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Consultation Response: Cleaner Fuels Program – Policy Design and Engagement

Introduction to LanzaJet

LanzaJet welcomes the opportunity to provide feedback on the design of the Australian Government's Cleaner Fuels Program.

We commend the Australian Government for making low carbon liquid fuels (LCLF) a strategic priority. As the consultation paper notes, LCLF are a critical factor in Australia's net zero transition, and expanding the use of these fossil fuel alternatives will enable the decarbonisation of aviation, heavy freight, maritime, mining and some industrial processes, whilst also improving Australia's energy security.

LanzaJet is an industry-leading sustainable aviation fuel (SAF) producer. We use our proprietary alcohol-to-jet (ATJ) process to convert any source of low-carbon, sustainable ethanol into drop-in SAF and renewable diesel (RD). Following a decade of technology development and demonstration, LanzaJet was launched with a clear mission—to scale the SAF market and enable the decarbonisation of the aviation sector. To that end, we have built and produced the first jet molecules from our first-of-a-kind (FOAK), 38 million litres per year commercial scale ethanol-to-SAF facility in Soperton, Georgia, U.S. LanzaJet's equity investors include LanzaTech, Suncor, Mitsui, British Airways, Shell, Southwest, Groupe ADP, Microsoft, MUFG, and Airbus.

Australia is an important market for LanzaJet. In partnership with Jet Zero Australia, and with support from the Qantas Group, Airbus, ARENA, and the Queensland Government, we are supporting the development of Project Ulysses: a 100 million litres per year ethanol-to-SAF production facility in North Queensland.¹ We are also partnering with Wagner Sustainable Fuels and LanzaTech to develop a facility utilizing our CirculAir platform: a joint technology solution with LanzaTech that converts any source of waste carbon and renewable power into SAF. The Wagner SAF refinery will convert municipal solid waste from Southeast Queensland into SAF and has received investments from the Queensland Government, ARENA and Boeing.²

LanzaJet is pleased to respond to the Cleaner Fuels Program consultation paper and offers the following responses. Should you wish to discuss these responses in more detail, please contact Flyn van Ewijk, Regional Director – Asia Pacific [REDACTED]

¹ See <https://www.lanzajet.com/sustainable-aviation-fuel-readies-to-take-flight-in-australia/>

² See <https://ir.lanzatech.com/news-releases/news-release-details/lanzatech-and-lanzajet-announce-new-project-wagner-sustainable>

1. Eligible Fuels

Question 1.1 – Which LCLF should be eligible under the program and why?

LanzaJet strongly supports SAF being the primary fuel eligible under the Cleaner Fuels Program. Aviation represents one of Australia’s most challenging sectors to decarbonise because it cannot electrify at scale, lacks viable non-liquid energy alternatives for medium- and long-haul operations, and faces growing international decarbonisation obligations under CORSIA.

As articulated in LanzaJet’s prior consultation submission, SAF is the only liquid fuel for which no large-scale alternative decarbonisation pathway exists. Shipping, road transport and many industrial applications all have credible electrification or hydrogen-based alternatives over time. Aviation does not. Policy support should therefore prioritise the sector that is structurally dependent on liquid fuels.

By contrast, RD and other LCLFs are substitutable in many end-use sectors that have long-term electrification or hydrogen pathways. Prioritising SAF ensures that government support aligns with hard-to-abate sectors, maximises genuine additional emissions abatement, and avoids directing limited public funding, private capital and feedstocks toward sectors that already have multiple decarbonisation options.

The design of the Cleaner Fuels Program should also ensure that perverse outcomes or incentives aren’t created with respect to intermediate fuels such as ethanol relative to SAF or RD. Incentives for intermediates risks diverting limited feedstocks away from SAF production, creating perverse outcomes where ethanol producers have a greater incentive to sell ethanol for petrol blending, rather than for conversion into SAF, delaying investment into SAF production capacity.

For example, as highlighted by the Renewable Fuels Association in the United States³, the structure of the 45Z SAF Clean Fuel Production Credit⁴ in the United States created an unintended disincentive for the production of ATJ SAF due in large part from volume loss when converting ethanol to SAF⁵. As a result, the same ethanol generates more 45Z value if left as ethanol than if it were processed through an ATJ unit and sold as SAF. Furthermore, the conversion of ethanol to SAF adds to the carbon intensity of the finished product relative to the ethanol feedstock, further disadvantaging SAF with respect to 45Z value.

The Cleaner Fuels Program should therefore ensure there is a level playing field with respect to intermediates and finished fuels to ensure perverse incentives like the example above do not occur.

Question 1.2 – Prioritisation of LCLF types

a. Should LCLF suitable for particular sectors or uses be prioritised? For example, should sustainable aviation fuel be prioritised over renewable diesel?

Refer to response to 1.1 above. SAF should be prioritised over RD because aviation has no alternative decarbonisation route and will remain reliant on liquid fuels through 2050 and beyond. SAF delivers strategic national value by enabling compliance with international aviation frameworks, protecting airline competitiveness and safeguarding international connectivity. In some cases, SAF production requires more complex processing and higher capital intensity, justifying stronger support relative to HEFA-based renewable diesel.

³ <https://ethanolrfa.org/file/2953/RFA%20Comments%20re%20Notice%202025-10%2045Z%20Clean%20Fuel%20Production%20Credit.pdf>

⁴ Originally under the Inflation Reduction Act, and now under the One Big Beautiful Bill Act

⁵ Volume loss when converting ethanol to SAF is due to ethanol dehydration to ethylene. There is no carbon/energy loss, only water is removed.

b. Should LCLF for certain sectors or uses be de-prioritised due to other viable decarbonisation pathways?

LCLFs used in sectors with credible electrification or green hydrogen pathways, such as light vehicles, should be de-prioritised for production incentives. Scarce public funding should be directed toward sectors that must rely on liquid fuels for decarbonisation rather than sectors with multiple viable technological alternatives, such as aviation.

c. What market impacts are anticipated by influencing prioritisation of particular fuel types?

Prioritising SAF would strengthen long-term investment certainty for SAF projects and feedstock developers, prevent crowding-out by HEFA and RD projects that are structurally cheaper and more mature, enable SAF producers to secure financing by reducing policy risk, encourage feedstock development aligned with aviation fuel demand, and accelerate Australia’s emergence as a regional SAF production and export hub.

2. Type of Production Support

Question 2.1 – Should the production credit be a fixed amount per litre of production, or a variable amount that depends on the market price of LCLF?

A variable production credit structure akin to a contract for difference (CfD) may be a more effective mechanism to enable project financing. This structure stabilises revenue and reduces credit risk for lenders by providing stable and predictable revenue, aligns government support with real market conditions, and minimises both over-compensation and under-support. In contrast, a fixed credit does not adequately account for fluctuations in SAF pricing relative to fossil jet fuel or international policy support, making it a less flexible and responsive option.

a. Are there any potential benefits, risks or constraints considering the two different production credit options?

A fixed credit offers administrative simplicity and budget predictability. However, they do not adjust to market conditions, meaning they may be insufficient for more nascent technology, during periods of low SAF–jet fuel prices, potentially rendering projects un-bankable. Conversely, during periods of high SAF premiums, fixed credits may result in over-compensation. Fixed credits also offer lower revenue certainty to lenders, as project cashflows remain exposed to SAF market volatility and global policy-driven price swings.

A variable credit linked to market prices (such as a CfD) is more likely to provide stronger investment certainty. By stabilising revenues relative to fossil jet fuel or an agreed strike price, a variable credit:

- improves project bankability and access to long-tenor debt;
- reduces financing costs and overall levelised cost of SAF;
- protects producers against downside price risk; and
- protects government against excessive upside payments when market prices rise.

This structure also aligns public support more closely with actual market need, ensuring that credits are only paid to the extent required to reduce the SAF–fossil fuel price gap. Furthermore, a CfD can more equitably support nascent technologies like ATJ by providing higher price support, as needed, to offset higher production costs compared to mature technologies such as HEFA, which benefit from lower production costs.

A learning from the development of the Revenue Certainty Mechanism (RCM) in the UK and the now, early days exploration of mechanisms for schemes in Europe, is the flaw in developing the scheme after the

mandate. The policies should ideally be developed together, in order to support supply into the mandate and can be better targeted towards SAF goals. The delay in not developing the scheme alongside the mandate is that a number of SAF projects have not progressed forward, and are waiting for the scheme – despite there being no significant movement on the structure of the scheme.

It is also important that the schemes should not penalise companies who are able to progress without an RCM and the way these schemes are funded, do not penalise fuel suppliers or airlines who are proactive in supporting SAF development. For example, in the UK, Project Speedbird – our 100 million litre per year SAF project with British Airways, does not expect to need the RCM to progress towards a final investment decision. However, the RCM is being paid by fuel suppliers, which is then charged to airlines, so even though British Airways are directly investing in Project Speedbird, they will have to pay RCM for our competitors. No organisation has endless pots of funding, and we are concerned that by forcing proactive fuel suppliers or airlines to pay for the RCM, reduces competition in the SAF production industry.

b. What outcomes do you think can be delivered with the available funding?

While the A\$1.1B allocation is a welcome and important signal, Australia will require multiple commercial projects to establish a resilient domestic industry. A\$1.1B over 10 years is likely sufficient to support one or two commercial-scale SAF projects (i.e. 100 million litres per year production capacity). Whereas if Australia is to have a nationally competitive SAF industry, three to five initial projects should be the aspiration. LanzaJet recommends a funding allocation in the order of A\$5B over 10 years to support these initial projects and bring Australia in line with regional trading partners.

c. What type of mechanism provides the greatest investment certainty or level of bankability to projects?

A variable credit, such as a CfD is more likely to provide the level of certainty required to secure long-tenor project finance. A CfD operates by stabilising revenues for project developers, effectively bridging the gap between fluctuating market prices and a predetermined strike price. This mechanism ensures that if market prices fall below the strike price, the government or designated entity compensates the project, and if prices rise above, the project returns the surplus.

The predictability afforded by CfDs not only makes projects more bankable but also reduces the credit risk for lenders. Financial institutions are more inclined to offer favourable loan terms when assured of stable cash flows, thereby facilitating the mobilisation of capital for large-scale infrastructure or renewable energy projects, including SAF projects.

d. How can this support be structured to prevent substantial upside to producers?

In the context of a CfD, excessive upside is inherently mitigated by the very structure of the CfD, which limits price volatility and caps gains beyond a predefined range. Nevertheless, additional measures such as price collars, transparent cost and yield reporting, and clawback mechanisms at high margin levels can further strengthen the control over potential excessive profits.

e. How do you consider pricing for LCLF will be set over the short-medium term and longer term? Will pricing be matched to a premium on equivalent fossil fuel or price of imported LCLF or be on a carbon abatement basis?

In the near term and in the absence of demand side policy in Australia, LanzaJet anticipates that the pricing of SAF will be significantly influenced by import price parity. This will be largely driven by strong demand originating from regulated SAF markets, particularly in Europe and the United Kingdom. The influence of these markets stems from SAF blending obligations – ReFuel EU and the UK’s SAF mandate. Additionally, global supply constraints will also exert upward pressure on SAF prices, arising from the fact that the industry is in its very early stages of scaling production capacity.

Looking further ahead, LanzaJet expects SAF prices will gradually align with the carbon-abatement value. This convergence is expected as demand-side policies evolve, transitioning from a focus on volumetric mandates to policies that emphasise the reduction of carbon emissions. For example, the governments of South Korea and Japan have both indicated that their policies will move in this direction. Furthermore, as book and claim frameworks become widely adopted, the separation of environmental attributes from physical molecules will also support the shift to valuing SAF on a carbon abatement basis.

Question 2.2 – To deliver the policy intent of the Program while maximising the value for taxpayers, do you agree that projects with the lowest cost should be prioritised under the Program, with the cost being measured either as per unit of LCLF produced or as per unit of carbon emissions abated?

No. Cost-only prioritisation will strongly favour the HEFA pathway as it well-established and financially viable due to larger scale, technology maturity and lower production costs. This approach significantly undermines investment in emerging technology pathways that, although currently more expensive, offer greater scalability and potential for long-term industry growth. By focusing solely on cost, we risk neglecting pathways such as ATJ that could provide more scalable options in the future.

However, it is important to exercise some caution with regards to power-to-liquids, not due to technical readiness (PtL uses existing technology pathways including gas fermentation + ATJ, Fischer Tropsch and methanol synthesis), but because of the fundamental economic challenges they present, particularly the high production costs driven by electricity and green hydrogen.

Question 2.3 – Should the production credit be linked to the quantum of LCLF produced, or the carbon emissions saving potential of the fuel?

LanzaJet favors support being tied to carbon-intensity reductions to reward higher abatement and align with international carbon accounting frameworks. This approach ensures that incentives are directly linked to measurable environmental outcomes, incentivising the LCLF market to produce fuels with the lowest possible carbon intensity. By focusing on carbon-intensity reductions, support mechanisms can differentiate between LCLF based on their environmental attributes, promoting fairness and efficiency in funding allocation.

Question 2.4 – What are your views on the cost to deploy LCLF domestically compared to internationally? Is there a local premium for domestic production?

LanzaJet believes there should be a local premium for domestic production due to the national strategic benefits from a LCLF industry. Domestic production of LCLF plays a vital role in bolstering Australia's energy and national security by reducing dependence on foreign supply chains, which are vulnerable to global disruptions. Additionally, a strong domestic production sector opens new market opportunities for Australian agriculture, drives job creation, particularly in regional and rural areas, stimulating economic development and fostering resilient communities. **Question 2.5 – Should the total value of production credits be capped for each project? If yes, what should the capped amount be and why?**

To support investment certainty, LanzaJet does not advocate for hard caps on the value of production credits. However, it may be reasonable to cap support at the nameplate capacity of a plant, as any production beyond this threshold represents additional upside for the producer that may not require subsidy. Additionally, support could be structured to also exclude future facility expansions.

Question 2.6 – Should production be focused on domestic supply only or should export also be permitted? What impact could restriction have for projects or the market?

LanzaJet does not support restricting the Cleaner Fuels Program solely to domestic supply, as export opportunities can significantly strengthen the business case for projects advancing towards FID. In the context of future policy development, the Cleaner Fuels Program should be designed with a comprehensive approach that considers demand-side policy, which will play a crucial role in driving production towards the domestic market, ensuring both fuel security and progress in decarbonisation efforts.

Question 2.7 – Is there a role for combined production support with capital grants for first-of-a-kind facilities?

Yes. Capital grants play a pivotal role in the development of first-of-a-kind facilities, significantly enhancing project bankability. These grants provide crucial financial support that helps mitigate the inherent risks associated with pioneering projects, making them more attractive to private investors and lenders.

In this context, ARENA's \$250 million fund dedicated to LCLF will be important. This commitment will serve to support the rollout of the first commercial facilities to establish Australia's LCLF industry – projects that might otherwise struggle to secure necessary investments to reach FID.

Grants can be transformative for FOAK projects. For example, LanzaJet's Freedom Pines project received a US\$50 million grant from Breakthrough Energy, which was crucial factor that enabled the project to proceed into construction. This grant also helped reduce the cost of production, demonstrating how targeted financial support can lower production costs.

In the United Kingdom, the Advanced Fuels Fund (AFF) is a competitive grant program supports the commercialisation of projects from feasibility stage upwards, with a focus on supporting Front End Engineering & Design (FEED) phase – a phase in which is often hardest to attract finance. LanzaJet were successful in the latest round of AFF and were awarded £10m towards the FEED of Project Speedbird, a 100 million litre SAF project jointly developed with British Airways, which has been critical in allowing the project to progress. However, the overall budget for the AFF is too low (circa £60m) and when spread across projects, has less impact than it could have – if it focused on a handful of the most promising projects.

In Europe, the Innovation Fund has proven successful in awarding larger amounts of capital to projects across a variety of sectors. Announced in November, the European Commission announced a total of €2.9 billion in grants has been awarded to 61 cutting-edge net zero technology projects, four of which are SAF projects. While good at releasing larger amounts of capital, potentially between €100 – 150m for large scale projects, the scheme is overly burdensome to apply for, requiring grant specialists among other hired resources, which makes it difficult to apply for. In addition, as the scheme is not only focused on low carbon fuels, it varies year on year as to its impact on SAF.

Lastly, grants are being used very effectively in Japan where the Japanese Government has allocated ¥340 billion (A\$3.3 billion) over a five-year period (2024-2029) to bolster the production of SAF and enhance supply chain infrastructure. This funding aims to help Japan achieve its SAF blending goal of 10% by 2030. Through this initiative, grants have been awarded to several Japanese refiners developing SAF projects. So far, six projects have received support—three HEFA projects and three ATJ projects. HEFA projects receive contributions covering 30% of their capital costs, while ATJ projects receive contributions amounting to 50% of capital costs. It was announced in 2024, that Cosmo Oil were selected for this scheme to support a project developed with Mitsui & Co. that will utilise LanzaJet technology. This funding marks a significant milestone for large-scale domestic SAF production in Japan and increasing SAF supply for the aviation industry.

Question 2.8 – What other types of funding or concessional finance could support LCLF projects (e.g. funding from CEFC and NRF)?

Long-term concessional finance, loan guarantees, and subordinated debt are critical enablers for economic development and investment. Concessional finance, in particular (such as lower interest rates, longer tenor,

and grace periods before repayments begin) can reduce the cost of production for SAF producers by lowering their capital expenses and debt servicing obligations.

The Australian Government's Special Investment Vehicles (Clean Energy Finance Corporation, National Reconstruction Fund, Export Finance Australia and the Northern Australia Infrastructure Fund) should play an important role in this context. Their participation in a project will also enhance the attractiveness of investments, "crowding in" private capital, by making them more appealing to private investors who might otherwise be hesitant due to potential financial uncertainties and perceived risks.

Question 2.9 – Is any other support required across the supply chain to enable domestic production of LCLF?

Government support will play a crucial role in ensuring the establishment and sustainable growth of a LCLF industry in Australia. Such support is particularly essential in the areas of feedstock development, including ethanol production, where funding and research initiatives can drive innovation and enhance resource availability. Additionally, investment in logistics infrastructure may also be needed to improve the efficiency of blending, transportation and distribution for LCLF in Australia.

Ethanol is a key feedstock for SAF production and Australia has significant potential to expand ethanol production. As described in the answer to question 1.1 above, consideration should be given to how the Cleaner Fuels Program – or via another government support mechanisms – can be designed in a way to support expanded ethanol production for the specific purpose of SAF production.

Question 2.10 – What lessons can Australia learn from other jurisdictions that have already implemented LCLF production support measures?

a) Demand Side Policy

Alongside support and incentive mechanisms, demand side policy (e.g. a SAF blending mandate or low carbon Fuel standard), with tradeable SAF certificates, is a critical tool in supporting the development of a SAF industry. Without regulated demand, SAF projects will struggle to secure long-term offtake arrangements needed for reaching a successful final investment decision.

For non-HEFA technologies, creating a specific market for advanced biofuels, recycled carbon fuels and low ILUC risk first generation SAF, supported through tradeable certificates, builds the business case for non-HEFA technologies by guaranteeing a market for this fuel. LCLFs will struggle to compete with HEFA in the early stages of market development, so establishing a HEFA cap, similar to what has been done in the UK SAF mandate, has resulted in a large number of advanced biofuel projects under development in the UK.

While not the scope of this consultation, it is important to note that supply side support alone will not be enough.

b) Airline incentives

In addition to production incentives, such as grant funding, user incentives can play an important role in securing the long-term offtakes needed to make SAF projects bankable. One example of this is the ability for airlines to offset their Emissions Trading Scheme (ETS) financial obligations when SAF is used and in Europe, the additional ability to mitigate the cost of SAF through EU ETS SAF allowances. The welcome scheme in Europe, that we would like to see replicated elsewhere globally as countries develop effective carbon pricing, has set as 20 million EU ETS allowances worth around €1.5 billion (at an allowance price of €75).

The support system covers all or part of the price difference between fossil jet and SAF, for use by commercial aircraft operations on their flights covered by effective carbon pricing. For SAF delivered to small airports or islands, 100% price gap can be covered, for all other airports 95% of the cost can be covered for E-Fuels and 70% for advanced biofuels. The scheme is currently first come first serve,

however, if some structure was included so you could secure volumes for the next 10 years (alongside an offtake arrangement), it would provide greater certainty on SAF value for early moving offtakers.

While not directly applicable in the Australian context, it does highlight an important consideration for policy makers in relation to the Safeguard Mechanism and future changes or reforms that may be considered.

c) **Book and Claim Structures**

By allowing companies to purchase renewable natural gas, utilities and ultimately SAF, through the purchase of book and claim credits from Australian facilities, allows such infrastructure to be built where it is most cost effective to do so, and allows for fuel production facilities to financially support those clean energy projects across the country. Various clean fuel regimes recognize such structure and we would recommend that the government of Australia to do the same with regard to the Guarantee of Origin Scheme.

Furthermore, a book and claim system (that separates physical molecules from environmental attributes) should also play a crucial role in supporting the development and scaling of the SAF industry in Australia. It allows airlines and other stakeholders to purchase SAF credits, even if the actual fuel is used elsewhere, thereby decoupling the physical fuel use from its environmental benefits. This system incentivises greater production and investment in SAF by creating a broader market demand without the logistical constraints of fuel distribution. As a result, it accelerates the industry's growth, promotes sustainability, and helps reduce aviation's carbon footprint more effectively.

d) **Scope 3 Recognition**

Some countries, such as Singapore, are considering how to increase engagement by companies who generate scope 3 emissions (through corporate travel or cargo) in the purchase of scope 3 SAF certificates. Such structures reduce the cost that airlines need to pay for SAF by providing for corporate fliers to purchase environmental attributes.

3. Fuel Production

Question 3.1 – Pathway prioritisation

a. Should priority be given to projects that use more-established production pathways (e.g. HEFA and HVO) than nascent production pathways that may present a higher level of technology risk?

No, please refer to the response to question 2.2. HEFA is a mature technology with established scalability, thus necessitating less support compared to emerging alternatives. Its production processes are well-optimised, and the supply chains are robust, allowing for consistent output with minimal intervention.

In contrast, nascent pathways such as ATJ are critical for achieving long-term scalability and ensuring a more diverse and extensive access to feedstocks. These emerging technologies are in the commercialisation and scale up phase, requiring additional support to optimise processes, reduce costs, and expand infrastructure. By investing in ATJ and similar pathways, we can enhance the resilience of sustainable aviation fuel production and promote a broader, more flexible feedstock base, which is vital for future growth and energy security.

b. How can nascent production pathways compete with more-established production pathways (e.g. HEFA and HVO)?

These technologies necessitate proportionally greater support for several critical reasons:

- **Higher Capital Cost:** The initial investment required to develop and deploy these technologies is higher compared to more established alternatives.

- Lower Technology Maturity: Many of these technologies are still in the developmental or early commercialisation stages. This lower level of maturity implies a greater degree of technical risk, higher research and development expenses, and the need for continuous innovation to reach optimal performance and efficiency.
- Limited Early-Market Economies of Scale: Emerging technologies often struggle to achieve cost efficiencies due to limited production volumes. Without the benefits of large-scale manufacturing and broad market adoption, unit costs remain high, making it challenging to compete with established technologies.

Considering the feedstock constraints associated with HEFA, it becomes imperative to invest in pathways such as ATJ. Such investments are crucial to diversifying feedstock sources, enhancing production scalability, and ensuring long-term sustainability in the advanced fuels sector.

c. What minimum stage of project development (and evidence) should be expected by projects under the program?

Projects should be at Front-End Engineering Design (FEED) stage. This requirement ensures that the project has undergone sufficient preliminary engineering and design work, providing a clear understanding of technical specifications, cost estimates, risk assessments, and feasibility studies. Reaching the FEED stage indicates that the project has advanced beyond initial concept development, with detailed plans that support informed decision-making, financial investment considerations, and readiness for subsequent project phases, such as detailed engineering, procurement, and construction.

Question 3.2 – Should there be a minimum facility size to be eligible?

LanzaJet believes support should be prioritized for projects that are considered commercial scale, which may vary depending on the technology and feedstock. In this context a hard threshold may be challenging to size.

Question 3.3 – Should LCLF be required to meet a carbon intensity threshold (% carbon intensity reduction compared to fossil equivalent) to be eligible for the program? If yes, what would be a reasonable threshold, and how should that threshold be calculated and verified? If not, why not?

LanzaJet does not believe a minimum carbon intensity threshold for LCLF is needed for the reasons provided in 3.3a) below. However, if a threshold is adopted, it should consider the following criteria to ensure it is effective and equitable:

- Avoid Excluding Fuels that Reduce Emissions: It is crucial that the thresholds are designed in a manner that does not inadvertently disqualify fuels that contribute to the reduction of greenhouse gas emissions. This approach supports the broader goal of environmental sustainability by encouraging the use of cleaner, more efficient energy sources.
- Reflect Realistic Industry Conditions: The thresholds should be grounded in the practical realities of the industry to ensure they are both achievable and meaningful. For instance, the United Kingdom has implemented a 40% threshold, serving as a practical benchmark that aligns with current industry capabilities and technological advancements. This example illustrates the importance of setting thresholds that are ambitious yet attainable.

a. If the production incentive is based on carbon emissions reduced, rather than volume of LCLF produced (see Question 2.3), is a minimum carbon intensity threshold still needed as part of the eligibility criteria?

Linking support mechanisms directly to CI inherently incentivises the adoption of fuels with greater abatement potential. This approach effectively guides the market towards fuels that achieve substantial carbon emission reductions compared to fossil fuels. Consequently, a CI threshold becomes redundant, as the support structure itself naturally drives the desired market behaviour. By making support relative to CI reductions, the framework encourages continuous improvements in emission reductions without the need for additional thresholds or credit multipliers.

b. Should Indirect Land Use Change be included in the method for determining carbon intensity, for the purpose of the Program?

Indirect Land Use Change (ILUC) is a significant issue with critical implications for maintaining social licence and ensuring the sustainability of LCLF production. Recognising its importance, it is essential to address ILUC appropriately within regulatory and sustainability frameworks.

LanzaJet recognises that ILUC modelling is fraught with considerable uncertainty and variability, which poses challenges for its integration into CI calculations. ILUC models vary significantly depending on the assumptions, data inputs, and methodologies employed. For example, variations in economic equilibrium models or differing assumptions about land productivity and agricultural yield improvements can produce divergent ILUC emission estimates for the same feedstock.

Given these challenges, a more pragmatic and effective approach would be to treat ILUC qualitatively as a risk factor rather than attempting to quantify it precisely within CI scores. This aligns with the International Energy Agency’s (IEA) recommendation to address ILUC through a qualitative, risk-based framework.⁶ Specifically, LanzaJet supports an approach where feedstocks are labelled based on their ILUC risk. This method provides clear and actionable information to stakeholders without over-relying on uncertain quantitative models. In this context, labelling feedstocks based on their ILUC risk could form part of a broader set of sustainability criteria for LCLF under the Cleaner Fuels Program and future demand side policy (refer to 3.4 below).

Importantly, this qualitative labelling still sends the right signals and incentives to the market. By clearly identifying and promoting low ILUC-risk feedstocks, it encourages investment and development in more sustainable feedstock sources.

c. Should any feedstocks be prioritised or otherwise considered out of scope?

LanzaJet does not support the exclusion or banning of specific feedstocks. Rather, robust sustainability criteria should be designed to ensure that all feedstocks are sourced and utilised responsibly. These frameworks should incorporate comprehensive safeguards that address environmental, social, and economic considerations, thereby promoting sustainable practices without unnecessarily restricting feedstock options. LanzaJet believes that such an approach fosters innovation and flexibility while maintaining a strong sustainability safeguards.

Expanding on this, LanzaJet recognises that the integration of sustainability criteria, along a risk-based approach to ILUC impacts, and support linked with CI, creates a multi-faceted safeguard system that not only addresses direct environmental concerns but also influences market behaviour towards more sustainable practices.

Question 3.4 – Other than carbon intensity, should any other sustainability criteria be included?

The CORSIA sustainability criteria could form the foundation of Australia’s approach to determining eligibility for SAF under the Cleaner Fuels Program or other future policy settings. These criteria provide a

⁶ <https://www.iea.org/reports/towards-common-criteria-for-sustainable-fuels>

robust, internationally recognised framework designed to ensure that CORSIA-eligible fuels contribute effectively to reducing lifecycle greenhouse gas emissions, while also addressing key environmental and social safeguards.

While CORSIA offers a strong starting point, it may be prudent to adjust and tailor the criteria to better suit the unique Australian context. Australia's diverse ecosystems, indigenous cultural heritage, and distinctive agricultural practices necessitate a nuanced approach. For example, adjustments could reflect Australia's specific biodiversity considerations, water resource management and land-use practices to ensure that sustainability measures are both locally relevant and globally credible.

Question 3.5 – Which international and domestic sustainability schemes should be allowed to verify sustainability claims?

ISCC (International Sustainability and Carbon Certification) and RSB (Roundtable on Sustainable Biomaterials) should be recognised as they are already established and accepted LCA and sustainability certification schemes under CORSIA. Both ISCC and RSB have undergone evaluation processes to ensure they meet the sustainability criteria set by CORSIA. Their recognition under CORSIA underscores their credibility, robust certification frameworks, and comprehensive approach to sustainability, covering environmental, social, and economic dimensions.

4. Other Policy Considerations

Question 4.1 – What are your views on the aforementioned factors affecting the merit of a proposal?

LanzaJet broadly supports the merit criteria outlined, viewing them as important guiding principles for the government when evaluating applications for support under the Cleaner Fuels Program. These criteria should comprehensively address key areas vital to Australia's national interest. Projects should broadly align with these criteria and proponents should be expected to demonstrate that their projects support these outcomes. However, individual criteria should not be considered strict "meet or beat" benchmarks, rather considered collectively when assessing how well a project may contribute to policy objectives.

Question 4.2 – Recipients under the Program will need to deliver benefits according to the Community Benefit Principles under the Future Made in Australia Act. How do you consider the Community Benefit Principles in relation to LCLF projects? Are there specific Community Benefit Principles that are more or less relevant?

LanzaJet supports the community benefits principals and believes LCLF projects are well placed to support these, especially through the creation of new, highly skilled jobs and the domestic manufacturing of LCLF, thereby enhancing Australia's industrial capabilities and energy security.

Question 4.3 – How will overseas policy developments interact with domestic policy settings to support projects reaching final investment decisions? For example, LCLF demand-side targets or mandates, and international frameworks such as the International Civil Aviation Organisation long-term global aspirational goal for international aviation (LTAG) of net-zero carbon emissions by 2050.

Australia must remain competitive with incentives to attract investment. The growing implementation of attractive incentives and blending mandates across the Asia-Pacific region is poised to significantly impact this landscape. For instance, countries like Japan and South Korea are introducing SAF blending requirements. Similarly, Singapore has introduced a passenger levy to purchase SAF and accelerate the transition to sustainable fuels within its aviation sector.

These evolving policies are set to drive a substantial surge in demand for Australia's feedstock and SAF, given the country's capacity for large-scale production. The proximity to these markets may support the commercial viability of SAF projects within Australia.

However, this rising external demand presents challenges for Australian airlines. In the absence of demand side policy in Australia and with the prospect of higher returns from exports, SAF producers might prioritise overseas markets, making it more difficult for local carriers to SAF at competitive prices. This export-driven dynamic could potentially strain the domestic supply chain, increasing costs for Australian airlines striving to meet their own sustainability targets. This underscores the critical importance of developing and implementing demand side policy in coordination with the Cleaner Fuels Program (refer to question 4.4 below).

However, there is also an opportunity for Australia to collaborate with regional partners to develop a mutually beneficial regional LCLF market. For instance, through the Jet Zero Council and the 2+2 dialogue between Australia and New Zealand efforts are being made to explore how Australia and New Zealand can work together to develop a regional LCLF industry. In this context, consideration could be given to how the Cleaner Fuels Program could be expanded to support projects in New Zealand (with appropriate additional funding). Likewise, alignment between across the Tasman on demand side policy design would also be welcomed.

Question 4.4 – In addition to production support, what other measures are considered critical to achieve final investment decisions for projects? What are their key features?

In addition to production incentives, it is crucial for projects to be supported by strong demand-side policies, either through a volumetric SAF blending obligation/mandate or a low carbon fuel standard (carbon intensity mandate) that create clear and consistent market signals. Demand-side policies such as these stimulate market growth by ensuring a guaranteed level of SAF demand, thereby reducing market uncertainties and risks for SAF producers and investors.

The best example of layered supply and demand-side policy for SAF is in the United Kingdom. The UK is introducing a suite of policies—including grants through the Advanced Fuels Fund and other programs,⁷ a revenue certainty mechanism akin to CfD,⁸ and robust demand-side mandates for low carbon road and aviation fuels⁹—all aimed squarely at building a cutting edge SAF industry. While still too recent to show results, LanzaJet believes the UK's holistic approach offers immense potential for industry building—and a strong example for Australia.

Question 4.5 – What are the intersecting policies you expect need to be considered to unlock a domestic LCLF production industry?

The successful implementation of the GO Scheme, fuel security policy, national feedstock strategy and sectoral net zero plans require a cohesive and integrated approach.

In particular, alignment with the National Feedstock Strategy is crucial. This strategy aims to coordinate the sustainable development of Australia's biomass feedstocks to support domestic low-carbon fuels, strengthen regional economies, protect food and fibre production, and improve national fuel and energy security – all of which is fundamental to a LCLF industry in Australia.

⁷ UK Department for Transport. [Advanced Fuels Fund competition winners](#). The UK AFF has already awarded 14 grants to 13 SAF projects.

⁸ UK Department for Transport, April 2024. [Sustainable aviation fuels revenue certainty mechanism: revenue certainty options](#).

⁹ UK Department for Transport, April 2024. [Supporting the transition to Jet Zero: Creating the UK SAF Mandate](#). See also [The Renewable Transport Fuel Obligation- an essential guide](#).

Additionally, the work of the National Fuel Council also plays a pivotal role. The Council's efforts in overseeing fuel quality standards, security measures, and the transition towards low-emission fuels provide a critical foundation for fuel security policy and the development of LCLF production capacity.

Lastly, the Department of Defence Future Energy Strategy should also be key consideration given its focus on transitioning aircraft, naval and land platforms to sustainable fuels like SAF and RD to cut emissions while strengthening sovereign fuel security and operational resilience.

Question 4.6 – Is there any other feedback you would like to provide that isn't covered by questions above?

It is understood that no decisions have been made by Government on either the LCA methodology or sustainability criteria required for qualification of LCLF under the Cleaner Fuels Program or future demand side policy settings. A decision will therefore need to be taken as Australia's policy settings firm up around whether Australia will use:

- a) established international LCA standards and frameworks (e.g. CORSIA for SAF) for the verification of LCLF carbon intensity; or
- b) the GO Scheme; or
- c) allow producers the flexibility to use either the GO Scheme or an approved international standard if one exists (such as CORSIA for SAF).

LanzaJet strongly prefers Option C, as it will provide producers with the flexibility to use the LCA methodology that is best suits their needs. In the context of SAF producers, it will also ensure they are not required to obtain multiple certifications – CORSIA for SAF sold to international airlines and the GO Scheme for the Cleaner Fuels Program.

In the case of SAF, regardless of the direction that is taken with respect to the treatment of ILUC as discussed in response to question 3.3(b) above, a CORSIA certification can still be fit for purpose despite its use of ILUC carbon intensity factors. Under CORSIA, a producer's CI score is made up of a "core value" and an "ILUC factor". If Australia's policy settings address ILUC with a risk-based framework, rather than modelling the CI impacts, the "core value" from a producer's CORSIA certification can be used to measure and verify carbon intensity for the Cleaner Fuels Program or under future demand side policy.