Dear,

SkyNRG is grateful for the opportunity to respond to the aviation green paper. SkyNRG is a project developer and future producer of sustainable aviation fuels (SAF) and we look with great interest at Australia since it is a market with a high potential for the production and uptake of SAF. We are therefore keen to get acquainted with the challenges for SAF in Australia and are willing to share our knowledge to aid in tackling these challenges.

About SkyNRG

SkyNRG is a global leader in Sustainable Aviation Fuel (SAF). Since 2010, the company has been scaling up SAF production capacity which is critical for the aerospace industry to meet its 2050 net zero commitment. SkyNRG has supplied SAF to over 90 customers across the world and is now developing dedicated production facilities across the globe to support the shift from fossil jet fuel to sustainable aviation fuel. As a certified B Corp™, SkyNRG prioritizes producing the most responsible and sustainable SAF worldwide. Recognized as a global sustainability leader, it maintains an independent Sustainability Board, which advises the company on feedstocks and provides strategic guidance on wide-ranging sustainability issues. SkyNRG's operations are certified by RSB (formerly known as the Roundtable on Sustainable Biomaterials).

In order to structure our consultation response we would like to take the liberty to only answer the questions that are relevant to sustainable aviation.

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*

The Australian government should put emphasis on sustainable aviation, since aviation is a hard-to-abate sector and very difficult to completely decarbonize. Australia has a unique situation that creates a lot of opportunities. This situation consists of the combination of strong economic opportunities, due to aviation being key to the Australian economy, and a large potential of biogenic feedstocks and renewable electricity. These create a strong lever to realize production of SAF within Australia and creates an opportunity to progress the SAF market to ensure that Australia can reach its 2050 sustainability targets.

There do exist a couple of caveats that must be tackled in order to ensure bankability of projects to realize investments. SAF is and most likely will be more expensive than fossil kerosine and needs therefore regulatory incentives, such as mandates or financial incentives, to ensure uptake in order to decrease financial risk. Australia can leverage these incentives to set the sustainability standards for SAF.

Chapter 3 – Airlines, airports and passengers – competition, consumer protection and disability access settings

- *What types of data and analysis should the Australian Government produce to support aviation competition outcomes?*

The Australian government should allow for competition on sustainability. This can be achieved through sustainability labelling on the basis of quantity and type of fuel used per

flight (incl. LCA score, feedstock and production pathway), airplane type used per flight, load factors on flights etc. The labelling should be done on a multicriteria basis of fuel efficiency and emissions reduced since you want to optimize for energy efficiency and emission reduction.

- *What should the Australian Government take into account in designing the terms of reference for the proposed Productivity Commission Inquiry?*

Sustainability should be included as an issue where different market parties can compete on next to price and customer service.

- *What measures should be taken to ensure Australian aviation markets operate efficiently, improve competition settings, and deliver optimal consumer outcomes?*

The Australian government should enforce flight labelling and a SAF mandate to ensure a sustainable aviation sector with competition between airlines to do more than the minimum set by the SAF mandate.

- *Are the Aeronautical Pricing Principles fit-for-purpose? How could they be improved?*

Airports should have the opportunity to take sustainability into account as a negotiating point in their contracting process.

Chapter 4 – Regional and remote aviation services

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

As stated correctly in the green paper, SAF is a technology that provides large opportunities for Australia, especially in the regional and remote areas on feedstock production. Currently, Australia produces oil seeds, which are not necessarily the most sustainable way to produce SAF. The Australian government should look at the sustainability criteria set by RSB to update their sustainability criteria and ensure that realizing CO_2 emission reduction occurs in parity with other sustainability criteria, such as indirect land use change. Remote and regional areas can profit from the harvest and processing of the feedstock of specifically advanced biofuels. Advanced biofuels are often produced from feedstocks which can best be processed with the hub and spoke concept, where the spokes are formed by production of an intermediate (ethanol, methanol) in the regional and remote regions of Australia.

Furthermore, Australia has a large potential for the production of eSAF due to the large potential for renewable energy. This can result in jobs in the renewable energy sector, hydrogen production or SAF production in regional and remote areas.

- *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?*

As SkyNRG, we are in favour of all solutions to decarbonize aviation. The development of hydrogen and electric airplanes is evolving rapidly, but it is good to realize that hydrogen has infrastructure challenges that must be tackled since hydrogen is not a drop-in fuel. The Australian government should take the infrastructure challenges into account when setting up the political framework.

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

SAF production is expensive. Currently most SAF is produced using the HEFA pathway. Australia has a large potential feedstock in other advanced biogenic feedstocks, however. Many of these feedstocks are bulky (e.g. agricultural or forestry residues, MSW). Therefore it does not make sense to transport them over a long distance from an economic and sustainability standpoint. This can be overcome by either having the SAF production close to the feedstock, or by converting the feedstock into an intermediate (ethanol or methanol) before transporting it to a central SAF plant. Both options would result in more jobs in remote and regional areas where the feedstock will be produced.

The Australian government should set up a mandate with a sub target for advanced biofuels. This sub target can focus on feedstocks similar to those addressed in Annex IX of the European Union's Renewable Energy Directive. These policies should focus on more sustainable and locally produced feedstocks. SAF plants focused on advanced fuels to meet this type of mandate will have a lower TRL level and will therefore need help de-risking. They might, for example, need a CapEx subsidy or loan guarantee to reduce the risk as part of the scale up. The Australian government can leverage these policies to encourage the use of regional supply-chains and stimulate job growth in regional areas.

Low carbon fuel standards have also proven effective in driving demand and supply of SAF into markets such as California. LCFSs are designed as market based mechanisms to decrease the carbon intensity of a fuel pool and provide an increasing range of low-carbon and renewable alternatives, which reduce petroleum dependency and achieve air quality benefits. As a performance standard, an LCFS can incentivize investment and production in SAFs that provide a greater carbon reduction benefit—the greater the carbon reduction, the more credits that can be earned to offset the cost of these fuels.

Another effective approach is the combination of a declining carbon intensity reduction requirement for fossil jet fuel in tandem with an increasing volumetric mandate for SAF volumes.

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?*

The most important thing the Australian government can do is set a mandate for SAF uptake on the largest 5 airports of Australia: Melbourne, Sydney, Perth, Brisbane and Adelaide. This mandate should include an overall mandate or percentage of SAF uptake required, which ensures affordability, as well as two sub targets--one for eSAF and one for advanced biofuels.

Furthermore, the aviation sector should largely step away from off-sets. It creates an illusion of sustainability, while the additionality of off-sets is often not guaranteed. As a result the public can become critical of sustainability efforts made in the aviation sector.

- *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?*

The most important measures that can achieve the most impact before 2050 are:

- Sustainable Aviation Fuels
- Fleet renewal

The introduction of a pricing mechanism and the introduction of a SAF mandate will have the largest impact in achieving these measures. Electric airplanes and hydrogen airplanes will aid in decarbonization and reduction of energy usage, but mostly after 2050.

- *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)?*

The Net Zero Roadmap and Action Plan should include at least:

- A timeline towards a mandate or low carbon fuel standard for SAF;
- Sustainability criteria for feedstocks;
- A list of sustainable feedstocks for the separate mandates;
- A definition of eSAF and how you can produce it;
- Funds for the realization of innovative new SAF projects to access for example in the form of:
    - Loan guarantees;
    - Subsidies;
    - Incentives for SAF production or uptake.

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

To begin with, the Australian airports and airlines are allowed to use off-sets. This is allowed, but it generates a misinformed message to the people making use of the plane or airport. We would therefore support a limitation on the use of off-sets where alternatives to reduce emissions within the sector are present.

Furthermore, the Australian government should enforce more sustainable behaviour by setting norms, setting a price on emissions and investing those funds towards new innovative ways to reduce emissions.

This could entail:

- A SAF mandate for all departing flights from Australia (incl. international flights) incl. an advance biofuels sub-mandate and a eSAF sub-mandate;
- A low carbon fuel standard;
- Sustainability norms on the fuels produced and used;
- A greenhouse gas pricing mechanism, such as the safeguard mechanism;
- Innovation and CapEx subsidies on new industries;
- Guarantees and loans for new projects.

- *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?*

Benefits:

- The green properties of emission reduction can be claimed under the Safeguard Mechanism;
- Companies can already report on their emission reduction on the basis of book-and-claim;
- The Australian government can better monitor non-CO_2 emissions;
- Airplane operators can compete on their sustainable ambitions and prove them through public reporting;
- By setting national guidance on reporting double counting can be prevented.

Risk:

- Mismatch with the widely used voluntary certification schemes

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

Quality standards are set by ASTM and these are recognized as a global standard.

Sustainability standards should be set by the Australian government, who can be advised by RSB, a sustainable certification body, NGO's and market participants.

Sustainability certification: the Australian government can set strong demands on quality of certification, random controls, taking into account reasonable assurance etc. If a certification body does not comply to the rules, they are not allowed to certify SAF.

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

Australia has strong opportunities for eSAF production due to the high potential for renewable electricity production. The most important legislation to start production of eSAF is 1) a SAF mandate that requires the uptake of eSAF. 2) clear sustainability requirements for hydrogen and eFuel production, similar to the Renewable Fuels of Non-Biological Origin DA in the EU or the RFNBO guidelines in the UK. 3) certification schemes that can certify against the sustainability criteria. 4) Support schemes, production targets, etc. to ensure that production of eSAF will be started in Australia.

Furthermore, as stated in the Green Paper, Australia also has high potential for biofuel production. There are no clear sustainability criteria published and some of the feedstocks produced in Australia are not in line with EU sustainability requirements, the biggest SAF market. As a result, producers will most likely focus on other feedstocks. Australia will produce a lot of feedstock for advanced SAF produced through routes such as, Methanol-to-Jet, Alcohol-to-Jet or Fischer-Tropsch. These production routes have a lower TRL and a higher risk profile associated with this. Therefore they need to be derisked to be able to reach FID and compete with the HEFA technology. The feedstocks for the production of advanced biofuels are more difficult to transport and the supply-chain will most likely be realized through a hub-and-spoke concept. As a result this can be used to increase development in rural areas, but the demand for advanced feedstocks is not as clear as the demand for HEFA due to the higher price point. Therefore, we would advise setting a mandate for advanced feedstocks.

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

1. There is no SAF mandate or low carbon fuel standard in place
2. There is no clear regulatory framework to which sustainability criteria SAF should comply.
3. For eSAF production there needs to be competitively priced renewable hydrogen present and biogenic CO_2, furthermore the definition of eSAF should be set similarly to the definition in the EU. This helps derisk the plants due to the opportunity to supply to the EU, if necessary.
4. For the HEFA production pathway the issue exists that co-processing will most likely be allowed up to 30 % by the ASTM. As this only requires low CapEx, most feedstocks containing free fatty acids will be used for blending in refineries. Australia currently has 2 operational refineries and it is unclear whether these refineries can co-process.
5. For advanced feedstocks the low-TRL of the production pathway is an issue. There is currently no supply-chain in place for the feedstocks. There is no set mandate for SAF produced from advanced feedstocks, and advanced feedstocks are more expensive than HEFA SAF. A subsidy scheme or guarantee scheme should be implemented to reduce the risk and increase the bankability of these projects.

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

The Australian government can implement support schemes for innovative production techniques, pilot plants and innovation funds for certification of new routes.

- *What information and guidance is needed to support regional aviation's net zero transition in the context of these emerging technologies?*

Regional transport needs guidance on whether or not infrastructure will be available for the necessary fuels. For example, if a hydrogen plane makes the lay-over it needs to ensure that it has the opportunity for tankering. Since hydrogen is difficult to transport and liquify the airports need to be sure whether and by when they have to develop the infrastructure to allow for uptake of hydrogen. Similar issues are present for high blends of SAF since SAF is currently only ASTM certified up to 50%.

Chapter 10 – Future industry workforce

- *How can government policy enable industry to support the net zero economy and the future skills, training, and workforce needs that entails (including future fuels)?*

One thing that seems currently overlooked in the Green Paper is the training of personnel for in the production of SAF. If Australia wants to realize SAF production in the country it needs to have trained personnel available, also in the regional areas of the country where the installations might be built near its feedstock. It can be a challenge to find skilled chemical engineers, operations managers and other staff to work in regional areas.

- *Would an analysis of future skills and workforce needs help position the aviation industry to pre-emptively respond to emerging needs?*

We think that a broader analysis should be more complete, including the feedstock and fuel production.

Chapter 11 – International aviation

- *Are there other issues or concerns associated with the Australian Government's approach to negotiating aviation bilateral agreements that you wish to highlight? What opportunities exist to improve the approach to international negotiations?*

SkyNRG strongly supports open skies to ensure that competition can result in a strong and vibrant Australian economy through tourism, trade and providing connectivity. A result of these negotiations will be better and cheaper connectivity, which results in more flights and thus more emissions. As part of the negotiations the Australian government should take sustainability into account. CORSIA does not provide a strong incentive to reduce emissions. For example. the pricing is weaker than the Australian Carbon Pricing mechanism. These international flights should be included in a SAF mandate, and/or in the same pricing scheme as national flights.

We are glad we could provide input on the Green Paper and are keen to be updated on the progress on the White Paper. Furthermore, we are willing to discuss our response to the consultation and are happy to answer any questions.

Best regards,

Tom Strengers

Policy and Sustainability Manager at SkyNRG
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