

New roadmap charts flight path to sustainable skies

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Australia has a moment-in-time opportunity to develop a sovereign

sustainable aviation fuel (SAF) industry, with domestic demand for jet fuel expected to increase by 75% by 2050, according to a new roadmap released today by Australia's national science agency, CSIRO and Boeing Australia.

Unlike conventional [jet fuel](#), SAF is produced from renewable sources—like agricultural waste, animal fats and vegetable oils—and significantly reduces [carbon emissions](#) over the fuel's life-cycle making it a more sustainable alternative for powering aircraft.

The Sustainable Aviation Fuel Roadmap builds consensus on developing an Australian sustainable aviation fuel (SAF) industry, identifying opportunities to produce and scale production using Australian feedstocks.

CSIRO Senior Manager and lead Roadmap author, Max Temminghoff, said Australia was in a prime position to develop a domestic industry.

"By actively working to liberate feedstocks, the roadmap estimates that Australia is currently sitting on enough resources to produce almost 5 billion liters of SAF by 2025. This could supply nearly 60% of jet fuel demand projected for that year," Temminghoff said.

"That's enough fuel to power 640,000 Melbourne to Sydney return flights on a Boeing 737.

"Through a combination of feedstocks and mature technologies, a large and growing portion of Australia's jet fuel demand can be met with local materials such as agricultural waste and residues.

"To convert these feedstocks into viable jet fuel, the report identifies the Alcohol-to-Jet and the Fischer-Tropsch process—a process currently conducted at CSIRO's Perth laboratory—as ideal technology options to

propel a sovereign SAF industry.

"But Australian government, industry and research must work together to overcome key challenges to realize the economic and sustainability benefits of a domestic SAF industry."

The challenges that the Australian SAF industry must address include feedstock availability, supply chain constraints, and aligning to international standards and regulation.

The roadmap points to biogenic materials in the near term, such as sugarcane, sawmill residues, and municipal solid waste, as well as hydrogen and CO₂ in the medium to long term, as key feedstocks.

Boeing Regional Sustainability Lead APAC and Roadmap co-author, Heidi Hauf, said the findings highlighted that a local SAF industry will contribute to decarbonization and energy security while also generating more regional jobs and new export markets.

"The report identified the role the Australian Defense Force could play in kickstarting Australia's SAF industry and also addressing Australian fuel security challenges," Hauf said.

"Currently, Australia imports 90% of its liquid fuel, including jet fuel, through long supply chains exposed to geopolitical and climate change risks, and delays associated with quality issues, placing the country in a vulnerable position when it comes to jet fuel security.

"With alternative technologies such as battery and [fuel](#)-cell powered planes still limited in long haul capabilities and the increasing competition for carbon offsets, SAF offers the largest potential for reduced aviation emissions in the near-term."

CSIRO Energy Director Dr. Dietmar Tourbier said the roadmap aligns with the Federal Government's recently established Jet Zero Council—of which CSIRO and Boeing are members—and supports the commercial aviation industry's commitment to net-zero carbon emissions by 2050.

"The [roadmap](#) is part of the critical work CSIRO is undertaking to support Australia's hardest to abate sectors to halve their emissions by 2035, and forms part of our Towards Net Zero Mission," Tourbier said.

Together, Boeing and CSIRO have a 34-year collaboration on joint research projects which has led to significant aerospace advances, including a focus on scaling SAF production across the region.

"While further technology development is expected to lead to fully synthetic fuels, biofuel is a critical component to help Australia advance its net zero ambitions now," Tourbier said.

"With the rest of the world transitioning to SAF, Australia should not miss out on the opportunity to become a major player in this space."

More information: Sustainable Aviation Fuel Roadmap:
www.csiro.au/safroadmap

Provided by CSIRO

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