

Global Hydrogen Market Valued at USD 195.4 Billion in 2024, Forecasted to Reach USD 341.2 Billion by 2032 at 7.1% CAGR – Japan Set to Capture 15.6% Market Share by 2027

Tokyo, Japan – April 28, 2025 | Source: Dataintel Consulting Pvt. Ltd — As per recent insights published by Dataintel, the global hydrogen market reached a valuation of USD 195.4 billion in 2024 and is expected to grow significantly to USD 341.2 billion by 2032, registering a Compound Annual Growth Rate (CAGR) of 7.1% over the forecast period. Japan is poised to contribute over 15.6% of the total market share by 2027, fueled by a national strategy to decarbonize energy production and invest in hydrogen-related infrastructure and technologies.

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Market Overview & Future Outlook

Hydrogen has rapidly evolved into a pivotal pillar of clean energy transformation. In 2024, grey hydrogen dominated the global market with a 58.2% share, primarily driven by its cost advantages and widespread industrial applications. However, green hydrogen, despite representing 14.7% of the total share in 2024, is projected to expand at a CAGR exceeding 12.3% due to heightened global decarbonization targets.

Japan continues to lead the Asia-Pacific hydrogen transformation wave, thanks to major policy commitments under the Basic Hydrogen Strategy and the Green Growth Strategy. In 2023 alone, Japan's government allocated JPY 370 billion (approximately USD 2.8 billion) toward hydrogen infrastructure development, reinforcing its long-term vision of achieving a hydrogen-powered society by 2050.

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Segmentation Analysis

By Region:

Asia-Pacific commanded a 43.6% share of the global hydrogen market in 2024. Japan's contribution is growing steadily, with hydrogen consumption in Tokyo, Yokohama, and Osaka accounting for 39.2% of the domestic total. Hydrogen imports surged by 12.4% year-on-year in 2023, particularly from Australia and the Middle East.

By Technology:

Steam Methane Reforming (SMR) held a dominant 51.8% share globally. However, Japan is pivoting toward water electrolysis, with national electrolyzer capacity expected to increase from 400 MW in 2023 to 3.2 GW by 2030.

By End User:

In Japan, hydrogen usage for power generation comprised 34.9% of total domestic consumption in 2024, followed by industrial sectors at 28.1%. The nation has publicly committed to transitioning 800,000 homes to hydrogen-powered energy solutions by 2030, catalyzing further investment in decentralized hydrogen infrastructure.

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Market Drivers, Restraints, and Opportunities

Drivers:

- The global clean energy investment boom, which reached USD 78 billion in hydrogen projects in 2023.
- Japan's domestic funding exceeding USD 13.1 billion for hydrogen-related R&D, infrastructure, and logistics within the same period.

Restraints:

- High costs associated with green hydrogen production and limited access to low-cost renewable energy sources.
- Japan's reliance on maritime hydrogen imports adds logistical and regulatory complexity.

Opportunities:

Japan is leveraging its digital economy and smart industrial base to roll out AI-integrated hydrogen energy management systems and autonomous hydrogen-powered logistics fleets. The market for hydrogen automation systems in Japan is forecasted to grow at 11.4% CAGR through 2030.

Competitive Landscape

Dataintel's analysis shows the hydrogen market is becoming increasingly competitive, with frequent mergers, cross-border R&D collaborations, and vertically integrated strategies shaping its evolution. Japanese corporations are entering bilateral pacts with European and Middle Eastern counterparts to co-develop hydrogen supply chains and accelerate commercial-scale production.

Between 2022 and 2024, over 47 new hydrogen ventures were established in Japan, signaling robust investor confidence in long-term energy diversification.

Recent Developments

- In 2024, Japan formalized its updated "Green Growth Strategy," introducing USD 4.2 billion in new hydrogen subsidies and grants to be disbursed by 2027.
- Hydrogen fueling station infrastructure expanded by 19.3% YoY in 2023, totaling 231 stations across the country.
- The Japanese Ministry of Land, Infrastructure, Transport and Tourism approved hydrogen-fueled cargo vessels, making Japan the first Asian nation to embrace hydrogen for marine logistics.

Such regulatory support is expected to unlock an additional USD 9.8 billion in private investment over the next five years, greatly enhancing Japan's hydrogen value chain from production to distribution.

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