Australia Green Hydrogen Market Assessment, By Technology [Polymer Electrolyte Membrane Electrolyzer, Alkaline Electrolyzer, Solid Oxide Electrolyzer, Proton Exchange Membrane Electrolyzer Tortoise], By Renewable Source [Solar, Wind, Hydropower, Others], By Transportation Channel [Roadways, Waterways, Pipelines], By End-user [Power Generation, Transportation, Chemicals & Petrochemicals, Steel, Food & Beverages, Medical, Others], By Region, Opportunities and Forecast, 2016-2030F

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Report description:

Australia green hydrogen market size was valued at USD 51 million in 2022, and is projected to reach USD 128.1 million by 2030, growing at a CAGR of 12.2% from 2023 to 2030. Energy is essential for global development and economies, fueling industries, transportation, and daily needs. However, rising energy demand leads to environmental concerns from greenhouse gas emissions and climate change impacts.

Green hydrogen is a promising solution to Australia's growing energy demands, offering a clean alternative for industries, transportation, and daily needs. It is produced using renewable energy sources, combats greenhouse gas emissions, aligns with global goals, and promotes a sustainable energy future. Australia, the largest LNG exporter, aims to become a global leader in Green Hydrogen energy.

Australia is actively investing in green hydrogen initiatives as it is gaining momentum as a clean energy option to achieve carbon neutrality. Cost reductions, technological advancements, favorable policies, and growing awareness drive the rise. Government, businesses, and individuals are embracing green hydrogen to reduce carbon emissions, improve air quality, and attain energy

self-sufficiency.

Australia's hydrogen industry is expected to generate USD 50 billion in GDP and create 13,000 regional jobs by 2050, with an additional 13,000 jobs from renewable energy infrastructure construction. Australia is a leading country in green hydrogen projects, accounting for 10% of global low-carbon hydrogen capacity. With seven operational projects and 146 pipelines, Australia has over 11 MTPA and 84 GW of Electrolyzer capacity.

Green Hydrogen Serves as the Future Fuel

The UNFCCC's Paris Agreement aims to limit global warming below 2-degree Celsius. To align with the Paris Agreement, Australia has set its emissions target to become a net zero emissions economy by 2050. Australian government implemented the Safeguard Mechanism, capping emissions from facilities releasing over 100,000 tons of CO2 equivalent per year, starting in July 2023. Green hydrogen is crucial in reducing emissions as it offers a clean energy alternative, reducing the carbon footprint and supporting the nation's emission reduction goals.

Australia's AGIG and Siemens Energy collaborated on Hydrogen Park South Australia in Tonsley, Adelaide in 2022. The project blends 5% green hydrogen into the local gas network, decarbonizing AGIG's business. With a 1.25 MW Proton Exchange Membrane electrolyzers, the plant has a maximum annual capacity of 175 tons of H2. Over 700 customers in Mitchell Park received the hydrogen blend, helping to avoid more than 7 tons of CO2 emissions from natural gas combustion.

Technological Innovations Boost Green Hydrogen's Potential

In Australia, significant advancements in electrolyzer technology have revolutionized the production of green hydrogen from renewable sources, enhancing efficiency and cost-effectiveness. These innovations accelerate the country's transition towards clean and sustainable energy solutions.

Taking giant advance technological strides Australia's ReNu Energy, through its subsidiary Countrywide Hydrogen in July 2023 chose Plug Power to supply two 5-megawatt proton exchange membrane electrolyzer systems for green hydrogen projects in Tasmania. The advanced electrolyzer systems will enable the generation of 4,200 kg per day of hydrogen. Green hydrogen will play a crucial role in decarbonizing Tasmania's transportation and natural gas sectors.

The design includes redundancy measures for a secure and uninterrupted supply and hydrogen storage using tube trailers. The projects will connect to the TasGas network, facilitating hydrogen injection and supply to local industries and showcasing Australia's advancements in green hydrogen technology.

Government Promotes Green Hydrogen as a Clean Energy Future

The Australian government plays an active role in promoting the growth of green hydrogen by providing policy frameworks, incentives, and funding support. This backing accelerates the adoption and advancement of green hydrogen as a sustainable energy solution. Additionally, green hydrogen holds the potential to enhance energy security in the country by reducing dependency on imported fossil fuels.

In their 2023-24 budget, the government declared an investment of USD 2.7 billion to support the country's ambitions of becoming a renewable energy superpower. This funding is expected to be pivotal in promoting and advancing green hydrogen initiatives, solidifying Australia's position as a key player in the global green hydrogen market. In 2022, Australia had an extensive pipeline of over 100 hydrogen projects, representing a significant potential investment of approximately USD 155 billion - USD 203 billion. This robust pipeline reflects the country's commitment to promoting green hydrogen and its potential to play a vital role in Australia's transition to a more sustainable and environmentally friendly energy future.

Growing Viability of Green Hydrogen

As renewable energy costs decline, green hydrogen in Australia becomes a viable and cost-effective choice, enabling integration across sectors for improved energy system efficiency. It serves as valuable energy storage, converting excess renewable energy into hydrogen for later electricity generation.

Australia is making significant strides towards becoming a renewable energy exporter by constructing its largest renewable hydrogen plant in the Pilbara region. The Yuri project, led by ENGIE and supported by a USD 47.5 million grant from ARENA, will feature a 10 MW Electrolyzer and 18 MW of solar PV in Karratha, WA. It aims to utilize renewable electricity to produce hydrogen and supply it to the adjacent Yara Pilbara fertilizer facility, replacing the fossil fuel-derived hydrogen used in ammonia production.

Infrastructure Development is Enabling the Growth

Australia is witnessing a surge in hydrogen infrastructure development, including storage, transportation, and refueling stations,

propelling the growth of the green hydrogen market. This extensive expansion supports the adoption of green hydrogen as a sustainable and low-emission energy solution in various sectors. It includes adopting hydrogen-powered urban transport systems and integrating hydrogen fuel cell buses and commercial vehicles. Moreover, the chemical industry is actively joining the movement by investing in green hydrogen technologies to leverage its potential as a sustainable energy source and reduce carbon emissions.

Australia has allocated USD 48 million for the Hunter Valley Hydrogen Hub, the country's first hydrogen hub. Construction is set to begin in 2025, potentially displacing natural gas in ammonia and explosives manufacturing from 2026. The federal government has earmarked USD 358.29 million for eight regional hydrogen hubs.

Impact of COVID-19

The COVID-19 pandemic had a notable effect on Australia's energy sector, causing disruptions, decreased transportation fuel demand, and a decline in industrial activities. The crisis underscored the need for resilience and carbon emission reduction. Consequently, the Australian government and the private sector have substantially invested in green hydrogen projects, infrastructure, and research. The growth of renewable energy sources such as solar and wind has been accelerated to support green hydrogen production.

For instance, the Hydrogen Utility Network project is developing a network of hydrogen pipelines in Australia. The network is expected to be operational by 2025 and will allow for the transportation of green hydrogen to markets across the country.

Impact of Russia-Ukraine War

The conflict between Russia and Ukraine has highlighted the risks associated with heavy reliance on fossil fuels for energy, especially in Australia. In response, Australia, with other nations, is actively seeking alternative to energy sources and technologies to enhance energy security and reduce dependence on fossil fuel imports. This includes investing in cleaner and more sustainable energy solutions to mitigate the impact of geopolitical disruptions on energy supplies.

Australia is investing in green hydrogen development projects, such as Invenergy's Sauk Valley Plant in Illinois, to produce 52 tons of green hydrogen annually and store 400kg on-site. These projects aim to enhance energy security with domestically produced, renewable hydrogen during crises.

Key Players Landscape and Outlook

Major stakeholders in the Australian green hydrogen sector are actively engaged in research and development (R&D) efforts to enhance technologies, reduce production costs, and enhance efficiency. These key players are making significant investments in large-scale projects and forging strategic partnerships to propel market expansion and foster the development of green hydrogen infrastructure within Australia and on a global scale.

Australian iron-ore company Fortescue Metals Group (FMG) has merged with its green hydrogen division, Fortescue Future Industries (FFI), to invest billions in green hydrogen projects. With 10% of FMG's profits supporting these initiatives, Fortescue strengthens its position in the sector and plans to make crucial investment decisions in Australia.

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

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