IFM Investors

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Flying into the future

Shifting to sustainable fuel sources

Decarbonisation of aviation, a particularly hard-to-abate sector, will hinge on the successful global rollout of sustainable aviation fuel. But how close are we to a widespread use of this drop-in fuel?

Key takeaways

1. Decarbonisation of aviation remains a significant global challenge, with sustainable aviation fuels (SAF) offering the only currently available medium-term pathway to lowering the sector's emissions.

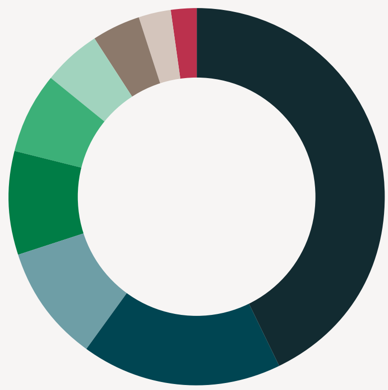
2. Government mandates and production fuel credits have proven effective in encouraging production of SAF globally. Airline-dependent Australia has only recently started its own process.

3. IFM Investors is working with the Australian government and industry to help leverage the country's advantages and get a domestic SAF industry off the ground.

Maintaining the freedom and connectivity that comes with frequent, affordable air travel while decarbonising is a significant global challenge. Over 20% of global carbon emissions come from the transport sector and while some of these emissions can be readily addressed, the 2% stemming from aviation are considered particularly hard-to-abate[1]. This is because the energy density requirements of commercial flight are difficult to meet using electrification or hydrogen. We believe that to decarbonise aviation, a fuel that is lighter than batteries and denser than hydrogen is needed. Sustainable aviation fuel (SAF) meets these criteria and is the only currently avaliable medium-term pathway to decarbonise aviation. Based on one modelling scenario[2], by 2050, replacing 80-90% of aviation fuel with SAF would reduce global aviation emissions by 62%[3].

FIGURE 1

GLOBAL EMISSIONS BY SECTOR IN 2023



Source: Air Transport Action Group (ATAG), 2024

[1] Aviation - IEA
[2] ICAO's long-term aspirational goal SAF avaliability scenarios (see scenario F2)
[3] IATA - Net Zero Roadmaps. Note this is dependent upon assumptions relating to the aircraft technology scenario by 2050.

SAF: An overview

The physical and chemical properties of SAF are almost identical to traditional aviation fuel. It was approved as safe for use in commercial aviation in 2011[4], following the first commercial flight blending traditional and biomass-based fuel in 2008[5]. Since then, approximately 800,000 commercial flights have been flown using SAF blended with traditional aviation fuel. Airlines covering approximately 34% of global passengers have made SAF usage commitments for 2030, although progress is being hindered by availability of fuel and airlines including Air New Zealand have scaled back commitments due to supply and price concerns[6]. One of the great advantages of SAF is that, being functionally identical to traditional aviation fuel, it is compatible with existing aviation fuel supply chains and airside fuel infrastructure, having already been supplied through 132 airports globally[7].

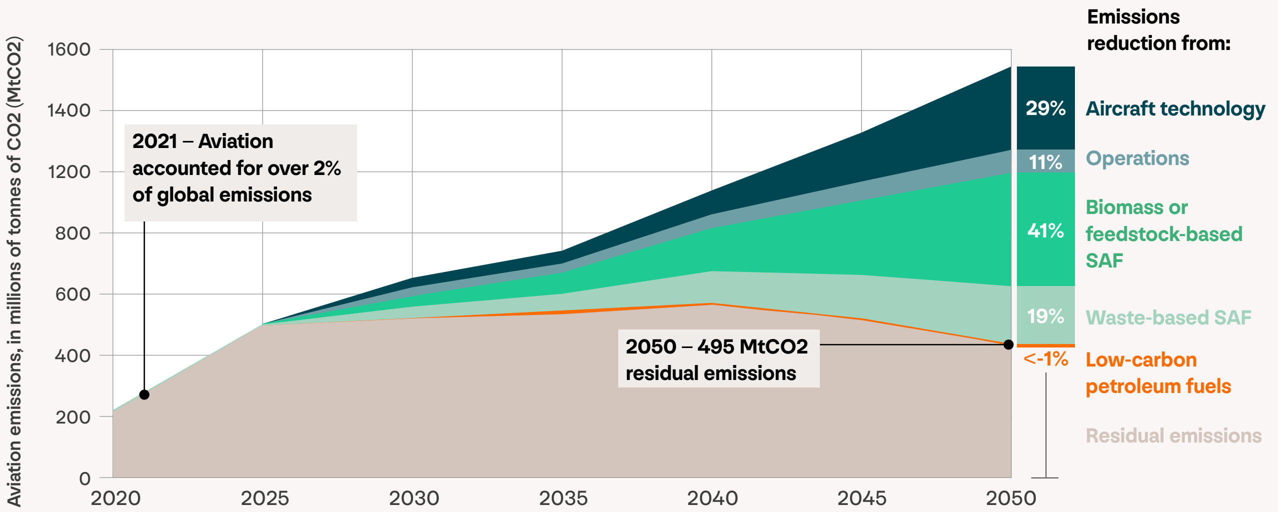
Where traditional aviation fuel is produced from crude oil, SAF can be produced from a range of feedstock readily available, including canola or rape seed oil. Other SAF feedstocks include sugar crops, waste oils, municipal rubbish and agricultural residues.

Unlike other decarbonisation pathways envisaged for aviation, such as engine and aircraft advancements, electrification, and hydrogen, SAF is a 'drop-in' ready fuel which can be blended with existing jet fuel, without significant alterations to airplane engines and refuelling infrastructure.

As a key decarbonisation lever in aviation, SAF is increasingly used across the aviation supply chain. The International Air Transport Association estimates SAF production will reach 2.7 billion litres in 2025. This would equate to 0.7% of all global jet fuel, more than doubling its share compared to the year prior. In the UK, Manchester Airports Group (MAG), a portfolio company of a fund managed by IFM, was instrumental in calling for the now-legislated UK mandate of 10% SAF usage by 2030. In the US, New York's LaGuardia Airport first distributed SAF to an airline tenant in 2022,

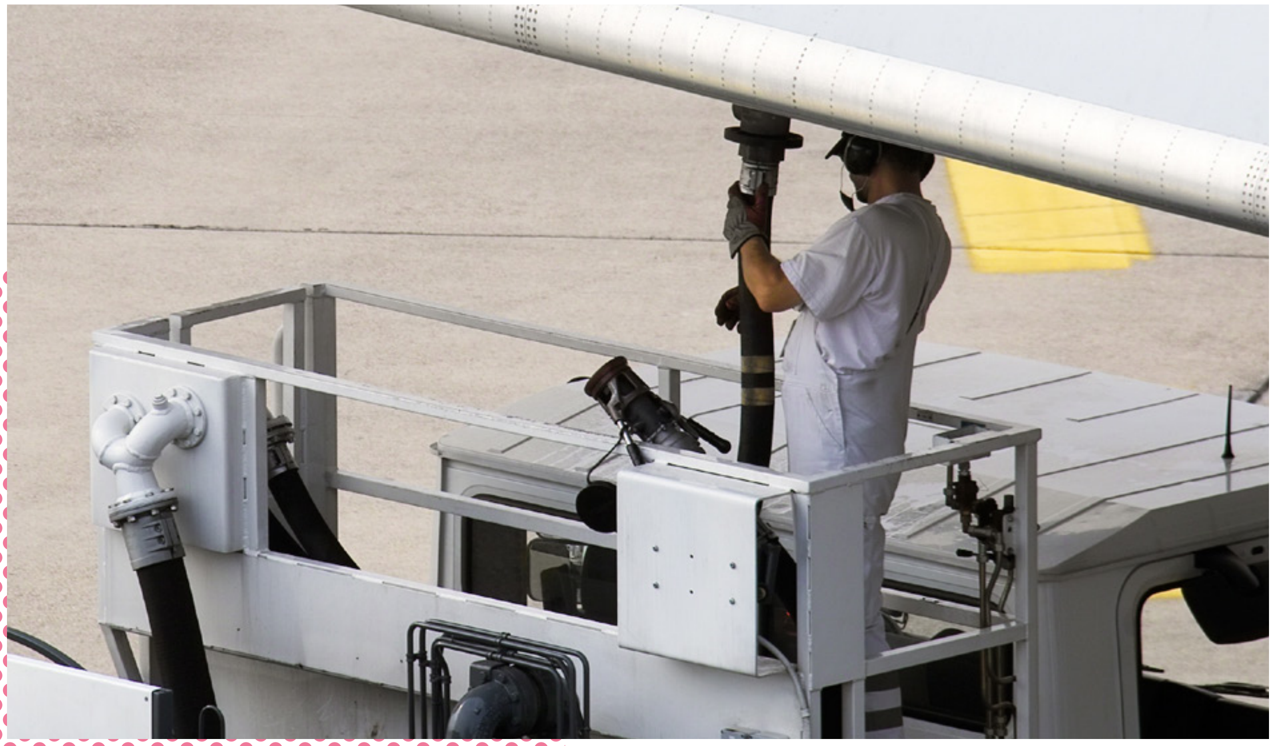
FIGURE 2

AVIATION INDUSTRY: GLOBAL EMISSION REDUCTION SCENARIO



Source: International Civil Aviation Organization (ICAO) report on the feasibility of a long-term industry goal for CO2 emission reductions. This is the 'medium' scenario out of a low, medium and high forecast of post-COVID aviation traffic.

4 ICAO https://www.icao.int/environmental-protection/Documents/Sustainable%20Aviation%20Fuels%20Guide_100519.pdf
5 News Releases
6 ATAG 2024
7 ICAO 2024



transporting the fuel from a Texas refinery nearly 1,500 miles away via two existing pipeline systems – those operated by Colonial Pipeline and Buckeye Partners, both owned by funds managed by IFM. As an owner of multiple Australian airports, including Sydney Airport, Melbourne Airport, Brisbane Airport and Adelaide Airport, rollout of SAF in Australia is a critical component in the continued decarbonisation strategy of IFM managed portfolios. Where many airports, including those owned by IFM managed funds, have successfully tackled Scope 1 and Scope 2 emissions, for instance by installing on-site solar arrays procuring renewable energy via power purchase agreements or electrifying fleet vehicles, most of an airport's Scope 3 emissions come from aircraft emissions.

Currently, however, global SAF supply is constrained, with 77 in-production SAF refining facilities which produced an estimated 1,900ML of SAF, or approximately 0.5% of total aviation fuel demand in 2024[8]. Of this, the overwhelming majority has been produced via the Hydrogenated Esters and Fatty Acids (HEFA) process, and S&P forecast 70% of all SAF will still be made via the HEFA process in 2030[9]. By 2050, global SAF demand is forecast to reach 330ML/d with the highest penetration in Europe (c. 50%) and North America (c. 35%)[10]. Commitment to increasing the global SAF supply is therefore necessary, with the Clean Skies for Tomorrow global target of 10% SAF across the aviation supply chain by 2030 backed by the wider industry, including Brisbane Airport[11].

Establishing a new industry

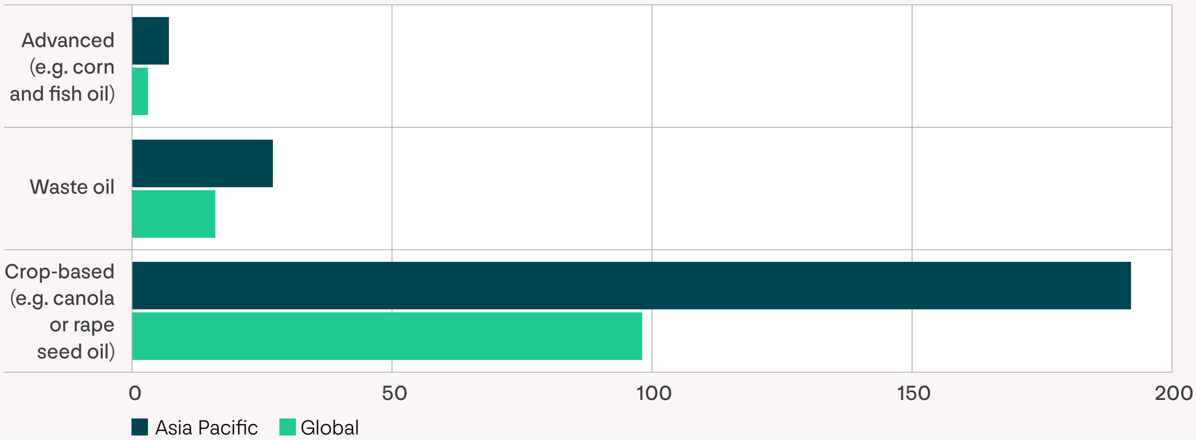
IFM Investors has a global exposure to the development of SAF markets and has seen some jurisdictions make rapid progress, while others move relatively slowly. The European Union's mandate of at least 20% SAF blended into existing fuel by 2035, increasing to 70% by 2050, is an example of a clear demand-side indicator of appetite for increasing SAF production. Similarly, the US Inflation Reduction Act Sustainable Aviation Fuel Credit is an example of a robust and effective supply-side incentive to drive investment into SAF supply chains.

In comparison, Australia has only recently begun to take its first meaningful steps towards establishing a domestic SAF industry. The government has started consulting with industry regarding supply and demand side support measures. We believe Australia has natural advantages which have the potential to create a generational opportunity to become a significant global producer of SAF - not least of

8 ATAG, 2024
9 S&P (2024)
10 S&P (2024)
11 Advancing Australia's sustainable aviation fuel industry | Brisbane Airport

FIGURE 3

FEEDSTOCK THAT CAN BE USED FOR SAF PRODUCTION, IN MILLION TONNES



Source: McKinsey Sustainable Fuels Practice (2024)

which being that the Asia-Pacific region produces an outsized share of SAF feedstock. Approximately 51% of global grains for SAF stem from the region, with significant shares in advanced feedstocks such as corn and fish oil (see Figure 3)[12]. Since 2022, IFM Investors has been engaged with government and industry to unlock this generational opportunity for Australia.

Working with industry and government

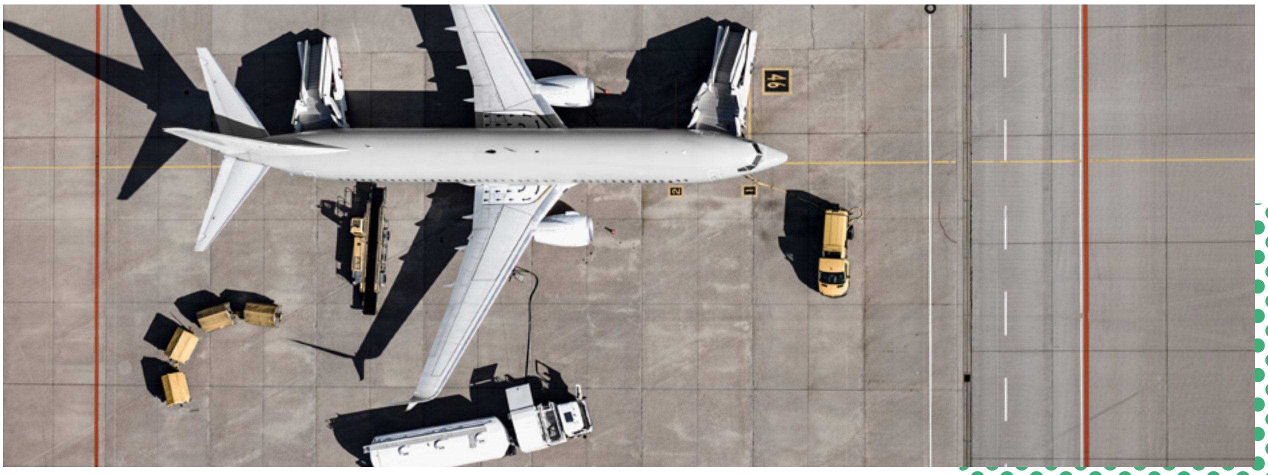
Given the significant opportunity for SAF production in Australia, IFM has been partnering with industry and government to advocate for a domestic industry. In July 2024, IFM announced that it was working with leading agribusiness and processing company GrainCorp and Australia's largest transport energy provider Ampol to explore the establishment of an integrated renewable fuels industry in Australia. At present, we are engaged with GrainCorp and Ampol in a preliminary feasibility process to assess the infrastructure and operational requirements of building an end-to-end SAF supply chain. This will include a greenfield GrainCorp canola crushing facility to supply a purpose-built renewable fuels refinery on the site of Ampol's existing refinery in Lytton, a suburb of Brisbane. This refinery is expected to be capable of producing over half a billion litres of SAF annually. Targeting a commencement date of 2030, the refinery would have a capacity of over 450 million litres of renewable fuels a year. Most recently, we were pleased to see the feasibility study supported by the Federal Government's Australian Renewable Energy Agency (ARENA), which has awarded a combined A$14 million to GrainCorp and Ampol to progress their respective components of the study.

While the above partnership is a significant step towards the establishment of an Australia SAF industry, its success is dependent on a suitable renewable fuels regulatory framework being introduced by the Australian government, and by other supportive governments across the globe. Reflecting on the significant success of supply-side support measures implemented in the US, we believe that a time-limited production tax incentive is essential. This could bridge the cost differential between SAF and traditional aviation fuel, support early investment into an Australian industry and create a more cost-competitive landscape with overseas SAF refining markets. Similarly, drawing on policy mechanisms that have demonstrated success in Europe, we would also encourage the Australian government to consider how an appropriate and achievable domestic SAF mandate may be implemented. This could increase market certainty for early investors in Australian SAF whilst being conscious of the price impacts on travellers.

[12] McKinsey (2024)

Once production incentives are in place, Australian farmers may see greater economic incentive to increase farming of feedstocks which can be converted into SAF. IFM anticipates that alongside an increase in canola crops in Australia, the right incentives, such as long-term offtake agreements signed between supply chain participants, could see a growth in farming of novel crops that have an even greater carbon emissions reduction potential. With jet fuel demand in Australia forecast to reach around 10bn litres per annum in 2030, achievement of meaningful progress towards 10% SAF usage in 2030 will require use of a wide slate of Australian feedstocks including canola oil and waste oils. It will also be important to optimise agricultural SAF supply chains to appropriately manage land and water resources.

“Alongside an increase in canola crops in Australia, the right incentives could see a growth in farming of novel crops that have an even greater carbon emissions reduction potential.



Conclusion

A suite of supply and demand side incentives built in partnership with industry can form the basis of a globally competitive regulatory framework for the production of SAF and other renewable fuels in Australia. We believe this could spur significant private sector investment and enhance Australia’s long term regional economic development and fuel security. It could also play a key role in supporting the decarbonisation of Australia’s aviation industry.

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