

India's Clean Molecule Bet

At COP26, we should showcase green hydrogen as our best weapon in climate war

-Amitabh Kant

The UN Intergovernmental Panel on Climate Change's (IPCC) recent assessment unequivocally highlights that the globe is warming up, much quicker than anticipated. Earth's average surface temperature is projected to hit 1.5 or 1.6 degrees celsius above preindustrial levels around 2030 in all scenarios. There is a respite: in the most ambitious if-we-do-everything-right scenario, global temperatures - after "overshooting" the 1.5 °C target - fall back to 1.4 °C by 2100. The UN Emissions Gap Report outlines that India is the only G20 country whose Nationally Determined Contributions (NDC's) is 2 degree compliant. This means that if all countries made efforts like India's, the average global temperature rise could be limited to 2°C by the next century.

We have taken several steps towards climate action including a 450 GW renewable target by 2030. The Report also states that G20 countries have accounted for 78% emissions, leaving only 14% of the carbon space is left for the entire world. India's carbon space utilization has been 52Gt, a mere 1.3% of the total available carbon space of 4000 Gt at 2°C. On a per capita share India's total carbon space should actually be 17.5% or 700 Gt.

India despite being a fast-growing nation with an enormous energy appetite has demonstrated its unwavering commitment towards mitigating climate change. It believes that the end-of-century global warming goal of 2°C is not enough and we must target 1.5°C to avoid climate disasters. As the second most vulnerable country to climate change, India is now leading the climate war with a clean molecule as ammunition: Green Hydrogen. We not only occupy a vital role in saving the planet but also towards the creation of a business advantage, new cost efficiencies, enhancing valuations for companies and their ability to attract investments.

With concerted focus on a truly zero carbon fuel, the Prime Minister in his Independence Day address launched the National Hydrogen mission This is a pivotal step towards making India energy independent by 100 years of Independence in 2047. India presently imports \$160 billion worth of fossil fuel energy and is likely to double it in next fifteen years. COP26 in Glasgow presents India with an opportunity to present its decarbonisation strategy based on renewable energy, storage and green hydrogen to the world.

Electricity contributes only a fraction to the overall energy basket. Almost 80 percent requirements are met by fossil fuels like oil, gas and coal. Sectors which utilize solid and liquid fuels cannot be powered by electricity due to technical factors. This is where hydrogen has a critical role to play. Hydrogen will help India and the world to decarbonise 'hard to abate' sectors such as steel, copper, fertiliser, cement, oil refining and long-distance transport.

Green hydrogen is produced using electrolysis of water with zero-carbon electric power. The steep reduction in solar and wind power prices in India makes green hydrogen an ideal production route. Green hydrogen will leverage India's most abundant solar and wind resources and will fast-track India towards zero-energy imports. In addition, India has rich land resources, a large coastline and world class clean-energy project execution capabilities to become a global hub for green hydrogen and derived products.

The world is mandating and demanding green products with mechanisms such as European Union carbon tariff. Green hydrogen is a stellar opportunity not only to reduce our emission and energy imports, but also to build scale and export capabilities in high value green products such as green steel, green ammonia and high-tech components.

India is on a rapid upward trajectory to become a champion in green hydrogen through a five pronged strategy.

First, enabling policies to reduce green hydrogen costs. Power costs including generation and transmission contribute to more than 70% of green hydrogen cost. As it is cheaper to transport electricity than hydrogen, initiatives such as transmission & distribution waivers, surcharge waivers and low taxes/duties will help reduce the green hydrogen costs by enabling the electrolysis facilities to set-up closer to demand centers.

Second, a visionary target to reduce the prices of green hydrogen. India is estimated to consume 11.7 Million Tons of carbon intensive industrial grey hydrogen by 2030 primarily in the refinery and fertilizer sector, twofold of the 5.6 Million Tons today. India must ensure that a large proportion of the upcoming new hydrogen capacity should be green in addition to mandating a fraction of existing capacities to go green. Long distance transport sector can also provide additional demand in the form of hydrogen derived ethanol or hydrogen fuel cells. India is targeting 5 million tons of zero-carbon hydrogen production by 2030 serving both existing and new applications. This should radically bring down the price of Hydrogen from the present US \$4 per kg to US \$1 by 2030.

Third, preparing sunrise sectors like green steel for green hydrogen is critical for creating vibrant clean export capabilities in India. India, one of the few countries whose steel demand is growing rapidly, is set to triple its steel production by 2030. This is an excellent opportunity for the Indian steel industry to create the world's largest green steel capacity to cement the Indian steel brand as high tech and low carbon. It is estimated that with government support and ambitious private initiatives, around 15 Million Tons of high-margin export oriented green steel capacity can be created in India by 2030.

Fourth, manufacturing and innovation capabilities are critical to achieve true Atmanirbharta in the green hydrogen industry. To address the low supply of electrolysers in the world, India is building capacities for the production of 20 GW of long lasting electrolysers in the coming decade. As a nascent field, R&D investments become critical to the success of the Indian electrolyser industry, where the roles of venture capital and academia-industry partnerships are imperative.

Fifth, decarbonisation is a global agenda and India can also enable the net-zero ambitions of our east-Asian allies. Scaled-up green ammonia synthesis in the Indian coast can be a historical opportunity to export energy. A well designed alliance with Korea, Singapore, Taiwan and Japan will enable win-win partnerships.

With proactive collaboration between innovators, entrepreneurs and government, green hydrogen has the potential to drastically reduce CO₂ emissions, fight climate change, and put India on a path towards net-zero energy imports. It will also help India export high-value green products making it one of the first major economies to industrialise without the need to 'carbonise'.

As highlighted by IPCC the world must achieve net zero by 2050. This should be done on the principle of common but differentiated responsibilities ensuring climate justice. Developed countries must advance their net zero years and commit to short-term goals rather than constantly shifting the goal post at the cost of the developing world.

COP26 in Glasgow is the perfect context to tell ourselves that we can become a major player in climate mitigation - via green hydrogen.

The writer is CEO, Niti Aayog. Views are personal