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Sustainable Aviation Fuel Alliance of Australia and New Zealand

2023 Aviation White Paper Submission

Bioenergy Australia (BA) is the national industry association committed to accelerating Australia's bio economy. Our mission is to foster the bioenergy sector to generate jobs, secure investment, maximise the value of local resources, minimise waste and environmental impact, and develop and promote national bioenergy expertise into international markets.

This submission from Bioenergy Australia is on behalf of the Sustainable Aviation Fuel Alliance Australia and New Zealand (SAFAANZ), the alliance it founded to fast-track the development, uptake and progression of SAF in the region. The SAFAANZ is a collaboration of more than 60 organisations across Australia, Asia, Europe and the USA. Our submission is specifically relation to point 1 how to maximise the aviation sector's contribution to achieving net zero carbon emissions, including through sustainable aviation fuel and emerging technologies.

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, reduce emissions by about 9 per cent, divert an extra 6 per cent of waste from landfill, and enhance fuel security. Now is the time to capitalise on these opportunities by prioritising sustainable aviation fuel (SAF) in the Aviation White Paper, effectively positioning the delivery of aviation services for the Australian public and international visitors out to 2050. The development of a Sustainable Aviation Fuel industry in Australia could alone create approx. 8,000 new jobs and an additional 2.8 Billion GDP per annum.

ATAG's analysis predicts that by 2050 air travel will carry over 10 billion passengers a year and for this growth to be sustainable the sector needs to decouple growth from emissions (CO₂ and non-CO₂) and increase access for all. Due to Australia's geographic location, economic and cultural connection to the world, decarbonising aviation must be a key component in Australia meeting net zero emissions by 2050.

The decarbonisation of aviation is intrinsically linked to the wider energy transition in Australia where low carbon energy carriers, such as renewable electricity, green hydrogen and renewable fuels, will be prioritised to meet demand in different sectors. However, it is important to note the hard to abate nature of aviation, with limited access to commercially viable low carbon technologies, when governments consider how to prioritise energy carriers and incentives in energy transition strategies.

Collaborations that foster a diverse portfolio of technologies that will mature at different times, and be suitable for different aviation segments, are based around the following four key strategies:

- **Fleet Renewal:** new airplanes provide significant efficiency gains by embedding innovation that can reduce fuel use and emissions by 15-25%.
- **Operational Efficiency:** including incentivising continuous improvements in manufacturing and production, material innovation and end of life custody is also important to decarbonising aviation.
- **Advanced Technologies:** intersecting renewable energy carriers with advanced technology flying machines will enable a diverse portfolio of low carbon aviation solutions in the future.
- **Renewable Energy Transition:** the aviation sector needs access to renewable and sustainable fuels, green hydrogen and abundant renewable energy to make diverse technology options available.

Under any scenario for the introduction of future advanced aircraft products with new energy carriers, Australia will need vast amounts of SAF to meet the civil aviation's commitment to net zero by 2050.

SAF is widely accepted today as a drop-in replacement for fossil jet fuel that works with existing airplanes and offers the largest potential to reduce carbon emissions over the next 20 to 30 years in all aviation segments. Hydrogen and electric flight concepts are in early-stage development and not likely to be commercially available for long distance flights - where 70% of aviation emissions are generated - for decades. SAF is certified technology ready to scale. Under ASTM certification SAF currently provides seven approved feedstock and production pathways to produce a drop-in fuel for use up to a 50% blend. SAF can be refined from waste biomass and hydro-carbon based industrial and household waste as well as used cooking oils and fats. Depending on the pathway, SAF can reduce emissions across the lifecycle by 80%, compared to fossil jet fuel.

Despite this potential, there is currently no viable domestic SAF industry in Australia.

The inherent risks of leaving development, processing and deployment of SAF to our global peers will cause Australia to be at the mercy of foreign markets, geopolitics, and distance.

While governments and industry across Europe, the United States, the United Kingdom, New Zealand, Singapore, Japan and Canada progress policy to accelerate the adoption of SAF, signalling to the market through ambitious SAF targets, through fuel subsidies, blending mandates, capital grants and loans, and funding for individual projects, Australia remains at first base, beholden to international competitors and inflated prices that are ultimately borne by the consumer.

Despite Australia possessing a diversity of potential SAF feedstocks, without a viable domestic SAF industry, Australian growers and producers are exporting their raw material to foreign refiners, at times locking into long term offtake agreements that sends millions of dollars to overseas markets. As a result, Australia risks becoming a net importer of a renewable fuel derived from feedstock abundantly grown on its own soil. This places Australia at risk of not only having a limited supply of feedstock but the sustainability credentials of imported renewable fuel being ultimately lower. This is a real and immediate threat with export of Australian feedstocks increasing, including over a 30,000% increase in the export of used cooking oil from Australia to the USA from 2020 to 2022.

SAF also remains as much as three-to-five times more expensive than conventional jet fuel. With supportive policy frameworks that encourage investment and innovation, Australia could produce and

export SAF at a competitive advantage to global peers due to its extensive feedstock and resource inputs. With support for early deployment of pre-commercial SAF production plants, Australia's Bioenergy Roadmap estimates production potential of up to 1908 ML per annum, representing 18 per cent of the aviation fuel market. To realise the full benefits of that production is to realise an economic windfall.

When considering alternative technologies, it should be acknowledged that although electric aviation can enable the delivery of decarbonisation and decentralisation of mobility in Australia and the Pacific region, there are complex planning, infrastructure, community and regulatory challenges. Products like Wisk and electric aviation generally require coordinated and nationally consistent regulatory framework to ensure contribution to decarbonisation, industry standards, certification, autonomy, and airspace integration. For electric aviation vehicles to be sustainable, they require access to affordable and reliable renewable electricity to charge power units for operation, and this should be considered in the infrastructure requirements and policy incentives for electrification of aviation.

With respect to hydrogen in aviation, the leading use of hydrogen in the medium term should be to develop and scale SAF, with a focus on sources of green hydrogen to do so (made possible by abundant sources of renewable energy for the power required in the production process). Hydrogen is required in some SAF pathways, and hydrogen and renewable carbon can be combined into a formation that can be used as a drop-in fuel. The industry is also considering using hydrogen as an energy carrier onboard aircraft.

The challenge of developing a domestic SAF industry is surmountable if we prioritise the growth and innovation of this critical technology, enabling the sector to meet its commitments while remaining competitive. Government intervention could develop a new industry that leverages Australia's existing assets and brings opportunities to regional areas, to meet local and global aviation fuel demand.

Bioenergy Australia support the Australian Government's interest in maximising the aviation sector's contribution to achieving net zero carbon emissions through SAF and emerging technologies. We submit that a domestic SAF industry will require the implementation of national and regional level government interventions noting four key opportunity areas:

- 1. Implement an Emissions Intensity Scheme for Australia's liquid fuel sector.**
- 2. Government incentives to fund the development of SAF in Australia, to help minimise the price gap between SAF and conventional aviation fuel.**
- 3. Leverage Government procurement primarily through Defence.**
- 4. Ensure sustainability and social license are at the centre of industry development through funding the Jet Council to support research and education**
- 5. National Framework for Voluntary Consumer Purchasing.**
- 6. Leverage existing Government programs such as the National Reconstruction Fund, Powering the Regions Fund and ARENA**
- 7. Enable a Regional and approach to SAF industry development and deployment**

To unlock Australia's potential to become not only a participant in the SAF industry, but a leading global player, governments must take concrete actions to support the creation of a domestic SAF industry.

1. Implement an Emissions Intensity Scheme for Australia's liquid fuel sector

SAF mandates are internationally recognised as critical to SAF deployment and scaling, with emissions intensity schemes identified as the most effective mechanism for driving domestic SAF uptake.

An emissions intensity scheme is based on reducing the emissions intensity of fuels relative to a benchmark over time. This also helps minimise the program's costs as the first years will require the most expensive SAF while the industry is emerging. Over time, and as SAF costs drop, the required reductions would increase as a greater impact can be achieved at the same price. It is recommended that initial benchmarks be set at less than 5% so that the target is achievable and not cost-prohibitive.

The relevant Federal body responsible for regulating this type of program would be able to leverage an entity such as the proposed Jet Council to gain industry insights on intensity approach in which the obligation is placed on aviation fuel suppliers. By choosing the point of fuel sale, all airlines, including international ones, would be indirectly subject to the emissions intensity policy.

By using emissions intensity as the key metric, the market can determine the most cost-effective manner by which to achieve reductions. This avoids the Government playing the role of 'picking winners' and leads to lower-cost outcomes for all participants.

2. Government incentives to fund the development of SAF in Australia, to help minimise the price gap between SAF and conventional aviation fuel

To minimise the price gap between SAF and conventional aviation fuel, Governments should consider specific funding or co-financing mechanisms to encourage the construction of commercial plants in Australia, as well as appropriately incentivise airlines to transition to SAF.

Government funding could be provided in the form of grants (ARENA) or low-interest loans (CEFC) to strengthen the commercial attractiveness of developing and operating a SAF refinery and capture competitive advantages for Australia, provided they are qualified on the basis of offtake remaining in Australia. The current technological advancements combined with lower financial risk as the SAF industry matures will bring down the costs of SAF production in Australia over time.

In addition, the funding mechanism could also target the operating revenues/margins of a SAF refinery. Under this mechanism, there is a price subsidy (cents per litre) that is provided when refining margins fall below certain thresholds. This mechanism would work by the Government providing a subsidy per L of SAF produced when the Jet A1 price falls inside or outside of certain ranges

Under any funding mechanism, there must be lifecycle assessments of the SAF to be produced. These would ensure that the lifecycle emissions associated with SAF are lower than those from conventional aviation fuel, in order to prioritise the lowest-carbon SAF options.

3. Leverage Government procurement primarily through Defence

The most effective way to promote a domestic SAF industry, without direct government intervention, is defence fuel procurement. More than two-thirds of fuel consumed by the Australian Defence Force is aviation fuel, representing six per cent of total jet fuel consumed in Australia. Reducing its reliance on internationally-sourced conventional jet fuel is not only a key marker in its own pursuit of decarbonisation, but a means by which the ADF increases its sovereign capability and operational independence.

A commitment from the ADF to be an early cornerstone customer of Australian-produced SAF would be a leap forward for the development of a domestic SAF industry, acting as a direct market signal, elevating the Federal Government's commitment in this space, and giving industry certainty that policy levers will be put in place to ensure its success.

As a number of SAF production pathways also give the opportunity to produce other liquid fuels required by the ADF e.g. Diesel, this would allow defence to invest in a supply chain that continues to provide relevant liquid fuels over the long term, while supporting its decarbonisation goals.

4. Ensure sustainability and social license are at the centre of industry development through funding the Jet Council to support research and education

Bioenergy Australia and SAFAANZ congratulate the Federal Government on funding the creation of the Jet Council and welcome further consultation to determine its function and composition. The Council will be a vital connection point for governments and aviation industry stakeholders, to determine the best policy framework required to accelerate aviation decarbonisation, lower barriers to entry, encourage investment and to guide and support pathways for SAF research and development.

In addition to plotting a policy pathway, the Council should be adequately funded to support research and education, to deepen understanding of SAF by the public, farmers and corporates, to help dispel misinformation, avoid perceptions of greenwashing, and showcase the inherent safety of the product and the opportunities available.

It is critical that the Council has the resources to educate consumers, corporations and governments of the span of emissions reduction from SAF products, ensuring focus remains on fuels that not only deliver the best outcome on actual emissions reduction, but contribute to the growth of a domestic SAF industry in Australia. This narrative is too important to be diminished by unintended social license or inadequate funding, and to ensure success in starting a new industry, the Council must have the capacity to keep the public informed at every stage of the journey.

The Council should also have the resources to encourage and utilise research into SAF to inform future development in Australia, utilising work already underway by a number of SAFAANZ members, which examine future possibilities from a range of new feedstocks and methods of refining.

To support the Council's ongoing acceleration of aviation decarbonisation, it should also provide guidance to Treasury and other relevant departments on the funding support required to create the SAF industry, for input into future budget cycles.

5. National Framework for Voluntary Consumer Purchasing

To maximise the aviation sector's contribution to achieving net zero carbon emissions, a national framework for a voluntary consumer purchasing program should be established to enable customers to opt-in to procure a portion of SAF for their flight. The program should focus on reducing the emissions associated with air travel, rather than using credits to offset those emissions, and be designed to incentivise domestic SAF production over SAF procured in other countries.

As a voluntary program, it ensures equity in cost allocation, as general consumers are not forced to incur additional costs. The costs are only borne by those who elect to participate, creating a less price-sensitive market for SAF.

As a starting point, a public service target would be considered a key market signal for producers, investors and airlines, providing a funding base to support and underwrite project development. A successful model of this proposal is the KLM Corporate SAF Program in The Netherlands, where public servants flying on KLM pay a premium for their ticket to opt-in to the airline's SAF purchasing program, reducing the government's carbon footprint in the process. The participation of Federal and State Governments in a voluntary consumer purchasing program would also provide a credible signal to large corporate organisations with net-zero targets or carbon-neutral commitments who can engage with airlines to reduce emissions without relying on carbon offsets.

By scaling up the industry and bringing on cost reductions through voluntary action, this will drive greater participation by voluntary customers resulting in accelerating cost reductions.

6. Leverage existing Government programs such as the National Reconstruction Fund, Powering the Regions Fund and ARENA

The Government has announced a range of significant funding and decarbonisation programs. To maximise the opportunity of developing a SAF Industry a coordinated approach across these programs will be essential.

7. Enable a regional approach to SAF industry development and deployment

Aviation is a global industry and requires global and regional collaborations.

Australia has a significant advantage in the region for the development of SAF, however to achieve aviation decarbonisation globally and within our region SAF will be needed in many jurisdictions that do not have the capacity to produce domestically.

Many of Australia's neighbours do not have the luxury of the available feedstock, infrastructure or capital to mobilise domestic SAF production and the Australian Government should ensure that a regional and collaborative approach to SAF development is prioritised to ensure that equity is central to any policy design.



Australia is uniquely placed to benefit from the global growth in SAF, but it must act swiftly to maximise its domestic potential as well as strategically positioned itself to achieve net zero carbon emissions by 2050. For a nation so heavily reliant on aviation, it is imperative that Australia sets its own course, writes its own rules, and reaps its own rewards, rather than become dependent on other nations and the oft-fragility of foreign markets. The pursuit of a vibrant and viable domestic SAF industry is not merely idealistic. Nor is it an industry vanity project. For Australia collectively, SAF represents a critical piece in our energy transition.

Thank you for the opportunity to provide this submission. Please send any comments or queries to myself at shahana@bioenergaustralia.org.au or 0439 555 764.

Sincerely,

A handwritten signature in black ink that reads 'Shahana McKenzie'.

Shahana McKenzie, CEO Bioenergy Australia