

# **Southeast Asia Hydrogen Generation - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)**

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## **Abstracts**

The Southeast Asia Hydrogen Generation Market size is estimated at USD 15.58 billion in 2024, and is expected to reach USD 47.57 billion by 2029, growing at a CAGR of 25% during the forecast period (2024-2029).

Over the medium term, factors such as increased government regulations for desulphurization, greenhouse gas emissions, and encouraging the production and consumption of hydrogen are likely to drive the hydrogen generation market in the Southeast Asian region during the forecast period.

On the other hand, the high capital costs of hydrogen energy storage are expected to restrain the growth of hydrogen generation.

Nevertheless, technological advancements in extracting hydrogen from renewable sources and increased applications of hydrogen as a fuel are likely to create lucrative growth opportunities for the hydrogen generation market in the coming years.

Indonesia is expected to witness significant growth in the Southeast Asian hydrogen generation market during the forecast period.

Southeast Asia Hydrogen Generation Market Trends

Grey Hydrogen is a Significant Segment

Grey hydrogen is the most common form of hydrogen production, and it uses natural gas (via steam methane reformation) or coal (via coal gasification) to produce hydrogen. The process of hydrogen production is a carbon-intensive process, as significant carbon emissions are released into the atmosphere during these production processes.

According to the Global CCS Institute, approximately 120 Mt of hydrogen is produced annually, of which approximately 98% of current hydrogen production is from the reformation of methane or the gasification of coal or similar materials of fossil-fuel origin (e.g., petcoke or asphaltene). A similar trend is expected to continue in the Southeast Asian region during the forecast period.

As grey hydrogen is manufactured from fossil fuels using mature technologies, it has one of the lowest manufacturing costs, which other alternatives, such as blue and green hydrogen, cannot compete with. It has been estimated that in regions with low fossil fuel prices, such as the Middle East, Russia, and North America, the cost of grey hydrogen production can dip as low as USD 1/kg H<sub>2</sub>, while in other regions, such as Europe and Southeast Asian region, the cost is well below USD 2/kg H<sub>2</sub>.

The region's attempt to minimize emissions, mainly from heavy industries like petrochemicals, iron and steel, and power generation, are resulting in measures to limit grey hydrogen production and usage. As a result, investments in the industry are fast declining, and capacity growth is likely to be severely limited during the forecast period. Despite lowering costs for blue and green hydrogen technologies, grey hydrogen production is predicted to remain cost-competitive with both types over the forecast period.

The chemical industry now employs hydrogen gas in relatively limited quantities. Grey hydrogen is used mainly in the steel industry. One kilogram of hydrogen requires 50-55 kWh to generate, while a ton of steel requires 50 kg of hydrogen. Steel output is expected to increase by 2022, with hydrogen playing an important role. Hydrogen helps to reduce the cost of steel.

Furthermore, in August 2023, Malaysian steelmaker Eastern Steel Sdn Bhd began operation of its newly developed blast furnace, which is expected to increase the company's annual steel production capacity to 2.7 million tons from 700,000 tons. The company has been exporting 40 percent of its steel products to other Southeast Asian countries, including Thailand and Indonesia. The

company also intends to install an additional blast furnace with an annual production capacity of 1.3 million tons within the next few years, further expanding its production capacity to 4 million tons. All these types of projects are likely to increase steel production and are expected to increase the demand for hydrogen across the region during the forecast period.

Therefore, owing to such factors, the grey hydrogen segment is likely to significantly impact the hydrogen generation market during the forecast period.

### Indonesia to Witness Significant Growth

As per the findings of the 19 February 2021 Indonesia Hydrogen Energy Outlook meeting, advancements in hydrogen technology contribute to the decrease of carbon emissions inside the nation. Additionally, businesses are starting to implement trial programs.

For instance, as part of a previous joint study agreement, Indonesia's state-owned energy firm Pertamina (PERTM.UL) is expected to explore the development of green hydrogen in the country in November 2022 alongside Singapore-based Keppel Infrastructure and global oil major Chevron. The firms want to investigate the viability of establishing a green hydrogen facility in Sumatra, Indonesia, with a production capacity of 40,000 tonnes per year, initially fueled by 250-400 megawatts of geothermal energy.

Several nations have started to push research into using hydrogen as an energy source since it has emerged as one of the most promising alternatives to carbon-intensive fuels. A Memorandum of Understanding for a long-term land lease to develop a solar-based green hydrogen production and export facility was signed in October 2022 by Carbon Governance Pte Ltd, a Singapore-based green energy project development company, with a local partner company in Bintan, Indonesia. The export of green hydrogen to Southeast Asia is anticipated to start in the first quarter of 2027, with the Bintan Green Hydrogen project scheduled to attain FID in the fourth quarter of 2023. All these developments/upcoming projects will likely positively impact hydrogen generation in Indonesia during the forecast period.

Indonesia still needs to establish the required laws and policies to advance its green hydrogen sector. As of right now, just a few pilot projects are using green

hydrogen for testing purposes. In any case, Green Hydrogen is believed to be essential to Indonesia's goal of becoming an emission-free nation by 2060. Green hydrogen is a sustainable energy source that is referenced in Indonesia's general national energy plan (RUEN) despite the need for official key policy papers for its development. In addition, the Indonesian Ministry of Energy and Mineral Resources' current renewable energy roadmap indicates that the country's power industry will progressively introduce green hydrogen development starting in 2031 and swiftly accelerate it beyond 2050.

Steel production in Indonesia is increasing very rapidly. The main reason for this is the hydrogen generation market. Hydrogen provides sufficient energy and reduces the cost of steel manufacturing.

Therefore, based on the above-mentioned factors, Indonesia is expected to witness significant growth in the Southeast Asia hydrogen generation market during the forecast period.

### Southeast Asia Hydrogen Generation Industry Overview

The Southeast Asia hydrogen generation market is consolidated. Some of the major players in the market (in no particular order) include Linde Plc, Air Liquide SA, Messer Group GmbH, Engie S.A., and Cummins Inc., among others.

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