

HOW WILL GREEN HYDROGEN BE A WATERSHED MOMENT FOR INDIA'S ENERGY TRANSITION?

There has been a marked rise in emissions, as we are increasingly witnessing the effects of climate change across the world. In India, nearly half of the population is living in regions with fewer than 200 clean air days a year. Furthermore, India also saw the output of its workforce decline by 7% — equivalent to 75 billion man-hours in 2017 due to heatwave conditions. The cost of emissions has been steep for India, as it continues to lose \$210 billion per year to emissions.

These conditions are only set to exacerbate, as India's energy consumption is pegged to double by 2040. India has begun moving in the right direction and has surpassed the renewable energy capacity target committed during Paris Climate Agreement. Renewable energy currently makes up for 40% of India's total installed power capacity, however, contributes only 25% to total electricity generation. This is where Hydrogen has a key role to play, as it can increase the share of renewables in the overall energy pool.

Hydrogen (H_2) is an energy carrier, not an energy source, which can deliver and store a large amount of energy and be used in various ways. It can also act as an energy buffer or storage, which can potentially solve the intermittency problem of large-scale renewables. H_2 is a highly versatile solution capable of decarbonizing the hard-to-abate sectors. It is also highly sustainable with no residue or emission except water.

Recent developments have made it possible for Hydrogen to go from hype to hope due to confluence of factors like declining costs, breakthroughs in technology and carbon taxes. Hydrogen for India can go beyond just a decarbonization strategy, emerging as the new economic growth engine, transforming India from an energy-deficient to an energy surplus, perhaps even a net energy exporter. Our Hon'ble Prime Minister Narendra Modi had announced the aspirational Hydrogen Mission, which is a watershed moment in India's energy transition journey. The new Green Hydrogen/Green Ammonia policy also makes India the 18th country in the world to release a comprehensive green hydrogen policy. Under the policy, the Government of India has set a target of production of 5 million tonnes of green hydrogen by 2030 and the related development of renewable energy capacity. The new policy will help cut the cost of manufacturing green hydrogen by 40-50%.

Reliance Industries Limited is keen to support India in its clean energy ambitions, and will invest USD 10 billion in new energy by 2024, and a further USD 70-80 billion by 2030. With India's comprehensive hydrogen policy, increased public-private collaboration and a sharpened focus on clean energy solutions, India is poised to become the new green hydrogen global hub. Green hydrogen will be India's biggest strategy for a 'Quantum Jump' to address the perils of climate change.

TOP ENERGY TRENDS FROM INDIA & ACROSS THE GLOBE

Will India's green hydrogen projects fuel its future needs?

Hyderabad-based Greenko group and Belgium-based John Cockeril recently announced that they would build a hydrogen electrolyser gigafactory targeting 2-gigawatt in India. Reliance Industries, Larsen & Toubro and Adani, together, have also earmarked investments of close to Rs 6 trillion in green hydrogen projects. Clearly, Green Hydrogen is powering the ambitions of India. And, this push by major corporate names comes as the government, which launched a green hydrogen policy in February, bets big on the sector. However, becoming a major exporter of green hydrogen will not be feasible until 2030, given our stated target, domestic requirements, and planned capacities. India plans to manufacture 5 million tonnes of green hydrogen per year by 2030. This would be half of the European Union's 2030 target of 10 million tonnes. According to S&P Global Commodity Insights data cited by a financial daily, there are 26 hydrogen projects in India, with a total capacity of 255,000 tonnes per year. However, only around 8,000 tonnes per year of capacity is expected to be operational by 2024.

Massive Australian green hydrogen project moves forward with new Japanese partner

Back in December 2021, the Northern Territory (NT) government granted Major Project Status to water-from-air technology company Aqua Aerem to develop its \$15 billion 10 GW Desert Bloom Green Hydrogen project in Tennant Creek, NT, with ambitious plans for commercial production by 2023. Considering the scale of renewable energy required for Green Hydrogen production, necessarily requiring lots of sun and wind, usually hot and arid regions are best situated. Technology that enables significant quantities of water to be obtained from the atmosphere provides a serious advantage and are demonstrable of the increasingly fecund solar-water nexus. The joint agreement will see the two companies develop the project, which Aqua Aerem said will produce approximately 410,000 metric tonnes of Green Hydrogen annually when it is completed.

Renewable energy to climate action – how India can achieve sustainable development in 2022

India's COP26 commitment to achieve net-zero emissions by 2070 is poised to lead the nation on a path to clean, green, and sustainable economic development. If climate change is not managed well, it can be inequitable, especially for the poor and marginalised communities. Renewable energy currently accounts for 10 per cent of the electricity generated in India. Reaching the capacity of 500 gigawatts by 2030, while sourcing 50 per cent of the energy requirement from such sources, calls for a transition at a massive scale. If managed right, a clean energy transition can improve the quality of life of rural communities, especially for women. It could also improve healthcare & education and facilitate a host of local economic activities to create new jobs. Transport contributes around 13.5 per cent of India's energy-related greenhouse gas emissions. The Gati Shakti Master Plan proposes an integrated approach for seamless multimodal connectivity. This will not only help in shifting demand toward cleaner modes but also in improving India's competitiveness as an exporting nation.

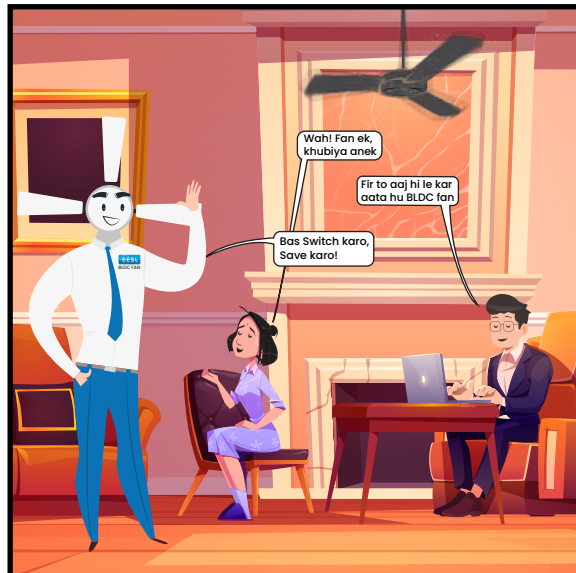
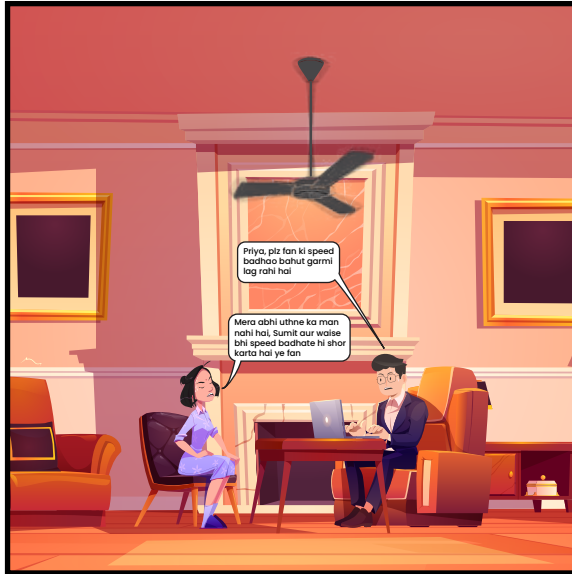
Is the climate tech opportunity real this time around?

Climate tech is increasingly being seen as an exciting opportunity in the world of technology startups and venture capital, globally and in India. But it is not the first time that startups focused on climate and the environment are getting this attention. The massive rise in climate-related disasters has had a significant economic and political impact. Various national and international commitments to achieve net zero emissions are broadly starting to align, even if significant differences remain. India notably also committed to achieving net zero by 2070. Significant technological breakthroughs in recent years offer the biggest hope that climate tech could actually change the game this time around. Renewable energy production — especially of solar energy — has become cost effective and in many cases cheaper than fossil-fuel driven energy production. Carbon capture technology is also improving more rapidly than before. Furthermore, satellite and space tech offer potential applications that could help us transform our energy systems. Remote sensing technology, for example, is making wind turbines more efficient while weather satellites are making solar cells more productive.

IPCC report on 'Mitigation of Climate Change': An explainer

The Inter-governmental Panel on Climate Change (IPCC) approved the Summary for Policy Makers (SPM) of the Working Group III contribution to the Sixth Assessment Cycle (AR6 WGIII) titled 'Mitigation of Climate Change'. The WGIII report examines the current trends of emissions, projected levels of future warming, and how to transition to a low carbon economy in order to limit global warming to 1.5 degrees Celsius by 2100. The report shows how transformative systems can ensure a safer climate and a sustainable economy. The report further highlights that reduction in greenhouse gas emissions, phasing out all fossil fuels, transformative shifts to scale up energy efficiency, renewable energy & electrification, and conservation & restoration of forests and lands - all aligned with sustainable development, accompanied by substantially increased finance and underpinned by principles of equity - offers the only real chance to avert runaway climate change.





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- ◆ 4. IEES – Integrated Energy Efficiency Services
- ◆ 5. OTHERS – New Programmes [Products & Services] under EESL BRAND [On Separate Approval Only]
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For more information, please contact us:



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