



# Low Carbon/Net Zero Sectoral Action Plan

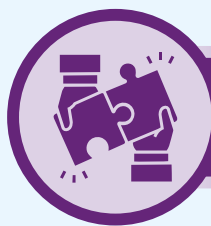
JUNE 2024

## Minister's Priorities

In February 2024 Minister Conor Murphy set out his vision for the economy with focus on four key objectives - **good jobs, promoting regional balance, raising productivity** and **reducing carbon emissions**.

In line with the Minister's priorities and DfE's Departmental Business Plan for 2024/2025 the Low Carbon/Net Zero Sectoral Action Plan ('Action Plan') has been developed. The Action Plan sets out a number of key activities to be taken forward by the Department and its key delivery partners that will help grow the Low Carbon/Net Zero Sector and deliver the Minister's vision for the economy.

The Department's Action Plan sets out a range of activities that aim to support the growth of the sector in order to provide high quality, high productivity jobs across the region. These can be classified under the following four broad themes:



**Collaboration**



**People and Skills**



**Innovation**



**Trade and Investment**

## Background

The global transition to net zero is crucial to protect and restore the environment but also presents huge opportunities for innovative Northern Ireland (NI) businesses with unique access to both EU and UK net zero markets.

The European Commission estimate that an additional €4 trillion euros in investment is needed to meet the EU's 2030 emission-reduction goals<sup>1</sup>. Supplying the goods and services to enable the global net-zero transition could be worth £1 trillion to UK businesses by 2030<sup>2</sup>. NI has unique access to both the EU and UK net zero markets. As a result of the Windsor Framework, we alone can export goods to these net zero markets.

As such NI is well positioned on an all-island basis, and within the UK and Europe, to become an important player in the development of low carbon enabling technologies. NI companies are already selling into the Green Economy, generating a turnover of £1.5bn with £230m in exports (2021)<sup>3</sup>.

NI companies and supply chains have strengths and capabilities across multiple green technology areas. However, by focusing on our core net zero technologies, we can be a global leader and accelerate the growth of our net zero economy. This will have the dual purpose of developing and implementing green technologies that will reduce our carbon emissions but also provide the opportunity to grow our local supply chains and to export these technologies and supporting components globally.

In addition, NI can become a 'greenshoring' destination of choice for companies wishing to establish a low carbon/net zero manufacturing base and supply chain. Climate legislation and government policies combined with market demands are pressing more companies into seeking greener production and supply chains.

The standard business practice has been to offshore manufacturing goods to less-developed; lower-wage countries as cheaply as possible. This 'offshoring' of production has made goods more affordable and accessible to the mass market. However recent events such as Covid-19, EU transition and the war in Ukraine have caused businesses to re-configure their supply chains.

NI, with its renewable energy sources and manufacturing base, can take advantage of this shift to greenshoring and global re-thinking of supply chains.

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1 [Europe, And the World, Should Use Green Subsidies Cooperatively \(imf.org\)](https://www.imf.org/en/News/Articles/2021/04/22/21-04-21-eu-green-subsidies)

2 [Opportunities for UK businesses in the net-zero transition | McKinsey](https://www.mckinsey.com/industries/energy/our-insights/opportunities-for-uk-businesses-in-the-net-zero-transition)

3 [Low carbon and renewable energy economy, UK - Office for National Statistics \(ons.gov.uk\)](https://www.ons.gov.uk/economy/green-economy/low-carbon-and-renewable-energy-economy)

## Consultation Responses

The Department consulted on the Approach to 10X Technologies and Clusters in September 2023<sup>4</sup>. The published consultation set out a planned approach to enhance activity within each priority sector, with likely key technologies and USPs to drive benefits at scale across the economy.

Responses to the Low Carbon/Net Zero technology sector encouraged the Department to widen its focus beyond green hydrogen and to include other low carbon technologies and their supporting supply chains that could contribute to the growth of our green economy.

We have considered the consultation responses in the development of our Action Plan. This Action Plan focuses on the low carbon, net zero technologies that we consider will provide the best opportunities for NI to achieve its emissions reductions targets as well as accelerating our economic growth.

There are other net zero technologies that have not been included within the Action Plan. That does not mean that they will not contribute to our net zero goals. However, the Action Plan focuses on the scalable low carbon/net zero technologies that we consider to be unique opportunities that build upon our natural resources as well as our innovative and manufacturing strengths that can make NI globally competitive.

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<sup>4</sup> [Approach to 10x Technologies and Clusters | Department for the Economy \(economy-ni.gov.uk\)](#)

## Policy landscape

The Climate Change Act (NI) 2022 (the 'Act') took effect in June 2022. The Act sets an ambitious emissions target of Net Zero by 2050. In addition to the Net Zero target, the Act also requires interim emission reduction targets for 2030 and 2040. The 2030 targets require a 48% net reduction in greenhouse gas emissions and at least 80% of electricity consumption from renewable sources.

The Department published its Energy Strategy in December 2021, prior to the Act taking effect. The strategy sets out the pathway for NI to meet its climate change and economic development goals by attracting investment and positioning our companies to compete for the global investment being made in low and zero carbon energy technologies.

Each year the Department has published an Energy Strategy Action Plan which outlines the priority areas across government for delivery in that year. Some of the actions within the 2024 Energy Strategy Action Plan<sup>5</sup> support the technology areas identified within this Low Carbon/Net Zero Sectoral Action Plan. We have not listed the relevant actions from the 2024 Energy Strategy Action Plan, but they should be considered in conjunction with this Action Plan.

There is also an ambition to make NI a destination of choice for advanced low carbon manufacturing. Innovate UK, the UK's national innovation agency, promotes greenshoring within its Materials and Manufacturing Vision for 2050<sup>6</sup>.

The vision foresees the UK as a green financing hub and a global greenshoring destination, founded on a networked ecosystem with:

- a regulatory framework that is proactive and that sets carbon accounting standards globally;
- an energy system that is reliable, clean and affordable;
- future skills that are foresighted to ensure that demand for them is met;
- machines and software that are made locally.

NI with its natural resources, skilled manufacturing and academic base has the opportunity to provide a significant contribution to this vision.

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<sup>5</sup> [Energy Strategy - Path to Net Zero Energy - 2024 Action Plan Report \(economy-ni.gov.uk\)](#)

<sup>6</sup> [Innovate UK Materials and Manufacturing Vision 2050 \(ukri.org\)](#)

## Opportunities within Low Carbon/Net Zero Sector

Meeting our decarbonisation targets and delivering our economic growth potential requires a suite of low carbon/net zero technologies. The technologies that are presented within the Action Plan, when combined, offer a decarbonisation pathway to meet our climate change and economic goals. Interconnecting these technologies will harness our natural resources, existing knowledge of integrating renewable sources and develop new areas of expertise and supporting supply chains.

NI has made significant progress on integrating renewable energy onto the electricity grid, led by onshore wind generation. In 2023, 45.8% of total electricity consumption in NI was generated from indigenous renewable energy source. 83% of this was generated from onshore wind.

Our target of at least 1GW of offshore renewable wind generation from 2030 will continue to support the transition from fossil fuels to green electricity. Ireland and Scotland also have offshore renewable wind generation ambitions. Ireland have set a target of 20GW by 2040 and 37GW by 2050<sup>7</sup>. The Scottish Government has set an ambition to increase offshore wind capacity to 11 GW of energy installed by 2030<sup>8</sup> with potentially more projects in the pipeline.

There are huge opportunities for the NI economy to benefit from the expansion in offshore wind within our region and beyond. Manufacturing hubs can be developed to provide the core infrastructure with local supply chains, complementary technologies and supporting spin-off industries.

However, electricity generation through renewable energy sources is intermittent and needs to be balanced with alternative energy sources and storage solutions. A significant amount of wind power is curtailed. This is wasted energy and could be re-directed to power alternative energy sources. Redirecting unused electricity can power clean technology, such as electrolyzers, to produce green hydrogen.

Increasing our offshore wind generation capacity will further enhance our ability to produce green hydrogen at the scale required to become a reliable energy source to decarbonise our economy.

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<sup>7</sup> [gov - Future Framework for Offshore Renewable Energy \(www.gov.ie\)](https://www.gov.ie/en/publications-and-resources/other/2023-06-10-future-framework-for-offshore-renewable-energy/)

<sup>8</sup> [Increased offshore wind ambition by 2030](https://www.gov.scot/publications/consultations/2023-06-10-increased-offshore-wind-ambition-by-2030/)



Large scale production of green hydrogen will require storage solutions to be developed so that we have a secure and ready supply of energy that can be transported to meet consumers' demands. The full hydrogen supply chain, from production, transportation, storage and consumption offers new employment and export opportunities. We can grow our construction, manufacturing, operations, research and technology bases to meet these emerging sectors.

We expect the shift to electrification to be further supplemented with distributed generation sources such as fuel cells. This technology can substantially reduce CO<sub>2</sub> emissions as highly efficient technology replaces central supplies from power stations. Natural gas solutions powering the fuel cells can then be transitioned to biomethane sources, hydrogen blends and then purely clean hydrogen solutions.

Fuel cells are not fully commercialised. However, if we could develop a test bed solution that could be scaled and combined with a pathway to commercialisation, we could support our own decarbonisation objectives and develop a leading and exportable technology solution.

Integrating and balancing multiple and distributed energy sources requires significant system management. The deployment of smart grid technologies can facilitate the integration of increasing renewable and low carbon energy solutions onto the electricity grid. We can develop monitoring and active response technologies that can support grid management. NI companies have already demonstrated expertise in the software sectors, including grid management, that we can exploit further to develop our own technology solutions that can be adopted in other net zero markets.

Low carbon heating technologies, such as heat pumps at a domestic or industrial scale with heat networks also offer an opportunity to decarbonise our domestic and commercial buildings. The technologies can be manufactured and installed locally thereby contributing to our emission reductions but can also be exported to international markets.

With our strong agricultural base NI has significant potential to produce biomethane gas. Biomethane offers a sustainable means of substituting natural gas but also presents a further benefit as a contributing source for e-fuel production. Complementing green hydrogen production with 'green' CO<sub>2</sub> captured as part of the biomethane process can produce e-fuels such as e-methanol. E-fuels can contribute to the decarbonisation of the maritime and aviation sectors. Given our island location and maritime tradition this offers an appropriate pathway where NI could be a global leader.

## What's next?

Building out these opportunity and technology areas will be a focus for Invest NI going forward with the aim of ensuring NI businesses and the local economy can benefit from the growth of the global Green Economy. Invest NI is well positioned as a convenor and catalyst to raise awareness of the emerging green opportunities, facilitate strategic engagements, and support the development of initiatives that contribute to the ambitions set by the Minister for the Economy's new Economic Vision, the Climate Change Act, the Energy Strategy, and the draft Green Growth Strategy.

It is difficult to predict timings around innovation and the subsequent scaling up of the technologies and supply chains. We have presented an indicative timeframe of when we consider the enabling actions to be carried out. The uptake and deployment of the technologies is expected to follow but its scale and pace is difficult to pinpoint at this stage. The presented timings should be considered with this in mind.

Available skills must also be assessed in parallel with the technology pathways that we are building. We have world class academic institutions in NI plus a vibrant further education sector delivering the skills that particularly our younger people need to deliver a net zero future. We have incorporated actions on skills within the Action Plan to ensure that we have the necessary pipeline of skills available to meet our goals as well as promoting an inclusive workforce.

Some of the technologies presented within the Action Plan will require financial support. The level and type of investment will vary according to the technology and its readiness level. Some may require research funding whilst others support for scaling production and routes to commercialisation. Within the Action Plan we have referred to funding mechanisms that are being established to support the development of these technologies.

Several actions require an evidence base to determine our next steps. Over time we will use the collected evidence and research findings to inform our future policy objectives. The Action Plan will need to be updated as the evidence base improves, and we have a clearer line of sight on the key technologies that will grow our green economy and meet our net zero goals.

We also expect to complement our Action Plan with future policy on the clustering of low carbon/net zero technologies. Collaboration within appropriately sized business and industrial clusters provide an opportunity to not only reduce emissions, but also deliver other benefits such as job creation, productivity gains, green credentials and acceleration of technology deployment. We plan to consult on clustering policy in 2025.



## Theme 1: Collaboration

**Objective:** To promote the Green Economy in NI and support NI businesses to optimise strategic opportunities emerging from the global drive to net zero.

Action No.	Delivery against Minister priorities	Detail	Delivery partners	Timescale
1	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Assess NI capability, supply chains and assets to inform propositions for key opportunity areas including but not limited to; Renewable Energy, Green Fuels (such as Green Hydrogen and Biomethane), Low Carbon Retrofit including Energy Efficiency, and Green Mobility.	DfE, Invest NI, Industry, Project Promoters, Local Research Base	Action Commenced
2	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Support and identify specific Green Economy opportunities aligned to NI capabilities and assist development of trade and FDI initiatives with the goal of increasing sales and investment.	DfE, Invest NI, Industry, Project Promoters, Local Research Base, UK Government, City & Growth Deals	Action Commenced
3	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Develop propositions to position NI as a Green Investment Location and partner of choice for net zero advancements.	DfE, Invest NI, Industry, UK Government, City & Growth Deals	Action Commenced
4	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Identify and maximise the opportunities from dual market access through the Windsor Framework.	DfE, Invest NI, Industry, UK Government	Action commenced

## Theme 1: Collaboration (continued)

Action No.	Delivery against Minister priorities	Detail	Delivery partners	Timescale
5	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Launch a Global Advisory Panel to enhance the international awareness of NI's Green Economy and Net Zero strengths by advising on proposition development initially targeted at the United States and then globally.	DfE, Invest NI, Industry, Project Promoters, Local Research Base, UK Government, City & Growth Deals	Commencing 2024/25
6	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Identify funding streams and support industry in the scaling of low carbon heat technologies, including heat pump manufacturing and supply chains.	DfE, Invest NI, Industry, UK Government, City & Growth Deals	Commencing 2024/25
7	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Develop a Green Economy market intelligence initiative to raise awareness of the strategic opportunities for NI businesses; and partner with industry and key stakeholders to advance diversification and emerging green business opportunities.	DfE, Invest NI, Industry, Project Promoters, Local Research Base	Commencing 2025/26

## Theme 2: Skills

**Objective:** Develop Green Skills Delivery Plan.

Action No.	Delivery against Minister priorities	Detail	Delivery partners	Timescale
8	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Facilitate an industry-led Green Skills Delivery Plan based on the Energy Skills audit published in June 2023 <sup>9</sup> .	DfE, Industry, Academic Partners	Commencing 2024

<sup>9</sup> [Action 20, Energy Strategy Action Plan 2024](#)

### Theme 3: Innovation

**Objective:** Promote research and innovation in net zero technologies, processes, and products.

Action No.	Delivery against Minister priorities	Detail	Delivery partners	Timescale
9	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Continue to work on public estates and with our partners across government to demonstrate new net zero/low carbon technologies.	DfE and project stakeholders	Action Commenced
10	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Identify and promote research opportunities available for emerging and innovative net zero technologies, processes and products.	DfE, Invest NI, Industry, Project Promoters, Local Research Base, UK Government, City & Growth Deals	Commencing 2024/25

## Theme 4: Trade and investment

**Objective:** To assist NI businesses to decarbonise and adopt greener business practices and establish funding support for green technologies.

Action No.	Delivery against Minister priorities	Detail	Delivery partners	Timescale
11	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Continued delivery of Invest NI's Energy and Resource Programmes including the new Energy Efficiency Capital Grant, the Resource Efficiency Capital Grant, Sustainability Plans, Technical Consultancy and Resource Matching through Industrial Symbiosis.	DfE, Invest NI	Action Commenced
12	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Continue to work with industry and stakeholders to capture data and develop evidence base for Industrial Decarbonisation Northern Ireland (ID-NI) project.	DfE, Invest NI, ID-NI Partners, Industry	Action Commenced
13	<ul style="list-style-type: none"> <li>• High Productivity</li> <li>• Good Jobs</li> <li>• Regional Balance</li> <li>• Reducing Carbon Emissions</li> </ul>	Establish a Net Zero Accelerator Fund that will provide government support to complement private investment for the development of innovative net zero technologies.	DfE, SIB	Commencing 2026