

# **Biodiesel Market Report by Feedstock (Vegetable Oils, Animal Fats, and Others), Application (Fuel, Power Generation, and Others), Type (B100, B20, B10, B5), Production Technology (Conventional Alcohol Transesterification, Pyrolysis, Hydro Heating), and Region 2024-2032**

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## **Abstracts**

The global biodiesel market size reached US\$ 44.5 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 62.6 Billion by 2032, exhibiting a growth rate (CAGR) of 3.8% during 2024-2032. Government regulations promoting renewable energy, surging concerns over energy security and oil price volatility, continuous technological advancements in production processes, increasing public awareness of environmental issues, and escalating efforts to combat climate change are some of the factors propelling the market.

Biodiesel has emerged as a viable solution to mitigate the environmental impact of transportation and industrial sectors. It is derived from renewable sources such as vegetable oils, animal fats, or recycled cooking grease. During transesterification, the raw materials are chemically transformed into biodiesel, releasing glycerol as a byproduct. The advantages of biodiesel are manifold, such as it reduces greenhouse gas emissions, thereby curbing air pollution and contributing to global climate change mitigation. Additionally, its use promotes energy security, as it can be domestically produced, lessening dependence on imported fossil fuels. It also exhibits superior lubricating properties, which can enhance engine life and efficiency. Moreover, it can be seamlessly integrated into existing diesel infrastructure without necessitating any engine modifications. Biodiesel is available in various types, including B100 (pure biodiesel), B20 (blend of 20% biodiesel and 80% petrodiesel), and B5 (5% biodiesel blend).

The global biodiesel market is influenced by government regulations and policies promoting sustainable energy sources and reducing greenhouse gas emissions. This is further supported by the increasing concerns over energy security and volatility in oil prices. Moreover, advancements in biodiesel production technologies and the expansion of feedstock availability enhance the feasibility and efficiency of biodiesel production, which is accelerating the market growth. In line with this, rising public awareness about environmental issues and the escalating need for cleaner energy solutions are creating a favorable environment for the market growth. Additionally, collaborations between public and private sectors foster research and development (R&D) activities in biodiesel applications, which is augmenting the market growth. Furthermore, international efforts to combat climate change and achieve sustainable development goals is fueling the market growth.

#### Biodiesel Market Trends/Drivers:

##### Government regulations and policies

The global biodiesel market is strongly influenced by government regulations and policies aimed at promoting sustainable energy sources and mitigating climate change. Umpteen countries have implemented mandates and incentives to encourage the use of biodiesel as a renewable alternative to conventional fossil fuels. These policies often include blending mandates, tax incentives, and subsidies for biodiesel production and consumption. For instance, the Renewable Fuel Standard (RFS) in the United States requires a certain volume of renewable fuels, including biodiesel, to be blended into transportation fuels. These regulations not only create a stable demand for biodiesel but also signal a commitment to reducing greenhouse gas emissions, driving investments in biodiesel production infrastructure and technology.

##### Energy security and oil price volatility

The global biodiesel market is influenced by concerns over energy security and the fluctuation of oil prices in the international market. Biodiesel offers a viable alternative to traditional petroleum-based fuels, reducing dependence on imported oil and enhancing energy self-sufficiency. In times of geopolitical tensions or supply disruptions, the availability of domestically produced biodiesel can provide a buffer against price shocks and supply uncertainties. Additionally, the price volatility of crude oil makes biodiesel an attractive option for consumers seeking more stable and predictable fuel costs. As a result, increased awareness of the potential benefits of biodiesel in ensuring energy security and stability further drives the growth of the global biodiesel market.

## Technological advancements and feedstock availability

The biodiesel industry's growth is closely linked to advancements in production technologies and the availability of suitable feedstock. Technological innovations, such as improved catalysts and more efficient conversion processes, have significantly enhanced biodiesel production yields and reduced costs. Furthermore, research and development efforts have focused on converting various feedstock sources, such as vegetable oils, animal fats, and waste oils, into biodiesel. The diversification of feedstock options increases the industry's resilience to fluctuations in agricultural markets and mitigates concerns about food-versus-fuel conflicts. As new feedstock sources become viable, such as algae and non-food biomass, the biodiesel market expands its sustainability and economic potential, attracting investment and further adoption.

### Biodiesel Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the global biodiesel market report, along with forecasts at the global and regional levels from 2024-2032. Our report has categorized the market based on feedstock, application, type and production technology.

### Breakup by Feedstock:

- Vegetable Oils
- Animal Fats
- Others

### Vegetable Oils dominate the market

The report has provided a detailed breakup and analysis of the market based on the feedstock. This includes vegetable oils, animal fats, and others. According to the report, vegetable oils represented the largest segment.

The abundant availability of vegetable oils as feedstock is primarily driving the segment's growth. Vegetable oils, such as soybean, rapeseed, palm, and sunflower oil, are widely produced globally for food consumption, resulting in a readily available and cost-effective source for biodiesel production. Additionally, the compatibility of vegetable oils with existing biodiesel production technologies contributes to their dominance. Moreover, government policies and incentives often favor the use of vegetable oils for

biodiesel production due to their lower carbon intensity and potential positive impact on agricultural sectors. Besides this, consumers and industries are increasingly demanding sustainable and environmentally friendly products, which align with the use of vegetable oils as a renewable feedstock. Their reputation as a more sustainable alternative to fossil fuels further enhances their appeal in the market. Furthermore, ongoing research and development initiatives focus on improving the efficiency of vegetable oil-based biodiesel production, making it a technologically mature and viable option for meeting renewable energy targets.

Breakup by Application:

Fuel

Power Generation

Others

Fuel holds the largest share in the market

A detailed breakup and analysis of the market based on the application has also been provided in the report. This includes fuel, power generation, and others. According to the report, fuel represented the largest segment.

The fuel segment holds the largest share in the biodiesel market due to the government regulations and policies mandating the blending of biodiesel with conventional fuels. Many countries have set blending mandates, requiring a certain percentage of biodiesel to be mixed with diesel or gasoline, thus driving the consumption of biodiesel as a fuel additive. Additionally, the increasing concerns over environmental sustainability and the need to reduce greenhouse gas emissions have motivated consumers and industries to seek cleaner fuel alternatives. Biodiesel, being a renewable and low-carbon fuel, appeals to environmentally conscious individuals and businesses, leading to a surge in its usage in the transportation sector. Furthermore, the widespread availability of feedstock sources, such as vegetable oils and animal fats, has made biodiesel a viable and cost-effective option for blending with conventional fuels. The ample availability of these feedstocks ensures a steady supply of biodiesel, further bolstering its dominance in the fuel segment. Moreover, advancements in biodiesel production technologies and the establishment of efficient distribution networks have facilitated the integration of biodiesel into the existing fuel infrastructure. This has made it convenient for consumers to access biodiesel blends, contributing to its dominance in the market.

Breakup by Type:

B100

B20

B10

B5

B100 dominates the market

The report has provided a detailed breakup and analysis of the market based on the type. This includes B100, B20, B10, and B5. According to the report, B100 represented the largest segment.

The B100 segment, referring to pure biodiesel, dominates the market due to several key drivers, including government policies and regulations favoring B100 usage as it represents a higher level of renewable content, aligning with sustainability goals and reducing greenhouse gas emissions. Many countries have implemented blending mandates or tax incentives specifically for B100, driving its demand in the transportation and industrial sectors. Additionally, B100's superior environmental credentials and reduced carbon footprint attract environmentally conscious consumers and businesses. As concerns over climate change intensify, the demand for cleaner fuels like B100 grows, bolstering its market share. In line with this, technological advancements and increased research and development (R&D) activities have resulted in improved engine compatibility and performance, addressing concerns about potential compatibility issues with existing engines. Besides this, the development of a well-established infrastructure to support the distribution and usage of B100 further solidifies its dominance in the market, ensuring accessibility and availability to consumers.

Breakup by Production Technology:

Conventional Alcohol Trans-esterification

Pyrolysis

Hydro Heating

Pyrolysis holds the largest share in the market

A detailed breakup and analysis of the market based on the production technology has also been provided in the report. This includes conventional alcohol trans-esterification, pyrolysis, and hydro heating. As per the report, pyrolysis represented the largest segment.

The pyrolysis segment dominates the biodiesel market due to several key drivers that contribute to its prominence. It offers a unique advantage by converting various feedstock sources, including agricultural residues, woody biomass, and municipal waste, into biodiesel. This diverse range of feedstock availability ensures a more sustainable and abundant supply, reducing the market's dependency on specific crops and minimizing potential conflicts with food production. Additionally, pyrolysis technology enables the production of biodiesel with lower production costs and higher yields compared to traditional transesterification processes. The efficient conversion of feedstock into biodiesel makes pyrolysis an economically viable option, attracting investors and fostering market growth. Moreover, pyrolysis contributes to waste management by converting organic waste materials into valuable energy products, thus addressing environmental concerns and promoting a circular economy approach. Governments and environmental agencies around the world are increasingly recognizing the importance of waste-to-energy solutions, further driving the demand for pyrolysis-based biodiesel production.

#### Breakup by Region:

Asia Pacific

North America

Europe

Latin America

Middle East and Africa

Europe exhibits a clear dominance, accounting for the largest biodiesel market share

The report has also provided a comprehensive analysis of all the major regional markets, which include North America, Europe, Asia Pacific, Latin America, and the Middle East and Africa. According to the report, Europe accounted for the largest market share.

Europe's dominance in the biodiesel market can be attributed to the stringent environmental regulations and ambitious climate goals set by European governments. Biodiesel, being a low-carbon alternative to fossil fuels, aligns well with these objectives, leading to its widespread adoption. Additionally, the region has a well-established agricultural sector, providing ample feedstock for biodiesel production. Abundant sources of vegetable oils, such as rapeseed, soybean, and sunflower, contribute to the region's biodiesel production capacity. Moreover, government support through policies, incentives, and subsidies has incentivized the biodiesel industry's expansion. Initiatives



like blending mandates and tax breaks for biofuels have created a stable market for biodiesel producers and encouraged investment in the sector.

Furthermore, the European Union's commitment to reducing its carbon footprint has fostered research and development in advanced biodiesel technologies, ensuring the industry's competitiveness and sustainability. Besides this, the region's well-developed infrastructure, including distribution networks and fueling stations, has facilitated the widespread availability and use of biodiesel, further solidifying Europe's dominance in the global biodiesel market.

#### Competitive Landscape:

The competitive landscape of the global biodiesel market features a diverse array of players, ranging from established multinational corporations to innovative startups. These companies are actively engaged in biodiesel production, distribution, and research and development. The market's competitive dynamics are influenced by factors such as technological advancements, feedstock availability, production capacity, and geographical presence. Key players are continuously investing in research to enhance production efficiency and explore new feedstock sources.

Market leaders are often characterized by a strong international presence, strategic partnerships, and a broad portfolio of sustainable energy solutions. Meanwhile, emerging players are making significant strides by leveraging niche markets and focusing on novel feedstock options. Additionally, collaborations with government bodies and industry associations play a pivotal role in shaping the competitive landscape, driving regulatory compliance and market expansion. As the demand for renewable energy grows, competition in the biodiesel market is expected to intensify, prompting companies to differentiate through innovation and sustainability initiatives.

The report has provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

Archer Daniels Midland Company (ADM)

Wilmar International Limited

Renewable Energy Group Inc.

Bunge Limited

Cargill, Incorporated

Neste Oyj

Louis Dreyfus Company B.V.

Biox Corporation  
Diester Industrie  
Biomass Technology Group (BTG) BV  
DuPont  
POET  
Verbio Vereinigte BioEnergie AG  
China Clean Energy, Inc.  
CropEnergies AG  
INEOS AG

#### Recent Developments:

In July 2023, Cargill partnered with TREES Consulting to develop a methodology that offers the beef industry a framework to measure the methane emissions.

In June 2021, Bunge (BG.N) merged with Glencore-backed (GLEN.L) to create an agricultural trading giant worth about \$34 billion.

In July 2023, Wilmar International sold its stake in sugar business, Cosumar.

#### Key Questions Answered in This Report

1. What is the global biodiesel market growth in 2024-2032?
2. What are the global biodiesel market drivers?
3. What are the key industry trends in the global biodiesel market?
4. What is the impact of COVID-19 on the global biodiesel market?
5. What is the global biodiesel market breakup by feedstock?
6. What is the global biodiesel market breakup by application?
7. What is the global biodiesel market breakup by type?
8. What is the global biodiesel market breakup by production technology?
9. What are the major regions in the global biodiesel market?
10. Who are the key companies/players in the global biodiesel market?



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