The Future of Energy is Green Hydrogen

- ***Amitabh Kant***

While rapid electrification of the economy is going to be an important step towards decarbonising the energy systems and enhancing the efficiency levels, electricity cannot address certain carbon intensive sectors which have to be decarbonised to ensure net-zero emissions. Hydrogen, as an energy carrier, is crucial for achieving decarbonization of hard-to-abate sectors. Many sectors such as iron ore and steel, fertilizers, refining, methanol, and maritime shipping emit major amounts of CO2, and carbon-free hydrogen will play a critical role in enabling deep decarbonization. For other high-emitting sectors, such as heavy-duty trucking and aviation, hydrogen is being explored with an outlook to be the preferred solution for several applications.

India is one of the early movers in the green hydrogen space. There are multiple reasons why India is pursuing this with vigor and conviction. Firstly, neither hydrogen nor electrolyser is a new technology. More than 70 million tons of hydrogen is produced annually across the world with India clocking around 8% of the global production.

Secondly, India's distinct advantage in low-cost renewable energy generation and world-class clean power execution capabilities makes green hydrogen the most competitive form of hydrogen in the medium run. This enables India to potentially be one of the most competitive producers of green hydrogen in the world. Since 75% of the cost of green hydrogen is dependent on renewable energy we should target to further bring down cost of solar power to Rs. 1 per Kw/h through lower cost of financing.

Energy security is the third important reason to pursue green hydrogen as it will enable the emergence of a domestically produced energy carrier that can reduce the dependence on fossil fuel imports of 160 billion dollars per year. In addition, with 500 GW renewables expected to come online by 2030, green hydrogen could act as a solution to extract value out of excess renewable power and avoid the duck curve possibilities in the grid.

Key policy measures for creating a green hydrogen ecosystem have recently been announced. Following are the 3 steps that will make India a leader in green hydrogen.

Firstly, India should make urgent efforts to secure the time-limited export markets. The EU is quadrupling its green hydrogen import plans for 2030. There is huge potential for exports to EU, Japan and South Korea.

Secondly, India should encourage Industrial R&D in electrolysers and other green hydrogen components. Indian companies cannot be dependent upon foreign technology suppliers. We need to Industrialize next-generation hydrogen technologies in India.

Thirdly, Industrial applications such as refining and non-urea fertilizers have to be mandated to go 100% green hydrogen by 2030 to ensure economies of scale for this nascent industry to flourish. With these measures the price of green hydrogen should fall from US$ 4 per kg to US$ 1 per kg by 2030.

With proper policy support, industry action, market generation and increased investor interest, India can position itself as a low-cost, zero-carbon green hydrogen manufacturing hub of the world.

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