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Green Hydrogen Is Cheaper Than LNG in Europe

Gas prices will fall eventually, but the European energy crisis has permanently improved prospects for the clean-burning fuel

By Rochelle Toplensky Follow

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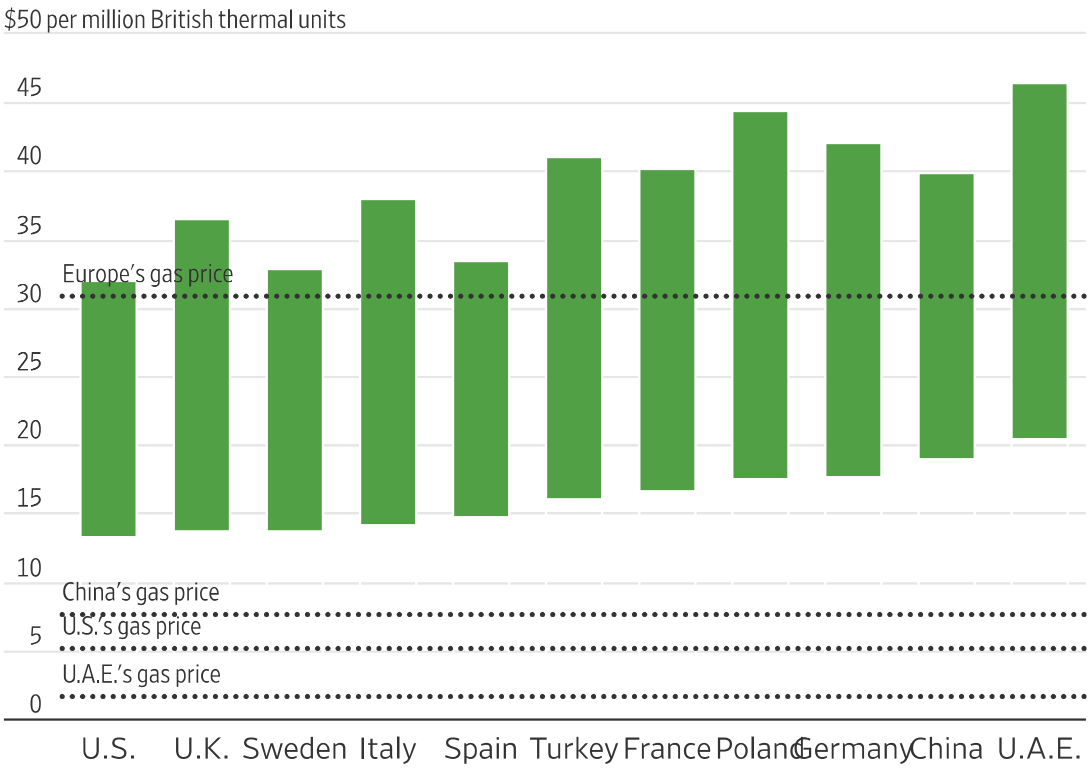
Green hydrogen now costs less than natural gas in eight European countries. Liquefied natural gas prices will come back to earth, but not without leaving a lasting impact on the multipurpose wonderfuel.

High LNG prices mean green hydrogen—produced by a renewable-powered electrolyzer splitting water—is cheaper to burn than natural gas in France, Germany, Italy, Poland, Spain, Sweden, Turkey and the U.K., according to research by BloombergNEF. The fuels' costs are often compared for two reasons: So-called gray and blue hydrogen can be produced using natural gas, and green hydrogen can be a clean substitute for some gas-powered processes.

The current price situation won't last. New LNG facilities coming online from 2024 should ease today's tight market, reversing the cost gap as green-hydrogen production scales up. Given long project lead times, it seems unlikely anybody is investing now purely on the basis of hydrogen's lower costs.

Levelized cost of green hydrogen, excluding subsidies.

Minimum and maximum price range



Gas prices are average for first half of 2022. Turkey's gas price is $31.27.
Compared on an energy-equivalent basis, such as when hydrogen & natural gas are combusted.
Source: Bloomberg NEF

Still, Europe's energy crisis is giving policy makers and companies other reasons to move ahead. There are now 990 hydrogen projects at various stages of development in the International Energy Agency's database. Last week the European Union approved its first "project of common European interest" in the sector: The Hy2Tech plan, covering 41 projects from 35 companies, will receive 5.4 billion euros in funding, equivalent to $5.4 billion.

Energy security has re-emerged as a key concern following Russia's invasion of Ukraine. In March, the EU outlined a multiyear plan to wean itself off Russian energy, primarily switching from Moscow's pipeline gas to new LNG suppliers but also doubling its hydrogen targets, among other efforts. Europe might have to move faster, with the looming threat that Moscow may not restart deliveries on the Nord Stream 1 pipeline this week.

Green hydrogen can be made anywhere with water as well as plentiful wind or sun for cheap renewable power. That opens up the possibility of European production or imports from an array of other regions. In addition to the fight against climate change, improved security of supply will likely underpin government support for hydrogen and may also figure into some industrial users' decision to switch fuels.

A second advantage of hydrogen: Its future costs appear relatively stable when compared with this year's volatile LNG spot markets. Gas-market volatility is expected to remain high, given unpredictable demand and the years it takes to build facilities. LNG buyers can avoid the spot market by signing long-term contracts. Traders and Asian companies have agreed new deals this year, but Europeans have been less willing to sign the decadeslong contracts LNG suppliers want.

In contrast, green hydrogen costs depend largely on two inputs: electrolyzers and renewable electricity. For both, capital costs will likely continue to fall as the technologies mature, despite the recent bout of inflation in wind turbines and panels. This relatively predictable and declining cost outlook for green hydrogen strengthens the business case for projects.

Green-hydrogen investments are also becoming more appealing to energy-intensive industries as a hedge against the rising cost of greenhouse-gas emissions. This year EU emissions allowances traded around €80 a metric ton, equivalent to $80. Prices are expected to go higher. Many industries don't have to buy allowances under the current rules, but the EU is expanding its system and is also expected to tighten its emissions targets.

Flattering comparisons with LNG won't hurt hydrogen, but the nascent industry doesn't need them to keep its momentum.

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