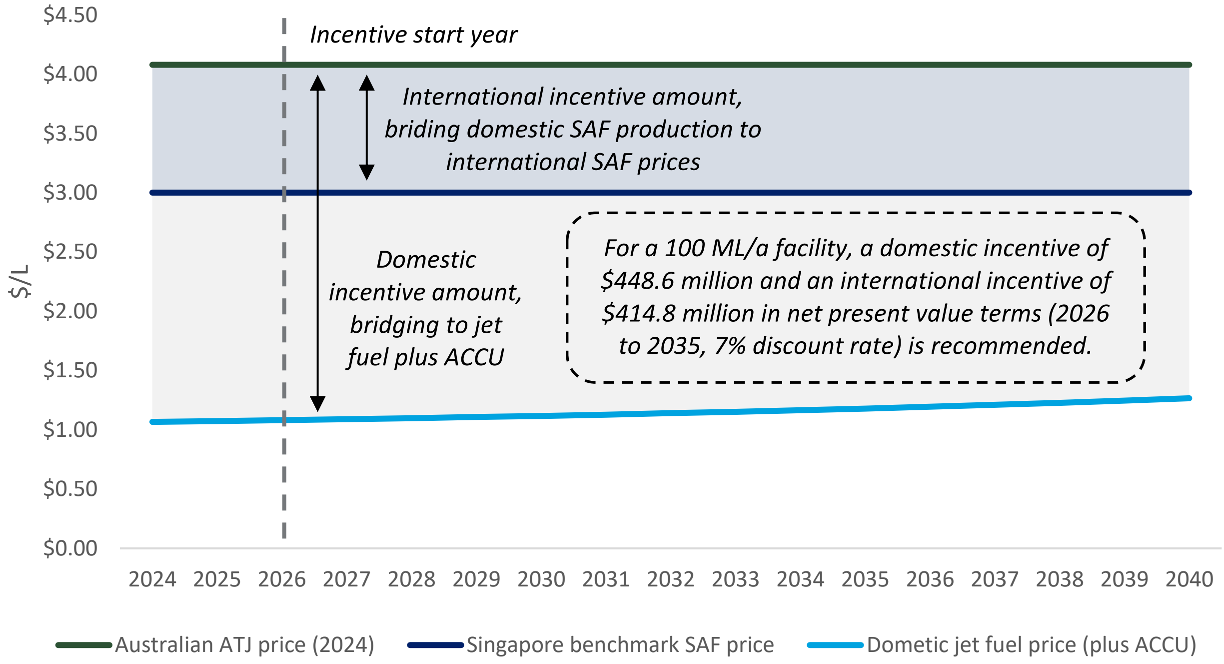
Both Chart 1 and 2 show the incentive value on a per litre basis, assuming a low international price of $3.00 per litre (the average price observed in the first half of 2024 from the Argus Singapore SAF index). Importantly, this analysis assumed that both HEFA and ATJ technologies remain at their current expected production cost without inflation – modelled in 2024 for this analysis. This ignores any change in exchange rates, which can be significant noting that jet fuel markets and the SAF market, including feedstocks, largely trade on the US dollar. The ability to reduce that exposure through end-to-end domestic production is another key advantage in comparison to imports. .

Chart 1: Illustration of subsidy per litre for a 500 ML HEFA facility, low international price, 2024 – 2035, $/L (real)



Source: Deloitte analysis
Note: The domestic incentive amount is the price gap, per litre of SAF produced, between the cost of HEFA SAF production and the domestic fuel price (plus ACCU). The international incentive amount is the price gap, per litre of SAF, between the Australian HEFA price and the International SAF (Singapore Benchmark) price. The analysis uses a low international price of $3.00/L. Note both the SAF and fossil jet benchmarks trade in USD implying some exposure to foreign exchange, which can in a similar way to the resources sector act as an economic buffer when the Australian dollar is weak.

Chart 2: Illustration of subsidy per litre for a 100 ML ATJ facility, low international price, 2024 – 2035, $/L (real)



Source: Deloitte analysis
Note: The domestic incentive amount is the price gap, per litre of SAF, between domestic ATJ SAF production and the domestic fossil jet fuel price (plus ACCU). The international incentive amount is the price gap, per litre of SAF, between the Australian ATJ price and the International SAF (Singapore Benchmark) price. The analysis uses a low international price of $3.00/L. Note both the SAF and fossil jet benchmarks trade in USD implying some exposure to foreign exchange, which can in a similar way to the resources sector act as an economic buffer when the Australian dollar is weak.

Decreasing the size of the required incentive

Demonstrated in Charts 1 and 2, the domestic incentive required for SAF to compete with traditional jet fuel, in the absence of a demand mandate, is much larger than the incentive required to bridge Australian SAF to international SAF prices. Imposing a demand mandate has significant potential to reduce the cost of a production incentive policy for Government.

The presence of a demand mandate means that Australian produced SAF only has to compete with the price of SAF that can be sourced internationally and imported into Australia. Our recommended policy approach involves both supply-side and demand-side policy mechanisms to ultimately reduce the cost of production incentives to Government, while acknowledging that in the short term greater supply is likely needed to kick start local production and incentivise the first wave of SAF producers to construct facilities.

The actual size of a SAF incentive for Government is largely dependent on the capacity of the production facilities (though there is significant advantage in unit cost amortisation to larger facilities, the timing of the incentive scheme, and the SAF production method / feedstock adopted at the facilities. Further, the size of the incentive required to support exported SAF is dependent on the share of production that is exported and the international SAF price. Notably the low international price is assumed as $3.00 per litre, based on the average price observed in the Argus Singapore SAF index in the first half of 2024, while the high international price is assumed to be $3.70 per litre which reflects the average price observed from January 2022 to June 2024.

Modelling the deployment of an incentive from 2026 to 2035, the cumulative cost of the incentive is estimated to be $2.7 billion in present value terms (7% discount rate) to produce 500ML of HEFA and 100ML of ATJ with low international prices (Table 1). This assumes that 25% of SAF produced is consumed domestically while 75% of SAF production is exported. If SAF production doubles to reach 1,000 ML of HEFA and 200 ML of ATJ SAF production, the incentive value also doubles to reach $5.4 billion. Notably, achieving approximately 100 ML of domestic HEFA SAF consumption equates to an emissions reduction in the air and space transport sector of just over 5% based on 2022-23 values. Additionally, the incentive costs will increase if more Australian-produced SAF is consumed domestically, but the delta will be directly contributing to a lower domestic emissions profile.

It should be noted that in modelling the cost of the proposed policy, we assume the same approximate margin for international and domestic consumers and that they trade similarly. Depending on the policy design, a lower margin for Australian production could be encouraged.

It is, in our view, important to support multiple technology pathways, HEFA is the predominance of current global production however feedstock will be constrained. While gasification FT and ATJ allow conversion of a greater diversity of feedstock they also target different parts of the economy through that feedstock strategy. This can have significant benefits for sugar growing areas, landfill diversion through use of MSW or utilisation of industrial CO_2 from facilities which would otherwise be vented.

Table 1: SAF production subsidy scenarios for domestic and international end use, NPV 2026 to 2035, $ millions, real 2025 dollars, assuming 25% domestic consumption and 75% exported SAF

		600 ML Production		1,200 ML Production	
		500 ML HEFA	**100 ML ATJ**	**1,000 ML HEFA**	**200 ML ATJ**
Low International Price	Domestic Subsidy	$1,623.1	$448.6	$3,246.2	$897.3
	International Subsidy	$213.8	$414.8	$427.6	$829.6
	Total	**$2,700.3**		**$5,400.6**	
High International Price	Domestic Subsidy	$1,623.1	$448.6	$3,246.2	$897.3
	International Subsidy	-	$69.1	-	$138.2
	Total	**$2,140.8**		**$4,281.6**	

Source: Deloitte analysis.
Note: Analysis uses a low international price of $3.00/L (reflecting the Argus Singapore SAF index price observed in the first half of 2024) and a high international price of $3.70/L (reflecting the Argus Singapore SAF index price observed from January 2022 to June 2024) of SAF produced. It should be noted that these estimates assume that the cost to produce Australian SAF is unaffected by high international prices, however in reality Australian prices may be influenced by global factors such as high feedstock prices, which could drive a cost increase.

The tangible goal of an incentive scheme designed in this way is to get the first 2-3 SAF production facilities up and running in Australia. This will establish Australia's reputation as an internationally competitive SAF producer and establish a growing source of demand from countries with demand mandates coming into effect and increasing in volume. To ensure effective implementation of this short-term incentive scheme, a variety of policy design parameters require consideration. Several of these potential parameters are discussed in Table 2 overleaf.

Table 2: Key policy design parameters for implementation of the recommended incentive program

Parameter	Recommendation
Duration	It is recommended that the incentive program supports the selected facilities for a 10-15 year duration (noting a 10-year timeframe has been modelled). The timeframe selected has the potential to impact the cost of the policy as a shorter scheme will prompt producers to recuperate capital expenses more rapidly.
Number of facilities supported	The incentive should support the first 2 to 3 producers (with some scope over time to increase to more producers establishing different technology pathways, such as PTL) to set up operational facilities in Australia.
Price discovery	Government could contemplate whether some proportion of a facilities output be sold on the spot market to provide price transparency and drive development of a regional index
Tiers of support	Having two tiers of subsidy support for both the domestic consumption and export of SAF is recommended. It should be noted that the volatility of international SAF prices impacts the subsidy rate. We would anticipate the implementation of an Australian mandate would see a switch to increasing domestic supply over export with some competition still from imports
Implementation timeline	Replicating the speed of deployment seen through Hydrogen Headstart, funding should be committed to projects within two years of policy announcement, with funding to be delivered in the following year. It is recommended that 2-3 SAF projects are selected which represent in aggregate over 500 ML of SAF production capacity to ensure adequate competition, including differing technology pathways.
SAF co-product considerations	The funding program will need to consider SAF co-products such as renewable diesel and naphtha. The production credit received for SAF would need to be higher than credit received for renewable diesel production.
Emissions reduction threshold	SAF produced should be required to achieve a minimum GHG emissions reduction of 50% compared to conventional jet fuel on a lifecycle basis. Emissions reduction on an aggregate market level should be encouraged above this value to drive efficiency of abatement
Emissions estimation	Emissions estimation methodologies should consider existing international frameworks (i.e., CORSIA, ISCC, GREET) with inclusion of Australian specific default factors for particular feedstocks
Feedstock or technology exclusions	Feedstock exclusions are not recommended. Transparency, emissions reduction, and broad sustainability are the primary requirements of a feedstock. Minimum standards can be implemented, which may exclude some feedstocks, as should incentivisation of the right outcome. Feedstock exclusions should only apply where the risk of a perverse outcome is too high be mitigated by standards or the market

In addition to the incentive scheme, the Federal Government should consider implementing a grant scheme for R&D that may lead to the commercialisation of on next generation SAF production methods. The intent of an R&D grant is to accelerate existing and potential projects to reach commercialisation at an earlier timeframe. Like the NSW Government's Clean Technology Innovation grant scheme, this R&D program could be designed to encourage specific technology adoption in SAF production (i.e., increasing the share of e-fuel production).

R&D grant programs also serve as a risk mitigator for potential investors. With the Federal Government signalling support for SAF-based R&D, SAF investors are likely to grow in number and volume of financial support. Not only could this mobilise the progress to SAF commercialisation, but it could also enhance competitiveness by incentivising more players into the market.

POLICY LEVERS OVER THE MEDIUM TERM (2030 ONWARDS)

Policy intervention over the medium term should involve demand-side intervention, alongside a measured amount of supply-side support. The combination of supply-side and demand-side policy provides the best overall outcomes for both fuel producers who have certainty in demand and fuel users and their consumers, while the impacts of higher costs and prices are softened. This policy combination also improves the attractiveness of SAF as a market to participate in over the long term and is more likely to attract a greater volume of Australian producers

Demand side policy levers

Recommended policy mechanism: Introduction of a SAF demand on a carbon emissions reduction basis. This mandate should be introduced from 2030 onwards, with the emissions reductions targets incrementally increasing to reach key milestones of 5% in 2030 and 20% in 2040. It should be signalled early, at the time of establishing supply-side policy support, to show producers and the investment community that Australia's approach will be a balance between supply-side support and demand-side drivers, giving more certainty of outcome and showing a scalable path for industry growth.

A demand-side policy lever should be implemented to ensure certainty in market demand for SAF in Australia. Demand side measures would greatly increase the feasibility of domestic production of SAF by providing certainty to investors and, via market-traded compliance credits, offset the amount of additional production support needed by the government. Without guaranteed domestic demand, domestic producers may be forced to export fuels to other markets and compete with fuels receiving production support from their own governments. Investors may also see a risk that production facilities produce supply, which cannot be sold into the market as they will have, at the point of investment, insufficient visibility of market demand and pricing in such a nascent industry.

An enforceable SAF demand mandate on a carbon emissions reduction basis is recommended as the most suitable demand-side policy measure to promote SAF uptake in Australia. This policy design would effectively create uptake in SAF and create a value for lower emissions SAF products, which has the potential to encourage greater agricultural decarbonisation. It stimulates technological pathways and innovation that produces higher yield of low-carbon-intensity fuels, rather than volume alone.

A demand mandate is the most effective policy mechanism as the market needs offtake certainty to invest in a nascent technology that cannot currently compete with substitutes in a free market. A target alone cannot provide this market certainty, as it is not enforceable and therefore does not reduce the risk associated with investment in SAF production: namely, whether offtake has an end-market.

An alternative demand-side policy that has the potential to achieve similar outcomes to a demand mandate is the introduction of a Low carbon fuel standard (LCFS) for the transport and/or aviation sectors. An LCFS sets an intended carbon emissions reduction for the sector but would need to incorporate a sub-mandate for SAF to achieve similar SAF uptake to a demand mandate imposed on SAF. This is a result of SAF being more expensive to produce than many other low carbon fuels, including renewable diesel, and that a transport wide sector sees emissions reduction driven by electrification and other technologies which may be lower cost than RD and SAF. This means that fuel producers are generally capable of substituting SAF production for RD production in the same production facilities if seeking these higher margins. While a LCFS is still a viable policy mechanism for SAF, it will need to be designed around these key differences between LCLF products for SAF fuel supply to meet similar SAF volumes to a mandate.

There are a range of factors to consider when designing a demand mandate that suits the unique characteristics and advantages of Australian SAF producers. For example, Australia may choose to introduce different technology-based sub-mandates to other jurisdictions due to the availability of certain feedstocks in Australia. Considering Australia's policy and economic landscape, Qantas' recommendations for the design of a SAF mandate are outlined in Table 3 (overleaf).

Table 3: Recommendations for the key design parameters for a SAF mandate

Australian mandate considerations	Sub-element	Recommendation
Designing for emissions reductions	**Purpose**	The purpose of the SAF mandate is to reduce emissions in the aviation sector and set a trajectory towards achieving net zero. By setting the mandate on an emissions reduction basis, fuel producers are incentivised to pursue lower carbon SAF production methods and technologies.
	Timing	The mandate should be implemented in 2030 and extend to 2050 at a minimum, with early signalling to the market (ideally at that same time as supply-side policy measures are announced).
	Obligated party	A mandate should be applied to jet fuel suppliers as it would avoid competitive distortions between airlines and place the SAF production requirements directly on those best placed to drive production. Despite the obligation not being placed on airlines, it is expected that SAF would be sold at a premium and airlines and their respective consumers would bear the cost of the policy – most notably when supply-side incentives are tapered and phased out.
	Market Mechanism	A tradeable certificate scheme would create appropriate economic incentives for fuel producers to discharge their mandate obligation in the most efficient way without creating perverse incentives. A trading scheme allows government to leverage market forces to incentivise maximal emissions reduction.
Coverage	**Eligible Fuels**	The government should consider how feedstock exclusions may dissuade unethical feedstock practices (i.e., extra deforestation)
	Minimum carbon emissions reduction threshold	SAF should achieve a minimum carbon emissions saving threshold of 50% relative to fossil jet fuel in order to be eligible for certificates.
	Sustainability standards	Broad criteria should be aligned to CORSIA, however other models (i.e. US GREET) should also be considered in the Australian context.. This should prioritise feedstocks with the highest emissions reduction and avoid feedstocks that contribute to deforestation. The standards must also prioritise traceability throughout the supply chain and avoid exclusions as much as possible to promote sustainability through carbon.
	LCA rules	The carbon emissions reduction should be calculated and certified on a life cycle basis. These rules already exist in CORSIA, ReFuel and ISCC and should be considered as a base framework to minimise international distortions.
Mandate trajectory	**Starting emissions reduction target**	The government should seek to adopt a 5% mandate in 2030 in line with the ICAO emissions reduction target and aligned to corporate decarbonisation targets.

Australian mandate considerations	Sub-element	Recommendation
	Growth trajectory	2030-2035: grow to reach 12% by 2035 2040: grow to reach 28% or greater by 2040 Targets should be reviewed prior to 2040 with a view to setting a growth trajectory for 2050 and beyond.
	Credit price floor or ratchet mechanism	Either a credit price floor or an auto-ratchet mechanism should be considered to mitigate potential price volatility in the event there is excess supply of SAF. The emissions reductions target should be designed with the flexibility to allow for a ratchet mechanism to allow for an increase in the target.
	Sub-mandates & product caps	It is recommended that there are no sub-mandates in the first two years of the mandate. After this two-year period, a sub-mandate should be introduced to address strategic fuel priorities such as 2nd generation SAF production methods and eFuels. This eFuel sub-mandate should start with small quantities (e.g., 1% of jet fuel in 2032) while these technologies are in their infancy and increase over time. Sub-mandates have been introduced into the UK and EU schemes (refer Box 2) to drive production in other types of SAF and diversify feedstock reliance.
	Review points and post 2040 trajectory	The Federal Government should introduce the mandate as soon as possible for a total length of 20-years, with regulatory reviews every five years. This mirrors the structure of typical 5-year increments of SAF mandates in the EU and the UK.
Compliance	**Alignment with CORSIA**	Any regional framework developed for sustainability and emissions calculation should consider that Australia will eventually be accountable to CORSIA standards into the regulation design. An alignment between these rules should be maximised to streamline processes and reduce costs and barriers for obligated parties.
	Obligation period	Each obligation period should be one year in length, running on a financial year basis. The obligation period determines the mandated emissions reduction from SAF use that should be met over the obligation period.
	Buyout/ penalty	The Federal Government should penalise non-complying fuel producers through a buyout price, set at a rate that disincentivises non-compliance with the SAF mandate. The buyout penalty should be incurred if a fuel producer falls short of the emissions reduction target set through the SAF mandate (e.g., their overall aviation fuel production must achieve a 5% emissions reduction in 2030), or if any other mandate requirements are not met (e.g., a non-compliant SAF product is produced to meet the target). Where a supplier falls short by only a partial share of the mandate (e.g., a 2.5% emissions reduction is achieved in 2030), the buy-out should be calculated by multiplying the buy-out price by the certificate shortfall. The buyout penalty should be calculated at the end of the obligation period.

Australian mandate considerations	Sub-element	Recommendation
Compliance certificates	**Calculation of certificates**	Certificates should be awarded on the basis of SAF production meeting mandated requirements. Certificates should be calculated as per the UK scheme, which uses the following methodology: $$Certificates = \frac{m \times LHV_i \times CI_{factor}}{LHV_f}$$ Where: • $Certificates$ is the number of certificates rewarded to a given SAF consignment • m is the mass of a given eligible fuel consignment, in kg • LHV_i is the energy density of the eligible fuel, in MJ/kg • CI_{factor} is the carbon intensity factor • LHV_f is the energy density of jet fuel, in MJ/kg
	Retirement and rollover of certificates	Where excess certificates are granted in an obligation period, these excess certificates should be able to be used to fulfill up to 25% of a fuel supplier's obligation in the following period.
	Trade of certificates	SAF suppliers should be able to discharge their obligation in full by purchasing certificates from other SAF suppliers, though a trading system. The price of a certificate should be determined by the buying and selling party and not by the mandate administrator.
Interaction with other policy settings	**Interaction with Safeguard Mechanism**	Airlines are currently subject to safeguard obligations, with SAF and RD from biogenic origin considered to have 0 emissions on a scope 1 basis. This ignores the lifecycle impact and quantification of SAF emissions reduction as it is applied internationally. The lack of consideration of a lifecycle impact can lead to perverse outcomes either overstating emissions reduction for some primary production crops or disallowing emisisons reduction from use of waste CO2 that would otherwise have been vented. It is recommended that a flexible approach to SAF's compliance with the safeguard mechanism is maintained This may involve development of the guarantee of origin scheme with a principle to not reduce or confound incentives to decarbonise.
	Interaction with short-term supply side support	The demand mandate is an important element for de-risking investment in SAF production, as it provides certainty in uptake despite the price gap between SAF and jet fuel.

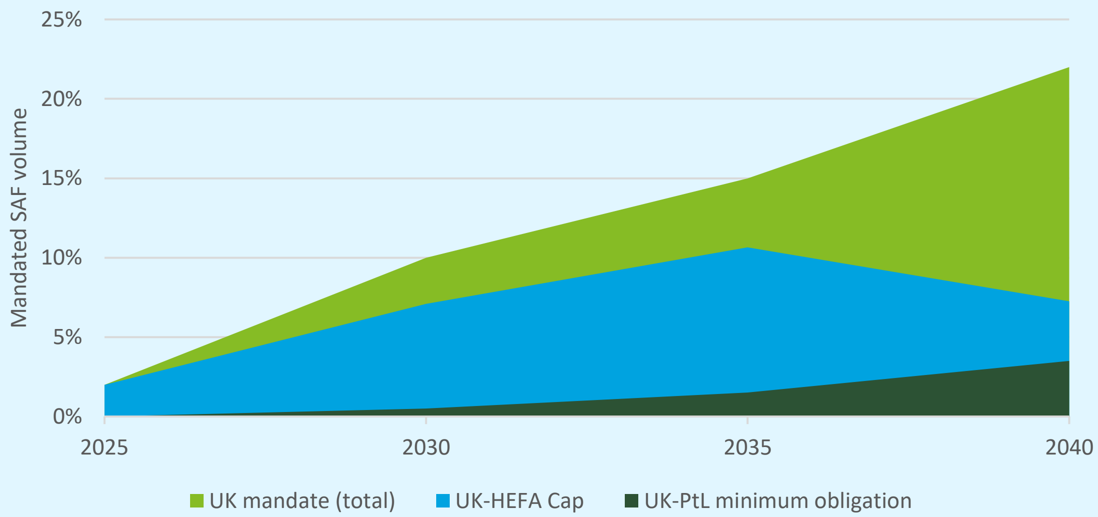
Box 2: SAF demand sub-mandates in the UK and EU

The United Kingdom's SAF mandate was published in April 2024 and introduces progressive targets from 2025 to 2040, to reach 22% SAF blends in jet fuel by 2040. Within this mandate, there are sub-mandates that apply to different production methods, including:

- **HEFA***:* HEFA is currently the most mature and lowest cost SAF production method. However, the contribution of HEFA to the UK mandate will be limited to 71% of the mandate amount by 2030 and 33% by 2040. There is a notable exclusion of domestically produced HEFA from the HEFA cap. This means domestic production of HEFA is still encouraged and the HEFA cap acts as a proxy import cap instead.
- **PTL (also referred to as e-fuels and synthetic aviation fuels)***:* A separate obligation for PTL SAF will be introduced in 2028, requiring jet fuel to incorporate 0.2% PTL SAF by 2028 and 3.5% by 2040. While currently more expensive to produce, PTL SAF has zero lifecycle carbon emissions and is expected to be required in higher quantities over the longer term to achieve net zero in the aviation sector.

These sub-mandates are demonstrated in Chart 4.

Chart 4: UK SAF mandate by technology



In addition, the EU sets sub-mandates for synthetic aviation fuel use within the ReFuelEU demand mandate. The mandate requires a minimum of 2% SAF to be blended into jet fuel from 2025, with the synthetic aviation fuel sub-mandate introduced from 2030, starting at a blend of 1.2%. By 2050, the ReFuelEU mandate requires 35% of jet fuel to comprise of synthetic aviation fuel.

Supply side policy levers

Recommended policy mechanism: Introduction of three forms of supply-side support over the medium term, addressing the unique challenges associated with technologies at different levels of maturity.

For all SAF production incentive is recommended at a rate of $0.442 per litre. This is equivalent to the fuel excise rebate already available to fossil fuel users in Australia. This incentive is available to all potential market entrants and encourages competitive market development and scale. This policy mechanism is recommended to be available for at least 15-20 years.

For alternative production methods, a CFD scheme is recommended to enable other production techniques to gain market share, diversify Australia's reliance on feedstocks, and to yield capital productivity gains in production methods that have the potential to be more cost competitive over the long term. The CFD scheme would only be available to producers selected for the scheme. This policy mechanism is recommended to be available for at least 15-20 years.

The provision of supply-side support for SAF has a very different calculus when a demand mandate is in place. The demand mandate provides long term certainty that the market will be willing to purchase SAF and it does not have to directly compete with jet fuel from a pricing perspective. However, the absence of supply-side support has the potential to place undue cost pressures on fuel producers and the aviation sector, particularly in an infant market which is expected to experience price volatility.

To manage price volatility while the market is undergoing SAF price discovery, supply-side Government intervention can be implemented to bridge costs and mitigate SAF price spikes when the market is still reaching scale and operational efficiency. The most suitable supply-side policy mechanisms vary on a technology-by-technology basis due to different levels of technological maturity and therefore competitiveness among SAF production techniques.

Production incentives are designed to encourage scale and efficiency in an industry and boost competition in SAF production by incentivising greater market participation. To improve cost competitiveness of Australian-produced SAF and to boost industry participation, we recommend the introduction of a production incentive of $0.442 per litre. This is equivalent to the fuel excise rebate already available to fossil fuel users in Australia. This incentive should be available to all prospective SAF producers and be agnostic of SAF production technology.

As it stands, HEFA is the most mature and cost competitive production method which currently supplies over 90% of global SAF supply. Other SAF production methods, such as ATJ, PTL, and FT, are less mature technologies and cannot yet compete with HEFA purely on a cost basis, yet they will need to be part of Australia's SAF production pathway to achieve the scale and supply required over the longer term. In these instances, more targeted supply-side support such as a CFD scheme is likely to be required to build scale and encourage investment in production techniques other than HEFA until production costs decline.

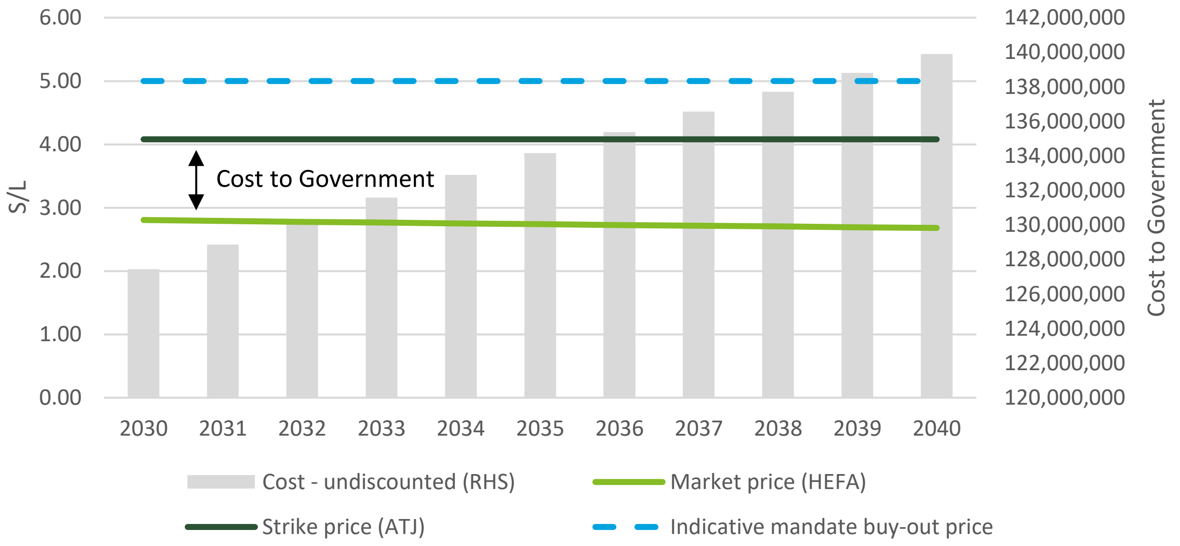
The benefit of a CFD scheme is that it de-risks the bottom line of potential SAF production and can be used to underwrite price differentials for different production technologies. Under a CFD, a producer would commit to producing a predetermined volume of SAF at a price underwritten by the scheme operator. The scheme operator pays the difference between the strike price and the market price when the market price is below the strike price, whilst they are compensated by the producer when the market price is above the strike price.

As CFD schemes require predetermined agreements that will only be made with a certain number of producers, they have potential to hinder the number of new entrants to the market. However, this arrangement also provides the Government greater discretion in advancing strategic priorities for SAF development, with the ability to undertake a larger number of agreements with eFuel producers, for example.

The CFD is recommended to be designed to bridge the price gap between the HEFA market price (noting this market price would factor in the impact of the HEFA production incentive) and less mature SAF production technologies. As such, the cost to Government will be substantially less than bridging production to the cost of jet fuel plus an ACCU (as is proposed for domestically consumed SAF for the short-term subsidy), though it is subject to vary based on technological advances in these other production techniques.

For example, a CFD mechanism could be designed such that it bridges the price of ATJ produced to the market price for HEFA (after the production incentive. The per litre subsidy paid through the CFD scheme would decline if ATJ is produced more efficiently (noting for the purposes of this analysis, the ATJ price has been set for the duration of the scheme) or if the market price of HEFA increases.

Chart 5: CFD subsidisation outcome for ATJ, real 2024 dollars, example only



Source: Deloitte analysis

Key parameters regarding the design of the production incentive and CFD scheme are outlined in Table 4.

Table 4: Key policy design parameters for medium-term supply-side policy intervention

Parameter	All SAF	Non-HEFA SAF production techniques
Policy mechanism	Production incentive	Contract for difference
Per litre value of mechanism	$0.442 offset per litre of production	Equal to the value of the price gap between HEFA and other production methods
Number of producers eligible for scheme	Unlimited	Recommend a minimum of 3 producers
Duration	15-20 years	15-20 years
Implementation timeline	As per SAF demand mandate	As per SAF demand mandate
SAF co-product considerations	Renewable Diesel (RD) can typically be produced as a co-product along with any SAF.	RD can typically be produced as a co-product along with any SAF.
Emissions reduction threshold	Minimum emissions reduction of 50% must be achieved	Minimum emissions reduction of 50% must be achieved
Feedstock or technology exclusions	Exclusions to be made where a specific SAF production technique is intended to be discouraged (e.g., if it contributes to excess deforestation)	Used to bring production of strategic priorities ahead of what would otherwise have been economically viable and smooth transitionary points in technology development

Box 3: Why two different supply-side initiatives are required

HEFA and other SAF production technologies are at different stages of technological maturity and, as a result, will yield the most benefit from different policy mechanisms. The two policy mechanisms are designed to support production given these varying levels of maturity, with the production incentive designed to encourage market competitiveness (both domestically and internationally) and the CFD policy for all non-HEFA SAF production technologies designed to support the uptake of diversified feedstocks and the advance of technological capabilities for other production methods, which are not yet competitive with HEFA production.

The introduction of a production incentive will improve the potential margin available to SAF producers which may encourage greater market participation. As the production incentive will be available to all producers, it does not provide an unfair advantage to any one producer in the Australian market or have an element of 'picking winners'. In the long term, this will support SAF production in becoming a self-sustaining, competitive market due to the presence of a higher number of producers.

HEFA is a relatively mature technology and can produce the most competitive SAF among production technologies currently available. In particular, HEFA is expected to benefit from this policy as the $0.442/L price gap as the potential to make Australian HEFA competitive with international prices, depending on the final production price of any given SAF facility in Australia.

However, as a production technology, HEFA is not viable for supplying all SAF demand – particularly on a global scale. HEFA relies on specific agricultural feedstocks for production, such as tallow, that are limited in supply. Relying only on a singular production method would inadvertently raise the price of HEFA feedstocks and reduce the cost competitiveness of HEFA as a production technology. Recognising this potential shortfall in feedstocks, a HEFA cap was introduced into the UK's SAF demand mandate to improve the rate of investment in other SAF production technologies.

Australia too, needs to ensure SAF feedstocks are diversified by encouraging investment in other SAF production technologies. The CFD scheme is designed to diversify Australia's feedstock reliance and improve Australia's technological capability across a variety of SAF production methods. In the long term, several of these alternative production methods are expected to become more cost effective than HEFA due to technological advancements and the expected price trajectory of feedstocks. While in the more immediate terms this may mean greater investment is needed to support uptake of these other production methods, in the long term SAF production is expected to become cheaper and more competitive.

In addition, consistent with Australia's policy objective of becoming a green hydrogen super-producer, catalysing SAF from green hydrogen using PTL pathways will be a potential pathway for Australia to become a mega-producer of eSAF in future decades, so early stimulation of this pathway may open significantly larger export opportunities for Australian-produced SAF to fulfill regional and global demand as part of the aviation industry's transition to decarbonised air travel.

TIMELINE OF POLICY INTERVENTIONS

As many international jurisdictions already have policies in place (or are finalising them) to support SAF production and uptake, and many of our aviation and trading partners are among them, Australia should position itself to implement policy support in the short term in order to achieve decarbonisation objectives and obtain global market share. A timeline for the consultation and implementation of the four policies discussed in this response is presented in Table 5 (overleaf).

Table 5: Timeline for SAF policy consultation and implementation

	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Overall policy timing											
Short-term supply incentive											
R&D grants											
Demand mandate											
Medium-term production incentive											
Medium-term CFD scheme											
Short term supply incentive											
Announcement											
Consultation period											
Producers selected for the incentive											
Policy in effect											
R&D grants											
Initial consultation period											
Announcement											
Expression of interest rounds											
Full application rounds											
R&D grant funding available											
Demand mandate											
Initial consultation period											
Announcement											
Detailed consultation											
Mandate legislation comes into effect											
Community education/awareness											
Mandate in effect											
Medium-term production incentive											
Initial consultation period											
Announcement											
Detailed consultation											
Incentive available											
Medium-term CFD scheme											
Initial consultation period											
Announcement											
Detailed consultation											
Producers awarded CFD contracts											
Policy in effect											

CONCLUSION
The policies outlined in the above sections outline a shared perspective from Qantas and Airbus on the most effective policy mechanisms to establish a competitive SAF production industry in Australia.

Given Australia is the eight largest consumer of jet fuel in the world, the carbon emissions impact of aviation is disproportionately high in Australia when compared to the rest of the world, relative to population. This is because Australians travel vast differences domestically and to connect with the rest of the world. Replacing jet fuel with SAF is a vast emissions reduction opportunity for Australia – one that far exceeds any benefit that can be achieved through adopting more energy efficient aircraft. SAF is critical for Australia's aviation industry to achieve the nation's decarbonisation commitments and for the industries 'licence to operate' into the future.

The economic opportunity associated with SAF industry establishment is immense and is expected to far exceed the potential cost of the policies. In an earlier report, we quantified the economic opportunity of Australia SAF production to comprise 18,000 jobs (including 5,000 in the production industry and 13,000 in the feedstock and supply chain), many of which will benefit regional and rural areas where the energy transition is expected to lead to high disruption. In addition to jobs, a SAF production industry has the potential to add $13 billion to gross domestic product.[6]

Over coming decades, Australia can build on this SAF production base and become a mega-producer of next generation SAF technologies, especially using green hydrogen, which the country has the capability to produce in abundance. As a result, the economic opportunity modelled is perceived to be just the beginning of a vast opportunity for Australia. Our balance of trade in liquid fuels has the potential to shift dramatically from being an importer, to being self-sufficient, to being an exporter, as the SAF and wider LCLF industry develops.

One final consideration for the development of an Australian SAF production industry is enhancing national fuel security. In a world that becomes more complex and volatile, it becomes increasingly untenable that Australia relies on importing 90% of liquid fuels, which, in turn, support almost half our energy consumption. In a crisis or isolation scenario, aviation takes on even more critical importance; either to urgently transport critically needed goods and supplies, move or evacuate people, or, in the worst case, to stand up a defensive capability. If global fuel supplies are cut and Australia has only its domestically produced jet fuel, our economy and our critical infrastructure reliant on aviation will grind to a halt. In contrast, by standing up a SAF production industry, Australia will have sovereign fuel supply and will be tenable to geopolitical instability.

These recommended policies, alongside the suggested policy design and implementation considerations, should assist Australia in achieving the following tangible outcomes:

- Final investment decisions are made for the development of the first 2 to 3 SAF production facilities in the next 12-18 months, generating a minimum of 500ML of SAF in aggregate once facilities are developed.
- Sector-wide compliance with a demand mandate, including limited reliance on buy-out mechanisms
- Tapering of supply-side support as an internationally competitive SAF production industry is established in Australia
- Australian producers at the forefront of building capability in nascent SAF production methods.

[6] ICF, (2023), *Developing a SAF industry to decarbonise aviation*, <https://www.qantas.com/content/dam/qantas/pdfs/qantas-group/icf-report-australia-saf-policy-analysis-nov23.pdf>.

Thank you for the opportunity to provide input into this consultation. If you have any further enquiries, please reach out to Qantas or Airbus.

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APPENDIX: RESPONSE TO CONSULTATION QUESTIONS

The low carbon liquid fuels opportunity

What do you think are Australia's comparative advantages as an LCLF producer? Where does Australia face international competition?

Australia's comparative advantage and key sources of international competition are outlined in 'Australia's unique opportunity to develop a low carbon liquid fuel industry'. Namely, Australia's feedstock advantage, renewable energy generation capability (including hydrogen) and an advanced skilled workforce create this comparative advantage. The greatest source of international competition stems from countries that have LCLF production incentives that also export LCLFs to the international market at these distorted price (e.g., the US).

Based on the current policy and market environment, to what extent will Australia rely on imports of LCLF, as opposed to domestic production?

As outlined in 'The need for policy support', Australia's feedstocks have the potential to generate enough SAF to cater for all of Australia's current jet fuel consumption and have sufficient capability and capacity to service export markets. It is expected that Australia may rely on some scale of imported LCLF (including SAF) while the industry is still scaling operations in Australia, but in the long term there is no need for import reliance if the Australian industry scales in line with or in advance of other major producers. Our ability to reduce this import reliance has significant economic and fuel security benefits for Australia, as articulated above.

Options to support an Australian domestic low carbon liquid fuel production industry

Options for a production incentive scheme

What mechanism do you think would best support a production credit scheme – through the tax system, contract for difference or grant based funding?

As outlined in 'Priorities for the next 12-18 months' and 'Priorities over the medium term (2030 onwards)', the key imperative is to establish an industry to demonstrate to stakeholders that Australia has significant potential to be a global power in SAF production. We have recommended operational grant-based funding to support the initial 2-3 producers to establish capability in Australia and de-risk investment decisions prior to the introduction of a demand mandate. We also recommended a production incentive from 2030 onwards that can be access by all SAF producers in Australia, to incentivise greater industry scale and competition. Finally, we have recommended a CFD scheme for all non-HEFA SAF production methods to enable these technologies to build commercial viability and bridge the cost gap between these technologies and HEFA. In addition, an R&D grant incentive is recommended to further advancement in next generation production technologies being developed by Australia's leading research institutions.

Are there other mechanisms Government could consider to deliver production support, other than a production tax incentive or competitive grant-based payment? What do you think is the highest priority form of support?

Our recommendations align with the policy mechanisms described above.

What are expected production costs of LCLF in Australia? How would you design production incentives to make production competitive in Australia?

Our expectations of the production cost profile of HEFA and ATJ SAF are outlined in Charts 1 and 2 in 'Priorities for the next 12-18 months'. Based on the expected price gap between jet fuel and SAF, we have designed the operational grant to bridge this price gap to establish operations for the first 2-3 producers in Australia prior to the introduction of a mandate. Once a mandate is in place the price will not need to be bridged to this extent to de-risk investment decisions for new producers, however we have recommended a production incentive for SAF in addition to a CFD mechanism for all non-HEFA SAF production techniques to continue to incentivise Australian production and innovation. It is important that Australia develop different production pathways, as no single production pathway will provide supply to meet demand, both at home and in potential export markets. This will allow Australian-produced SAF to compete in an international market with price distortion from incentives in other jurisdictions.

What would an expected rate of support be under a competitive grant-based production scheme (contract for difference or fixed grant amount per production unit)?

Our expectations of the required rate of support for HEFA and ATJ SAF is shown in Charts 1 and 2 in 'Priorities for the next 12-18 months'. Similarly, our expectations for the required rate of support under a CFD scheme is shown in Chart 5 in 'Priorities over the medium term (2030 onwards)'. Further, we have recommended a production incentive of $0.442 per litre of SAF production in 'Priorities over the medium term (2030 onwards)'.

How many producers would you expect a production incentive scheme to support in Australia?

We have recommended that the operational grant described in 'Priorities for the next 12-18 months' should be awarded to establish the first 2-3 producers in Australia. In terms of longer-term policy recommendations, the production incentive described in 'Priorities over the medium term (2030 onwards)' should be available to all potential SAF producers in Australia while the CFD scheme should be incorporate a minimum of three producers.

How could the introduction of a production incentive scheme affect competition in fuel production and supply markets, and also amongst fuel users?

Our proposed approach to providing different levels of support, as outlined in 'Priorities for the next 12-18 months' and 'Priorities over the medium term (2030 onwards)', based on how soon producers enter the market and by technology is designed to foster competitive market development over time. It is viewed that there is sufficient local and international depth of prospective participants to drive a competitive market establishment. In particular, the recommended production incentive for SAF will foster a competitive SAF production environment in Australia as there is no cap on potential producers. Further, the CFD scheme will improve the cost competitiveness of all non-HEFA production methods over time, providing increasingly price competitive SAF that HEFA will need to compete against, and which will be necessary additions to HEFA output to meet longer term SAF demand in Australia and create a viable export market for Australian producers.

What are the expected timeframes for when an industry would be sustainable without support from Government?

The potential timeframes in which Australia's SAF industry would depend on a range of factors including the expected technological improvement in SAF production technologies – particularly production methods other than HEFA – as well as the price trajectory of ACCUs under the safeguard mechanism which impact the price competitiveness of jet fuel. We have recommended that policy measures implemented in the medium term (2030 onwards) have a lifespan of 15-20 years to ensure fuel producers are supported for the duration of the time in which they are paying back debt. We proposed weighting support to earlier projects to de-risk those projects and send strong signals to investors that the policy frameworks support the creation of an industry, alongside a mandate to ensure a base of demand is always present.

How should production support be funded, and how could this best be aligned with the beneficiaries of the production support?

Production support should be Government funded, as is the case with similar production incentives for clean economy fuels, such as the hydrogen production tax incentive announced in the 2024-25 Federal Budget. It is important to differentiate the approach for the establishment of a new emerging industry and the approach for one that is in commercial scale operation. Any funding mechanism should be subject to a rigorous design process that defines clear objectives, including those that support a long-term viable sector in Australia. The development of an internationally competitive SAF production industry in Australia is expected to yield an immense long term economic benefit for Australia in terms of value added, jobs, export growth, enhanced fuel security, and regional development. As a result, the government's investment in SAF today is likely to generate long term returns.

Design of production incentives

Would production support need to offer a different rate of incentive for SAF and renewable diesel?

While our analysis focuses on SAF, we are of the view that SAF and RD need different levels of support. RD offers more lucrative margins at present, as it is expected to be cheaper to produce than SAF. In California where the LCFS is output-agnostic, these high margins have led to RD supply far exceeding SAF supply (refer to Box 1 in 'Australia's unique opportunity to develop a low carbon liquid fuel industry' for further detail).
Would a potential production support program need to prescribe certain proportions of production volumes towards SAF or renewable diesel?

While our analysis focuses on SAF, we are of the view that policy intervention needs to set different sub-requirements for SAF and RD production. This aligns with our view on the shortcomings of the Californian LCFS, whereby output-agnostic policy has led to RD supply far exceeding SAF supply (refer to Box 1 in 'Australia's unique opportunity to develop a low carbon liquid fuel industry' for further detail).

Would production support need to provide different levels of support for emerging and established production pathways? What are some of the design considerations Government should consider?

We are of the view that emerging and established SAF production pathways should receive different levels of support. In designing policy recommendations for 2030 onwards (refer to 'Priorities over the medium term (2030 onwards)'), we have recommended that SAF should receive a production incentive while all non-HEFA SAF production methods should be further supported through CFD schemes. It is expected that CFD schemes would provide these more nascent technologies with a higher degree of support until the commercial gap between technologies is reduced. We highlight the key importance being to establish initial commercial scale activities to drive industry participants to invest in future capacity.

What policy approaches are technology agnostic, applying efficiently to new technologies as they emerge?

Our policy recommendations are designed around the differences between SAF production technologies and are not technology agnostic, because the technologies produce outcomes at different price-points. This approach ensures that no technology is adversely impacted by a supply-side policy and has the potential to be competitive, with the caveat that scheme operators have the discretion to award CFD schemes to projects with the most merit and greatest strategic alignment.

Emissions and sustainability criteria

Do you support an emissions reduction threshold being included as part of eligibility criteria for fuels to receive support under a production incentive program? What threshold would you seek be included in eligibility criteria (for example 50 per cent emissions reduction relative to conventional fuels, or another emissions reduction ratio)?

We support an emissions reduction threshold where a minimum carbon emissions reduction (%) per tonne of SAF used is required to be eligible for a production incentive program. The design of all policies (see in 'Priorities for the next 12-18 months' and 'Priorities over the medium term (2030 onwards)') suggests a minimum carbon emissions reduction threshold of 50%, relative to the use of fossil jet fuel.

The emissions estimation methodology should align with CORSIA methods as much as possible. As it is in Australia's best interest to become a SAF exporter, any production incentive should strategically set up the industry to be fit for international trade. Aligning these methods will reduce distortion from global markets and make Australian SAF more competitive.

Do you think any threshold should increase over time?

The recommended demand mandate (see 'Priorities over the medium term (2030 onwards)') does not include a prescribed view to increasing the minimum emissions reduction threshold. However, the recommendation to pursue sub-mandates for certain technologies would implicitly raise the emissions reductions achieved for SAF overall, particularly if these sub-mandates apply to lower emissions SAF such as e-fuels.

Do you think incentives should be included to encourage emissions reduction in addition to a minimum eligibility threshold?

The recommended demand mandate, as outlined in 'Priorities over the medium term (2030 onwards)', recommends that the mandate is imposed on an emissions reduction basis. This incentivises emissions reduction above and beyond the minimum threshold, particularly where there are further market opportunities available through the trade of certificates.

If you don't support a threshold, what emissions requirements do you think are better?

Not applicable.

Do you have views on the sustainability criteria under consideration as part of the criteria? What additional or alternative criteria would you want to see form part of the criteria?

We support the used of the Guarantee of Origin Scheme to certify the emissions and sustainability profile of LCLFs, as outlined in the consultation paper. Further, we support the adoption of ICAO's CORSIA scheme including its emissions and sustainability criteria. The adopted criteria should be consistent with CORSIA, and where there are valid divergent positions (such as unique Australian attributes), Australia should use its influence to help shape CORSIA standards to be inclusive of such elements.

Do you have any other views on emissions and sustainability criteria?

As outlined in 'Priorities over the medium term (2030 onwards)', we recommend that only feedstocks with the highest sustainability standards should be allowed to produce SAF in Australia. This should prioritise the use waste products from feedstocks and avoid feedstocks that contribute to deforestation. The standards must also prioritise traceability throughout the supply chain and avoid exclusions as much as possible to promote sustainability through carbon.

What are the community benefits associated with LCLF production in Australia?

We have outlined key economic benefits in 'Australia's unique opportunity to develop a low carbon liquid fuel industry'. These benefits include growth in value-added, jobs, exports, enhanced fuel security, and regional development. In addition, there are significant environmental benefits associated with LCLF production in Australia, including decarbonisation from associated fuel consumption and potential to facilitate accelerated decarbonisation in the Australian agricultural sector. A thriving SAF and RD sector is expected to drive significant benefit to Australia's agricultural sector participants.

Demand-side mechanisms

What demand-signals would best drive confidence and certainty for a domestic LCLF production industry?

Our proposed approach to implementing demand-side policy is outlined in 'Priorities over the medium term (2030 onwards)'. An enforceable SAF demand mandate is the best overall approach to de-risking SAF production, however a LCFS with a sub-requirement for SAF production has the potential to have a similar impact. A target is not considered to be sufficient in terms of driving demand for SAF or providing demand certainty for SAF producers.

How might demand measures interact with the Safeguard Mechanism for covered facilities?

It is expected that a demand mandate would support fuel producers and consumers in achieving obligations under the Safeguard Mechanism with less reliance on the purchase of Safeguard Mechanism Credits to achieve emissions reductions. Where Safeguard obligations are not met (i.e., decarbonisation targets are not achieved), Safeguard Mechanism credits can be purchased. Interaction with the Safeguard Mechanism means the effective current (or baseline) price of jet fuel is a higher expense due to its emissions intensity and any price increases from the demand mandate should be considered relative to this baseline.

Should demand-side interventions be designed to only apply to some areas of the market and not others? Which sectors or sub-sectors should demand-side interventions apply? How would the introduction of a mandate or other demand measures affect competition in your industry?

Our proposed mandate approach (see 'Priorities over the medium term (2030 onwards)') covers design elements for a SAF mandate specifically. Demand-side interventions should apply to SAF and RD, however a suitable emissions reduction requirement should be designed regarding different production and market demand considerations, by fuel type.

Should design of a mandate, low carbon fuel standard, target or other demand option create requirements for a certain proportion of fuel use be drawn from Australian produced LCLF?

We have not recommended any sub-requirements for Australian-produced SAF use in 'Priorities over the medium term (2030 onwards)'. This is due to the potential risk that Australian-produced SAF does not meet the obligated volume (or emissions reduction threshold) to meet this potential sub-requirement. Further, a sub-requirement of this nature may require an obligation on both the selling and buying party to ensure certain volumes of Australian-produced SAF are reserved for and purchased by Australian fuel users, adding to the regulatory complexity of this requirement.

How would the introduction of demand side measures impact the feasibility of domestic production of LCLFs, and what impact would this have on the appropriate design of any production support?

The introduction of mandated SAF demand requirements (either a demand mandate or a LCFS) would have a positive impact in the feasibility of Australian SAF production as it de-risks investment by providing demand certainty. It should be noted that demand is only one of several risks to potential SAF production and supply-side policy is highly recommended to accompany a demand mandate to negate potential pricing risks. When recommending adequate supply and demand-side policy mechanisms in 'Priorities over the medium term (2030 onwards)', all policy recommendations are designed according to the assumption that they are simultaneously integrated. In isolation, the policy recommendations could have shortfalls such as high pricing volatility impact consumers with a demand mandate alone, or insufficient market demand with supply incentives alone.