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## **Submission on the 'A Future Made in Australia: Unlocking Australia's low carbon liquid fuel opportunity' consultation paper**

The Clean Energy Council (the 'CEC') welcomes the opportunity to provide a submission on the Low Carbon Liquid Fuels (LCLFs) consultation paper.

The CEC is the peak body for the renewable energy sector in Australia. We represent and work with around 1,000 businesses operating in Australia across solar, wind and hydro power, energy storage and renewable hydrogen. Our mission is to accelerate Australia's clean energy transition.

The development of decarbonisation pathways for all sectors of the economy is critical for achieving Australia's legislated commitment of net zero emissions by 2050, as part of accelerating global action and a historic agreement reached at COP28 in December 2023 to 'phase out' the use of fossil fuels.

Renewable energy is the foundation of much of Australia's decarbonisation journey and will be a critical ingredient in the decarbonisation of the transport sector. As outlined in the CEC's submission to the [Electricity and Energy Sector Plan consultation](#), the CEC considers the decarbonisation of the Australian electricity sector, is feasible by 2035.

This renewable energy advantage can be harnessed to develop power-to-liquid synthetic e-fuels, which can complement bioenergy-based fuels for applications where direct electrification is not practicable or applicable. We consider the main applications for LCLFs are heavy road transport, rail, maritime, aviation and hard-to-abate heavy industries.

Global production of LCLFs must scale up rapidly and Australia has an opportunity to leverage its strategic advantage of renewable resources, to secure a significant role in the production of these renewable-based fuels, thereby reducing our dependency on imports and vulnerability to supply shocks and creating new clean energy-based processing and manufacturing opportunities.

Scaling up production will require substantial policy support. LCLFs typically cost in the range of two to five times more than incumbent fossil fuel equivalents, and a combination of supply and demand-side policies and investment will be required to incentivise industry to invest in large-scale production capacity which can deliver supply at internationally competitive prices, and to stimulate fuel switching by target industries.

With such a large task to replace fossil-based liquid fuels with renewable based solutions, and the most attractive solutions for different industries likely to evolve over time, we need to support a broad range of LCLF solutions to come forward. We would encourage the Australian Government to adopt broad and durable policy frameworks which provide long-term visibility and predictability to producers and users alike and will enable markets to identify and develop the most efficient and practical solutions over time. This may mean some additional targeted support will also be required for solutions with an initially higher cost-base which nevertheless offer strong prospects of long-term scalability and competitiveness, particularly for those sectors without efficient alternative decarbonisation options.

The range of LCLF production pathways will need to be underpinned by robust, internationally compatible certification and sustainability frameworks including a low carbon fuel standard that is under consideration.

While we note the focus on this paper is centred on renewable diesel and sustainable aviation fuels (SAF), we highlight that liquid fuel dependent industries will require access to a range of LCLFs including ammonia, methanol, renewable diesel and SAF to reduce emissions across the economy.

In the remainder of this submission, we highlight that:

1. Both supply and demand side policy settings and investment will be critical to stimulate production and fuel switching.
2. Sectoral mandates or emissions intensity standards are required to incentivise sectors as a whole to decarbonise (rather than being dependent on voluntary early movers), while providing offtake certainty to producers.
3. Scaling domestic LCLF production will require technology research and deployment, supportive regulations and financial mechanisms.

## Australia’s low-carbon liquid fuel opportunity

Biogenic LCLF production pathways are the least cost option as demonstrated by CSIRO modelling. However, in the early stages of domestic production, supply will likely be insufficient to meet demand.

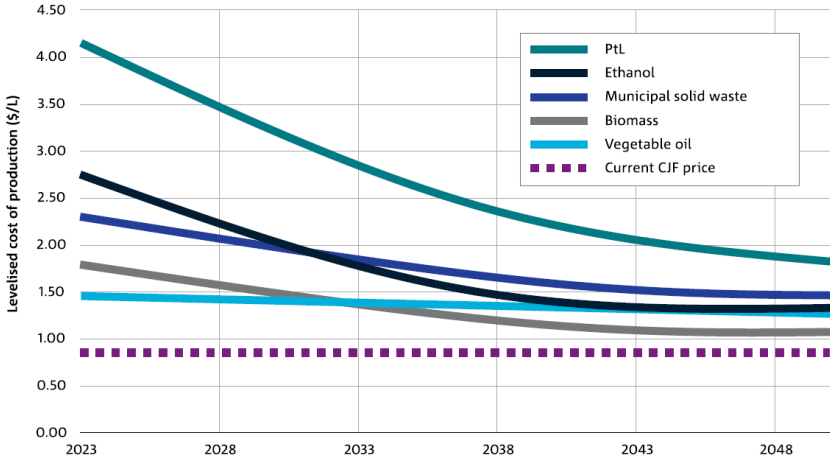


Figure 1 - Projected levelised cost of production for five feedstocks, CSIRO 2023<sup>1</sup>

Decarbonising liquid fuels will require a supporting range of technologies and production pathways as some pathways have limited scalability to match project demand to achieve net zero by 2050.

<sup>1</sup> Sustainable Aviation Fuel Roadmap 2023 | CSIRO

Renewable hydrogen will be a key feedstock for power-to-liquid (PtL) products including ammonia, methanol, renewable diesel and sustainable aviation fuels (SAF). While the costs of hydrogen-based PtL solutions may be higher in the short term, the costs are projected to decrease over time with the scaling of the hydrogen sector. PtL products also deliver the highest emissions reduction potential over the product lifecycle<sup>2</sup>.

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## Increasing Australia's domestic production capability

Establishing domestic LCLF production and scaling production with demand, requires coordinated policy and a range of financial support that will mobilise investment to progress projects across the LCLF value chain.

The consultation paper acknowledges that without developing Australia's feedstock production capability, feedstocks will likely be exported overseas to produce LCLFs that will be sold back to Australian consumers at increased cost. CSIRO analysis projects Australia to be a large contributor to the production of LCLFs due to the abundance of renewable energy resources lowering the cost of production<sup>3</sup>.

Securing international capital for LCLF production is extremely competitive. Investors are leveraging the generous tax incentives, research grants, infrastructure investment and market measures offered by the *Inflation Reduction Act (IRA)*, while the European Union has also announced similar measures to attract and secure investment.

Development of the supply-side of the LCLF market will require consistent, flexible and responsive policy mechanisms that adapt to the changing production environment. We welcome the range of funding commitments in the Federal Budget 2024-25 to encourage investment in renewable and low carbon technologies via the 'Future Made in Australia' framework, and in particular the Hydrogen Production Tax Incentive scheme, which will assist to bring forward large-scale capacity renewable hydrogen production in Australia. We also acknowledge the \$1.7 billion Future Made in Australia Innovation Fund, a portion of which, we understand, will be available to support SAF. We would expect that further funding support may be required following the completion of this review.

### Reducing the cost differential

The immediate challenge for establishing a domestic LCLF production sector is overcoming the production cost gap between LCLFs and the incumbent fossil fuel equivalents. Estimates for the cost of SAF production ranges between two to five times more expensive when compared to conventional jet fuel<sup>4</sup>.

Although there will be a range of potential offtakers for LCLFs, the gap between what offtakers can (and are willing to pay) is considerable. A key focus of government policy must be reducing or bridging the commercial viability gap of low carbon fuels to encourage investment in domestic LCLF projects.

We will require new policies and investment which help to lower the cost of production for a range of renewable fuel types, and demand-side policies to stimulate uptake, in addition to the range of

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<sup>2</sup> [Developing a SAF industry to decarbonise Australian aviation](#) | ICF

<sup>3</sup> [Sustainable Aviation Fuel Roadmap 2023](#) | CSIRO

<sup>4</sup> [A Future Made in Australia: Unlocking Australia's low carbon liquid fuel opportunity](#) | DITRDCA

existing government support for emerging clean industries, such as concessional financing through the Clean Energy Finance Corporation.

### **Fuel prioritisation**

We note that technology-neutral financial mechanisms would incentivise renewable diesel production over SAF, which is more expensive for biorefineries to produce. While road transport would drive demand for renewable diesel in the short-term, we note that there are a range of alternative zero emissions technologies for existing diesel users (trucks, buses, machinery) – the first and foremost among these being electrification – which mean that renewable diesel is less of a strategic priority than fuels for sectors which *do not* have strong alternatives.

Aviation at present, does not have alternatives that are technologically ready and must have access to large-scale SAF production to decarbonise. Furthermore, international demand will be much higher for SAF past 2050 with projects guaranteed long-term offtake.

Australia should exercise care to give strategic prioritisation to market segments such as aviation which are most dependent on LCLF in the long-term, even where the cost of doing so in the short term is higher than for other fuel types.

### **LCLF production support**

The consultation paper highlights that several supply-side mechanisms are under consideration including contracts-for-difference, capital grants and production credits and/or incentives.

It is likely that a combination of stable mechanisms with sufficient duration will be required to upscale domestic LCLF production similar to the suite of supports announced by the Government to kickstart the renewable hydrogen industry (e.g. Hydrogen Headstart, ARENA grant programs and the Hydrogen Production Tax Incentive).

Supply-side mechanisms must provide revenue certainty to producers and offtakers and be flexible enough to respond to market influences as LCLF production diversifies and expands.

### **CfD schemes**

Contract-for-difference (CfD) schemes can partially bridge the cost gap between LCLFs and fossil fuels by covering the long-term operational costs over a long-term period (10-15 years). However, CfDs could force the government to choose 'winning' technologies while the large cost differential between SAF and conventional jet fuel, may be a budgetary burden.

The government could tailor a CfD mechanism based on emissions reduction savings rather than total fuel volumes to help increase investment in pathways that offer the best decarbonisation results while controlling the budgetary impact.

The Netherlands' SDE++ (Stimulation of Sustainable Energy Production and Climate Transition programme) provides a CfD subsidy for organisations using CO<sub>2</sub> reducing technologies which varies between €60–300 per tonne of CO<sub>2</sub> avoided over a period of 12-15 years<sup>5</sup>.

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<sup>5</sup> [Sustainable Aviation Fuel Roadmap 2023](#) | CSIRO

### **Public grants or loan facilities**

A combination of public finance incentives (loans, grants and production incentives) coupled with blending mandates, are the most common policy levers that incentivise LCLF production and consumption. Up-front grants alone may not incentivise enough long-term investment to develop projects. The EU and US are implementing a combination of emissions trading, production incentives and tax credits to hasten the development of their renewable fuel sectors.

The Biden Administration launched the SAF Grand Challenge in 2021 that established a production target of 3 billion gallons of SAF by 2030. Among research funding and R&D programmes, the SAF credit includes a baseline subsidy of US\$1.25 per gallon if SAF achieves at least a 50 per cent emissions reduction. A bonus \$0.01 is awarded for each additional percentage point reduction in emissions above 50 per cent, up to a maximum of \$1.75 per gallon.

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## **Demand-side mechanisms**

On their own, supply-side support incentives, will not be enough to establish domestic LCLF production. The production cost of low carbon fuel alternatives is at a price premium and costs are likely to remain high in the early stages of the LCLF industry's development.

For industries that are dependent on high energy density fuels, mechanisms must be implemented that incentivise the switch to low carbon alternatives. In the absence of effective climate policy to drive emissions reductions in the heavy transport sector, relying on voluntary corporate action is inefficient and unfair, as it places those companies with stronger decarbonisation targets at a cost disadvantage in the markets within which they operate.

The CEC strongly advocates for the Government to put in place a broad-based requirement that will drive fuel switching. This could be delivered through a clean fuel mandate (e.g. a rising share of consumption over time must be clean), or the implementation of emissions/low-carbon fuel standards (requiring sectors to meet increasingly stringent emissions intensity standards over time). These requirements must be long-term and predictable to provide certainty for suppliers and customers, and increasingly ambitious in line with Australia's international emissions reduction commitments under the Paris Agreement. We are starting late off a low base, and as such time will be required to scale up efforts over the decade ahead, but Australia should aim to quickly catch up to international best practice in the 2030s, particularly if it intends to realise its aspirations to become a renewable energy superpower.

### **Carbon pricing**

The most efficient demand-side policy mechanism is carbon pricing – as Australia well knows from past experience – allocating a cost to emissions and assisting to level the playing field between environmentally harmful activities and products and clean alternatives, without requiring significant government expenditure.

While the CEC would like to see the reintroduction of carbon pricing as soon as possible, we recognise that it has low prospects of political support at the present time, and as such, we must also examine alternative policy options, which will necessitate more direct and targeted interventions.

## Mandates and targets

Mandates and volumetric targets are key components of fuel switching regulations and create demand certainty for LCLFs. According to the World Economic Forum, 75 per cent of total aviation fuel in 2030 will be covered by a regulatory obligation (a mandate or a target) with some countries utilising up to 30 per cent SAF<sup>6</sup>.

In April 2023, the European Union legislated a SAF blending mandate to require fuel suppliers to blend SAF with kerosene. The law mandates a 2 per cent blend from 2030 and will gradually increase to 70 per cent by 2050<sup>7</sup>. Similar targets are being considered in India, Japan and Brazil.

The EU scheme allocates the responsibility to meet the conditions of the SAF blending mandate on fuel suppliers. If suppliers fail to meet the target, they can either purchase excess credits from suppliers that exceeded their production target or pay a 'buy out' price that is more expensive than the cost of SAF – in essence a penalty fee that is not disproportionately harsh.

The CEC considers that the Australian Government should consider adopting a similar target or mandate while scaling up domestic production to help meet the projected demand.

Airbus, Qantas and ICF's report found that a blending requirement for 5 per cent SAF by 2030 and 28 per cent SAF by 2040 would drive estimated SAF use of 3.5 billion litres by 2040, that would mitigate 9.4 million tonnes of CO<sub>2</sub> emissions<sup>8</sup> per year.

Any implementation of mandates would need to include a provision for effective penalties for non-compliance, in order to de-risk LCLF production projects.

## SAF fees or levies

In February, Singapore announced it would introduce a levy for the purchase of SAF (applied to passengers and cargo) from 2026. The levy will vary based on distance travelled and the class of ticket purchased. This policy mechanism is designed to increase demand for SAF to achieve a 1 per cent uplift in SAF in 2026.

The rationale behind the levy is that it will demonstrate to the public the role SAF will play in decarbonising air travel while motivating airlines to introduce SAF without bearing the total cost themselves.

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## Emissions and sustainability criteria

Investment in low carbon liquid fuels will need to be supported by transparent emissions accounting for liquid fuels generally.

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<sup>6</sup> [Scaling Up Sustainable Aviation Fuel Supply](#) | World Economic Forum

<sup>7</sup> [European Commission ReFuelEU Aviation press release](#)

<sup>8</sup> [Developing a SAF industry to decarbonise Australian aviation](#) | ICF

The CEC strongly supports the inclusion of LCLFs into the Guarantee of Origin (GO) scheme particularly as LCLFs will only reduce emissions if fuel standard regulations and certification schemes can calculate and certify that the lifecycle emissions footprint is lower than conventional fossil fuels.

We strongly encourage the Government to develop and implement a robust, internationally compatible LCLF standard in collaboration with industry that will facilitate the trading of LCLFs and Product GO certificates.

Credible requirements on the emissions intensity of LCLFs will be critical to ensuring the achievement of legislated federal and state-based legislated emissions reduction targets. Regulations must also avoid the double counting of emissions reduction credits to other schemes.

## **Conclusion**

This Low Carbon Liquid Fuels and the Transport and Infrastructure Net Zero consultations current under way present a critical opportunity for Australia begin developing the clean energy alternatives that will be required for hard-to-electrify transport sectors and other industrial uses. Australia has a natural advantage to be a long-term low-cost producer of LCLFs, and the development of this capability is an important strategic opportunity to increase our energy security by reducing our dependence on imports.

We currently have inadequate policy settings in order to drive the decarbonisation of our heavy transport sector in particular, and the Government urgently needs to address this policy gap, by establishing long-term targets and effective supporting mechanisms for achieving them on both the supply and demand side. We cannot rely on voluntary corporate action to achieve the decarbonisation outcomes we need – we require broad based frameworks which provide certainty for all market participants in relation to the rate of emissions reductions required, and support industries to make the shift to renewable fuel alternatives.

We must move quickly – there will be no economic or commercial advantage to delay – and the faster that we can signal the long-term requirements, the better industry will be placed to plan and respond.

We look forward to strong and decisive policy emerging from this consultation.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Anna Freeman', written in a cursive style.

Anna Freeman  
Policy Director – Decarbonisation