

Hydrogen Cymru

Response to Welsh Government's

National Development Framework Consultation 2019

Hydrogen Cymru is being established to advance the hydrogen economy in Wales. Currently in the formation phase, a formal launch is being planned for early 2020. This response to the Welsh Government's NDF consultation represents the views of those Hydrogen Cymru supporting organisations listed below.

Increasing evidence supports the view that hydrogen is essential to delivering net zero targets^{1,2,3}. Most recently we have seen a stalling of emissions reduction (according to ONS stats) with Wales already having more work to do in reducing its emissions than the rest of the UK.

Hydrogen can help decarbonise all sectors of the economy; in power, heat, industry, transport and agriculture applications. Hydrogen can be used for power to gas applications, for energy storage, for fuel production and for use across the industrial and energy sectors. Hydrogen has huge market potential across energy systems⁴.

Power to gas technology, in the form of electrolysis, is emerging across the world as a means of releasing the full potential of renewable energy. This works by using renewables and low carbon power to split water to produce hydrogen and oxygen.

There is a need to create a pathway for the application of power-to-gas technologies in order for renewables and other low carbon power sources - of all types and at all scales - to overcome electricity grid constraints and costs and to reach new markets.

This "sector coupling" of the electricity, heat, transport and heavy industry networks through so-called green hydrogen can release the full potential of renewables utilising both existing and new infrastructure.

The need to build new, costly electricity grid infrastructure which connects areas of renewable energy resource to areas of energy demand can be reduced by utilising renewables to produce hydrogen as the alternative. Hydrogen can be stored for use in local communities and can also be shipped (e.g. at-scale via gas pipelines) to external markets.

The business case for such scenarios is evolving and is expected to progress through the 2020s to a stage where "no-regrets" low carbon hydrogen may reach cost-parity with conventional (natural gas-based with no CCS) hydrogen production⁵.

Hydrogen technologies can, therefore, add significant value to renewables and also complement other clean energy technologies including batteries, smart controls and nuclear power.

The use of hydrogen as a fuel not only supports deep decarbonisation goals but also improves air quality (there are very low greenhouse gas and particulate emissions); supports resilient future-proofed distributed generation systems; and de-couples communities from volatile, external energy markets.

We are in a position where rapid decarbonisation needs to begin today and across the whole energy system. By connecting with the waste and heavy industries, hydrogen provides a variety of opportunities that can begin to be implemented immediately.

While we recognise that the NDF has been several years in the making and some of its preparatory work predates the current surge of interest in hydrogen, it has been noted that even with the acknowledgement that we are in a climate crisis the NDF does not make mention of hydrogen technologies and infrastructure. We would still urge that provision should be made to the future, potentially large-scale application of hydrogen technologies within the current NDF.

Hydrogen Cymru can help establish a framework for more detailed assessments which can inform the evolution of the NDF through the 2020s, with deep decarbonisation at scale in mind.

Hydrogen can help deliver the Welsh Government's renewable energy targets (e.g. For one gigawatt of renewable energy capacity to be locally owned by 2030). We, therefore, call on the NDF to recognise this and to reflect the scale-up potential of producing hydrogen from Wales' large onshore and offshore renewable resource.

The emerging hydrogen economy will also bring about significant job creation throughout the value chain and supply chains. There are opportunities for investment into hydrogen infrastructure assets and for indigenous startups.

In summary, we would ask for a statement in the NDF which recognises that hydrogen is likely to play a major role in a future decarbonised economy and that there is a presumption in favour of hydrogen-related infrastructure.

References:

- 1** **Climate Change Commission, Net Zero Technical Report, May 2019**
<https://www.theccc.org.uk/publication/net-zero-technical-report/>
- 2** **International Energy Agency, The Future of Hydrogen, June 2019**
<https://www.iea.org/publications/reports/thefutureofhydrogen/>
- 3** **Energy Networks Association, Pathways to Net Zero, October 2019**
<http://www.energynetworks.org/gas/futures/gas-decarbonisation-pathways/pathways-to-net-zero-report.html>
- 4** **Wood Mackenzie, Green hydrogen production: Landscape, projects and costs, October 2019**
<https://www.rechargenews.com/transition/1867257/green-hydrogen-can-beat-fossil-fuel-h2-on-price-by-2030>
- 5** **Bloomberg NEF Analysis, August 2019**
<https://www.bloomberg.com/news/articles/2019-08-21/cost-of-hydrogen-from-renewables-to-plummet-next-decade-bnef>

Hydrogen Cymru Supporting Organisations November 2019:

Afallen
Arup
Bia Energy Consulting
Capital Law
Chris Foxall
Costain
Dwr Cymru Welsh Water
Industry Wales
Innogy
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