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E-Methanol Market Assessment, By Energy Source [Solar, Hydro, Wind, Others], By Application [Chemical Feedstock, Marine Fuel, Power Generation, Others], By Region, Opportunities and Forecast, 2017-2031F

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Abstracts

The global e-methanol market is projected to witness a CAGR of 26.65% during the forecast period 2024-2031, growing from USD 231.10 million in 2023 to USD 1,518.77 million in 2031. The ongoing technological advancements and increased government support have ramped up e-methanol production facilities. The cost of hydrogen and carbon dioxide sources significantly regulate the production cost of e-methanol, which usually ranges between USD 800-2400/ton, depending on the process for carbon dioxide. For instance, the first commenced plant in Iceland utilizes renewable hydrogen and carbon dioxide from a geothermal plant to produce E-methanol.

E-methanol caters to a myriad number of advantages, such as its adaptability as a liquid fuel that can be readily stored and transported at room temperature at normal pressures, unlike hydrogen or LNG. E-methanol produced from renewable sources, such as biomass or green hydrogen, helps reduce carbon emissions, thereby making it a greener alternative to conventional fuels. The market drivers include the need to scale production, increasing demand for renewable and sustainable fuel, increasing integration of e-methanol in chemical feedstocks, rise in competition for feedstock, legislative assistance, a profound increase in demand rate, and economic viability. These qualities underline e-methanol's promise as a long-term and diverse fuel choice in the transition to greener energy.

The rate of demand for e-methanol is rising exponentially. The expanding environmental concerns and the continuous need for sustainable fuels have raised the requirement for

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e-methanol. Moreover, the growing demand for electric cars, as well as the necessity for sustainable energy sources to replace old fossil fuels in a variety of sectors, are driving the market growth. In April 2023, Methanex, the world's largest methanol producer, estimated that worldwide methanol demand will represent an increase of more than 14 million mt over the following five years. This development trajectory is supported by a gradual shift to renewable methanol. On the other hand, the International Renewable Energy Agency (IRENA) also stated that it expects an expected annual output of 250 million mt of e-methanol by 2050.

Increasing Demand for Renewable and Sustainable Fuel is Expediting the Market Growth

The continuous rise in the necessity of renewable and sustainable fuel in numerous industries, such as transportation, chemical production, and power generation, has increased the demand for e-methanol at an exponential rate worldwide. The progress of renewable energy technology, which allows for efficient manufacturing by water electrolysis utilizing sources like wind, solar, and hydroelectric power, is accelerating the expansion of e-methanol. This green fuel functions as a versatile energy carrier, promoting grid stability, energy security, and the shift to a circular economy.

For instance, in November 2023, SunGas Renewables announced that it had been selected by ABEL Energy, an Australian green hydrogen and ethanol project developer, to supply green methanol for a new USD 1.4 billion plant in Northern Tasmania. The ABEL Energy Bell Bay Power Fuels Project is intended to produce 300,000 tons of green methanol annually. This amount is 3 times Australia's current methanol usage and the shipping fuel equivalent of reducing 540,000 tons of CO2 from the environment each year.

Increasing Integration of E-Methanol in Chemical Feedstocks is Augmenting Market Expansion

The rising use of e-methanol in chemical feedstocks is having a substantial influence on the e-methanol business. This integration is being pushed by an increase in demand for green carbon feedstocks across the sectors. The move to e-methanol synthesis from CO2 and e-hydrogen is gaining traction, particularly in applications, such as chemical manufacturing, maritime and aircraft transportation, and methanol derivative generation.

For example, in January 2024, BASF Process Catalysts, a leading developer of innovative catalyst technology, announced a new collaboration with Envision Energy.

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The partnership intended to improve the conversion of green hydrogen and CO2 into e-methanol using an innovative, dynamic process architecture. With their respective skills, the two businesses are planning to optimize the process of manufacturing e-methanol from green hydrogen and CO2, opening the way for a more sustainable energy future. BASF will deliver SYNSPIRE catalyst technology that Envision Energy will incorporate into its energy management system.

Government Initiatives are Fuelling the Market Growth

Government measures are vital in accelerating the expansion of the e-methanol market. The collaboration of government entities with organizations aim to promote sustainable energy sources, while lowering carbon emissions by encouraging the production and use of e-methanol. The government initiatives are driving market growth and facilitating a shift towards cleaner and more sustainable fuel sources by introducing renewable energy projects, promoting research and development in clean fuel technologies, and establishing regulations that favour the use of e-methanol.

For instance, in December 2023, Idemitsu Kosan Co.Ltd. collaborated with Hydrologic Instrumentation Facility (HIF) USA to launch an e-methanol company, with a prominent emphasis on CO2 and renewable hydrogen fuel generation. This program intends to construct an e-methanol supply chain, expedite research on foreign procurement, develop maritime fuel uses, and boost Japanese e-fuel and synthetic chemical manufacturing to achieve a carbon-neutral society by 2050.

Europe Dominates the Market

Several factors have contributed to Europe's dominance in the e-methanol business. Firstly, the region's thriving chemical sector, especially in Germany, foresees the promise of green methanol as a sustainable feedstock, which drives innovation and sustainable practices. Secondly, Europe has launched considerable governmental steps to decarbonize marine transportation, promoting the use of green methanol. Furthermore, the continuous rising need for green fuels and chemicals in Europe is a significant driver of the e-methanol industry, with some firms looking at methanol as a decarbonization fuel.

For instance, in July 2023, P1 Fuels and Carbon Recycling International jointly agreed to provide an e-methanol manufacturing unit to Germany. This cooperation combines CRI's Emissions-to-Liquids technology with P1's methanol-to-gasoline technology to provide cost-effective e-fuels for internal combustion engine cars. The agreement,

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announced at COP28, represents a commitment to green technology and sustainable fuel solutions, with plans for a demonstration facility and industrial-scale operations in the future.

Future Market Outlook (2024 – 2031F)

Due to the growing need for e-methanol in industries, such as transportation and chemicals, governments are spending a substantial amount of money for its technological advancements. This trend is expected to provide several market expansion opportunities in the future.

Key industry participants are indulging in various collaborations to enrich the quality of their e-methanol solutions, thereby paving the way for significant long-term development opportunities.

The significant increase in demand for kerosene and gasoline is propelling total market expansion, creating several prospects for future success.

The continued attempts of organizations to reduce carbon emissions have a substantial influence on market growth, with e-methanol providing a 95% decrease in carbon emissions. This environmental focus is projected to lead to significant market growth prospects in the future.

Key Players Landscape and Outlook

Key participants in the e-methanol market include BASF SE., Henan Shuncheng Group, Orsted A/S, and European Energy A/S. The players are collaborating on various projects due to the growing need for e-methanol, the possibility for e-methanol to serve as a hydrogen transport carrier, and its role in facilitating the transition to green hydrogen. Furthermore, the rise in the need for sustainable energy solutions, the expansion of the chemical industry, which requires methanol feedstock, and the desire for cleaner energy alternatives all add to the appeal of e-methanol projects.

In July 2023, European Energy A/S announced that it is building the world's largest CO2-to-green methanol factory in Denmark, with an annual capacity of nearly 32,000 tons. The facility will use Clariant's Megamax catalyst for methanol synthesis, which is noted for its high activity and stability in CO2-to-methanol conversion. This endeavor is consistent with manufacturing green methanol to benefit industries such as marine

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transportation and chemical manufacturing.

In December 2023, Orsted's FlagshipONE E-Methanol Project gained significant support during COP28, with Breakthrough Energy Catalyst, taking a 15% ownership investment and giving a grant, subject to financial requirements. This support is likely to help Orsted secure long-term offtake agreements, transforming fuel procurement in the marine industry. Orsted expects additional funding from Horizon Europe grants and a quasi-equity investment from the European Investment Bank (EIB) via InvestEU to advance FlagshipONE's technology and scale green fuel production.

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Contents

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5. GLOBAL E-METHANOL MARKET OUTLOOK, BY REGION, 2017-2031F

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6. MARKET MAPPING, 2023

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12. KEY PLAYERS OUTLOOK

*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work.

13. STRATEGIC RECOMMENDATIONS

14. ABOUT US AND DISCLAIMER

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