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Can Norway save the European Union's hydrogen ambition for 2030?

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How competitive can Norway – one of the main natural gas suppliers to the European Union (EU) – be at exporting hydrogen to the EU? We explore three scenarios in which Norway's hydrogen export market may develop: A Business-as-usual, B Moderate Onshore, C Accelerated Offshore. Applying a sector-coupled energy system model, we examine the economic, social and environmental implications of each scenario. Given a variety of cost assumptions in shipping, CCS and electrolysis, the pathways result in wide ranges of potential costs of hydrogen from 2-7€/kg hydrogen. In the cheaper scenarios A and B we identify roadblocks in social acceptance in either the expansion of onshore wind turbines, or in resistance against CCS technologies. Environmental trade-offs in land use change follow suit. Any of the pathways discussed requires fast investments in the necessary infrastructure paired with measures to increase social acceptance and to alleviate environmental impacts. Nonetheless, we show that Norway could supply a significant share of the EU's hydrogen demand in the near-term future.