

Green Hydrogen & Renewable Fuels Market Forecasts to 2032 – Global Analysis By Fuel Type (Green Hydrogen, Renewable Methanol, Renewable Ammonia, Sustainable Aviation Fuel (SAF), Renewable Diesel (HVO) and Other Fuel Types), Production Pathway, Deployment Model, Application and By Geography

<https://marketpublishers.com/r/G70E203AEF26EN.html>

Date: October 2025

Pages: 200

Price: US\$ 4,150.00 (Single User License)

ID: G70E203AEF26EN

Abstracts

According to Statistics MRC, the Global Green Hydrogen & Renewable Fuels Market is accounted for \$1.25 trillion in 2025 and is expected to reach \$4.53 trillion by 2032 growing at a CAGR of 20.2% during the forecast period. Green hydrogen is a clean fuel produced through the electrolysis of water using renewable energy sources such as wind, solar, or hydropower, resulting in zero carbon emissions. It serves as a sustainable alternative to fossil fuels, supporting decarbonization in industries and transportation. Renewable fuels, also known as biofuels, are derived from organic materials like biomass, algae, or waste, offering lower greenhouse gas emissions compared to conventional fuels. Together, green hydrogen and renewable fuels play a vital role in promoting energy transition and achieving global climate goals.

Market Dynamics:

Driver:

Decarbonisation mandates & climate policies

Decarbonization mandates and climate policies are accelerating investment in green hydrogen and renewable fuels across industrial sectors. Governments are setting net-

zero targets that require alternatives to fossil-based energy and feedstock's. Refineries are integrating low-carbon fuels into long-term transition plans. Public funding is improving project viability across transport and heavy industry. Demand for clean molecules is rising in steel and chemicals. These dynamics are propelling large-scale deployment across energy systems.

Restraint:

High capital and production costs

Electrolyser systems require significant upfront investment to reach industrial scale. Cost parity with conventional fuels remains difficult to achieve. Developers face long payback periods and uncertain offtake agreements. Financing models are evolving to support blended capital structures. These constraints continue to hinder widespread adoption.

Opportunity:

Energy storage & grid balancing opportunity

Hydrogen can stabilize intermittent renewables by acting as a long-duration storage medium. Biofuels offer flexible dispatch and compatibility with existing infrastructure. Utilities are exploring power-to-gas and seasonal storage models to improve grid resilience. Industrial clusters are using hydrogen for load balancing and carbon offsetting. This momentum is expanding the role of fuels beyond transport and heat.

Threat:

Feedstock and land use constraints

Biomass availability varies by region and competes with food, forestry, and conservation priorities. Land-intensive cultivation can trigger environmental and social concerns. Water use and soil degradation risks are prompting scrutiny from regulators and NGOs. Developers must balance yield, impact, and lifecycle emissions to maintain credibility. These limitations continue to constrain long-term growth potential.

Covid-19 Impact:

The pandemic disrupted supply chains and delayed infrastructure projects across the

green fuels sector. Lockdowns affected construction timelines and equipment availability for hydrogen and biofuel facilities. Demand volatility in transport and industry slowed short-term adoption. Recovery programs are now prioritizing clean energy investment to support economic and climate goals. Public awareness of energy security and resilience has increased. The crisis reinforced the strategic importance of low-carbon fuels in future-proofing energy systems.

The green hydrogen segment is expected to be the largest during the forecast period

The green hydrogen segment is expected to account for the largest market share during the forecast period due to its versatility, scalability, and alignment with decarbonisation targets. Electrolysis technologies are gaining traction across industrial, transport, and utility sectors. Developers are securing renewable power supply to ensure low-emission production. Integration with ammonia, methanol, and synthetic fuels is expanding downstream applications. Government-backed pilot projects are validating commercial viability. This segment anchors the long-term roadmap for clean hydrogen deployment.

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

Over the forecast period, the aviation segment is predicted to witness the highest growth rate as airlines and fuel providers seek sustainable alternatives to kerosene. Renewable jet fuels and hydrogen-based propulsion are gaining momentum in regional and long-haul segments. Partnerships between aircraft manufacturers, energy firms, and regulators are accelerating innovation. Demand for drop-in fuels and retrofittable solutions are rising across fleets. Carbon reduction mandates and SAF blending targets are driving adoption. This segment is redefining aviation through low-carbon fuel integration.

Region with largest share:

During the forecast period, the Europe region is expected to hold the largest market share due to its strong climate policy framework, funding mechanisms, and industrial collaboration. The EU is scaling hydrogen valleys, biofuel corridors, and cross-border infrastructure. Investment in electrolyser manufacturing and feedstock logistics is driving regional capacity. Presence of leading energy firms and technology providers is reinforcing market strength. Regulatory clarity and carbon pricing are supporting commercial deployment.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR as energy demand, policy support, and technology investment converge. Countries like China, India, Japan, and Australia are scaling green hydrogen and biofuel initiatives across transport and industry. Government-backed programs and export strategies are accelerating infrastructure development. Local firms are launching region-specific solutions tailored to feedstock availability and energy mix. Demand for clean fuels is rising across aviation, shipping, and heavy industry. The region is emerging as a strategic growth hub for renewable energy carriers.

Key players in the market

Some of the key players in Green Hydrogen & Renewable Fuels Market include Air Liquide S.A., Linde plc, Siemens Energy AG, Plug Power Inc., Nel ASA, ITM Power plc, Cummins Inc., Ballard Power Systems Inc., ENGIE S.A., Shell plc, TotalEnergies SE, Repsol S.A., Ørsted A/S, HIF Global LLC and Johnson Matthey plc.

Key Developments:

In February 2025, Air Liquide and TotalEnergies announced a joint investment exceeding €1 billion to develop two large-scale low-carbon hydrogen production plants in the Netherlands. These projects aim to produce 450,000 tonnes of green hydrogen annually by 2030, significantly reducing CO₂ emissions in industrial and heavy mobility sectors.

In August 2024, Linde signed a long-term agreement to supply clean hydrogen to Dow's Path2Zero project in Alberta, Canada. This investment, exceeding \$2 billion, aimed to construct Canada's largest clean hydrogen facility, scheduled for completion by 2028.

Fuel Types Covered:

Green Hydrogen

Renewable Methanol

Renewable Ammonia

Sustainable Aviation Fuel (SAF)

Renewable Diesel (HVO)

Other Fuel Types

Production Pathways Covered:

Electrolysis (PEM, Alkaline, SOEC)

Biomass Gasification

Anaerobic Digestion

Power-to-Liquid (PtL)

Power-to-Gas (PtG)

Other Production Pathways

Deployment Models Covered:

On-Site Production

Centralized Hubs

Distributed Energy Systems

Cross-Border Hydrogen Corridors

Applications Covered:

Transportation

Aviation

Maritime

Heavy-Duty Vehicles

Industrial Feedstock

Chemicals

Steel & Cement

Power Generation

Residential & Commercial Heating

Energy Storage & Grid Balancing

Other Applications

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

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)

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

Contents

1 EXECUTIVE SUMMARY

2 PREFACE

- 2.1 Abstract
- 2.2 Stake Holders
- 2.3 Research Scope
- 2.4 Research Methodology
 - 2.4.1 Data Mining
 - 2.4.2 Data Analysis
 - 2.4.3 Data Validation
 - 2.4.4 Research Approach
- 2.5 Research Sources
 - 2.5.1 Primary Research Sources
 - 2.5.2 Secondary Research Sources
 - 2.5.3 Assumptions

3 MARKET TREND ANALYSIS

- 3.1 Introduction
- 3.2 Drivers
- 3.3 Restraints
- 3.4 Opportunities
- 3.5 Threats
- 3.6 Application Analysis
- 3.7 Emerging Markets
- 3.8 Impact of Covid-19

4 PORTERS FIVE FORCE ANALYSIS

- 4.1 Bargaining power of suppliers
- 4.2 Bargaining power of buyers
- 4.3 Threat of substitutes
- 4.4 Threat of new entrants
- 4.5 Competitive rivalry

5 GLOBAL GREEN HYDROGEN & RENEWABLE FUELS MARKET, BY FUEL TYPE

- 5.1 Introduction
- 5.2 Green Hydrogen
- 5.3 Renewable Methanol
- 5.4 Renewable Ammonia
- 5.5 Sustainable Aviation Fuel (SAF)
- 5.6 Renewable Diesel (HVO)
- 5.7 Other Fuel Types

6 GLOBAL GREEN HYDROGEN & RENEWABLE FUELS MARKET, BY PRODUCTION PATHWAY

- 6.1 Introduction
- 6.2 Electrolysis (PEM, Alkaline, SOEC)
- 6.3 Biomass Gasification
- 6.4 Anaerobic Digestion
- 6.5 Power-to-Liquid (PtL)
- 6.6 Power-to-Gas (PtG)
- 6.7 Other Production Pathways

7 GLOBAL GREEN HYDROGEN & RENEWABLE FUELS MARKET, BY DEPLOYMENT MODEL

- 7.1 Introduction
- 7.2 On-Site Production
- 7.3 Centralized Hubs
- 7.4 Distributed Energy Systems
- 7.5 Cross-Border Hydrogen Corridors

8 GLOBAL GREEN HYDROGEN & RENEWABLE FUELS MARKET, BY APPLICATION

- 8.1 Introduction
- 8.2 Transportation
- 8.3 Aviation
- 8.4 Maritime
- 8.5 Heavy-Duty Vehicles
- 8.6 Industrial Feedstock
- 8.7 Chemicals

- 8.8 Steel & Cement
- 8.9 Power Generation
- 8.10 Residential & Commercial Heating
- 8.11 Energy Storage & Grid Balancing
- 8.12 Other Applications

9 GLOBAL GREEN HYDROGEN & RENEWABLE FUELS MARKET, BY GEOGRAPHY

- 9.1 Introduction
- 9.2 North America
 - 9.2.1 US
 - 9.2.2 Canada
 - 9.2.3 Mexico
- 9.3 Europe
 - 9.3.1 Germany
 - 9.3.2 UK
 - 9.3.3 Italy
 - 9.3.4 France
 - 9.3.5 Spain
 - 9.3.6 Rest of Europe
- 9.4 Asia Pacific
 - 9.4.1 Japan
 - 9.4.2 China
 - 9.4.3 India
 - 9.4.4 Australia
 - 9.4.5 New Zealand
 - 9.4.6 South Korea
 - 9.4.7 Rest of Asia Pacific
- 9.5 South America
 - 9.5.1 Argentina
 - 9.5.2 Brazil
 - 9.5.3 Chile
 - 9.5.4 Rest of South America
- 9.6 Middle East & Africa
 - 9.6.1 Saudi Arabia
 - 9.6.2 UAE
 - 9.6.3 Qatar
 - 9.6.4 South Africa

9.6.5 Rest of Middle East & Africa

10 KEY DEVELOPMENTS

10.1 Agreements, Partnerships, Collaborations and Joint Ventures

10.2 Acquisitions & Mergers

10.3 New Product Launch

10.4 Expansions

10.5 Other Key Strategies

11 COMPANY PROFILING

11.1 Air Liquide S.A.

11.2 Linde plc

11.3 Siemens Energy AG

11.4 Plug Power Inc.

11.5 Nel ASA

11.6 ITM Power plc

11.7 Cummins Inc.

11.8 Ballard Power Systems Inc.

11.9 ENGIE S.A.

11.10 Shell plc

11.11 TotalEnergies SE

11.12 Repsol S.A.

11.13 Ørsted A/S

11.14 HIF Global LLC

11.15 Johnson Matthey plc

List Of Tables

LIST OF TABLES

Table 1 Global Green Hydrogen & Renewable Fuels Market Outlook, By Region (2024-2032) (\$MN)

Table 2 Global Green Hydrogen & Renewable Fuels Market Outlook, By Fuel Type (2024-2032) (\$MN)

Table 3 Global Green Hydrogen & Renewable Fuels Market Outlook, By Green Hydrogen (2024-2032) (\$MN)

Table 4 Global Green Hydrogen & Renewable Fuels Market Outlook, By Renewable Methanol (2024-2032) (\$MN)

Table 5 Global Green Hydrogen & Renewable Fuels Market Outlook, By Renewable Ammonia (2024-2032) (\$MN)

Table 6 Global Green Hydrogen & Renewable Fuels Market Outlook, By Sustainable Aviation Fuel (SAF) (2024-2032) (\$MN)

Table 7 Global Green Hydrogen & Renewable Fuels Market Outlook, By Renewable Diesel (HVO) (2024-2032) (\$MN)

Table 8 Global Green Hydrogen & Renewable Fuels Market Outlook, By Other Fuel Types (2024-2032) (\$MN)

Table 9 Global Green Hydrogen & Renewable Fuels Market Outlook, By Production Pathway (2024-2032) (\$MN)

Table 10 Global Green Hydrogen & Renewable Fuels Market Outlook, By Electrolysis (PEM, Alkaline, SOEC) (2024-2032) (\$MN)

Table 11 Global Green Hydrogen & Renewable Fuels Market Outlook, By Biomass Gasification (2024-2032) (\$MN)

Table 12 Global Green Hydrogen & Renewable Fuels Market Outlook, By Anaerobic Digestion (2024-2032) (\$MN)

Table 13 Global Green Hydrogen & Renewable Fuels Market Outlook, By Power-to-Liquid (PtL) (2024-2032) (\$MN)

Table 14 Global Green Hydrogen & Renewable Fuels Market Outlook, By Power-to-Gas (PtG) (2024-2032) (\$MN)

Table 15 Global Green Hydrogen & Renewable Fuels Market Outlook, By Other Production Pathways (2024-2032) (\$MN)

Table 16 Global Green Hydrogen & Renewable Fuels Market Outlook, By Deployment Model (2024-2032) (\$MN)

Table 17 Global Green Hydrogen & Renewable Fuels Market Outlook, By On-Site Production (2024-2032) (\$MN)

Table 18 Global Green Hydrogen & Renewable Fuels Market Outlook, By Centralized

Hubs (2024-2032) (\$MN)

Table 19 Global Green Hydrogen & Renewable Fuels Market Outlook, By Distributed Energy Systems (2024-2032) (\$MN)

Table 20 Global Green Hydrogen & Renewable Fuels Market Outlook, By Cross-Border Hydrogen Corridors (2024-2032) (\$MN)

Table 21 Global Green Hydrogen & Renewable Fuels Market Outlook, By Application (2024-2032) (\$MN)

Table 22 Global Green Hydrogen & Renewable Fuels Market Outlook, By Transportation (2024-2032) (\$MN)

Table 23 Global Green Hydrogen & Renewable Fuels Market Outlook, By Aviation (2024-2032) (\$MN)

Table 24 Global Green Hydrogen & Renewable Fuels Market Outlook, By Maritime (2024-2032) (\$MN)

Table 25 Global Green Hydrogen & Renewable Fuels Market Outlook, By Heavy-Duty Vehicles (2024-2032) (\$MN)

Table 26 Global Green Hydrogen & Renewable Fuels Market Outlook, By Industrial Feedstock (2024-2032) (\$MN)

Table 27 Global Green Hydrogen & Renewable Fuels Market Outlook, By Chemicals (2024-2032) (\$MN)

Table 28 Global Green Hydrogen & Renewable Fuels Market Outlook, By Steel & Cement (2024-2032) (\$MN)

Table 29 Global Green Hydrogen & Renewable Fuels Market Outlook, By Power Generation (2024-2032) (\$MN)

Table 30 Global Green Hydrogen & Renewable Fuels Market Outlook, By Residential & Commercial Heating (2024-2032) (\$MN)

Table 31 Global Green Hydrogen & Renewable Fuels Market Outlook, By Energy Storage & Grid Balancing (2024-2032) (\$MN)

Table 32 Global Green Hydrogen & Renewable Fuels Market Outlook, By Other Applications (2024-2032) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

I would like to order

Product name: Green Hydrogen & Renewable Fuels Market Forecasts to 2032 – Global Analysis By Fuel Type (Green Hydrogen, Renewable Methanol, Renewable Ammonia, Sustainable Aviation Fuel (SAF), Renewable Diesel (HVO) and Other Fuel Types), Production Pathway, Deployment Model, Application and By Geography

Product link: <https://marketpublishers.com/r/G70E203AEF26EN.html>

Price: US\$ 4,150.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/G70E203AEF26EN.html>