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# Aviation Re-Imagined

Georgine Roodenrys - 24 October 2024

## We must learn from the past...

Jared Diamond

Collapse: How Societies Choose to Fail or Succeed

- Long-term planning: "... the courage to practice long-term thinking, and to make bold, courageous, anticipatory decisions at a time when problems have become perceptible but before they have reached crisis proportions."
- Willingness to reconsider core values: "... the courage to make painful decisions about values. Which of the values that formerly served a society well can continue to be maintained under new changed circumstances? Which of these treasured values must instead be jettisoned and replaced with different approaches?"



## If we fail to decarbonize or repair nature... the Planet will be fine...the state of the environment is a social issue

To manage social license proponents of sustainable aviation must:

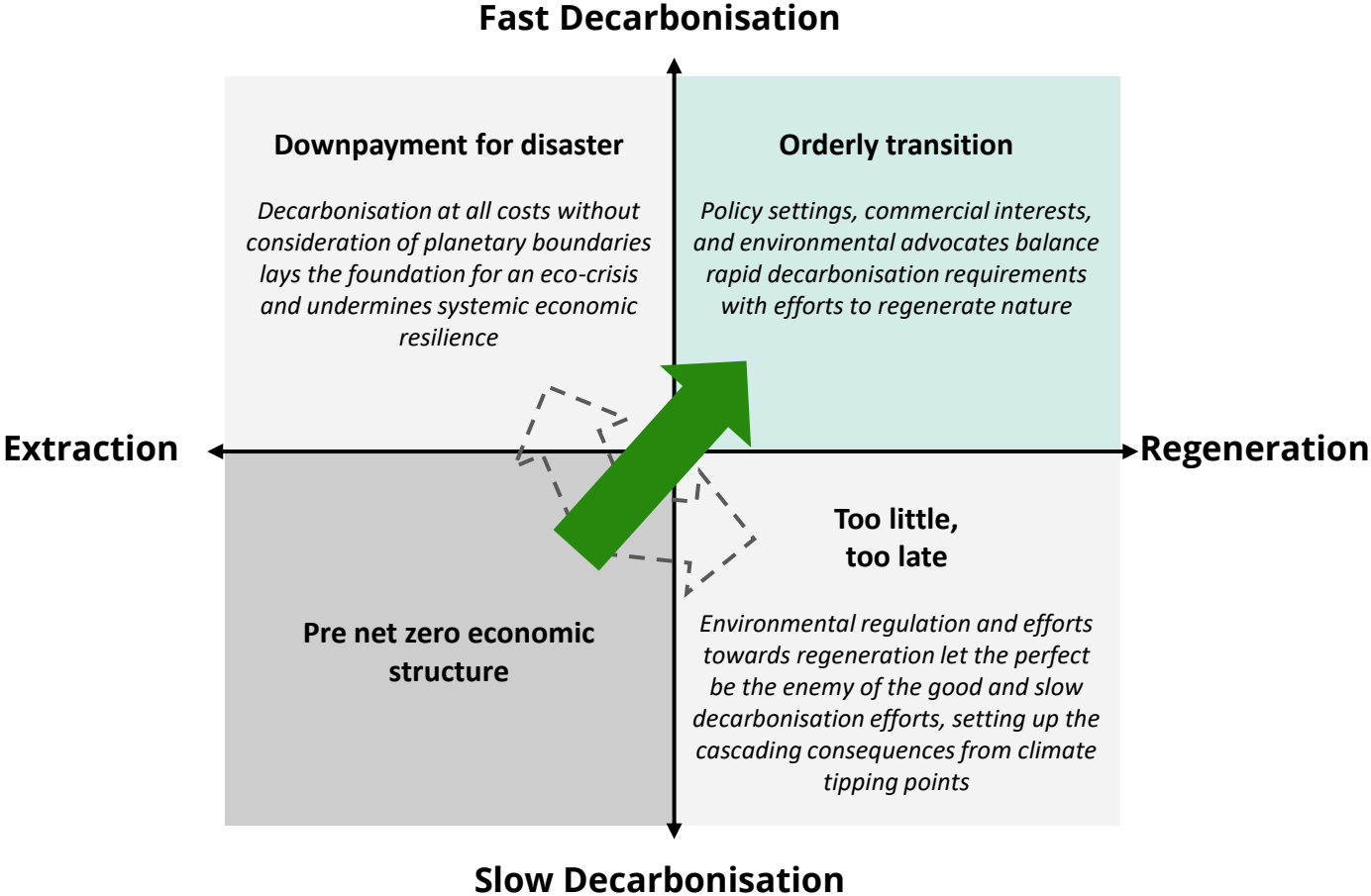
- Take and talk a systems view – understand the whole decarbonization challenge
- Demand nature positive outcomes
- Drive system innovation



# An orderly climate transition depends on regeneration as well as speed & scale

Failure to couple decarbonisation with regeneration risks significant economic consequences

Conceptual framework for understanding the relationship between decarbonisation & regeneration

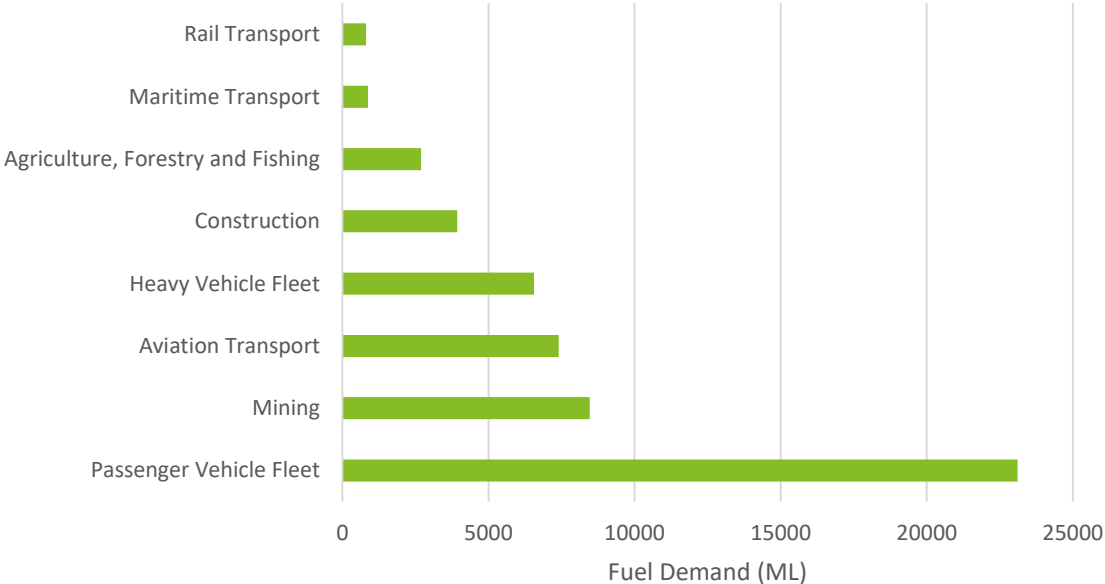


Source(s): 1. [Climate Rights International](#), 2024

# What is the case for decarbonising aviation?

Australia's liquid fuel use constitutes 22% of total emissions

Fig. 1: Australian liquid fuel demand across key sectors



## Liquid fuel use represented 22% of Australia's 2020 emissions footprint

Liquid fuel use in Australia contributed 117 MtCO<sub>2</sub>e in the 2019/20 financial year. The aviation industry contributed 18.9 MtCO<sub>2</sub>e in the 2019/20 financial year, equivalent to 3.5% of Australia's total emissions.

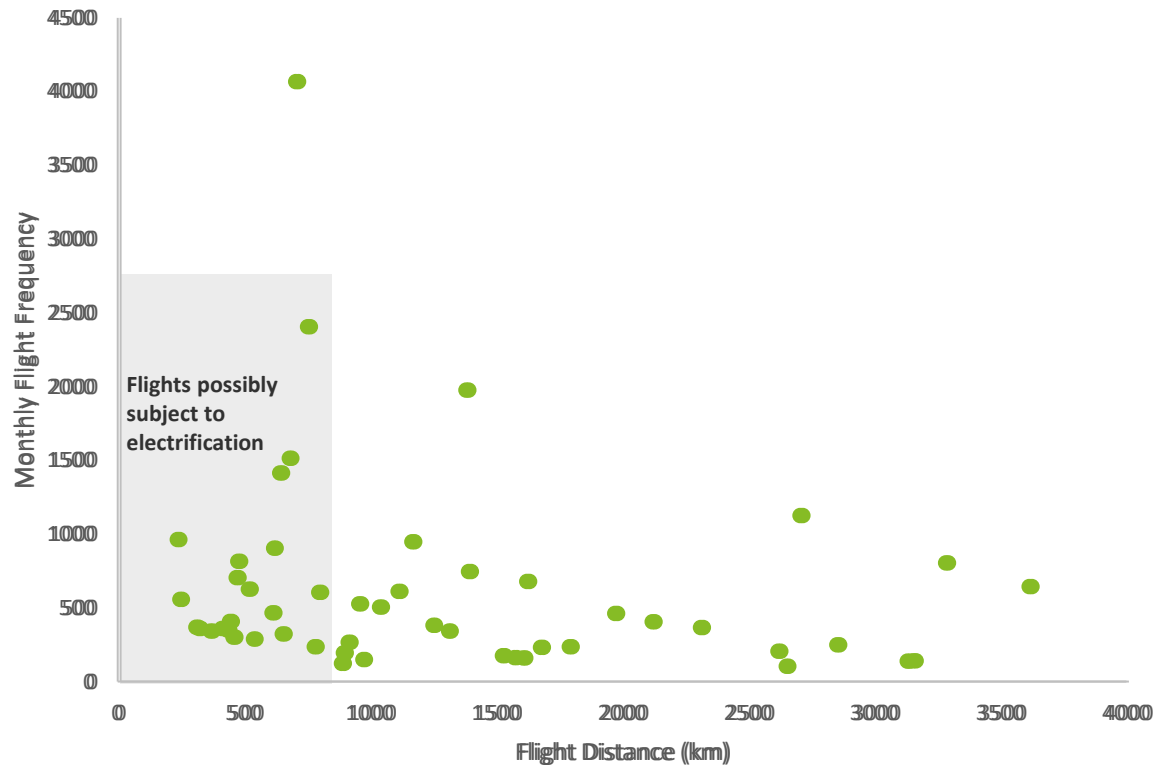
Source: Bioenergy Australia (2023), "Transitioning Australia's Liquid Fuel Sector: The Role of Renewable Fuels", based on ABS 2019/20 financial year Energy Accounts



# And why biogenic SAF and not electrification?

This diversification of decarbonisation technologies highlights the importance of SAF

Australian domestic air routes by distance and frequency



## Only a third of Australia's domestic air travel is likely to be electrified

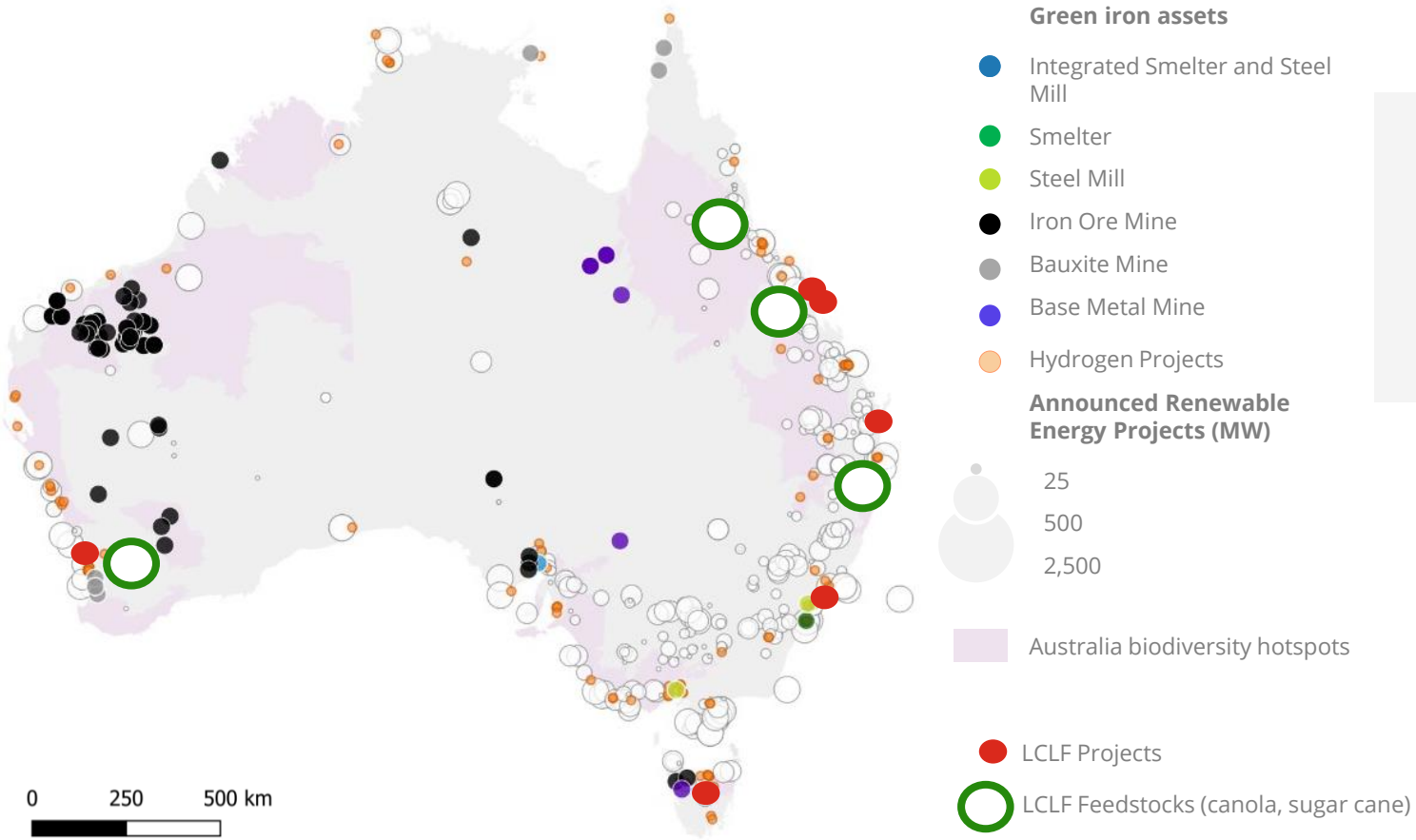
This figure demonstrates that about 30% of Australian domestic air travel will be subject to electrification. Short-haul flights are ideally suited for electrification. Australia could adapt next generation aircraft technologies such as battery-electric in the medium-term or hydrogen-powered in the longer-term.

Source: Flight data from BITRE (2023), Australian Air Distances and Domestic Aviation Activity. Electrification applicability from Deloitte and Shell (2021) Decarbonising Aviation: Cleared for Take-off

# LCLF is just one part of the transition story....

Future Made in Australia will require structural consideration of nature & regional impacts

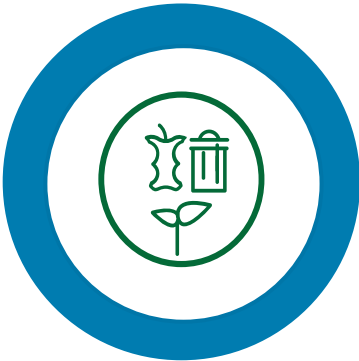
Figure 2: Overlaying key elements of Future Made in Australia with Australia's biodiversity hotspots<sup>1</sup>



**A new approach will be required to deploy at pace while managing the impacts on these hotspots.** Adopting a new mindset of coupling nature regeneration with development could reduce further degradation of these areas. Several organisations such as Carbon Positive Australia and Western Australia Biodiversity Science Institute (WASBI) are leading efforts to support this by contributing to knowledge sharing and supporting efforts to minimise residual impacts from increased development.

Notes: 1. Biodiversity hotspots are approximate and provide an illustrative example based on information from the [Western Australian Biodiversity Science Institute](#). Extraction and processing assets, announced renewable energy projects and hydrogen projects is based on databases from GeoScience Australia, DISER, the Global Energy Monitor, DCCEEW and WABSI. 2. [Williams et al., 2011](#)

With this level of impact....and because of the cumulative nature of the transition to net zero...social license issues will emerge across the value chain....



**Upstream**

- Land-clearing
- SAF versus carbon
- SAF versus food
- SAF versus materials
- Renewable Energy on productive land
- Scale of development in farming communities
- Genetically modified grain use and impacts on environment
- Fertilizer and water use
- First Nations economic participation
- Export of fuel crops



**Production**

- Industrialization of regional communities
- Water security
- Environmental Impact
- Jobs/Skills
- First Nations economic participation

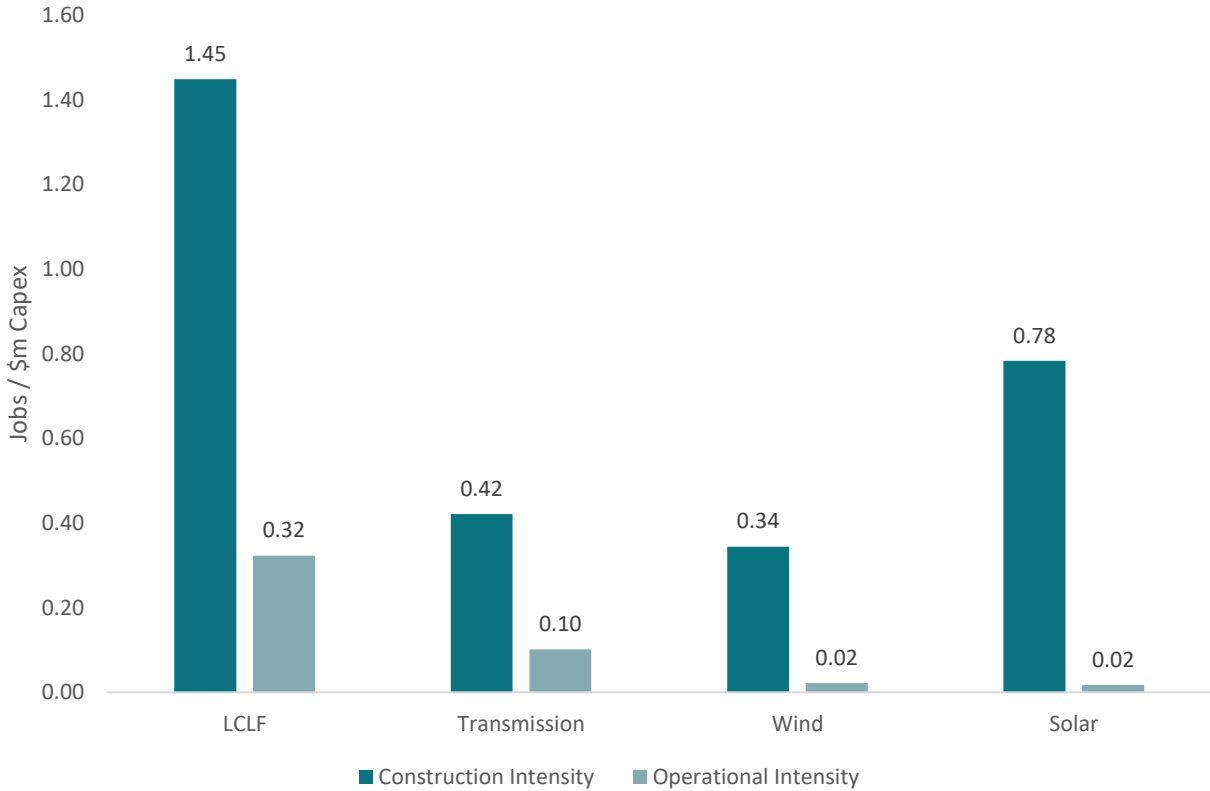
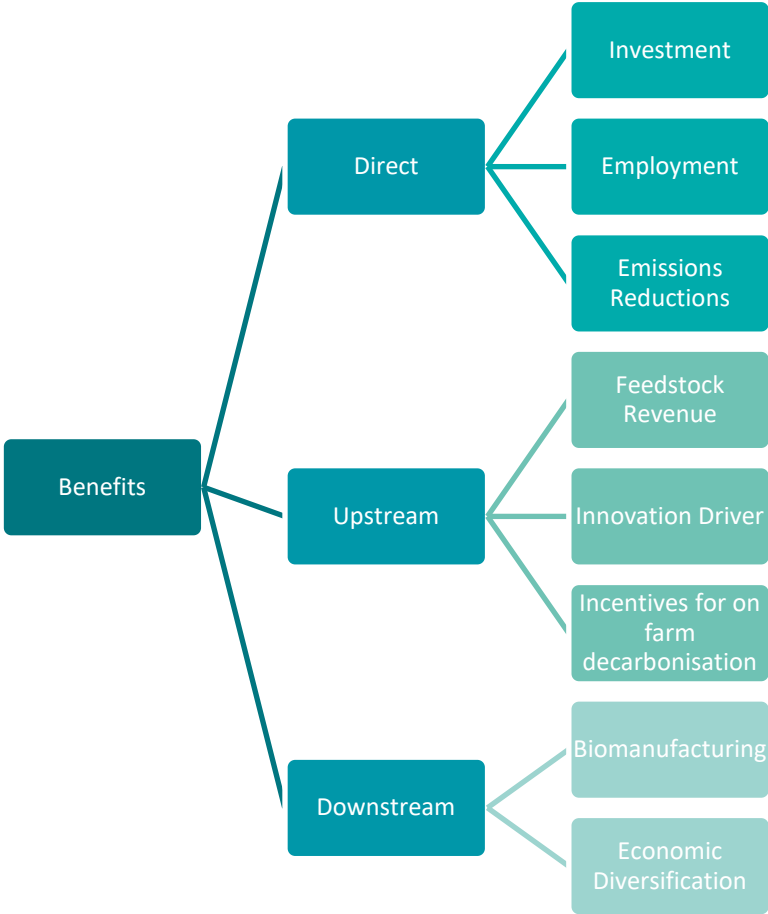


**Aviation & Tourism**

- Increasing costs of travel
- Inequitable access to travel as costs increase
- Distrust of sustainability claims & reporting
- Distrust of emissions claims & reporting
- Climate impacts on key tourism destinations sparking outrage



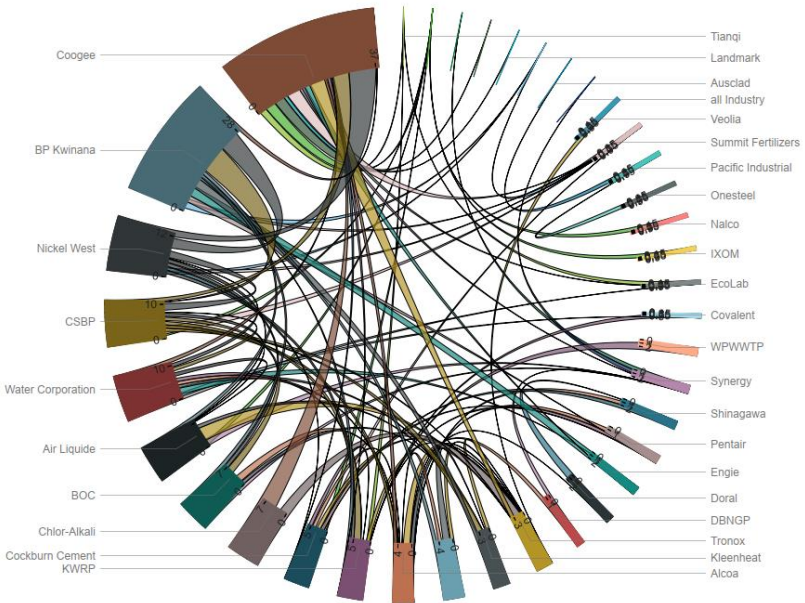
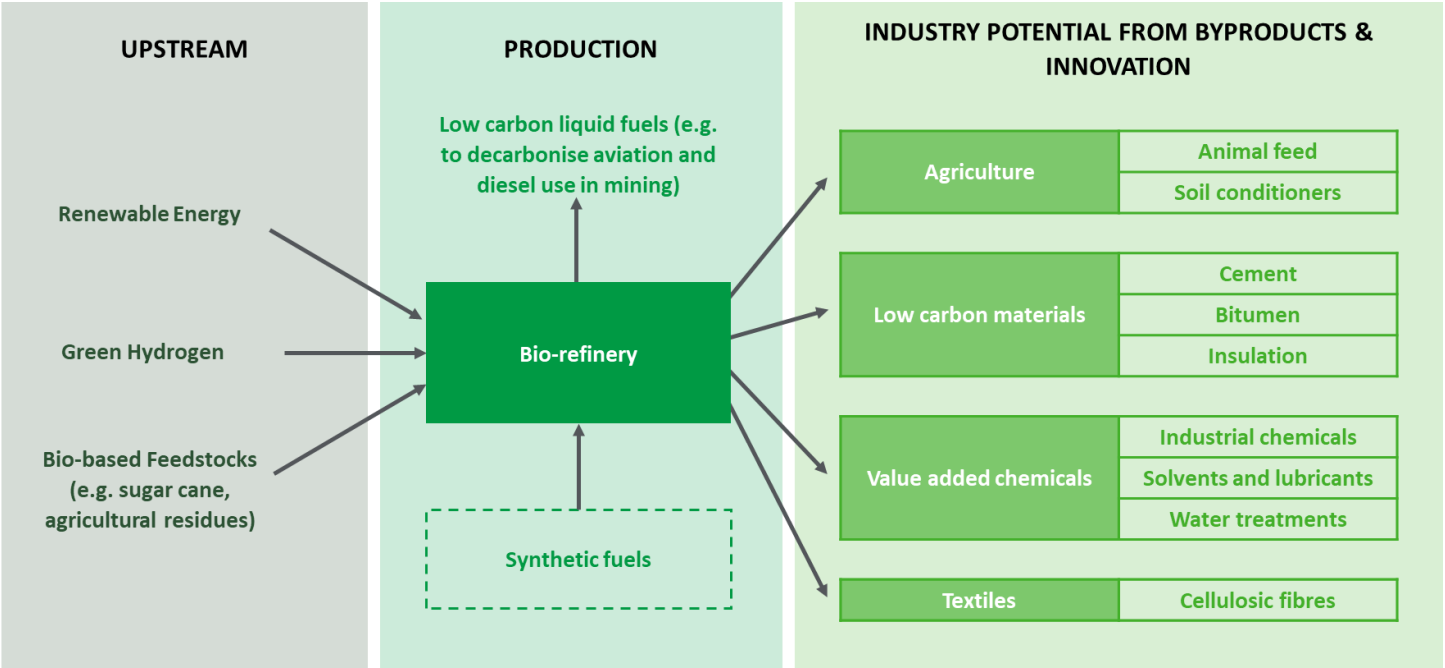
To succeed Aviation and Tourism industries must have a clear view of the benefits an LCLF industry will create, to compare against other productive uses for public and private capital



Source: Deloitte analysis based on sample of 3-5 projects per category  
 Typical Workforce requirements per \$m of project capex

# The narrative must include the wider benefits to regions, communities and government including co-benefits.

Acceleration of development will require structural consideration of nature & regional impacts



Source: Deloitte analysis, including of material flows outlined by Kwinana Industries Council

# What are the key insights...unlocking social license for sustainable aviation?

## 5 key approaches to support sustainable industry development

1

### **Certification standards that address social and environmental impacts**

The industry in Australia is already heading in the right direction with interest in ensuring that local sustainability standards address a range of issues including social and environment. Certification and supply chain transparency will be vital for ensuring that a nature positive approach underpins LCLF development and reflects local concerns.

2

### **Promoting the economic co-benefits of developing low carbon liquid fuels**

The aviation and tourism sectors can do more to make the broader case for the transition to a ZNE economy rather than presume that communities accept this change and believe that change to their regions and communities is both inevitable and positive. Decarbonization of these sectors must support broader community goals.

3

### **Cluster production to industrial eco-systems and facilitate complexity**

To minimize regional social and environmental impact and maximise public value, industry should promote LCLF development in industrial clusters that support development of economic complexity. Clustering will expedite planning and de-risk investment and support co-benefits.

4

### **Promote regenerative agriculture: Food, fuel, energy, materials + biodiversity**

Understanding the impacts of biogenic feedstocks on the use of productive land and how market forces can be tempered to ensure regenerative outcomes will support long term sustainability. Certification and supply chain transparency will assist. As will integrated policy and planning.

5

### **Support innovation in the planning system to increase renewables deployment while addressing social license.**

The rapid deployment of renewables is currently meeting social license headwinds. Bottlenecks can be unlocked by digitizing and innovating in the planning and approvals space with a focus on approvals conditioning that supports regional development and supports nature positive outcomes.



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