

WBA SAF Factsheet:

Market status, policy landscape and the scale-up gap



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SUSTAINABLE AVIATION FUELS (SAF)

WBA Factsheet

Summary

Sustainable Aviation Fuel (SAF) is a critical technology for decarbonising the aviation sector, which currently contributes about 2–3% of global CO₂ emissions. SAF is produced from a wide range of sustainable feedstocks, including used cooking oil, agricultural residues, municipal solid waste, woody biomass, and captured carbon, using approved conversion pathways such as HEFA, Fischer-Tropsch, Alcohol-to-Jet, and Power-to-Liquid. Compared to conventional jet fuel, SAF can reduce lifecycle greenhouse gas (GHG) emissions by 60–95%.

SAF is a drop-in fuel: it is chemically indistinguishable from conventional Jet A-1, requiring no modification to existing aircraft or airport fuelling infrastructure when blended up to approved limits. ICAO's Long-Term Aspirational Goals (LTAG) and major industry roadmaps project that SAF could provide 65–80% of the sector's CO₂ reductions by 2050. Global SAF production reached approximately 1 million tonnes in 2024, less than 0.5% of total aviation fuel demand of ~300 million tonnes per year.

Scaling SAF requires rapid expansion of feedstock supply chains, commercialisation of advanced conversion technologies, and enabling policy frameworks including blending mandates, tax incentives, and certification standards. The EU's ReFuelEU Aviation regulation, the US Inflation Reduction Act, and ICAO's CORSIA scheme are the principal policy drivers. Strong international collaboration, investment in first-of-a-kind projects, and harmonised global sustainability standards will be essential to close the gap between current production and the volumes needed for net-zero aviation by 2050.

Key Facts at a Glance

Indicator	Data
Global aviation CO ₂ (2024)	~1 Gt/year (~2.5% of global CO ₂ ; ~12% of transport CO ₂)
Total jet fuel demand	More than 300 million tonnes/year
SAF production (2024)	~1 million tonnes (~0.53% of aviation fuel demand, EASA 2025)
GHG reduction vs fossil jet	60–95% lifecycle reduction depending on pathway & feedstock
ASTM-certified pathways (2025)	11 pathways; maximum blend typically 50% (Exception of 10% for HFS-SIP)



Download the Factsheet here

Summary and key facts

What SAF is and why it matters

- SAF is produced from waste and renewable feedstocks via approved pathways (HEFA, Fischer-Tropsch, ATJ, PtL), cutting lifecycle GHG emissions by 60–95% versus fossil jet.
- It is a drop-in fuel: chemically indistinguishable from Jet A-1 up to approved blend limits, requiring no aircraft or infrastructure modification.
- ICAO's LTAG and industry roadmaps rely on SAF for 65–80% of aviation's CO₂ reductions by 2050.
- Global (nameplate) production reached ~1 Mt in 2024, under 0.5% of the ~300 Mt/year jet fuel market, and scaling requires feedstock expansion, conversion technology commercialisation, and sustained policy support (ReFuelEU, CORSIA, US IRA).

Key facts at a glance

Indicator	Data
Global aviation CO ₂ (2024)	(~2.5% global CO ₂)
Total jet fuel demand	>300 Mt/year
SAF production (2024)	~1 Mt (~0.53% of demand)
GHG reduction vs fossil jet	60–95% lifecycle, by pathway
ASTM-certified pathways	11 (2025); max blend typically 50%
Dominant pathway today	HEFA, 81% from UCO (2024 EU)
Required SAF by 2050 (NZE)	~300–400 Mt/year
Asia-Pacific SAF demand 2030	0.4–5.9 Mt/yr, by policy scenario

SAF production pathways

Pathway	Primary feedstocks	Max blend	Lifecycle GHG reduction
HEFA	Used cooking oil, waste animal fats, non-food oil crops	50%	74–84%
Fischer-Tropsch (FT-SPK)	Woody biomass, municipal solid waste, agricultural residues	50%	66–94%
Alcohol-to-Jet (ATJ)	Sugarcane, corn, cellulosic ethanol, waste sugars	50%	50–80%
Power-to-Liquid (PtL)	Green hydrogen + CO ₂ (DAC or biogenic)	50% (via FT)	~90% or near-neutral
HFS-SIP Fermented Sugars to Iso-Paraffins	Sugars (farnesane production)	10%	Moderate (niche volumes)
CHJ Catalytic Hydrothermolysis Jet	Non-edible plant oils, algae oils	50%	Similar to HEFA
Recycled Carbon Fuels	Industrial off-gases, MSW via fermentation/gasification	Varies	Significant (waste carbon diversion)

Seven pathways certified under ASTM D7566 as of 2025; HEFA and ATJ together expected to account for ~89% of 2030 SAF production (DOE estimate).

Policy landscape

Global frameworks

CORSIA (ICAO, global)

- Mandatory phase begins 2027. Minimum 10% lifecycle GHG reduction for eligible SAF. Only 8% of APAC stakeholders report being fully ready.

ReFuelEU Aviation (EU, in force Jan 2025)

- 2% (2025) → 6% (2030) → 20% (2035) → 70% (2050). Asian SAF exports to Europe rose ~5× year-on-year in 2025.

US SAF Grand Challenge + IRA

- Section 45Z credit cut from \$1.75 to \$1.00/gallon from 2026 (OBBBA); feedstocks now restricted to US, Canada, Mexico origin.

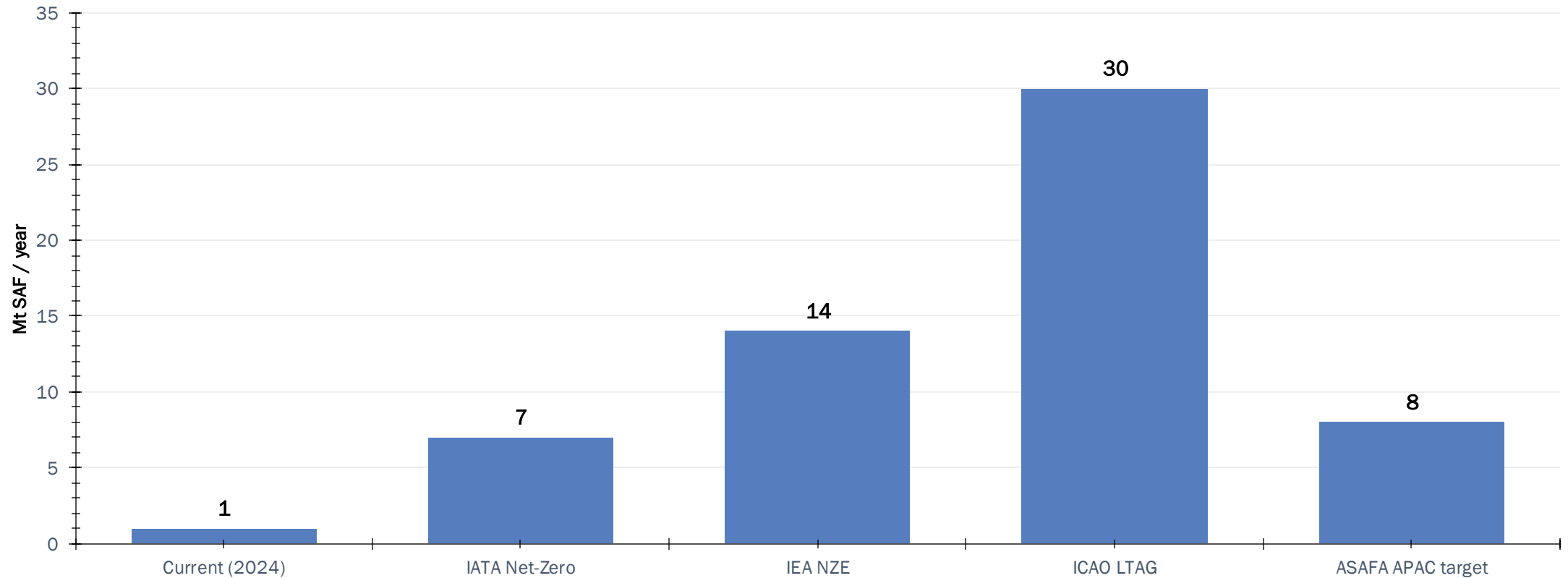
Asia-Pacific mandates

- **Singapore:** binding law from Jan 2027; 1% from 2027, rising to 5% by 2030, 7–10% by 2035.
- **South Korea:** enacted; 1% from 2027 → 3% (2030) → 7% (2035), international flights.
- **Japan:** 1% blending target by 2030, backed by Green Innovation Fund capital subsidies.
- **Australia:** A\$1.1bn Cleaner Fuels programme (Sept 2025); no formal blending mandate yet.
- **Thailand, Indonesia, India:** proposed roadmaps (1% from 2026–27), not yet binding law.

The scale-up and investment gap

Current nameplate capacity is ~2 Mt/year, a fraction of what every net-zero scenario requires by 2030

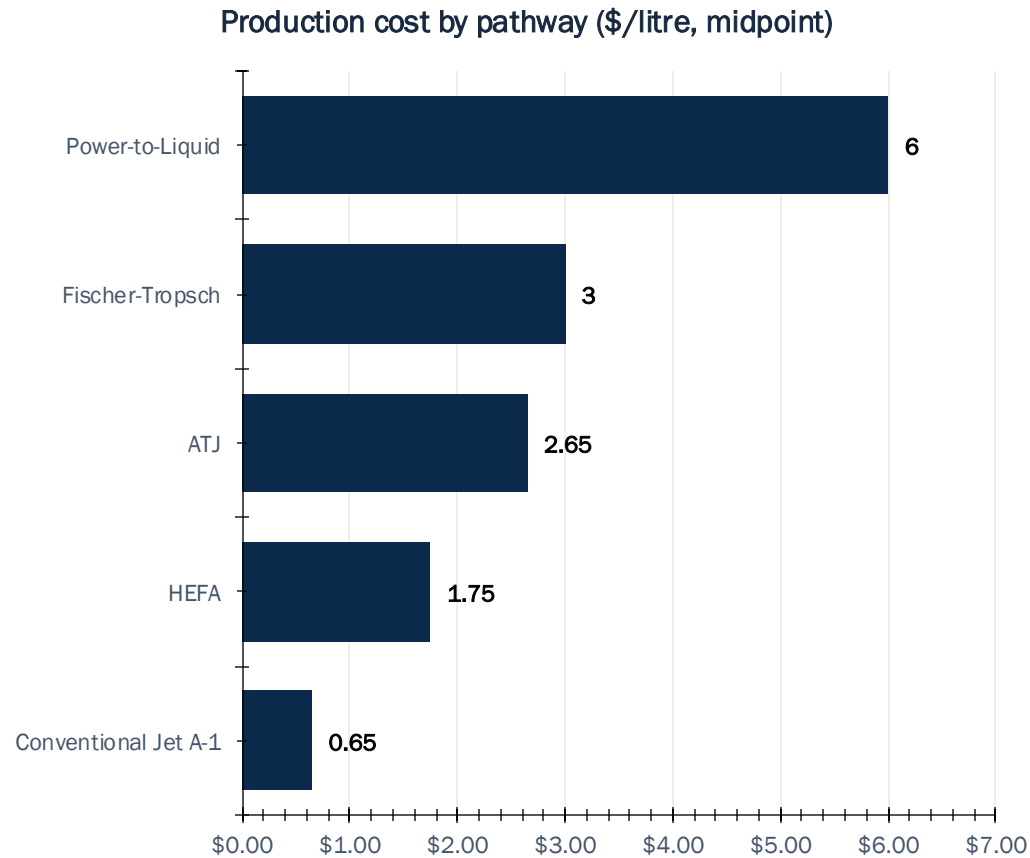
SAF production: current output vs. 2030 requirements by scenario (Mt/year)



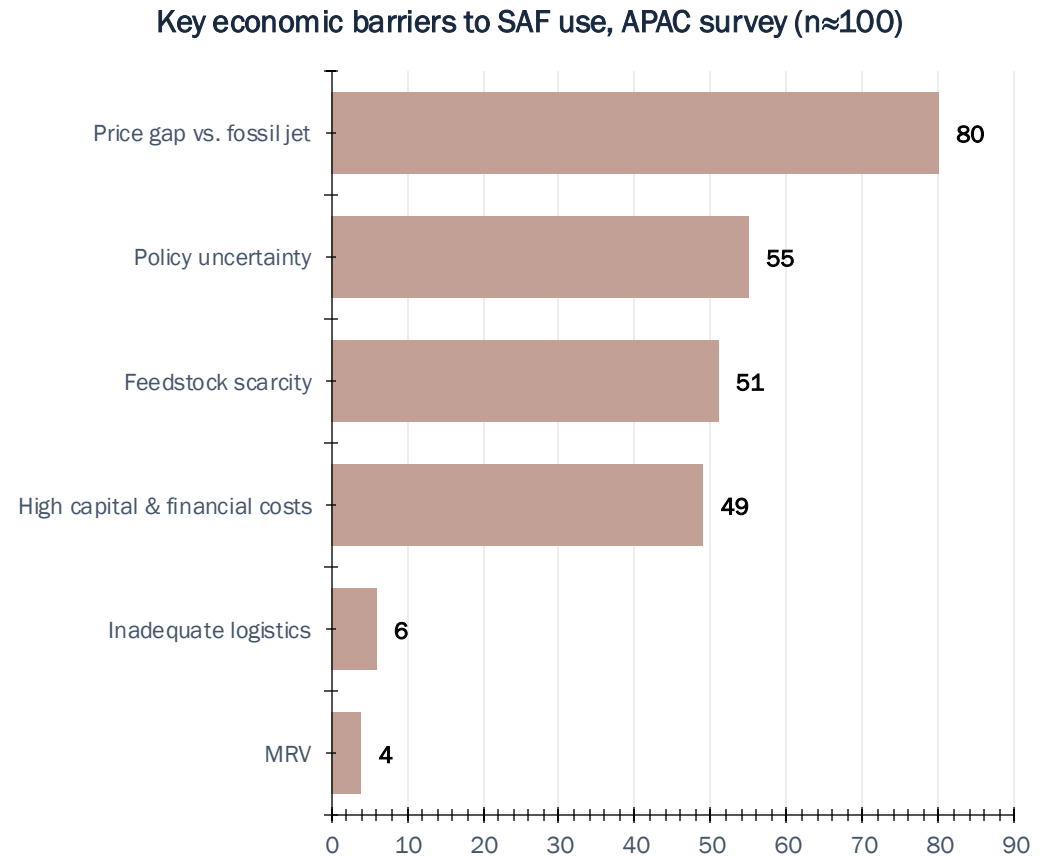
IEA NZE requires ~14 Mt by 2030 and ~400 Mt by 2050. SkyNRG estimates announced projects reach only ~12.8 Mt even if all proceed without delay.

Production costs and economic barriers

SAF costs 2–6× conventional jet fuel



Price gap is the top-cited barrier

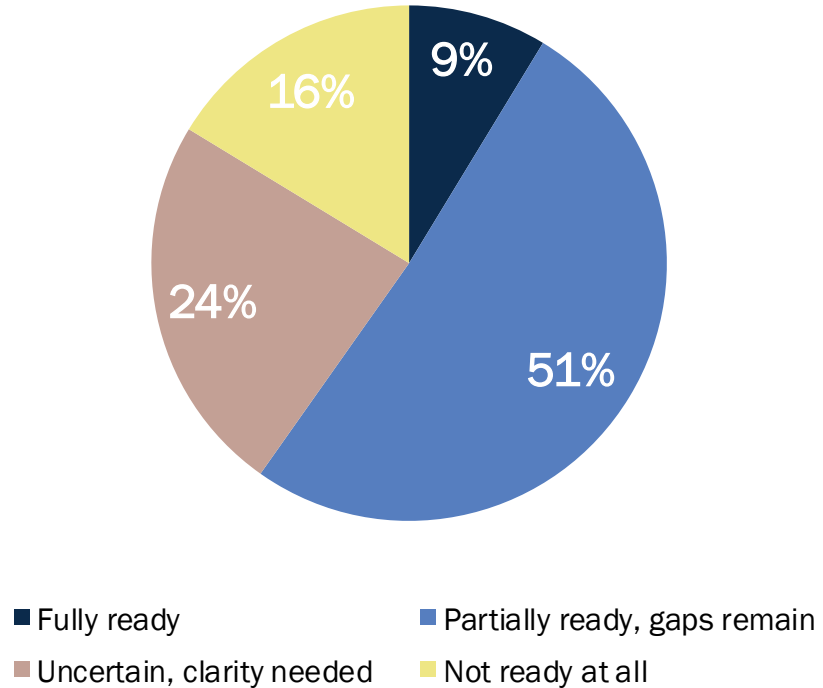


Marginal abatement cost of SAF: \$200–400/tonne CO₂, well above prevailing carbon prices. A 5% blend adds ~\$3–8 to a short-haul return ticket.

CORSIA readiness in Asia-Pacific

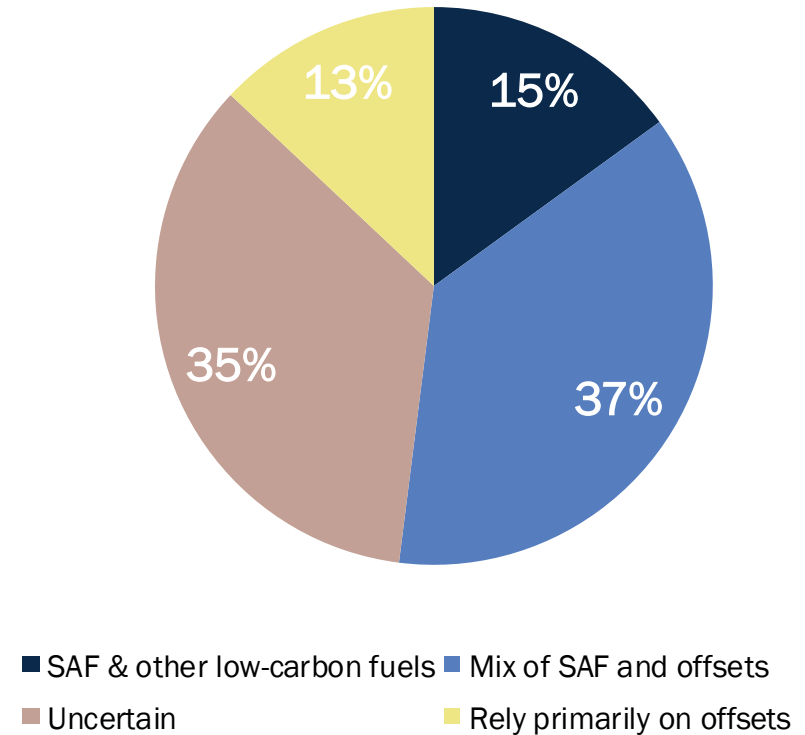
Under 10% of stakeholders feel fully ready

How ready do stakeholders feel for CORSIA 2027?



Compliance strategy remains unsettled

Planned compliance strategy



Source: WBA citing ASAFA APAC SAF Outlook 2025 industry survey (~100 respondents). CORSIA's mandatory phase begins 2027.

WBA policy recommendations

A coordinated policy portfolio: WBA calls on governments to

- Establish long-term SAF blending mandates with clear, predictable escalation schedules to 2050, providing the demand certainty that underpins investment.
- Provide capital grants and production tax credits targeted at advanced non-HEFA pathways (FT, ATJ, PtL), where technology risk is highest.
- Develop CfD or similar long-term revenue guarantee mechanisms to de-risk first-of-a-kind plants.
- Harmonise sustainability certification standards internationally and facilitate an interoperable SAF certificate registry, particularly in Asia-Pacific.
- Formally recognise Book-and-Claim as a valid compliance mechanism during the supply scale-up phase.
- Evolve mandates from volume-based to carbon intensity-based frameworks to reward genuine GHG reductions.
- Ensure carbon pricing mechanisms provide a stable and rising incentive for lower-carbon fuel choices.

Stable, predictable policy over the full investment horizon of SAF projects (10–20 years) is as important as the level of support provided.

Conclusion

2025 was an inflection point, but the scale-up challenge ahead remains substantial

- ReFuelEU Aviation entered into force, LanzaJet's Freedom Pines Fuels became the world's first commercial Alcohol-to-Jet plant, Australia committed A\$1.1 billion to domestic SAF production, Singapore enacted its SAF mandate into law, and South Korea announced mandatory blending from 2027.
- The global SAF market is no longer theoretical: it is real, expanding, and beginning to reshape aviation fuel trade flows, with Asia-Pacific exports to Europe up roughly five-fold year-on-year.
- Yet current production remains under 0.5% of aviation fuel demand, against requirements 400 times larger by 2050 under net-zero scenarios.
- Asia-Pacific, with the world's largest aviation growth market and substantial feedstock resources, has a defining role to play. The next five years will determine whether the region becomes a global SAF leader or falls behind.

Source: World Bioenergy Association, Sustainable Aviation Fuels (SAF) Factsheet, August 2026.