Sustainable Aviation Fuel (SAF)

Sustainable Aviation Fuel (SAF) is obtained from renewable resources (such as vegetable oils, biomass, animal fat and residual gases). The use of SAF decreases the CO2 aviation emission, a hard-to-abate decarbonizing sector, due to strict requirements to aviation fuels.
Brazil is a country with favorable edaphoclimatic conditions and has a well-established leadership history in biofuels production and use, which makes it a potential SAF supplier.

Routes' Process Inputs:

Biomass, H_2O, Residue, CO_2, Renewable Electricity

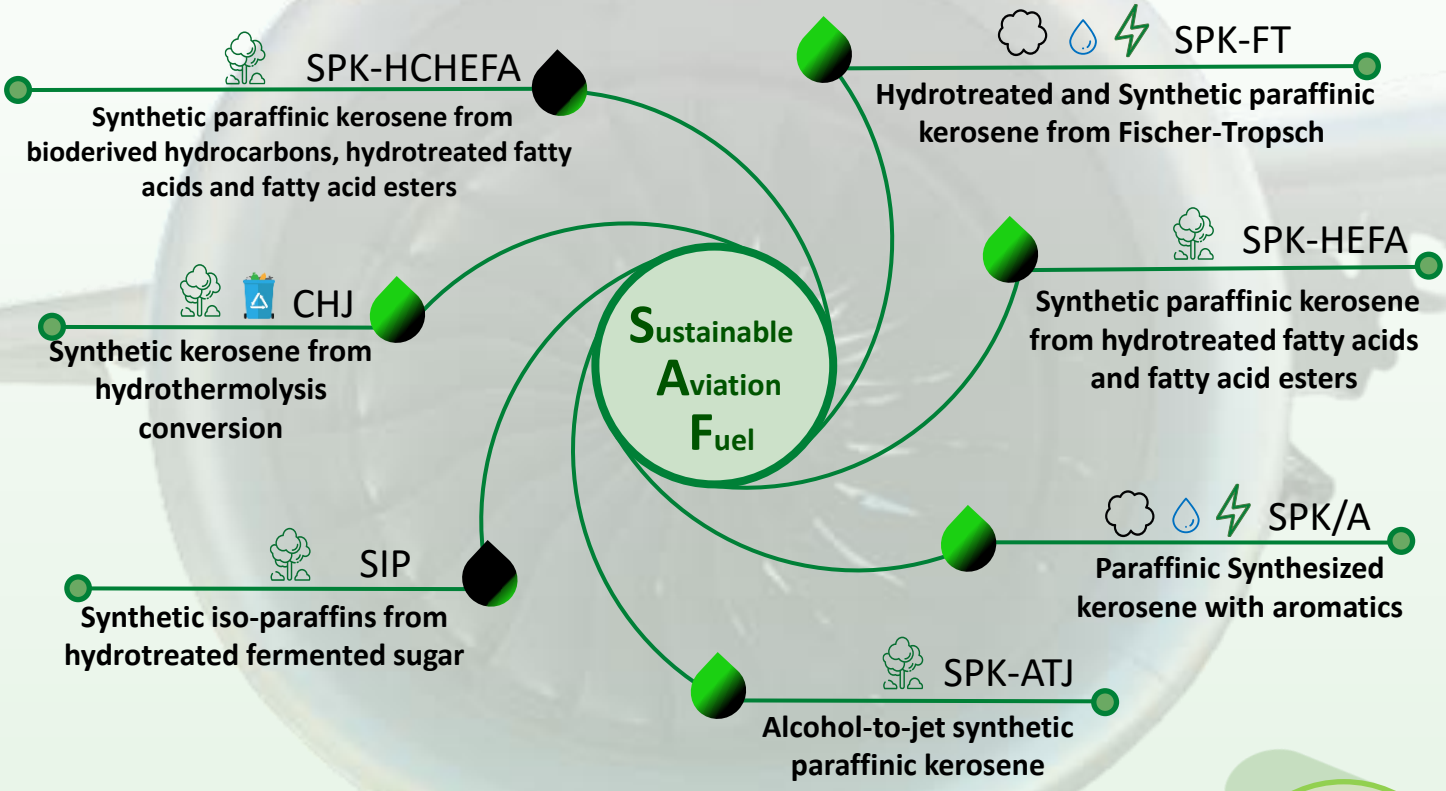
Authorized Production Routes in Brazil (2023)

ANP (2021)

Maximum mixture with fossil Jet fuel

50% SAF

10% SAF



Route	Sustainable Inputs
SPK-HEFA	Vegetable oils (new and recycled) and animal fats
SPK-HCHEFA	
SPK-FT	Municipal solid waste, agriculture and agro-industrial waste
SPK/A	
SPK-ATJ	Sugar or starch crops and lignocellulosic feedstocks
SIP	Carbohydrates (sucrose)
CHJ	Sewage, fertilizer, residues from: food processing, forestry, agricultural and agro-industrial

Source: ANP (2021)

Worldwide SAF production

2019
25 million liters

2020
62,5 million liters

2021
100 million liters

2022
450 million liters

More than 450.000 commercial flights by 2022

Source: IATA (2022)

Sustainable Aviation Fuel (SAF)

Empresa de Pesquisa Energética

2014
Aviation: responsible for 2% of global CO_2 emissions (IPCC, 2014).

2017
PL nº 9,321: Creates the "National Program of Biokerosene".

2019
ANAC: monitoring of CO_2 emissions on international flights from/to Brazil

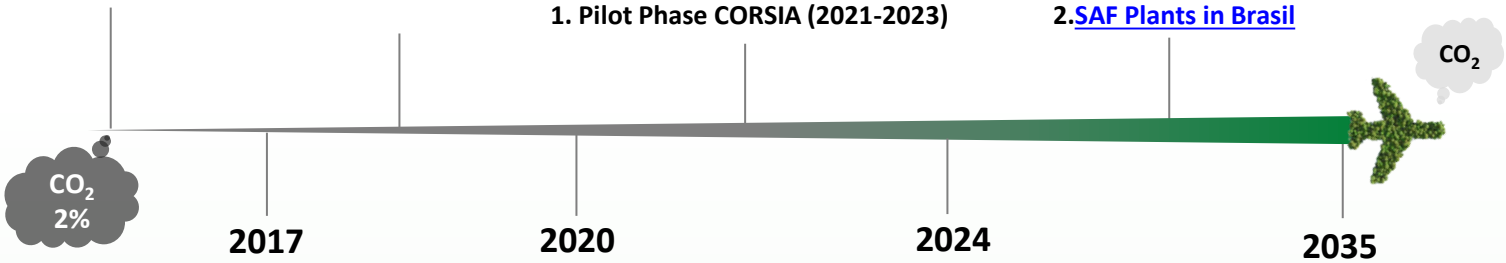
2020
Internacional Agreement CORSIA: Zero carbon growth*.

2021
1. Law nº 14,248/2021: National Program of Biokerosene
2. Program "Fuels of Future": CT-CF – ProBioQAV
1. Pilot Phase CORSIA (2021-2023)

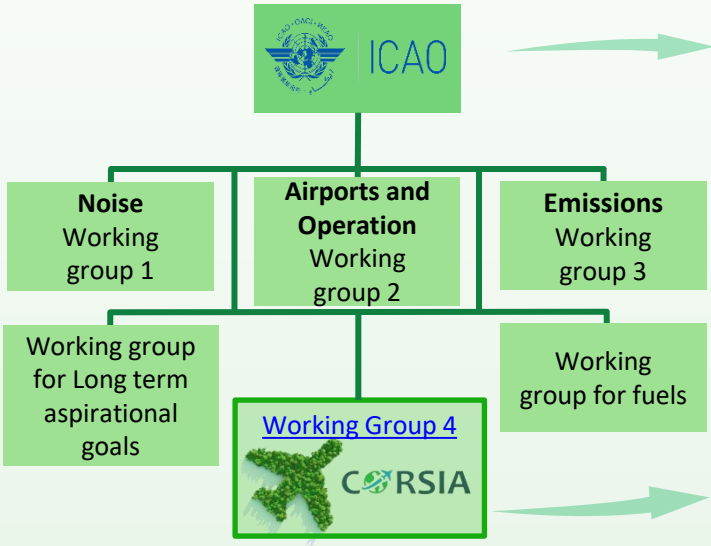
2024
CORSIA First Phase, voluntary participation (2024-2026).

2027
1.Second Phase CORSIA (2027-2035), mandatory participation (compensation for carbon credit or SAF use)
2.SAF Plants in Brasil

2035
CORSIA: Aviation emissions equal to the year-base



Note: *Baseline of emissions: 100% of the 2019 level for 2021-2023 and 85% of the 2019 level from 2024, due to the Covid-19 pandemic in 2020.

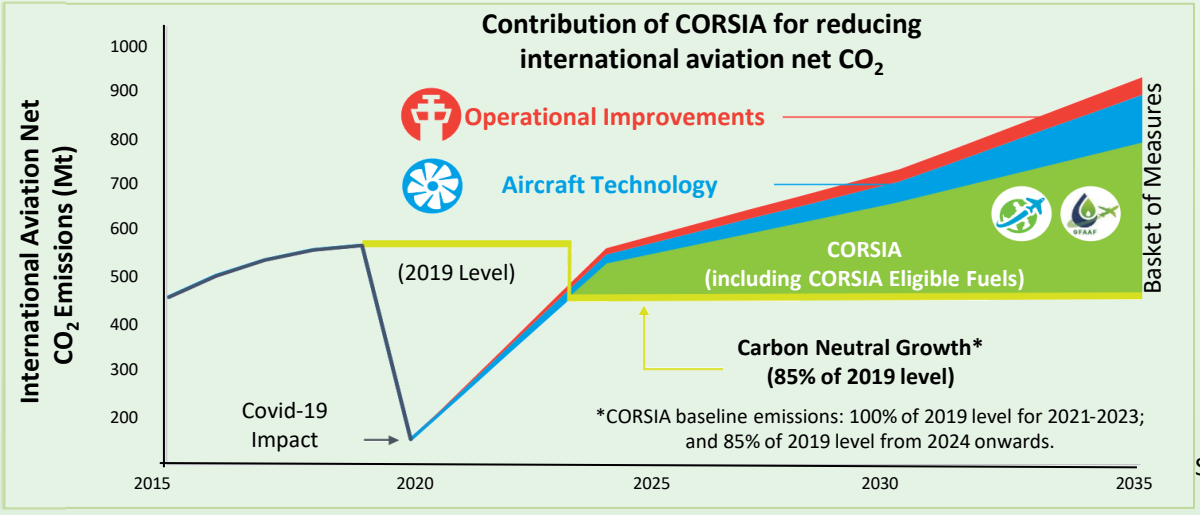


The International Civil Aviation Organization (ICAO)

- Efforts to reduce GHG emissions from aviation
- Actions: technological and operational improvements, use of sustainable aviation fuels and carbon market
- Aspirational goals:
  - Zero carbon growth from 2020
  - 2% annual improvement in energy efficiency by 2050
  - Long-term aspirational global goal of net-zero carbon emissions by 2050

Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

- One of ICAO's programs
- Proposal for carbon-neutral growth in the aviation sector from 2020



Source: ICAO (2023)

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To find out more:

Análise de Conjuntura dos Biocombustíveis
Plano Decenal de Expansão de Energia

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