Biodiesel Market Assessment, By Feed Stock [Vegetable Oil, Animal Fats, Others], By Application [Transportation, Power Generation, Others], By Region, Opportunities and Forecast, 2017-2031F

Market Report | 2024-08-23 | 230 pages | Market Xcel - Markets and Data

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Report description:

Global biodiesel market is expected to observe a CAGR of 8.03% during the forecast period 2024-2031, rising from USD 41.15 billion in 2023 to USD 76.34 billion in 2031. Compared to 2021, the global demand for biofuels increased by 6% in 2022, equivalent to 9,100 million liters per year. The growth is attributed to favorable regulations in the United States and Europe. Additionally, India and Brazil are experiencing rising demand for biodiesel, supported by financial incentives and blending requirements. Indonesia has seen increased biodiesel usage due to its 30% biodiesel blending mandate.
According to IEA, in 2023, 48.2 billion liters per year of biodiesel was consumed globally. Most of the demand for biofuels is coming from developing nations, especially Brazil, Indonesia, and India. Each of the three nations have strong regulations, a growing need for transportation fuel, and a plentiful supply of feedstock, with the highest usage of biodiesel. Advanced economies such as the United States, Canada, Japan, and European Union are tightening their transportation regulations. However, volume growth is limited due to factors such as the increasing popularity of electric vehicles, improvements in vehicle efficiency, high biofuel costs, and technological constraints.
Regulations intended to reduce GHG emissions are driving demand of biodiesel, as it has low GHG emissions and is made from wastes and residues. Meanwhile, emerging economies are the main drivers of the growing use of biodiesel, with the dual goals of minimizing the use of foreign oil imports and maximizing the use of domestic resources to support local economies. Additionally, using biofuels lowers greenhouse gas emissions in these nations.
Biodiesel is a clean-burning, renewable alternative to diesel that can be utilized in existing diesel engines. It is made from an increasing range of animal fats, agricultural feedstock, and recycled cooking oil. The market is expected to increase due to rising demand for biodiesel as an alternative to conventional fossil fuels in power generation and transportation applications.
One of the key elements propelling the market is the increasing need for fuels that are environmentally friendly and assure complete combustion while lowering greenhouse gas (GHG) emissions. Demand is being driven by biodiesel's excellent

compatibility with current diesel engines. The number of cars and other industries using biodiesel, together with the population growth are predicted to increase demand for biodiesel in the market.

Transportation Segment to Dominate Market

Due to the rising demand for environmentally friendly fuels such as biodiesel, which help lower carbon emissions, the transportation segment is expected to lead the global biodiesel market. People are becoming more conscious of environmental safety due to the transportation industry's carbon emissions, which contaminate the air and contribute to heart disease and breathing difficulties. Biodiesel is a renewable diesel replacement utilized in existing diesel engines without modifications. It raises the demand for biodiesel in the transportation sector.

For instance, in January 2023, the US Department of Energy (DOE) declared that it would put USD 118 million into 17 projects to hasten the creation of sustainable biofuels for the country's industry and transportation needs. By advancing biorefinery development, from pre-pilot and demonstration to supply sustainable fuels that limit emissions associated with fossil fuels, the selected projects will increase domestic production of biofuels and bioproducts.

Indonesia Holds the Largest Market in Terms of Production

Over 8 million kiloliters of biodiesel have been produced in Indonesia, demonstrating a strong industry that can meet both local and international demand. With a reported capacity of over 12 million kiloliters, the nation has a sizable capability for producing biodiesel, indicating its readiness to satisfy rising biodiesel demand.

By blending diesel with Fatty Acid Methyl Ester (FAME) derived from palm oil, Indonesia intends to reduce fuel imports, increase domestic demand for palm oil, and lower emissions. The mandate, which has been expanded to include a nationwide B20 program in 2018, a B30 program in 2020, and a 35% blending rate by August 2023, is carried out by Pertamina in collaboration with private enterprises. Tests comparing the performance of two diesel fuel types with different degrees of bio components are part of the government's effort to surpass 35% of blending rates. The government started testing a 50% renewable diesel blend in May 2023, focusing on heavy equipment used in the mining industry. The successful implementation of the B30 program, mandating a 30% biodiesel blend in diesel fuel, demonstrates Indonesia's commitment to renewable energy and its leading role in the global biofuel initiatives.

Global Biofuels Alliance to Influence Market Growth

In September 2023, as the G20 Chair, India initiated the Global Biofuels Alliance (GBA), a multi-stakeholder collaboration of governments, international organizations, and industries that brings together largest producers and users of biofuels to promote the development and use of biofuels. The project seeks to establish biofuels as a vital component of energy transition and a driver of employment and economic expansion.

Through facilitating capacity-building exercises across the value chain, providing technical support for national programs and, encouraging the sharing of policy lessons technology advancements, and the increasing use of sustainable biofuels with the involvement of a wide range of stakeholders, the Alliance hopes to accelerate the global uptake of biofuels. To encourage the use and trading of biofuels, GBA seeks to create globally accepted standards, norms, and sustainability principles. The alliance will promote international cooperation for the promotion of biofuels by acting as a knowledge base and expert hub.

Rising Demand for Low-Carbon Emission Products

Biodiesel is devoid of sulfur compounds and aromatics, making it easy to use, biodegradable, and non-toxic. It is compatible with the majority of diesel engines, produces fewer greenhouse gases and air pollutants, and emits less harmful carbon-based emissions. The biodiesel business is expanding due to growing concerns about greenhouse gas emissions from the use of fossil fuels. In addition to a lower harmful and carcinogenic aromatic carbon content than petroleum diesel, biodiesel can cut greenhouse gas emissions by up to 50%.

For instance, Indonesia has submitted its latest commitment to the UNFCC, setting updated targets of a 31.89% reduction and a 43.2% reduction by 2030. The increase is conditional and shows that lowering emissions without help from abroad is a priority. To position biofuels as the main energy source for its transportation sector by 2050, Indonesia has devised the Long-Term Low Carbon Strategy (LTS-LCCR 2050). The transition entails gradually switching from gasoline to renewable diesel, bioethanol, and biodiesel derived from palm oil.

Future Market Scenario (2024 - 2031F)

Demand for biodiesel is expected to increase due to developments in transportation fleets, greater demand from consumers, and

improvements in domestic policies. By 2031, global ethanol and biodiesel production is expected to rise to 140 billion liters and 55 billion liters, respectively, as a result of growth in Asian nations that support domestic production with tax breaks, subsidies, and low-interest loans for investments. Different nations use different feedstocks for biodiesel products, becoming more aware of the sustainability of biofuel production.

By 2031, ethanol mix rate in the United States will reach 11%. The European Union will continue to generate the most biodiesel globally, with a decline in production shares from 30.7% to 28% worldwide. By 2031, advanced biofuel sources are predicted to rise from 24% to 37% of total biofuel consumption in European Union, while overall biofuel usage is predicted to decline by 1.5% per annum. As it poses a high risk of ILUC, palm oil-based biodiesel is projected to see a decrease in consumption. Over the next ten years, Brazil is predicted to consume more fuel overall, underpinning the potential growth of blending biofuels into gasoline and diesel. By 2031, Indonesia is expected to produce 10.9 billion liters of biodiesel. European Union's environmental regulations and high-income countries' decreasing diesel use are expected to increase their exports during the forecast years.

In 2021, due to rising soybean oil prices and production expenses, the Argentina government lowered the biodiesel mix rate from 10% to 5%, which is estimated to increase to 8.5% in 2031. Tax exemptions will continue to boost the development of the country's biodiesel market. The Thailand government plans to gradually decrease its ethanol subsidy by 2022, with higher blends expected to be less affected. Blending is expected to reach 16%, and its production is projected to increase to 2 billion litter by 2031. Biodiesel demand will be supported by obligatory blending rates, with subsidies favoring B20 and B10. However, limited palm oil supply and high vegetable oil prices will constrain domestic supply.

Key Players Landscape and Outlook

The global biodiesel market is dominated due to their extensive production capacities and advanced technologies. The market outlook is expected to be positive, driven by increasing demand for cleaner transportation fuels and government policies. Regulations and incentives are encouraging biodiesel adoption, while advancements in production technology and feedstock diversification enhance efficiency and cost-effectiveness. Key players are expanding operations and forming strategic partnerships to improve biodiesel production and distribution. Innovations in feedstock and processing technologies are expected to further boost market growth.

For instance, in October 2023, Neste completed the merger of Neste Engineering Solutions Oy (NES) into Neste Corporation. As a result of the merger, NES is expected to provide a high-quality technology and engineering services for oil and gas, petrochemicals, and bio-based industries.

For instance, in June 2022, Chevron completed the acquisition of Renewable Energy Group. The acquisition aims to make Chevron one of the leading renewable fuel companies in the United States, offering cost-effective and lower carbon solutions to utilize in current fleets and infrastructure. The executive vice president of Downstream & Chemicals stated that the merger will enhance Chevron's offerings.

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