Neste submission on the Aviation Green Paper

Thank you for the opportunity to make a submission on the Aviation Green Paper. Neste supports the federal government's desire to meet the aviation sector's net-zero by 2050 goal by decarbonising Australia's aviation sector through encouraging the use of Sustainable Aviation Fuel (SAF) - and suggests some recommendations that would make it more effective in achieving that objective.

Creating demand certainty and investment in the biofuels sector, requires enabling policies both at a federal and state level. Biofuels producers require certainty of demand to finance projects and increase supply. Long-term offtake agreements and stable policy development such as biofuels mandates/obligations, and/or incentives, help provide confidence in such investments.

A range of measures are proposed in the Aviation Green Paper to make the sector fit for 2050 including investments in infrastructure, airports, airlines and competition. In this response, Neste will focus on our area of expertise, which is related to Chapter 5 of the Green Paper: '**Maximising aviation's contribution to net zero**,' and more specifically on SAF.

Introductory remarks: Neste and Sustainable Aviation Fuels

About Neste

Neste is the world's largest producer of SAF. Neste already supplies SAF to several airlines in the Asia Pacific region including Singapore Airlines, All Nippon Airways and Air New Zealand.

Neste MY Sustainable Aviation Fuel™ is made from sustainably sourced, renewable waste and residue raw materials. Neste MY Sustainable Aviation Fuel, in its neat form, reduces lifecycle greenhouse gas (GHG) emissions by up to 80% compared to fossil jet fuel use, calculated with established life cycle assessment (LCA) methodologies, such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). When blended with conventional jet fuel, Neste MY Sustainable Aviation Fuel can be used as a drop-in fuel as it is compatible with

existing aircraft engines and airport fuel supply infrastructure, requiring no extra investment or modifications into these.

Neste's renewable products have been certified to comply with the European Union's Renewable Energy Directive (EU RED), and meet the requirements of the U.S. Environmental Protection Agency (EPA).

Sustainable Aviation Fuel is an effective tool to quickly reduce emissions

Biofuels, such as SAF, are an important part of the toolkit in reducing carbon emissions from transport. Manufactured from waste products and residuals that have absorbed atmospheric carbon dioxide, biofuels reduce lifecycle greenhouse gas emissions compared to fossil fuels.

Neste's renewable products alone helped our customers reduce their GHG emissions by 11.1 million tonnes of carbon dioxide equivalent (CO_2e) in 2022 - equivalent to 2.28% of Australia's annual net emissions - and we have a goal of helping our customers reduce over 20mn tonnes of CO_2e by 2030. There is enormous potential for growth in biofuels supply over coming decades by making use of existing and future waste streams furthering the goal of a circular economy, and displacing continued fossil fuel extraction.

Unlike hydrogen or electricity, biofuels can be used in existing aircraft fleet engines, allowing for instant emissions reductions without costly capital investments to replace aircrafts or fuelling infrastructure, and can be used where other low-carbon alternatives are not available.

Renewable Raw Materials

We use a wide variety of sustainably-produced raw materials to produce our renewable products at our renewables refineries in Finland, the Netherlands and Singapore. These include:

- **Animal fat** from food industry waste that is unsuitable for human consumption.
- **Used cooking oil (UCO):** We source only UCO that is certified by European Commission recognised voluntary schemes (e.g. ISCC) and/or is compliant with US biofuel regulation requirements (EPA Renewable Fuel Standard 2 (RFS2)).

- **Vegetable oil processing waste and residues**.
- **Tall oil based raw materials:** Crude tall oil is a residue generated at pulp mills when pulp is produced from pine wood. Crude tall oil and some of its derivatives, e.g. crude fatty acids and tall oil fatty acids, can be used as raw material for renewable products.

Australia has an abundance of both current and future renewable raw materials available to support biofuels production.

The future

Neste has set a concrete target to reach carbon neutrality across all our production (Scope 1 and 2 emissions), which currently includes both renewable and fossil fuels, by 2035. We have also decided to set a concrete target for Scope 3 emissions to reduce the use phase emission intensity of sold products by 50% by 2040 compared to 2020 levels. Our target will be achieved through Neste's transformation towards increasing the share of renewable and circular solutions as well as working with our suppliers and partners to reduce emissions across our value chain. There is huge potential to increase the availability of feedstock while also improving its sustainability.

Consultation questions

Chapter 2 – Likely future directions out to 2050

What emphasis should the Australian Government place on these trends to help guide the future of the sector? Are there any other trends the Australian Government could add?

The aviation industry is projected to continue to grow both in terms of passengers traveling, aircraft in the skies as well as the amount of GHG emitted year on year. While there are several sustainability drivers in the industry, the Australian Government should place a strong emphasis on the development of SAF as a key driver to guide the future of a more sustainable aviation sector. SAF is quite unique in its capacity to reduce emissions while still being compatible with existing infrastructure for both producers and end users, using a diverse pool of feedstocks that have been proven to be economically viable and have global acceptance. Here is a short summary of some of these key advantages:

- **Compatibility with Existing Infrastructure:** SAF is ASTM certified (D7566) for use as a drop-in replacement for conventional jet fuel. When blended with conventional jet fuel, Neste MY Sustainable Aviation Fuel can be used as a drop-in fuel as it is compatible with existing aircraft engines and airport fuel supply infrastructure, requiring no extra investment or modifications into these. Unlike many other alternative technologies, SAF does not require extensive modifications to any conventional aircrafts or airports.
- **Lifecycle Greenhouse Gas Emissions Reduction:** Neste MY Sustainable Aviation Fuel, in its neat form, reduces lifecycle greenhouse gas emissions by up to 80% compared to fossil jet fuel use, calculated with established life cycle assessment (LCA) methodologies, such as CORSIA.
- **Non-CO_2 Emissions Reduction:** Due to its chemical composition, SAF burns cleaner than conventional jet fuel. As it does not contain sulfur or aromatics, it reduces sulfur oxide (SOx) and particle emissions. The reduction in soot particle emissions is important also from a climate point of view, as soot particles are the key driver of contrail cirrus, which is estimated to have an even larger contribution to aviation's climate impact than

carbon dioxide. In total, around two-thirds of aviation's climate impact is attributable to non-CO_2 emissions.[1]

- **Global Acceptance:** Over the last decade, SAF has strongly increased its international acceptance, with many airlines, manufacturers, and governments around the globe. European Union member countries, the United Kingdom, the USA and Japan have all made commitments for growing SAF usage. The ReFuelEU Aviation regulation, coming into force in the European Union, will establish an EU-wide minimum requirement of 2% for SAF use by 2025, rising gradually to 70% 2050.

[1] Lee et al (2020), The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018, Atmospheric Environment

Chapter 4 – Regional and remote aviation services

Where should the Australian Government focus its engagement in regional and remote aviation, including helping achieve Closing the Gap outcomes, noting established state, territory and local government responsibilities and programs?

The Australian Government should focus on improving access to SAF, facilitating supply chain infrastructure while supporting economic development, and addressing the need for cooperation between Federal and State governments. In this case, contributing to "Closing the Gap" would mean providing equal opportunities for indigenous communities to participate in consultations as well as providing employment and education opportunities in the aviation sector.

It is clear that the growth in the aviation industry will come hand in hand with the need to invest in essential regional and remote airport infrastructure, such as runways, terminal facilities, and safety equipment. On the other hand, it is important to consider the indigenous communities' access to essential regional and remote aviation resources. This investment can improve passenger and basic services to these areas while helping support economic development and tourism.

Thus, with the implementation of skill and training programs that provide education and employment opportunities in the aviation sector for residents of these areas can help create a local workforce that can support aviation and economic development in these regions.

What opportunities do emerging aviation technologies present for regional and remote Australia?

Emerging aviation technologies, with a special focus on SAF have the capacity to empower regional and remote areas across Australia tackling economic, environmental and social challenges.

- **Infrastructure Development:** The production and use of SAF can drive infrastructure development including and not limited to feedstock production, agricultural processing, distribution networks and biofuel production. SAF can be produced from various renewable raw materials, including agricultural waste and residue materials, algae, and

other biomass materials. In areas with agricultural raw materials, there is an opportunity to develop or improve facilities to grow and collect agricultural residues and raw materials that later can be turned into value-added products like biofuels. Furthermore, to convert these feedstocks into output a refinery facility is required. These facilities can process locally available feedstock resources, turning them into SAF and other outputs such as renewable diesel, renewable plastics, and chemicals. Finally, the biofuel supply chains require the establishment of a reliable fuel supply network. Some of these facilities include the need of handling, storage and delivering of the feedstocks and well as the fuel. Supporting the creation of these networks will enhance the access to SAF as well as the opportunity to use these infrastructure for other energy needs, including by products like renewable diesel.

- **Rural Employment:** SAF industry offers significant opportunities for job creation. Firstly, as mentioned above SAF is mainly produced from various renewable feedstocks. In rural and remote areas, farmers could diversify their income streams by cultivating new feedstocks such as novel vegetable oils (NVO) or collecting feedstocks that are suitable for SAF production. Additionally, SAF production and distribution requires workers capable of operating machinery, maintaining equipment, overseeing production processes as well as related transportation, storage and related supporting employment opportunities.
- **Energy Costs/Independence:** SAF production not only addresses the aviation industry's environmental impact from GHG emissions, but it can also help reduce energy costs for local communities through several activities such as co-generation, energy recovery, bioenergy production, and grid integration. It is known that remote regions often rely on external energy resources, which can be expensive and subject to market volatility. Integrating these initiatives to the grid will translate to local communities being less reliant on external sources of energy, where energy costs can be high along with an unstable supply.

What are specific issues experienced by the regional and remote aviation sector in the context of decarbonisation? What elements should the Transport and Infrastructure Net Zero Roadmap and Action Plan include to recognise the specific circumstances of the regional and remote aviation sector?

Firstly, regional and remote areas in Australia cover vast distances with low population density. Therefore, there is an inherent challenge when it comes to distance and connectivity. Alternative modes of transportation such as electric vehicles or high speed trains are not adequate, economical or feasible. The plan should acknowledge aviation as the primary and principal mode of transport to address this challenge. Secondly, as mentioned above regional and remote airports require investment in infrastructure. Thirdly, addressing feedstock availability and acceptability is essential for the production of SAF. There are a wide range of feedstocks available today and it is necessary to increase the acceptability of some of them to allow a wider range to produce biofuels. Feedstock criteria includes and is not limited to sustainable sourcing, risk assessment, negative impacts on food, and general sustainability issues like deforestation and biodiversity. There are several feedstocks that would be suitable for different areas and looking at diversifying and finding fit for purpose solutions is key.

What opportunities are there to develop domestic bioenergy feedstock production and collection in Australia's regions, and what policy settings from the Government would support this?

Australia has a significant potential in terms of biogenic feedstocks as recently identified in CSIRO's "Sustainable Aviation Fuel Roadmap." The report suggests that Australia has enough feedstocks to produce 60% of local jet fuel demand, growing to 90% by 2050 as biogenic sources continue to grow and hydrogen production ramps up. However, maximising this potential for domestic feedstock requires enabling policies and regulations that create demand for both feedstock and SAF producers.

One of the most important activities to create opportunities for development comes with policy and regulatory frameworks. Mandates for biofuels are the proven option when it comes to policy that would drive the successful adoption of sustainable liquid fuels. In the particular case of SAF, blending mandates are a useful tool to gradually introduce percentages of SAF in the fuel mix for airlines. This type of policy approach encourages airlines to increase SAF uptake while managing fuel cost. Furthermore, it helps create a steady market demand for SAF and an incentive for fuel producers to sell to the Australian market.

Chapter 5 – Maximising aviation's contribution to net zero

How can Government work with industry to ensure a strong and sustainable aviation sector that supports emissions reduction targets while growing jobs and innovation?

Encouraging the usage and adoption of SAF would be the first step towards a more sustainable aviation sector in Australia. Mandates for blending SAF into conventional aviation fuels and incentives, such as subsidies for SAF use and blending, support emissions reductions targets. Thus, it is also important to update policy and regulatory frameworks to get up to speed with other countries like those in Europe and the USA. Aviation is a hard-to-abate sector, requiring sector-specific policy frameworks to drive in-sector emission reductions, such as SAF blending mandates that are already adopted in select European countries (France, Sweden, Norway), and will become European wide via the ReFuelEU and UK SAF mandate implementation in 2025. This means that Australia does not have to try to 'reinvent the wheel' but can use proven approaches. It will also allow biofuels manufacturers to comply with Australian law without having to reformulate their products.

Given there are a number of measures that industry and government could pursue to help achieve net zero by 2050 in aviation, are there specific measures that more emphasis and support should be given to?

It would be important to have governmental support for the adoption of SAF to create certainty of demand for investments in SAF production capacity, which involve high capex and are supported by investors only if there is a long-term certainty of demand.

Internationally, we have seen that mandates are an effective way to encourage and embed the use of biofuels, including SAF. Mandates are internationally recognised as a policy signal for the development of SAF demand to enable investments in SAF production. And within this space, we highlight that in our experience, emissions intensity reduction schemes have been identified as one effective mechanism for driving SAF uptake.

A sufficiently high mandate would incentivise a more robust market for both domestically produced and imported biofuels, which would deliver significant emissions reductions. This can

happen alongside the establishment of domestic manufacturing capability and enable faster and larger emissions reductions.

Such schemes are based on reducing the emissions intensity of fuels relative to a set target over time. In July 2021, the European Commission presented a package of proposals to make the EU's climate, energy, land use, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55 % by 2030, compared with 1990 levels, known as the 'Fit for 55' package. The package includes a proposal to ensure a level playing field for sustainable air transport, also known as the ReFuelEU Aviation initiative. The approved initiative envisages a 2% overall SAF target in 2025, rising to 6% in 2030, and reaching 70% by 2050. The United Kingdom aims to establish its SAF mandate by 2025, and to reach a SAF blending target of 10% by 2030.

What should be included in relation to aviation in the Australian Government's Transport and Infrastructure Net Zero Roadmap and Action Plan (including for sectors, such as GA and airports)?

Neste would recommend the following three points to be included:

- Ensure investment certainty through mandated schemes with a long-term outlook
- Leverage the maximum potential of SAF through:
    - Gradual and steady increase in targets
    - Scale-up of available technologies alongside investments in future generations
    - Utilisation of a broad renewable feedstock pool
- Avoid fragmentation and prevent protectionism through global alignment and collaboration with existing schemes

How can the Australian Government ensure all emitters in the aviation sector play a role in meeting Australia's emissions reduction targets?

Meeting emissions reduction targets is a critical national goal. While there have been significant changes in national policy such as the Safeguard Mechanism for Australia's largest emitters, it is important to create tailor-made policies for the aviation sector. To achieve this goal, it is

necessary to allow for a combination of regulatory measurements supported by financial incentives, innovation, public awareness, and collaborative efforts among key stakeholders (airports, airlines, producers). The Australian government needs to nurture an environment in which all the key stakeholders in the aviation industry are motivated and supported in actively taking action in emissions reduction.

What are the benefits and risks associated with updating the National Greenhouse and Energy Reporting (NGER) scheme and/or other policy mechanisms to enable unique claims on sustainable aviation fuel (SAF) sourced through common infrastructure? How can risks be managed?

In the design of the policy, it is vital that claims on SAF sourced through common infrastructure is considered. The industry needs a system of mass balance already at production stage because SAF manufacturing facilities are of a scale where each molecule cannot be segregated. Also further down the supply chain, covering the blending of SAF and its transport (eg. via pipeline) into commingled systems of airports, mass balance is crucial because a segregated supply chain all the way to the plane is not feasible. It is a routine procedure in the industry (e.g. EU RED). Neste supports mass balance with physical connection (the alternative which is book & claim, does not have a physical connection).

The primary benefit of a mass balance scheme is that it simplifies the supply chain (as compared to segregation) and thereby lowers cost and increases the climate benefits. At the same time, it enables the sale of SAF while ensuring exclusive allocation of the full environmental benefits to the customer.

Risks associated with mass balance could be managed by: (1) need for a closed, interconnected infrastructure, (2) robust accounting system for that infrastructure and (3) certification of the whole supply chain.

What types of arrangements are necessary to support industry confidence in the quality standards and sustainability certification of SAF?

Aviation is a global and interconnected market. Aircraft operators need to reduce their emissions across the international airport networks where they procure fuel. The market would benefit from increasing global alignment on sustainability standards that set the requirements for eligible SAF. Key sustainability frameworks currently in place include the Renewable Energy Directive framework of the European Union, and the CORSIA framework of ICAO.

For example, Neste's SAF is typically either ISCC EU certified or it complies with the pathways of the U.S. Environmental Protection Agency (EPA). Thus, our production and raw material sourcing comply with EU Renewable Energy Directive or the requirements of EPA, and meet the environmental obligations in the EU Member States or the United States respectively. Furthermore, in 2022 Neste delivered the first time in aviation history a CORSIA certified batch of SAF to a commercial airline. This milestone was delivered to American Airlines at San Francisco International Airport.

Should policy and regulatory settings be refined to support development of domestic SAF production capability and industry take-up of SAF?

While the importance of developing domestic SAF production capability should not be undermined, prioritizing industry take-up will set the stage for a steady and secure growth in the SAF market. So policies should enable the uptake of SAF and create a level playing field for both domestic as well as imported SAF, as Australia will be challenged to meet its net-zero emissions targets through domestic production alone.

As industry demand for SAF increases in the short term, it will increase the opportunity for domestic production in the medium-long term, providing a clear pathway for the development of SAF production capabilities in Australia.

Frontrunner countries in the Asia-Pacific region are already shaping policies for SAF, with ambitions that are aligned to those in Europe and North America. For example, the International Advisory Panel (set up by the Civil Aviation Authority of Singapore) proposed in September

2022 a structural offtake mechanism for SAF by 2025. In New Zealand, the government announced that a dedicated SAF mandate would be developed by 2025 and in Japan, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) has set a target of 10% for SAF in 2030. Other APAC countries, like India, South Korea and Malaysia have also indicated that they are exploring SAF mandates.

What are the current and future challenges in developing an Australian SAF production industry, including challenges associated with growing, refining and consuming feedstocks?

There are several key challenges when it comes to developing an Australian SAF production industry. Like many other industries, there are general challenges with raw materials and supply chain restrictions. Nonetheless, the following challenges are unique to SAF:

- **Regulatory and Policy Barriers:** The lack of existing regulatory frameworks is the most fundamental barrier to SAF production capabilities. Biofuels mandates/obligations are an effective tool to create a steady demand that can be adjusted gradually. Internationally, we have seen that mandates are an effective way to encourage and embed the use of biofuels. The absence of consistent and long-term policies supportive frameworks

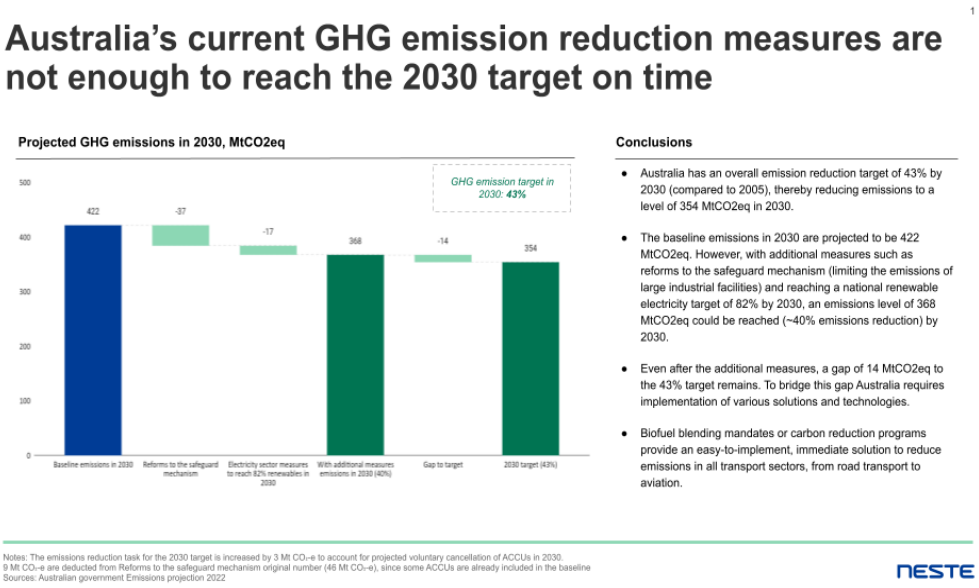
(incentives, mandates, etc) can hinder the market demand and reduce the positive impact these fuels can have on the decarbonisation journey.

- **Feedstock availability and acceptability:** Australian feedstock acceptability currently benefits from strong sustainability and human development measures through the supply chain. As the eligible feedstock pool grows and diversifies within Australia, importance must continue to be placed on ensuring that negative externalities are mitigated. The addition of new feedstocks should not come at the cost of sustainability goals . Maintaining Australia's status across human development and sustainability will protect our feedstock and SAF acceptance globally.
- **SAF is a global market:** It is important to understand that Australian feedstocks are currently being used in the manufacture of biofuels overseas and sold into foreign markets. Any future local production of SAF would end up being offered into the global market despite being produced locally if there is no regulation to encourage domestic uptake. If domestic mandate levels are insufficient, local production will be sold into global markets diluting the environmental benefits of domestic production. Furthermore, large scale investment to set up the production of sustainable aviation fuels are required during the early stages of market development. The right incentives and policies should be in place for the business case economics to be feasible.

How can policy and regulatory settings support research and development and subsequent investment in emerging low and zero emission technologies and related infrastructure?

Significant investment is required to support emerging and zero emission technologies such as biofuels. To put it in perspective, Neste's expansion of its current Singapore refinery to double capacity from 1.3 million tonnes to 2.6 million tonnes (including up to 1MT optionality for SAF production), cost around EUR 1.6 billion. Such investment is enabled by policies like the EU ReFuel Initiative, Japan's planned 10% mandate by 2030, Singapore's planned structural offtake mechanism and ongoing policy and regulatory development in the USA. Therefore, investment in research and development and subsequent investment in the manufacture of biofuels such as SAF, will only happen when there is demand certainty in Australia. Such demand certainty can be created by policy and regulatory signals.

We would also like to highlight that economic modelling carried out by Neste shows that Australia's current emissions reduction measures are not enough to reach the 43% target set for 2030.



Biofuels can play an important role in bridging this gap. However, we would also highlight that bridging the gap requires all green technologies to be advanced across Australia.

Chapter 11 – International aviation

Are there opportunities for improvement and where would the greatest benefits be achieved?

It is definitely important to learn from other international examples to draw valuable insights and best practices.

Firstly, it is important to learn from policy and regulatory frameworks in the USA (RFS, LCFS) and the EU (EU RED, ReFuelEU Aviation). Focusing on setting clear targets, and establishing supportive regulations and providing incentives for sustainable liquid fuel adoption would lead to economic benefits as well as emissions reductions.

Secondly, it is important to understand the level of infrastructure development required if policies lean towards local production. At this stage, it is important to learn that liquid biofuels is a global market and therefore being able to create a demand by adopting biofuels mandates is crucial.

Thirdly, promoting public awareness and education about the importance of sustainable fuels is necessary to maximise their acceptance and adoption. Looking at examples where successful campaigns have been executed can provide guidance on effective strategies to inform and engage the public. This will help with feedstock acceptability and key sustainability themes.

What issues would be important to cover in a review of the framework for New and Redeveloping International Ports?

The aviation industry is inherently international, and it would be important to include successful examples of airports where SAF supply has been implemented overseas. A review should consider the framework's alignment with international standards (i.e. EU RED or CORSIA), agreements, and collaborations in between airports and SAF products to ensure a harmonized and efficient global SAF market. Neste has collaborated with airports such as Los Angeles International Airport (LAX), San Francisco International Airport (SFO), Amsterdam Schiphol (AMS), and Helsinki-Vantaa Airport (HEL), among others where SAF is currently available for uptake.

Conclusion

Thank you again for giving Neste the opportunity to contribute to the Aviation Green Paper. This is a valuable first step in Australia's journey to decarbonise aviation. Should you have any question or comment and require further information, please contact Steven Bartholomeusz, Head of Public Affairs Asia-Pacific at: steven.markb@neste.com or +65 8876 6702.