

Hydrogen at the Helm

Industry perspective on emerging H₂ trends

Green hydrogen, which is hydrogen produced by the electrolysis of water using renewable energy sources, has perhaps become the most sought after clean energy technology. With its versatile range of applications, from energy generation and storage to transport, it is undoubtedly a key piece of the energy transition story. As countries worldwide strive to deploy large-scale green hydrogen projects and develop the most cost-effective technologies, India too is joining the bandwagon, with a slew of policy interventions and projects. At a recent conference organised by *Renewable Watch*, industry leaders discussed the key trends, challenges and outlook for developing a competitive green hydrogen market in the country. Edited excerpts...

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Hydrogen is no longer the fuel of the future; it is the fuel of today. There are discussions regarding the type of hydrogen to be used and developed. Considering the global perspective and the ambitious strategies being developed for the production and use of green hydrogen, it is imperative to focus more on this cleaner alternative. The big question is regarding the cost of green hydrogen, which depends on the source of the energy used to produce it and the cost of the electrolyzers. Following from this, another important question is regarding the source of the hydrogen. Should it be sourced from solar or wind energy, or should blue hydrogen, which uses carbon capture technologies, be the priority? As the cost curve will continue to fall steeply for green hydrogen, going forward, it should be the priority. However, it is true that blue hydrogen will continue to complement the uptake of green hydrogen. I see a fast transition towards green hydrogen. It will start competing with other energy sources in the next four to five years.

Hydrogen has multi-pronged applications.

It can be used for power storage and generation, transportation, and in the fertiliser industry. Hydrogen blending of natural gas is also a promising opportunity, given that India imports the bulk of its gas needs. Globally, interesting developments are taking place in the shipping, aviation and railway sectors regarding the use of hydrogen fuel cells in a bid to decarbonise these industries. We completely agree with the government's stance that a mandate-based approach is the way forward for promoting hydrogen. A policy framework is needed, and the Indian government is working towards that.

ACME has been discussing opportunities with various stakeholders and government agencies in this space. ACME is involved in building a small-scale, integrated commercial green hydrogen and green ammonia pilot project in Rajasthan, which will be commissioned within the next two to three months. Green ammonia has huge potential not only as a feedstock for power plants, but also for the transportation of hydrogen over long distances, which is a huge challenge. The cost

will initially be a challenge for the pilot. But, going forward, the cost of such projects will fall if the demand problem for hydrogen is solved. In the green hydrogen value chain, apart from production of hydrogen, there is also immense potential for companies to act as integrators. Overall, the global fall in the costs of electrolyzers will benefit India as well. ACME will build integration models to bring down the cost of green hydrogen, so that it can compete with other energy sources.

India has a target of setting up 450 GW of renewable energy projects by 2030. India's peak energy demand is in the range of just 180-190 GW. It is not expected to increase in sync with these ambitious targets in the next 10 years. In this scenario, there is a possibility of the renewable energy capacity sitting idle. To utilise this capacity by creating additional demand, the production of green hydrogen will be important.

In terms of technology, alkaline electrolyzers have been commonly used and universally accepted by many companies.



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