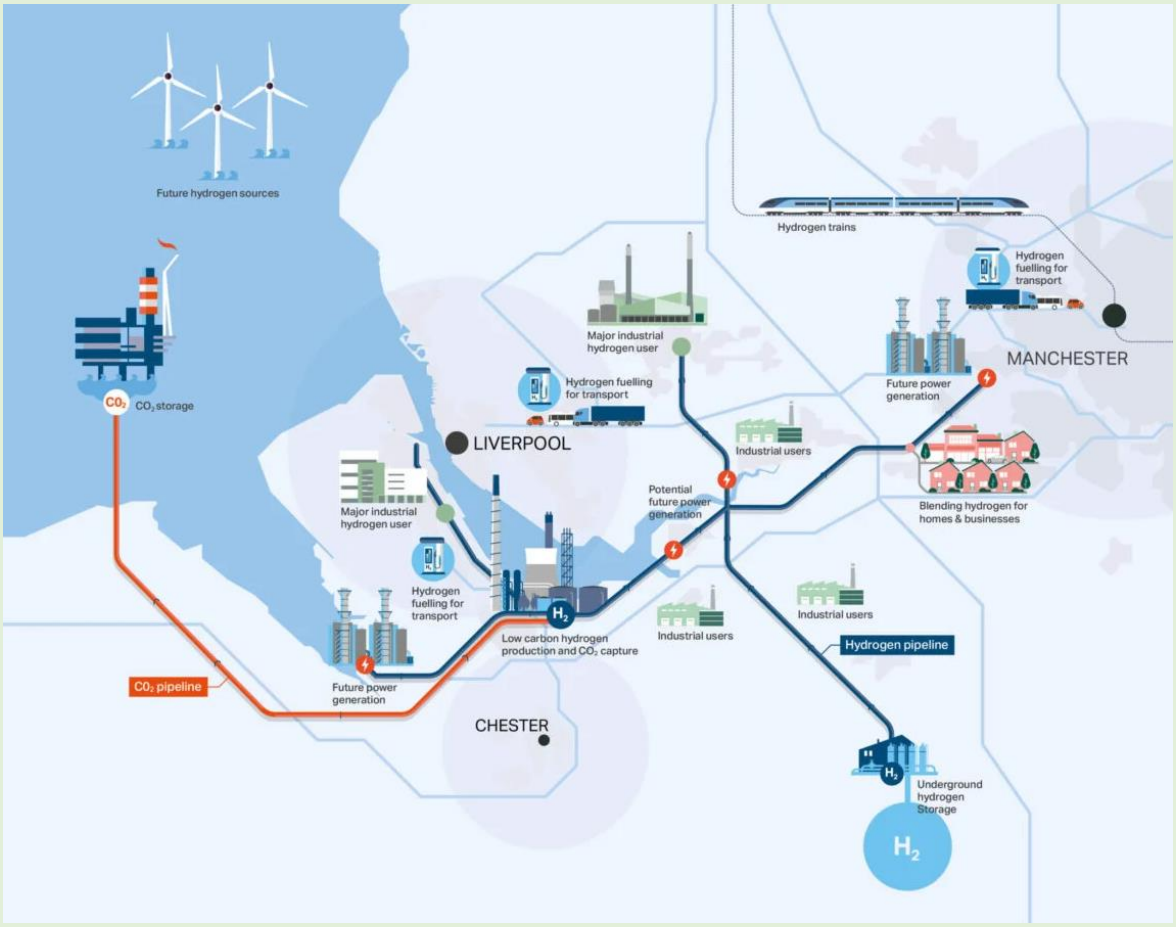
Through Blue to Green

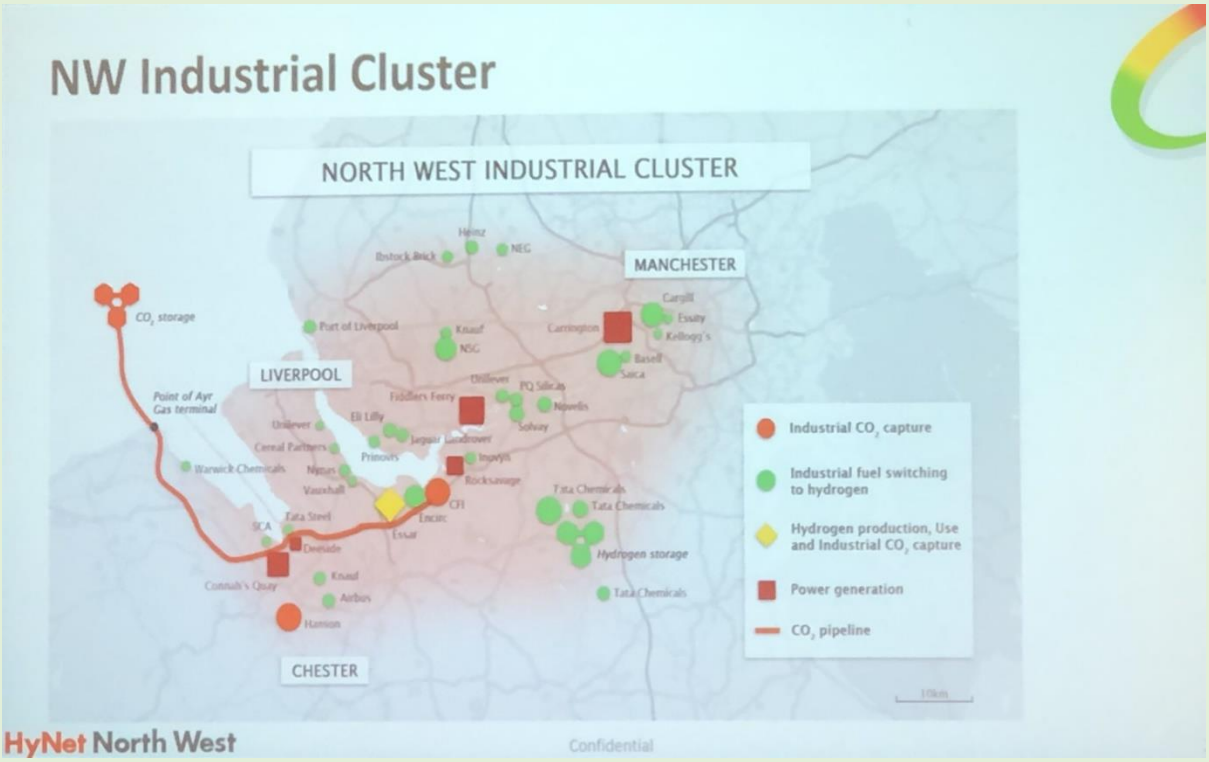
Hydrogen and Innovation in the Northwest of England



October 4, 2024, Update:

Today’s announcement confirms up to £21.7 billion of funding available, over 25 years, to make the UK an early leader in 2 growing global sectors, CCUS and hydrogen, to be allocated between these 2 clusters. The UK’s commitment was first made in 2009, and the confirmation of funding today represents a major success story for British industry.

Here's a piece I shared with the community back in 2020.



The Energy Centre at Thornton is rapidly becoming something of a second home (Hydrogen-from-plastic-waste; Renewable-heat-from-wind-turbines) and today I was there to hear about recent developments in hydrogen.

It was pleasing to see a packed room at the energy centre including some familiar faces from the UK energy and innovation sectors. Having personal involvement in RIIO-ll it was a chance to see the Northwest of England putting pieces of the hydrogen jigsaw together and moving to deliver schemes which are effectively shovel-ready.

Developed by William Murdoch in the early days of the industrial revolution the potential of hydrogen as a fuel was bypassed by cheap coal. Hydrogen can be produced by any number of means including

by coal, gas (with a reforming and carbon dioxide producing process requiring capturing) and going forward, by renewable energy.

Roll-out of the hydrogen economy in the region will initially involve carbon capture and storage, but beyond that as the asset base for energy production in the industrial Northwest of England moves offshore it will evolve from the fossil-based 'Blue' hydrogen to renewables-generated 'Green' hydrogen. (round-four)

Utilities have led the charge in offshore wind - which currently stands at 10GW installed - and are now being joined in the arena by global oil and gas majors. Hydrogen may offer a means to take overspill energy from offshore wind farms as we transition through fossil driven 'Blue' production to the renewable 'Green'. The energy intensive electrolysis process can smooth natural peaks and troughs from a variable wind regime - and enable the offshore industry to go for dispatchable UK baseload electricity supply.

Delegates, ranging from researchers and academics to industrialists involved in delivering schemes, learned that the gas transmission network's business case emerging from RIIO-II is now complete and hydrogen is integral to the consultation response. Should Ofgem prove supportive, there is a shared hope that a hydrogen economic opportunity, one with a global resonance, could take off in the region.

This economic opportunity could act as an enabler for manufacturing sectors to link together and allow economies of scale, perhaps in clusters - as in offshore wind - to enable a range of opportunities from those making canisters and buses to a new generation of domestic boilers thus ensuring the UK takes maximal advantage of the opportunity.

Today's workshop highlighted how joined-up thinking can revive the UK's manufacturing industry which has dropped from 17% to 10% of the economy in the last 20 or so years. The remaining 10% is looking to decarbonize and hydrogen could offer a realistic route to meeting this and the UK's climate commitments.

The concept of replacing methane with hydrogen had been well-received by industrialists and that the manufacturing industry is awaiting a reasonable network with which to connect.

The industry is watching with interest to see whether the Chancellor recognises that hydrogen is perhaps ready for support to enable it to compete with incumbent industries. Other exigencies are currently in the government's mind, but a strategic vision is also sometimes required.

Findings from the hynet proposal and the year-old Keele hydeploy demonstrator may lead to the regulations being amended to allow hydrogen to become more widely embedded in the UK gas network.

Innovation continues apace with hydrogen; the development process will not necessarily be cheap but hopefully scalability will allow prices to fall and for it to become integral to the UK gas network within the next 20 years.

Hydrogen compatible boilers are already in place and industrial-scale hydrogen turbines are likely to be ready within the coming decade - let's hope that's here in the Northwest.

Thornton is rapidly becoming *the* incubation hub for renewable energy and cleantech for the UK and it's especially pleasing that some of the SMEs, and entrepreneurs based there and with whom I so regularly engage are making substantial progress.

The next step is project delivery in the Northwest, but de-carbonisation is a global process and one which may happen quickly. The first industrial revolution began here two centuries ago – we now could finish the process and make it sustainable through this fourth industrial revolution.

January 2022 updates:

Plans for the UK's first low carbon hydrogen hub that could produce 3TWh of low carbon hydrogen a year from 2025 have moved forward.

Located at the Stanlow Refinery in Ellesmere Port, Cheshire, Essar Oil UK, behind the plans, has lodged a planning application with Cheshire West and Chester Council for the introduction of new substances. Essar Oil wants to introduce oxygen and natural gas as

well as increase the quantities of hydrogen to its production processes at the Stanlow Manufacturing Complex, which it owns.

The energy firm also wants to increase substances it says fall within the “flammable gases and environmental hazard categories” at the proposed low carbon hydrogen production plant.

HyNet North West, the low carbon hydrogen hub will manufacture hydrogen at the refinery facross the North West and North Wales region. The hub will initially produce 3TWh of low carbon hydrogen each year from 2025.

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Business Opportunities for the Hydrogen Economy