

Study says 'blue hydrogen' likely bad for climate

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A paper released Thursday said hydrogen production was difficult to justify on environmental grounds, even at sites like this Shell project in Germany which employs renewable energy.

Use of "clean" hydrogen has been seen as a viable and environmentally benign energy alternative, but a study released Thursday said it could

lead to higher greenhouse gas emissions than coal.

The study takes aim at an energy source touted by President Joe Biden's administration, the International Energy Agency, and some major energy companies.

The authors lambast "blue hydrogen," saying it "appears difficult to justify on climate grounds."

"Blue hydrogen is hardly emissions free," according to an article in academic journal *Energy Science and Engineering* that alludes to the broad support for the fuel in Washington and beyond.

Biden's \$1.2 trillion infrastructure bill which the Senate passed on Tuesday, does not mention "blue hydrogen" but includes \$8 billion in funding for at least four "regional clean hydrogen hubs."

But the researchers warned that using the fuel, which involves [carbon capture](#) and storage (CCS), as part of a clean energy strategy "only works to the extent it is possible to store carbon dioxide long-term indefinitely into the future without leakage back to the atmosphere."

The US Energy Department in June announced \$52.5 million in funding for 31 projects to support "next generation clean hydrogen."

And a 2019 IEA report touted hydrogen's potential "to become a critical part of a more sustainable and secure energy future."

But the production is energy-intensive, with emissions released during the heating and pressuring process and from the use of natural gas as a base fuel to generate hydrogen, according to the study by Cornell's Robert Howarth and Stanford's Mark Jacobson.

While blue hydrogen does contain some of emissions, the paper notes that energy also is needed in the carbon-capture process.

As a result, it "provides no benefit," since the combined emissions of carbon dioxide and methane, another [greenhouse gas](#), are greater for blue and gray hydrogen than for natural gas, diesel oil or coal, the paper said.

"We suggest that blue [hydrogen](#) is best viewed as a distraction, something that may delay needed action to truly decarbonize the global [energy](#) economy," the authors wrote.

More information: Robert W. Howarth et al, How green is blue hydrogen?, *Energy Science & Engineering* (2021). [DOI: 10.1002/ese3.956](#)

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