أديبك ADIPEC
4-7 November 2024
Abu Dhabi, UAE

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CASE STUDY

Building pathways for greater adoption of sustainable fuels in aviation

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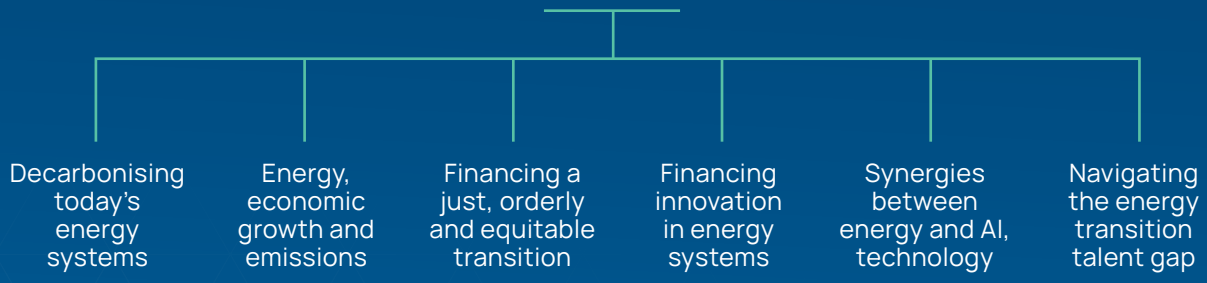
KEY PILLARS OF ADIPEC



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Building pathways for greater adoption of sustainable fuels in aviation

CONTEXT

The aviation industry's goal of achieving net-zero carbon emissions centres on maximising reductions at the source through sustainable aviation fuels (SAFs), cutting-edge propulsion technologies, and efficiency improvements such as enhanced air traffic management.

SAFs, which currently account for only 0.53% of aviation's fuel need, can reduce CO2 emissions by up to 80%[1]. They are produced from diverse feedstocks, including waste fats, oils, greases, municipal solid waste, agricultural and forestry residues, wet wastes, etc. SAFs can also be synthesised by capturing carbon directly from the air.

There's strong market demand for SAFs, but supply remains a challenge. To address this, TotalEnergies and Masdar have launched a collaboration to produce green methanol and SAFs. The initiative is part of broader efforts to decarbonise high-emission industries such as aviation and maritime.

KEEPING ENVIRONMENT AT THE FRONT AND CENTRE OF OPERATIONS

Masdar, the UAE's leading renewables firm, and French energy giant Total Energies are exploring the development of a commercial project in Abu Dhabi focused on producing methanol and SAF from green hydrogen.

The initiative aims to capture CO2 from industrial sources to be used as feedstock alongside green hydrogen to produce methanol, which will subsequently be converted into SAF. This collaboration follows a successful demonstration flight conducted by the two companies in 2023, which highlighted the potential of transforming methanol into SAF.

2.5%
Percentage share of aviation industry in global CO2 emissions[9]

65%
Estimated reduction in emissions by airlines through the use of SAF by 2050[7]

490,000
Number of flights that have now taken off using a mix of SAF and traditional fuels[7]

50
Number of airlines that have some experience with SAF[8]

Organisations involved

- ADNOC
- bp
- Emirates
- Etihad Airways
- IATA
- Masdar
- Tadweer
- TotalEnergies

Industry

Aviation, maritime

Location

Global

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- **ADNOC: Atrium, Stands #A210, #CN52, #14052 & #14240**
- **Bp Exploration Operation Co. Ltd.: Atrium, Stand #A20**
- **Masdar City Free Zone: Concourse, Stand #CN10**
- **TotalEnergies: Atrium, Stand #A232**

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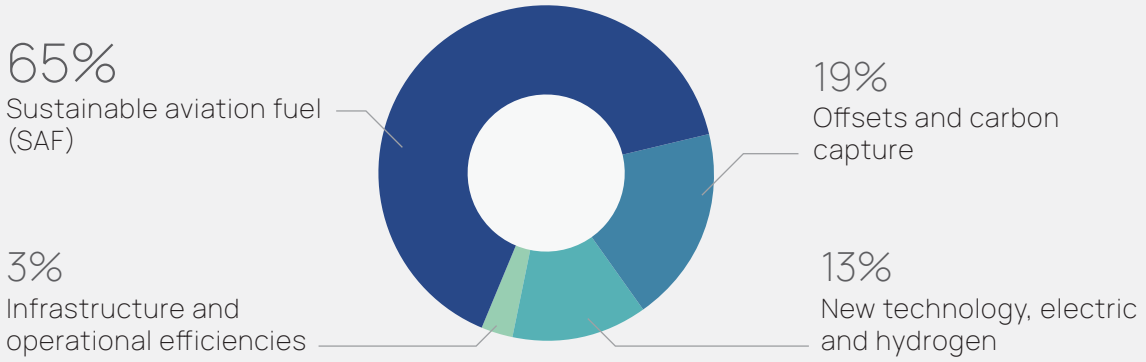
How aviation sector can achieve net zero emissions by 2050

Transitioning to sustainable aviation fuel is crucial for the sector's future. Additionally, it is essential to focus on eliminating emissions at the source, implementing effective offsetting strategies, and advancing carbon capture technologies

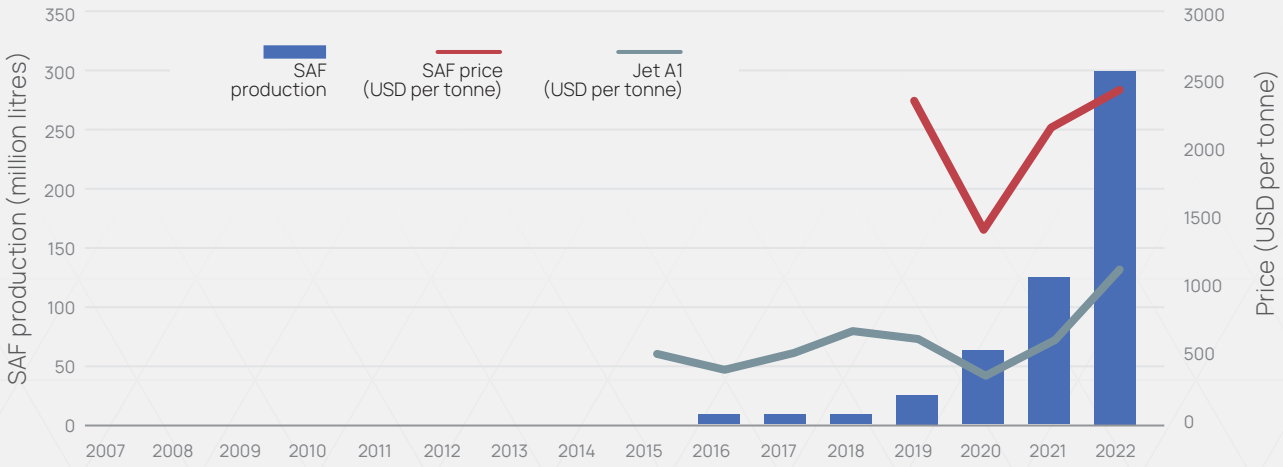


Source: IATA

Masdar's green hydrogen division has been concentrating on aviation and forging strategic partnerships in recent years to advance SAF development. In 2023, Masdar partnered with Etihad Airways, ADNOC, bp, and Tadweer to explore production of SAF using municipal solid waste and renewable hydrogen in Abu Dhabi[5]. This effort aligns with the UAE's voluntary target to supply 1% of aviation fuel at its national airports with locally produced SAF by 2031. The country aims to produce 700 million litres of SAF annually by 2030[1]. The UAE government is also working towards establishing a national regulatory framework for SAF to support the sector's long-term growth.

SAF is not a recent discovery. The first SAF-fuelled flight was successfully tested in 2008, followed by a commercial airline flight in 2011. Since then, 50 airlines have jointly flown around 490,000 flights using a blend of SAF and traditional fuels[2]. Despite these advancements, integrating SAF into everyday operations remains an ongoing challenge. Greater adoption of cleaner fuels is essential for making substantial reductions in the aviation industry's carbon

Global SAF production, SAF and jet fuel prices



Source: ICAO, IATA and CAPA - Centre for Aviation

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emissions, as well as in other hard-to-abate sectors such as maritime.

Mohamed Jameel Al Ramahi, Chief Executive Officer of Masdar, said: "SAF has huge potential for reducing the hard-to-abate aviation sector's carbon emissions and Masdar is proud to support the development and growth of this sector."

Industry studies indicate that unmixed SAF can reduce life-cycle CO2 emissions by up to 80% compared to conventional fuel, with significant reductions even when blended with traditional fuels[3]. This potential led to the creation of the World Economic Forum's Clean Skies for Tomorrow coalition in 2021, which brought together 60 companies committed to achieving 10% SAF in global aviation by 2030[4]. Key participants include British Airways, Delta Airlines, KLM, United Airlines, and Virgin Atlantic, signalling a significant shift towards sustainable fuel adoption.

In November 2023, Dubai-based carrier Emirates conducted a demonstration flight using its A380 aircraft on 100% SAF, proving the fuel's viability as a drop-in replacement for conventional jet fuel.

While SAF holds transformative potential for reducing aviation emissions, its widespread adoption requires concerted efforts from industry stakeholders. Demand is robust, with every drop of SAF produced already purchased and used. The challenge now lies in scaling up supply to meet this demand. Governments must establish policy frameworks that incentivise renewable fuel producers to allocate 25-30% of their output to SAF to meet regional and national policies as well as airline commitments.

Cross-industry partnerships and collaborations such as these are crucial to scaling up this essential fuel and making it a viable solution to accelerate emissions reduction and help decarbonise the transport industry.

> "SAF has huge potential for reducing the hard-to-abate aviation sector's carbon emissions and Masdar is proud to support the development and growth of this sector."

Mohamed Jameel Al Ramahi,
Chief Executive Officer, Masdar

REFERENCES

1 • https://www.iata.org/en/pressroom/2023-releases/2023-12-06-02/
2 • https://www.iata.org/en/iata-repository/pressroom/fact-sheets/fact-sheet--alternative-fuels/
3 • https://www.iata.org/en/programs/sustainability/sustainable-aviation-fuels/
4 • https://www.weforum.org/press/2021/09/clean-skies-for-tomorrow-leaders-commit-to-10-sustainable-aviation-fuel-by-2030/
5 • https://www.reuters.com/business/sustainable-business/uae-companies-explore-production-sustainable-aviation-fuel-with-bp-2023-01-20/
6 • https://www.iata.org/en/programs/sustainability/sustainable-aviation-fuels/#:~:text=We%20estimate%20that%20Sustainable%20Aviation,in%20order%20to%20meet%20demand.
7 • https://u.ae/en/about-the-uae/strategies-initiatives-and-awards/policies/transport-and-infrastructure/general-policy-for-sustainable-aviation-fuel#:~:text=To%20achieve%20this%2C%20the%20UAE,locally%20produced%20SAF%20by%202031
8 • https://www.i6.io/blog/which-airlines-are-embracing-saf
9 • https://ourworldindata.org/global-aviation-emissions#:~:text=Aviation%20accounts%20for%202.5%25%20of,to%20global%20warming%20to%20date.&text=Flying%20is%20one%20of%20the,How%20does%20this%20add%20up%3F

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