Hydrogen Ireland

The Association for Energy, Mobility, Industry & Community

The transition to hydrogen: How are energy alternatives progressing?

Energy Transition Summit 2024

HYDROGEN TRANSITION

Hydrogen energy has been gaining attention as a promising alternative to traditional energy sources. The progress of hydrogen energy alternatives is a crucial aspect of the global transition to a low-carbon economy.

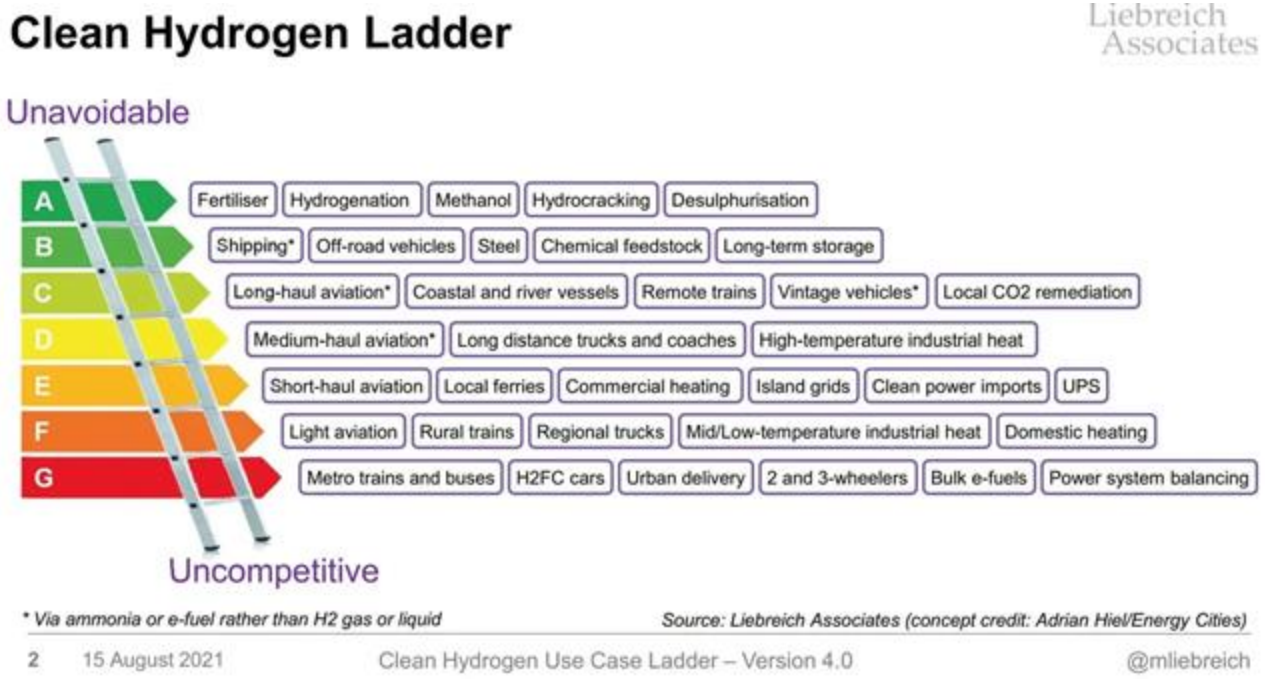
What are the possible uses of hydrogen and what are their scale?

1. How much energy is really consumed to make, package, distribute and transfer hydrogen?
2. Where does the energy come from?
3. How efficient is the distribution of the lightest, thus most impractical of all energy gases? How much energy is needed to run a hydrogen economy?
4. Can we afford such a wasteful hydrogen economy at all?

HYDROGEN FRICTION

Some critics argue that hydrogen has been overhyped as a solution to various global challenges, such as decarbonization and energy transition. They highlight the following concerns:

- Hydrogen production faces many yet to be solved technical challenges.
- Hydrogen requires specialized infrastructure for production, storage transportation, and distribution,
- The process of producing hydrogen can be energy-intensive,
- Other clean energy alternatives, such as electrification and battery technologies, is be more practical and cost-effective for certain applications, making the push for hydrogen less necessary.



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HYDROGEN IRELAND'S ENERGY AUTONOMY?

Hydrogen especially Green Hydrogen has real potential to;

1. fuel the energy transition away from fossil fuels
2. help countries develop energy autonomy
3. Accelerate our decarbonisation journey
4. Develop a balanced pathway for a just transition for all

Industry is projected to drive the majority of clean hydrogen uptake until 2030, followed by a wider uptake in new applications by 2050

source McKinsey Global Energy Perspective 2023: Hydrogen outlook

HYDROGEN INFLATED EXPECTATIONS?

- The past four years have witnessed a true surge in expectations about hydrogen and its possible use cases in the EU's decarbonisation.
- The true cost of emissions, emerging financial viability and technical reasons are combining to ensure that the emerging H2 sector has a solid foundation.
- The period of temporary disillusionment is over, there is no other way to continue decarbonisation than to turn to hydrogen.
- However, reality is settling in - large-scale use of H2 is going to arrive at a later stage than expected currently in the still hyped policy arena.

HYDROGEN ECONOMY – Strides or baby steps?

Ireland is making progress in the development of hydrogen energy alternatives, with a focus on green hydrogen production.

According to recent research, Ireland has the potential to produce green hydrogen at a cost of €3.50/kgH2 by 2030, making it the cheapest in Europe.*

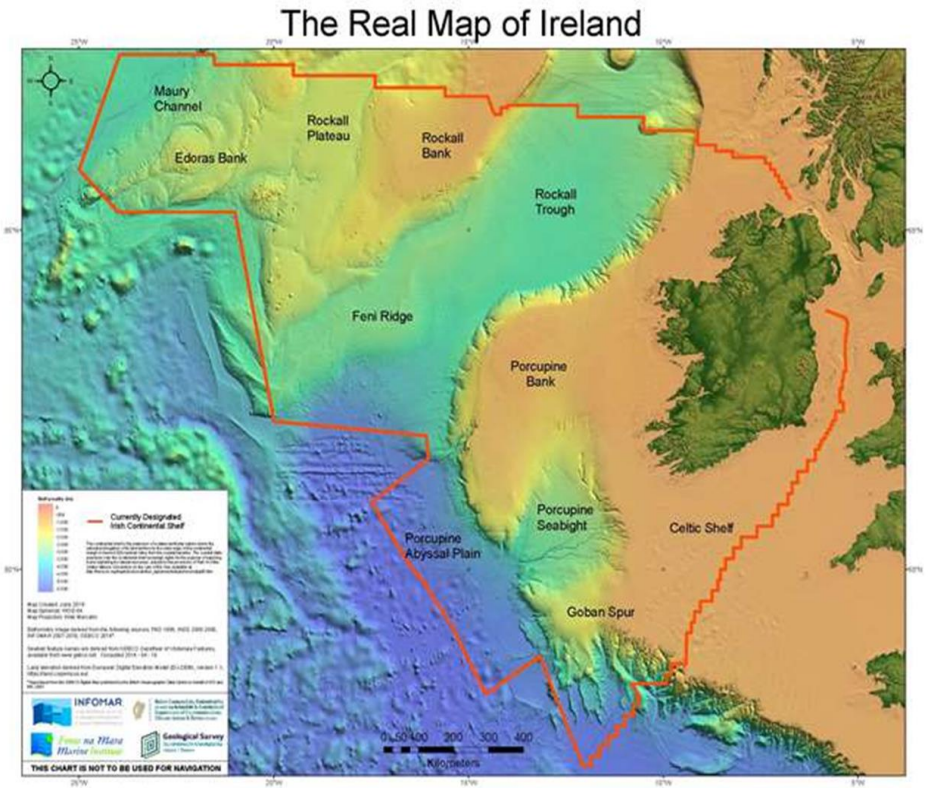
This is a promising development, as green hydrogen is expected to play a crucial role in Europe's transition to a green economy, particularly in decarbonizing the transport sector

* Source Aurora Energy Research March 7, 2023

HYDROGEN laggard

Green hydrogen is a promising pathway advocated by Hydrogen Ireland and has the potential to accelerate Ireland's journey to net-zero emissions.

While Ireland is making progress in developing hydrogen energy alternatives, it lags behind Europe in terms of the scale and scope of its efforts. Europe has a more established hydrogen market, with several countries already investing heavily in hydrogen infrastructure and technology.
However, Ireland's unique geography and abundant offshore wind resources provide opportunities for the country to become a significant player in the European hydrogen market.



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TECHNOLOGICAL INNOVATION

- Technological Innovation can be the catalyst for a green dawn but it must be people centred - empathetic innovation where technology works for people, rather than the other way round. We are at the cusp of the 4th Industrial Revolution or Clean Energy Revolution – to be successful it must be driven by people, skills, training and quality of life.
- The Green Dawn brings a once in a lifetime opportunity for government to develop a new clean energy economy and develop parallel strategies for addressing the planetary and cost of living crises

The race is on to adopt hydrogen technologies, with some countries positioning to become tomorrow's hydrogen superpowers.

Source: World Economic Forum 2022 lean hydrogen energy low carbon superpowers

A GREEN DAWN

- As the fossil fuel energy skies darken there is light on the horizon– there is a Green Dawn. Clean energy is the catalyst for EU Energy Security and will be the core of the solution that lets us become the masters of our own destiny. Access to clean affordable energy is a fundamental right and one that needs immediate cohesive action from all.
- As we move to a new green economy the old world of power monopoly is changing and countries/multinationals are in fear of their fossil-based power being diluted by green opportunity and the masses gaining more control in the power equation.
- Climate transition is bringing uncertainty, a position where today's government's off predictability are not comfortable.
- However, the Green Dawn brings multiple opportunities beyond the obvious. Moving to an economy based on clean, secure energy it affords governments the opportunity to fix the world's energy emergency and rebalance the social economy at the same time.

REPORT CARD

- In comparison to other European countries, Ireland's progress in hydrogen energy alternatives is promising, but there is still a long way to go.
- The EU has set ambitious targets to reduce greenhouse gas emissions and increase renewable energy adoption, and hydrogen is expected to play a key role in achieving these goals.
- While Ireland's cost of green hydrogen production is expected to be the among the lowest in Europe by 2030, other countries such as Germany, France, and the Netherlands are also investing heavily in hydrogen infrastructure and research

CLEAN ENERGY ECONOMY - REBALANCING SOCIETY

- We live in a stratified society where those with power – the minority, decide for all. The energy transition to a green destination must be a more equitable journey. One that removes the layers of inequality and use this energy opportunity to create opportunities for all and importantly an open, transparent society.
- It is the poorest people who are and will suffer the most from all the crises we face. We need to develop policies to achieve for climate and environmental justice abroad and at home. The vulnerable and marginalised are the most affected by climate change, air and water pollution and energy poverty. Communities that are the least represented or not represented in places of power and positions to influence policies are the most affected by pollution, extraction and other negative 'externalities' of the modern globalised and globalising capitalist system.

NAVIGATION & TRANSFORMATION

Ireland has recognised the potential of hydrogen and is taking steps to develop the sector, the progress has been slower compared to many other European countries that have made hydrogen a more central part of their energy transition strategies. Catching up with the European leaders in this field remains a key challenge for Ireland. We have a great once in a lifetime opportunity to ensure hydrogen is commodified and build a stronger resilient Ireland, assist EU unity and energy security with a euro denominated global hydrogen market.

CONCLUSION

Hydrogen energy alternatives have made significant progress in recent years, offering a cleaner and more sustainable option to traditional fossil fuels. The advantages of hydrogen energy, including zero emissions, high energy density, abundance, flexibility, energy storage potential, and decarbonization capabilities, make it an attractive alternative energy source. As research and development continue to advance, hydrogen energy will play a significant role in reducing greenhouse gas emissions and mitigating climate change.

Hydrogen Ireland Conference 2024 –

save the date

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