

TAKEOFF FOR SUSTAINABLE AVIATION FUELS



According to Flightradar24, more than 139,000 aircraft were in the air worldwide on July 20, 2023 - more than ever before.

International aviation accounts for 3% of global greenhouse gas emissions. Sustainable aviation fuels (SAFs) must be widely adopted to decarbonize the industry. Depending on the technology and raw materials used, SAFs, or sustainable aviation fuels, can lower carbon emissions by almost 80% compared to traditional kerosene-based fuels. However, due to dedicated raw materials cultivation, first-generation SAFs made from plant-based materials have a poor life cycle assessment. Second-generation SAFs made from biomass or organic waste, such as animal fats or municipal waste, can reduce CO₂ emissions by 20% to 80% compared to conventional kerosene.

The market is on the verge of upheaval

Sustainable Aviation Fuels (SAF) account for only 0.15 percent of total fuel consumption and production. Traditional refineries are unsuitable for producing biofuels, making it difficult to procure the necessary raw materials on a large scale. This results in high production costs, and SAF for the aviation sector is still two to three times more expensive than conventional kerosene. Fuel accounts for around 30 percent of an airline's operating costs, a considerable expense. However, the SAF market is rapidly changing. According to the World Economic Forum, the global SAF market could reach \$60 billion by 2030.

Governments subsidize and quotas

Current developments in Europe and the U.S. have accelerated the development of second-generation Sustainable Aviation Fuel (SAF), with governments gradually increasing the minimum quotas. The Biden administration aims to reach a target of 10% SAF by 2030. The European regulation, "ReFuelEU Aviation," sets minimum quotas of 15% by 2030, increasing by two percentage points annually, reaching 25% in 2035 and 55% in 2050. To encourage production, the U.S. Inflation Reduction Act (IRA) proposes a tax credit of \$1.25 per gallon, provided that carbon intensity is reduced by at least 50% compared to traditional jet fuel through SAF. In Europe, SAFs are not yet listed among the eight net-zero technologies classified as strategic by the E.U. Still, according to the Commission, they are eligible as other net-zero technologies.

The sustainable aviation fuel (SAF) market is currently dominated by major oil companies such as Shell, ExxonMobil, B.P., and TotalEnergies, as they possess the technical expertise in refining and have the financial resources to invest. However, specialist companies such as Nestle, Aemetis, and Darling Ingredients contribute to the growing market. Darling Ingredients, a US-based company, is a pioneer in the circular economy and recycles protein and fat waste, such as animal carcasses and used cooking oil, to produce sustainable ingredients for food, health products, and second-generation biofuels. They have also partnered with U.S. refining group Valero to establish a joint venture called Diamond Green Diesel, which aims to expand biodiesel production. Darling

Ingredients is also part of Jacob's fund portfolio.

Biodiesel production in the U.S. to be expanded

Diamond Green Diesel has become North America's top biofuel producer by leveraging Darling Ingredients' unique network for collecting waste oils and animal fats. It also leverages Valero's refining expertise. The partners aim to produce 1.8 billion liters of second-generation SAF annually in Texas, starting in 2025. This is six times global production in 2022 and about 20% of the global capacity projected for 2025 to 2030.

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