

19 CLIMATE

19.1 INTRODUCTION

This chapter assesses the likely significant direct and indirect effects of the Project (**Figure 1.2**) on climate. The Project refers to all elements of the application for the construction of Carrigeen Renewable Energy Development (**Chapter 2: Project Description**). Where negative effects are predicted, the chapter identifies appropriate mitigation strategies therein. The assessment considers the potential effects during the following phases of the Project:

- Construction of the Project
- Operation of the Project
- Decommissioning of the Project

Common acronyms used throughout this Environmental Impact Assessment Report (EIAR) can be found in **Appendix 1.4**. This chapter of the EIAR is supported by Figures provided in Volume III and by the following Appendix documents provided in Volume IV of this EIAR:

- **Appendix 19.1 Scottish Government – Carbon Calculator Input and Output Data**

19.1.1 Statement of Authority

Jennings O'Donovan & Partners Ltd. (JOD) have extensive experience in all aspects of wind farm development, from design and planning stages through to construction. JOD have been active as engineering consultants in the wind energy market in Ireland since 1998 and have completed numerous wind farm projects, varying from single wind turbine installations to large-scale, multi-turbine developments with a total of over 2,000 MW generation capacity.

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Kathlyn Feeney is Graduate Environmental Scientist with a First-Class Honours Degree (BSc. Hons) in Environmental Science. She forms part of the Environmental team responsible for preparing the EIAR Chapters. Kathlyn has one year's experience writing EIARs, Feasibility Studies, Screening Reports, and Appropriate Assessments for Wind Farms.

Ciara Gilligan is a Senior Environmental Scientist at JOD with over 9 years of experience in environmental consultancy. She holds a BSc (Hons) in Earth and Ocean Sciences from the University of Galway and recently completed a micro-credential course in Environmental Impact Assessment of Marine Renewable Energy Developments at the same university. Ciara has worked extensively on planning applications for large-scale infrastructure projects across Ireland and the UK, including renewable energy, interconnectors, and water/wastewater schemes. Her expertise includes the preparation of Environmental Impact Assessments, Ecological Impact Assessments and Appropriate Assessments.

The chapter has been reviewed by Ms. Sarah Moore. Sarah Moore is an Environmental Scientist in JOD with over 17 years of environmental consultancy experience. She has obtained a MSc in Environmental Engineering from Queens University, Belfast, and a BSc in Environmental Science from University of Limerick. Since joining JOD, Sarah has been involved as a Project Environmental Scientist on a range of renewable energy, wastewater, structures and commercial projects. She has experience in the preparation of Appropriate Assessments, Ecological Impact Assessments, Environmental Impact Assessments, Shadow Flicker analysis and Geographic Information Systems.

19.1.2 Background and Objectives

The factors that indicate climate change are well established in Ireland, with increased average air temperatures, sea level rises, changes in precipitation patterns, more frequent extreme weather events, and changes in plant and animal species distribution.

In 2005, greenhouse gas emissions data estimated that Ireland was 25.4% above 1990 levels (the base year for Kyoto targets). Emissions data from 2007 show that Ireland was 24.6% above the level for 1990. By 2013, total emission levels in Ireland had dropped back almost to 1990 levels, largely as a result of the economic downturn, with indications that individual households had reduced their emissions (EPA, 2014)¹. However latest greenhouse gas emissions projections from the Environmental Protection Agency (EPA)

¹ Environmental Protection Agency, (2014). Air Quality in Ireland 2014 - Key Indicators of Ambient Air Quality. Available at: <https://www.epa.ie/publications/monitoring--assessment/air/air-quality-in-ireland-2014.php> [Accessed 27th February 2026].

indicate an overall increase in greenhouse gas emissions from most sectors². The projected growth in emissions is largely underpinned by projected strong economic growth and relatively low fuel prices leading to increasing energy demand over the period³. The EU Commission has also imposed targets on Ireland's emissions. Ireland's target is to reduce Effort Sharing Regulation (ESR) emissions by 42% by 2030 compared with 2005 levels, with a number of flexibilities available to assist in achieving this. This value is the national total emissions less emissions generated by stationary combustion and aviation operators that are within the EU's emissions trading scheme. The EPA 2025 emission projections show that greenhouse gas emissions will be reduced by 10 to 22 per cent by 2030 (compared to 2005) without the use of flexibilities and by 13 to 26 per cent with the use of flexibilities. Ireland ESR emissions annual limit for 2024 was 38.7 Mt CO₂eq, which was exceeded by 1.8 Mt CO₂eq after using the ETS flexibility⁴. This shows that Ireland was not compliant with its 2024 Effort Sharing Regulation annual limit and are predicted to be below the 2030 reduction of 42% compared with 2005 levels.

This chapter assesses the following as per the EIA Directive:

- The climatic environment of the area of the Project and the potential effects on climate through greenhouse gas (GHG) emissions during the construction, operation and decommissioning phases of the Project. This assessment includes mitigation measures, residual effects and cumulative impacts of the Project.

19.1.3 Relevant Legislation and Guidance

The assessment has been prepared in accordance with the relevant legislation and having regard to the relevant guidance listed below:

- The Ambient Air Quality and Cleaner air for Europe (recast) Directive 2024/2881⁵
- The Clean Air for Europe (CAFE) Directive⁶, as amended by Commission Directive (EU) 2015/1480, as amended (the “**CAFE Directive**”)
- The Ambient Air Quality Standard Regulations 2022⁷ (S.I. No. 739/2022)

²] Environmental Protection Agency, (2023). Ireland's Greenhouse Gas Emissions Projections 2023–2050. Available at: <https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-greenhouse-gas-emissions-projections-2023-2050.php> [Accessed 27th February 2026].

³ Environmental Protection Agency, (2018). Ireland's Greenhouse Gas Emissions Projections 2017–2035. Available at: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA_2018_GHG_Emissions_Projections_Summary_Report.pdf [Accessed 27th February 2026].

⁴ Environmental Protection Agency, (2025). Ireland's Greenhouse Gas Emissions decrease by 2 per cent in 2024. Available at: <https://www.epa.ie/news-releases/news-releases-2025/irelands-greenhouse-gas-emissions-decrease-by-2-per-cent-in-2024.php> [Accessed 27th February 2026]

⁵ European Parliament and Council, (2024). Directive (EU) 2024/2881 on ambient air quality and cleaner air for Europe. Available at: <https://eur-lex.europa.eu/eli/dir/2024/2881/oj/eng> [Accessed 27th February 2026]

European Commission, (1996). Council Directive 96/62/EC on ambient air quality assessment and management. Available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=uriserv:l28026> [Accessed 27th February 2026].

⁷ Government of Ireland, (2022). S.I. No. 739/2022 - Ambient Air Quality Standards Regulations 2022. Available at: <https://www.irishstatutebook.ie/eli/2022/si/739/made/en/print> [Accessed 27th February 2026].

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports⁸ – June 2022 (EPA, 2022).
- Environmental Protection Agency (2025) Air Quality in Ireland Report 2024⁹
- WHO global air quality guidelines¹⁰ (2021) Particulate matter (PM_{2.5} and PM₁₀), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide
- IAQM (2024) Guidance on the assessment of dust from demolition and construction¹¹, version 2.2
- IAQM (2016) Guidance on the Assessment of Mineral Dust Impacts for Planning¹², Institute of Air Quality Management. 2016.
- Government of Ireland (2023) Clean Air Strategy for Ireland¹³
- Roscommon County Council Climate Action Plan 2024-2029¹⁴
- Roscommon County Development Plan 2022-2028¹⁵
- Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106¹⁶ (TII, 2022a)

19.1.4 Assessment Structure

In line with the EIA Directive and current EPA guidelines listed in **Chapter 1: Introduction, Section 1.10.2** the structure of this climate chapter is as follows:

- Assessment Methodology and Significance Criteria
- Description of baseline conditions at the Wind Farm Site
- Identification and assessment of impacts to the climate associated with the Project, during the construction, operational and decommissioning phases
- Mitigation measures to avoid or reduce the effects identified
- Identification and assessment of residual effects of the Project considering mitigation measures
- Identification and assessment of cumulative effects if and where applicable

⁸ Environmental Protection Agency, (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports. Available at: <https://www.epa.ie/publications/monitoring--assessment/assessment/guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment-reports-eiar.php> [Accessed 27th February 2026].

⁹ Environmental Protection Agency, (2025). Air Quality in Ireland 2024. Available at: <https://www.epa.ie/publications/monitoring--assessment/air/air-quality-in-ireland-2024.php> [Accessed 27th February 2026].

¹⁰ World Health Organization, (2021). WHO global air quality guidelines: PM_{2.5}, PM₁₀, ozone, NO₂, SO₂ and CO. Available at: <https://www.who.int/publications/i/item/9789240034228> [Accessed 27th February 2026].

¹¹ Institute of Air Quality Management, (2024). Guidance on the assessment of dust from demolition and construction. Available at: <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf> [Accessed 27th February 2026].

¹² Institute of Air Quality Management, (2016). Guidance on the assessment of mineral dust impacts for planning. Available at: https://iaqm.co.uk/text/guidance/mineralsguidance_2016.pdf [Accessed 27th February 2026].

¹³ Department of Climate, Energy and the Environment, (2025). Clean Air Strategy Progress Report 2025. Available at: <https://www.gov.ie/pdf/?file=https://assets.gov.ie/255392/efe212df-d9a7-4831-a887-bea2703e2c64.pdf> [Accessed 27th February 2026].

¹⁴ Roscommon County Council, (2024). Roscommon County Council Climate Action Plan 2024–2029. Available at: <https://www.roscommoncoco.ie/en/services/climate-action/roscommon-climate-action-plan/roscommon-county-council-climate-action-plan-.pdf> [Accessed 27th February 2026].

¹⁵ Roscommon County Council, (2022). Roscommon County Development Plan 2022–2028. Available at: <https://www.rosdevplan.ie/roscommon-county-development-plan-2022-2028/> [Accessed 27th February 2026].

¹⁶ Transport Infrastructure Ireland, (2025). TII Publications Document ID 3217. Available at: <https://www.tiipublications.ie/document/?id=3217> [Accessed 27th February 2026].

- Conclusion as to likely significant effects of the Development on Climate.

The desktop study as outlined in **Section 19.2**, together with the other assessments detailed in this chapter, provide the planning authority with sufficient details regards Climate assessment for the Project.

19.1.5 Assessment Methodology and Significance Criteria

In this section, a description of the methods employed for each part of the assessment, are outlined.

The following tool was employed to assess climate impact of the Project:

- Carbon calculator for wind farms developed under the guidance of the Scottish Government, Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH) and Forestry Research is accepted best practice in Ireland. The tool's purpose is to assess, in a comprehensive and consistent way, the carbon impact of wind farm developments. This can be found in **Appendix 19.1**.

19.2 CLIMATE AND GREENHOUSE GASES

GHGs constitute a group of gases contributing to global warming and climate change. GHGs with the most global warming potential are carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). Other greenhouse gases are 'F-Gases' (hydrofluorocarbons and perfluorocarbons), sulphur hexafluoride (SF₆) and man-made gases used in refrigeration and air conditioning appliances.

Continued GHG emissions will lead to increasing global warming, with the best estimate of warming exceeding 1.5°C in the near term (2021-2040) due to increased cumulative CO₂ emissions. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred. Human-caused climate change is already affecting many weather and climate extremes in every region across the globe. This has led to widespread adverse impacts and related losses and damages to nature and people (IPCC, 2023¹⁷).

Human activities that produce GHGs include:

- Carbon dioxide emissions through burning fossil fuels such as coal, oil and gas and peat
- Methane and nitrous oxide emissions from agriculture
- Emissions through land use changes such as deforestation, reforestation, urbanization, desertification

¹⁷ Intergovernmental Panel on Climate Change, (2023). Climate Change 2023 – Synthesis Report. Available at: <https://www.ipcc.ch/report/ar6/syr/> [Accessed 27th February 2026]

Current projections indicate that continued emissions of greenhouse gases, including the burning of fossil fuel to produce electricity, will cause further warming and changes to our climate. Climate is predicted to have indirect and direct impacts on Ireland including:

- Rising sea-levels threatening habitable land and particularly coastal infrastructure;
- Extreme weather, including more intense storms and rainfall affecting our land, coastline and seas;
- Further pressure on our water resources and food production systems with associated impacts on fluvial and coastal ecosystems;
- Increased chance and scale of river and coastal flooding; Giving rise to:
 - Greater political and security instability;
 - Displacement of population and climate refugees;
 - Heightened risk of the arrival of new pests and diseases;
 - Poorer water quality, and
 - Changes in the distribution and time of lifecycle events of plant and animal species on land and in the oceans¹⁸.

Climate change means a significant change in the measures of climate, such as temperature, rainfall, or wind, lasting for an extended period – decades or longer. Earth's climate has changed naturally many times during the planet's existence. However, currently human activities are significantly contributing to climate change through greenhouse gas emissions. The global average temperatures have increased by more than 1°C since pre-industrial times, and there is an 80% chance that the annual global average temperature will temporarily exceed 1.5°C above pre-industrial levels for at least one of the next five years¹⁹.

At the Paris climate conference (COP21) in 2015, 195 countries adopted the first-ever universal, legally binding global climate deal. The agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to below 2°C above pre-industrial levels and to limit the increase to 1.5°C. Under the agreement, Governments also agreed on the need for global emissions to peak as soon as possible, recognising that this will take longer for developing countries and to undertake rapid reductions thereafter in accordance with the best available science.

¹⁸ Department of Environment, Climate and Communications, (2019). Climate Action Plan 2019 – To Tackle Climate Breakdown. Available at: <https://www.gov.ie/en/publication/ccb2e0-the-climate-action-plan-2019/> [Accessed 27th February 2026].

¹⁹ World Meteorological Organization, (2024). Global temperature likely to exceed 1.5°C above pre-industrial level temporarily in next 5 years – Press Release, 05 June 2024. Available at: <https://wmo.int/news/media-centre/global-temperature-likely-exceed-15degc-above-pre-industrial-level-temporarily-next-5-years> [Accessed 27th February 2026].

The Glasgow Climate Pact (COP26) of 2021 aims to limit the rise in global temperature to 1.5°C and finalise the outstanding elements of the Paris Agreement. The Glasgow Climate Pact is manifested across three United Nations climate treaties, including the United Nations Framework Convention on Climate Change (the COP), the Kyoto Protocol (the CMP), and the Paris Agreement (the CMA).

The United Nations Climate Change Conference (COP 28) held in November 2023 was particularly momentous as it marked the conclusion of the first 'global stocktake' of the world's efforts to address climate change under the Paris Agreement. Having shown that progress was too slow across all areas of climate action – from reducing greenhouse gas emissions, to strengthening resilience to a changing climate, to getting the financial and technological support to vulnerable nations – countries responded with a decision on how to accelerate action across all areas by 2030. This includes a call on governments to speed up the transition away from fossil fuels to renewables such as wind and solar power in their next round of climate commitments.

At COP29 in Baku (December 2024), countries reaffirmed their commitment to the Paris Agreement. Several significant agreements were reached, including a new climate finance goal to mobilise \$300 billion annually by 2035 and efforts to secure \$1.3 trillion per year from public and private sources. A global carbon market agreement was established, providing pathways for sustainable business practices, while a new loss and damage fund was operationalised, with \$800 million pledged to support adaptation efforts. Enhanced measures for transparent climate reporting were also adopted to ensure accountability and track progress. These initiatives aim to accelerate global climate action and provide critical support to vulnerable nations adapting to climate effects.

COP30 was held from November 10 to 22, 2025, in Belém, Brazil. Adaptation to climate change was a top priority this year in Belém. Countries built on the new global climate finance goal agreed at COP29 in Baku (the New Collective Quantified Goal or NCQG), which aims to scale up support for developing countries. Its aim is to mobilise at least USD 300 billion per year by 2035 in finance from public sources, as part of a total of USD 1.3 trillion per year from all sources, public and private. At COP30, the EU renewed its commitment to the COP28 pledges to transition away from fossil fuels, triple renewable energy capacity and double energy efficiency by 2030, as agreed in Dubai.

In Ireland, the Climate Action Plan 2023 (CAP2023), developed by the Department of the Environment, Climate and Communications, outlined a detailed strategy to achieve a 75%

reduction in overall GHG emissions by 2030 and to reach net-zero emissions by no later than 2050. This ambitious plan reflects commitments made in the Program for Government and enshrined in the Climate Action and Low Carbon Development Act 2015 and Climate Action and Low Carbon Development (Amendment) Act 2021, as amended (the "Climate Act"). The subsequent Climate Action Plans 2024 and 2025 (CAP2024 and CAP2025) builds on CAP2023, detailing a sectoral roadmap to deliver a 51% reduction in GHG emissions by 2030. CAP2025 emphasizes the need for transformative change across six high-impact sectors, including a critical focus on renewable electricity generation to supply 80% of demand by 2030.

Among its key measures, CAP2025 targets the deployment of 9 GW of onshore wind, 8 GW of solar and at least 5 GW of offshore wind energy by 2030. Chapter 12 of CAP2025 highlights the immense challenge facing the electricity sector, noting its pivotal role in the decarbonization of other sectors such as transport, heating and industry through electrification. The plan identifies the need for unprecedented deployment rates of renewable energy and grid infrastructure, requiring policies to shift from an 'end of decade' trajectory to a 'remaining carbon budget' approach.

Section 12.1.3 of CAP2025 underscores the urgency of action, particularly as the energy system faces severe pressures to ensure security of supply amid projections of rapid electricity demand growth. The electricity sector has been assigned one of the steepest carbon budget trajectories, with a 75% reduction target across all sectors. CAP2025 also addresses barriers to renewable energy development, including onshore wind, emphasising the dual benefits of emissions reduction and enhanced energy security through reduced reliance on imported energy.

In summary CAP2025, approved by the Irish Government in April 2025, reinforces Ireland's commitment to meeting legally binding emissions targets. It emphasizes the unparalleled scale of renewable energy development required, which must proceed at a rate approximately eight times faster than the historical average between 2025 and 2030, placing climate solutions at the core of Ireland's economic and social development.

The provision of the Project will have a long-term positive impact by providing a sustainable energy source. Should the Project not proceed, fossil fuel power stations will be the primary alternative to provide the required quantities of electricity. This will further contribute to greenhouse gas and other emissions. It will also hinder Ireland in its commitment to meet its target to increase electricity production from renewable sources and to reduce

greenhouse gas emissions as agreed at the Paris climate conference (COP21) in 2015, Glasgow Climate Pact (COP26) in November 2021, COP28 in November 2023, the 2024 United Nations Climate Change Conference in Baku (COP29) and the Belém Political Package (COP30).

19.3 RELEVANT LEGISLATION AND GUIDANCE

Greenhouse gasses (GHGs) are the subject of international agreements, such as the United Nations Framework Convention on Climate Change, Kyoto Protocol and the Paris Agreement. The Glasgow Climate Pact is manifested across these three United Nations climate treaties. At a national level, the Climate Action and Low Carbon Development (Amendment) Act 2021 (the Climate Act) commits Ireland to reach a legally binding target of net zero emissions no later than 2050, and a cut of 51% by 2030 (compared to 2018 levels). It establishes a framework with clear, legally binding targets and commitments and ensures the necessary structures and processes are embedded on a statutory basis to achieve Ireland's national, EU and international climate goals and obligations in the near and long term. The Climate Act is supported by the annual Climate Action Plans (e.g., CAP2021, CAP2024, CAP2025), which detail the specific actions needed to achieve the targets.

County Roscommon falls within the Northern and Western Regional Assembly (NWRA) region which is covered by the Regional Spatial and Economic Strategy (RSES) for that region. It provides a 12-year strategy for the period 2020 – 2032 to achieve the objectives and vision of the regional assembly. Within the RSES, there are Regional Policy Objectives (RPO), many of which relate to renewable energy.

The Roscommon Renewable Energy Strategy was developed as a planning framework to support and underpin the core strategy and policy objectives of the Roscommon County Development Plan 2022-2028. The strategy sets out specific framework for the development of renewable energy throughout the county.

These agreements along with international and national policy and legislation are discussed further in **Chapter 4: Planning Policy**. This assessment has been prepared in accordance with the relevant legislation and all plans within Section 15, 'Duties of certain bodies', of the Climate Act have been considered. The Project has been assessed against and is consistent with those plans.

19.4 ASSESSMENT METHODOLOGY

The methodology accords with guidance and best practice, as outlined below:

- A climate assessment has been conducted through a desk study of the local and national climate in relation to the Project area (Baseline description).
- The climate impact of the Project has been assessed using the Carbon Calculator Tool (version 1.8.1, released date 11 Dec 2023). This carbon calculator specifically designed for assessing the climate impact of wind farms was developed under the guidance of the Scottish Government, Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH) and Forestry Research (impact assessment). Commonly used guidance produced by SNH in 2003 (in a technical guidance note) has been used to determine carbon payback in the absence of any more detailed methods to determine the impacts on soil carbon stocks. The use of the Scottish carbon calculator in assessing the climate impact and determining carbon payback for this Project is considered best practice, as the peat habitat of Scotland is similar to Ireland and at similar latitudes, the simulated land-atmosphere interactions are applicable.

The methodology approach taken to evaluate the 'do nothing scenario', 'significance of effects', 'mitigation measures' and 'assessment of cumulative effect' is outlined in **Section 18.1.5**.

19.4.1 Existing Climate

The Köppen climate classification divides regions of the globe based on seasonal precipitation and temperature patterns. The five main groups are tropical, dry, temperate, continental, and polar. The Irish climate is defined as a temperate oceanic climate on the Köppen climate classification system²⁰. Ireland's climate is mild, moist and changeable with abundant rainfall and a lack of temperature extremes. The country generally receives cool summers and mild winters, and it is considerably warmer than other areas on the same latitude. Ireland's land mass is warmed by the North Atlantic Current all year and as a result does not experience a great annual range of air temperatures.

The best available data from Met Eireann was used to assess the existing climate and climate trends. The annual mean air temperature for Ireland over the climate period 1991-2020 is 9.8 °C and range from 8.5 and 10.8 °C. Due to the moderating influence of the sea, areas closest to the coast are generally warmest. Comparing the 1991-2020 annual mean air temperature for Ireland with that of the 1961-1990 period, there has been an

²⁰ Britannica, (n.d.). World distribution of major climatic types. Available at: <https://www.britannica.com/science/Koppen-climate-classification/World-distribution-of-major-climatic-types> [Accessed 27th February 2026].

average annual mean temperature increase of approximately 0.7 °C²². Nationally, annual average rainfall over the period 1991-2020 is approximately 1,288mm. There is large variation in rainfall. Annual average rainfall ranges from 878mm in regions along the east coast to 2,044mm in the southwest mountainous regions. December is the wettest month with average rainfall of approximately 142mm over the same period. The driest months are April and May with average rainfall of 82mm and 79mm, respectively.

The highest number of rain days and wet days are observed in elevated western and northwest regions. The average annual number of very wet days²¹ observed over the period 1991-2020 again shows that these events are more frequent in the west of the country than in eastern and midland regions. Annual rainfall totals on the west coast generally average between 1,000mm and 1,400mm with the wettest months being December and January and April being the driest month. The annual average rainfall for Ireland has increased by approximately 7% between the period 1961-1990 and 1991-2020 climate periods²².

The prevailing wind direction is between south and west. Average wind speed ranges from 3m/s in south Leinster to 8m/s in the extreme north of the country. On average there are less than 2 days with gales each year at some inland places like Carlow, but more than 50 a year at northern coastal locations such as Malin Head²³.

Belmullet is the closest meteorological station to the project with at least 30 years (climate period) of historical data. For the purpose of the climate assessment, meteorological data from Belmullet over the period of 1994–2023 is shown in **Table 19.4**

The mean annual air temperature as shown in **Table 19.3** is between 1991 and 2021 was 10.4 °C. Mean monthly temperatures ranged from 6.4°C in January to 15°C in August. Mean total annual rainfall over this period was 1241.6mm, with a maximum monthly mean rainfall of 139.6mm in November and a minimum monthly mean rainfall of 70.8mm in May²⁴.

²¹ a very wet day is defined as being greater than the 95th percentile of “wet days” ($R \geq 1\text{mm}$) during the 1961-1990 reference period

²² Met Éireann (2024). Climatological Note 22 <https://www.met.ie/education/publications/climatological-notes> [Accessed 27th February 2026].

²³ Met Éireann (2025). Wind data, Available at: <https://www.met.ie/climate/what-we-measure/wind> [Accessed 27th February 2026]

²⁴Met Éireann, (2023). Belmullet Station Data. Available at: https://www.met.ie/cms/assets/uploads/2023/09/www_met_ie_belmullet_9120.htm [Accessed 27th February 2026].

Table 19.3: Belmullet Meteorological Station Data Averages (1991- 2020)

Month	Mean Air Temperature (°C)	Maximum Air Temperature (°C)	Minimum Air Temperature (°C)	Mean Daily Maximum Temperature (°C)	Mean Daily Minimum Temperature (°C)	Mean Precipitation Total (mm)	Grass Minimum Temperature (°C)	Mean Wind Speed (knot)	Highest Gust (knot)	Sunshine Duration (hours)
January	6.4	13.7	-5.9	8.9	3.9	136.9	5	14.8	94	1.4
February	6.5	15.6	-4.1	9.2	3.9	109.9	5	14.2	82	2.4
March	7.7	22.2	-4.9	10.5	4.9	90.6	6.4	13.2	74	3.5
April	9.1	23.9	-2.1	12.2	6	74	9.4	12.1	75	5.3
May	11.4	26.3	0.5	14.6	8.2	70.8	13.1	11.6	78	6.3
June	13.5	27.2	3.5	16.3	10.6	73	15.8	11.2	63	5.6
July	14.9	29.9	5.6	17.6	12.3	85.9	16.9	10.7	62	4.4
August	15	27.7	5.2	17.7	12.4	100.5	16.2	10.9	56	4.6
September	13.7	25	3.1	16.5	11	102.6	13.6	11.7	73	4
October	11.2	21	-1.7	13.8	8.7	131.2	10.3	12.5	71	3
November	8.7	16.2	-4.6	11	6.3	139.6	7.4	13	80	1.7
December	6.9	14.6	-7.8	9.2	4.6	123.3	5.5	14.2	93	1.2
Annual Mean	10.4	29.9	-7.8	13.1	7.7	1241.6	10.4	12.5	94	3.6

The next section examines the carbon losses and savings from the Project and its impact on the climate.

19.4.2 Calculating Carbon Losses and Savings

Sustainable Energy Authority Ireland's (SEAI) Energy in Ireland 2024 Report²⁵ notes 'Almost all (98%) of the energy-related greenhouse gas emissions are from CO₂, with the rest from methane (CH₄) and nitrous oxide (N₂O) by-products of combustion such as nitrous oxide (N₂O) emissions.' Therefore, when considering the impact of the Project on climate the focus is on how to reduce carbon production.

EirGrid defines capacity factor as the ratio of the actual electrical energy produced by a generator to the maximum possible energy it could have produced if it ran at full output for the entire period. This can be expressed mathematically as:

$$\text{Capacity Factor} = \text{Actual Energy Output} \div (\text{Installed Capacity} \times \text{Hours in Period})$$

It is a measure of how effectively a generator is used over time.

- A high-capacity factor → generator produces close to its maximum potential.
- A low-capacity factor → generator is limited by weather, design, availability, or system constraints.

The Project will contribute significantly to national renewable electricity targets by producing an estimated 203.2 GWh of renewable electricity per annum²⁶, supporting the Government's objective of achieving 80% renewable electricity by 2030. In doing so, the Project will also help reduce CO₂ emissions. It is estimated that **51,558** tonnes of CO₂ will be displaced annually, amounting to approximately **1,804,530** tonnes of CO₂ avoided over the Project's proposed 35-year operational lifetime, compared to equivalent generation from conventional fossil fuel power stations²⁷.

Based on average domestic electricity consumption of approximately 4,200kWh per household per annum (as reported by the CRU and CSO), the Project's annual output could supply the equivalent of approximately **48,333 homes**. By comparison, recent CSO data

²⁵ Sustainable Energy Authority of Ireland, (2024). *Energy in Ireland 2024*. Available at: <https://www.seai.ie/sites/default/files/publications/energy-in-ireland-2024.pdf> [Accessed 27th February 2026]

²⁶ Calculated using the EirGrid capacity factor which shows 37% for the Project. Installed Capacity (62.7MW) x Hours per year (8,760) x Capacity Factor Annual Energy (0.37 GWh) = 203,223.24 MWh/yr (Estimated annual generation: ~203.2 GWh per annum).

²⁷ EirGrid (2025). Enduring Connection Policy 2.4. Solar and Wind Constraints Report: Assumptions and Methodology. Available at: <https://cms.eirgrid.ie/sites/default/files/publications/ECP-2.4-Solar-and-Wind-Constraints-Report-Assumptions-and-Methodology-v1.1.pdf>

(2022) indicates that the total housing stock in County Roscommon is **32,129 dwellings**. Therefore, the Project, when operational, could generate enough renewable electricity to meet approximately **150% of the total household electricity demand in County Roscommon**.²⁸

19.4.2.1 Carbon Calculator

To assess the effect of the Project on the climate, the carbon emitted or saved as a result of the Project was determined using a carbon calculator. The Scottish Government have produced an online carbon calculator which aims to assess, in a comprehensive and consistent way, the carbon emission offset effects of wind farm developments. This is done by comparing the carbon costs of wind farm developments with the carbon savings attributable to the wind farm. The carbon calculation takes into account the carbon released from a number of sources during the construction, operational and decommissioning stages. These include the effects of drainage works on peat soils, forestry felling, losses associated with harvesting and transport of felled trees, changes in land use and embodied carbon from Wind Turbine manufacture, transportation and construction. Also included in the assessment tool is the assessment of peat disturbance.

Assessments are also carried out to estimate the carbon saving over the lifetime of the wind farm, compared to electricity produced using fossil fuel. The assessment of carbon savings relates to the capacity of the wind farm over the number of years for which it is operational, site improvement works, (i.e., peatland improvement, habitat creation, etc.), forestry felling, and site restoration works, (i.e., removal of infrastructure and restoration of previous site conditions), when the wind farm will be decommissioned.

The completed worksheet, including the assumptions used in the model, is provided in **Appendix 19.1** of this EIAR. The model calculates the total carbon emissions associated with the Project including manufacturing of the Wind Turbine technology, transport, and construction of the Project. The model, which is assessed for the 11 number Wind Turbines (11 no. Nordex N163 5.7MW) accounts for improvement works (see **Appendix 6.1 Biodiversity Enhancement and Management Plan (BEMP)**) and the years taken for the Wind Farm Site to return to its original characteristics but does not factor in the potential re-use of Wind Turbine components. All metal components can be recycled, while there is limited potential at present for the recycling/reuse of the fibreglass blades.

²⁸CSO - Press Statement Census 2022 Results Profile 2 - Housing in Ireland Roscommon. Available at: [Press Statement Census 2022 Results Profile 2 - Housing in Ireland Roscommon - CSO - Central Statistics Office](#) Accessed on: 24/03/2026

The model also calculates the carbon savings associated with the Project against three comparators:

- i. Coal fired Electricity Generation
- ii. Grid mix of Electricity Generation
- iii. Fossil fuel mix of Electricity Generation (oil, gas and coal)²⁹.

This is to compare this renewable source of electricity generation to traditional methods of electricity generation to assess the carbon savings and losses.

19.4.2.2 Carbon Losses

The potential carbon losses were assessed for the Project. The main CO₂ losses due to the Project are summarised in **Table 19.4**. A copy of the input and output data is provided in the completed worksheet in **Appendix 19.1**.

Table 19.4: Carbon Losses

Origin of Losses	Total CO ₂ Losses (tonnes CO ₂ equivalent)
	Wind Turbines Used (5.7 MW)
Loss due to Wind Turbine life (i.e., Wind Turbine manufacture, construction and Decommissioning)	56,142
Losses due to Backup	43,254
Losses due to reduced carbon fixing potential	2,782
Losses from soil organic matter	59,021
Losses due to DOC and POC ³⁰ leaching	12,714
Total Expected Losses	173,913

²⁹ Energy Institute (2025). Ireland 2050. Oil and Gas – How dependent on imports are we?. Available at: [https://irelandenergy2050.ie/present/oil-and-gas/?q=how-dependent-on-imports-are-we#:~:text=Ireland%20has%20only%20small%20proven,%25\)%20and%20coal%20\(10%25\)%20and%20coal%20\(10%25\)\)](https://irelandenergy2050.ie/present/oil-and-gas/?q=how-dependent-on-imports-are-we#:~:text=Ireland%20has%20only%20small%20proven,%25)%20and%20coal%20(10%25)%20and%20coal%20(10%25))) [Accessed 27th February 2026].

³⁰ DOC= Dissolved Organic Carbon, POC= Particulate Organic Carbon

The worksheet model estimates that the Project will generate approximately 173,913 tonnes of CO₂ equivalent losses under the expected capacity (5.7 MW) over the course of its 35-year operational lifetime. These values represent the cumulative greenhouse gas emissions associated with the construction, operation, and decommissioning phases of the Project.

A portion of these emissions arises from the manufacture, installation, and decommissioning of the wind turbines, accounting for approximately 56,142 tonnes (32.3%).

Emissions associated with backup generation, required to maintain grid stability during periods of variable wind output, contribute approximately 43,254 tonnes (24.9%).

The remaining emissions arise from land-based impacts, including losses from soil organic matter, reduced carbon fixing potential of vegetation, and the leaching of dissolved and particulate organic carbon (DOC and POC). These amount to approximately 74,517 tonnes (42.9%).

It is important to note that the model assumes the entire Project footprint comprises "Acid Bog" habitat, one of only two habitat categories available in the model (the other being "Fen"). However, the actual Wind Farm Site has large sections of agricultural land, which typically stores less carbon than acid bogs. Consequently, the modelled CO₂ losses related to ground disturbance are likely overestimated, and the real emissions associated with land impacts should be lower than indicated in these projections.

The figures discussed above are based on the assumption that the hydrology of the Wind Farm Site and habitats within the Wind Farm Site are not restored upon decommissioning after the expected 35-year operational lifespan. However, at the end of this period, the Wind Turbines may be replaced with newer, more efficient models, subject to obtaining the necessary consents. Such a scenario would effectively offset the carbon losses associated with non-restoration of habitat hydrology through the continued generation of carbon-neutral energy by the new Wind Turbines, thereby enhancing the long-term carbon balance of the Project.

19.4.2.3 Carbon Savings

The carbon calculator is pre-loaded with information specific to the CO₂ emissions from the United Kingdom's electricity generation plant, which is used to calculate emissions savings from proposed wind farm projects in the UK and similar data was not available in the model

for the Irish electricity generation plant. Therefore, these CO₂ emissions savings from the Project were calculated separately from the worksheet.

A simple formula is used to calculate carbon dioxide emissions reductions resulting from the generation of electricity from wind power rather than from carbon-based fuels such as peat, coal, gas and oil. The formula is:

$$\text{CO}_2 \text{ (in tonnes)} = \frac{(A \times B \times C \times D)}{1000}$$

where:

- A = The maximum capacity of the wind energy development in MW (**62.7MW**)
- B = The capacity or load factor, which takes into account the availability of Wind Turbines and array losses etc. (**0.37 (37%)**)
- C = The number of hours in a year (**8,760 hours**)
- D = Carbon load in grams per kWh (kilowatt hour) of electricity generated and distributed via the national grid. (**253.7 gCO₂/kWh**)

For the purposes of this calculation, the rated capacity of the Project is assumed to be approximately 62.7MW. Section 4.4.2 of the EirGrid's 'Constraint Forecast Studies for Enduring Connection Policy (ECP) - Methodology Statement'³¹ identifies a Capacity Factor of 37% for Area C in which the Project is located. A load factor of 0.37 (or 37%) has been used for the Project.

There has been a strong reduction in the CO₂ intensity of electricity generation, especially after 2016, with intensity falling below 300 g CO₂/kWh for the first time in 2020. It is now less than a third of its 1990 value (896 gCO₂/kWh). The number of hours in a year is 8,760. The most recent data for the carbon load of electricity generated in Ireland is for 2023 and was published in SEAI December 2024 report³², 'Energy in Ireland 2024 Report'. The emissions factor for electricity in Ireland in 2023 was 253.7 gCO₂/kWh. This is most recent set of data for a full annual year. The below calculation for carbon savings is based on the latest emission factor (253.7 gCO₂/kWh) for electricity in Ireland in 2023.

While the carbon intensity of most fuels will not change over time, this is not true for electricity. The greenhouse gas emissions associated with the use of a unit of electricity

³¹ <https://cms.eirgrid.ie/sites/default/files/publications/Constraint-Forecast-Studies-for-ECP-Methodology.pdf>

³² Sustainable Energy Authority of Ireland, (2024). Energy in Ireland 2024. Available at: <https://www.seai.ie/sites/default/files/publications/energy-in-ireland-2024.pdf>

provided from the all-island grid will change quite considerably as the composition of electricity generation changes, particularly as the electricity sector decarbonises and a greater share of our electricity is generated from renewable sources.

Figure 19.1 which follows is sourced from the SEAI³³ and show the lowering of the CO2 emissions intensity of electricity in Ireland since 2005. The reduction in CO2 emission intensity is directly linked to the removal of oil, peat, and coal as a source of fuel for electricity production, being replaced by renewable energy like wind and solar.

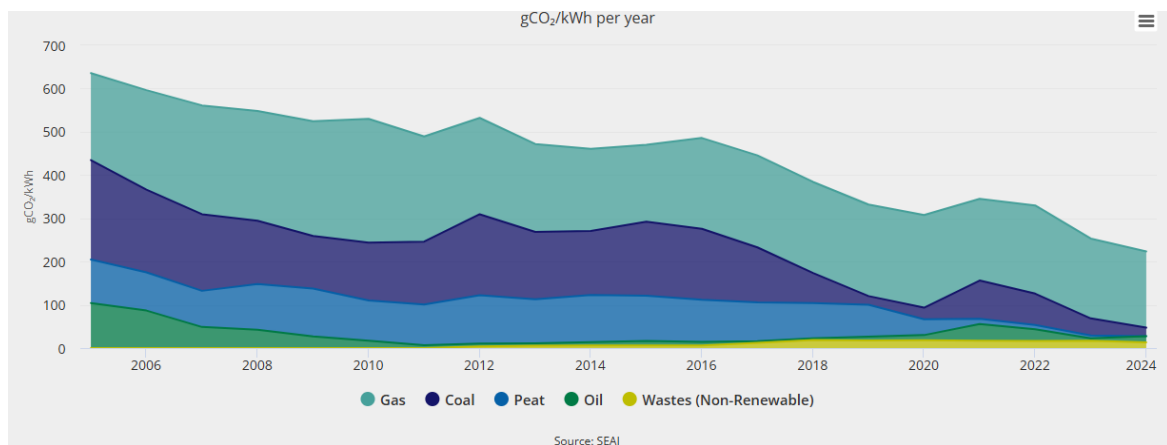


Figure 19.1: CO2 emissions intensity of electricity in Ireland [source SEAI]

This figure reflects the current average composition of the generating plant, which includes a mix of renewable and fossil fuel generators. However, as future renewable generation is expected to replace fossil fuel generators, this figure may overestimate future CO₂ emissions. It is important to consider the likely reduction in CO₂ intensity over time as Ireland continues to decarbonise its electricity grid.

The calculation for carbon savings are as follows:

$$\text{CO}_2 \text{ (in tonnes)} = \frac{(62.7\text{MW} \times 0.37 \times 8,760 \times 253.7)}{1000}$$

= 51,558 tonnes per annum

Based on this calculation, approximately **51,558** tonnes of CO₂ will be displaced per annum from the largely carbon-based traditional energy mix by the Project. In total, it is estimated that **1,804,530** tonnes of CO₂ will be displaced over the proposed 35-year lifetime of the Project.

³³ <https://www.seai.ie/data-and-insights/seai-statistics/electricity>

The Scottish Government carbon calculator results as presented in **Table 19.4** calculated **173,913** tonnes of CO₂ (worst case) will be lost to the atmosphere due to changes in the peat environment (model assumes the whole site is peat) and due to the construction and operation of the Project. This represents approximately 10% of the total amount of carbon dioxide emissions that will be offset by the Project.

Given the calculated carbon savings over the expected 35-year period of the Project, the carbon losses due to the construction and operation of the Project will be offset by the Project in approximately 3.37 years of operation.

19.4.3 Other GHG Gases Losses and Savings

For Energy in Ireland 2024³⁴, SEAI estimated the annual amount of GHG avoided by each renewable energy type based on the fossil fuels that are displaced. This analysis requires an estimate of the types of fossil fuels displaced, as well as the quantities, by each renewable energy type for each year from 1990 to 2023. A summary of this analysis is presented below:

Figure 19.1 shows the trend in annual avoided GHG emissions from renewable energy in electricity, heat and transport from 2003 to present. The estimated emissions avoided through the use of renewable energy was 7.15 MtCO₂eq in 2023, more than any previous year, with:

- 5.57 MtCO₂eq avoided by use of renewables in electricity;
- 0.88 MtCO₂eq avoided by use of renewables in transport; and
- 0.70 MtCO₂eq avoided by use of renewables in heat.

Figure 19.2 shows the breakdown in annual avoided GHG emissions by each renewable energy type and mode of application. Wind accounted for 4.55 MtCO₂eq or 63.6% of the total avoided emissions in 2023.

The use of renewable electricity ensures that switching to EVs and heat pumps results in less GHG emissions than the fossil fuel alternative

³⁴ Sustainable Energy Authority of Ireland, (2024). Energy in Ireland 2024. Available at: <https://www.seai.ie/sites/default/files/publications/energy-in-ireland-2024.pdf> [Accessed 27th February 2026].

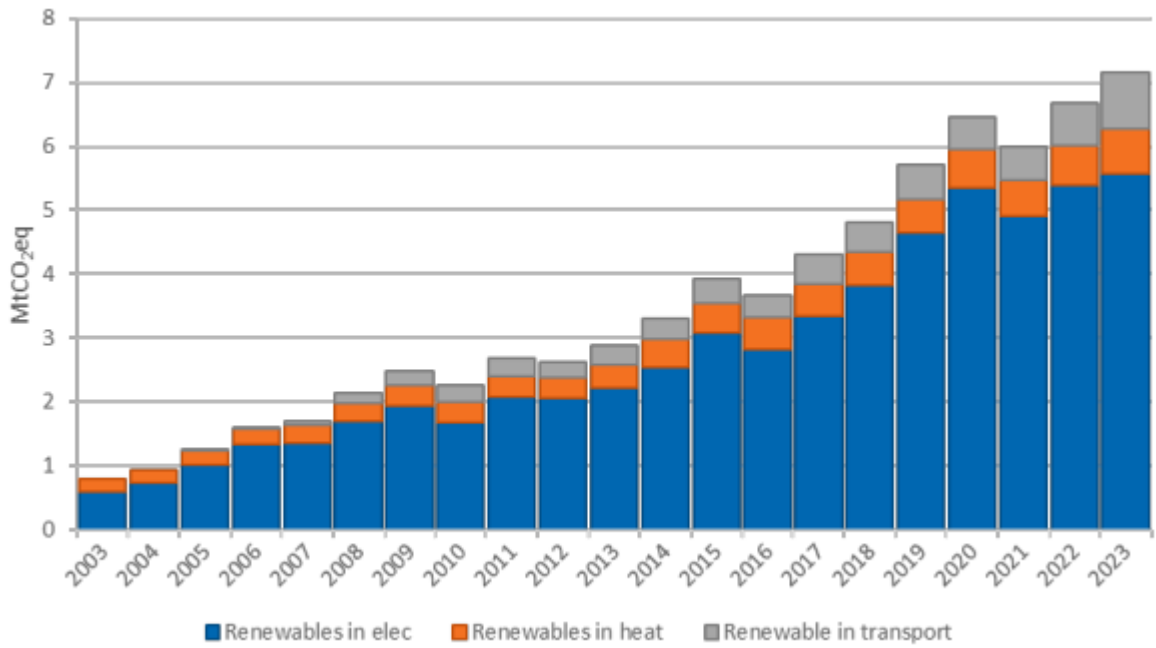


Figure 19.1. Avoided emissions from renewable energy in electricity, heat and transport modes (Source: SEAI Energy in Ireland 2024 report).

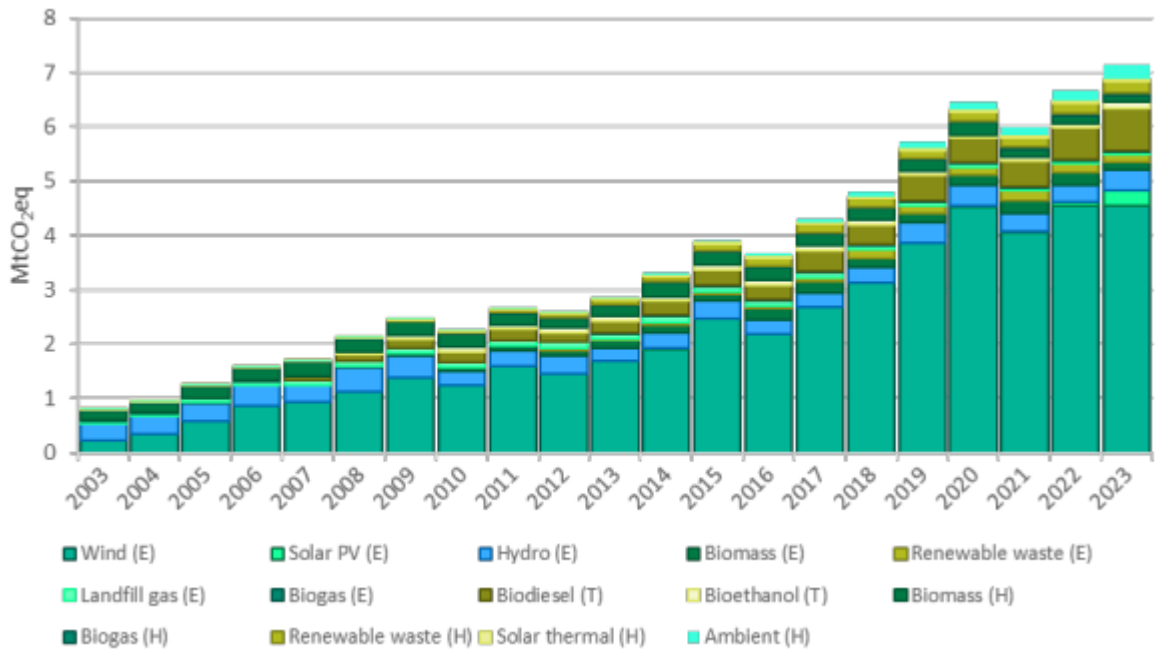


Figure 19.2. Avoid emissions by renewable energy type³⁵ (Source: SEAI Energy in Ireland 2024 report).

³⁵ Mode denoted in brackets: (E) for electricity, (T) for transport and (H) for heat.

19.4.4 Do Nothing Impact

Ireland has adopted binding agreements to reduce dependency on fossil fuels and increase energy production from sustainable sources, creating a requirement for the nation to transition to a low carbon economy as detailed in **Chapter: 4 Planning and Policy**. The binding EU targets have been transposed into Irish National Policy in the CAP2025 which commits to a target 9 GW of onshore wind by 2030. This demonstrates the significance of wind energy in the Irish energy context and highlights the need for the proposed Project in reaching both EU and national renewable energy targets.

Ireland is obliged under the Renewable Energy Directive EU/2023/2413 amended to ensure that 42.5% of the total energy consumed in heating, electricity and transport is generated from renewable resources by 2030. This is in order to help reduce the nation's CO₂ emissions and to promote the use of indigenous renewable sources of energy. These targets have been incorporated into national policy in the CAP2025 which aims to:

- Reduce CO₂ eq. emissions from the electricity sector by 62-81%.
- Deliver an early and complete phase-out of coal and peat fired electricity generation. (Note although peat-fired electricity generation has ceased in Ireland, coal and oil-fired plants are still operational. Tarbert Power Station (620 MW) was scheduled to close by 2023, and Moneypoint Power Station (915 MW) was scheduled to close by 2025. These closures have been delayed arising from concerns about the security of electricity supply. This delay means that more carbon emissions will arise. It highlights the urgency of constructing this and other wind farms.
- Increase electricity generated from renewable sources to 80%, including:
 - 9 GW of onshore wind energy

Furthermore, the Climate Act will act to reduce 51% emissions over a ten-year period to 2030, in line with the programme for Government which commits to a 7% average yearly reduction in overall greenhouse gas emissions over the next decade, and to achieving net zero emissions by 2050.

Under a 'Do Nothing' alternative, the Project will not be constructed. The land upon which Project will occur would remain unchanged. The main land use of the Wind Farm Site would remain as peatland and or commercial forestry. Consequently, the environmental effects, identified in the EIAR, positive and negative, would not occur.

However, in the "Do-Nothing" scenario, the prospect of creating sustainable energy through County Roscommon's wind energy resource would be lost at this Wind Farm Site. The

Projects contribution to EU and National renewable energy and greenhouse gas reduction targets would be lost. This may result in the nation incurring significant financial penalties from the EU if targets are not achieved.

According to EirGrid Group's All-island Generation Capacity Statement 2021 – 2030 (EirGrid, 2021), the growth in energy demand for the next ten years on the Island of Ireland will be between 18% and 43%. In the 'Do-nothing' scenario, importation of fossil fuels to maintain growing energy supply will continue and Ireland's energy security will remain vulnerable. A "Do-nothing" scenario would contribute to strain on existing energy production and may effect on economic growth if energy demand cannot be met. The delays in closing Tarbert and Moneypoint means we continue to rely on imported fossil-fuels with unpredictable pricing, a vulnerable supply chain and higher carbon emissions.

19.4.5 Potential Impacts of the Project

19.4.5.1 Construction Phase

It is estimated that during the wind farm construction, an approximate total of 8,983 loads of material and building supplies will be delivered and removed from the Wind Farm Site. The majority of HGV movements to and from Wind Farm Site will occur during the first six months of the construction period and will be associated with Site Access Road construction, Turbine Hardstand construction and Turbine Foundation construction. It is estimated that 35-40 staff light goods vehicles (LGV) will visit the Wind Farm Site daily during the peak construction period. There will also be a number of vehicles working within the Wind Farm Site during the construction phase including excavators, dump trucks and cranes.

The main GHG produced by vehicles is CO₂. Smaller quantities of N₂O and CH₄ are also produced (and emitted) by the fuel consumption process. The potency of these GHGs is very high, with 1kg of N₂O releasing the equivalent of 298kg of CO₂ into the atmosphere and 1kg of CH₄ releasing the equivalent of 25kg CO₂.

In the absence of mitigation measures the effect of vehicle movements associated with the construction phase will have, a **short-term, moderate** potential effects on GHG emissions. There will be no likely significant effects on climate from vehicle movements.

Carbon losses from excavation works is included in the carbon calculator and accounts for approximately **43% (74,517 tonnes)** of the total carbon losses associated with the Project.

This is considered to be a permanent, moderate, negative effect. There are no likely significant effects on carbon losses due to the construction of the Project.

19.4.5.2 Operation Phase

The Project is a renewable energy project which will be in direct contrast to traditional energy and the associated emission of greenhouse gases from electricity-generating stations dependent on fossil fuels, thereby having a long-term positive impact on the climate. The Project will displace carbon dioxide from fossil fuel-based electricity generation, over the proposed 35-year lifespan of the Project. The Project will assist in reducing carbon dioxide (CO₂) emissions (**51,558 tonnes per annum**) that would otherwise arise if the same energy that the Project will generate were otherwise to be generated by conventional fossil fuel plants. This is a **long-term, moderate, positive** effect on the climate. There will be no significant effect on climate.

19.4.5.3 Decommissioning Phase

Any impacts and consequential effects that occur during the Decommissioning phase are similar to that which occur during the construction phase, albeit on a smaller scale and shorter duration. The mitigation measures prescribed for the construction phase of the Project will be implemented during the Decommissioning phase thereby minimising any potential impacts.

In the absence of mitigation measures the effect of vehicle movements associated with the Decommissioning phase will have, a **short-term, moderate** potential effects on GHG emissions. There will be no likely significant effects on climate from vehicle movements.

19.4.6 Climate - Mitigation Measures

All mitigation measures detailed and assessed in this EIAR and outlined in the CEMP (**Appendix 2.1**) will be implemented onsite. Good practice site control measures will comprise the following.

It is considered that the Project will have an overall positive impact in terms of carbon reduction and climate.

This Project will have a local/regional and national impact on carbon reduction. The Project will assist Ireland in meeting a 51% reduction in overall greenhouse gas emissions by 2030 compared with 2018 levels and support increasing the onshore wind capacity to 9 GW, and 80% renewable electricity targets as per the Climate Action Plan 2024 and 2025.

19.4.6.1 Construction Phase

- All machinery when not in use will be turned off.
- Exhaust emissions from vehicles operating within the Wind Farm Site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the Contractor by ensuring that emissions from vehicles are minimised through regular servicing of machinery.
- Use of local quarries, materials suppliers and waste facilities will be used, as outlined in **Chapter 16: Traffic and Transport**, minimising travel distances
- A robust Traffic Management Plan (**Appendix 16.2**) has been developed, utilising the most direct routes where possible. This Plan will be updated to reflect project needs.

19.4.6.2 Operation Phase

The operation phase of the Project will have a **long-term, moderate positive** impact on the climate due to the displacement of fossil fuels that would otherwise have to be burned to generate the equivalent annual electricity production, and therefore no mitigation is necessary for this operational phase.

19.4.6.3 Decommissioning Phase

Mitigation measures during the decommissioning phase will be similar to those employed during the construction phase as outlined above.

19.4.7 Cumulative Effects

Potential cumulative effects on the climate between the Project and other developments in the vicinity were also considered as part of this assessment. The other developments considered as part of the cumulative effects assessment are described in **Appendix 2.4** (20km radius from the Wind Farm Site for large scale developments such as wind farms and 10km radius from Site for other major developments, as is consistent with the EPA "Guidelines on the information to be contained in environmental impact assessment reports" (2022)).

During the construction phase of the Project, there may be other consented developments within 10km and wind farms within 20km that are yet to be constructed, which will have minor exhaust emissions from construction plant and machinery. In a worst-case scenario if any of these developments were constructed at the same time as the Project, there would be **short-term slight negative** cumulative impact on climate due to exhaust emissions.

The nature of the Project is such that, once operational, it will have a **long-term, moderate, positive** impact on the climate. It is considered that the cumulative impact will be positive in terms of carbon reduction and the climate.

During the operational phase emissions of CO₂, CH₄, and NO_x, emissions from the Project and other projects listed in **Appendix 2.4** emissions will result from the operation and maintenance vehicles onsite. However, these emissions will be minimal. Therefore, there will be long-term imperceptible negative cumulative effects on the climate. Importantly, the positive effects from fossil fuel replacement, particularly in reducing greenhouse gas emissions, are expected to far outweigh any negative operational effects, contributing significantly to climate mitigation efforts.

Cumulative effects during the Decommissioning phase will be similar to the construction phase although slightly less as a result of the reduced works required because some infrastructure will be left in-situ e.g., Turbine Foundations and the Site Access Roads.

The nature of the Project, once operational, they will have a cumulative **long-term, significant, positive** effect on the climate

19.4.7.1 Potential Cumulative Effects with Other Wind Farm Developments

The greatest potential for cumulative effects to occur would be if the construction phase of permitted and/or proposed wind farms, as listed in **Table 2.1**, and the construction phase of the Project overlapped. In an unmitigated scenario, there may be potential for some cumulative effects on climate.

There are 4 No. proposed (not yet built) and 3 operational wind farms located between 6.8km and 19.4km) from the Project. Wind farms are renewable energy projects which will displace the traditional use of fossil fuels in energy production, thereby having a positive impact on the climate during operation.

There are two permitted wind farms within the 20km study area, Leam Wind Farm and Riverstown Single Turbine, which are located 6.6km and 19.2km North-west from the Wind Farm Site. Leam Wind Farm, a 2-turbine wind farm, was granted permission by the Commission on the 13th October 2023 (Case Reference: 314120). Riverstown Single Turbine was granted permission by Sligo County Council on 4th of July 2024. A review of the Environmental Impact Assessment Report (EIAR) attached to the applications indicates that the construction of Leam Wind Farm and Riverstown Single Turbine will not result in

any cumulative effects when built concurrently with the Project as both are a considerable distance away.

With regards to potential cumulative effects associated with permitted cumulative wind farms. The Environmental Reports for Leam Wind Farm and Riverstown Single Turbine and the EIAR for this Project detail strict mitigation measures for the protection of climate during the construction phase.

Therefore, with the implementation of the proposed mitigation measures (both for the Project and for the other wind farms) there will be no significant negative cumulative effects associated with the construction, operational or decommissioning phases of the Project and other wind farms within the cumulative study area.

The nature of the Project and other energy developments within 20km are such that, once operational, they will have a cumulative **long-term, significant, positive effect** on climate.

19.4.7.2 Potential Cumulative Effects with Other Developments

A detailed cumulative assessment has been carried out for all planning applications (granted and awaiting decisions) within the cumulative study area (10km). The 10km radius distance search area selected for other development, other than wind farms, is considered to be reasonable for cumulative impact assessment for EIAR and consistent with the EPA "Guidelines on the information to be contained in environmental impact assessment reports" (2022).

The planning applications identified within the study area are of small scale, consisting mostly of new dwellings or renovations of existing dwellings, as well as for the erection of farm buildings (refer to **Appendix 2.4**). Based on the small scale of the works and the temporal period of likely works, combined with the mitigation measures prescribed in this report for protection of climate during the construction phase, no significant cumulative effects will occur as a result of the Project (construction, operation and decommissioning phases) and other developments.

19.4.8 Residual Effects of the Project

19.4.8.1 Construction Phase

There will be a short-term imperceptible negative effect to climate as a result of greenhouse gas emissions. There will be no significant residual effect on climate as a result of the Project during the construction phase.

19.4.8.2 Operational Phase

There will be a long-term, moderate, positive effects to climate as a result of reduced greenhouse gas emissions. There will be no significant residual effect on greenhouse gas emissions as a result of the Project during the operational phase.

19.4.8.3 Decommissioning Phase

Any impacts and consequential effects that occur during the Decommissioning phase are similar to that which occur during the construction phase, albeit of less effect. For example, Turbine Foundations and Site Access Roads will be left in-situ. No forest felling will take place during the Decommissioning phase. There will be no significant residual effect on climate as a result of the Project decommissioning phase.

19.4.9 Summary of Significant Effects

This assessment has identified no likely significant effects, given the mitigation measures embedded in the design and recommended for the Project.

The nature of the Project is such that, once operational, it will have a moderate, positive and long-term, impact on the climate. It is considered that the cumulative impact will be positive in terms of carbon reduction and the climate also.

19.4.10 Statement of Significance

This chapter has assessed the significance of potential effects of the Project on climate. The Project has been assessed as having the potential to result in a **short-term imperceptible, negative** effects on climate during the construction and Decommissioning phases. There will be **long-term moderate, positive** effect to climate as a result of reduced greenhouse gas emission during the operational phase.

Potential cumulative effect of the Project once operational on climate was assessed as having a **long-term, significant, positive** impact on the Climate.

The Project complies with and is for the purpose of achieving the objectives of the Climate Action Plan 2025 and Roscommon CPD 2022-2028. It ensures the achievement of carbon budgets and compliance with sectoral emissions ceilings.