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Bio-Based Aviation Fuel Market Forecasts to 2034 – Global Analysis By Fuel Type (HEFA (Hydroprocessed Esters & Fatty Acids), Fischer-Tropsch Synthetic Fuel, Alcohol-to-Jet Fuel, Sugar-to-Jet Fuel, Power-to-Liquid (PtL) Fuels, Other Fuel Types), By Feedstock, By Production Technology, By Application, By End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Bio-Based Aviation Fuel Market is accounted for $12 billion in 2026 and is expected to reach $65 billion by 2034 growing at a CAGR of 23% during the forecast period. Bio-Based Aviation Fuel, also known as sustainable aviation fuel (SAF), is produced from renewable biological sources such as plant oils, agricultural residues, or waste materials. It serves as a low-carbon alternative to conventional jet fuel and can significantly reduce lifecycle greenhouse gas emissions. SAF is compatible with existing aircraft and fueling infrastructure, enabling gradual adoption. Increasing regulatory mandates, airline commitments, and environmental concerns are driving demand. Advancements in production technologies are improving scalability and cost competitiveness, supporting decarbonization of the aviation industry.

Market Dynamics:

Driver:

Increasing airline commitments to sustainability

Carriers worldwide are pledging to reduce carbon emissions and align with net-zero targets. Bio-based aviation fuels provide a viable pathway to decarbonize air travel.

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Regulatory mandates and international agreements are reinforcing adoption. Partnerships between airlines and biofuel producers are accelerating commercialization. Rising consumer awareness of sustainable travel is further boosting demand. Collectively, these commitments are fueling growth in the bio-based aviation fuel sector.

Restraint:

Limited feedstock availability

Biofuel production depends on raw materials such as used cooking oil, agricultural residues, and waste fats. Supply constraints and seasonal variability hinder consistent production. High competition for feedstock across industries adds further challenges. Smaller producers struggle to secure reliable supply chains. Regional disparities in feedstock availability slow global scalability. These limitations continue to restrict large-scale adoption of bio-based aviation fuels.

Opportunity:

Development of advanced biofuel technologies

Innovations in hydroprocessed esters, fatty acids, and synthetic pathways are improving efficiency and scalability. Next-generation biofuels offer higher energy density and compatibility with existing aviation infrastructure. Governments and private firms are investing heavily in R&D to accelerate commercialization. Partnerships between technology providers and airlines are driving innovation. Integration with carbon capture and renewable energy systems enhances sustainability. This technological progress is expected to strengthen competitiveness and expand applications in the sector.

Threat:

Competition from synthetic aviation fuels

Synthetic fuels produced from renewable electricity and captured carbon are gaining traction as alternatives. Governments and airlines are exploring synthetic pathways alongside biofuels. High investment in synthetic fuel infrastructure may divert resources from bio-based solutions. Consumer preference for advanced low-carbon technologies adds further pressure. Price competitiveness between synthetic and bio-based fuels remains uncertain.

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Covid-19 Impact:

The Covid-19 pandemic had mixed effects on the bio-based aviation fuel market. Global air travel disruptions slowed demand and delayed infrastructure projects. However, recovery programs emphasized sustainability, boosting investment in clean aviation fuels. Airlines accelerated commitments to decarbonization during recovery phases. Governments introduced green stimulus packages supporting biofuel development. Remote collaboration and digital platforms reinforced innovation in fuel technologies. Consumer awareness of climate issues strengthened post-pandemic.

The used cooking oil segment is expected to be the largest during the forecast period

The used cooking oil segment is expected to account for the largest market share during the forecast period as it is widely available and cost-effective compared to other feedstocks. Cooking oil waste offers a sustainable raw material for biofuel production. Governments are supporting collection and recycling initiatives to strengthen supply chains. Airlines prefer fuels derived from used cooking oil due to their compatibility with existing infrastructure. Continuous innovation in refining technologies enhances efficiency. Rising demand for circular economy solutions reinforces this segment's dominance.

The fuel distributors segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the fuel distributors segment is predicted to witness the highest growth rate due to rising demand for efficient supply chain management. Distributors play a critical role in scaling biofuel adoption across airports and airlines. Partnerships between distributors and producers are driving commercialization. Government-backed mandates for sustainable aviation fuel blending are accelerating demand. Digital platforms are enhancing transparency and efficiency in distribution networks. Growing airline commitments to sustainability reinforce adoption.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share owing to advanced aviation infrastructure and strong sustainability mandates. The U.S. leads in biofuel adoption across airlines and airports. Government-backed initiatives and funding programs are reinforcing innovation. Established producers and distributors are driving commercialization of bio-based fuels. Strong

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consumer and corporate demand for sustainable travel ensures steady growth. Expansion of renewable feedstock collection further strengthens visibility.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by rapid aviation growth and rising sustainability awareness. Countries such as China, India, and Japan are investing heavily in biofuel technologies. Government-backed clean energy initiatives are boosting adoption. Local startups are entering the market with cost-effective solutions, expanding accessibility. Expansion of aviation infrastructure and renewable energy projects is further supporting growth. Rising demand for sustainable travel in emerging economies reinforces adoption.

Key players in the market

Some of the key players in Bio-Based Aviation Fuel Market include Neste Oyj, World Energy LLC, Fulcrum BioEnergy, LanzaJet Inc., TotalEnergies SE, Shell plc, BP plc, ExxonMobil Corporation, Chevron Corporation, Honeywell UOP, Gevo Inc., Velocys plc, SkyNRG, Repsol SA, ENI SpA, Airbus SE and Boeing Company.

Key Developments:

In February 2026, Neste extended its relationship with World Fuel Services through a five-year agreement to expand the availability of Neste-supplied SAF at more than 100 airports across World Fuel's UK and European network . The collaboration combines Neste's SAF production capabilities including its Rotterdam refinery currently capable of producing up to 500,000 tons of SAF annually with World Fuel's established distribution infrastructure to help customers comply with ReFuelEU Aviation Regulation requirements.

In October 2024, World Energy partnered with RMI (Rocky Mountain Institute) to enable corporate clients to lower the impact of business travel through the purchase of sustainable aviation fuel certificates. The collaboration aims to scale the SAF certificate market and accelerate aviation decarbonization through transparent book-and-claim accounting.

Fuel Types Covered:

HEFA (Hydroprocessed Esters & Fatty Acids)

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Fischer-Tropsch Synthetic Fuel

Alcohol-to-Jet Fuel

Sugar-to-Jet Fuel

Power-to-Liquid (PtL) Fuels

Other Fuel Types

Feedstocks Covered:

Used Cooking Oil

Agricultural Residues

Algae-Based Feedstock

Industrial Waste Gases

Other Feedstocks

Technologies Covered:

Hydroprocessing Technology

Gasification & Fischer-Tropsch

Fermentation Technology

Pyrolysis Technology

Biochemical Conversion

Other Technologies

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Applications Covered:

- Commercial Aviation
- Military Aviation
- Cargo Aviation
- Business Aviation
- Urban Air Mobility
- Other Applications

End Users Covered:

- Airlines
- Airport Operators
- Fuel Distributors
- Government Agencies
- Other End Users

Regions Covered:

- North America
  - United States
  - Canada
  - Mexico
- Europe

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- Germany
- France
- Italy
- Spain
- Netherlands
- Belgium
- Sweden
- Switzerland
- Poland
- Rest of Europe

Asia Pacific

- China
- Japan
- India
- South Korea
- Australia
- Indonesia
- Thailand

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- Malaysia
- Singapore
- Vietnam
- Rest of Asia Pacific

South America

- Brazil
- Argentina
- Colombia
- Chile
- Peru
- Rest of South America

Rest of the World (RoW)

- Middle East
  - Saudi Arabia
  - United Arab Emirates
  - Qatar
  - Israel
  - Rest of Middle East
- Africa
  - South Africa

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Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

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SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Contents

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9 GLOBAL BIO-BASED AVIATION FUEL MARKET, BY END USER

10 GLOBAL BIO-BASED AVIATION FUEL MARKET, BY GEOGRAPHY

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List Of Tables

LIST OF TABLES

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Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) are also represented in the same manner as above.

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