

Next steps

Transitioning to a low carbon, green growth economy poses huge challenges for Northern Ireland, but also creates huge opportunities.

The greatest of those opportunities is to substitute local, low carbon sources of energy for our historic dependence on imported, high carbon fuels.

Key to that is innovation, collaboration, and a sense of urgency in addressing how Northern Ireland, as a whole, can maximise its natural assets to power its water, electricity and transport infrastructure.

That involves issues which go beyond NI Water's remit, but there are clear steps we can take, and are taking to help create the necessary momentum.

Electricity storage



NI Water and NIEN are currently engaged in a joint exercise to map their assets and understand the synergies between them and how they could be used to develop new and existing demand response and energy services.

This exercise will look specifically at how the two organisations could align their control systems and cyber secure infrastructure to maximise their use of both existing assets such as water pumps and potentially new and innovative assets such as electrolyzers, stand-by generators and new forms of energy storage whatever form that takes, battery, kinetic or heat.

Hydro pump storage systems are another storage option, and a similar mapping exercise/study needs to be carried out to understand the potential of NI Water's past and present reservoirs to act as a reserve power system for when the wind isn't blowing and the sun isn't shining.

Electrolysis



The 1 MW Belfast Demonstrator will build on the results of the successful 10 kW Kinnegar Pilot.

It is intended that its emerging findings will then be used to test the benefits of applying 10-15 MW of electrolyzers to the operation of an entire works before a potential roll-out across Northern Ireland.

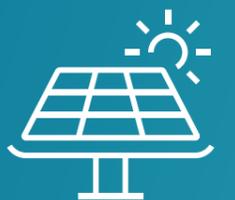
The deployment at a single plant would demonstrate how electrolyzers can:

- Optimise the performance of a wastewater treatment works using oxygen to increase capacity.
- Deliver enough hydrogen to fuel 150 buses or large vehicles.
- Be used to help SONI (Electricity Transmission System Operator for Northern Ireland) flex supply and demand in the wider Northern Ireland electricity market.

In doing so it could help create the confidence amongst users and investors that a full roll-out is both feasible and desirable - and indicate the potential to address the constraints on growth that wastewater capacity issues currently pose at a local level.

To enable this rapid scaling up to happen, discussions have begun about the possibility of building and operating an electrolyser factory in Northern Ireland to supply both the local and international market. It is estimated that this could create 50 to 100 highly skilled jobs, as well as helping Northern Ireland get ahead of the quickly growing global demand for electrolyzers. That demand means there is already a waiting list of up to two years for fresh orders, but in Northern Ireland, because of the early stage at which NI Water engaged, there is the opportunity both to keep ahead of the queue and participate in a booming global industry. Failure to do so would mean that opportunity being lost and Northern Ireland losing its early advantage.

A low carbon economy?



The transformation of our wastewater treatment works into Renewable Resource Hubs could encapsulate the transition to a low carbon economy in Northern Ireland.

Using the ambient heat from our works to power large scale greenhouse agriculture could not only address Northern Ireland's biggest source of carbon, but also help diversify farming in this country.

Two such schemes are already under construction in East Anglia. Northern Ireland has the chance to learn from those early adopters, as well as to apply the additional lessons we are learning from our own early investment in electrolyzers. Clearly this will require a comprehensive study which goes beyond NI Water's remit, but the potential to transform one of our leading industries is there.

Conclusion

The transition to a renewable energy era is gathering pace. 2030, when new petrol and diesel cars will no longer be available is less than a decade away.

The speed of that transition, and the time it takes to devise and implement new ways of doing things, means that we must start thinking now about how we are going to adapt to the demands of the new era.

Northern Ireland is no different in that regard from any other country. We do, however, have some natural advantages.

Wind power, because of our geography, is one. But it is how we harness that natural advantage that counts. Can we create the kind of integrated, flexible, low carbon, low energy cost system the new era will demand?

Can we align the need to decarbonise with the need to grow our economy?

Answering those questions will require three basic things: innovation, collaboration and a sense of urgency. Northern Ireland has shown repeatedly that we can innovate - and NI Water hopes that the developments outlined in this report build on that rich history.

The key, therefore, is whether we can summon the institutional and political will to realise the potential that innovation can unlock. In the answer to that lies Northern Ireland's future, and that of generations to come.