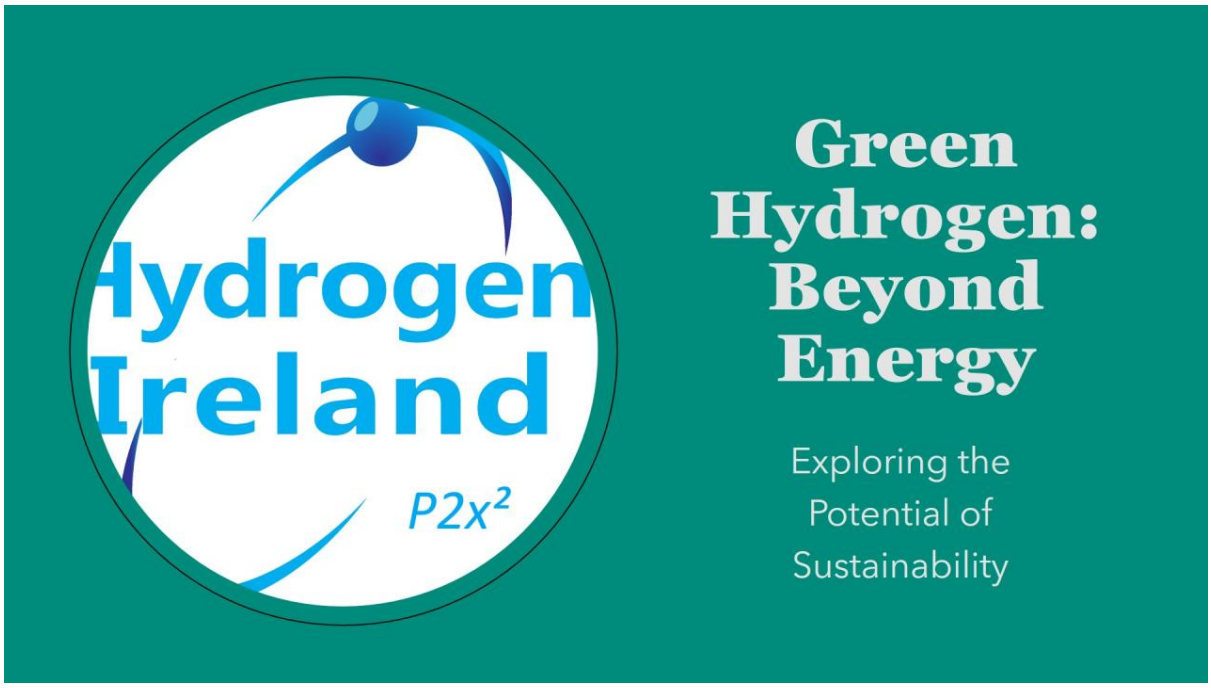


Introduction

As the world continues to address the urgent need to transition to clean and sustainable sources of energy, **#greenhydrogen** has emerged as a promising solution.

While the primary focus of P2X has been on energy applications, there is a growing interest in exploring its potential beyond linear energy applications. *P2x²* looks at how green hydrogen can be used to drive innovation and transformation in a variety of industries and used to create a more sustainable and environmentally friendly economy.

With its potential to decarbonise various sectors, including transportation and industry, green hydrogen has been the subject of much discussion in recent years.

Whilst the initial focus through hydrogenvalleys and projects such as GenComm, and others has largely been on the power applications of green hydrogen, such as mobility, fuel cells, energy storage, we are now looking to the next steps in the evolution of application for green hydrogen - power to x, or P2X, are now coming into view.

P2X - *P2x²*

P2X refers to the use of green hydrogen for power applications beyond traditional energy production. This includes the conversion of hydrogen into other valuable products, such as ammonia and synthetic fuels, through processes like electrolysis and methanation. By utilising green hydrogen in this way, P2X has the potential to further reduce carbon emissions and create new economic opportunities in the clean energy sector.

So, what's next for P2X? Several key developments include the scaling up of production facilities for green hydrogen and its derivatives and for what we term #**Hydrogenfutures**. Green Hydrogen is a vector that delivers more than just green power and it is the 'beyond energy' the *P2x²* opportunities that excites the mind, green hydrogen has the potential to deliver a range of additional benefits in the new clean economy. As governments and industries invest in infrastructure for green hydrogen production, distribution, and utilisation, the levelised cost of green hydrogen (LCOH) will decrease, making it more competitive with fossil fuels and the door to clean energy futures will open.

Next Gen H2

Another significant next step for P2X is the development of next generation hydrogen technologies and processes to improve the efficiency and sustainability of green hydrogen production. This includes advancements in electrolysis technology, as well as the horizontal integration of renewable energy sources like solar and wind power to power electrolysers.

Additionally, research in partner organisations including Queen's University Belfast under David Rooney and at IZES gGmbH under Bodo Groß is ongoing into the use of alternative feedstocks for green hydrogen production, such as biomass and seawater.

Additional activities include investigations beyond energy, where green hydrogen has the potential to deliver a range of additional benefits in the new clean economy. This area or research we call **#P2x²** is looking at where the production of green hydrogen can create new jobs and stimulate economic growth in regions with abundant renewable energy resources. Furthermore, the use of green hydrogen in industries like transportation and manufacturing can help reduce air pollution and improve public health.

Conclusion

The next steps in green hydrogen **#P2X** and **#P2x²** are focused on scaling up production, improving efficiency, and exploring new applications beyond energy. By continuing to invest in research and development, as well as policy support for green hydrogen, we can unlock the full potential of this versatile and sustainable energy source in the transition to a greener future and accelerate our journey to #netzero.

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