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IENE Comment

Europe Needs a Hydrogen Plan Recalibration

Europe Needs a Hydrogen Plan Recalibration

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Energy think tank Bruegel this month released a policy brief that put a price tag on the EU's climate ambitions. Between now and 2030, we would need to spend more than 1.3 trillion euro every year if we are to hit the 55% emission reduction target. Some of this would be going into green hydrogen—unless decision makers make some really pressing recalibrations in the segment. It's either that or waste billions that can be better spent on something that works.

Green hydrogen is being promoted as a sort of silver bullet solution to transition problems. Hydrogen can be used as a fuel, it can be used as energy storage, and it can be used to make fertiliser. The most abundant element in the known universe is indeed versatile. In its so-called green form, however, it is also exorbitantly expensive—and evidence is mounting that the cost is not coming down anytime soon.

Earlier in the year, one of the biggest green hydrogen hopefuls, Fortescue's Andrew Forrest, threw in the towel and cancelled investment plans that would have turned the miner into a major green hydrogen producer. Now, more companies are quitting green hydrogen, citing what essentially comes down to a lack of a future.

First, BP said in its third-quarter report it would axe 18 green hydrogen projects. The company pointed to cost savings as reason for the decision. These would come in at $200 million annually, BP said, likely understating the costs of its flirt with green hydrogen.

Then, Norsk Hydro said it was pulling out of green hydrogen altogether. "To strengthen the focus on Hydro's 2030 strategy and address challenging market conditions in the batteries and green hydrogen sectors, battery materials and green hydrogen will no longer be strategic growth areas for Hydro and no further capital will be allocated," the company said.

Then, ThyssenKrupp's chief executive came out with a warning that the EU's plans for green hydrogen capacity were seriously unrealistic. "In the next five years, we talk about maybe 400 gigawatts of announcements in terms of electrolyzers that should be up and running. This is just impossible," Werner Ponikwar told the Wall Street Journal in an interview.

Interestingly, Ponikwar said that there is plenty of money for green hydrogen projects. What was lacking was progress on the projects. Those "projects don't reach a phase where its developers decide to invest," the executive said, blaming regulatory burdens. Yet it is not

regulation that is the problem with green hydrogen. It's the cost.

Green hydrogen currently costs some $200 per MWh as opposed to less than $90 per MWh for so-called gray hydrogen that is made from natural gas. This is quite a steep cost difference and it is there despite years of government support for green hydrogen. It is also deterring potential buyers and, of course, investors. The reason that this cost is not coming down is because such a development would violate the laws of physics.

Green hydrogen is produced through the hydrolysis of water using electricity generated by wind or solar installations. It is a highly energy-intensive process featuring substantial loses of the input energy along the way. That's why it is expensive—and also because you need a steady, reliable supply of electricity to make the process cheaper, and wind and solar cannot provide that. Talk about using surplus wind and solar output could only sound feasible to someone unfamiliar with the concept of cost-effectiveness.

There is also a water problem with green hydrogen production. This problem does not get a lot of attention because if it gets this attention, it might just sink the green hydrogen boat before it launches at all. Here's the problem: hydrolysis takes massive amounts of water to turn into a modest amount of green hydrogen. The ratio is roughly 20 tonnes of water for 1 tonne of hydrogen. Yet we are being warned repeatedly that Europe's water resources are dangerously depleted. How do you justify using a lot of these resources to turn into green hydrogen? You don't.

Europe needs to urgently recalibrate its green hydrogen ambitions because right now, it is spending, or at least promising to spend, a lot of money on something that not only won't make Europe environmentally cleaner, but it will add to an already overwhelming financial burden aimed at reducing the amount of CO2 in the atmosphere—while China and India keep building new coal-powered plants because they put energy security above emissions. Sure, green hydrogen production could help avoid some wind and solar curtailment. Whether it is worth the not insignificant investment and water consumption is another question. And its answer should be a resounding "No".

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