

**Bioenergy Australia Submission
Cleaner Fuels Program - Policy Design and Engagement Paper**

Bioenergy Australia (BA) is the national industry association committed to accelerating Australia's bio economy. Through targeted advocacy, campaigns, education, industry building and allied sector engagement, we're:

- Enabling decarbonisation of Australia's hard to abate sectors
- Enhancing energy security, supply and supporting the transition of Australia's energy system
- Growing Australia's economy and providing jobs and economic development including for regional Australia
- Enabling the development of Australia's circular economy

This submission is on behalf of the Low Carbon Fuels Alliance of Australia and New Zealand (LCFAANZ). This alliance was founded to accelerate the development and deployment of Low Carbon Liquid Fuels in Australia. Individual members of the alliances will be providing more detailed submissions specific to their business and expertise. This submission is a collective response and does not represent the views of any specific member.

Australia's Bioenergy Roadmap (ARENA, November 2021) outlines how, by the start of the next decade, Australia's bioenergy sector could contribute to around \$10 billion in extra GDP per annum and 26,200 new jobs (predominately regional), reduce emissions by about 9 per cent, divert an extra 6 per cent of waste from landfill, and enhance fuel security. Bioenergy Australia thanks the Australian Government for the opportunity to provide feedback on the Cleaner Fuels Program - Policy Design and Engagement Paper. We greatly appreciate the Government's ongoing collaboration and communication with industry. We believe the level of engagement demonstrated is unprecedented, and commend the Government for its genuine commitment to this space.

1. Eligible fuels

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

- Sustainable Aviation Fuel (SAF)
- Renewable Diesel
- Biodiesel
- Biomethanol
- Ethanol
- BioLPG
- BioLNG

Question 1.2: Should certain types of LCLF be prioritised over others?

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

We support a fuel-agnostic approach, with a targeted design for fuels that face production disadvantages or serve sectors with no viable alternatives, such as aviation. The scheme should recognise that not all fuels are equal in cost or demand, while still ensuring a range of LCLFs have access to support. The aim of the scheme should be to unlock overall LCLF supply rather than create competition between end uses.

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

No, we do not support certain LCLFs being de-prioritised. LCLFs will be needed across multiple sectors (not just aviation) well into the long term. Even with strong electrification trends, Australia is still projected to require almost 30 billion litres of liquid fuel in 2050, meaning multiple end-use sectors will continue to rely on liquid fuels.¹

Australia also has the capacity to leverage and scale up existing production: biodiesel is already produced domestically, with the ability to increase output to around 100 million litres per year, while ethanol production could potentially rise to around 400 million litres per year.² These fuels can support a variety of sectors, and therefore supporting these additional and potentially intermediary fuels (such as for ATJ pathways reliant on ethanol) could help maximise production capacity and expand the total supply of LCLF.

Thus, even where alternative decarbonisation options may emerge, de-prioritising particular fuels risks constraining supply in sectors where demand will continue, including heavy transport, marine, mining and remote operations. We recognise that aviation faces some of the most limited decarbonisation options, with SAF expected to remain a critical pathway for reducing emissions and meeting long-term demand in the sector. Yet, a fuel-agnostic design allows the market to reveal where demand is strongest. Removing eligibility for certain fuels would distort those demand signals and undermine investment, scale-up and price discovery across the broader LCLF ecosystem.

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

Prioritising one class of LCLF over another will create several effects:

- **Capital may shift toward prioritised fuels:** Developers and investors are likely to direct early-stage capital to fuels with stronger policy signals, influencing which projects move toward FID.

¹ [Securing our Fuel Future: Resilience Through Low Carbon Liquid Fuels \(March 2025\)](#)

² Ibid.

- **Feedstock competition and pricing could shift:** Changing the relative value of different pathways may influence feedstock demand, contracting behaviour, and long-term supply arrangements.
- **Technology deployment pathways may diverge:** Incentives for one fuel type could accelerate the associated technologies and infrastructure, while others scale more slowly.
- **Fuel availability and pricing may be affected:** If production is pulled toward certain fuels, short-term availability of other LCLFs may tighten, influencing price trajectories until additional supply comes online.
- **Sectoral decarbonisation progress may become uneven:** Prioritised sectors may see faster progress, while others wait for cost curves to improve or alternative pathways to mature. Even sectors that may develop alternative decarbonisation pathways in the future will still require LCLF fuels for the foreseeable future. Artificially narrowing the scheme's scope could undermine investor confidence and weaken project bankability across multiple fuel pathways.
- **Reduced investor confidence across broader LCLF sector:** Artificially narrowing the scheme's scope could undermine investor confidence for broader LCLF and weaken project bankability across multiple fuel pathways.
- **Targeted support could help scale fuels that are currently higher-cost or earlier-stage:** By reducing initial barriers, improving investor confidence, and expanding production technologies, it allows fuels to scale and move down the cost curve.
- **Differentiated credits:** A differentiated credit value for certain fuels can shift the price signal for those fuels, potentially influencing producers to produce fuels that can face higher costs or additional operational challenges over other alternatives. An example of this was under the US Inflation Reduction Act, SAF received a higher production credit than renewable diesel. Developers shifted planned hydrotreating capacity from renewable diesel to SAF, feedstock prices (e.g., UCO and tallow) rose, and several renewable diesel projects slowed or were redesigned for SAF. This shows how even modest policy prioritisation can significantly affect capital allocation, feedstock markets, and technology deployment.

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

1. Fixed production support (fixed ¢/L incentive)

Benefits

- **Revenue certainty:** A fixed per-litre production credit provides predictable revenue per unit, which is crucial for attracting investment.

- **Integration into offtake contracts:** Offtakers can treat the fixed incentive as a stable contribution to the final fuel price. This simplifies pass-through arrangements and allows clearer risk allocation between buyers and producers.
- **Lower administrative complexity:** Payments are based on verified production volumes rather than price reconciliation, reducing the compliance burden for government and proponents and lowering ongoing administrative costs.
- **Allows differentiated credit levels:** A fixed production incentive can be structured so different LCLF types receive different per-litre credit values. For example, this approach could enable the Government to set a higher credit for higher-cost fuels, such as SAF, effectively ensuring these fuels remain financially viable and leveling the playing field across all pathways.
- **Straightforward design could enable rapid implementation:** A fixed production incentive could be announced, designed, and implemented quickly, which is critical for ensuring investment certainty and supporting projects that are already in development. Timely implementation enables projects to reach final investment decisions, achieve early successes, and generate momentum for the broader LCLF industry. Given the current state of the industry, with projects already moving forward and investment decisions being made, it is critical to secure support as soon as possible.

Risks / Constraints

- **Limited responsiveness to market price fluctuations:** Because the credit is fixed, it does not automatically adjust to changes in feedstock costs, fossil fuel prices, or carbon prices. Producers may still face margin pressure if input costs spike which can give lenders less certainty.
- **Insensitive to technological differences:** The credit may not reflect differences in technology cost curves.
- **Insensitive to shifts in imported fossil jet and diesel prices** and global policy-driven price swings, which strongly influence domestic market competitiveness.
- **May require periodic review**, as the Australian cost gap is likely to change quickly as more projects come online.

2. Contract-for-Difference

Benefits

- **Certainty mechanism:** A CfD manages revenue certainty risks, ensuring stable revenue and reducing exposure to market price fluctuations. This can improve project bankability and access to long-tenor debt, reduce financing costs and protect producers against downside price risk.
- **Gradual adjustment:** CfD instruments can be applied on a sliding scale over time, gradually reducing coverage. For instance, covering 100% of the cost premium in the first year and reducing year-on-year over a decade, allowing customer willingness to pay to increase gradually.

- **Bridging cost gap:** CfD bridges the production cost premium relative to conventional fuel for a fixed period, supporting commercial-scale facilities to achieve cost-competitive production in Australia.
- **Exit strategy:** CfDs can be designed with specific timelines and exit strategies, ensuring clarity and manageability for both government and producers.
- **Investor attractiveness:** By guaranteeing a price and shifting project risk, CfDs enhance project attractiveness to investors.
- **Limited upside exposure:** Protects government from excessive payments if market prices rise above the strike price.
- **Allows fuel differentiation:** CfDs can be designed with different strike prices for each fuel type, allowing higher-cost fuels, such as SAF, to receive higher guaranteed revenues. This structure stabilises project revenue relative to market prices while reflecting the higher production costs of specific fuels, making all pathways investable without bias towards lower-cost options.

Risks / Constraints

- **Higher complexity:** Designing and implementing a CfD mechanism can be more complex, requiring additional time and resources to develop careful structuring and coordination. Given the need for near-term support for LCLF projects, CfDs may be more suitable for later stages when sufficient time is available to ensure robust design and effective implementation.
- **Reference price requirement:** Requires a transparent, widely accepted reference price which can be more complex.
- **Downside payments:** If prices exceed the strike price, producers need to pay back — financiers can view this as revenue volatility.
- **Reference price selection risk:** Using international spot markets may create a mismatch for domestic pathways dependent on Australian feedstocks (UCO, tallow, residues).
- **Uncertainty over time:** Over time, CfD's may create uncertainty regarding continued government support, especially with changes in political leadership or shifts in policy priorities.

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

The A\$1.1 billion allocation is a welcome and important first step, providing a strong signal of government support. However, establishing a resilient domestic LCLF industry will require additional support and funding to enable multiple commercial projects to reach financial close and scale production.

Currently, approximately 10 LCLF projects have been announced across Australia, representing ~1.5 billion litres of potential new production capacity.³ Around half of these projects are at an advanced development stage, with project concepts now transitioning to the engineering

³ <https://cdn.revolutionise.com.au/cups/bioenergy/files/nyydxvvoi7belg4m.pdf>

development stage. This funding alone will not be sufficient to support all projects through to financial close and actual domestic production.

We stress the critical role of this scheme in supporting the successful delivery of the first LCLF projects in Australia. The success of these initial projects will be essential in demonstrating commercial and technical viability of these fuels as well as building confidence among investors, policymakers, and the public. The scheme should be structured to maximise the likelihood of success for these early, deliverable projects, establishing a strong foundation and creating the conditions for subsequent projects to succeed.

Although this funding is a crucial step to encourage investors and developers to commit capital to Australian projects, further support will be needed to help more projects reach commercial viability and grow the scale and impact of the industry.

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

Each mechanism supports investment certainty in different ways:

Fixed Production Credits: A fixed production credit enhances bankability by providing a stable revenue floor and improving debt serviceability. It offers predictable, easy-to-model cashflows, but may not protect margins when feedstock costs rise or fossil fuel prices fall.

Contracts-for-Difference (CfDs): A CfD stabilises project revenues by bridging the gap between fluctuating market prices and a predetermined strike price. This revenue predictability strengthens bankability, reduces credit risk for lenders, and encourages financial institutions to offer favourable loan terms.

With both a fixed or variable production incentive scheme, the principle of long-term duration is key to de-risk project investment and provide certainty, with a minimum term of 10 years recommended.

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

- **Maximum credit per litre (fixed):** Setting an upper limit on the subsidy per litre can prevent excessive profit if market prices rise, while still providing sufficient support to cover production costs and a reasonable return.
- **Sliding scale / tapering (fixed and variable):** Credits can be reduced gradually as prices increase, ensuring the credit fills the gap between costs and revenues without creating windfall profits.
- **Clawback triggers (fixed):** For fixed credits, clawbacks could be activated if LCLF market price exceeds an indexed ceiling. This is already built into the design of a CfD.
- **Degression mechanism (fixed):** Predetermined annual percentage decline in the credit (e.g., X% per year or step-downs tied to cumulative national output thresholds) could be

considered in the later terms of the program but only after projects have been established and commercial-scale production of LCLF is operating in Australia.

- **Periodic review (fixed or variable):** Credit levels can be adjusted over time based on updated costs, market conditions, and technology developments. To avoid creating uncertainty, these reviews should be predefined in timing and methodology and should not retroactively reduce credits already awarded, ensuring that projects maintain stable, predictable support.

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 short-to-medium term, pricing for LCLF will be higher than fossil fuels, driven by the high cost of production, technological immaturity, supply constraints and the need for policy support to bridge the price gap. Domestic LCLF prices will also compete with imported LCLF and thus influenced by foreign policies. Additionally, global supply constraints will also exert upward pressure on LCLF prices, arising from the fact that the industry is in its very early stages of scaling production capacity.

Over the longer term, as production scales, technologies mature, and costs decline through economies of scale, LCLF is expected to become more competitive and increasingly reflect its carbon-abatement value. Under relevant carbon frameworks, the price of LCLF will align with the emissions reductions it delivers. As the market matures, we expect that offtakers will look for a greater segmentation of LCLF products, taking into account not just direct carbon intensity, but also impacts such as indirect land use impacts.

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?

While cost-effectiveness is important, prioritising projects solely on “lowest cost” risks supporting fuels that deliver less carbon benefit, rely on lower-value and potentially unsustainable feedstocks, may have a low feasibility of reaching FID, or may not contribute to long-term domestic capability. Certain production pathways and feedstocks can achieve greater emission reductions despite higher production costs, ensuring that public funding accelerates pathways that provide the highest abatement per dollar spent and support broader climate and strategic objectives. By focusing solely on cost, the program would neglect supporting pathways that could provide more scalable options in the future.

Beyond just focusing on the direct carbon intensity of projects, there needs to be consideration of ILUC. This is a significant issue with critical implications for maintaining social licence, ensuring the sustainability of LCLF production, and aligning expectations with major international market guidelines such as CORSIA. In addition, there needs to be strong consideration of the development

maturity of projects and likelihood of reaching FID. Otherwise, there is a risk that projects with low feasibility bid in artificially low prices.

A balanced assessment framework should therefore take into account cost-effectiveness, abatement value, lifecycle carbon intensity, technology readiness, and domestic strategic value. Such an approach ensures that projects are selected not only based on financial cost but also on the overall value delivered and support scalability.

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

The production credit should be linked to carbon-intensity reductions, rewarding fuels that deliver greater emissions savings. This directly links incentives to measurable environmental outcomes, encouraging projects that maximise carbon abatement. By targeting support to actual emissions reductions, the scheme promotes efficiency, fairness, and aligns with the policy goal of decarbonisation.

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?

Domestic production of LCLF is generally more expensive than in regions with established supply chains, lower feedstock costs, more mature technology deployment, and stronger policy incentives. While Australia benefits from certain feedstocks and abundant renewable resources, the first wave of domestic projects will require higher support than comparable projects overseas until economies of scale and supply-chain maturity improve.

This premium justifies the need for production incentives to make initial projects financially viable and to lay the foundation for long-term competitiveness, enabling Australia to capture the fuel security, economic, and regional development benefits of domestic production.

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?

We stress that any cap must be set high enough to cover the costs of early domestic deployment and provide certainty for investors. For first-mover projects, this is particularly important: early projects face higher capital costs, unproven supply chains, and elevated market risk. A low cap could constrain their ability to reach financial close, whereas a sufficiently high cap ensures they are not financially disadvantaged compared with later entrants.

Caps could be linked to carbon emissions abated or the nameplate capacity of a plant, so that production beyond this threshold represents additional upside for the producer without requiring subsidy.

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?

We support domestic production and supply being prioritised, but recognise that export will play an important role in project bankability. Export markets strengthen regional economies and position Australia as a renewable fuels producer of global significance. Allowing producers to sell into both domestic and international markets expands offtake opportunities and improves revenue certainty, particularly for large-scale and first-mover facilities. Restricting production to domestic supply only would limit market flexibility, reduce competitiveness, and make financing more difficult for early projects, which face the highest risk and uncertainty in establishing domestic supply chains.

Domestic access to LCLF could be ensured through targeted demand-side mechanisms or by designing the incentive structure to provide differentiated production credits that reward domestic supply, rather than export restrictions.

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

Yes, there is a clear role for combining production-linked support with capital grants. FOAK facilities face high upfront costs, higher technology and integration risks, and limited access to low-cost finance. Production credits address operating cost gaps, but they do not cover early-stage or pre-production capital expenditures, which capital grants are designed to support. This blended model is widely used internationally for emerging fuel technologies.

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

Concessional finance - Concessional finance (such as lower interest rates, longer tenor, and grace periods before repayments begin) can reduce the cost of production by lowering capital expenses and debt servicing obligations. These finance options can improve bankability and attract private investors to early-stage or scale-up projects. These mechanisms can work alongside a production-linked incentive by lowering the capital that must be sourced commercially, to improve financial viability.

CEFC insurance products - There could be a role for the CEFC to offer insurance products, such as contingency risk insurance, for a premium. This insurance would cover part of the “unknown unknowns” in project delivery—unexpected construction cost overruns, schedule delays, or technology underperformance beyond standard engineering, procurement, and construction guarantees. It replaces some of the internal contingency with an external, priced risk transfer: the project pays a premium, and the insurer covers a defined range of overruns or shortfalls if they occur.

Debt, Equity, and Guarantees - Long-term, government-backed finance can support facilities, making them more commercially viable. NRF instruments complement production-linked incentives by sharing project risk, reducing the required level of per-litre subsidy to reach bankability.

Net Zero Fund - The Net Zero Fund offers a promising mechanism for additional support relevant to LCLF projects, particularly for infrastructure, early-stage deployment, and supply-chain development. Our response to the [Net Zero Fund: proposed design \(2025\) consultation available here](#).

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

Capital support for new production facilities: Targeted grants or co-investment for new production facilities, particularly first-of-a-kind or emerging technologies, can reduce upfront capital risk, complement production-linked incentives, and support the early deployment of domestic LCLF projects.

Feedstock innovation, supply chain, and infrastructure: Resources and funding are needed to drive feedstock innovation, provide supply incentives, and support capital and development for infrastructure that enables the expansion and integration of Australia's feedstocks into LCLF production. Further details are available in our submission to the *National Bioenergy Feedstock Strategy*.

Infrastructure support: Support is required for infrastructure and supply chains critical to LCLFs, including processing facilities, blending facilities, transport logistics, and fuel distribution systems. Key infrastructure that can improve project bankability and reduce carbon intensity includes:

- Hubs for aggregating feedstocks and managing logistics
- Road and rail transport networks to enable reliable movement of feedstocks and finished fuels
- Feedstock and fuel storage and blending facilities, integrated with shared-user sites and regional terminals
- Utilities and decarbonisation inputs that enable predictable lifecycle CI and improve operational efficiency

Demand-side mechanisms: Regulated demand-side measures with ambitious yet achievable targets, designed to minimise costs for consumers, can play a key role in supporting LCLF deployment.

Examples include:

- Mandates tied to carbon intensity, introduced progressively.
- Low Carbon Fuel Standards.
- Government procurement targets or term-dated procurement contracts for LCLF. These measures provide a clear signal of government commitment to LCLFs, creating predictable demand that underpins investment in domestic LCLF production.

Manufacturing scale-up: Expanding domestic manufacturing capacity for components and process equipment central to LCLF supply chains can reduce costs, strengthen local industry, and support the rapid deployment of projects.

Education and awareness: There is a need for knowledge-sharing and awareness-building campaigns to help consumers understand the role, compatibility, and sustainability of LCLFs, as a way to build market confidence.

Contingency risk insurance policy: This insurance could cover some of the “unknown unknowns” in project delivery. In first-of-a-kind low-carbon fuel projects, lenders often require very high contingency buffers—extra capital costs or stricter debt service ratios—which can make promising projects seem unbankable. Contingency risk insurance policies could allow the project to pay a premium so that the insurer covers a defined range of overruns or shortfalls, reducing the need for overly conservative internal allowances.

Enabling supply to overcome geographical constraints: The distance between suppliers and potential large-scale offtakers, such as the mining sector, adds cost, complexity, and scope 3 emissions associated with transporting fuel to end users. In some cases, feedstocks are also located far from refineries, further constraining supply and increasing logistics challenges.

To address geographic constraints (and minimise emissions from transporting low carbon fuels to end users), creating a model that enables the renewable energy attributes of biofuels to be traded and reported under the scope 1 market-based approach within the NGER framework could support uptake in remote locations while avoiding additional scope 3 emissions and cabotage costs. Expanding market-based reporting of scope 1 emissions through tradeable, non-provenanced carbon certificates could also encourage investment and accelerate uptake of low-carbon fuels in geographically remote regions. Additionally, the scheme could be designed with a geographically strategic approach. This could involve considering the geographical spread of refineries receiving subsidies to enable local feedstock refining and improve the availability of fuels across Australia.

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

There are numerous lessons that Australia can draw from international experiences, including both best practices to adopt and challenges to avoid. Below are some examples for consideration.

- **US, 45Z SAF Clean Fuel Production Credit:** The Clean Fuel Production Credit is a newly established tax credit for clean fuel production, available beginning January 1, 2025. The income tax credit is for the domestic production of clean transportation fuel, which is divided into two broad categories: sustainable aviation fuel (SAF) and non-SAF transportation fuel.⁴ The tax credit amount is \$0.20 per gallon for non-aviation fuel and \$0.35 per gallon for SAF. For facilities that satisfy the prevailing wage and apprenticeship requirements, the credit amount is \$1.00 per gallon for non-aviation fuel and \$1.75 per gallon for SAF. The CFPC is structured on a sliding scale, so that producers become eligible for larger credits as the lifecycle GHG emissions of their fuels approach zero.⁵

⁴<https://www.congress.gov/crs-product/IF12502>

⁵<https://www.worley.com/en/insights/our-thinking/chemicals-and-fuels/ethanol-to-jet-aviation-key-to-net-zero>

As highlighted by the Renewable Fuels Association in the United States, the structure of the 45Z SAF Clean Fuel Production Credit has created an unintended disincentive for the production of ATJ SAF due in large part from volume loss when converting ethanol to SAF. 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.⁶

- **UK, Revenue Certainty Mechanism:** In January 2025 the UK government confirmed the government's decision to implement a Guaranteed Strike Price (GSP) model to help attract the necessary long-term funding to support the SAF industry meet the demand generated by the UK SAF Mandate. This proposes a production tax incentive through a Guaranteed Strike Price (GSP) mechanism is combined with clear demand-side measures as part of an integrated policy suite. Additionally, the Ministry of Defence is also bound by emissions reduction and renewable fuel use targets.⁷
- **UK, Contracts-for-difference:** The first use of a CfD policy to support sustainable projects was the low-carbon electricity CfD policy implemented in the UK in 2014. This mechanism has been particularly effective in terms of its impact on offshore wind with 13 GW of projects in the four rounds carried out to date and with prices falling from US\$164.59/MWh to US\$46.61/MWh⁸.
- **UK layered supply and demand-side policy:** The UK is introducing a suite of policies—including grants through the Advanced Fuels Fund and other programs,⁹ a revenue certainty mechanism akin to CfD,¹⁰ and robust demand-side mandates for low carbon road and aviation fuels¹¹. While it is still too early to assess results, the UK's holistic approach arguably offers significant potential for industry development and provides a strong example for Australia.
- **Canada, Biofuel Production Incentive & Clean Fuels Fund:** The Canadian government is taking action to assist the country's canola and agriculture producers by introducing a new biofuel production incentive and amending the country's Clean Fuel Regulations to support the domestic biofuels industry. The government will immediately introduce new biofuel production incentives that will provide more than \$370 million over two years to help domestic producers and restructure their value chains. The incentive will be provided on a per-liter basis to Canadian producers of biodiesel and renewable diesel and will be available

⁶<https://ethanolrfa.org/file/2953/RFA%20Comments%20re%20Notice%202025-10%2045Z%20Clean%20Fuel%20Production%20Credit.pdf>

⁷<https://www.gov.uk/government/consultations/saf-revenue-certainty-mechanism-approach-to-industry-funding/outline/saf-revenue-certainty-mechanism-approach-to-industry-funding-government-response>

⁸ Deloitte, 'The Transitioning Australia's Liquid Fuel Sector: The Role of Renewable Fuels Report' (May 2023)

⁹ UK Department for Transport. [Advanced Fuels Fund competition winners](#). The UK AFF has already awarded 14 grants to 13 SAF projects.

¹⁰ UK Department for Transport, April 2024. [Sustainable aviation fuels revenue certainty mechanism: revenue certainty options](#).

¹¹ 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](#).

from January 2026 through December 2027 for up to 300 million liters (79.25 million gallons) per facility.¹²

- **EU Innovation Fund:** The Innovation Fund in Europe has awarded €2.9 billion in grants to 61 net-zero technology projects, including four SAF projects, providing approx. €100–150 million for large-scale projects. While effective at distributing significant capital, the scheme is complex to apply for, requiring specialist support, and its impact on LCLF varies year to year since it is not focused solely on low-carbon fuels.¹³
- **EU, ReFuelEU Aviation Regulation:** The EU's ReFuelEU Aviation regulation requires a 6% SAF blend by 2030, including a 0.7% e-SAF sub-target, alongside anti-tankering rules to cut emissions.¹⁴
- **Singapore SAF Levy:** A levy will begin in 2026 to fund the purchase of SAF worth S\$3 for short haul flights and up to S\$16 for long haul flights, excluding transit passengers. The levy is clear, transparent and well-communicated. Centralised Government procurement will also likely result in maximum volumes of SAF being purchased with the funds collected.¹⁵
- **Japan, 2024 Tax Reform Act:** Introduces a tax credit to promote domestic production of strategic goods, including SAF. Companies can claim a credit (JPY30 per litre) based on either the volume of SAF produced and sold (within 10 years of plan certification but before 31st March 2027) or the acquisition cost of production assets – whichever results in a lower credit. The maximum credit per year is capped at 40% of the corporate tax liability, with a four-year carry forward.¹⁶
- **Republic of Korea, Blending mandate, tax credits and financial incentives:** The government has established a phased blending mandate for SAF, requiring a 1% blending ratio by 2027, increasing to 3–5% by 2030 (with the final ratio to be determined in 2026), and reaching 7–10% by 2035 (to be finalised in 2029). In addition to these blending requirements, the government continues to provide tax credits and financial incentives to support SAF research, development, and production facilities, offering up to 25% investment support and 40% R&D support.¹⁷

¹²<https://biodieselmagazine.com/articles/canada-introduces-new-biofuel-production-incentive-in-response-to-trade-disruptions-tariffs>

¹³https://ec.europa.eu/commission/presscorner/detail/en/ip_25_2564

¹⁴<https://www.carbon-direct.com/insights/beyond-the-transatlantic-core-emerging-saf-mandates-in-global-markets>

¹⁵<https://www.aerosociety.com/media/26900/july-2025-aerospace.pdf>

¹⁶<https://www.ishkaglobal.com/Savi/Article/7809/SAF-Policy-Map-Updates-from-Colombia-EU-Japan-Thailand-and-more>

¹⁷<https://www.greenairnews.com/?p=8125>

3. Fuel production

Question 3: Considering this objective, what production pathways should be focused on or prioritised?

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, we support a technology-agnostic approach that maximises strategic growth and scalability of the domestic LCLF industry. While HEFA and HVO are currently the most mature and commercially deployed technologies, they alone will be insufficient to meet long-term growing LCLF demand. It is also important to recognise that these technologies are not the only established pathways: LanzaJet's Freedom Pines Project is the first commercial-scale plant to fully commercialise ATJ production technology.

Thus, technologies such as Alcohol-to-Jet (ATJ), Hydrothermal Liquefaction (HTL), Pyrolysis, thermochemical biomass-to-liquid (BtL), Fischer-Tropsch (F-T) and e-SAF, are advancing rapidly and are critical for achieving meaningful volumes of LCLF in Australia. They can also offer significant emissions reduction potential and regional development benefits. By supporting a mix of pathways rather than pre-selecting winners, the program can support projects with the greatest potential impact rather than solely those with the lowest technical risk. Limiting support to HEFA and HVO risks bottlenecking industry growth, slowing innovation, and constraining Australia's ability to meet long-term LCLF demand.

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

Nascent production pathways can compete with established technologies when policy settings recognise their structural disadvantages and the broader benefits they deliver. Key considerations include:

- **Higher capital requirements:** Early-stage pathways require greater upfront investment in new infrastructure and specialised equipment, as well as higher integration costs compared with mature technologies.
- **Lower technology readiness:** Many emerging pathways remain in demonstration or early commercial stages, which increases technical risk, raises development costs, and requires ongoing innovation to reach stable performance.
- **Limited early-market scale:** Smaller initial production volumes prevent cost efficiencies, keeping unit costs high until wider market adoption enables economies of scale.
- **Strengthening feedstock diversity:** Supporting emerging pathways reduces reliance on constrained HEFA feedstocks and improves long-term supply resilience.
- **Leveraging broader benefits:** Many emerging pathways offer significant emissions reductions and economic benefits for regional communities, providing additional public value that justifies early-stage support.

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

- **Project maturity:** Projects at the Front-End Engineering Design (FEED) stage indicate a reasonable level of commercial readiness. They should demonstrate a risk-managed technology pathway and a plausible route to competitiveness.
- **Commercial viability:** Projects should provide evidence of funding commitments, equity interest, or a credible capital-raising strategy.
- **A sustainability and regulatory compliance plan:** Projects should have a plan addressing sustainability, feedstock sourcing, lifecycle greenhouse gas assessment or carbon abatement potential, waste and by-product handling, and alignment with relevant environmental and regulatory requirements and sustainability criteria.
- **Project delivery capability:** Provide evidence that they have the capacity, technical skillset, or partnerships required to build, commission, and operate the facility (supply-chain links, feedstock agreements, offtake arrangements, etc.).

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

Smaller, regionally distributed plants can be commercially competitive and support strong community and supply-chain outcomes. At the same time, prioritising support for projects at a commercial scale may help ensure economic viability and efficient deployment. Given that commercial scale can vary depending on the technology and feedstock, setting a strict minimum facility size could be challenging.

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?

The program should be designed to incentivise and reward higher-performing fuels, encouraging improved carbon performance and sustainability outcomes, while still enabling inclusion across feedstocks and production pathways. It is crucial that any threshold does not inadvertently disqualify fuels that contribute to the reduction of greenhouse gas emissions. This inclusion is particularly important given Australia's early-stage industry, where supporting a range of technologies and feedstocks is necessary to build sufficient scale and enable the sector to grow efficiently.

Therefore, in addition to carbon intensity reduction, the scheme should consider how it can support readily deliverable projects to drive near-term industry development. This could include factoring in TRL levels, funding models, and expected time to production when assessing project eligibility, as well as how complementary programs, such as ARENA funding, could assist earlier-stage projects to support ongoing industry growth.

As noted earlier, there should be consideration not just of carbon intensity but ILUC impacts.

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 carbon intensity inherently incentivises fuels with higher abatement potential. Nevertheless, a minimum CI threshold remains important to prevent extremely low-performing fuels from undermining the integrity of the Program.

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

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.

Without iLUC:

- Feedstocks with fundamentally different sustainability profiles may appear equivalent.
- Rotation crops could lose their competitive advantage.
- Australia risks incentivising imported feedstocks with uncertain land-use change histories.
- The Program's emissions integrity could be weakened.

ILUC is one of the hardest risks to incorporate into low-carbon fuel policy because the impacts are real but highly uncertain, model-dependent and often only visible at system level rather than at individual project level. We acknowledge that ILUC modelling is subject to considerable uncertainty, making its integration into CI calculations challenging.

A potential approach is to treat ILUC qualitatively as a risk factor, with feedstocks labelled according to their ILUC risk. This could offer guidance to stakeholders without relying heavily on uncertain models and might form part of broader sustainability criteria under the Cleaner Fuels Program and other policies. Qualitative ILUC risk labelling could also help signal investment opportunities in sustainable feedstocks while supporting environmental integrity and long-term sector sustainability.

A potential way to bring ILUC into a production tax incentive linked to carbon intensity is to split the incentive into (1) a base production credit differentiated by ILUC risk category, and (2) a variable top-up based on measured/verified carbon intensity. Under this design, feedstocks are first classified into ILUC risk bands (e.g. "low", "medium", "high", "unacceptable") using transparent criteria such as additionality, land type, food/feed competition and traceability. The base credit is higher for low-ILUC-risk feedstocks and lower for feedstocks with more uncertain or potentially higher ILUC risk.

The variable CI-linked component then rewards projects for delivering genuinely low lifecycle emissions, regardless of technology route, using a robust, standardised LCA method. This structure does three things: first, gives a structural preference for low-ILUC feedstocks without requiring precise ILUC quantification for every project; second, maintains strong incentives for process efficiency and innovation through the CI-based top-up; and third, manages policy and investor risk by avoiding binary sustainability cut-offs while signalling that high ILUC risk receives weaker support.

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

We do not support feedstock restrictions or bans, as these could significantly impact investment and project development, hinder innovation, and slow the growth of the local LCLF market. Rather, robust sustainability frameworks should be designed to ensure that feedstocks are sourced and utilised responsibly. These frameworks should incorporate comprehensive safeguards that address environmental, social, and economic considerations, ensuring sustainable practices and high-performing options are rewarded rather than constrained by prescriptive rules.

These frameworks should also account for differences in carbon intensity between nascent and established feedstocks. While mature feedstocks have LCAs based on commercial-scale data, emerging feedstocks often rely on preliminary estimates from trial or ideal conditions. Actual commercial operations may result in higher carbon intensities due to variable yields, pests, or other challenges. Recognising these differences ensures all feedstocks are assessed fairly, supporting innovation and early-stage project delivery while still encouraging low-carbon performance from established feedstocks.

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

In addition to carbon intensity other sustainability criteria to be considered include:

Australia has the opportunity to learn from established global schemes, pathway approval processes and various sustainability standards that have been in place for more than a decade. With that said, any sustainability criteria developed for Australia must reflect our local circumstances and unique sustainability characteristics. Beyond GHG emissions reductions, assessments should also consider environmental and social sustainability.

The CORSIA framework provides a useful reference that could serve as a starting point for an Australian sustainability standard. It provides a robust, internationally recognised framework designed to ensure eligible fuels contribute effectively to reducing emissions, while also addressing key environmental and social safeguards. While CORSIA provides a strong foundation, an Australian standard should be tailored to reflect Australia's diverse ecosystems, indigenous cultural heritage, and distinctive agricultural practices.

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.

4. Other policy considerations

Question 4.1: What are your views on the aforementioned factors affecting the merit of a proposal? We support the proposed merit criteria, recognising them as important guiding principles for determining support under the Cleaner Fuels Program. These criteria address key areas that are critical to Australia’s national interest and align with the potential economic, environmental, and social benefits that LCLF can provide.

We note that individual criteria should not be treated as strict “pass/fail” thresholds. Instead, these elements should be considered collectively to evaluate the overall contribution of a project and the broader goals of advancing LCLF production in Australia.

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 (see Appendix D). 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?

LCLF projects will create secure and long-term employment and skill opportunities across the feedstock, logistics, fuel refining, and infrastructure sectors. A domestic SAF industry alone could contribute \$13 billion to GDP annually by 2040 and support almost 13,000 feedstock-related jobs and 5,000 high-value roles in facility construction and operations.¹⁸ These projects could also provide pathways for workers from legacy fossil fuel refineries to transition into the low-carbon sector. The Clean Energy Generation: Workforce Needs for a Net Zero Economy report found that the 1,500 workers currently employed in traditional petroleum refining could readily transition to roles in renewable liquid fuels, often at the same worksites.¹⁹ With at least 375,000 workers in aviation and road freight industries relying on ongoing liquid fuel supplies, this highlights the vital role LCLF projects will play in supporting the Australian workforce.²⁰

Many LCLF facilities will also be located near feedstock sources in regional areas, meaning that these projects will need to engage collaboratively with these communities to ensure social acceptance and support for the projects. These projects can create local jobs, stimulate economic activity, support a circular economy, and drive local development, and the projects will need to engage with communities to ensure these benefits are realised.

LCLF projects also represent a strategic opportunity to strengthen domestic industrial capabilities by improving fuel security and resilience. Domestic fuel refining capacity has declined by 70% over the past two decades, and liquid fuel imports now cost around \$50 billion annually. Approximately 90% of these imports come from Asia, with just three countries supplying the majority of both diesel and jet fuel. Establishing local production can strengthen domestic capabilities and reduce reliance on imported fuels.

¹⁸ [ICF Report, 'Developing a SAF industry to decarbonise Australian aviation' \(November 2023\).](#)

¹⁹ [Jobs and Skills Australia, The Clean Energy Generation: workforce needs for a net zero economy \(2023\)](#)

²⁰ [Securing our Fuel Future: Resilience Through Low Carbon Liquid Fuels \(March 2025\)](#)

While the potential benefits are significant, projects may face operational or supply challenges, such as variability in local feedstock availability due to climate or pests, or the need to import certain materials to maintain production. If the Community Benefit Principles are applied too rigidly, there is a risk that promising projects could be delayed or prevented from proceeding. Although LCLF projects will deliver a range of benefits under the CBP, care should be taken to ensure that compliance requirements do not inadvertently block projects from delivering on these outcomes.

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.

Overseas policy developments can influence domestic investment decisions by signalling global demand for low-carbon fuels and indicating potential offtake opportunities. Demand-side measures in international jurisdictions create clear market signals for producers, showing where there will be demand for low-carbon fuels.

However, reliance solely on international demand carries risks. Without domestic demand policies, Australian-produced low-carbon fuels will be exported to meet overseas demand rather than supporting local decarbonisation or enhancing domestic fuel security and resilience. This export-driven dynamic will put pressure on the domestic supply chain, increasing costs for Australian offtakers seeking to adopt these fuels. Overall, global policies provide important market signals, but domestic measures are essential to ensure Australian production delivers benefits domestically.

Furthermore, existing international LCA frameworks such as GREET, RED II, and CORSIA will need to be considered in the design of Australian policy and industry standards. Global sectors such as aviation, maritime, and feedstock already need to meet several different international standards. To avoid additional compliance burdens and ensure harmonisation, Australian schemes should align with these frameworks while being adapted to the Australian context and supporting local feedstock and production systems.

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?

- **Demand-side mechanisms:** Regulated demand-side measures with ambitious yet achievable targets, designed to minimise costs for consumers, can play a key role in supporting LCLF deployment. Demand-side mechanisms are essential to give LCLF producers, feedstock suppliers and investors long-term certainty and confidence in domestic LCLF demand, helping them plan, optimise operations, scale supply chains, and establish reliable commercial offtake arrangements. We strongly encourage the timely development of accompanying demand-side measures with this supply-side support.
- **Infrastructure and logistics support:** Targeted support for storage, transport, and refuelling or processing infrastructure addresses gaps in the supply chain that could prevent produced

fuel from reaching end-users. This support can resolve operational bottlenecks and delivery constraints, reducing execution risk and enabling investors to proceed to FID.

- **Certification and sustainability verification:** Access to recognised schemes (e.g., ISCC, RSB, GO/RGGO) ensures compliance with environmental and sustainability requirements. This reduces regulatory and reputational risk, providing investors' confidence that projects will meet program and market expectations.

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

- **Demand-side measures** – policies that create predictable market demand for LCLF while still supporting customer competitiveness.
- **Guarantee of Origin (GO) Scheme** – provides certification and traceability of low-carbon products, including future LCLFs
- **National Bioenergy Feedstock Strategy** – coordinates sustainable and verifiable feedstock supply.
- **National Greenhouse and Energy Reporting Scheme** - enables reporting of specific low emissions fuels delivered through shared infrastructure. As noted above, there is an opportunity to consider how to expand market-based reporting of scope 1 emissions through tradeable, non-provenanced carbon certificates to support the uptake of LCLF in geographically remote regions
- **Defence Future Energy Strategy** - sets a framework for transitioning military platforms to lower-carbon fuels like SAF and Renewable Diesel (RD).
- **Regulatory and fuel-quality standards** – ensure low-carbon fuels meet technical, safety, and market requirements (e.g., paraffinic diesel standard).
- **Australian Infrastructure Plan** – supports storage, transport, blending, refuelling infrastructure, and logistics.
- **Excise support** – fiscal mechanisms to reduce costs and improve the financial viability of LCLFs.
- **State-level strategies** – e.g., NSW Renewable Fuel Strategy, supporting regional production and uptake of low-carbon fuels.

Thank you for taking the time to consider our submission. Any questions or request for further assistance are welcome [REDACTED].

Sincerely,



Shahana McKenzie
CEO Bioenergy Australia