

# **Australia Hydrogen Market By Technology (Steam Methane Reforming, Membrane Cell Technology), By Application (Petroleum Refinery, Ammonia Cracking, Chemical & Petrochemical, Others), By Region, Competition, Forecast and Opportunities, 2019-2029F**

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## **Abstracts**

Australia Hydrogen Market was valued at USD 4.25 billion in 2023 and is anticipated to project steady growth in the forecast period with a CAGR of 4.26% through 2029. Australia's hydrogen sector is experiencing notable growth, spurred by a series of strategic initiatives and investments aimed at fostering a robust hydrogen industry. Recognizing hydrogen's potential as a low-emission fuel, the government has prioritized its development, envisioning a thriving hydrogen energy industry. In a significant move, the Australian government allocated USD 2 billion in the 2023-24 Federal Budget to establish the Hydrogen Headstart initiative. This initiative serves as a crucial revenue support program, intended to expedite market expansion by offering financial assistance to emerging hydrogen projects and enterprises, while also promoting innovation and collaboration within the sector.

Australia boasts an active hydrogen production capacity of 10.2ktpa, with projections indicating substantial growth in the years ahead. Ongoing research and development endeavors focus on enhancing hydrogen production technologies and optimizing efficiency. The government's steadfast commitment to renewable resources and sustainable energy solutions bolsters Australia's standing in the global hydrogen market.

Backed by significant government investment, a strong emphasis on research and development, and a strategic utilization of renewable resources, Australia's hydrogen industry is primed for considerable advancement. As global attention increasingly turns

towards sustainable energy alternatives, Australia's burgeoning hydrogen market is poised to wield significant influence on the international stage, contributing to a cleaner and more environmentally sustainable future.

## Key Market Drivers

### Growing Demand of Hydrogen in Automotive Industry

The automotive sector is currently witnessing a profound transformation globally, as manufacturers pivot towards cleaner alternatives and depart from conventional fossil fuel vehicles. Among these sustainable alternatives gaining traction are hydrogen fuel cell vehicles (FCVs), which emit solely water vapor, making them environmentally sound.

In Australia, industry frontrunners like Hyundai are spearheading efforts to boost the adoption of hydrogen vehicles. Through strategic collaborations with Neoen, ActewAGL, and the Australian Capital Territory (ACT) government, Hyundai aims to streamline operational costs and bolster refueling accessibility, thereby expediting the uptake of hydrogen vehicles.

Australia's abundant renewable energy resources position it favorably for the production of green hydrogen, generated using renewable energy sources. Fortescue, an Australian enterprise, harbors ambitious plans to export a substantial portion of its green hydrogen to power heavy-duty vehicles, industrial sectors, and global power grids.

With a keen eye on the burgeoning hydrogen sector, the Australian government is actively investing in its advancement. Initiatives like CSIRO's HyResource and HyLearning are geared towards raising awareness among stakeholders and the general public about the myriad benefits and potential applications of hydrogen.

### Surge in Technological Advancements

Technological progressions in hydrogen production are reshaping Australia's endeavors to decarbonize its economy. The diminishing expenses associated with renewable energy sources like solar and wind power are bolstering the viability of large-scale zero-emissions hydrogen production. This trend is anticipated to establish Australia as a prominent player in the global arena of clean energy exports, while significantly mitigating its carbon emissions.

The growth trajectory of Australian Hydrogen market is underpinned by the continual decrease in hydrogen production and distribution costs, alongside advancements in end-use technologies. These enhancements are rendering hydrogen an increasingly feasible and commercially appealing energy solution, driving further progress in technology and market development.

The establishment of a hydrogen export market is poised to not only fortify Australia's economic landscape but also yield noteworthy domestic advantages. For instance, leveraging hydrogen for energy storage has the potential to enhance the stability of Australia's power grid, thus bolstering the nation's energy resilience.

The surge in technological innovations serves as a pivotal catalyst propelling Australia's burgeoning hydrogen market. As technology continues to advance, Australia stands uniquely positioned to fully harness the potential of hydrogen, fundamentally reshaping its energy framework and actively contributing to a more sustainable global energy paradigm. By embracing these innovations and leveraging its abundant natural resources, Australia is poised to chart a course towards a brighter and greener future for generations to come.

## Key Market Challenges

### High Cost of Production

The production of hydrogen from renewable sources, termed as green hydrogen, comes with a higher price tag compared to conventional fossil fuel-based methods. This cost disparity primarily stems from the substantial initial investments required for setting up electrolyzers, the technology utilized to split water into hydrogen and oxygen using electricity.

The elevated production costs present a notable obstacle for the advancement of Australia's hydrogen market. They impede the competitiveness of hydrogen as an alternative energy solution and may dissuade potential investors from engaging in the market. The establishment of transportation and storage infrastructure for green hydrogen further amplifies the overall expenditures.

These challenges also serve as a catalyst for technological advancements. As the sector progresses, endeavors are underway to enhance the efficiency of electrolyzers, develop innovative materials, and refine the overall hydrogen production process. Research and development initiatives are directed towards curtailing capital expenses,

boosting the effectiveness of renewable energy sources, and identifying more economical methods for hydrogen storage and transportation.

## Key Market Trends

### Expansion of Hydrogen Infrastructure

Australia, endowed with vast natural resources and renowned for its prowess in energy exportation, stands poised to cultivate a flourishing hydrogen sector within its borders. Acknowledging this potential, the nation's National Hydrogen Strategy, unveiled in 2019, underscores the importance of erecting a resilient infrastructure to underpin hydrogen production.

Recent developments have seen Australia presenting proposals for a renewable hydrogen facility in Victoria state, a move that fortifies the country's capability for hydrogen generation. Australian hydrogen enterprises are proactively broadening their horizons beyond domestic borders, cementing the international prospects of Australia's hydrogen sector. Such initiatives not only amplify Australia's influence in the global hydrogen arena but also position the nation as a frontrunner in pioneering sustainable energy solutions worldwide.

## Segmental Insights

### Technology Insights

Based on the category of technology, the steam methane reforming emerged as the fastest growing segment in the Australian market for hydrogen in 2023. Steam Methane Reforming (SMR) has emerged as an exceptionally efficient technique for generating hydrogen, boasting an impressive efficiency rate of approximately 74%. This renders it highly appealing for addressing the escalating demand for hydrogen. Beyond its efficiency, SMR also offers cost-effectiveness, with the production cost of hydrogen via SMR estimated at around USD2.27 per kilogram.

In Australia, the predominant method for hydrogen production is through natural gas steam methane reforming. This preference is primarily attributable to Australia's abundant natural gas reservoirs, rendering SMR a pragmatic and feasible option for hydrogen generation in the nation. By harnessing these resources, Australia is strategically positioned to accelerate its hydrogen industry and play a pivotal role in the global shift towards cleaner energy alternatives.

## Regional Insights

Australia Capital Territory & New South Wales emerged as the dominant player in the Australia Hydrogen Market in 2023, holding the largest market share in terms of value. In New South Wales (NSW), the Electricity Infrastructure Roadmap delineates comprehensive strategies aimed at harnessing opportunities within the hydrogen sector. This encompasses not only hydrogen production but also its seamless integration into existing energy infrastructure. The goal is to optimize hydrogen's potential across various sectors, including transportation, industry, and power generation.

To expedite progress in hydrogen technologies, both regions have allocated significant resources to research and development. For instance, the University of New South Wales (UNSW) has spearheaded pioneering research in hydrogen production and storage. Their innovative studies contribute crucial insights and technological breakthroughs that will shape the trajectory of the hydrogen industry.

Through concerted efforts and strategic investments, NSW and the Australian Capital Territory (ACT) are positioning themselves as frontrunners in the hydrogen revolution. By driving innovation, fostering job creation, and spearheading the transition towards cleaner energy solutions, they are paving the way for a sustainable future.

## Key Market Players

Amtronics (Aust) Pty Ltd

Energys Australia Pty Ltd

Blue Energy Limited

Hydrogen Systems Australia Pty Ltd

BOC Limited

Air Liquide Australia Limited

Chevron Australia Pty Ltd

Iwatani Australia Pty Ltd

## Report Scope:

In this report, the Australia Hydrogen Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

### Australia Hydrogen Market, By Technology:

- o Steam Methane Reforming
- o Membrane Cell Technology

### Australia Hydrogen Market, By Application:

- o Petroleum Refinery
- o Ammonia Cracking
- o Chemical & Petrochemical
- o Others

### Australia Hydrogen Market, By Region:

- o Victoria & Tasmania
- o Queensland
- o Western Australia
- o Northern Territory & Southern Australia
- o Australia Capital Territory & New South Wales

## Competitive Landscape

**Company Profiles:** Detailed analysis of the major companies present in the Australia Hydrogen Market.

**Available Customizations:**

Australia Hydrogen Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

**Company Information**

Detailed analysis and profiling of additional market players (up to five).

## Contents

### 1. PRODUCT OVERVIEW

- 1.1. Market Definition
- 1.2. Scope of the Market
  - 1.2.1. Markets Covered
  - 1.2.2. Years Considered for Study
  - 1.2.3. Key Market Segmentations

### 2. RESEARCH METHODOLOGY

- 2.1. Objective of the Study
- 2.2. Baseline Methodology
- 2.3. Key Industry Partners
- 2.4. Major Association and Secondary Sources
- 2.5. Forecasting Methodology
- 2.6. Data Triangulation & Validation
- 2.7. Assumptions and Limitations

### 3. EXECUTIVE SUMMARY

- 3.1. Overview of the Market
- 3.2. Overview of Key Market Segmentations
- 3.3. Overview of Key Market Players
- 3.4. Overview of Key Regions/Countries
- 3.5. Overview of Market Drivers, Challenges, Trends

### 4. AUSTRALIA HYDROGEN MARKET OUTLOOK

- 4.1. Market Size & Forecast
  - 4.1.1. By Value
- 4.2. Market Share & Forecast
  - 4.2.1. By Technology (Steam Methane Reforming, Membrane Cell Technology)
  - 4.2.2. By Application (Petroleum Refinery, Ammonia Cracking, Chemical & Petrochemical, Others)
  - 4.2.3. By Region
  - 4.2.4. By Company
- 4.3. Market Map



- 4.3.1. By Technology
- 4.3.2. By Application
- 4.3.3. By Region

## **5. VICTORIA & TASMANIA HYDROGEN MARKET OUTLOOK**

- 5.1. Market Size & Forecast
  - 5.1.1. By Value
- 5.2. Market Share & Forecast
  - 5.2.1. By Technology
  - 5.2.2. By Application

## **6. QUEENSLAND HYDROGEN MARKET OUTLOOK**

- 6.1. Market Size & Forecast
  - 6.1.1. By Value
- 6.2. Market Share & Forecast
  - 6.2.1. By Technology
  - 6.2.2. By Application

## **7. WESTERN AUSTRALIA HYDROGEN MARKET OUTLOOK**

- 7.1. Market Size & Forecast
  - 7.1.1. By Value
- 7.2. Market Share & Forecast
  - 7.2.1. By Technology
  - 7.2.2. By Application

## **8. NORTHERN TERRITORY & SOUTHERN AUSTRALIA HYDROGEN MARKET OUTLOOK**

- 8.1. Market Size & Forecast
  - 8.1.1. By Value
- 8.2. Market Share & Forecast
  - 8.2.1. By Technology
  - 8.2.2. By Application

## **9. AUSTRALIA CAPITAL TERRITORY & NEW SOUTH WALES HYDROGEN MARKET OUTLOOK**

## 9.1. Market Size & Forecast

### 9.1.1. By Value

## 9.2. Market Share & Forecast

### 9.2.1. By Technology

### 9.2.2. By Application

## 10. MARKET DYNAMICS

### 10.1. Drivers

### 10.2. Challenges

## 11. MARKET TRENDS & DEVELOPMENTS

### 11.1. Recent Developments

### 11.2. Product Launches

### 11.3. Mergers & Acquisitions

## 12. POLICY & REGULATORY LANDSCAPE

## 13. AUSTRALIA ECONOMIC PROFILE

## 14. COMPETITIVE LANDSCAPE

### 14.1. Amtronics (Aust) Pty Ltd

#### 14.1.1. Business Overview

#### 14.1.2. Company Snapshot

#### 14.1.3. Products & Services

#### 14.1.4. Financials (In case of listed)

#### 14.1.5. Recent Developments

#### 14.1.6. SWOT Analysis

### 14.2. Energys Australia Pty Ltd

### 14.3. Blue Energy Limited

### 14.4. Hydrogen Systems Australia Pty Ltd

### 14.5. BOC Limited

### 14.6. Air Liquide Australia Limited

### 14.7. Chevron Australia Pty Ltd

### 14.8. Iwatani Australia Pty Ltd

## **15. STRATEGIC RECOMMENDATIONS**

## **16. ABOUT US & DISCLAIMER**

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