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Alcohol to Jet (ATJ) Market Forecasts to 2032 – Global Analysis By Feedstock Type (Ethanol-to-Jet (ETJ), Isobutanol-to-Jet (IBTJ), Methanol-to-Jet (MTJ), N-butanol-to-Jet (NBTJ) and Fatty Alcohols to Jet), Fuel Type (ATJ-SPK (Alcohol-to-Jet Synthetic Paraffinic Kerosene), ATJ-SKA (Synthetic Kerosene with Aromatics) and Blended Sustainable Aviation Fuel (SAF)), Production Process, Feedstock Source, Distribution Channel, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Alcohol to Jet (ATJ) Market is accounted for $5.2 million in 2025 and is expected to reach $12.3 million by 2032 growing at a CAGR of 12.9% during the forecast period. Alcohol-to-Jet (ATJ) is a sustainable aviation fuel (SAF) production pathway that converts alcohols typically ethanol or isobutanol into jet-grade hydrocarbons. The process involves catalytic steps such as dehydration, oligomerization, hydrogenation, and fractionation to yield synthetic paraffinic kerosene (ATJ-SPK). Compatible with existing aircraft engines and infrastructure, ATJ fuels offer reduced lifecycle greenhouse gas emissions. Feedstocks may include biomass, agricultural residues, or industrial byproducts, making ATJ a viable alternative to fossil-based jet fuels in decarbonizing the aviation sector.

According to journal Renewable and Sustainable Energy Reviews (2024), Alcohol-to-Jet (ATJ) fuel pathways can reduce lifecycle greenhouse gas emissions by up to 70% compared to conventional jet fuel, depending on the type of alcohol feedstock used and production process efficiency.

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Market Dynamics:

Driver:

Global push for decarbonization in aviation

Governments and industry stakeholders are prioritizing low-carbon alternatives to fossil-based jet fuels in line with global climate targets. Alcohol-to-jet pathways, such as ATJ-SAF, are being recognized for their drop-in compatibility with existing aircraft engines. Additionally, airlines are signing long-term offtake agreements, reinforcing market confidence. The push for net-zero commitments from major carriers is expected to accelerate commercial adoption across developed and emerging markets.

Restraint:

Policy and regulatory uncertainty/inconsistency

Variations in SAF qualification standards, subsidy access, and lifecycle emission accounting slow down investment decisions. Uncertainty around long-term policy support, especially for low-carbon ethanol and butanol feedstocks, affects scalability. In certain regions, lack of harmonized incentives makes ATJ less competitive compared to alternative SAF routes. The absence of clear mandates for airline SAF blending further complicates commercialization timelines.

Opportunity:

Integration with existing ethanol production infrastructure

Existing ethanol plants can be retrofitted or expanded to incorporate conversion modules, significantly lowering capital expenditure. This integration offers operational efficiencies and supply chain continuity, particularly in agrarian economies with surplus ethanol feedstock. Strategic collaborations between ethanol producers and aviation fuel developers are accelerating demonstration projects. Moreover, emerging markets are exploring decentralized ATJ facilities to stimulate rural economies while supporting decarbonization goals.

Threat:

Rapid development of electric or hydrogen-powered aviation

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As aircraft manufacturers race to develop next-generation zero-emission platforms, reliance on SAF may diminish beyond short-to-medium haul routes. Government funding is increasingly being diverted to alternative propulsion R&D, posing strategic challenges to the ATJ ecosystem. Public perception and policy may gradually shift toward direct electrification rather than incremental decarbonization via drop-in fuels. Competitive pressure from these disruptive technologies could limit ATJ's future market share if commercialization lags.

Covid-19 Impact:

The pandemic disrupted aviation fuel demand globally, delaying many ATJ projects due to reduced air travel and capital constraints. However, the crisis also spotlighted the need for energy security and supply chain diversification, favoring local SAF production pathways. Stimulus packages in several countries included green recovery components, providing renewed momentum for SAF initiatives. Additionally, the post-Covid emphasis on climate resilience is prompting airlines and regulators to revisit sustainability roadmaps.

The isobutanol-to-jet (IBTJ) segment is expected to be the largest during the forecast period

The isobutanol-to-jet (IBTJ) segment is expected to account for the largest market share during the forecast period due to its advanced development status and successful pilot deployments. Isobutanol-derived fuels benefit from high energy density and improved cold flow properties, making them commercially attractive for long-haul aviation. In contrast, the oligomerization route is projected to exhibit the fastest CAGR during the forecast period. Its flexibility in using multiple alcohol feedstocks and simplified reaction steps is drawing attention from technology developers.

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

Over the forecast period, the oligomerization segment is predicted to witness the highest growth rate owing to its flexibility and technical advantages. This conversion process allows the use of a diverse range of alcohol feedstocks, including ethanol and butanol, offering scalability across different regions. Lower operational complexity and modular setup potential make it favorable for small-to-medium-scale SAF production units. Additionally, advancements in catalyst design and reactor optimization are helping

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improve conversion efficiency and throughput.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share supported by strong R&D, favorable SAF policies, and a robust aviation infrastructure. The region hosts some of the most advanced ATJ demonstration plants and enjoys regulatory incentives like the Low Carbon Fuel Standard and federal tax credits. Meanwhile, the Asia Pacific region is forecasted to register the highest CAGR, propelled by rapid regional air traffic growth and rising interest in domestic SAF production.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by a surge in aviation fuel demand and supportive government initiatives. Countries such as India, China, and Japan are actively investing in domestic sustainable aviation fuel (SAF) production to reduce reliance on imports and address climate mandates. Rapid urbanization and expanding low-cost carrier fleets across Southeast Asia are further boosting interest in low-carbon jet fuels.

Key players in the market

Some of the key players in Alcohol to Jet (ATJ) Market include Suncor Energy, LanzaJet, Gevo, Neste Oyj, Honeywell UOP, Sasol, Enerkem, Virent, SkyNRG, TotalEnergies, Shell, FLITE Consortium, Mitsui & Co., Cosmo Oil, Hypoint and Cosmo Oil.

Key Developments:

In June 2025, LanzaJet signed a memorandum of understanding with ATOBA Energy to develop new commercial models for scaling Sustainable Aviation Fuel (SAF) procurement using LanzaJet's ATJ pathway.

In June 2025, LanzaJet deepened partnership with Microsoft to adopt Azure as LanzaJet's preferred cloud platform, supporting global scalability. Collaboration spans climate investments, renewable fuel offtake, and now digital infrastructure.

In April 2025, Gevo, Inc signed a voluntary Scope 1 and Scope 3 carbon credit offtake

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agreement with Future Energy Global. Designed to accelerate SAF's book-and-claim market and promote low-carbon aviation.

Feedstock Types Covered:

- Ethanol-to-Jet (ETJ)
- Isobutanol-to-Jet (IBTJ)
- Methanol-to-Jet (MTJ)
- N-butanol-to-Jet (NBTJ)
- Fatty Alcohols to Jet

Fuel Types Covered:

- ATJ-SPK (Alcohol-to-Jet Synthetic Paraffinic Kerosene)
- ATJ-SKA (Synthetic Kerosene with Aromatics)
- Blended Sustainable Aviation Fuel (SAF)

Production Processes Covered:

- Dehydration
- Oligomerization
- Hydrogenation
- Separation & Purification Processes

Feedstock Sources Covered:

- Sugarcane

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- Corn
- Agricultural Waste
- Forestry Residues
- Industrial CO? Emissions
- Other Feedstock Sources

Distribution Channels Covered:

- Direct Supply Agreements with Airlines
- Fuel Blenders & Refiners
- Airport Fueling Infrastructure

End Users Covered:

- Commercial Aviation
- Cargo Airlines
- Business & General Aviation
- Unmanned Aerial Vehicles (UAVs)
- Other End Users

Regions Covered:

- North America
  - US

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- Canada
- Mexico

Europe

- Germany
- UK
- Italy
- France
- Spain
- Rest of Europe

Asia Pacific

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- China
- India
- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina

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Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & 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 2024, 2025, 2026, 2028, and 2032
- 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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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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