



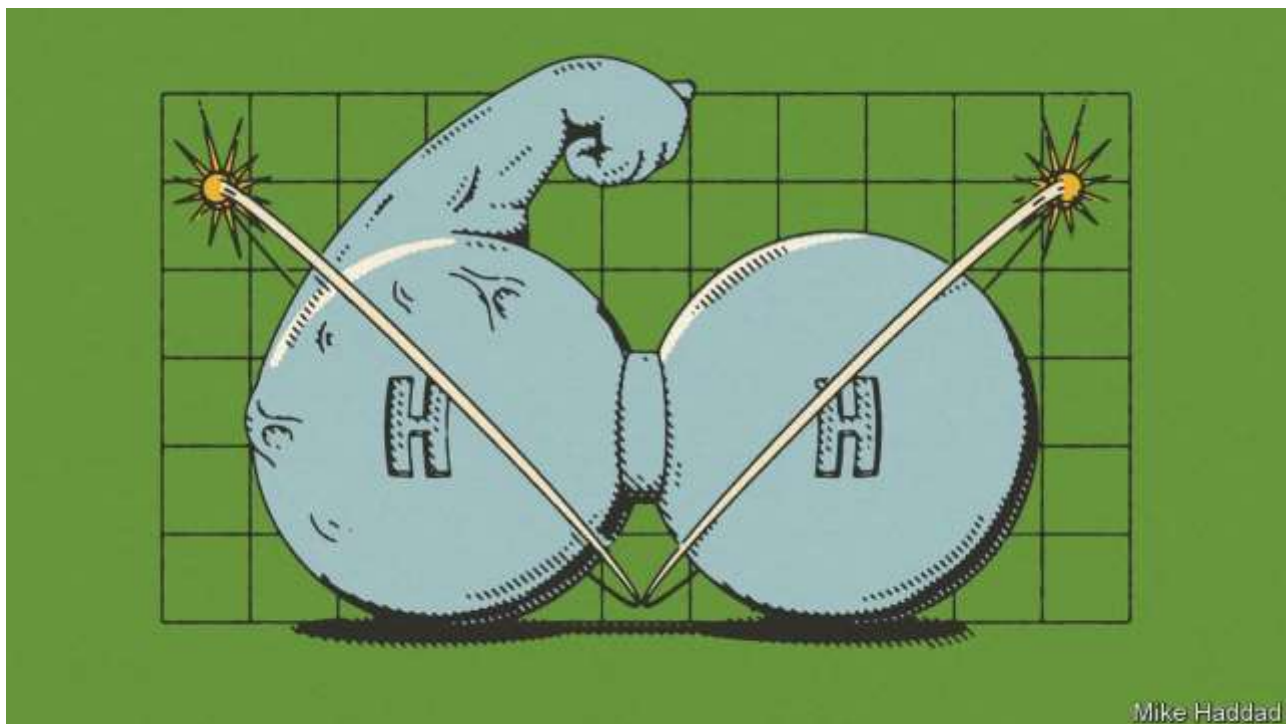
Hydrogen hype is rising again will this time be different?

Investors have been excited, and disappointed, before

By Vijay Vaitheeswaran:
Global energy and climate innovation editor,

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Guzzlers of fizzy drinks in Brisbane could be helping to tackle climate change in 2023. By the end of the year, the vehicle delivering those sugary beverages may no longer spout climate-warming gases. PepsiCo Australia, the local arm of the world's biggest purveyor of snacks and drinks, will test a new sort of lorry powered not by a dirty diesel engine but by fuel cells, devices that convert hydrogen to electricity while emitting only water vapour.



Enthusiasts are bubbling with excitement as a swirl of geopolitical and energy trends has put the spotlight once again on hydrogen, a clean fuel that can be made from a variety of primary energy sources. Hydrogen has seen previous



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false dawns. Two decades ago European and Japanese carmakers wasted billions chasing the dream of fuel-cell passenger cars. But governments and investors are betting that this time will be different.

One reason is growing interest in using hydrogen to replace fossil fuels in heavy industries, such as steel-making. That would help reduce carbon emissions—and could also boost energy security by reducing dependency on natural gas, the price of which has soared in the wake of Russia's invasion of Ukraine. Environmentalists love that “green” hydrogen can be made with renewable energy in electrolyzers—devices that use electricity to split water into oxygen and hydrogen. This has sparked a global rush to manufacture them, with around 600 proposed projects, about half of them in Europe. But Big Oil is keen on hydrogen too, because “blue” hydrogen can be made in a cleanish way from natural gas, if methane leaks are minimised and resulting carbon emissions are captured and sequestered.

Just how durable this latest wave of enthusiasm for hydrogen will prove to be should become clear in 2023. A global recession could slash funding for novel technologies as companies cut capital expenditure and investors grow risk-averse. Supply-chain disruptions could also spoil things. They have already forced ITM Power, a pioneering British firm, to roll back plans to scale up its production of electrolyzers. And as countries respond to the energy shock they may prioritise security of supply, from dirty sources such as coal, over new technologies that can help tackle climate change.

One telltale sign will be how many of those electrolyser projects actually go ahead. Andy Marsh, chief executive of America's Plug Power, a pace-setter in the industry, predicts that global electrolyser sales will shoot up from almost zero a few years ago to \$15bn in 2023. Bernd Heid of McKinsey, a consultancy, believes the first gigawatt-scale green-hydrogen project will get the go-ahead next year. Bloombergnef (BNEF), a research firm, reckons electrolyser shipments will rise from 1gw now to 2.4-3.8gw in 2023, mostly in Asia.

But there is much enthusiasm about green hydrogen in Europe too. “Europe has been pregnant with a lot of projects but will finally give birth in 2023,” says Daryl Wilson of the Hydrogen Council, an industry body. He expects the regulatory uncertainty that has held back many of those projects to be cleared up. Mr Heid predicts that Europe will conduct the first global auction for



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hydrogen supply and demand, and that the European Commission will set up a European Hydrogen Bank in 2023.

Perhaps, but as that BNEF forecast suggests, Asia will be worth watching, too. China is currently the biggest manufacturer of electrolyzers, and the firm predicts that scaling up production will help it cut costs by 30% by 2025. India has unveiled policies to promote its own green-hydrogen industry. That is prompting Western firms to try to manufacture electrolyzers and make hydrogen there. India's Greenko, a renewables firm, thinks its joint venture with Belgium's John Cockerill, an electrolyser giant, will produce the world's lowest-cost ammonia (a fuel derived from hydrogen) by the end of 2023. homiHydrogen, an Indian startup, plans to make electrolyzers that are "98% Indian-made" by that time.

But the biggest force pushing hydrogen forward in 2023 will be a tidal wave of government money in America. **The Inflation Reduction Act, which is really a climate-change law, offers a staggering \$3/kg in subsidy for green-hydrogen projects. Unlike Europe's thicket of rules, America's hydrogen policy is clear and extremely compelling, experts say.** Many green-hydrogen projects, currently unable to compete against dirtier forms of hydrogen (which typically cost around \$2/kg), will suddenly enjoy costs below \$1/kg. In sun-kissed or wind-swept areas, some may even see negative costs.

Mr Heid predicts that America will leapfrog Europe in attracting hydrogen projects, with total investments possibly reaching \$100bn by 2030. The global hydrogen race is hotting up, and 2023 looks to be a make-or-break year. Watch this gas. ■

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