



3rd ECAC SAF Workshop

09 March 2023

**Working for quieter and cleaner aviation.
Your safety is our mission.**

An Agency of the European Union 

What are SAF and why are they needed?

- Definition and main concepts

Sustainable Aviation Fuel (SAF) is a sustainable, non-conventional, alternative to fossil-based jet fuel. Several definitions and terminology may apply, depending on regulatory context, feedstock basis, and production technology.

EAER 2022

Conditions



Meet the technical standards that prove they have the same properties as the A-1 jet (ASTM D7566, ASTM 1655, DEFSTAN-91-91).



Meet certain sustainability criteria, which have been verified by an independent entity.



EUROPEAN AVIATION ENVIRONMENTAL REPORT 2022



What are SAF and why are they needed?

- SAF specifications



All aviation fuel must meet strict technical specifications, with the ASTM standard being the most widely recognized, including for SAF.



1. D7566 Annex A1: Fischer Tropsch (FT) Synthetic Paraffinic Kerosene (FT SPK), 2009.
2. D7566 Annex A2: Hydroprocessed Esters and Fatty Acids (HEFA SPK), 2011.
3. D7566 Annex A3: Hydroprocessed Fermented Sugar (HFS-SIP) 2014.
4. D7566 Annex A4: FT-SPK plus aromatics (FT-SPK/A), 2015.
5. D7566 Annex A5: Alcohol to Jet (ATJ-SPK), approved in 2016 para el empleo de isobutanol y actualizado en 2018 para etanol.
6. D7566 Annex A6: Catalytic Hydrothermolysis Synthesized Kerosene (CH-SK, or CHJ), 2020.
7. Annex A7: Hydro-processed Hydrocarbons, Esters and Fatty Acids Synthetic Paraffinic Kerosene (HHC-SPK or HC-HEFA-SPK), HEFA a partir de algas, 2020.
8. D1655 Annex A1: Co-processing of biocrudes, fats and oils in a conventional refinery, 2018.
9. D1655 Annex A1: Co-processing of Fischer-Tropsch Biocrude, 2020.



EU Clearing House

- Navigate producers through the fuel approval process, including the partial funding of fuel testing and research report review costs.
- Pre-screening of new fuel and production process projects, including advising fuel producers on their fuel

In the annexes, blending requirements are established for each SAF pathway, currently the maximum allowed is a 50 /50 blend (Annex A1, A2, A4, A5, A6).

Once approved, the SAF is considered to have properties comparable to conventional Jet-A1 and can use the existing logistics network.



What are SAF and why are they needed?

- SAF benefits



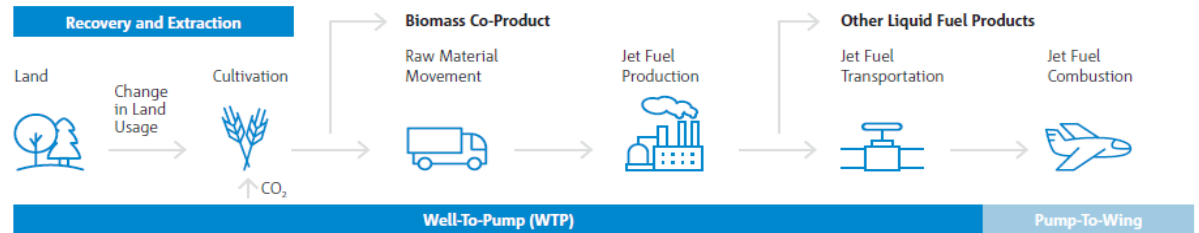
1. CO₂eq emission reductions

Greenhouse gas emission reduction potential differs depending on the feedstock used, with values typically ranging from 65% to 85% reduction potential compared to conventional Jet A1.



In the most ambitious ICAO scenario for assessing CO₂ emissions from international aviation, SAF could contribute to 63% of the emissions savings in 2050.

IS3, ICAO LTAG



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2. Non-CO2 emission climate effects mitigation

In 2018, the estimated Effective Radiative Forcing (ERF) from non-CO2 emissions accounted for more than half (66%) of the aviation net warming effect, although the level of uncertainty from the non-CO2 effects is 8 times larger than that of CO2.



Real test campaigns from DLR, Airbus and NASA showed that using a blend of half biofuel and half regular fuel reduced soot emissions by as much as 50%-70%.

[Nature article, 2021](#)



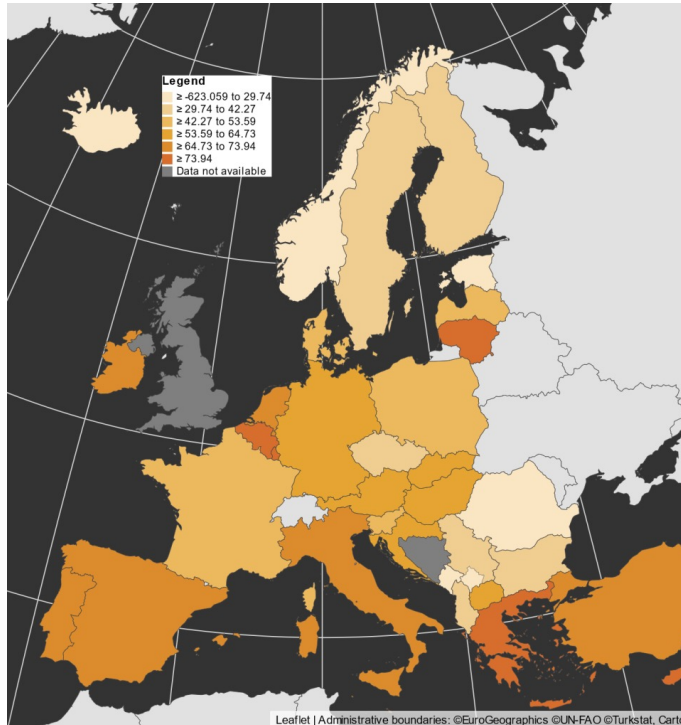
Updated analysis of the non-CO2 effects of aviation

EASA, 2020



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Energy import dependency in European countries in 2020 in percent of energy needs covered by net imports. [Source: eurostat 2022.](#)

3. Energetic independence

The EU produces large parts of its energy domestically, Still, most energy needs (about 60%) are met through imports.



The development of regional value chains of SAF can help to reduce the energy independence of the region, in a context of international instability and uncertainty. This will also improve the trade balance, reducing the need for petroleum-based products.

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