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Gefördert durch:
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NOW
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Projekträger:
VDI|VDE|IT
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Fachverband Nachhaltige Ressourcen e.V.

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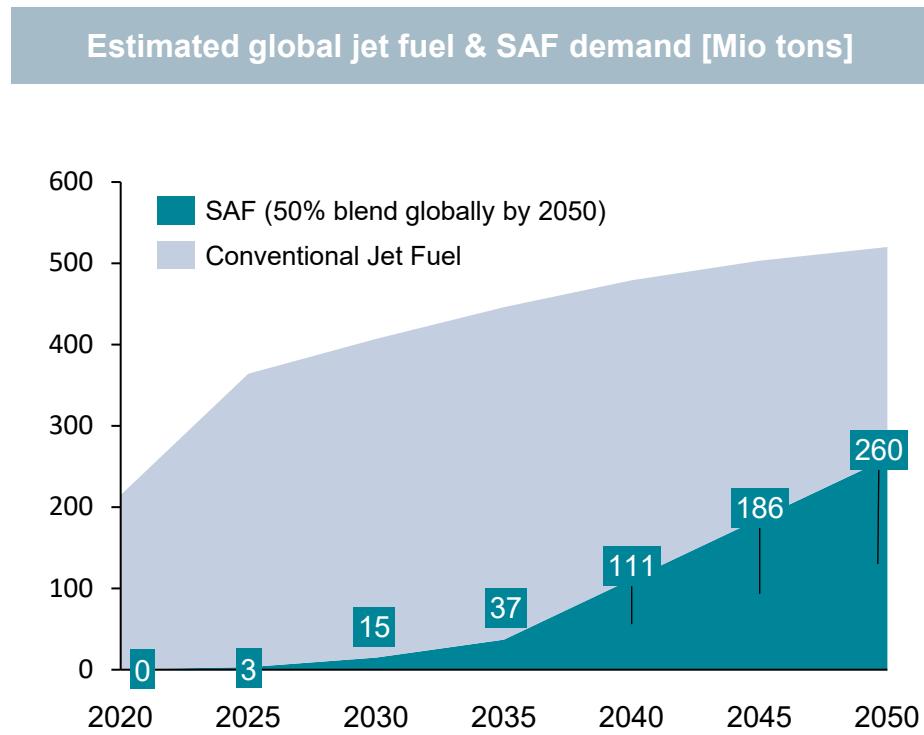
SAFari Project – Sustainable Aviation Fuels Based on Advanced Reaction and Process Intensification

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Hydrogen Technologies Fraunhofer ISE



Aviation Accounts for ~3% of Global GHG Emissions

The potential global market for SAF could reach up to 260 million tons by 2050



ReFuelEU Aviation Proposal establishes SAF blend mandates:
Penalties for non-compliance with the blending mandate

New targets for sustainable aviation fuels (as % of fuel mix)



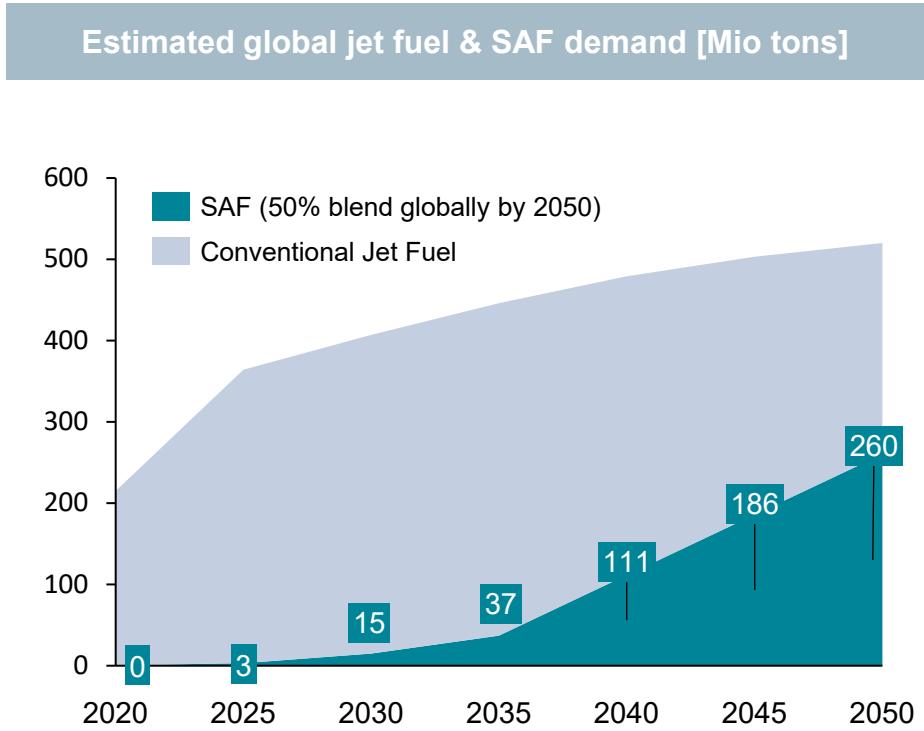
Legislation under discussion to establish a low carbon fuel standard for aviation fuels:

Tax credits to substitute higher costs (Inflation Reduction Act)

Sources: Fueling Net Zero, ICG, Sep 2021/ US 2030 forecast based on stated government target of 9 Mio tons, 2035 forecast data by EIA 2021 / ROW: data from WEF/ McKinsey clean skies report 2020 / 2050 SAF volume scenario based on 50:50 SAF blend, Jet fuel demand from *Clean Skies for Tomorrow* (McKinsey & Co, 2020)

Aviation Accounts for ~3% of Global GHG Emissions

SAF as the most Important Lever towards Net Zero Carbon 2050 for aviation

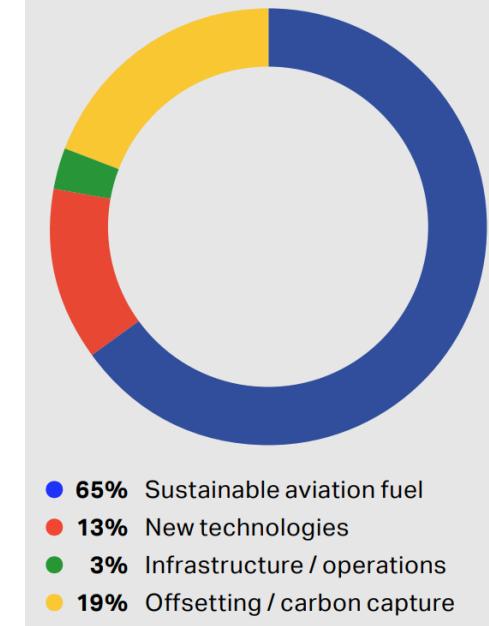


"At the 77th IATA Annual General Meeting in Boston, United States, IATA member airlines passed a resolution committing them to achieving **net zero carbon emissions from their operations by 2050.**"

"The game changer, however, is sustainable aviation fuel (SAF), which is **expected to account for about 65% of our carbon mitigation efforts by 2050.**"

Airlines bought **every drop of SAF** that was available in 2021 and made forward purchase agreements worth some **\$17 billion.**

Contribution to achieving Net Zero Carbon in 2050



Sources IATA Annual Review 2022.

SAF is Essential to Reduce GHG emissions

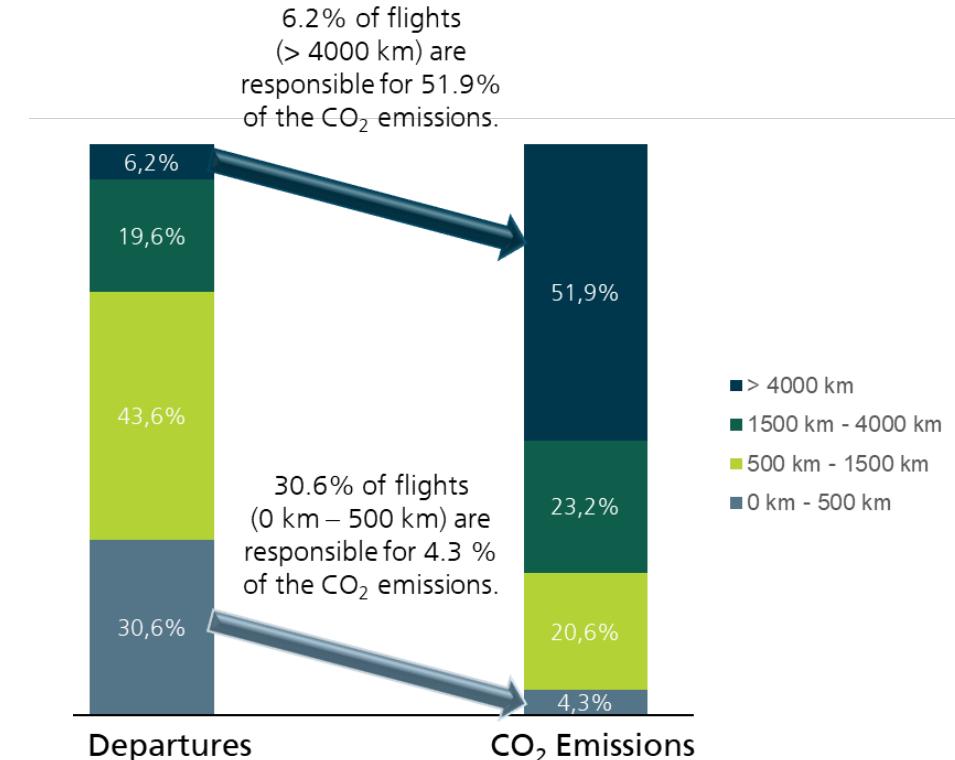
SAF contributes to reducing CO₂ and non-CO₂ effects alike

- DLR: "Experimental evidence that burning low aromatic sustainable aviation fuel can result in a **50 to 70%** reduction in soot and ice number concentrations and an increase in ice crystal size" → less warming
- **Zero emission aviation is feasible by SAF and optimization of combustion**



The NASA DC8 research aircraft probing contrails from the DLR A320 burning sustainable aviation fuel blends. Photo showing the DC8 chasing a contrail from the A320 burning a sustainable aviation fuel blend above Germany on 24 January 2018.¹

Source: Voigt, Christiane; Kleine, Jonas; Sauer, Daniel; Moore, Richard H.; Bräuer, Tiziana; Le Clercq, Patrick et al. (2021): Cleaner burning aviation fuels can reduce contrail cloudiness. In: Commun Earth Environ 2 (1). DOI: 10.1038/s43247-021-00174-y.



Graph: VDI news 9/2021, Alexander Reiß
Eurocontrol Data Snapshot, 16. Februar 2021

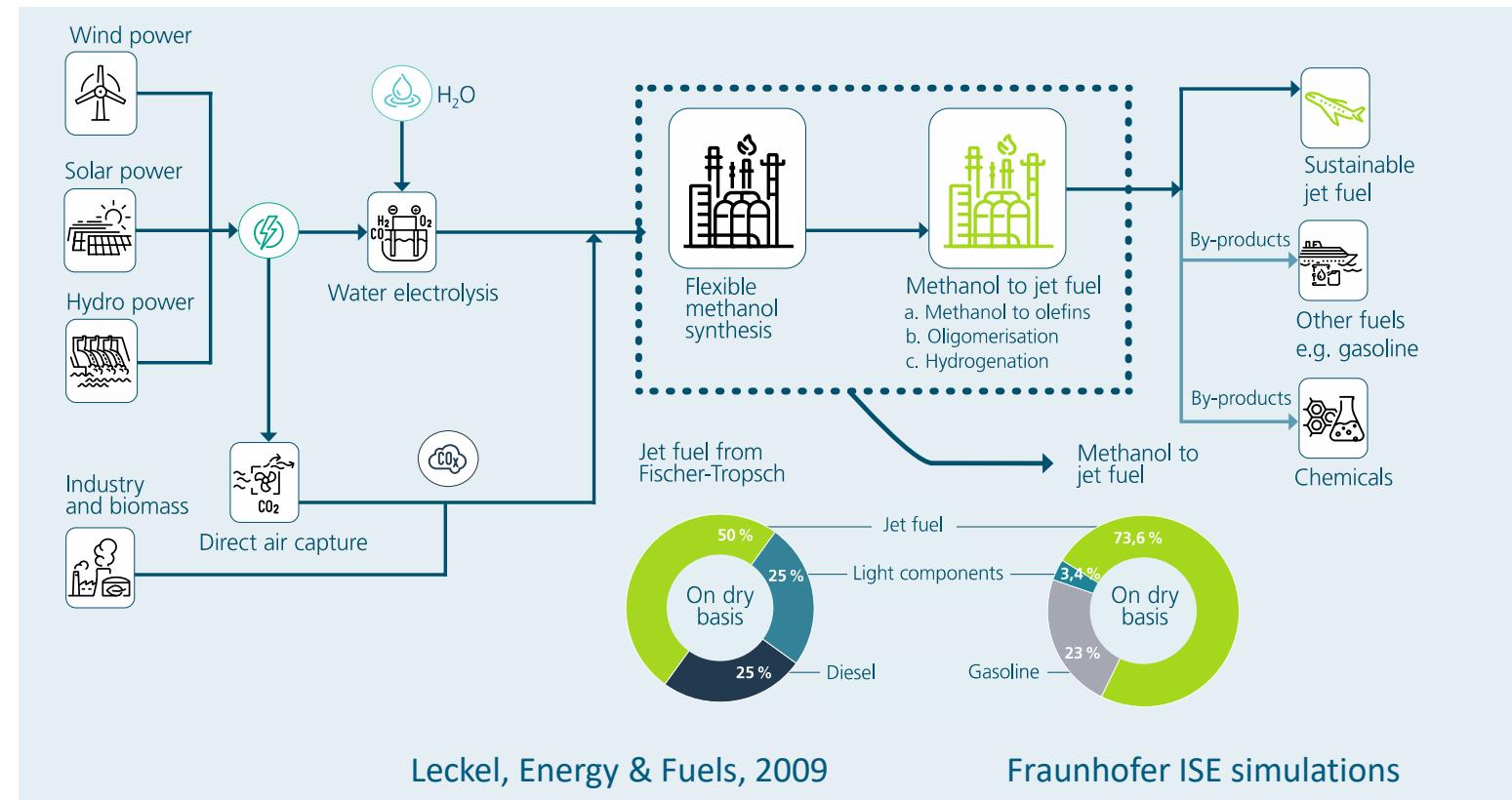
- Long-distance flights cause most of the CO₂ emissions
- Only liquid fuels has the potential to reduce these emissions

A close-up photograph of an airplane's engine and wing against a backdrop of a warm, orange and yellow sunset. The aircraft's metallic surfaces reflect the light, and the sky is filled with soft, pastel-colored clouds.

SAFari: Sustainable Aviation Fuels based on Advanced Reaction and Process Intensification

- The main objective of the SAFari project is the **production** and testing of Sustainable Aviation Fuel (**SAF**) from **methanol** in a **pilot plant** for the purpose of **full ASTM approval** and the achievement of a blend rate also of perspective > 50% SAF

Visit the SAFari pressrelease for more:
<https://www.ise.fraunhofer.de/de/presse-und-medien/presseinformationen/2023/entwicklung-einer-pilotanlage-zur-herstellung-von-nachhaltigen-synthetischen-flugkraftstoffen-auf-basis-von-methanol.html>



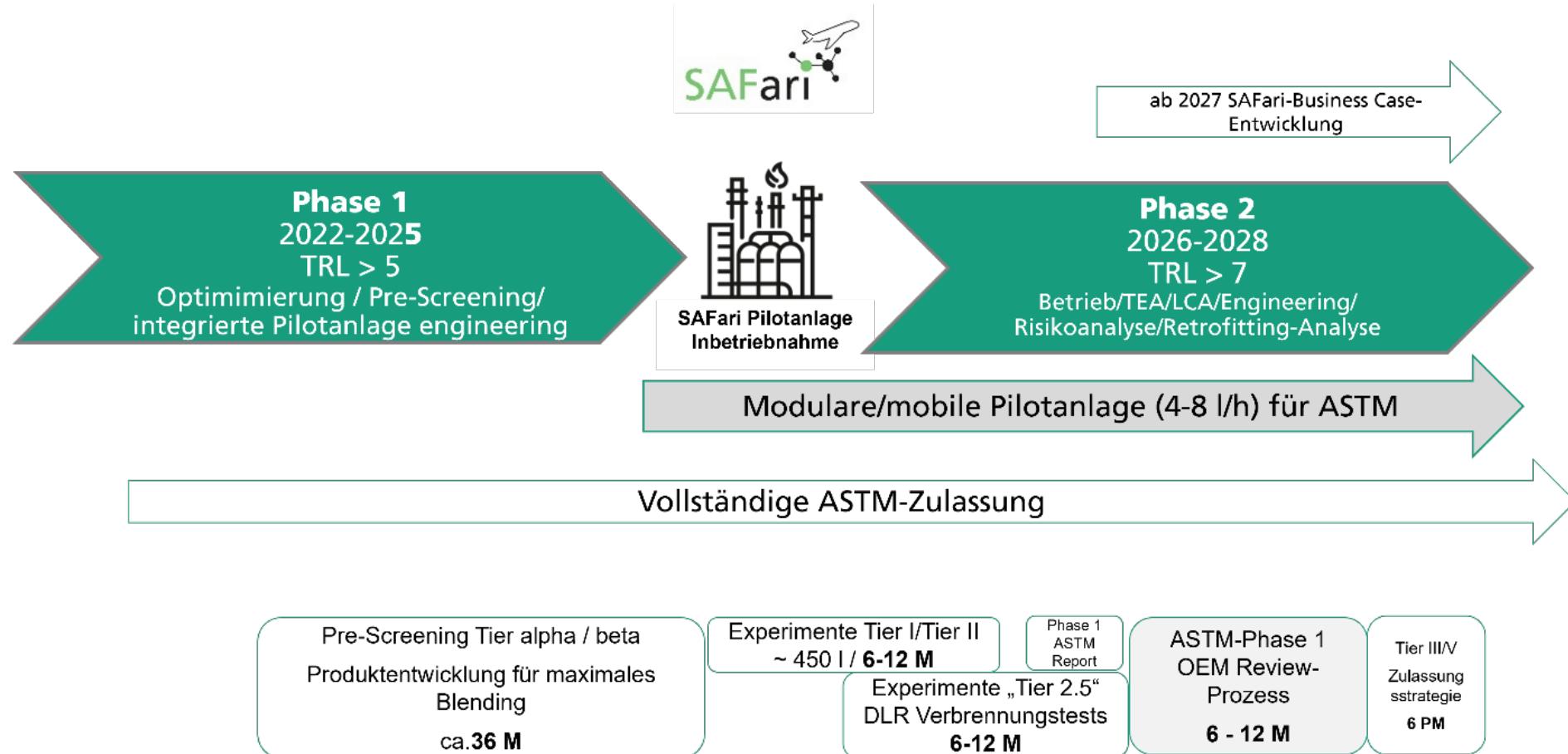


Figure: Overall SAFari timeline and the interrelationships of the ASTM process.

Visit the SAFari press release for more information:

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