

Sustainable Aviation Fuel Market Forecasts to 2034 – Global Analysis By Fuel Type (Biofuel-based SAF, Alcohol-to-Jet (ATJ) Fuel, Power-to-Liquid (PtL) Fuel and Synthetic Aviation Fuels (e-SAF)), Feedstock, Technology, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Sustainable Aviation Fuel Market is accounted for \$2.9 billion in 2026 and is expected to reach \$6.8 billion by 2034 growing at a CAGR of 11.2% during the forecast period. Sustainable aviation fuel refers to aviation fuel produced from non-petroleum feedstocks including agricultural residues, used cooking oils, municipal solid waste, algae biomass, and renewable electricity-derived hydrogen, delivering greenhouse gas lifecycle emission reductions of 50–80% compared to conventional jet fuel while meeting the same technical specifications for aircraft compatibility. Production pathways include hydroprocessed esters and fatty acids, alcohol-to-jet synthesis, Fischer-Tropsch synthesis, power-to-liquid electrofuels, and co-processing in petroleum refineries, enabling drop-in blending with existing jet fuel infrastructure and aircraft engines without modifications.

Market Dynamics:

Driver:

Aviation Decarbonization Mandates

Aviation decarbonization mandates from international regulators and national governments are the primary driver of sustainable aviation fuel adoption, as the International Civil Aviation Organization's Carbon Offsetting and Reduction Scheme for International Aviation and EU ReFuelEU Aviation regulation establish binding SAF

blending requirements for airlines operating in covered markets. Airlines face escalating carbon credit purchase obligations under expanding emissions trading scheme coverage that SAF consumption can offset at potentially lower cost. Corporate travel sustainability commitments from major enterprise customers are additionally generating SAF procurement demand through airline customer pressure.

Restraint:**Price Premium Over Conventional Jet Fuel**

Sustainable aviation fuel currently commands a price premium of three to six times conventional jet fuel costs that materially impacts airline operating economics and constrains voluntary adoption beyond mandate compliance minimums. Current production volumes represent less than one percent of global jet fuel demand, limiting manufacturing scale economies that would reduce unit costs. Feedstock competition with food production, renewable diesel, and other bioenergy applications creates supply constraints and price volatility that undermine cost reduction trajectories. Airlines operating on thin margins require substantial government blending mandates or incentives to commit to SAF procurement contracts at current premium pricing levels.

Opportunity:**Power-to-Liquid E-Fuel Scaling**

Power-to-liquid electrofuel development represents a transformative long-term opportunity as renewable electricity cost declines enable economically competitive synthetic aviation fuel production from green hydrogen and captured CO₂. E-SAF offers unlimited feedstock scalability unconstrained by biomass resource availability or agricultural land competition, enabling aviation fuel decarbonization at full industry scale. Government investment programs including EU Horizon research funding and U.S. DOE clean hydrogen initiatives are supporting power-to-liquid technology demonstration projects that are progressing toward commercial cost competitiveness timelines within the forecast period.

Threat:**Feedstock Availability and Competition**

Feedstock availability constraints and inter-industry competition for limited sustainable

biomass resources represent a systemic threat to sustainable aviation fuel scaling, as used cooking oil and agricultural residue supplies face competing demand from renewable diesel, biogas, and other bioenergy applications simultaneously pursuing low-carbon transition objectives. Regulatory restrictions on certain feedstock categories including palm oil derivatives and indirect land use change attributions limit eligible feedstock pools. Scaling SAF production to meaningful shares of aviation fuel demand will require development of advanced feedstock categories including algae, municipal solid waste, and power-to-liquid pathways that face their own development and cost challenges.

Covid-19 Impact:

COVID-19 devastated global aviation traffic volumes and airline revenues, temporarily halting new SAF procurement commitments and delaying production facility investment decisions. However, post-pandemic aviation recovery combined with intensified regulatory pressure generated a wave of airline SAF offtake agreement announcements and government incentive programs. Pandemic-era SAF policy development in the EU and UK accelerated blending mandate implementation timelines, structurally advancing the regulatory framework supporting SAF market development.

The synthetic aviation fuels (e-SAF) segment is expected to be the largest during the forecast period

The synthetic aviation fuels (e-SAF) segment is expected to account for the largest market share during the forecast period, due to its unlimited scalability potential and ability to achieve the deepest greenhouse gas lifecycle reductions among SAF production pathways when powered by renewable electricity. Government investment in power-to-liquid demonstration projects is accelerating cost reduction curves. E-SAF's compatibility with existing jet engine certification and airport fuel infrastructure enables seamless blending integration, while corporate sustainability buyers are generating premium pricing acceptance for e-SAF credits that supports project economics.

The agricultural residues segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the agricultural residues segment is predicted to witness the highest growth rate, driven by abundant global availability at competitive pricing, established supply chain infrastructure in major agricultural economies, and favorable regulatory classification under sustainable feedstock criteria. Biochemical and

thermochemical conversion of wheat straw, corn stover, and rice husks into SAF-compatible alcohol intermediates is maturing toward commercial cost competitiveness. Government agricultural sustainability programs in key markets are subsidizing residue collection infrastructure that improves feedstock supply security and reduces SAF production input costs.

Region with largest share:

During the forecast period, the Europe region is expected to hold the largest market share, due to the EU ReFuelEU Aviation regulation establishing the world's most ambitious binding SAF blending mandates, strong government investment in SAF production facility development, and leading airline corporate sustainability commitments. European airlines including Air France, Lufthansa, and British Airways are implementing SAF procurement programs exceeding regulatory minimum requirements. EU innovation fund financing and member state incentive programs are supporting commercial SAF production facility construction across the continent.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, due to rapidly growing aviation traffic volumes in China, India, Southeast Asia, and the Pacific driving fuel demand growth, and emerging national SAF policy frameworks creating incentivized adoption pathways. Japan's 10% SAF blending target by 2030 and Singapore's SAF mandate are establishing regional policy precedents. Major Asia Pacific airlines are entering SAF offtake agreements to meet investor ESG expectations and prepare for forthcoming blending regulations.

Key players in the market

Some of the key players in Sustainable Aviation Fuel Market include Neste, TotalEnergies, World Energy, Gevo Inc., LanzaJet, Fulcrum BioEnergy, Velocys, SkyNRG, Shell Plc, BP Plc, ExxonMobil Corporation, Repsol, Eni S.p.A., Honeywell UOP, Airbus SE, Boeing, Phillips 66, and Avfuel Corporation.

Key Developments:

In March 2026, LanzaJet commissioned its first commercial-scale alcohol-to-jet (ATJ) SAF production facility in Georgia, enabling large-scale conversion of ethanol feedstocks into sustainable aviation fuel, accelerating commercialization and

diversification of SAF production pathways globally.

In February 2026, Velocys secured project financing approval for its Bayou Fuels SAF plant in Mississippi, leveraging Fischer-Tropsch technology to convert municipal solid waste and agricultural residues into low-carbon aviation fuel, advancing circular economy-based fuel production.

In January 2026, Neste announced a major sustainable aviation fuel (SAF) production capacity expansion at its Rotterdam refinery, adding 500,000 tonnes annually, strengthening its market positioning and supporting rising global demand for low-carbon aviation fuel solutions.

In November 2025, Gevo Inc. initiated construction of its Net-Zero 1 SAF facility in South Dakota, targeting 65 million gallons annually, reinforcing its net-zero carbon strategy through renewable energy integration and sustainable feedstock utilization in aviation fuel production.

Fuel Types Covered:

Biofuel-based SAF

Alcohol-to-Jet (ATJ) Fuel

Power-to-Liquid (PtL) Fuel

Synthetic Aviation Fuels (e-SAF)

Feedstocks Covered:

Agricultural Residues

Used Cooking Oil & Waste Oils

Municipal Solid Waste

Algae-based Feedstock

Forestry Residues

Technologies Covered:

Hydroprocessing Technology

Gasification & Fischer-Tropsch Synthesis

Alcohol Conversion Technology

Power-to-Liquid Technology

Applications Covered:

Commercial Aviation

Military Aviation

Cargo Aviation

Private Aviation

End Users Covered:

Airlines

Defense Sector

Cargo Operators

Airport Authorities

Other End Users

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

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

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)

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)

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