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Renewable electricity in Northern Ireland: a primer

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This Research Paper provides an introduction to renewable electricity in Northern Ireland. It includes background information on renewable electricity generation technologies, their costs and efficiency. The Paper also looks at renewable electricity policy, support and development in Northern Ireland.

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Key Points

Renewable electricity generation has increased globally and in the United Kingdom, including Northern Ireland. Onshore wind is the dominant source globally, in the United Kingdom and in Northern Ireland.

Costs have decreased and efficiency has improved across most renewable electricity technologies.

The Department for the Economy's Energy Strategy 2021-2030 targets:

- 80% electricity from renewables by 2030
- £2 billion turnover in the low carbon and renewable energy sector by 2030

Northern Ireland achieved 40% electricity consumption from renewable generation in December 2018. This was 43.5% in December 2025. Progress has slowed since 2018, in part due to a lack of a support mechanism for renewable electricity.

Great Britain and the Republic of Ireland use "Contracts for Difference" (CfD) to support large-scale projects. Both regions also support small-scale generation. The United Kingdom Government has formed the Great British Energy company to invest in renewables.

Northern Ireland plans to introduce a CfD Scheme to support larger renewables in 2026. The Department for the Economy has stated the options for smaller scale support in this area will continue to be evaluated.

Barriers to development include grid capacity, connection policies and the planning process. Steps to address these have been taken forward and are at different stages of development. The costs of addressing some of the issues may increase consumer electricity bills in Northern Ireland, raising concerns about protecting vulnerable consumers.

Business numbers and turnover in the low carbon sector in Northern Ireland have grown (2014–2022). In the same period, employment in the sector declined.

Executive Summary

There has been significant growth in renewable electricity generation globally since 2010. Across the world, onshore wind accounts for the largest proportion of renewable electricity generation - 22.9% of all electricity generated by renewable sources in 2022. In 2023, wind energy – both onshore and offshore – generated 28.1% of the United Kingdom's electricity, making it the largest renewable generation type. As of December 2024, onshore wind accounted for 81.7% of Northern Ireland's renewable electricity generation.

Data from the International Renewable Energy Agency show that the "Total Installed Cost" fell for most renewable electricity generation types between 2010 and 2023. The "Levilised Cost of Electricity" (LCOE) of renewable generation also fell for most technologies between 2010 and 2023. Renewable electricity generation has also become more efficient over time, with the capacity factor of most technologies improving between 2010 and 2023.

Since 2010, renewable electricity policy in Northen Ireland has been overseen by the:

- The Strategic Energy Framework - 2010 to 2020.
- The Northern Ireland Energy Strategy – Path to Net Zero Energy – 2021 to 2030.

The current Energy Strategy's target of achieving 70% of electricity consumption from a diverse range renewable generation by 2030, was replaced by an 80% statutory target introduced through the Climate Change Act (Northern Ireland) 2022.

The Energy Strategy links renewable energy development to economic growth. Moreover, it contains a target to double the size of the green economy and achieve a turnover of more than £2 billion from the sector. This link between the renewable development and economic growth was later reinforced February 2024 by the Department for the Economy's Economic Vision. Decarbonising the economy is one of the Vision's four priorities. The associated Low/Carbon Net

Zero Action Plan, produced by the Department in 2024, seeks to promote opportunities in the sector, develop skills and promote innovation.

Northern Ireland achieved its previous renewable electricity target to power 40% of electricity consumption from renewables in December 2018. In the 12-month period leading to December 2024, 43.4% of Northern Ireland's electricity consumption was powered by renewables; largely onshore wind energy. The Department for the Economy's data on renewable electricity generation show that:

- Between December 2014 and December 2018, the proportion of total consumption powered by renewable increased by 21.7 percentage points.
- Between December 2018 and December 2024, the proportion of total consumption powered by renewable increased by 3.2 percentage points.

The noted slowdown in renewable development is in part explained by the absence of a renewable support initiative in Northern Ireland since the 2017 closure of the Northern Ireland Renewable Obligation to new generation. Other barriers to renewable development identified in this paper include grid connection issues and planning delays.

Both the United Kingdom and the Republic of Ireland currently support larger renewable electricity generation through a CfD Scheme. Smaller-scale development in the United Kingdom is supported by the "Smart Export Guarantee" (SEG). The Republic of Ireland has adopted a "Feed-In Tariff" for smaller-scale development.

In the United Kingdom, a newly formed public energy company – Great British Energy – will support investment in renewable energy and supply chains across the United Kingdom.

In Northern Ireland, the Department for the Economy is developing an Electricity Support Scheme. This will also be based on a CfD approach to support larger developments. The Minster for the Economy noted in April 2025 that primary legislation will be brought before the Northern Ireland Assembly in 2025, to

enable the delivery of this Support Scheme. It is planned that the first auctions to occur under such a Scheme will be in 2026.

Said Scheme is likely to be funded by electricity consumers in Northern Ireland. This is the case in other regions. The socialisation of cost in this way raises questions of how vulnerable consumers could be protected during the transition to renewables.

Stakeholders have expressed support for a smaller-scale generation Support Scheme. In 2024, the Minster for the Economy stated that that options for such Support would be evaluated as part of the Department's "Net Zero Ambitions".

Steps are also being taken to address grid suitability and the coat of connection. The System Operator for Northern Ireland has set out a £630 million grid investment plan. The Department for the Economy has also recently consulted on the socialisation of connection charges, with a view to reducing proportion paid by generators and increasing the proportion paid by consumers. A consultation response is expected on 16 June 2025.

Again, the potential increase in costs for consumers raises question of how vulnerable consumers could be protected during the transition to renewable generation in Northern Ireland.

In April 2023, the Department for Infrastructure (DfI) launched the "Review of Regional Planning Policy on Renewable and Low Carbon Energy – Public Consultation". Its aim was to ensure renewable strategic planning policy was "fit for purpose". The Department for Infrastructure's consultation closed on 20 June 2023. No further updates on the policy's development could be found at the time of writing.

Data from the Office of National Statistics' (ONS) "Low carbon and renewable energy economy estimates", published in 2024, show that between 2014 and 2022 the number of businesses in Northern Ireland's Low Carbon Electricity sector increased from 500 to 2,500 - an increase of 400%. In the same period, the sector's turnover increased from £0.37 billion to £0.78 billion - an increase of 111%. Between 2014 and 2022, full-time equivalent employment in the sector decreased from 6,600 to 5,200 – a decrease of 21%.

Contents

Introduction

This Research Paper, commissioned by the Committee for the Economy (the Committee), provides an introduction to renewable electricity in Northern Ireland. It outlines background information on a range of renewable electricity generation technologies and their costs; and looks at renewable electricity policy in Northern Ireland, tracking progress towards the region's renewable electricity target. The Paper also sets out the proposed renewable electricity support mechanism for Northern Ireland, identifies some of the renewable development barriers, and highlights economic impacts of the sector.

The Paper is structured as follows:

1. Renewable electricity: technology, costs and capacity factors
2. Renewable electricity in Northern Ireland
3. Renewable electricity support mechanisms
4. Barriers to renewable electricity development
5. Actions to tackle barriers
6. The economic impact of the low carbon electricity sector in the United Kingdom
7. Concluding remarks

Please note Appendix 1 explains the energy measurement units referenced throughout the Paper, when addressing energy capacity, consumption and generation.

1 Renewable electricity: technology, costs and capacity factors

Providing context to the rest of the paper this section outlines the various renewable electricity generations technologies available to policy makers, including setting out the current global, United Kingdom and Northern Ireland installed capacity[1] of each technology, where available. It also examines the

[1] Installed capacity refers to the maximum amount of electricity a generator can produced under ideal conditions Installed capacity | Practical Law

cost of those technologies and their capacity factors. It is presented using the following two sub-sections:

- 1.1 - Renewable electricity generation technologies and their installed capacity.
- 1.2 - Changes to the costs and capacity factors of renewable electricity generation technologies between 2010 and 2023.

1.1 Renewable energy technologies and installed capacity

Below is an introduction to a range of renewable energy technologies; describing their operation and examining their global, United Kingdom and Northern Ireland installed capacity.

1.1.1 Wind Energy

The process by which wind turbines produce electricity is described by the International Renewable Energy Agency (IRENA) as follows:

> *Wind is used to produce electricity by converting the kinetic energy of air in motion into electricity. In modern wind turbines, wind rotates the rotor blades, which convert kinetic energy into rotational energy. This rotational energy is transferred by a shaft which to the generator, thereby producing electrical energy.*[2]

Wind turbines can be installed both onshore and offshore. Onshore wind energy is power that is generated by wind turbines located on land. Conversely, offshore wind is powered by turbines installed in the sea.

Globally, wind power – both on and offshore – has grown significantly since 2010. Global onshore wind increased from 178 gigawatts (GW) of installed capacity in 2010 to 699GW in 2020 . Offshore wind increased from 3.1GW in 2010 to 34.4GW in 2020. In 2022, onshore wind accounted for 22.9% all renewable electricity generation globally. Offshore wind accounted for 1.9% of global renewable electricity in the same year.

[2] IRENA Wind energy

In the United Kingdom, over the same period, the installed capacity of onshore wind increased from 4,080 megawatts (MW) in 2010, to 14,075MW in 2021. As of 2023, onshore wind capacity was 15,498MW. Offshore wind capacity increased from 1,341MW in 2010, to 10,383MW in 2020. As of 2023, the United Kingdom's offshore wind capacity was 14,745MW (up from 1,341MW in 2010). In the same year wind – both onshore and offshore – generated 28.1% of the United Kingdom's electricity.[3]

In 2010, Northern Ireland has an installed onshore wind capacity of 340.6MW, this increased to 1,447,0MW in 2023. Northern Ireland has zero MW of offshore wind installed. [4] Moreover, wind energy accounted for 81.7% total renewable electricity generation in Northern Ireland as of December 2024.[5]

It is worth noting that despite the growth in wind energy and the falling costs (see sub-section 1.2 below for further information), recent reports point to potential issue affecting development. For example, in the United Kingdom, in May 2025, the Danish company Ørsted pulsed out of an offshore wind project in the North Sea, citing adverse developments.[6] This followed a similar decision made by the Swedish development Vattenfall, which stopped work on a wind farm in Norfolk Boreas in 2023.[7] Exposure to fluctuations in raw materials prices, such as steel and rare earth metals, and a shortage of boats, have been identified by developers as key constraints on development.[8]

1.1.2 Solar power

Solar power generates electricity by harnessing power from the sun. There are two main types of solar electricity generation:

- **Solar photovoltaic (PV)**, which uses solar cells to convert sunlight to electricity. The technology is modular, allowing installations to range from

[3] Department for Energy Security and Net Zero, Digest of United Kingdom Energy Statistics https://assets.publishing.service.gov.uk/media/66a7d51649b9c0597fdb06bc/DUKES_6.2.xlsx
[4]Department for Energy Security and Net Zero Regional Renewable Statistics - GOV.UK (updated 31 October 2024)
[5] Electricity Consumption and Renewable Generation Statistics (accessed 04 June 2025)
[6] Ørsted shelves Hornsea 4 project as struggles mount | 4C Offshore News (7 June 2025)
[7] Norfolk Boreas: Work on offshore wind farm stops over soaring costs - BBC News (20 July 2023)
[8]The Conversation Why wind farm developers are pulling out at the last minute (9 June 2025)

smaller rooftop installations of 3-20 kilowatts (kW) to multiple megawatt sized systems.

- **Concentrated solar power (CSP)**, which uses mirrors to concentrate solar rays, which are then used to heat a fluid to create steam. That steam drives a turbine that generates electricity. CSP is used in large-scale power plants.

Globally, the installed capacity of solar power has increased from 40,133.08MW in 2010 to 1,411,139MW in 2023.[9] In 2022, it generated 15.2% of renewable electricity worldwide.[10] By comparison, in the United Kingdom, the installed capacity increased from 95MW in 2010 to 16,238MW in 2023. In 2023, the technology generated 4.7% of the United Kingdom's electricity.[11] In Northern Ireland, the installed capacity of solar PV grew from 1.2MW in 2010 to 325.5MW in 2023. In the 12-month leading up to December 2024, solar PV generated 3.g% of the renewable electricity generated in Northern Ireland.[12] The global installed capacity of CSP grew from 2,567MW in 2012, to 6,876MW. There are currently no CSP generation plants in the United Kingdom. The technology requires "large open spaces, unpopulated areas and land with long-periods of sunlight", as such it is only to a "select few regions of the world".[13]

1.1.3 Geothermal

Geothermal generation use the "heat found within the subsurface of the earth" to generate electricity. It can also be used directly for heating and cooling. As a source of electricity generation, geothermal requires "medium- or high-temperature" sources of heat. Such sources are "usually located close to tectonically active regions were hot water and/or steam is carried to the Earth's surface of can be accessed at shallow depths". There are range of geothermal technologies at different stages of maturity. Geothermal heat pumps and electricity generation from hydrothermal reservoirs are both considered mature

[9] IRENA Solar energy (accessed 11 June 2025)
[10] IRENA Technologies (accessed 11 June 2025)
[11] Department for Energy Security and Net Zero, Digest of United Kingdom Energy Statistics https://assets.publishing.service.gov.uk/media/66a7d51649b9c0597fdb06bc/DUKES_6.2.xlsx
[12] Department for the Economy, Electricity Consumption and Renewable Generation Statistics (accessed 09 June 2025)
[13] IRENA Solar energy (accessed 11 June 2025)

and reliable technologies. Newer technologies include the use of medium-temperature fields to generated electricity using “binary cycle technology”. Enhanced geothermal systems are also being developed and are at the demonstration stage.[14]

At a global level, geothermal electricity generating capacity increased from 9,914MW in 2010 to 15,427MW in 2024. As of 2022, it accounted for 1.1% of global renewable electricity generation. According to the United Kingdom data there is currently no geothermal electricity generating capacity installed in the United Kingdom.

The 2023 North East Local Partnership/Whitehall Department for Energy Security and Net Zeo (DEZN) White Paper - entitled “The case for deep geothermal energy – unlocking investment at scale in the United Kingdom” - noted that “most of the United Kingdom’s onshore deep geothermal potential in found in deep sedimentary basins that are dispersed across the United Kingdom”. These are shown in Figure 3 below. The White Paper noted, however, that temperatures found in these sites “makes these systems most suited for geothermal heating applications such as district heat networks, horticulture and industry”. Moreover, it added that “estimating the useable fraction of heat has not yet been possible”.

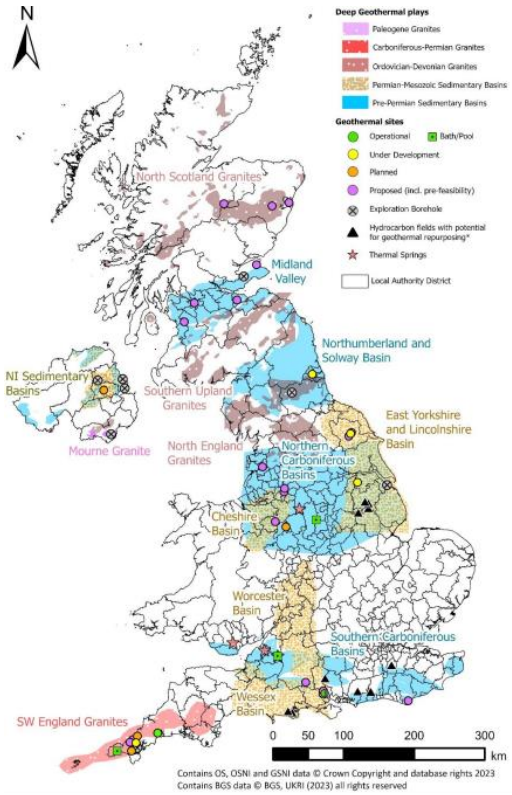
In addition to the sedimentary basins, Figure 3 also identifies a number of granites in Cornwall, North of England, Scotland and Northern Ireland (Mourne Granites), noting that these granites have been “identified as proved and potential geothermal targets for power and/or heat production”.[15] In particular, in reference to the granites located in Northern Ireland, the technical report that accompanied the noted White Paper stated that although it was an area “with hot dry rock potential”, the geothermal potential had not been assessed to date due to limited data.[16]

[14] IRENA Geothermal energy (access 11 June 2025)
[15] Department for Energy Security and Net Zero (2023) Publication: A deep geothermal energy white paper - North East Evidence Hub
[16] Department for Energy Security and Net Zero (2023) The case for deep geothermal energy - unlocking investment at scale in the UK. A deep geothermal energy white paper

Potential scrutiny point:

1. Does the DfE or Geological Survey of Northern Ireland have plans to assess the geothermal power potential of the Mourne granites?

Figure 1: Location of potential geothermal power/heat sites in the United Kingdom



Source: A deep geothermal white paper (2023)

The United Kingdom's first geothermal plant is under development in Cornwall. Known as the United Downs Project, the project aims to demonstrate the potential of geothermal power generation in the United Kingdom. As such, it is a proof of concept project, which if successful could be rolled-out further. GEL,

the company responsible for the project, are targeting the production of 20MW electricity from further site in the Cornwall area by 2030.[17]

1.1.4 Hydropower

Hydropower utilises water to drive turbines, which generate electricity. There are two general types of hydropower plants: those with dams and reservoirs; and those without. Hydropower plants with dams can store water that is used to generate electricity at peak times. Plants without dams are generally smaller in scale and utilise a river's flow to generate electricity.[18]

Globally, renewable hydropower capacity increased from 926,416MW in 2010 to 1,283,041MW in 2024. As of 2022, renewable hydropower accounted for 51.2% of global renewable electricity generation. In the United Kingdom, total installed hydropower capacity increased from 1,646MW in 2010 to 1,890MW in 2023. An increase of 15%. As of 2023, hydropower accounted for 1.9% of all electricity generation in the United Kingdom. Northern Ireland had 7.9MW of installed hydropower in 2010; rising to 11.2MW in 2023.[19]

1.1.5 Marine Energy

Marine energy, also known as ocean energy, utilises ocean tides, waves and currents to produce electricity. Such technologies are at the demonstration stage and are not yet commercially available.[20] The technology's relative immaturity is evident in its global installed capacity which was 249.9MW in 2010, rising to 493.7MW in 2024.[21] There are only relatively small amounts of marine energy installed in the United Kingdom. As of 2023, there were 10MW of marine energy installed in the United Kingdom.

Whereas Northern Ireland currently has no marine energy installed capacity. The data show that between 2009 and 2015 Northern Ireland had a marine

[17] The United Downs Geothermal Power Plant, Cornwall, UK: Combining the Generation of Geothermal Electricity and Heat, with the Extraction of Critical Raw Materials
[18] IRENA Hydropower (accessed 11 June 2025)
[19] Department for Energy Security and Net Zero Regional Renewable Statistics - GOV.UK (updated 31 October 2024)
[20] IRENA Ocean energy (accessed 11 June 2025)
[21] IRENA_Stats_extract_2025 H1.xlsx

energy capacity of 1.2MW.[22] This capacity was from the SeaGen turbine located in Strangford Lough. This commercial scale demonstration project was commissioned in 2008, with decommissioning beginning in 2016 and completed in 2019. Over its active lifetime the turbine exported 11.6GWh of electricity.[23]

1.2 Renewable electricity costs and capacity factors

This subsection relies on IRENA data to provide an overview of the cost of the renewable electricity technologies outlined in subsection 1.1 of this Paper. It also examines the capacity factor of the various technologies.

IRENA uses two cost metrics for renewable electricity:

- The "Total Installed Cost" (TIC): which includes the total cost of completing a project, such as project development costs, grid connection, equipment, installation, civil engineering, etc. The calculation does not include any financial support that may be offered to renewable energy developers. The total installed cost is presented in US Dollars per Kilowatt of installed electricity generating capacity ($/kW).
- The Levelised Costs Of Electricity (LCOE): LCOE is total life cycle costs/ total lifetime energy production, where life cycle costs include investment expenditure, operations and maintenance and any fuel expenditure associated with the technology. The calculation does not include any financial support that may be offered to renewable energy developers. Estimates of LCOE allow for comparison across different technologies. The LCOE is presented in US Dollars per Kilowatt hour of electricity produced ($/kWh).

Capacity factors calculate the ratio of "annual generation relative to the theoretical continuous maximum output" of a renewable generation technology and are expressed as a percentage. In other words, a capacity factor provides a measure of a technology's actual generation compared to the maximum amount that it would produce if it were to operate without interruption. As such, it allows

[22] Department for Energy Security and Net Zero Regional Renewable Statistics - GOV.UK (updated 31 October 2024)
[23] SeaGen Turbine, Northern Ireland, UK

for an assessment of the reliability of the various technologies, by providing an estimate of how often they are running at maximum power.[24]

Table 1 below summarises changes to each technology's total installed costs (TIC), LCOE and capacity factor (CF) between 2010 and 2023. The figures included in Table 1 are global averages and are presented in 2023 prices, to show:

- The TIC of renewable energy installations fell for most technologies between 2010 and 2023. The biggest decrease was for solar PV, which fell by 86% over the period. Onshore and offshore wind saw significant decreased of almost 50%. There were two exceptions in this trend in decreasing TICs – hydropower increased by 92% and geothermal increased by 52%.
- The LCOE of most renewable technologies fell between 2010 and 2023. Solar PV again saw the largest decrease – 90% over the period. The LCOE CSP (a 70% decrease), Onshore wind (a 70% decrease),and Offshore wind (63% decrease) also fell significantly. Again hydropower and geothermal generation were the exception to the downward trend in LCOE increasing by 33% and 31% respectively.
- In 2023, the global weighted average LCOE of newly installed fossil fuel generation was 0.100$/kWh. All technologies, excluding CSP, had a lower LCOE than the global weighted average LCOE of newly installed fossil fuel generation in the same year.
- Most technologies had an improved capacity factor in 2023 relative to 2010. The exceptions this were geothermal, the capacity factor for which fell; and bioenergy, the capacity of which remained the same.
- Marine energy TIC, LCOE and capacity are not included in Table 1 as they are not included in the original IRENA data set on account of the technologies' relative novelty.

[24] US Department for Energy, What is Generation Capacity (30 March 2025) https://www.energy.gov/ne/articles/what-generation-capacity

Table 1: Total installed cost, LCOE and capacity factor trends by technology 2010 and 2023[25]

	TIC 2010 (2023 $/kW)	TIC 2023 (2023 $/kW)	TIC % change 2010 to 2023	LCOE 2010 (2023 $/kWh)	LCOE 2023 (2023 $/kWh)	LCOE % change 2010 to 2023	Capacity factor 2010 (%)	Capacity factor 2023 (%)	Capacity factor % change 2010 to 2023
Bioenergy	3,010	2,730	-9%	0.084	0.072	-14%	72	72	0%
Geothermal	3,011	4,589	52%	0.054	0.071	31%	87	82	-6%
Hydropower	1,459	2,806	92%	0.042	0.057	33%	44	53	20%
Solar PV	5,310	758	-86%	0.460	0.044	-90%	14	16	14%
CSP	10,453	6,580	-37%	0.393	0.117	-70%	30	55	83%
Onshore wind	2,272	1,160	-49%	0.111	0.033	-70%	27	26	33%
Offshore wind	5,409	2,800	-48%	0.203	0.075	-63%	38	41	8%

Source: IRENA (2023)

[25] IRENA Renewable power generation costs in 2023 (2024)

2 Renewable electricity in Northern Ireland

This section sets out current levels of renewable electricity generation in Northern Ireland. It begins, however, outlining the policy context within which renewables are being developed in the region.

2.1 Renewable electricity policy context in Northern Ireland

The Department for the Economy has responsibility for energy policy in Northern Ireland. Since 2010, energy policy in general, and renewable electricity development in particular, have been driven by one of two over-arching strategies:

- The Strategic Energy Framework, which covered the period 2010 to 2020.
- The Northern Ireland Energy Strategy – Path to Net Zero Energy, which was launched in 2021 and which "sets out a pathway for energy to 2030".

In addition to the above strategies, the Climate Change Act (Northern Ireland) 2022 sets a statutory target for renewable electricity generation in Northern Ireland. The sub-sections that follow provide a brief overview of both strategies and explain the impact of the Climate Change Act (Northern Ireland) 2022 on renewable electricity targets in Northern Ireland.

2.1.1 The Strategic Energy Framework 2010 to 2020

Between 2010 and 2020, energy policy in the region was driven by the Strategic Energy Framework (SEF). That policy was predicated on four interlinked objectives:

- building competitive markets
- ensuring security of supply
- enhancing sustainability
- developing Northern Ireland's energy infrastructure

From a renewable electricity perspective, the Strategy set a target of delivering 40% of electricity consumption from renewable resources by 2020. As will be

explored more in subsection 1.2 below, that target was first reached during the 12-months leading up to December 2018, when 40.7% of electricity consumption came from renewable resources.

For a large proportion of the time covered by the SEF, renewable electricity development in Northern Ireland was supported by the Northern Ireland Renewable Obligation Scheme (NIRO). Section 3 below looks at renewable electricity support models in more depth. However, for the purposes of this sub-section, it is worth explaining how the NIRO, which was launched in 2005, operated.

Under the NIRO, electricity suppliers were legally required to provide evidence that a specified quantity of electricity provided to consumers came from renewable sources. Evidence of compliance with this obligation was in provide in the form of Renewable Obligation Certificates (ROCs). ROCs were issued for free to accredited generators for every Megawatt hour (MWh) of electricity they generated. Generators could then sell these ROCs to electricity suppliers on an open market. This provided renewable energy generators with two income streams – one from electricity sold to the grid, the second from the sale of ROCs to suppliers.

The Scheme:

> *… closed to new large-scale onshore wind on 31 March 2016, to new small scale onshore wind on 30 June 2016 and to all other technologies on 31 March 2017, with exceptions to those projects that met the criteria for grace periods.*
>
> *All grace periods[26] have expired and the NIRO is now closed to all new renewable electricity generation. It is important to note that all those projects already accredited will continue to receive ROCs for 20 years from their accreditation date or until 31 March 2027, whichever is earlier.[27]*

[26] The grace periods for NIRO applied from 1 April 2017 to the 31 March 2018, see Ofgem for details https://www.ofgem.gov.uk/system/files/docs/2016/08/niro_closure_factsheet.pdf
[27] Northern Ireland Renewables Obligation | Department for the Economy

Two aspects of the NIRO were seen as particularly favourable to Northern Ireland. First, Northern Ireland electricity consumers paid less for subsidising renewable development than their Great Britain (GB) counterparts due to lower obligation levels. Second, the NIRO was a non-competitive scheme and supported all eligible renewable projects.[28]

Following the staggered closure of the NIRO over the period 2016 to 2017, new renewable electricity generation in Northern Ireland has been developed without access to a support scheme. As in subsection 2.2 below, DfE's current energy strategy includes actions to introduce a renewable electricity support scheme in Northern Ireland.

Over the period 2010 to 2020, the electricity generation target set out in the SEF was supported by a number of other strategies, including:

- The Sustainable Energy Action Plan 2012-2015 and beyond (SEAP). An outworking of the SEF, the SEAP set out the actions taken forward across the Northern Ireland Executive to promote sustainable energy development.[29]
- The Offshore Renewable Energy Strategic Action Plan 2012-2020 (ORESAP), outlined NI's vision for offshore renewable development, sought to maximise the development of offshore resources and positive economic development, while minimising the impact on the environment and other marine users.[30]
- The Onshore Renewable Electricity Action Plan 2013 to 2020 (OREAP) sought to *"examine the role and cumulative impact of potential market led renewable electricity generation mixes"* in meeting the 40% target. It examined the potential renewable electricity generation mix, the

[28] House of Commons Library, Support for low carbon power (April 2020)
[29] Department for Enterprise, Trade and Investment, Sustainable Energy Action Plan 2012 – 2015 and beyond (May 2012) https://www.economy-ni.gov.uk/sites/default/files/publications/deti/Sustainable%20energy%20action%20plan%202012-15.pdf
[30] Department for the Economy Microsoft Word - Strategic Action Plan 2012-2020 22.3.12.DOC

estimated cost to consumers of renewable development and the environmental impact of renewable electricity development.[31]

2.1.2 The Northern Ireland Energy Strategy – Path to Net Zero Energy: 2021 to 2030

The "Northern Ireland Energy Strategy – Path to Net Zero Energy: 2021 to 2030" (Energy Strategy) was launched by the DfE in December 2021. The Energy Strategy sets the direction of energy policy in Northern Ireland until 2030 and seeks to lay the groundwork to achieve net zero energy by 2050.

The Energy Strategy sets out a "roadmap", consisting of 21 "policies and enablers" across five themes:

- **"Placing you at the heart of energy future":** the Energy Strategy aims to "make energy as simple as possible for everyone in society and develop policies that enable and protect consumers through the energy transition".
- **"Grow the green economy":** the Energy Strategy aims to "create new jobs and grow a skills base for the low carbon economy through innovation, support and focussing on out competitive strengths".
- **"Do more with less":** the Energy Strategy aims to "set clear targets, standards and regulations that [will] drive improvements in energy efficiency, provide support to invest in improvements to buildings and help consumers to make changes that reduce their energy use".
- **"Replace fossil fuels with renewable energy":** the Energy Strategy will begin the process of phasing out fossil fuel generation in Northern Ireland. The strategy will seek to grow Northern Ireland's "indigenous renewable base, support by sustainable renewable imports", which will lead to the decarbonisation of "power, heat and transport".
- **"Create a flexible, resilient and integrated energy system":** the Energy Strategy aims to "create a flexible, smart and digitised energy

[31] Department for Enterprise, Trade and Investment, Onshore Renewable Electricity Action Plan 2013-2020 (Nov 2013) https://www.economy-ni.gov.uk/sites/default/files/publications/deti/OREAP%202013-2020.pdf

> system that integrates renewables across heat, power and transport, creates value for consumers and enhances security of supply".[32]

As noted, the Energy Strategy is viewed by the Department as part of the journey towards net zero carbon and affordable energy for Northern Ireland. The Department also views it as a way to grow Northern Ireland's economy. The Strategy established three targets in this regard:

- **Energy Efficiency:** deliver energy savings of 25% from buildings and industry by 2030.
- **Renewables:** meet at least 70% of electricity consumption from a diverse mix of renewable sources by 2030.
- **Green Economy:** Double the size of our low carbon and renewable economy to a turnover of more than £2 billion by 2030.[33]

Two things are worth noting about the renewable electricity target. First, the wording is different from the 40% target set out in the SEF. The Energy Strategy seeks to develop a "diverse mix" or renewable generation. As explained in sub-section 2.3.2 below, to date Northern Ireland's renewable generation has been largely reliant on onshore wind.

Second, Section 15 of the Climate Change Act (Northern Ireland) 2022 introduced a new statutory target for renewable electricity, stating:

> *The Department for the Economy must ensure that at least 80% of electricity consumption is from renewable sources by 2030.*[34]

For context, the Clean Power Action Plan published by the Whitehall Department for Energy Security and Net Zero in December 2024, which set a target that "clean sources" will produce at least 95% of Great Britain's electricity generation by 2030. In the context of the Clean Power Action Plan, "clean power" has a broader definition the renewable generation. It includes renewables, nuclear, gas with carbon capture and storage, and hydrogen to

[32] The Path to Net Zero Energy. Safe. Affordable. Clean.
[33] The Path to Net Zero Energy. Safe. Affordable. Clean.
[34] Climate Change Act (Northern Ireland) 2022

power.[35] The independent system operator in Great Britain, the National Energy System Operator, estimated in November 2024, that achieving the DEZN's 95% clean power target would require between 77% and 82% of power to be generated variable renewables by 2030.[36] The Republic of Ireland's Climate Action Plan 2021 set a target to increase the share of electricity generation from renewables to 80%.[37]

The Green Economy target included in the Energy Strategy links energy policy with economic policy. This was further reinforced by the Department for Economy's Economic Vision set out in February 2024. The Vision is based upon four priorities; one of which is decarbonising the Northern Ireland economy.[38],[39] In June 2024, the Department also released seven sectoral plans aimed at developing the Northern Ireland economy "in line with department's economic vision". As part of this, a "Low Carbon/Net Zero Sectoral Action Plan" was produced, with four objectives:

1. To promote the Green Economy in Northern Ireland and support Northern Ireland businesses to optimise strategic opportunities emerging from the global drive to net zero.
2. To develop a Green Skills Delivery Plan.
3. To promote research and innovation in net zero technologies, process and products.
4. To assist Northern Ireland businesses to decarbonise and adopt greener business practices and to establish funding support for green technologies.

To date, the Energy Strategy has been driven forward by Annual Action plans. The latest Action Plan 2025, published on the 31 March 2025, sets out the following "key actions" for the year as follows:

[35] Clean power targets - House of Commons Library
[36] Clean Power 2030 | National Energy System Operator
[37] Ireland's Energy Targets | SEAI
[38] The other three priorities are increasing the number of good jobs, raising productivity and driving regional balance.
[39] Delivering on the Economic Vision - Year One Progress Report

- A consultation on the terms and condition for the Renewable Energy Support Scheme to enable the first auction in 2026. The Department aims to publish the final design in Quarter 2 2025 and to consult on the terms and conditions in Quarter 3.
- A Support Scheme design for future low carbon heat and energy efficiency in residential buildings.
- A Smart Meter Design Plan to enable an electricity grid that will be ready to support delivery of the 80% renewable electricity target by 2030.
- An all-of-Government approach to plan and deliver benefit at a local level through a Community Energy Pathfinder Project. This Plan aims to "use industrial decarbonisation to support the decarbonisation of local communities".[40]

2.2 Renewable electricity development in Northern Ireland – December 2014 to December 2024

The following sub-section uses DfE renewable generation statistics to provide a timeline of renewable electricity generation in Northern Ireland. The sub-section also looks at the share of renewable generation by technology and the contribution of off-grid generation.

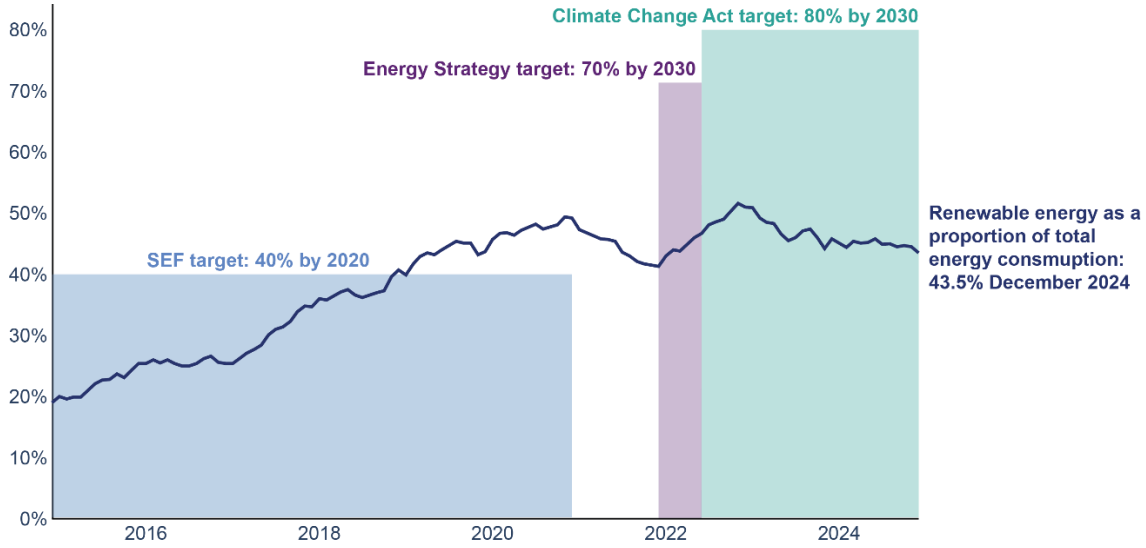
2.2.1 Renewable electricity production as a proportion of total consumption – December 2014 to 2024

The DfE regularly publishes "Electricity Consumption and Renewable Generation Statistics" on a quarterly basis. That publication provides data on renewable electricity generation as a proportion of electricity consumption, which enables measurement of progress against renewable electricity targets. The data show the proportion of electricity consumption powered by renewable sources over 12-month rolling periods. This section relies on data covering the 12-months to December 2024.

[40] Archibald publishes Energy Strategy Action Plan 2025 - March 2025 | Department for the Economy with additional details from Energy Strategy - The Path to Net Zero Energy - Action Plan 2025

Figure 2 shows the proportion of total energy consumption from renewables in each 12-month period from the 12-months leading to December 2014, to the 12-monhts leading to December 2024. The Figure also shows progress towards the various target – 40%, 70% and 80% - over time. As can be seen by the Figure, in December 2014 renewables powered 19% of all electricity consumption. The equivalent figure was 43.5% in December 2024. The 40% by 2020 target was reached in December 2018, when renewables provided 40.7% of total consumption. Between December 2014 and December 2018, the proportion of total consumption powered by renewable increased by 21.7 percentage points. Despite reaching 51.6% of total consumption in November 2022, overall, between December 2018 and December 2024, the proportion of total consumption powered by renewable increased by 3.2 percentage points.[41]

Figure 2: Renewable energy generation as a proportion of total electricity consumption December 2014 to December 2024, and renewable electricity targets[42]



Source: DfE (2025)

As noted above, the NIRO closed to all new applications in March 2017. Since that date, no Support Scheme has been available to renewable developers in Northern Ireland. This is likely to be one reason why development has slowed in

[41] Department for the Economy Electricity Consumption and Renewable Generation Statistics (accessed 09 June 2025)
[42] As cited immediately above

the intervening period. The industry group Renewables Northern Ireland has noted that the lack of support for developers in Northern Ireland has led to investment in renewable going elsewhere.[43] It should be noted that other barriers to development have existed over this time period; these are explored in Section 4 below.

As noted above, the DfE is currently developing a new renewable Energy Support Scheme. The Department views the development of this Scheme as a "key enabler" of achieving the 80% target by 2030.

In 2024, the DfE stated that based on a 20% increase in electricity demand by 2030, approximately 5TWh additional electricity generation will be required to meet the 80% target. Forecasting carried out for the DFE by Aurora found that 1.5TWh could be met by non-supported renewable and that "3.5TWh of generation are therefore expected to require support".[44] [45]

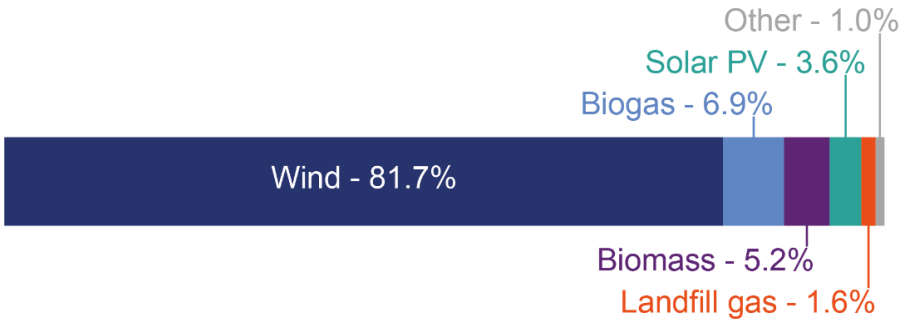
Section 3 provides further details of renewable support models in the United Kingdom and the Republic of Ireland, as well as an update on progress in Northern Ireland.

2.2.2 Renewable energy by technology type – December 2024

The DfE's Electricity Consumption and Renewable Energy Statistics also provide a breakdown of renewable electricity generation in Northern Ireland by technology. Figure 3 shows that breakdown for the 12-months to December 2024. As can be seen from that Figure, wind energy generated for the largest proportion of generation in Northern Ireland; accounting for 81.7% of all renewable power. Biogas (6.9%), Biomass (5.2%), Solar PV (3.6%) and Landfill Gas all made smaller contributions.[46]

[43] RenewableNI Reacts To Energy Strategy Action Plan
[44] There is uncertainty around the forecast demand for 2030. As such the forecasted generation volumes could vary by plus or minus 1TWh based on demand scenarios.
[45] Renewable Electricity Support Scheme
[46] Department for the Economy, Electricity Consumption and Renewable Generation Statistics (accessed 09 June 2025)

Figure 3: Renewable energy generation by technology December 2024



Source: DfE (2025)

Potential scrutiny point:

2. How will the DfE encourage a diverse mix of renewable generation in Northern Ireland going forward?

2.2.3 Micro-generation and off-grid renewable energy

The "Electricity Consumption and Renewable Generation Statistics" is based upon data provided to the DfE by Northern Ireland Electricity (NIE) Networks and the System Operator for Northern Ireland (SONI). The Department states that the data presented in that report "represents the minimum amount of renewable electricity generation in Northern Ireland". This is because the NIE Networks and SONI data do not capture all renewable generation in Northern Ireland. In particular, it does not include generation that does not feed into the electricity grid. This includes businesses who generate electricity for their own uses ("auto-generators"), microgenerators (with a capacity of 50kW or less) and non-exporting stations.

The DfE estimates, based on generators accredited to the NIRO, microgeneration and non-exporting stations generated 142.1GWh of renewable electricity between April 2023 and March 2024. This would be equivalent to 4.3% of the renewable generation recorded by SONI and NIE Networks in the same period. It should be noted, however, that the above estimate does not

include microgenerators and non-export stations that are not accredited to the NIRO and was closed to new applications in March 2017.[47]

3 Renewable electricity support mechanisms

As noted in sub-section 1.3, between 2005 and 2017, renewable electricity developers in Northern Ireland could avail of support through the NIRO. That Scheme provide renewable energy generators with ROCs for every MWh of electricity they produced. Those ROCs were then sold to electricity suppliers on an open market. During this period, renewable electricity generators could benefit from two income streams – one from electricity sold to the grid, the second from the sale of ROCs to suppliers.

To date, a replacement to the NIRO Scheme has not been launched in Northern Ireland. Conversely, developers in neighbouring jurisdictions, namely Great Britain and the Republic of Ireland have been able to access support. On this, the DfE's website states:

> *Currently, with no existing support scheme in Northern Ireland, potential investment into renewable electricity in Northern Ireland is instead being diverted to Great Britain, the Republic of Ireland, and other countries. A support scheme for Northern Ireland would support investment and be a driver to increase wealth, prosperity and living standards across Northern Ireland.*[48]

The following sub-sections briefly outline the current Support Schemes in the Great Britain and the Republic of Ireland, before looking at developments in Northern Ireland.

3.1 Current Support Schemes in Great Britain

In Great Britain, two Schemes are available to generators. The choice of Scheme depends upon the size of the renewable installations. For larger

[47] Department for the Economy Electricity Consumption and Renewable Generation Statistics (accessed 09 June 2025)
[48] Renewable Electricity Price Guarantee | Department for the Economy

generators with an installed capacity of 5MW or more, the main support mechanism is the Contracts for Difference (CfD) scheme.[49] The CfD Scheme works:

> *… by guaranteeing a set price for electricity – known as a strike price – that generators receive per unit of power output. As the wholesale price of electricity fluctuates, the generator is either paid a subsidy up to the set price, or pays back any surplus above the set price to the scheme, so that they have the certainty of always receiving the value of the strike price. The cost, or benefit, is passed on to consumers through their bills.*[50]

CfD contracts are awarded through competitive auction. The United Kingdom Government sets and publishes a budget in advance of an auction:

> *…then sealed bids of strike prices submitted by developers are accepted sequentially from the lowest to the highest until the budget is exceeded. This is referred to as a reverse auction, as the winners are the lowest rather than highest bidders.*[51]

CfDs in Great Britain are funded through a levy on suppliers. That levy is ultimately passed onto consumers. Ofgem, the regulator in Great Britain, has estimated that the CfD levy added "£100 to typical domestic over the period April 2019 to December 2024". Ofgem adds that this was "2.9% of the total electricity bill that a household with typical consumption would have paid over this period".[52]

For smaller generators of under 5MW the Smart Export Guarantee (SEG) scheme can provide support. Under the SEG, certain electricity suppliers are obliged to offer a tariff and make payment to small-scale low carbon generators for electricity exported to the grid. There are two types of SEG Licensees: mandatory SEG Licensees are suppliers with at least 150,000 domestic electricity customers; and, voluntary licensees are suppliers with fewer than

[49] Contracts for Difference scheme for renewable electricity generation: government response to consultation on proposed amendments to the scheme (Part A)
[50] House of Commons Library, Contracts for Differences (12 September 2023)
[51] As cited immediately above
[52] Renewable energy: Costs - House of Lords Library

150,000 customers but who elect to participate in the scheme.[53] SEG Licensees determine the rate suppliers pay generators, the contract length and other terms. Ofgem notes that: *"whilst wholesale electricity prices can sometimes fall below zero, SEG Licensees must always offer a tariff that remains above zero".*[54] As SEG payments are set by SEG Licensees, Ofgem recommends that generators *"shop around to find the best deal for them".*[55]

In addition to the above, the United Kingdom Government recently launched the publicly owned energy company "Great British Energy" (GB Energy). The company was designated by the Great British Energy Act 2025, which received Royal Assent on 15 May 2025. The Great British Energy Act 2025 requires the Secretary of State for Energy Security and Net Zero to "prepare a statement of strategic priorities" for the company. The Great British Energy Act 2025 extends to the whole of the United Kingdom, including Northern Ireland. The Act holds that Secretary of State must not include anything in the statement of strategic priorities that concerns the legislative competence of Northern Ireland Assembly[56], without first securing the legislative consent of the Assembly.[57]

GB Energy's objectives are to:

- drive clean energy deployment, including through investing in technology and partnering with the private sector
- invest in, own and operate energy projects
- support decarbonisation through energy efficiency measure.
- support United Kingdom energy independence

[53] Ofgem, SEG, Electricity Suppliers (accessed 23 September 2020) https://www.ofgem.gov.uk/environmental-programmes/smart-export-guarantee-seg/electricity-suppliers

[54] Ofgem, About the Smart Export Guarantee (accessed 23 September 2020) https://www.ofgem.gov.uk/environmental-programmes/smart-export-guarantee-seg/about-smart-export-guarantee-seg

[55] Ofgem, SEG Generators (accessed 23 September 2020) https://www.ofgem.gov.uk/environmental-programmes/smart-export-guarantee-seg/generators

[56] The Great British Energy Bill itself received legislative consent from all three devolved legislatures Great British Energy legislation passes through Parliament - GOV.UK

[57] Great British Energy Act 2025 Section 5

- undertake measure to ensure slavery and human trafficking is not taking place in supply chains [58]

GB Energy is "backed by £8.3 billion" in funding over the course of the current parliament. To date, a number of announcements have been made, including:

- £300 million funding for offshore wind supply chains
- £200 million to invest in rooftop solar and renewable energy schemes for schools, hospitals and communities across the United Kingdom
- £4 million in funding for a Scottish Community Energy Fund, focussed on community onshore wind, solar and hydropower
- £3 million in funding for local renewable energy projects in Wales[59]

Potential Scrutiny Point:

3. What interaction has the DfE had with GB Energy and what plans are there to utilise GB Energy funding to support projects in Northern Ireland?

3.2 Current Support Schemes in the Republic of Ireland

In the Republic of Ireland, the Renewable Electricity Support Scheme (RESS) was launched in 2020 to support larger generation. It works in a similar way to the United Kingdom's CfD Scheme in that generators are awarded a guaranteed price for their electricity through competitive auctions.[60]

RESS auctions are delivered by the Department of Environment, Climate and Communications (DECC), with the support of Commission for Regulation of Utilities (CRU) and EirGrid, the Transmission System Operator (TSO). To date, there have been five general RESS auctions and one offshore RESS auction specifically designed for offshore renewable developments. [61] A second

[58] Great British Energy Act 2025 Section 3
[59] Great British Energy legislation passes through Parliament - GOV.UK
[60] How Ireland's new RESS 3 energy support scheme works
[61] RESS | Customer information | EirGrid

offshore RESS auction is timetabled for 2025, with applications due to open in September of that year.[62]

Small-scale renewable energy developers – above 50kW and up to 6MW in size – in the Republic of Ireland can avail of the Small-Scale Renewable Electricity Support Scheme (SRESS). The SRESS is a non-competitive operated by the Department of Environment, Climate and Communications. It offers 15-year Feed-In Tariff Support to successful applicants. The number of applicants is limited to fixed aggregate installed capacities that vary by capacity.[63]

To date, the SRESS has been rolled-out in two phases:

- Phase 1: targeted towards renewable self-consumers above 50kW and up to 1MW. This Scheme opened in 2023 and will close at the end of 2025.
- Phase 2: targeted towards community projects, small to medium enterprises and farms. This Scheme opened in January 2025.[64]

A third phase, which will support all categories of applicant, will open post-2025. This Scheme will support generators with an installed capacity of 50kW to 1MW, including self-consumers.[65]

Current tariff Rates under the SRESS depend on the size, technology and the category of the renewable generation installation. Table 2 below provides a summary of the rates available under SRESS 1:

[62] ORESS-Tonn-Nua-Auction-Timetable.pdf
[63] For example, in SRESS 1 Solar of up to 1MW is limited to a total capacity of 25MW, whereas Solar of between 1MW to 6MW is limited to a total of 80MW terms-and-conditions-for-the-first-competition-of-sress1.pdf
[64] Department of Climate, Energy and The Environment, SRESS (updated 4 June 2025) Small-Scale Renewable Electricity Generation (SRESS)
[65] As cited immediately above

Table 2: SRESS 1 Tariff rates by technology and category[66]

Category	Solar (50kw to 1MW	Solar 1MW to 6MW	Wind 50kW to 6MW
Community projects	€150/MWh	€140/MWh	€90/MWh
SME/Farm projects	€130/MWh	€120/MWh	€80/MWh
Other export tariff rates	€130/MWh	-	-

Source: Government of Ireland (2024)

3.3 Developments in Northern Ireland

The move to CfD support mechanisms for larger installations in Great Britain and the Republic of Ireland, and the move to the SEG Scheme for smaller installations in Great Britain, reflects a wider towards market-based approaches in Europe. In 2020, the European Union stated that:

> *…financial support for renewable should be limited to what is necessary and should aim to make renewable competitive in the market.*[67]

And that:

> *…Support Scheme should be flexible and respond to falling production costs. As technologies mature, schemes gradually removed. For instance, feed in tariffs should be replaced by feed in premiums and other support instruments that incentivise producers to respond to market developments*.[68]

[66] Government of Ireland, Terms and Conditions for the First Competition of the Small scale Renewable Electricity Support Scheme (December 2024) terms-and-conditions-for-the-first-competition-of-sress1.pdf
[67] https://ec.europa.eu/energy/topics/renewable-energy/support-schemes_en
[68] *Ibid*

The latest information from the DfE suggests that Northern Ireland will follow a similar market-based approach for larger scale installations. In February 2023, the Department published a consultation on the design of a Renewable Energy Support Scheme for Northern Ireland. In April 2024, the DfE published its response to the consultation – "Design considerations for a renewable electricity Support Scheme for Northern Ireland".[69] In the response document, the DfE noted support for the following among respondents:

- A CfD Scheme was the preferred approach.
- The Scheme should support installations with capacities of between 0.5MW and 5MW. With auctions running every one to two years, and support provided through a 15 to 20-year contract.
- Incentivisation should be tailored to technology and should encourage the diversification of Northern Ireland's renewable generation mix.
- A grant of planning permission and a grid connection offer should be a condition of eligibility.[70]

Respondents also noted that the cost of funding the Scheme would likely be passed on to consumers, but also added:

> *…communities hosting renewable projects should reap benefits from their contribution to carbon neutral electricity generation that benefits all of Northern Ireland.*[71]

As noted in sub-section 3.1, consumers in Great Britain cover the costs of the CfD Scheme there. Consumers in Northern Ireland previously covered the costs of the NIRO Scheme. Whilst the NIRO closed to new applicants in 2017:

> *projects already accredited with the scheme will continue to receive ROCs for 20 years from the accreditation date or until 31 March 2037, whichever is earlier.*[72]

[69] Department for the Economy Design considerations for a renewable electricity support scheme for Northern Ireland: response | Department for the Economy (9 April 2024)
[70] As cited immediately above
[71] As cited in footnote 69
[72] Department for the Economy Northern Ireland Renewables Obligation | Department for the Economy (accessed 12 June 2024)

This means that Northern Ireland consumers continue to fund the NIRO Scheme through their electricity bills. An October 2020 report by the Northern Ireland Audit Office (NIAO) found that the cost to the average domestic electricity consumer in Northern Ireland to fund Renewable Support Schemes was £31 per year in 2019 – which was equivalent to 5% of the average total electricity bill in that year.[73]

Against this backdrop, it is worth noting that the recent Fuel Poverty Strategy consultation published by the Department of Communities estimated that 27% of Northern Ireland households are living in fuel poverty.[74] This raises the question of how the costs of supporting renewable electricity development can be socialised, whilst also protecting vulnerable consumers.

Potential scrutiny points:

4. How will the DfE ensure vulnerable customers are protected during the transition to renewables?

5. Has the DfE carried out any assessment of the potential impact on consumers of the proposed Energy Support Scheme in Northern Ireland?

The most recent update from the Minister for the Economy in response to a Written Assembly Question on 11 April 2025 stated:

> *I plan to bring primary legislation before the Assembly this year, with subordinate regulations to follow as we move towards implementation. The upcoming publication on the final scheme design will provide a full update including eligibility criteria, delivery roles and responsibilities and an outline of the contract allocation process.*[75]

As noted in sub-section 1.2. above, a consultation on the terms and conditions of an Energy Support Scheme to enable a first auction in 2026, was one of the

[73] Generating electricity from renewable energy (HTML) | Northern Ireland Audit Office
[74] Department for Communities Consultation on a draft fuel Poverty Strategy (December 2024)
[75] Northern Ireland Assembly Witten Questions, AQW 2597/22-27 (11 April 2025) AIMS Portal

actions to taken forward in the Department's Energy Strategy Action Plan 2025 published in March 2025.[76] The Action Plan also notes that the Department aims to publish the final design in Quarter 2 2025 and to consult on the terms and conditions in Quarter 3.[77]

Potential scrutiny point:

6. When will the DfE introduced energy Support Scheme legislation into the Northern Ireland Assembly?

The 2023 consultation on the design of a Renewable Energy Support Scheme for Northern Ireland asked respondents for the opinions on the following question:

> *Do you agree that incentivising small-scale and microgeneration would not make a substantial contribution to reaching the Energy Strategy targets?*[78]

In the their response document, the DfE noted that:

> *Respondents generally agreed that microgeneration could continue to make a substantial contribution to reaching the Climate Change Act (Northern Ireland) 2022 targets. However, there was broad consensus that a dedicated support scheme would be necessary to efficiently support microgeneration.*[79]

The Department's Energy Strategy Action Plan 2025 did not include plans to take forward a microgeneration support scheme in 2025. Earlier, in 2024, when asked about the support for microgeneration the then Minister for the Economy noted:

[76] Department for the Economy Archibald publishes Energy Strategy Action Plan 2025 - March 2025 | Department for the Economy
[77] Department for the Economy Energy Strategy - The Path to Net Zero Energy - Action Plan 2025 (March 2025)
[78] As cited immediately above
[79] Northern Ireland Assembly, Assembly Written Questions, AQW 1336/22-27 (17 June 2024) AIMS Portal

- The Energy Efficiency Capital Grant Scheme launched by the DfE and Invest Northern Ireland in April 2024 provided grant funding to businesses to invest in energy saving technology, including microgeneration.
- The Windsor Framework enabled the extension of Value Added Tax relief for energy saving materials to Northern Ireland, enabling the application zero rates of VAT to installation of the energy-saving materials such as sola panels in Northern Ireland.
- Power NI offers a Utility Regulator approved microgeneration export which "offers current micro-generation".[80]

The then Minister also stated:

> *Further options for microgeneration support, including domestic renewable energy generation, will be continue to be evaluated as part of our net zero ambitions.*[81]

Potential scrutiny point:

7. Has the DfE given any further consideration to a small-scale or microgeneration support scheme for Northern Ireland?

4 Barriers to renewable electricity development

Three recent reports have highlighted some of the issues facing renewable electricity developers in Northern Ireland. Those reports are the Northern Ireland Assembly Committee for the Economy's 2020 report "Energy Strategy Micro Inquiry",[82] a 2022 Northern Ireland Audit Office (NIAO) review of the planning system[83], and Renewables Northern Ireland's 2023 report

[80] AIMS Portal
[81] AIMS Portal
[82] Committee for the Economy, Energy Strategy Micro Inquiry (23 November 2020)
[83] NIAO, Planning in Northern Ireland (February 2022)

"Accelerating Renewables in Northern Ireland".[84] This section provides a short overview of each report's findings.

4.1 Energy Strategy Micro Inquiry

In November 2020, the Committee for the Economy conducted a "Micro Inquiry" that sought stakeholder views on "what they wanted to see in the Energy Strategy" that DfE was developing at the time. Although renewable electricity was not the focus of that Micro Inquiry, the responses received from stakeholders did identify some barriers to the development of renewables in Northern Ireland.

In particular, respondents noted barriers emerging from grid infrastructure, planning and support. In those areas, respondents identified the following "needs":

- **grid investment** to facilitate renewable development and to encourage low-carbon investment in Northern Ireland
- **grid connections** to enable small-scale renewable generation
- **planning policies and processes** to deliver strategic and timely decisions to build investor confidence in grid capacity.
- **planning** to facilitate more efficient, co-ordinated, and strategically aligned to deliver government policy and involve more local community engagement and involvement
- **planning policy** to support consistency in renewable electricity generation and grid infrastructure at all levels and across all locations
- **proactive Departmental action** to ensure that the Department for Infrastructure Local Development Plans and strategies are consistent with regional planning policies

[84] Renewable Northern Ireland, Accelerating Renewables Report (September 2023)

- **a Northern Ireland support scheme[85] or equivalent** to provide support for developers as that available to developers in Great Britain and the Republic of Ireland.[86]

4.2 NIAO – Planning in Northern Ireland

The NIAO conducted a review of the planning system in 2022. It highlighted a number of issues in Northern Ireland's planning system. Examples are listed below. Though not specific to renewable energy, the issues identified by the NIAO instead are relevant to this Paper, as they concern the planning system in general, which applies to renewable energy:[87]

- The delay in decision making, especially most major applications' failure to meet statutory decision-making targets. In fact, it appears that the planning system in Northern Ireland is slower than in other jurisdictions.[88]
- A financially unstable system - where the income generated from planning - does not cover the full cost of service delivery.
- Submission of poor quality applications, often without the correct supporting documentation, slow down the planning approval process.
- There is a need for improved joined-up working between all organisations responsible for the delivery of planning, including departments, councils and statutory consultees.
- Expert advice from statutory consultees is often not sent in time, especially for major applications.
- A "plan-led" system without the plans is problematic. Local Development Plans (LDPs) were to be produced within three and a half years, but six years later they are still not complete. Also, councils highlighted that the current LDP process is too slow to respond to rapidly evolving issues such as climate change, energy and public health.

[85] Renewable generation was previously supported under the Northern Ireland Renewable Obligation scheme. This closed to new wind application on 1 July 2016, and to all to other technologies on 1 April 2017
[86] Committee for the Economy, Energy Strategy Micro Inquiry (23 November 2020)
[87] NI Audit Office, Planning in Northern Ireland (2022)
[88] As cited immediately above, p.28

- The planning system faces challenges in effectively managing applications which have the potential to have a significant impact on the environment. Environmental assessments required for individual applications are often complex and time-consuming.[89]

4.3 Accelerating Renewables in Northern Ireland

Renewables Northern Ireland is an industry body for renewable developers in Northern Ireland. In November 2023, the body published "Accelerating Renewables in Northern Ireland"; a report that also drew on stakeholder experiences of renewable development. Its findings mirrored those of the earlier noted Committee for the Economy's Micro Inquiry, in which stakeholders identified "points of failure" in the grid, the planning system and the route to market.

The report found that Northern Ireland's points of failure had caused renewable development to lag behind Great Britain and the Republic of Ireland. The report identified a range challenges in each area. For example, with regard to the grid, the report identified the following challenges:

- a lack of investment over the previous ten years had led to increased renewable energy placing increased pressure on the gird
- constraint and curtailment issues were preventing viable renewable energy from being used to its full potential
- a shortage of the skills needed to deliver grid development
- an "evidence-based approach to investment" as opposed to an "anticipatory" approach had prevented "ahead of time" grid development
- unlike Great Britain, where planning and grid applications take place concurrently, the requirement for planning permission to be secured prior to a grid application had resulted in "timeline issues" in Northern Ireland
- prohibitive grid connection costs and timelines making renewable projects economically unviable.[90]

[89] NIAO, Planning in Northern Ireland (2022) p.25
[90] Renewable Northern Ireland, Accelerating Renewables Report (September 2023)

With regard to planning, the challenges listed were:

- the length of time to reach decisions and a lack of clarity
- a lack of consistency across councils
- over consultation, leading to delays
- the variable quality of planning applications, particularly among small-scale projects
- under resourced planning departments due to budget constraints
- renewable energy knowledge gaps across departments.[91]

With regard to route to market, such challenges included:

- the absence of a Northern Ireland renewable support scheme
- no definitive timeline on a new support scheme
- a lack of government at the time of writing of the report.[92]

5 Actions to tackle barriers

As noted in sub-section 3, the DfE has been developing an Renewable Energy Support Scheme for Northern Ireland, which seeks to address one of the barriers identified in Section 4 above. Action is also ongoing in other areas, particularly in planning and grid development.

5.1 Grid

To support the implementation of the Energy Strategy and to facilitate progress towards Northern Ireland's Renewable Electricity Target, the System Operator for Northern Ireland (SONI) has published a "Transmission Development Plan for Northern Ireland 2023 to 2032" (the Development Plan). A draft of that Plan underwent consultation in 2023; followed by further Utility Regulator-led consultation in 2024, before its publication and adoption in January 2025. [93]

[91] Renewable Northern Ireland, Accelerating Renewables Report (September 2023)
[92] As cited immediately above
[93] SONI, Transmission Development Plan for Northern Ireland | SONI

It sets out a £630 million investment project over ten years, which includes "several essential upgrades to the electricity network", including:

- modernising parts of the grid in Greater Belfast
- upgrading the transmission system in County Antrim
- strengthening the grid in the North West and Mid Tyrone
- bolstering interconnection with Great Britain and Republic of Ireland by increasing the capacity of the Moyle Interconnector and constructing a new North-South Interconnector.[94]

In June 2023, the DfE and the Utility Regulator issued a joint Call for Evidence in relation to "A Review of the Connections Policy Framework in Northern Ireland". This Call sought stakeholder views on "potential changes to the current connections policy framework in Northern Ireland and the costs and benefits of those potential". Among the options considered in the documents was a potential "move to a policy framework that would place a greater proportion of connection costs on business and domestic consumers via their electricity bills", which would "mean a lower proportion of costs are paid by the connecting party".

The Call for Evidence closed on 6 October 2023. It received 40 responses from stakeholders. In a cover letter that accompanied the publication of the non-confidential response to the Call, the DfE and the Utility Regulator noted that:

> *Most stakeholders (mainly generators) have expressed a favourable inclination towards transitioning to a shallower connection charges policy. A smaller, but significant segment of respondents (mainly 3rd party/consumer representatives) raised concerns regarding the potential short-term financial burdens of shallow connection charges on the fuel poor and other vulnerable groups.*[95]

[94] As cited immediately above
[95] 202406 Joint Connections Update CfE resposnes final v3_3.pdf

This again raises the question, previously raised in sub-section 3.3 above – that is, how the transition to greater levels of renewable generation could be managed, while also protecting vulnerable consumers.

Potential scrutiny point:

8. How will the DfE protect vulnerable consumers from the impact of the proposed changes to Connection Policy?

A subsequent consultation on the socialisation of connection charges in Northern Ireland was published by the DfE in January 2025. It closed in April 2025, with a Consultation Response expected on 16 June 2025.[96]

5.2 Planning

In April 2023, the DfI launched the "Review of Regional Planning Policy on Renewable and Low Carbon Energy – Public Consultation". The aim of that consultation was to ensure Renewable Strategic Planning Policy was "fit for purpose and up-to-date to inform decision-making in relation to development proposals". The consultation proposes a planning policy based on the following strategic objectives:

- ensuring renewable development is facilitated at appropriate locations to maximise deployment
- securing an appropriate mix of renewable energy
- ensuring that environmental, landscape, visual, safety and amenity impacts are adequately addressed
- ensuring adequate protection of Northern Ireland's built, natural and cultural heritage
- facilitating the integration of renewable and low carbon energy technology into the design, siting and layout of new development

[96] Increased socialisation of connection costs in the distribution electricity network - NI Direct - Citizen Space

- enabling energy from offshore renewable and low carbon energy developments to be appropriately connected to onshore networks.[97]

The DfI's consultation closed on 20 June 2023. No further updates on the policy's development could be found at the time of writing.[98]

Potential scrutiny point:

9. When will the DfI publish its response to the "Review of Regional Planning Policy on Renewable and Low Carbon Energy – Public Consultation"?

6 The economic impact of the low carbon electricity sector in the United Kingdom

As noted in sub-section 1.2, above, the DfE's Energy Strategy and subsequent Economic Vision linked renewable energy with economic growth. This section provides an overview of the economic impact of Northern Ireland's low carbon economy and renewable economy. It also compares the performance of the sector in Northern Ireland with the rest of the United Kingdom. To do so, the section relies on the Office of National Statistics' (ONS') "Low carbon and renewable energy economy estimates". The latest version of the ONS data was published in 2024 and cover the years 2014 to 2022.[99]

The ONS dataset examines the broad impact of the low carbon and renewables sector. Within the context of the dataset, the low carbon and renewable economy is defined as including:

[97] Department for Infrastructure, Review of Regional Planning Policy on Renewable and Low Carbon Energy – Public Consultation (April 2023)
[98] A consultation report could not be located during a search of DfI consultation reports at the time of writing Publications | Department for Infrastructure
[99] Low carbon and renewable energy economy, UK - Office for National Statistics

- Low carbon electricity, which includes the sectors of offshore wind, onshore wind, solar, hydropower, other renewable electricity, carbon capture and storage and nuclear power.
- Low carbon heat, which includes the sectors of renewable heat and renewable combined heat and power.
- Energy from waste and biomass, which includes the sectors of bioenergy and alternative fuels.
- Energy efficient products, which includes the sectors of energy efficient lighting, energy efficient products and energy monitoring, saving or control systems.
- Low carbon services, which includes the sector of low carbon consultancy, advisory and offsetting services.
- Low emission vehicles and infrastructure, which includes the sectors of low emission vehicles and infrastructure, and fuel cells and energy storage systems.[100]

This sub-section presents data for the “low carbon electricity sector” (LCE). Equivalent data for the broader Low Carbon and Renewable Energy sector can be found in Appendix 2 at the end of this Paper.

6.1 Number of businesses in the LCE

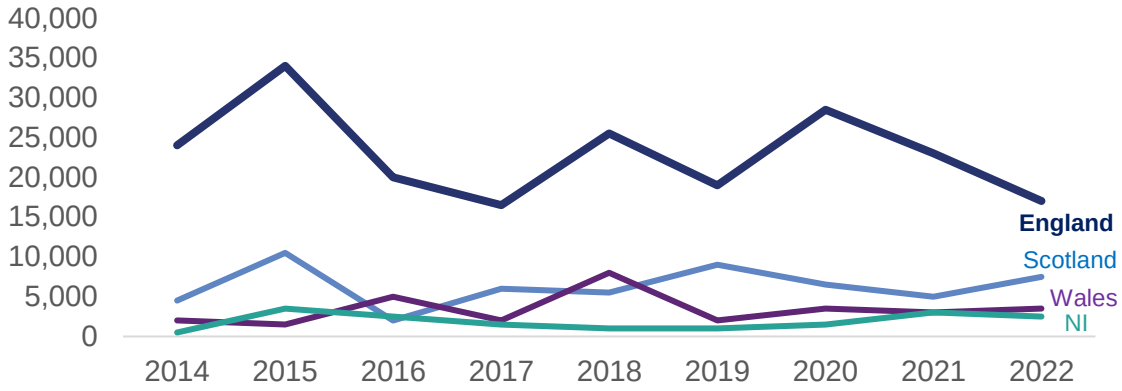
Figure 4 shows changes in the number of businesses found in the LCE between 2014 and 2022, across England, Scotland, Wales and Northern Ireland. As can be seen from the Figure, Northern Ireland had the fewest such businesses for each year. It further shows that number of businesses fluctuated year-on-year across all jurisdictions. Moreover, all the devolved regions saw growth in the number of LCE businesses in this period, with Northern Ireland growing by the largest proportion; and the number of LCE businesses in England fell overall. The data for each region were::

- England decreased from 28,500 in 2014, to 17,000 in 2022 – a decrease of 41%

[100] Low carbon and renewable energy economy, UK - Office for National Statistics

- Scotland increased from 4,500, to 7,500 – an increase of 67%
- Wales increased from 2,000, to 3,500 - an increase of 75%
- Northern Ireland increased from 500, to 2,500 - an increase of 400%

Figure 4: Changes in the number of LCE businesses in the United Kingdom regions 2014 to 2022[101]

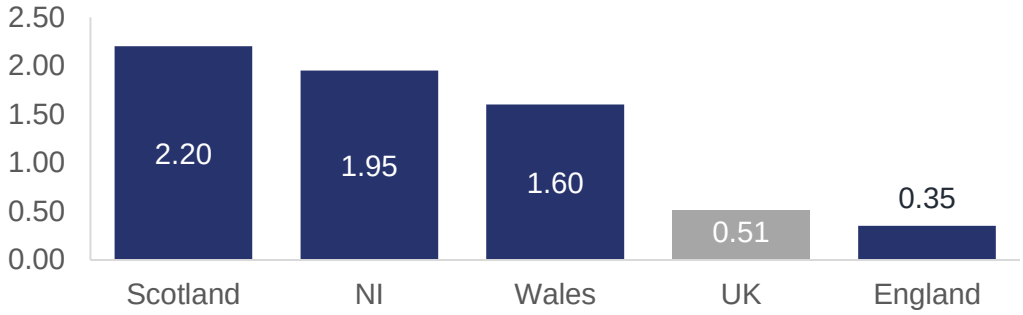


Source: ONS (2024)

To account for the different sized economies in each region, Figure 5 shows the number LCE business in each region as a proportion of all private sector businesses in that region in 2022.[102] As can be seen from the Figure, Northern Ireland had the second largest proportion of LCE businesses (1.95%) after Scotland (2.20%). The Northern Ireland proportion was also higher than the proportion of LCE businesses in the United Kingdom as a whole (0.51%):

[101] Low carbon and renewable energy economy, UK - Office for National Statistics
[102] Proportions rely on business numbers from Department for Business, Energy and Industrial Strategy's Business population estimates 2022 Business population estimates 2022 - GOV.UK

Figure 5: The proportion of total businesses accounted for by LCE businesses in the United Kingdom and constituent regions 2022 (%)



Source: ONS (2024) and BEIS (2022)

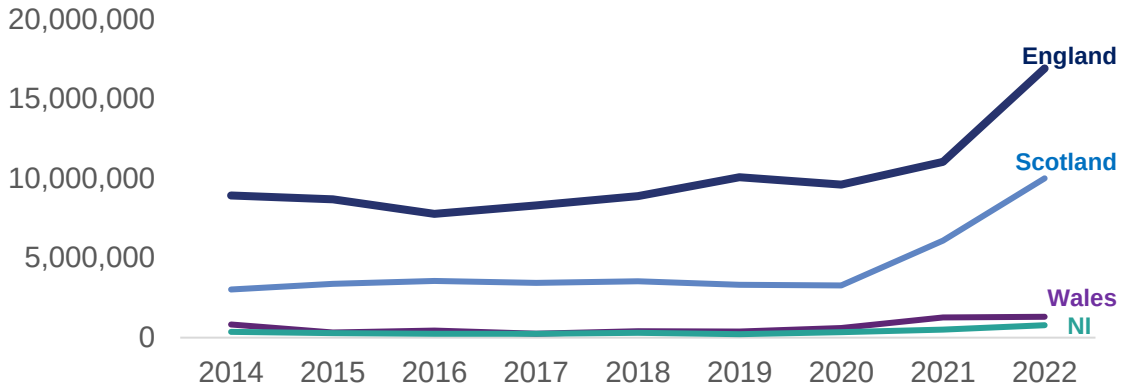
6.2 Turnover of the LCE sector

Figure 6 below shows changes in the turnover of LCE businesses in the United Kingdom regions over the period 2014 to 2022. As can be seen from the Figure, Northern Ireland's LCE businesses had the lowest turnover of the United Kingdom regions. Despite fluctuations, all regions' LCE businesses saw growth over the period 2014 to 2022:

- England increased from £8.94 billion in 2014 to £16.91 billion in 2022 – an increase of 89%
- Scotland increased from £3.03 billion to £10.01 billion – an increase of 230%
- Wales increased from £0.83 billion to £1.31 billion - an increase of 58%
- Northern Ireland increased from £0.37 billion to £0.78 billion - an increase of 111%

As noted in sub-section 2.2, above, the current Northern Ireland Energy Strategy includes a target to increase the turnover of the low carbon and renewables sector to over £2 billion by 2030. It is worth noting that as of 2022, the turnover of Northern Ireland's entire Low Carbon and Renewable sector (as defined in the introduction of this section) was £1.6 billion increases. Based on this data, the sectors turnover would need to increase by 25% to meet the 2030 target.

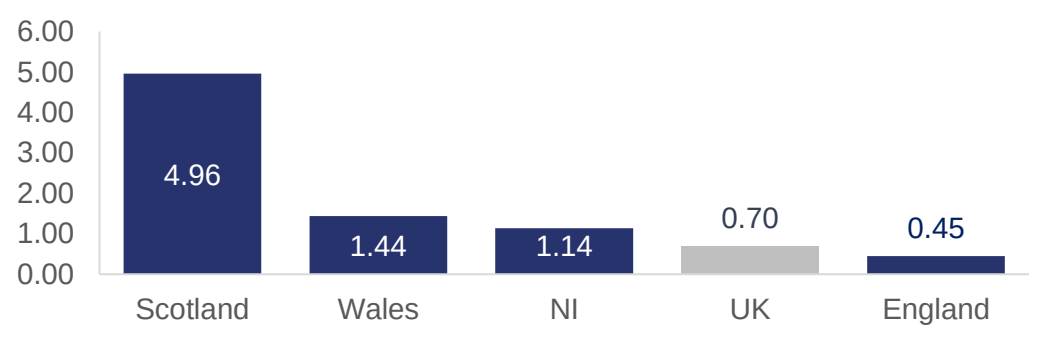
Figure 6: Changes in turnover (£000s) of LCE businesses in the United Kingdom regions 2014 to 2022



Source: ONS (2024)

To account for the different sized economies across the United Kingdom, Figure 7 below shows the proportion of total turnover accounted for by LCE businesses in the United Kingdom and its constituent regions in 2022.[103] The Figure shows that Northern Ireland's LCE businesses accounted for the third highest proportion of turnover (1.14%), after Scotland (4.96%) and Wales (1.44%). The proportion of LCE turnover in Northern Ireland was higher than the United Kingdom as a whole (0.70%).

Figure 7: The proportion of total turnover accounted for by LCE businesses in the United Kingdom and constituent regions 2022 (%)



Source: ONS (2024) and BEIS (2022)

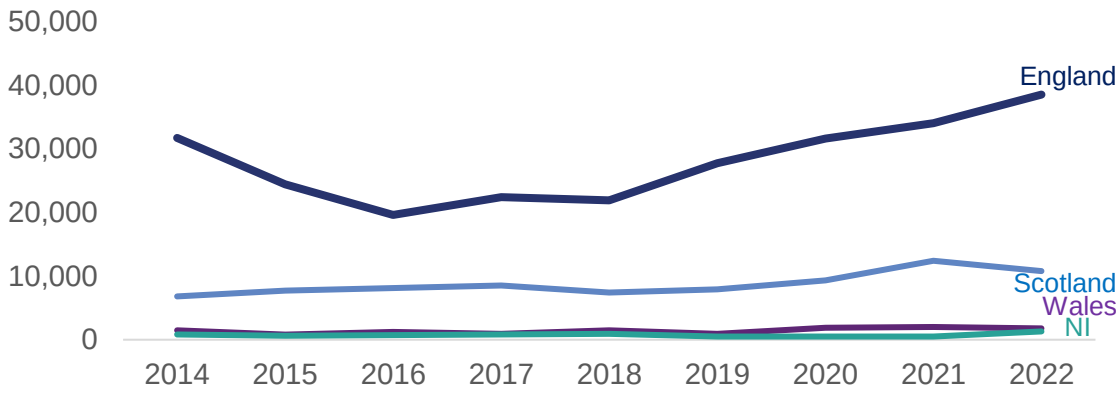
[103] Proportions rely on turnover figures from Department for Business, Energy and Industrial Strategy's Business population estimates 2022 Business population estimates 2022 - GOV.UK

6.3 Employment

Figure 8 below shows changes in full-time equivalent (FTE) employment in LCE sector across the United Kingdom regions over the period 2014 to 2022. The Figure shows Northern Ireland's LCE sector had the lowest FTE employment. Total sectoral FTE employment fell in Northern Ireland between 2014 and 2023. All regions, excluding Northern Ireland, saw an increase in LCE FTE employment over the period:

- England increased from 196,100 in 2014 to 272,400 in 2022 – an increase of 40%
- Scotland increased from 23,200 to 24,700 – an increase of 7%
- Wales increased from 10,000 to 11,000 - an increase of 10%
- Northern Ireland fell from 6,600 to 5,200 – a decrease of 21%

Figure 8: Changes in Employment (FTE) in the LCE sector in the United Kingdom regions 2014 to 2022



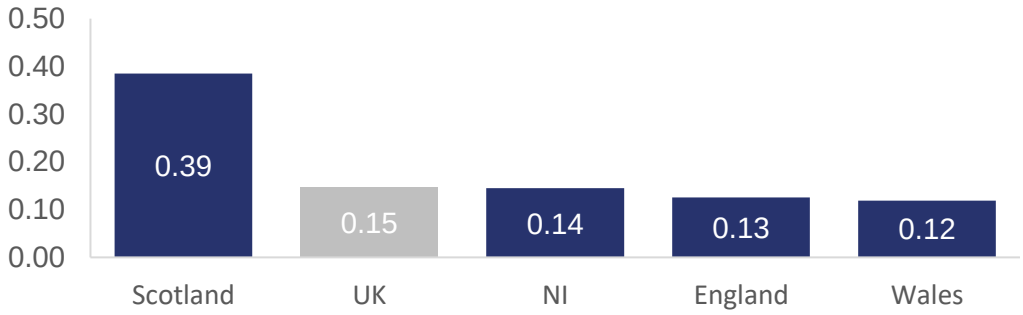
Source: ONS (2024)

To account for the different sized economies across the United Kingdom, Figure 9 below shows FTE employment in the LCE sector as a proportion of the total number of workforce jobs (seasonally adjusted) in the United Kingdom and each region as of June 2022.[104] Figure 8 shows that Northern Ireland FTE

[104] Proportion of jobs calculated using the total workforce jobs from ONS 13 December 2022 update of its Workforce jobs by region and industry estimates JOBS05: Workforce jobs by region and industry - Office for National Statistics

employment in the LCE sector was the second highest proportion (0.14%) of total workforce jobs of the United Kingdom regions in 2022 after Scotland (0.39%). This was, however, below the United Kingdom total (0.15%):

Figure 9: LCE FTE Employment 2022 as a proportion of total workforce jobs in the United Kingdom and constituent regions June 2022 (%)



Source: ONS (2024) and ONE (2022)

7 Concluding remarks

This Research Paper provides an introduction to renewable electricity in general in the United Kingdom, including a closer look at Northern Ireland. The Paper has shown the following:

- Renewable electricity generation has grown globally since 2010. It has also grown across the United Kingdom and Northern Ireland. Onshore wind energy is the most prevalent form of renewable generation globally and in both the United Kingdom, and in Northern Ireland in particular.
- The cost of renewable generation has fallen for most technology types over the same period. Most technologies have also seen efficiency improvements.
- Current renewable generation policy in Northern Ireland is driven by the Northern Ireland Energy Strategy – Path to Net Zero Energy: 2021 to 2030. Key targets are to achieve 80% of consumption from renewable source by 2030 and to increase the turnover of the Low Carbon and Renewable Energy sector to £2 billion by the same year.

- Northern Ireland hit its previous 40% renewable electricity target in December 2018. As of December 2024, renewable generation powered 43.5% of electricity consumption. The pace of progress has slowed since reaching the 40% target in December 2018. This in part can be attributed to a lack of support mechanism in this period.
- Great Britain and Republic of Ireland have adopted a CfD model to support large-scale renewable generation. This reflects a move toward market-based solutions across Europe. Both regions also support small-scale renewable generation.
- In the United Kingdom, a newly formed public energy company – Great British Energy – will support investment in renewable energy and supply chains across the United Kingdom.
- The DfE has proposed legislation for a Renewable Support Scheme for Northern Ireland. Such legislation is due in 2025, with the first auctions anticipated to be held in 2026.
- No plans for Small-Scale or Microgeneration Support have been identified for Northern Ireland. In 2024, the Minster for the Economy stated that that options for such Support would be evaluated as part of the Department's "Net Zero Ambitions".
- Stakeholders informing the DfE have also identified barriers to renewable electricity development in the gird, grid connection policy and planning.
- The System Operator for Northern Ireland has published its Grid Investment Strategy. That Strategy sets out grid investment plans up to 2032, which will enable further renewable electricity development. Separately, the DfE has proposed changes to grid connection policy if taken forward this will transfer some of the cost for grid from generators t consumers and businesses. A consultation on this closed in April 2025, with a Consultation Response expected on 16 June 2025.
- The costs of the proposed changes to Renewable Support, Grid Investment and Connections Policy are likely to be passed onto

consumers through their electricity bills. This raises a question of how vulnerable consumers could be protected.

- DfI have consulted on changes to the planning system. The outcome of that consultation, however, is currently unclear.
- The number of businesses in Northern Ireland's Low Carbon Electricity sector grew between 2014 and 2022. Turnover in the sector also increased over this period; while employment decreased.

Appendix 1: Units used to measure power

Power refers to the rate at which energy is transferred, used, or converted from one form to another (power = energy/time). It can be used to measure how much energy a device needs to operate satisfactorily. In the case of electricity generation, it is used to measure the rate at which coal, gas, oil, wind, or sun etc. is converted into electricity.

The basic unit of power when referring to electricity is the Watt. There are a number of terms used to describe multiples of watts:

- 1000 Watts = 1 kilowatt (kW);
- 1000 Kilowatts = 1 Megawatt (MW);
- 1000 Megawatts = 1 Gigawatt (GW); and,
- 1000 Giga Watts = 1 Tera Watt (TW).

The amount of energy created or consumed is typically measured in kilowatt hours. It measures power over time (energy = power x time). It is used, for example, to measure and bill consumers for the amount of electrical energy delivered to their home.

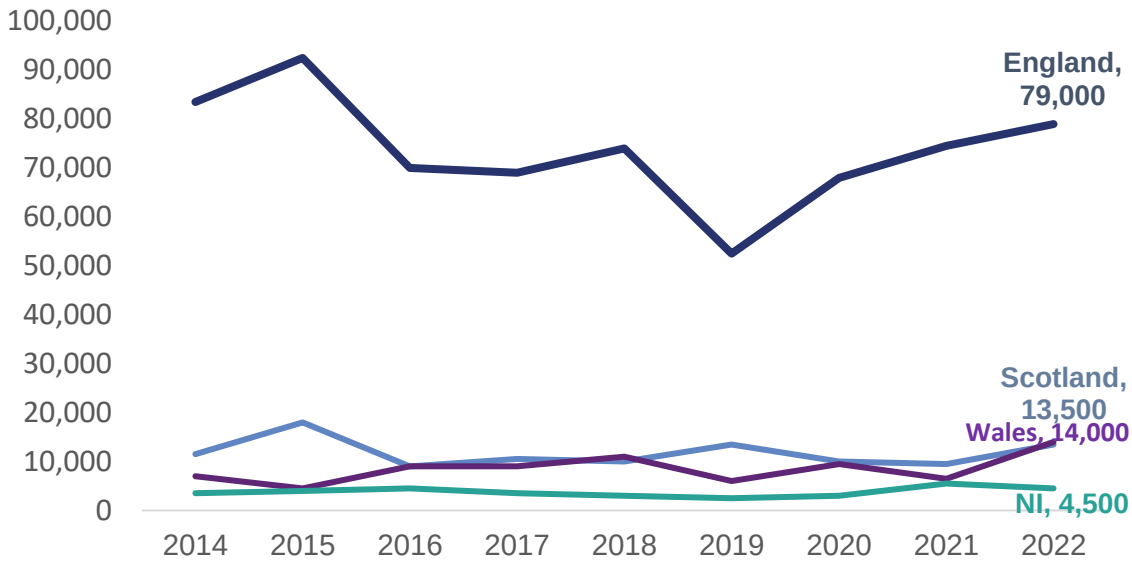
A 1kW system will consume or produce 1 kilowatt hour of energy in 1 hour. A 10 kilowatt system will produce or consume 1kilowatt hour in six minutes.

There are a number of common multiples:

- 1000 Watts or 1 kilowatt for 1 hour = 1 kilowatt hour (kWh);
- 1000 Kilowatt hours = 1 Megawatt hour (MWh);
- 1000 Megawatt hours = 1 Gigawatt hour (GWh); and
- 1000 Gigawatt hours = 1 Terawatt hour (TWh).

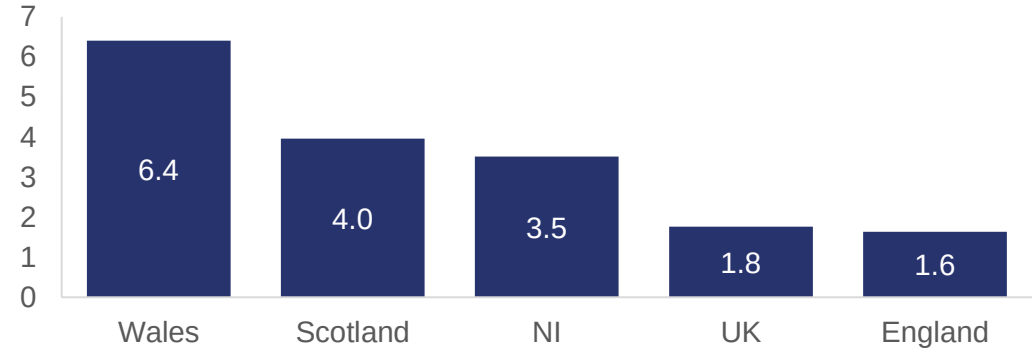
Appendix 2: Number of businesses, turnover and FTE employees in the United Kingdom's Low Carbon and Renewable Energy Sector 2014 to 2022

Figure 10: Changes in the number of LCRE businesses in the United Kingdom regions 2014 to 2022



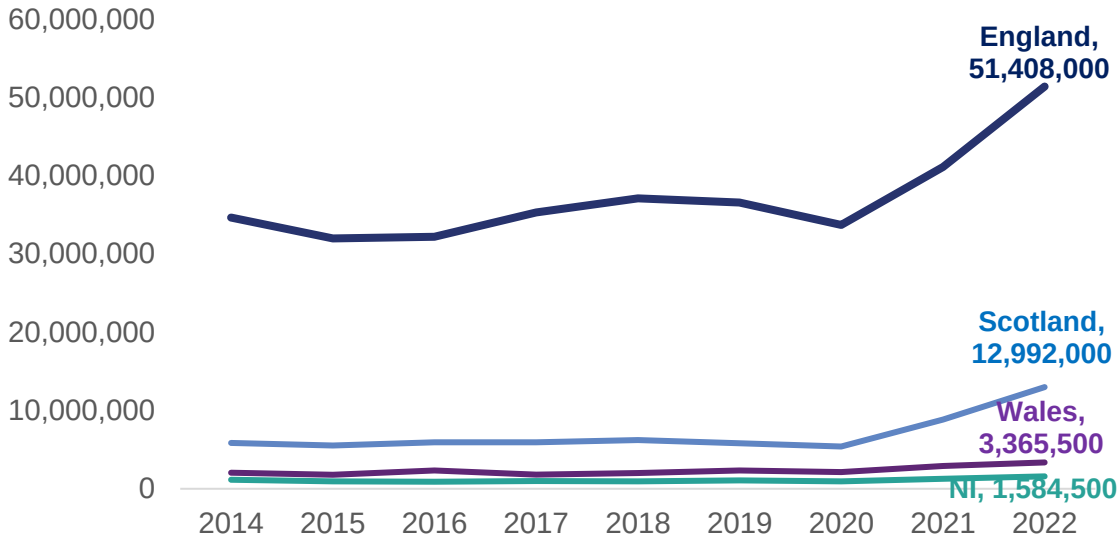
Source: ONS (2024)

Figure 11: The proportion of total businesses accounted for by LCRE businesses in the United Kingdom and constituent regions 2022 (%)



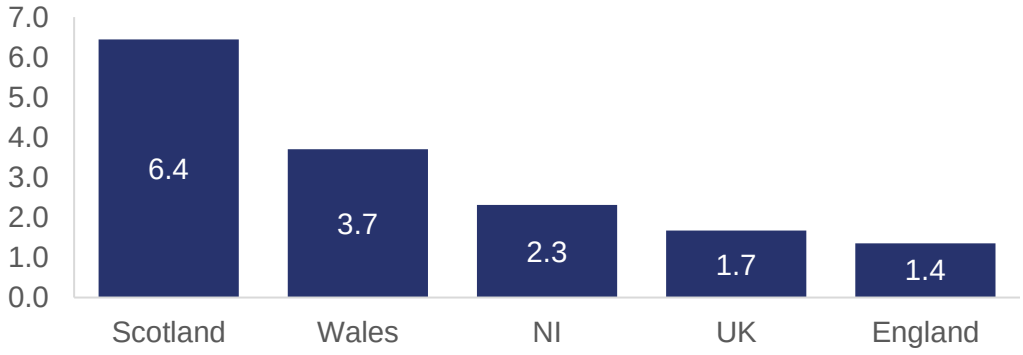
Source: ONS (2024) and BEIS (2022)

Figure 12: Changes in turnover (£000s) of LCRE businesses in the United Kingdom regions 2014 to 2022



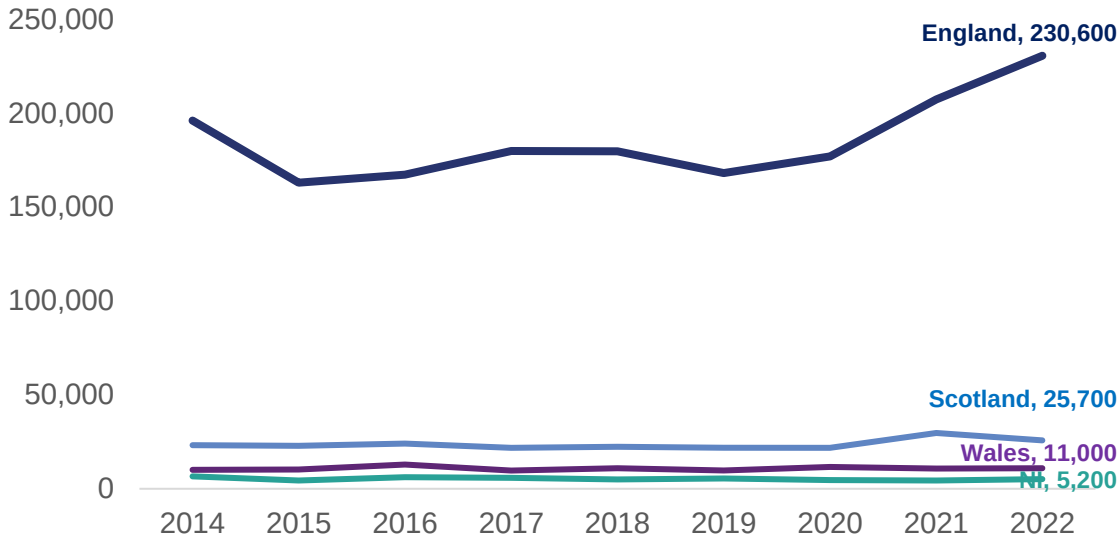
Source: ONS (2024)

Figure 13: The proportion of total turnover accounted for by LCRE businesses in the United Kingdom and constituent regions 2022 (%)



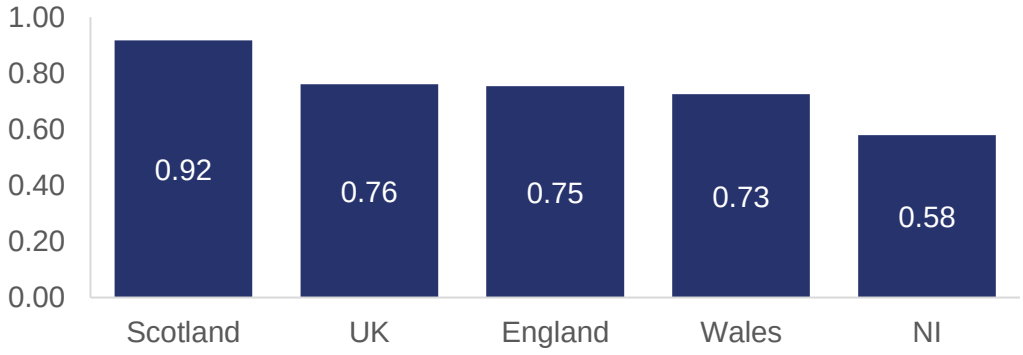
Source: ONS (2024) and BEIS (2022)

Figure 14: Changes in Employment (FTE) in the LCRE sector in the United Kingdom regions 2014 to 2022



Source: ONS (2024)

Figure 15: LCRE FTE Employment 2022 as a proportion of total workforce jobs in the United Kingdom and constituent regions June 2022 (%)



Source: ONS (2024) and ONE (2022)