

## **Committee on Environment and Climate Action**

**1<sup>st</sup> March 2022**

(In relation to accelerating and achieving the full potential of Ireland's offshore wind resource (floating/fixed & east coast/west coast), supply chain / logistics development and green hydrogen, with a view to providing Ireland's needs but also contributing to the European and global demand for clean energy)

### **Dr James Carton**

I am Assistant Professor in Sustainable Energy & Hydrogen at the School of Mechanical and Manufacturing Engineering Dublin City University & Science Foundation Ireland (SFI) MaREI research centre funded investigator.

I would like to thank the Committee for the opportunity to address members in relation to accelerating and achieving the full potential of Ireland's offshore wind resource and green hydrogen, in the view of contributing to Ireland's, Europe's and global demand for clean energy.

Energy consumption & use is a major contributor to carbon emissions and we must transition, with haste, to more sustainable energy, food and waste systems. My contribution will focus on decarbonisation and the necessary role of the energy carrier; green hydrogen in Ireland.

The first key message is that our energy system and its decarbonisation must be viewed as the complex integrated system that it is. As a country we have introduced incremental change that has not been affective and will not achieve our necessary cumulative carbon reductions towards 2030.

The second key message is that we know what to do to decarbonise and also we know how to do it:

- We must manage energy consumption, we must electrify as much as possible (heat-pumps, BEVs, etc), increase energy efficiency, deploy renewable energy fast and at large scale.

However, electricity can only bring us so far, variable wind electricity is not useful on its own all of the time and only so many cables of a limited capacity will be placed in the ground or overhead or subsea; And what about Heavy Duty Vehicles, Intercity trains, Intercontinental airplanes, Ships, Agricultural fertilizer, Cement, Aluminium, etc; At the same time we deploy renewables we must deploy and scale up the energy carriers necessary to decarbonise. We also need to power our electricity grid, when there is no wind, and therefore we need energy storage; many orders of magnitude higher of which batteries alone can provide.

I ask the committee to now think about hydrogen. Green Hydrogen. From renewable electricity.

In a recent report from IRENA, Hydrogen could meet 12% of World energy use by 2050, others suggest up to 24%.

To enable this transformational energy system change what should Ireland do? A non-exhaustive list would include:

1. A Hydrogen Strategy – to enable policy development & to guide investment - Now.
2. Stimulate suitable demand for hydrogen (production is not the bottleneck)
3. Focus on Hydrogen Valleys – a cluster of producers & distributors & users, this reduces risk, reduces cost & enables scaleup
4. Implement supporting mechanisms for green hydrogen infrastructure
5. Implement the Biofuels obligation – that supports green hydrogen

6. Deploy a Guarantee Of Origin scheme for the green hydrogen – use European models e.g. CERTIFHY
7. Develop large scale storage of hydrogen in Ireland – for consistent energy supply & directly connected to geopolitical energy security challenges
8. Create and support Export opportunities for green hydrogen – e.g. to Germany
9. Further study of the role of green hydrogen to decarbonise heat in the built environment
10. Launch a National Hydrogen Research Centre - to enable high value jobs /skills – aiming for similar achievements of tech companies or medical-device or pharma industry in Ireland

The final message is that decarbonising can support rural & coastal development and jobs, it can enhance our energy security and keep our homes warm and cities clean. To accelerate and achieve the full potential of Ireland's offshore wind resource we need green hydrogen sooner rather than later.

Thank you for allowing me this time and opportunity to speak, I am happy to take any questions.