

India's Green Hydrogen Mission: Domestic Push Gains Momentum Amidst Weak Export Outlook

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Green Hydrogen Sector Latest News

- Stakeholders in India's emerging green hydrogen sector remain optimistic that the alternative fuel is poised to play a significant role in the country's future energy landscape.

Domestic Push to Green Hydrogen Development

- India's **green hydrogen** sector is at a pivotal juncture. With global demand faltering due to geopolitical tensions and uncertain international policy environments, India has turned its attention inward, focusing on domestic demand creation, infrastructure, and policy support.
- The government and industry remain confident in the long-term prospects of green hydrogen, recognising its potential role in decarbonising key sectors like fertilisers, steel, and shipping.

National Green Hydrogen Mission and Strategic Interventions

- Launched in 2023, the **National Green Hydrogen Mission** is India's flagship initiative to position the country as a global hub for green hydrogen production, usage, and export.
- Backed by an outlay of Rs 19,744 crore, the mission aims to develop **5 million metric tonnes (MMT)** of green hydrogen production capacity by 2030.
 - It also includes provisions for the domestic manufacture of electrolyzers under the **SIGHT (Strategic Interventions for Green Hydrogen Transition)** programme.
- To ensure integrity and transparency, the Ministry of New and Renewable Energy (MNRE) introduced a **measurement and certification framework in April 2025**, establishing standards to verify green hydrogen at production sites.

Global Headwinds Affect Export Demand

- Despite significant investments and plans for export-oriented projects like **ReNew's green ammonia facility in Odisha**, India's export aspirations face severe constraints.
- At the heart of the slowdown is the weakening of global demand, a consequence of both **geopolitical instability** and **policy uncertainty** in key markets like the US and EU.
- MNRE highlighted that lack of **market visibility** and setbacks to US policies such as the **Inflation Reduction Act (IRA)**, now threatened by a rollback proposal called the "Big Beautiful Bill" under consideration by the US Senate, have undermined investor confidence and planning in global clean fuel transitions.
- Additionally, tenders floated by European agencies such as Germany's **Hintco** (under the H2Global Foundation) failed to attract sufficient industry participation, compounding the export sluggishness.

Efforts to Secure Global Access

- To address logistical and trade-related barriers, India is engaging with major European ports, including **Rotterdam and Antwerp**, to streamline future green hydrogen shipments.
- At the policy level, **free trade agreement (FTA) discussions with Europe** now include proposals to reduce import duties on Indian green hydrogen and derivatives.
- Nonetheless, the short-term outlook for exports remains bleak, pushing stakeholders to explore alternative paths for sectoral growth.

Domestic Demand as a Growth Driver

- In response, the Indian government is aggressively working to **build a robust domestic market** for green hydrogen.
- A recent tender for the supply of **8 lakh tonnes** of green hydrogen received full bids, demonstrating rising interest among Indian enterprises.
- Additionally, the **Solar Energy Corporation of India (SECI)** is managing another tender for **7 lakh tonnes**, particularly aimed at the fertiliser industry.
- To further ensure offtake, pilot initiatives are being rolled out in sectors like transportation, steel, and shipping. Hydrogen fuel cell buses are currently being tested in five cities, including **Ladakh**, to examine real-world performance.

- Industry voices have argued that **domestic mandates** may be necessary to truly scale adoption, for example, making it mandatory for fertiliser manufacturers to source a portion of their ammonia from green hydrogen sources.

Cost Competitiveness and Commercial Viability

- The greatest hurdle to mainstream adoption remains **cost competitiveness**.
- Currently, **green hydrogen costs \$4-\$5 per kg**, compared to **\$2.3-\$2.5 per kg for grey hydrogen**, which is produced using fossil fuels.
- These cost dynamics mean that, unlike renewables today, green hydrogen is **not yet commercially viable** without policy mandates or incentives.
- A new report by **CII, Bain & Company, and RMI** attributes this high cost to immature supply chains, high financing costs, and lack of scale. It recommends incremental strategies to boost demand, including:
 - **Blending green hydrogen** into grey hydrogen or piped natural gas networks.
 - Encouraging its use in **niche sectors** such as ceramics, chemicals, and glass.
 - Leveraging **public procurement**, particularly for **green steel**, to boost scale and lower costs.

Future Outlook: Balancing Export Aspirations and Domestic Realities

- India's long-term vision for green hydrogen remains ambitious and well-supported.
- However, present challenges suggest a need to rebalance expectations, shifting emphasis from **export-oriented growth** to **domestic market creation and infrastructure building**.
- If successful, India could replicate its renewables success story in this domain too, gradually achieving cost parity and becoming a leader in global green hydrogen trade.

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