

100% Renewable UK

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Blue Hydrogen – an implausible alternative to renewable energy

Blue hydrogen, that is hydrogen produced from fossil fuels (in practice usually natural gas), is hydrogen produced in circumstances where the carbon in the fossil fuel feedstock is captured and stored (carbon capture and storage, or CCS).

But this is not a substitute for energy from renewable energy, for a number of reasons. These reasons grow out of two issues. **First**, there is the issue of hydrogen's suitability for different energy purposes; it has some potentially important niche purposes, but it is not as suited to supply heating in buildings. See our document 'Hydrogen – can it help or hinder a 100 per cent renewable energy economy?' (in the Hydrogen page). **Second**, blue hydrogen is grossly inferior to hydrogen produced from renewable electricity through hydrolysis. For some arguments here, see the article in Recharge News:

<https://www.rechargenews.com/transition/governments-are-being-sold-a-pup-on-blue-hydrogen-from-methane-/2-1-756185>. Some shortcomings with blue hydrogen are also set out in a report on hydrogen as an energy carrier by IRENA, the International Renewable Energy Agency, see pages 15-18. The link is: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Sep/IRENA_Hydrogen_2019.pdf

This section (in the IRENA document) talks about how, in reality, carbon capture is unlikely to be close to 100 per cent because carbon extraction processes become more and more expensive the higher the proportion of carbon is captured (85 per cent and over).

Support for unabated natural gas

In addition a blue hydrogen programme will provide support for a continued fossil fuel industry (including unabated methane leakage from extraction activities). The industry will include the probability that it will enable production of natural gas that is not subject to carbon capture and storage. In reality natural gas is produced without carbon capture from wells onshore or offshore, and this production is then sold onto different players, some of

whom, putatively, could be using the natural gas to produce 'blue' hydrogen. So, blue hydrogen provided in one market is most likely going to be supporting natural gas being sold in other markets which will be burned without CCS. Hence blue hydrogen will be keeping the conventional fossil fuel industry going.

Then there is the issue of monitoring and accountability over the extent to which the carbon is stored in a sustainable fashion. How are we going to know about this?

It is pure nonsense to claim that production of blue hydrogen is necessary to pave the way for green hydrogen. The natural gas industry claims that converting the natural gas infrastructure to hydrogen use will pave the way for green hydrogen. But this infrastructure is being used mainly to supply the very area which hydrogen is most unsuitable, that is building heating. Green hydrogen should be produced for useful purposes; eg specialised industrial purposes and energy storage. In reality what the natural gas industry wants is to keep us hooked on using its products for as long as possible.