Rialtas na hÉireann
Government of Ireland

Ireland's First Biennial Transparency Report under the Paris Agreement

Produced by The Department of the Environment, Climate and Communications
December 2024

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1 Overview

1.1 Introduction

The Biennial Transparency Report (BTR) is a key component of the Enhanced Transparency Framework, required by Article 13 of the Paris Agreement. In order to inform the Global Stocktake under Article 14, this BTR aims to give a clear understanding of climate change action in light of the Convention's goal and improved implementation of it, as outlined in Article 2 of the Paris Agreement. This includes tracking progress toward achieving each Party's individual Nationally Determined Contributions (NDCs) under Article 4 and providing and receiving support from relevant individual Parties and Parties' adaptation actions under Article 7, including good practices, priorities, needs, and gaps.

This BTR fulfils the requirements according to decision 18/CMA.1, which are:

- Building on and enhancing the transparency arrangements under the Convention, recognizing the special circumstances of the least developed countries (LDCs) and small island developing States (SIDS), and implementing the transparency framework in a facilitative, non-intrusive, non-punitive manner, respecting national sovereignty and avoiding placing undue burden on Parties;
- The importance of facilitating improved reporting and transparency over time;
- Providing flexibility to those developing country Parties that need it in the light of their capacities;
- Promoting transparency, accuracy, completeness, consistency and comparability;
- Avoiding duplication of work and undue burden on Parties and the Secretariat;
- Ensuring that Parties maintain at least the frequency and quality of reporting in accordance with their respective obligations under the Convention;
- Ensuring that double counting is avoided;
- Ensuring environmental integrity.

Ireland’s National Inventory Report (NIR) is submitted as a separate document and is summarised in Chapter Two of this report. Chapter Three provides details on information necessary to track progress with information regarding policies, measures and projections also contained in this chapter. Chapter Four provides details on climate change impacts and adaptation. Chapter Five provides details on Ireland’s support provided and mobilised. Chapter Six notes that as this is the

first BTR submission by Ireland that there are no improvements to mention but highlights the chapters foreseen as important in the subsequent BTR submissions.

1.2 National Inventory Report

Ireland’s Environmental Protection Agency (EPA) has compiled a supplemental National Inventory Report (NIR) that will be submitted alongside the BTR to the UNFCCC. The NIR covers the years 1990–2022. In addition to serving as Ireland's inventory agency and handling all facets of inventory preparation and maintenance, the EPA is ultimately in charge of Ireland's national greenhouse gas (GHG) inventory and is responsible for reporting Ireland's submissions on an annual basis. The NIR, which provides a thorough picture of Ireland's GHG inventory in both quantitative and qualitative terms, is composed of the Common Reporting Tables (CRT) and the National Inventory Document (NID) together with other methodological papers. Chapter Two provides a summary of the major trends in national GHG emissions and reductions as outlined in the NIR 2024.

1.3 Information to track progress

Together, the European Union (EU) and its Member States have pledged to meet the legally required goal of reducing domestic net GHG emissions by at least 55% from 1990 to 2030. By 2050, the European Climate Law aims to achieve climate neutrality, and by 2030, it sets an intermediate goal of lowering net greenhouse gas emissions by at least 55% from 1990 levels. This 2030 goal is in line with the EU Nationally Determined Contributions (NDC)'s goal.

"Economy-wide absolute emission reduction" is what the joint EU NDC stands for. Ireland is one of the 27 EU member states that are included in the NDC's scope. The emissions and removals from every sector of the EU GHG inventory are included in the NDC.

Furthermore, the NDC covers GHG emissions from marine journeys between EU Member States as well as CO2 emissions from specified international flights regulated by the EU Emission Trading System, or ETS. Without the use of foreign credits, the emission reductions must be accomplished within the EU. Based on all reported emissions and removals, net emissions are used to track the Land Use, Land-Use Change and Forestry (LULUCF) sector's progress toward the NDC's 2030 target.

1.4 Climate change impacts and adaptation

Projections for Ireland indicate that impacts will continue and intensify into the future, with Ireland's climate projected to become warmer, with an increase in both dry periods and heavy rainfall events. Rates of sea level rise will increase, and the frequency of extreme weather events are also expected to increase. Ireland's coastline and waterways may be particularly vulnerable to climate change impacts. The expected increased impacts of extreme weather events depend on accurate forecasts and climate modelling, which isa core activity of Met Éireann, the Irish Meteorological Service.

Discussed in Chapter 4, sectoral plans and local adaptation strategies have identified climate hazards including: heatwaves and droughts coinciding, cold spells, extreme precipitation, flooding, severe windstorms, storm surges, and coastal erosion. This chapter outlines the potential impacts on specific sectors, provides information on climate change impacts, and follows on with key domestic adaptation policies and strategies to address them.

This chapter also highlights the considerable progress Ireland has achieved in adaptation, including mainstreaming across national, sectoral and local levels. At a sectoral level significant developments have been made in: agriculture, forestry and seafood; flood risk management and flood relief schemes; nature-based solutions; electricity and communications networks; health; transport; water; and, built and archaeological heritage. The establishment of Climate Action Regional Offices (CAROs) has also contributed greatly to advancing work at local level.

1.5 Support Provided and Mobilised

Ireland has a strong record of providing climate finance to developing countries, with significant progress achieved in the delivery of this climate finance in recent years. Ireland's International Climate Finance Roadmap, published in July 2022, articulates the Government's vision for providing €225 million per year in climate finance to developing countries by 2025. We expect to meet this target. Ireland will maintain its focus on supporting adaptation and resilience to climate change in some of the most climate vulnerable countries around the world. Ireland's public funding for climate action includes on-going support for mitigation and, in particular, adaptation action in developing countries, mainly through bilateral assistance to Ireland's key partner countries in Sub-Saharan Africa and through funding for Civil Society Organisations (CSOs) and UN agencies. Ireland also provides contributions to multilateral funds established under the auspices of the UNFCCC, including the Least Developed Countries Fund, the Least Developed Countries Expert Group, the Global Environment Facility, the Adaptation Fund, the Green Climate Fund and the Fund for Responding to Loss and Damage (from 2024).

The level of detail in Ireland's multilateral climate finance reporting has been improved in recent years due to changes in EU-level reporting requirements. Specifically, both climate-specific and core-funding amounts are calculated for all payments where feasible, and closer attention has been paid to the use of unearmarked funding in terms of categorisation eg. cross-cutting, adaptation, mitigation.

1.6 Improvements in Reporting

With this being the first BTR produced by Ireland there are no improvements to note however, it is envisaged that this section will play an important role in subsequent reports. In subsequent reports this section will highlight reporting improvements and the efforts made to enhance transparency and the awareness of the climate change efforts made by Ireland.

2 National Inventory Report

2.1 Introduction

A supplementary NIR covering the years 1990-2022 has been prepared by the EPA and will be submitted alongside the BTR to the UNFCCC. The EPA has overall responsibility for Ireland's national GHG inventory, performing the role of inventory agency in Ireland and undertaking all aspects of inventory preparation and management as well as the reporting of Ireland's submissions annually. Together, the CRT and the NID with related methodological reports make up the NIR, which offers a comprehensive picture of Ireland's greenhouse gas inventory in both quantitative and qualitative terms. The key trends in national GHG emissions and removals as outline in the NIR 2024 are summarized in the section that follows; summary tables are located in CTF table 6. It should be mentioned throughout this synopsis that Ireland's NIR 2024 offers more thorough explanations. Unless otherwise noted, the figures and graphs in this chapter come from the NIR 2024.

2.2 Summary of National Emission and Removal – related Trends

In 2022, total emissions of greenhouse gases including indirect emissions from solvent use (without LULUCF) in Ireland were 60,604.9 kt CO2 equivalent, which is 9.7 % higher than emissions in 1990. The total for 2022 is 15.2 % lower than the peak of 71,476.9 kt CO2 equivalent in 2001 when emissions reached a maximum following a period of unprecedented economic growth. The Energy sector accounted for 56.5 % of total emissions in 2022, Agriculture contributed 37.0 % while a further 5.0 % emanated from Industrial Processes and Product Use and 1.4 % was due to Waste. Emissions of CO2 accounted for 60.6 % of the national total in 2022, with CH4 and N2O contributing 29.1 % and 9.1 %, respectively. The combined emissions of HFC, PFC, SF6 and NF3 accounted for 1.2 % of total emissions in 2022.

An approach 1 level assessment of emission source categories (ranking on the basis of their contribution to total emissions) identified 29 key categories in 2022 (excluding the LULUCF sector). There were 18 key categories of CO2, accounting for 58.5 % of total emissions. There were seven key categories of CH4, three key categories of N2O and 1 key category of HFC in level assessment, which accounted for 28.1 %, 7.7 % and 1.0 % of total emissions, respectively. The

results of the approach 1 key category analysis clearly show the impact of CO2 emissions from energy consumption on total emissions in Ireland. These combustion sources of CO2 emissions accounted for 16 out of 29 key categories identified by level assessment in 2022 or 54.3 % of total emissions. The top ten key categories contributed 73.9 % of total emissions in 2022 with emissions of CO2 from the combustion of liquid fuels by road traffic being the single largest source, accounting for 18.2 % of the total national emissions.

The application of uncertainty analysis for Irish GHG inventories using the IPCC approach indicates an overall level uncertainty of 3.50 % in the 2022 inventory (excluding the LULUCF sector) and a trend uncertainty of 2.28 % for the period 1990 to 2022. These values are determined largely by the low uncertainty in the estimates of CO2 emissions from the energy sector, which is the major source category in Ireland and for which the input data and methodologies are most reliable. The 60.6 % of emissions contributed by CO2 in 2022 are estimated to have an uncertainty of 1.27 %. Emissions of CH4 from 3.A Enteric Fermentation and N2O from 3.D.1 Direct N2O Emissions from Managed Soils sectors combined account for the majority of the level uncertainty (contributing 93.9 % and 83.8 %, respectively to each gas uncertainty) in the 2022 inventory. The impact of HFC, PFC, SF6 and NF3 on inventory uncertainty in the year 2022 was negligible (0.60 %) because they account for only 1.2 % of total emissions.

3 Background Information and Tracking Progress

3.1 National Circumstances and institutional arrangements

3.1.1 Government Structure

Ireland is a parliamentary democracy. The national parliament is called the Oireachtas and consists of the President and two houses - the Dáil (the lower house), and the Seanad (the upper house). Bunreacht na hÉireann, the written Constitution of Ireland, sets out the administrative structure of the Government and defines the structure and principles of legal and social policy to guide the Oireachtas. The rights of every citizen are also enshrined in the Constitution. The power of the two houses of the Oireachtas derives from the Constitution and legislation. The Dáil is the primary house and the Government is answerable to the Dáil. The Head of the Government is the Taoiseach, who is appointed by the President on the nomination of the Dáil. Departments of State are assigned to members of the Government, with a Minister occasionally being responsible for more than one Department.

The Irish Government has overall responsibility for ensuring delivery of Ireland's obligations under the UNFCCC, the Kyoto Protocol, and the Paris Agreement. A Cabinet Committee assists the Government in having a whole-of-Government approach given the broad nature of policy areas encompassed by the environment and climate. The Cabinet Committee is supported by a Senior Officials Group which assists in ensuring policy coherence, particularly for cross-sectoral issues such as climate change. The Minister for the Environment, Climate and Communications has primary responsibility for Ireland's policy on climate change.

3.1.2 Population Profile

The results of Ireland's most recent Census, in 2022, shows that Ireland's resident population stood at 5,149,139.This is the first time that the population has exceeded 5 million since 1851.

Ireland's population has been steadily growing since the 1990s and increased by 39.1% between the 1991 and 2022 censuses. Net Migration has remained positive since 2015. The impact of COVID-19 saw a significant drop in net migration between 2020 and 2021 (dropping from 44,700 to 21,800 people). In Ireland, an estimated 70,000 Ukrainian immigrants arrived in the year to April

2023. In fact, 2022 and the early part of 2023 saw two of the largest net migration figures since the period 2005 – 2008.

Almost half (47%) of the population in 1971 was under 25 years of age, however, by 2022, this had fallen to 32%. In 2022, the population aged 65 and over was more than double that of the same cohort in 1971.

Ireland's population density also increased to 73 persons per square kilometre by 2022, up from 70 persons per square kilometre by 2016 and from 67 persons in 2011, although this remains relatively low compared to other European countries. The 2022 census shows that 28.3% of the population is concentrated in the Dublin region, outside of which the State has a highly-dispersed, less dense population.

3.1.3 Geographic Profile

Ireland is situated off the north-west coast of the continent of Europe between longitude 5.5° and 10.5° West and latitude 51.5° and 55.5° North. The total area of the island of Ireland is 84,421 square kilometres. Within this, the Irish State comprises 70,282 square kilometres. The greatest length of the island from the north to the south is 486 kilometres and the greatest width, from east to west, is 275 kilometres. There are 3,172 kilometres of coastline. The island consists of a large central lowland of limestone with a relief of hills and a number of coastal mountains, the highest of which, Carrantuohill, is 1,040m.

The Shannon, at 340km, is Ireland's longest river. Ireland's national parks are home to some of the most unique landscapes, while the wild bog lands that occur in mountain and lowland areas are among the most distinctive natural habitats in the country. The biodiversity of wildlife is comparatively low due to Ireland's isolation from mainland Europe with many species present on the continent being absent. Many common animals and plants have, in fact, been introduced by human settlers. However, as an island nation, Ireland has its own distinct and unique biodiversity of plant and animal species. The marine habitats surrounding our island are home to whales, dolphins, vast colonies of seabirds, abundant fish and cold-water coral reefs, as well as rich algal and invertebrate communities. On land, there is a wealth of species in our mountains, peatlands, turloughs, woodlands, grasslands, lakes, rivers, and coastal habitats.

3.1.4 Economic Profile

Ireland is a small, open economy. A strong period of economic growth over the period 1995 to 2007 saw GDP rise by an average of 6% per annum. However, this was followed by a sharp drop in economic activity during the global financial crisis and the subsequent collapse of Ireland's domestic property market and construction industry. GDP shrank by 10% between 2007 and 2011, with employment falling by 14%.

The economy experienced fitful growth over the next few years as it recovered from the financial crises and subsequent EU-IMF bailout programme. Growth began to increase again from 2014 onwards, with underlying growth of the domestic economy averaging around 4% per annum in the 5 years preceding the COVID-19 pandemic. This placed the Irish economy in a strong position, with robust growth, balanced public finances, a current account surplus and a labour market close to full employment.

The COVID-19 pandemic, however, had a severe impact on the domestic economy. While at a headline level, GDP increased by almost 6% in 2020. This is very much a function of the 'dual-nature' of the Irish economy – characterised by highly productive and mainly foreign-owned Multinational Corporations (MNCs) on one side and domestic small to medium enterprises (SMEs) on the other – and masks an unprecedented contraction in the domestic economy. Modified Domestic Demand (MDD), which provides the best measure of domestic economic activity, fell by around 5% in 2020. The unemployment rate – including recipients of the Pandemic Unemployment Payment (PUP) - peaked at 30% in April 2020. Ireland saw some of the largest declines in private consumption and construction investment, as a result of the comparatively severe lockdowns throughout that year.

Due to the success of our vaccination programme, restrictions were eased over the course of 2021, with the domestic economy recovering strongly as a result. The strength of the recovery meant that by the third quarter of 2021, both output and employment had exceeded pre-pandemic levels, While Ireland's economy has recovered, considerable risks remain, including the geopolitical instability caused by the war in Ukraine, more persistent inflationary pressures, and Brexit related disruptions to Irish exports.

3.1.5 Climate Profile

Ireland has a mild temperate oceanic climate, due to the controlling influence of the Atlantic Ocean. Mean annual temperatures generally range between 9°C and 10°C with the higher values in coastal regions. Summer is the warmest season, followed by autumn, spring and winter. The highest temperatures occur inland during the summer, with mean seasonal maxima between 18°C and 20°C while highest values occur in coastal regions during the winter. July is the warmest month, followed by August and June; the coldest month is January followed closely by February and then December.

A long-term average national temperature series for Ireland, derived using data from five centennial stations, shows that temperatures have varied considerably from year to year. National annual temperatures have largely been above normal (1961-1990) since the late 1980's and broadly consistent with global temperature trends. 15 of the top 20 warmest years on record have occurred since 1990. The annual average temperature in Ireland has increased by approximately 0.9°C over the last 120 years, with a rise in temperatures being observed in all seasons.

The highest rainfall occurs in the western half of the country and on high ground, while rainfall decreases to the northeast. The average annual rainfall is approximately 1230 mm, but totals in excess of 3000 mm may occur on high ground. The driest seasons are spring and summer, with an average of approximately 260 mm, while autumn and winter have averages of approximately 350 mm. The driest months are April, May, June and July, with an average of approximately 80 mm each month. February, March, August and September have average rainfall totals of approximately 100 mm, while October, November, December and January have averages of approximately 130 mm.

Annual average amounts of precipitation are increasing. Annual precipitation was 6% higher in the period 1989 to 2018, compared to the 30-year period 1961 to 1990. The decade 2006 to 2015 was the wettest on record.

Climate observations also show that Ireland's oceans are also changing in line with global trends. Irish seas are becoming more acidic and warming and sea level is rising. Generally speaking, Ireland's climate is following global changing climate trends and national studies project these changes to continue.

3.1.6 Energy

Data relating to national and sectoral statistics for energy production, transformation and end-use are collected by the SEAI in the year following the activity. Following collection these data are

rigorously analysed with complete data and analysis typically becoming available for public use in December of that year.

The latest data published by SEAI relating to national energy statistics has been used in preparing sections of this report. Where complete data for 2023 is not yet available, particularly relating to the breakdown of final energy consumption in the economy, data is presented to the end of 2022. The following published sources from SEAI have been used in preparing these sections:

- *Energy in Ireland 2023*, December 2023, https://www.seai.ie/data-and-insights/seai-statistics/key-publications/energy-in-ireland/
- *2023 National Energy Balance*, September 2024, https://www.seai.ie/data-and-insights/seai-statistics/key-publications/national-energy-balance/
- *First Look: Ireland's Supply and Security of Supply in 2023*, July 2024, https://www.seai.ie/data-and-insights/seai-statistics/key-publications/energy-supply-security/
- *First Look: Renewable Energy in Ireland 2023*, September 2024, https://www.seai.ie/data-and-insights/seai-statistics/key-publications/renewable-energy-in-ireland/

3.1.6.1 Key Trends

- Energy-related GHG emissions from the combustion of fossil fuels accounted for 57% of Ireland's national total (52% of the national total with LULUCF)[1].
- Ireland's national energy-related emissions were down by 7.6% in 2023, compared to 2022, and reached their lowest level in 30 years.
- The main driver of reduced energy-related emissions in 2023 was the reduced emissions from electricity generation.
- Ireland was reliant on fossil fuel for 82.8% of its primary energy requirement in 2023.
- Ireland remains reliant on imports for its energy needs – its energy import dependency was 78.5% in 2023.

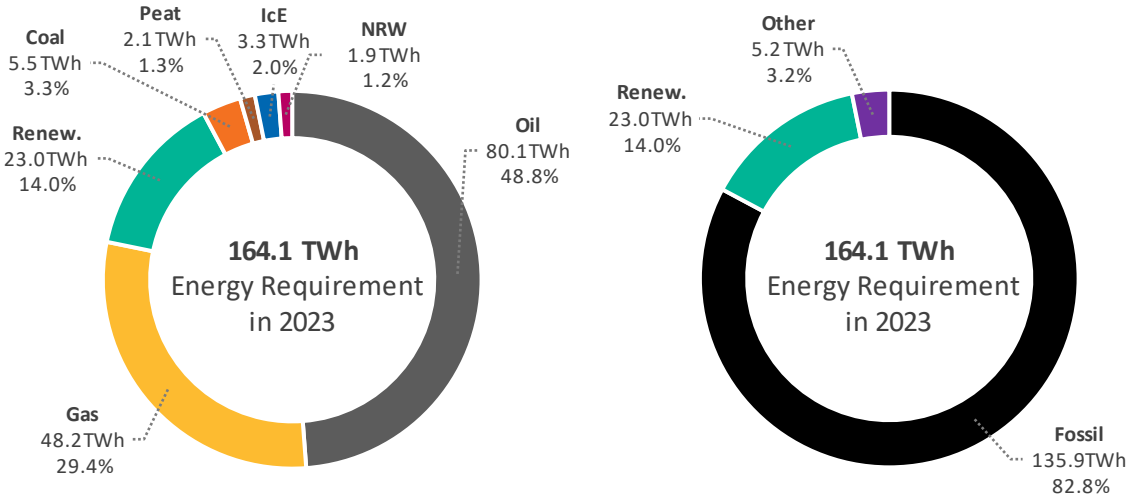
1 National totals from Ireland's Provisional Greenhouse Gas Emissions 1990-2023, EPA, July 2024, https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-provisional-greenhouse-gas-emissions-1990-2023.php

- Ireland used 23.38 TWh of renewable energy in 2023, up from 21.68 TWh in 2022. Wind accounted for just under half (49.9%) of that renewable energy, followed by biodiesel (13.4%) and biomass (11.0%).

3.1.6.2 Energy Requirement and Production

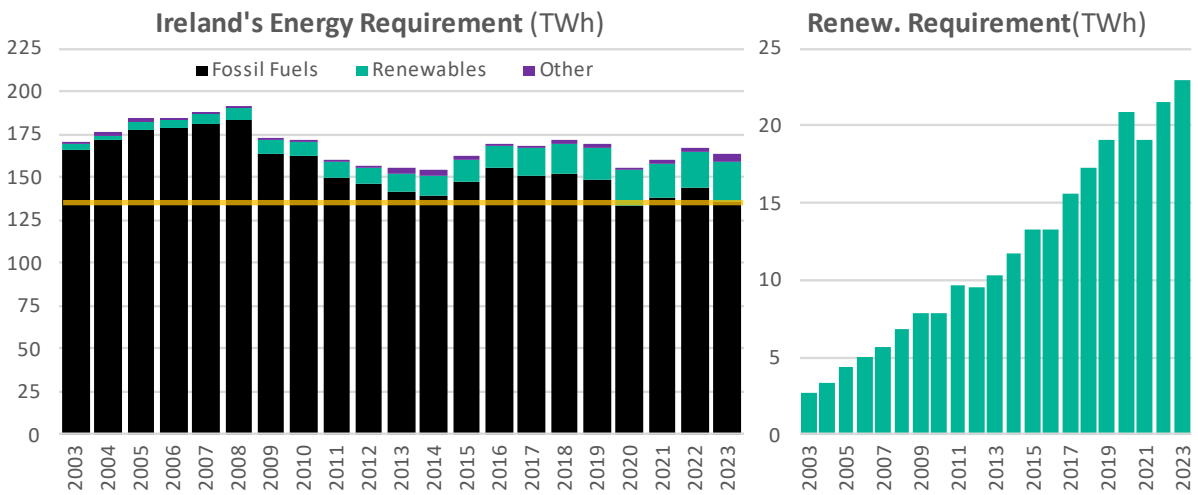
In 2023, Ireland's national primary energy requirement remained heavily fossil fuel dependent, with 82.8% of energy requirement satisfied by fossil fuels. Over three-quarters of Ireland's energy requirement came from the sum of its oil (48.8%) and natural gas (29.4%) needs. Renewables accounted for 14.0% of Ireland's energy requirement in 2023, up from 12.9% in 2022.

Figure 3.1 - information on the 2023 breakdown of Ireland's national energy requirement by energy product and energy type in 2023 (IcE and NRW stand for net imported interconnector electricity and non-renewable wastes, respectively)



Ireland's use of fossil fuels reached its lowest level in 2023 for over 20 years, outside the exceptional year of 2020, when COVID-related travel restrictions significantly reduced demand for petrol, diesel, and jet kerosene. 2023 saw record high use of renewable energy in Ireland.

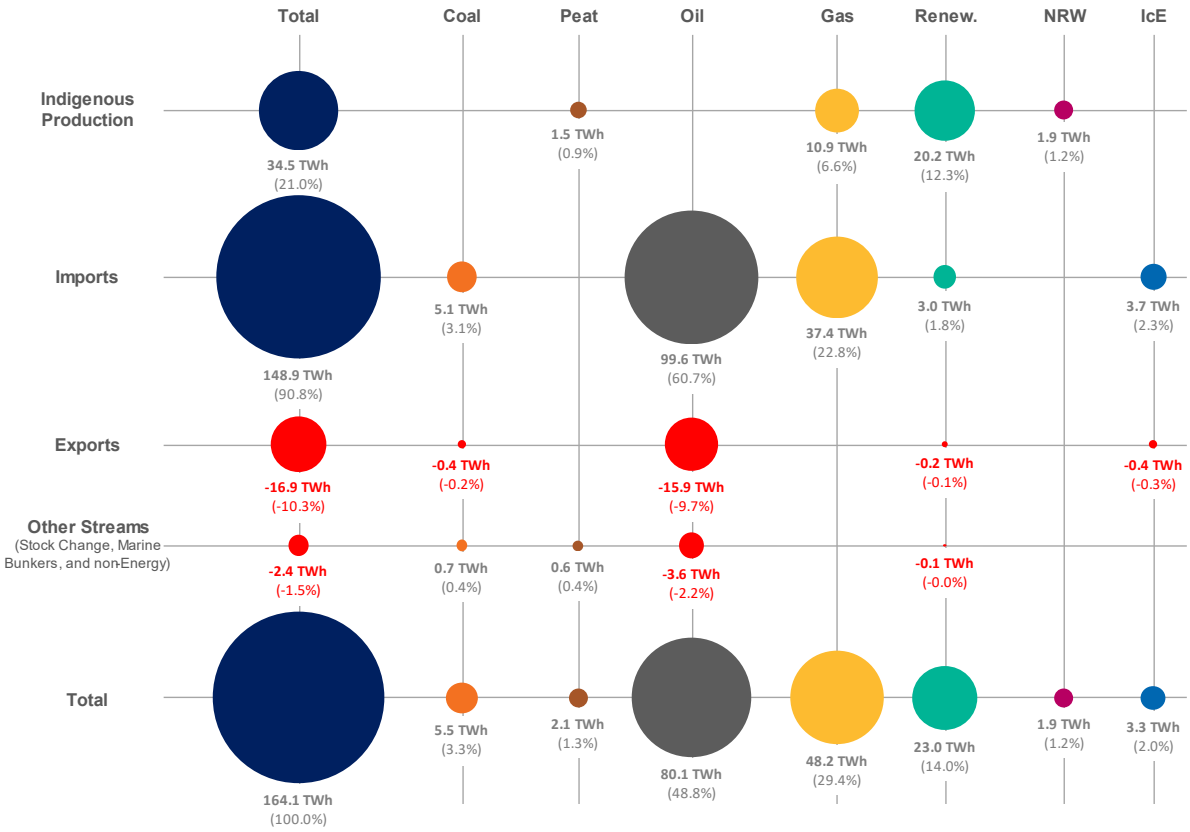
Figure 3.2 - Time series of Ireland's energy requirement by energy type, with detail of Ireland's Renewable Energy Requirement.



In 2023 Ireland's overall energy requirement was 164.1 TWh, down 1.7% on 2022 levels. Ireland saw a drop in requirement for all fossil fuels in 2023, with drops of 0.38 TWh in natural gas, 0.30 TWh in coal, 0.05 TWh in peat, and 0.03 TWh in oil. Conversely, 2023 saw demand increases of 0.30 TWh in the net-import of Interconnector Electricity (IcE), 0.14 TWh in renewable energy, and 0.02 TWh in non-renewable waste (NRW).

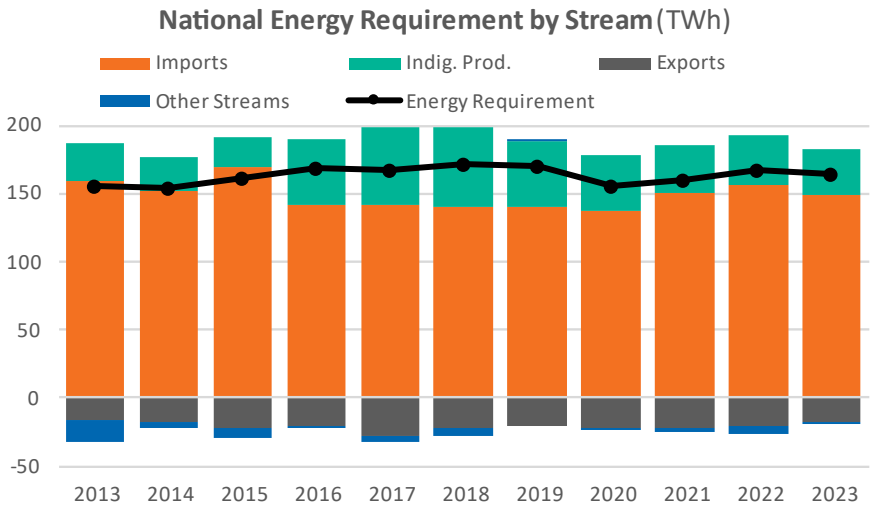
Ireland's energy requirement is satisfied by the sum of positive-inward flows, such as indigenous production, imports, and stock-draws, and negative-outward flows, such as exports, stock-builds, and marine-bunkering. Ireland imports 100% of its oil and coal requirement but satisfies its requirement for other energy products through a blend of (net) imports and indigenous production, *i.e.* the production or generation of energy within Ireland, from resources in Ireland. Ireland's largest energy exports are fuel-oil and gasoline, produced by the refining of imported crude oil at the Whitegate refinery in County Cork.

Figure 3.3 - Bubble plot showing the indigenous production, imports, and exports of the different energy products that sum to Ireland's overall energy requirement in 2023.



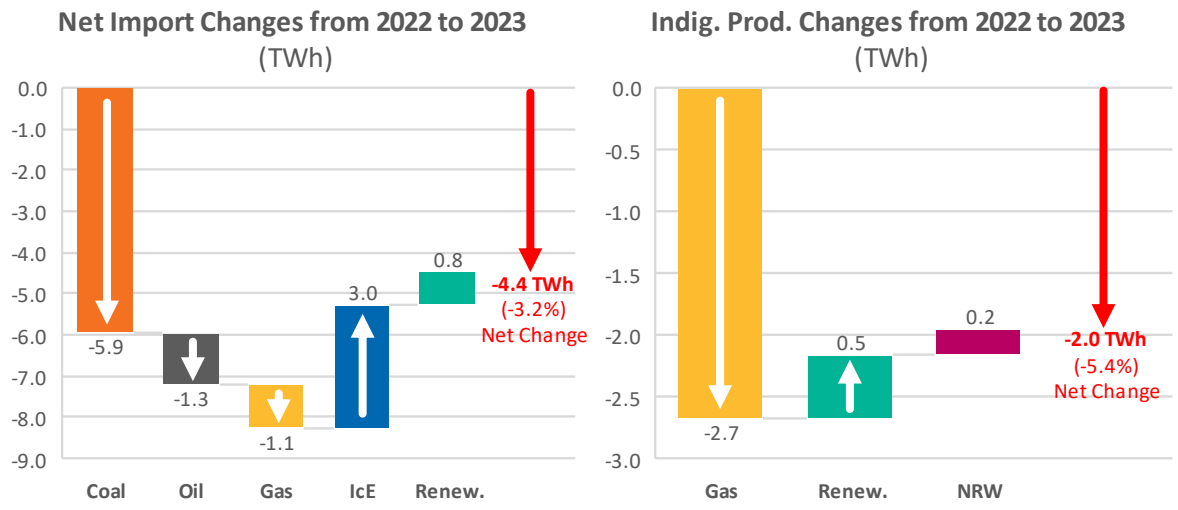
Ireland's total energy requirement dropped by 2.9 TWh in 2023, driven by drops in indigenous production (-2.0 TWh) and net imports (-4.4 TWh), and a counteracting increase in stock draws (+3.3 TWh).

Figure 3.4 - Time series of Ireland's overall energy requirement by supply stream.



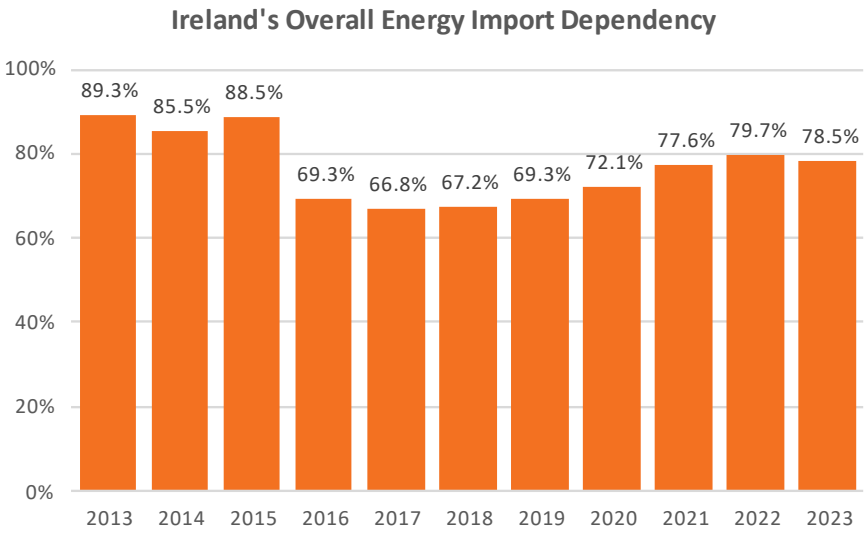
The overall drop in net imports in 2023 was driven by reductions in imported coal (-5.9 TWh), oil (-1.3 TWh), and natural gas (-1.1), with partially counteracting increases in the net imports of interconnector electricity (+3.0 TWh) and renewables (+0.8 TWh). The overall drop in indigenous production in 2023 was driven by a reduction in indigenous gas (-2.7 TWh), with partially counteracting increases in the indigenous production of renewables (+0.5 TWh) and non-renewable waste (+0.2 TWh).

Figure 3.5 - Waterfall plot comparing 2022 to 2023 changes in Ireland's net import of energy, and indigenous production of energy.



Ireland lacks significant indigenous fossil fuel resources and its only in relatively recent years that it has begun to harness significant quantities of natural gas from the Corrib gas field off the west coast of Ireland. From circa 2000 – 2016, Ireland imported approximately 85% - 90% of its energy needs, this fell sharply following the opening of the Corrib gas field to a low of 66.8% in 2017. Ireland's overall energy import dependency in 2023 was 78.5%, which is down on the value of 79.7% for 2022. By way of comparison, the average EU energy import dependency was 55.5% in 2021, the latest year for which a published value is available from Eurostat.

Figure 3.6 – Time series of Ireland's overall energy import dependency.



3.1.6.3 Energy Consumption

Primary energy supply responds to the level of final demand for energy services (heating, transportation and electricity) and how end users want that energy demand satisfied. Energy service demand is driven primarily by economic activity and by the energy end-use technologies employed in undertaking such activity.

The relationship between economic activity and energy demand is less straightforward in Ireland than it is for most other countries. Gross Domestic Product (GDP) is the most widely accepted measure of economic activity internationally, but Ireland's GDP is strongly influenced by the revenue and profits reported by multinational companies. Some economic activity of these companies results in large amounts of value added (see Appendix 4), but with little energy consumption. This was illustrated clearly in 2015, when Irish GDP increased suddenly by +25% from 2014, due to the transfer of intellectual property from multinational companies. Care must be taken when comparing macro-economic indicators, such as energy per unit GDP, across countries.

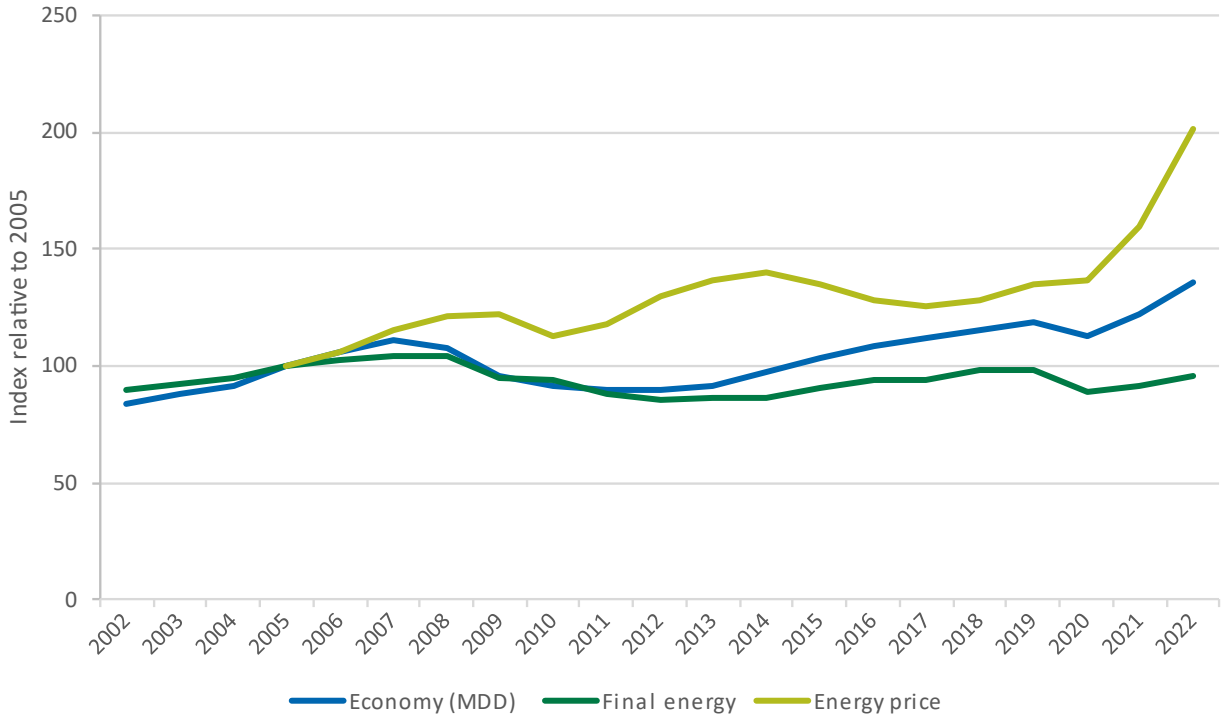
Ireland's Central Statistics Office has developed alternative indicators to GDP that more accurately reflect the level of economic activity in the domestic economy, and to remove the distorting effects of globalisation. Modified domestic demand[2] (MDD) was first published in the Quarterly National Accounts[3] results for Q1-2017 and excluded trade by aircraft leasing companies, exports and

[2] Previous editions of this report presented another economic indicator, modified gross national income (GNI*), as an alternative to GDP. For more information on the differences between GDP, GNI* and modified domestic demand refer to the CSO.
[3] CSO, *Quarterly National Accounts*. Available from: https://www.cso.ie/en/statistics/nationalaccounts/quarterlynationalaccounts/

imports of R&D services, and exports and imports of R&D-related IP products. For comparison, Ireland's MDD grew by +5.3% from 2014 to 2015, *vs.* +25% for GDP.

Figure 3.7 shows the historical trends for modified domestic demand, energy prices and final energy, each expressed as an index relative to 2005. This figure illustrates changes in economic growth and shows the effect of the economic downturn between 2008 and 2012 (and the subsequent return to growth after 2013).

Figure 3.7 - Index of modified domestic demand, final energy demand and energy price



Source: SEAI[4]

Table 3.1 gives the growth rates for the economy (GDP and MDD), primary energy, final energy and energy-related CO_2 emissions for the period. Transport and industry have responded to economic activity, while energy use in the residential and services sectors is more driven by short-term annual variations in weather and energy prices.

Table 3.1 - GDP, MDD, final energy, primary energy and energy-related CO_2 growth rates

[4] https://www.seai.ie/sites/default/files/publications/energy-in-ireland-2024.pdf

	Quantity				Change to 2022 (%)		
	2022	2021	2018	2012	2021	2018	2012
Economy (GDP) Million €2021	475,016	434,070	335,848	203,080	+9.4%	+41.4%	+133.9%
Economy (MDD) Million €2021	229,866	206,386	194,852	151,925	+11.4%	+18.0%	+51.3%
Final energy (TWh)	140.26	133.91	144.65	124.76	+4.7%	-3.0%	+12.4%
Primary energy (TWh)	167.08	160.74	171.34	156.46	+3.9%	-2.5%	+6.8%
Energy related CO_2 ($ktCO_2$)	**36,475**	**35,368**	**39,369**	**38,362**	**+3.1%**	**-7.4%**	**-4.9%**

Source: SEAI[5]

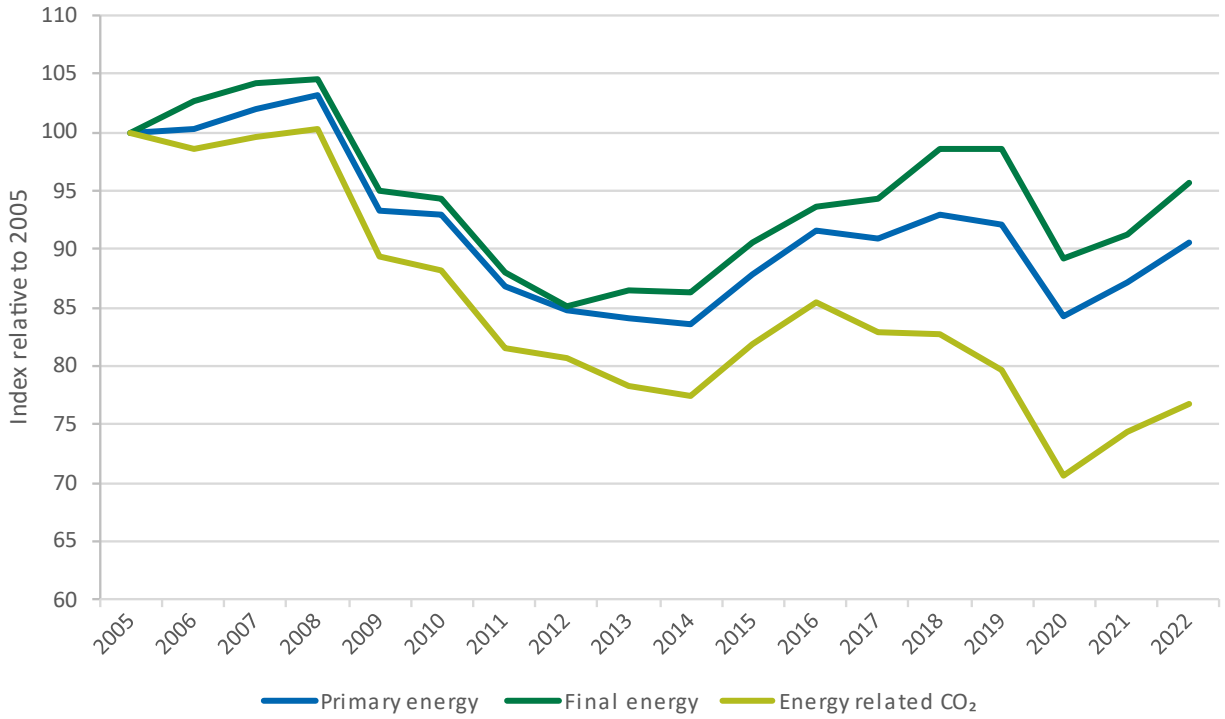
In 2020, final energy use, energy-related CO_2 emissions and MDD fell, due largely to the impact of COVID-19 on economic activity (while GDP increased by +5.9%). All indicators returned to growth in 2021 and continued into 2022.

The overall efficiency of electricity generation has increased over the period. These improvements are driven by introducing higher efficiency CCGT gas generators, reductions in inefficient coal generation, and the increased supply of wind-generated electricity (considered 100% efficient).

Figure 3.8 shows the relationship between final energy demand, primary energy use and energy-related CO_2 emissions, expressed as an index relative to 2005. The difference between the trends in final energy use and primary energy supply arises from improvements in the efficiency of energy transformations, particularly electricity generation.

Figure 3.8 - Index of final energy, primary energy and energy-related CO_2

[5] https://www.seai.ie/sites/default/files/publications/Energy-in-Ireland-2023.pdf



Source: SEAI[6]

3.1.6.4 Fuel Consumption and Fossil Fuel Trends

Key fossil fuel trends:

- Fossil fuels accounted for 83% of primary energy requirement in 2023 (*i.e.* before accounting for losses in energy transformation, own use and distribution losses), and 86% in 2022.
- From 2012 to 2023, primary energy requirement of fossil fuel decreased by 7%.
- Fossil fuel use in electricity generation decreased from 47.06 TWh in 2012 to 32.89 TWh in 2023, a 30% drop, with decreases in the use of coal and peat, and an increase in the use of natural gas.
- Fossil fuels accounted for 72% of final energy use in 2023 (*i.e.* after accounting for losses in energy transformation, own use and distribution losses) and 73% in 2022.
- From 2012 to 2023, the final consumption of fossil fuel has increased by 5%, despite the primary energy requirement of fossil fuel decreasing by 7% the same period. This is due to

[6] https://www.seai.ie/sites/default/files/publications/Energy-in-Ireland-2023.pdf

the decrease in fossil fuel use in energy transformation (specifically electricity generation), but the increase in its direct use in the final energy sectors.

- The final consumption of coal and peat combined fell by 48% between 2012 and 2023, while the final consumption oil and natural gas increased by 10% and 2% respectively.
- The use of peat in electricity generation ceased entirely at the end of 2023.

Figure 3.9 shows the trends in energy supply to electricity generation broken out by energy type to the end of 2022.

Figure 3.9 - Energy input to electricity generation by energy type

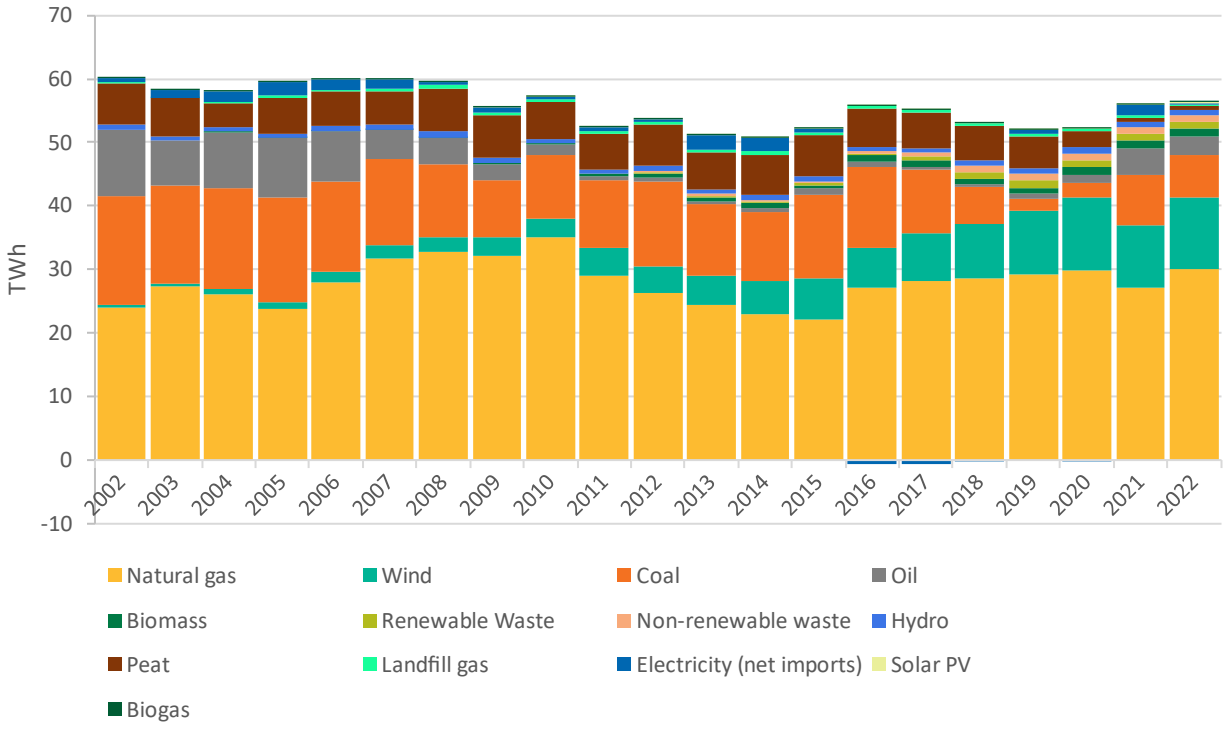


Table 3.2 shows the energy input to electricity generation by energy type in 2022 with comparison to previous years.

Table 3.2 - Energy input to electricity generation by energy type with comparison to previous years

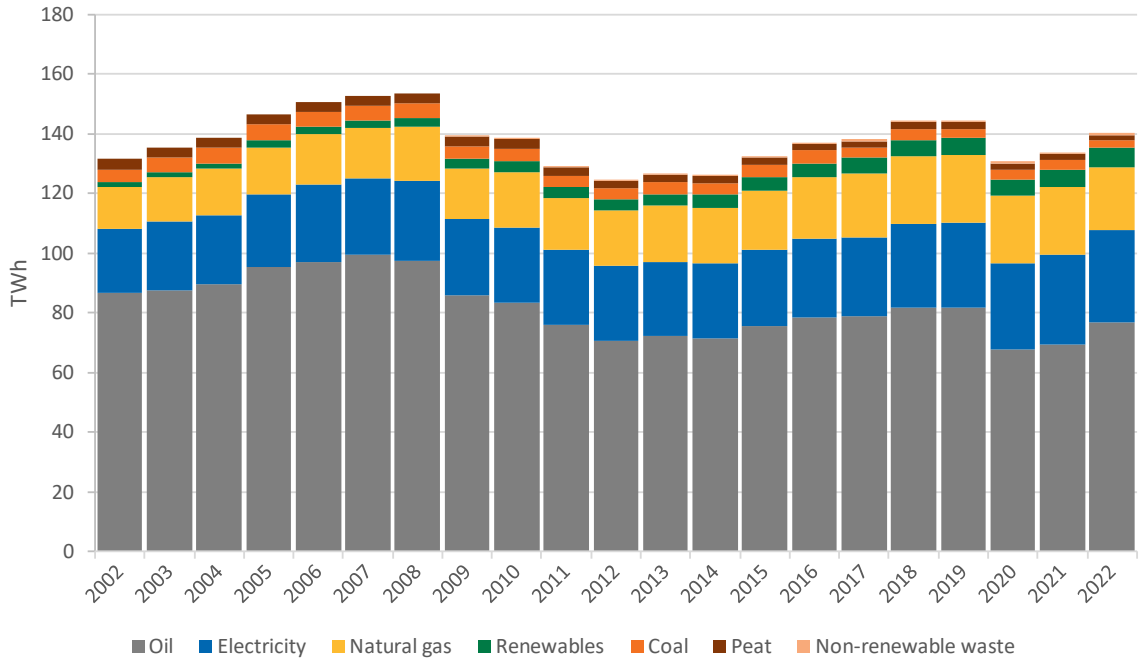
	Quantity (TWh)				Share (%)				Change to 2022 (%)		
	2022	2021	2018	2012	2022	2021	2018	2012	2021	2018	2012
Natural gas	30.17	27.24	28.62	26.40	53.4%	48.6%	53.9%	49.1%	+10.7%	+5.4%	+14.3%
Wind	11.21	9.78	8.64	4.01	19.8%	17.4%	16.3%	7.5%	+14.6%	+29.7%	+179%
Coal	6.56	7.82	5.69	13.49	11.6%	14.0%	10.7%	25.1%	-16.1%	+15.3%	-51.4%
Oil	2.97	4.19	0.40	0.65	5.3%	7.5%	0.8%	1.2%	-29.0%	+636%	+357%
Biomass	1.26	1.18	0.88	0.47	2.2%	2.1%	1.7%	0.9%	+7.0%	+42.8%	+168%
Renewable Waste	1.14	1.13	1.15	0.29	2.0%	2.0%	2.2%	0.5%	+0.7%	-1.5%	+297%
Non-renewable waste	1.05	1.04	1.06	0.21	1.9%	1.8%	2.0%	0.4%	+1.1%	-0.8%	+390%
Hydro	0.70	0.75	0.69	0.80	1.2%	1.3%	1.3%	1.5%	-6.4%	+1.0%	-12.6%
Peat	0.63	0.83	5.50	6.48	1.1%	1.5%	10.4%	12.1%	-24.4%	-88.6%	-90.3%
Landfill gas	0.30	0.34	0.39	0.50	0.5%	0.6%	0.7%	0.9%	-12.3%	-23.1%	-40.0%
Electricity (net imports)	0.25	1.59	-0.03	0.41	0.4%	2.8%	-0.1%	0.8%	-84.1%	-1,008%	-39.1%
Solar PV	0.15	0.08	0.02	0.00	0.3%	0.1%	0.0%	0.0%	+85.8%	+714%	-
Biogas	0.12	0.11	0.08	0.05	0.2%	0.2%	0.2%	0.1%	+7.6%	+50.5%	+155.3%
Total	**56.51**	**56.08**	**53.10**	**53.77**	**100%**	**100%**	**100%**	**100%**	**+0.8%**	**+6.4%**	**+5.1%**

Table 3.3 Energy input to electricity generation by renewable sources, non-renewable sources

	Quantity (TWh)				Share (%)				Change to 2022 (%)		
	2022	2021	2018	2012	2022	2021	2018	2012	2021	2018	2012
Renewable	14.88	13.38	11.86	6.12	26.2%	23.2%	22.4%	11.3%	+11.3%	+25.4%	+143.2 %
Non-renewable	41.63	42.71	41.24	47.65	73.3%	74.1%	77.7%	87.9%	-2.5%	+0.9%	-12.6%
Electricity (net imports)	0.25	1.59	-0.03	0.41	0.4%	2.8%	-0.1%	0.8%	-84.1%	-1,008%	-39.1%
Total	**56.76**	**57.67**	**53.07**	**54.18**	**100%**	**100%**	**100%**	**100%**	**-1.6%**	**+7.0%**	**+4.8%**

Figure 3.10 shows the annual trends in final energy use by energy type for the period 2022-2022. Table 3.4 provides numerical details on the absolute values, relative shares, and percentage changes in the final energy use by energy type shown in Figure 3.9. Although Ireland remains heavily reliant on oil, its consumption has decreased, in absolute and percentage terms, over the period presented. Decreases were precipitated by two events: the economic downturn from 2008 to 2012 and the COVID-19 impact in 2020 and 2021. Outside of these events, oil consumption has increased each year. Other general trends over the period shown have been decreases in the consumption of coal and peat, and increases in the consumption of gas, electricity and renewables.

Figure 3.10 - Total final consumption by energy type



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	Quantity (TWh)				Share (%)				Change to 2022 (%)		
	2022	2021	2018	2012	2022	2021	2018	2012	2021	2018	2012
Oil	76.94	69.50	81.93	70.80	54.9%	51.9%	56.6%	56.7%	+10.7%	-6.1%	+8.7%
Electricity	30.77	30.02	27.89	24.83	21.9%	22.4%	19.3%	19.9%	+2.5%	+10.4%	+23.9%
Natural gas	21.03	22.69	22.81	18.89	15.0%	16.9%	15.8%	15.1%	-7.3%	-7.8%	+11.3%
Renewables	6.70	5.77	5.34	3.47	4.8%	4.3%	3.7%	2.8%	+16.0%	+25.5%	+92.8%
Coal	2.27	3.20	3.75	3.94	1.6%	2.4%	2.6%	3.2%	-29.1%	-39.5%	-42.4%
Peat	1.87	2.10	2.30	2.50	1.3%	1.6%	1.6%	2.0%	-11.0%	-18.6%	-25.4%

	Quantity (TWh)				Share (%)				Change to 2022 (%)		
	2022	2021	2018	2012	2022	2021	2018	2012	2021	2018	2012
Non-renewable waste	0.68	0.63	0.64	0.32	0.5%	0.5%	0.4%	0.3%	+8.3%	+6.7%	+113%
Total	**140.26**	**133.91**	**144.65**	**124.76**	**100%**	**100%**	**100%**	**100%**	**+4.7%**	**-3.0%**	**+12.4%**

Table 3.4 - Final energy by fuel compared with previous years

3.1.6.5 Renewable Energy

Ireland set a record high of 23.38 TWh in renewable energy use across electricity, transport, and heat for 2023. Just over a third (33.7%) of our electricity came from wind in 2023. Ireland's use of renewables in 2023 helped avoid 7.4 MtCO2. Wind generation in 2023 was 4.1% higher than in 2022, and higher than any previous year, setting a new annual record of 11.7 TWh.

Solar electricity generation in 2023 was 33.4% higher than in 2022 but accounted for just 1.9% of Ireland's electricity supply, which is the equivalent of providing all the country's electricity needs for 1 full week. In 2023, 64% of solar generation came from utility-scale solar farms and 36% came from rooftop solar panels. Electricity from Irish solar farms increased by over 2,400% in 2023, as multiple new utility-scale sites were connected to the grid, while electricity from rooftop solar panels increased by 74%.

The use of renewable ambient heat from heat pumps increased by almost 25%. In 2023, about two-thirds (67.4%) of Ireland's renewable energy went to electricity generation, and one-third (32.6%) was directly consumed by end-users. The annualised average biofuel-blend in road diesel was 8.4% (energy basis) in 2023, up from 6.5% in 2022. The annualised average biofuel-blend in road petrol was 4.2% (energy basis) in 2023, up from 3.2% in 2022.

Renewable Energy Targets

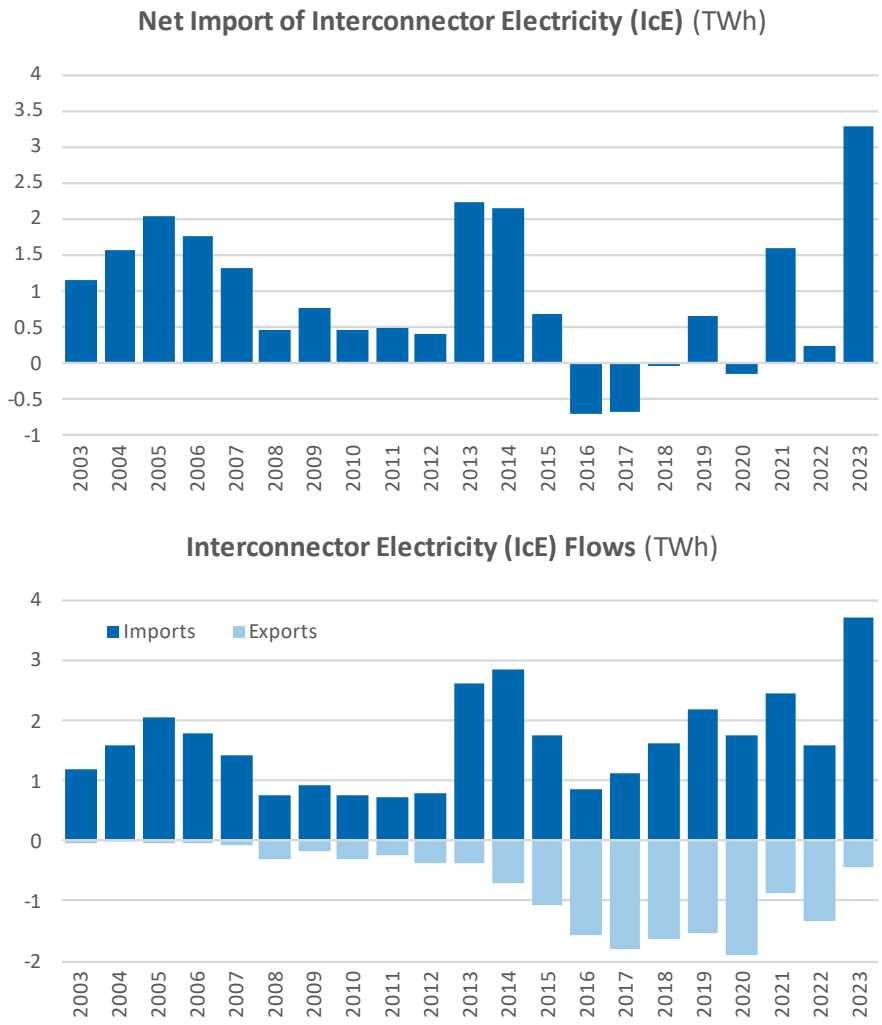
- The following are the provisional values for the share of renewable energy in Ireland's gross final consumption of energy in 2023, calculated in accordance with the EU's recast Renewable Energy Directive (RED II) and associated guidance from Eurostat:
- Overall share of energy from renewable sources in gross final consumption (RES-overall) was 14.6%.
- Share of energy from renewable sources in gross final consumption of electricity (RES-E) was 38.9%.
- Share of energy from renewable sources in final consumption of energy the transport sector (RES-T) was 7.6%.
- Share of energy from renewable sources in gross final consumption of energy in heating and cooling (RES-H) was 7.2%.

3.1.6.6 Electricity Imports

Ireland's net import of electricity across interconnectors increased from 0.3 TWh in 2022 to 3.3 TWh in 2023 – a 10-fold increase – setting an annual record the use of imported electricity. Ireland's net import of electricity is given by the sum of positive-flow imports and negative-flow exports. In 2023, Ireland imported 8.3 times more the electricity than it exported.

Although Ireland's consumption of electricity increased by 3.0% in 2023, the generation of electricity within Ireland fell by 6.7%, due to an increased use of imported electricity through interconnectors from Great Britain (East-West) and Northern Ireland (North-South). In 2023, Ireland generated 3.3 TWh less electricity from fossil fuels than in 2022, balanced by 3.0 TWh more electricity imported through international interconnectors, and 1.0 TWh more renewable generation in Ireland. In total, Ireland's gross supply of electricity increased by 0.7 TWh in 2023.

Figure 3.11 - Time series of Ireland's net imports (imports less exports) of electricity summed across the North-South and East-West international interconnectors.



3.1.6.7 Primary Energy by Sector

Figure 3.12 shows how Ireland's primary energy supply ultimately services the energy needs of different sectors of the economy. Where primary energy is used directly by end users in a particular sector, then allocation is straightforward. An example is the use of natural gas in the residential sector. Where fuels undergo a transformation process before final use by an end-user, then the full primary energy required to satisfy that final use is allocated to the sector. For example, for the electricity used in the residential sector, the fuels used to generate that electricity (gas, wind, coal, peat and oil, *etc.*) are allocated to the residential sector.

Figure 3.12 Total primary energy requirement by sector

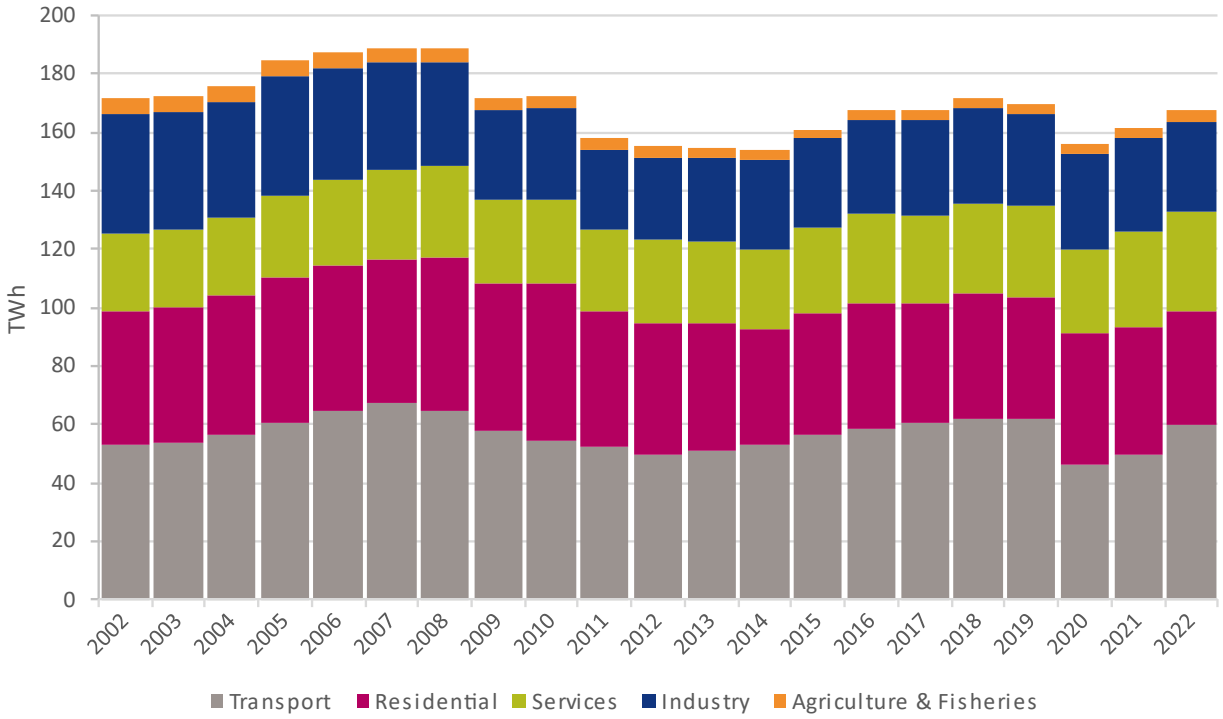


Table 3.5 details the quantities, shares and trends of primary energy supply across economic sectors up to 2022. The total primary supply is split across the transport (34.7%), residential (22.6%), services (19.9%), industry (18.0%), and agriculture and fisheries sectors (2.4%).

Table 3.5: Primary energy by sector compared with previous years

	Quantity (TWh)				Share (%)				Change to 2022 (%)		
	2022	2021	2018	2012	2022	2021	2018	2012	2021	2018	2012
Transport	59.61	49.63	61.75	49.28	34.7%	30.1%	35.3%	30.9%	+20.1%	-3.5%	+21.0%
Residential	38.80	43.84	42.82	45.32	22.6%	26.6%	24.5%	28.4%	-11.5%	-9.4%	-14.4%
Services	34.19	32.41	31.30	28.48	19.9%	19.6%	17.9%	17.9%	+5.5%	+9.2%	+20.1%
Industry	30.98	32.30	32.28	28.54	18.0%	19.6%	18.4%	17.9%	-4.1%	-4.0%	+8.6%
Agriculture & Fisheries	4.21	3.45	3.45	3.86	2.4%	2.1%	2.0%	2.4%	+22.2%	+22.0%	+9.1%
Total	**167.79**	**161.63**	**171.60**	**155.48**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**+3.8%**	**-2.2%**	**+7.9%**

3.1.7 Transport

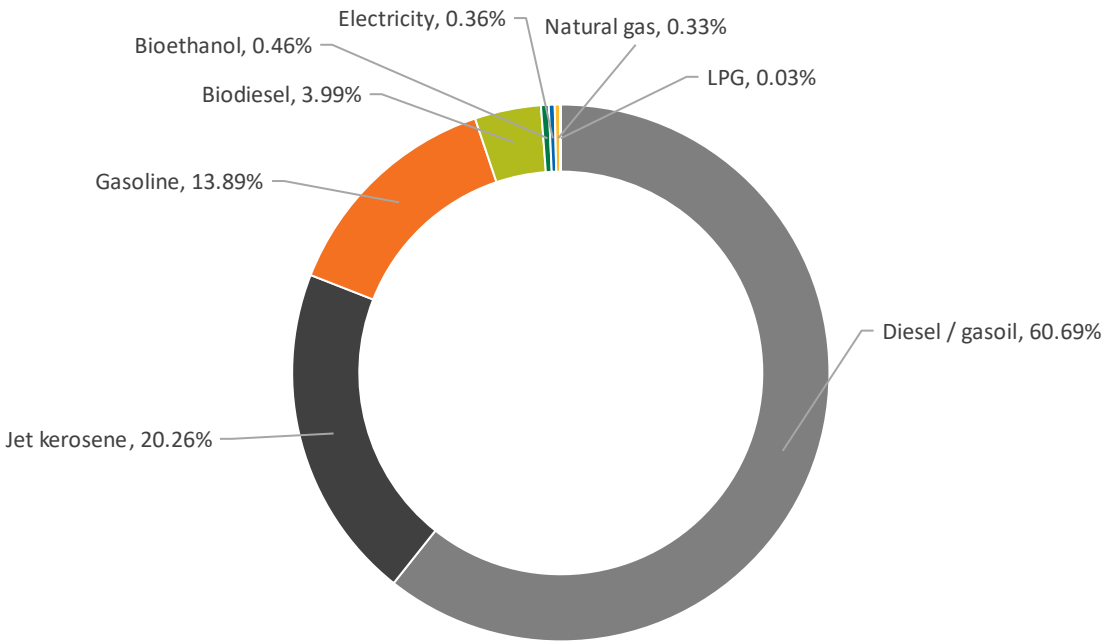
Transport has been the sector most responsive to changes in economic growth. Transport energy use and CO_2 emissions peaked in 2007, before falling sharply during the recession. The transport sector returned to growth in 2013, but by 2022, total transport energy use was still below the 2007 peak. In 2022, transport was the sector with Ireland's largest end use of energy, the total transport energy demand accounted for more than 40% of total final energy and had rebounded to 95% of pre-COVID 2019-levels. While 2022 and 2023 showed record levels of biofuel blending into our petrol and diesel, energy demand and related emissions from transport continued to rise with energy demand for transport 19.9% higher than in 2021, as travel patterns continued to rebound to pre-COVID levels. Energy-related emissions from transport, excluding international aviation and maritime navigation increased by +0.7 $MtCO_2$ in 2022 compared to 2021.

Transport remains heavily dependent on fossil fuels, particularly oil products. This lack of fuel diversity is unique amongst the energy using sectors. Renewables made up a very small share of

transport energy use in 2022. Electricity also remains a small share of transport energy use, which is split between electric rail (Dublin Area Rapid Transit (DART) and Luas) and electric vehicles (mostly private cars). This has meant that there has been very little decarbonisation of the transport fuel mix to date, with transport CO_2 emissions remaining tightly coupled to energy use.

Demand for the diesel and petrol used in road transport in 2022 was 6.1% and 13.9% higher than in 2021, respectively. In 2022, 93.9% of road transport energy demand came from fossil fuels, with 68.6% coming from fossil-diesel and 25.4% coming from fossil-petrol. The remaining 6.1% of non-fossil energy in road transport came mainly from the biofuels blended into the diesel and petrol fuels available from garage forecourts across the country. 4.7% of road transport energy in 2022 came from the biodiesel blended into our diesel, and 0.8% came from the bioethanol blended into our petrol. Electricity accounted for just 0.5% of road transport energy in 2022. Figure 3.13 shows the share of energy types in transport final energy in 2022.

Figure 3.13 - Shares of energy types in 2022 transport final energy



The quantity of biofuel blended into diesel and petrol has increased over the last decade and in 2022, biofuel use in transport was 26.2% higher than in 2021. This trend was further boosted in 2023, when the Irish Government announced the roll-out of E10 blended petrol in Ireland, in line

with CAP-23 actions. Moving blended petrol to E10 acts to double the allowable bioethanol content from 5% to 10% (by volume). CAP-23 also calls for roll-out of B12 blended diesel for 2025 and B20 blended diesel for 2030, increasing the biofuel blended into diesel to 12% and 20% (by volume), respectively.

In 2022, private car energy use dominated and accounted for nearly 40% of transport energy use. Private car energy use declined briefly during the recession in 2009 and 2010 but returned to growth in 2011. It peaked in 2015 and remained relatively flat until 2019, before the sharp drop in 2020 when energy use for private cars dropped by 21%. This reduction was mostly due to the impact of public health measures on limiting travel during the pandemic and resulted in the lowest energy use in private cars for almost 20 years. One significant long-term trend is the year-on-year reduction in petrol use since 2007, which continued into the COVID-impacted years (2020 and 2021). This was mostly driven by a sustained switch from petrol to diesel vehicles. Since 2008, the combined effect of the EU legislation obligating manufacturers to reduce average fleet emissions and the changes to the Irish taxation system for private cars has been to shift new car purchases from higher to lower CO_2 emissions bands, and to reduce the average specific CO_2 emissions of new cars. This shift from petrol to diesel cars was already underway prior to the changes in motor taxation in 2008, but accelerated sharply after that. The Irish car stock is also showing strong growth in EVs, but still from a low base. As 85% of all vehicles licensed for the first time in 2022 had an internal combustion engine and given that the typical lifespan of a car is around 15 years, it will be well into the next decade before there is a significant phasing out of cars with internal combustion engines.

Heavy goods vehicles (HGV) energy use also saw a large reduction during the recession, falling by 49% between 2007 and 2013. Despite the recovery of the economy between 2012 and 2019, the HGV activity in most categories did not recover to 2007 levels. By 2019, ‘Delivery of construction materials’ remained 52% below 2007 levels, ‘Import and export’ was 46% below and ‘Other’ was 58% below. For ‘Delivery of construction materials’, this is to be expected, as despite the recovery in the economy, activity in both new house construction and motorway construction remained well below 2007 levels. Although HGV activity was less affected by COVID-19 travel restrictions than private cars or aviation, the number of tonne-kilometres still fell in 2020. This was nearly twice the reduction seen in total economic activity, as measured by MDD. HGV activity returned to growth in 2021.

Aviation energy use is notable in that it usually makes up a large share of transport energy use in Ireland, particularly since 2000, but can be severely affected by external factors, such as recessions or the COVID-19 pandemic. International aviation energy consumption fell by 44%

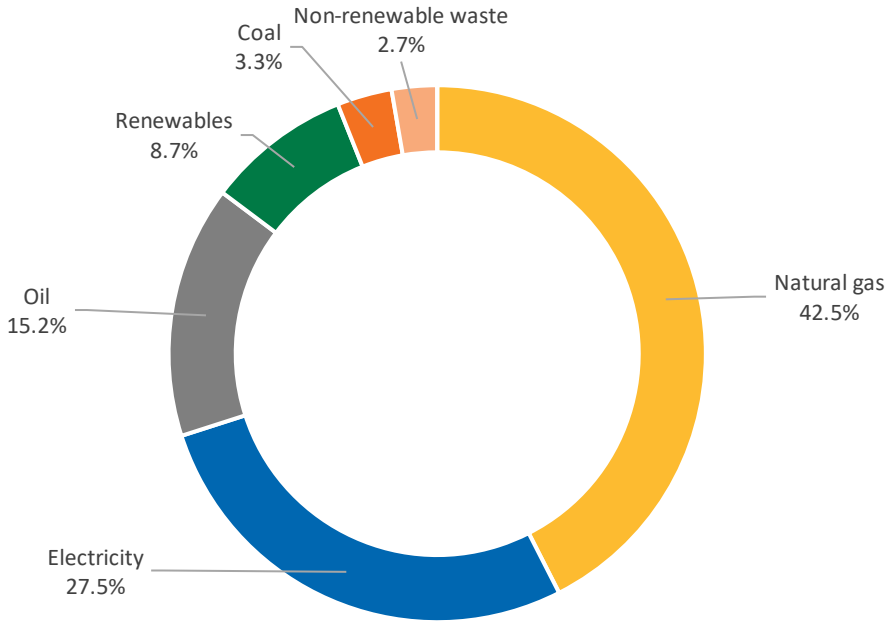
between 2007 and 2012 during the recession. It returned to strong growth after 2012, reaching an all-time-high in 2019, 6.8% above the previous 2007 peak, before the dramatic 64.1% fall in 2020, taking it below the HGV sub-sector demand for the first time since 2012. In 2022, consumption in international aviation had returned to around the same level as 2017. Demand for jet kerosene in 2022 was 12.8% higher than in 2021 and this was a significant contributor to the overall increase in transport energy demand.

It is also useful to split energy supply or use into the three modes of electricity, transport and heat. In 2022, 34.3% of energy-related emissions came from the transport mode. Final energy use in the transport mode decreased during the 2008-2012 recession, and again during the COVID-19 restrictions in 2020 and early 2021. Outside of these events, final energy use in the transport mode has increased each year. In 2020, every single fuel type in the transport mode saw a reduction against its 2019 values, with an overall reduction in final energy use of 26% in transport. Diesel remained by the largest fuel type with a share of 70%, followed by petrol (15%) and jet kerosene (10%). Most of the reduction in transport fuel use in 2020 was in diesel and jet kerosene, which fell by 13.6% and 64.3% respectively. All fuels remained below pre-pandemic levels in 2021 and 2022 (with the exception of biodiesel). Liquid biofuels accounted for 4.5% of final energy in the transport mode in 2022.

3.1.8 Industry & Public Sector

In 2022, the industry sector's final energy consumption was 24.90 TWh, down 4.2% on the 2021 value. Industry had the 3rd largest sectoral final energy use and accounted for a 17.8% share of final energy consumption. Approximately 60% of GHG emissions from industry are energy related and in 2022, industry had a 10.3% sectoral share of energy related CO_2 emissions (3.74 MtCO2) associated with direct fuel use. Figure 3.14 shows the share of each energy type in the final energy consumed in industry in 2022.

Figure 3.14 Shares of energy types in 2022 industry final energy



Natural gas formed the largest share, at more than 40%, followed by electricity and oil. Renewables accounted for around 9%.

Natural gas, wastes and renewables have all increased their shares of industrial energy use over the last 20 years, while the shares of oil and coal have decreased. The share of electricity has declined slightly faster than overall energy consumption within the industry sector. The increase evident in renewables, is mainly due to the use of biomass in the wood-processing industry, and the use of the renewable portion of wastes in cement manufacturing. There was also significant fuel switching from coal and oil to natural gas during this period. Because gas is less carbon intensive than oil or coal, this fuel switching, along with increased use of renewable energy, has resulted in lower average emissions per unit of energy used in industry during this period.

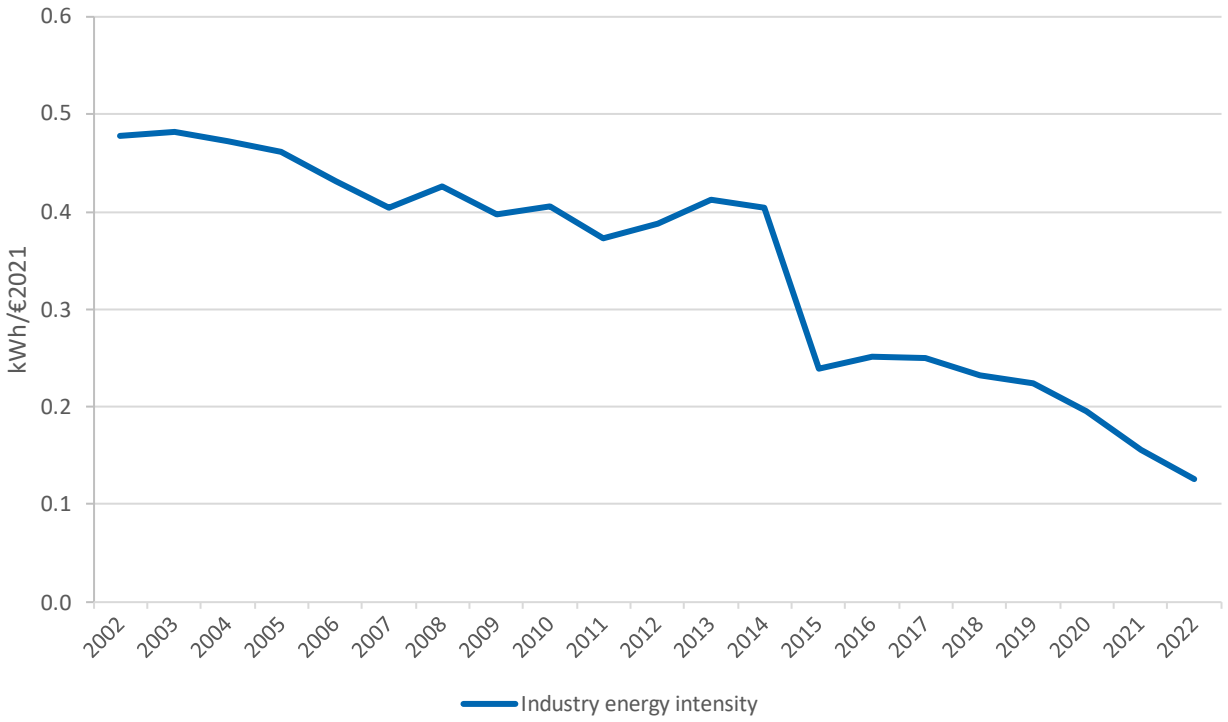
In 2022, industry was the 2nd largest sectoral end user of final energy in the heat mode (18.04 TWh, 35.2%). The largest and most consistent reduction in oil use for heat over the last two decades has come from the industry sector and recent growth in renewable energy use for heat has been due to increased use of renewable wastes in industry.

In 2022, industry was the 3rd largest sectoral end user of final energy in the electricity mode (6.86 TWh, 22.3%). Over the last 10 years there has been a modest increase in industry final demand in the electricity mode (+11.7%), when compared to the 2012 value.

Over the last 20 years, the industry energy intensity has reduced because of a drop in industrial energy consumption while value added increased. Figure 3.15 shows the industrial energy

intensity over the period, expressed in kilograms of oil equivalent per euro of industrial value added at 2021 money value (kWh/€2021).

Figure 3.15 Industry energy intensity



Value-added output from industry was 74% higher in 2015 compared with 2014. The large increase in gross value added in 2015 is explained by several one-off factors, such as transferring assets into Ireland, and what are known as reverse takeovers. This increase in gross value added incurred no additional energy consumption.

The step-change in industry energy intensity in 2015 illustrates the fact that energy intensity is not a sufficient indicator of energy efficiency, as variations may result from many factors, such as structural changes, or changes to the fuel mix or activity. Examples of changes to the structure of the industry sector include the cessation of steel production in 2001, of fertiliser production in late 2002, and of sugar production in 2007.

3.1.9 Circular Economy

Resource extraction and processing are responsible for over 90% of biodiversity loss and water impacts, as well as half of all GHG emissions. Achieving a circular economy will be crucial to lowering the carbon footprint of the world and safeguarding the environment, human health, and natural resources. Additionally, the circular economy boosts competitiveness and economic resilience. Materials can be reused, remanufactured, or kept closer to the point of consumption within the EU, resulting in the creation of skilled jobs and safer supply chains.

Ireland's ambition is to be an EU and global leader in the transition to a circular economy - an economy in which we keep resources in use for as long as possible; extract the maximum value from them whilst in use; and recover and regenerate products and materials at the end of life.

3.1.9.1 National Waste Management

The GHG emissions from waste come from waste treatment and are reported under the waste sector. The gains in reducing material use, and substituting virgin material with recycled material, will be credited back up the supply chain. Minimising waste generation, and improving segregation, reuse and recycling will lead to less emissions associated with waste transport and treatment. Ireland has made significant progress in managing waste streams, particularly in improving recycling rates and diversion from landfill.

In terms of waste management, one of the largest contributors to methane emissions in Ireland is the landfilling of Municipal Solid Waste (MSW)[7]. Municipal Solid Waste consists of three main elements - household, commercial (including non-process industrial waste), and street cleansing waste (e.g. street sweepings, street bins and municipal parks and cemeteries maintenance waste). The biodegradable element of MSW (Biodegradable Municipal Waste - BMW) primarily responsible for methane emissions consists of organic materials such as food and kitchen waste from households, caterers, restaurants and retail premises, as well as biodegradable garden and park waste. Methane may, if not properly managed, be emitted from landfill sites as fugitive emissions, a process affected by the local weather conditions (humidity and climate).

National and regional waste policy are all predicated on the management of waste in line with the waste hierarchy, whereby the prevention, preparation for re-use, recycling and other recovery of

[7] Ireland's Provisional Greenhouse Gas Emissions 1990-2023 | Environmental Protection Agency (epa.ie)

waste are preferred (in that order) to the disposal of waste (in Ireland disposal means the landfilling of waste). In effect, national waste policy seeks to:

- Limit the overall amount of MSW going to landfill (which in turn reduces BMW to landfill); and,
- Reduce the share of biodegradable material which is present in the MSW which does go to landfill (and divert BMW to more sustainable treatment such as anaerobic digestion and composting).

There are several reasons for seeking to reduce landfill as much as possible, including:

- Its impact on the environment from emissions of leachate (polluting water tables) and methane gas (GHG); and
- The lost economic opportunity of burying material in the ground as opposed to reusing / recycling or recovering energy from it.

Emissions from the Waste sector, which account for 1.5% of total national emissions, decreased by 4.0% in 2023 because of a decrease in emissions of methane from landfills by 6.3%. Long-term decreases are a result of decreased quantities of municipal solid wastes (MSW) disposed of at landfills which now are combusted in Waste to Energy (WtE) plants. In addition, a decrease in the proportion of organic materials (food and garden waste) in MSW as well as a diversion of paper products from landfills. A large proportion of organic food and garden waste is now treated in composting and anaerobic digestion facilities, which have significantly lower emissions than landfills.[8]

3.1.9.2 Waste Trends

- Municipal Solid Waste to Landfill

The implementation of national and regional waste management policy has meant that the landfill of MSW has decreased. Ireland's landfill rate for municipal waste managed was 16 % in 2021, the same as in 2020. There has been a steep decline in Ireland's landfill rate for municipal waste from over 80 % in 2001. Ireland must reduce the share of municipal waste landfilled to 10 % or less by 2035, which includes waste landfilled at each step along the waste treatment process in Ireland

[8] Ireland's Provisional Greenhouse Gas Emissions 1990-2023 | Environmental Protection Agency (epa.ie)

and abroad.[9] Diversion of municipal waste from landfill has been increasing for the following reasons:

- Increases in the landfill levy for disposal of waste to landfill.
- Requirements to divert BMW from disposal to landfill under the landfill Directive targets.
- Capacity for incineration of municipal waste at Ireland's municipal waste incinerators.
- Increasing mechanical treatment of residual waste at waste facilities, leading to the production of refuse derived fuel/solid recovered fuel which is used as a fuel both in Ireland and abroad. Organic fines arising from the mechanical treatment of residual waste can be bio-stabilised and are generally recovered via backfill at landfill.

The Circular Economy and Miscellaneous Provisions Act 2022 provides a legal basis for the additional measures and is complemented by other actions such as the introduction of a Deposit Return Scheme (DRS) for plastic bottles and aluminium cans and the expansion of Extended Producer Responsibility schemes to additional material and product categories.

Since 2017, Ireland has two operational MSW Waste to Energy facilities with total licensed capacity of 835,000 tonnes of MSW per annum.

The number of landfills accepting MSW has decreased from twenty-eight in 2010 to three in 2022.[10]

- Biodegradable Municipal Waste to Landfill

The Landfill Directive, (1999/31/EC), sets limits on the quantity of BMW that can be disposed to landfill. The limits (tied to 1995 statistical base year) are phased, with each phase having a stricter diversion obligation. The quantities of BMW disposed to landfill in Ireland have been on a largely downward trend since 2010. The quantity of BMW disposed to landfill was 109,384 tonnes in 2021 and 129,572 tonnes in 2022. These are well within Ireland's current limit of 610,000 tonnes, which is calculated based on the tonnage of BMW landfilled in 1995 (1.3 million tonnes). There has been a slight increase in BMW disposed to landfill in 2021 and 2022 compared to the 2020 figures of 104,255 tonnes. This corresponds to a rise in the total amount of municipal waste accepted at landfill in the last two years.[11]

[9] Municipal | Environmental Protection Agency (epa.ie) – EPA waste data release 27 November 2023

[10] Biodegradable Municipal Waste | Environmental Protection Agency (epa.ie), EPA waste data release, 04 May 2023

[11] Biodegradable Municipal Waste | Environmental Protection Agency (epa.ie), EPA waste data release, 04 May 2023

The general decline in BMW to landfill is mirrored in steady rise in the quantity of municipal biowaste treated by composting/anaerobic digestion in Ireland which has increased significantly since 2010 with the introduction of the Food Waste Regulations and the associated roll-out of brown bins to commercial premises and households. The revised Waste Framework Directive ((EU) 2018/851) makes the separate collection of biowaste mandatory from the end-2023. This requirement is likely to result in a further decline in the BMW content of municipal waste landfilled in Ireland in the years ahead. [12]

3.1.10 Built Environment

Risks associated with climate change pose a serious threat to Ireland's built environment since they have the capacity to seriously harm homes, businesses, and vital infrastructure, resulting in high financial expenses as well as hazards to public health and welfare.

Due to predicted climate change, urban areas will be more vulnerable to heat stress, coastal erosion, and floods (coastal, pluvial, and fluvial). Increased precipitation, subsidence, more intense freeze-thaw cycles, wind damage, increased storminess, including structural damage and increased weathering from driving rain, and effects on indoor air quality and thermal comfort put the building fabric at greater risk at the building scale. These risks are systemic because decisions and patterns of development have the potential to exacerbate and solidify existing problems.

In 2022 the built environment contributed 11.1% of Ireland's GHG emissions, a decrease from 12.3% in 2021. Every aspect of our economy and culture is impacted by our building stock and heating needs. Decarbonising our current built environment is therefore a major task for homes, businesses, and the public sector, as acknowledged by the Climate Action Plan.

3.1.10.1 New Buildings

More Energy Efficient Building Regulations

Conservation of Fuel and Energy in Buildings, one of twelve parts comprising the Second Schedule to the Building Regulations, is in place to limit the energy use and carbon dioxide

[12] Biodegradable Municipal Waste | Environmental Protection Agency (epa.ie), EPA waste data release, 04 May 2023

emissions from a building as far as is practicable and requires an energy performance and carbon dioxide emissions performance to meet the cost optimal level of energy performance as required by the Energy Performance of Buildings Directive 2010/31/EU. This is recognised as an advanced energy performance requirement for buildings.

The Energy Performance of Buildings Directive requires that all new buildings (public and private) are Nearly Zero Energy Buildings (NZEB).

Part L of the Building Regulations for Dwellings and for Buildings other than Dwellings set the NZEB performance requirements for all new buildings. For dwellings, this represents a 70% improvement in energy performance when compared with the 2005 Part L requirements. For buildings other than dwellings, this represents a 60% improvement in energy performance compared with the 2008 Part L requirements. These measures are bringing about significant reductions in carbon emissions from all new buildings.

Electricity heating systems, the majority of which are heat pumps, were installed in 97% of new dwellings in 2023. This rapid transition to low-carbon heating systems is a result of these Nearly Zero Energy Building (NZEB) regulations introduced by the Department of Housing, Local Government and Heritage in 2019. These regulations have effectively phased out fossil fuel boilers in new homes. The change will significantly improve air quality in the areas where these new homes are built relative to traditional developments, providing more comfortable and energy-efficient homes, while also helping to achieve carbon reduction targets committed to in the Climate Action Plan.

This significant shift towards renewable heating systems in new homes shows that Ireland's ambitious building regulations under the Climate Action Plan complement the requirements of the recast Energy Performance of Buildings Directive.

3.1.10.2 Existing Buildings

The Government funds a number of grant schemes, administered by the Sustainable Energy Authority of Ireland (SEAI) to support the residential and non-residential sectors to improve the energy efficiency of their buildings.

a) Public Sector Buildings

The CAP21 sets specific energy and emissions reduction targets and requirements for the public sector to achieve by 2030. This has been reinforced by Climate Action Plan 2024:

50% energy efficiency improvement.

51% CO_2eq. emissions reduction target.

It continues to strengthen the commitment that the public sector will not install heating systems that use fossil fuels (certain exceptions apply).

Ireland achieved a 32.5% improvement in energy efficiency performance (compared to a 2009 baseline) while fossil CO_2 emissions had reduced by 3.9% in the public sector since the GHG baseline (2016-2018 average) by end 2022.

- Recast of Energy Performance of Buildings Directive and Energy Efficiency Directive

The EU's Fit for 55 package is a set of legislative proposals to make the EU's policies in several areas 'fit' for reducing GHG emissions by at least 55% by 2030 (compared to 1990 levels).

Under the Energy Efficiency Directive[13], there is a requirement for the public sector to achieve an annual absolute energy consumption reduction of 1.9 % and to renovate at least 3 % of the total floor area of buildings owned by public bodies each year.

The updated Energy Performance of Buildings Directive[14] (EPBD) contains minimum energy performance standards for buildings occupied by the public sector, which will require the 16% of the worst-performing buildings to be brought up in standard by 2030 and the 26% worst-performing buildings to be brought up in standard by 2033.

b) Public Sector Energy Efficiency Programme

This energy management and advisory programme offers comprehensive support and engagement to the public sector, focusing on embedding energy management and capacity building and supporting over 350 public bodies and 4,000 schools in achieving these targets.

The Public Sector Pathfinder Programme (an element of the Public Sector Energy Efficiency Programme) is a capital support fund for public sector energy efficiency and the decarbonisation of the sector's building stock.

The programme is operated on the basis of individual agreements between SEAI and national estate portfolio leads. The Programme is targeted at those large public bodies, or sectors of public

[13] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AJOL_2023_231_R_0001&qid=1695186598766

[14] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401275&pk_keyword=Energy&pk_content=Directive

bodies, where retrofit activity can be coordinated centrally, and is aimed at developing building retrofit approaches and models that can be replicated across the wider public sector.

The Programme is co- funded by the Department of the Environment, Climate and Communications and a number of partners and is administered by the SEAI. Current partners include the Department of Education, the Department of Further, Higher, Education, Research, Innovation and Science, the Office of Public Works, Local Authorities and the Health Service Executive. A review of this programme has been carried out; the learnings of the review will continue to inform decision-making on retrofit and decarbonisation options.

c) Residential and Community Retrofit

The Climate Act 2021 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). CAP21 set a goal to reduce GHG emissions from the residential sector from 7 Mt CO_2eq. in 2018 to between 3.5-4.5 Mt CO_2eq. in 2030.

One of the measures to achieve this is to retrofit the equivalent of 500,000 homes to a BER of B2/cost optimal or carbon equivalent and the installation of 400,000 heat pumps in existing homes to replace older, less efficient heating systems by 2030. This represents approximately 30% of the housing stock and is among the most ambitious retrofit programmes worldwide.

Key targets to 2030 include:

Equivalent of 120,000 dwellings retrofitted to BER B2 or cost optimal equivalent by 2025, and 500,000 dwellings by 2030

170,000 new dwellings using heat pumps by 2025, and 280,000 by 2030

45,000 existing dwellings using heat pumps by 2025, and 400,000 by 2030

To meet these targets, Ireland will need to deliver the equivalent of 75,000 B2 homes upgrades per year from 2006 to 2030.

d) National Retrofit Plan

The National Retrofit Plan, which was published as part of CAP21, sets out how the government will deliver on our retrofit targets. The Plan is designed to address barriers to retrofit across four key pillars: driving demand and activity; financing and funding; supply chain, skills and standards; and governance. For each pillar, barriers were identified and time- bound policies, measures and

actions were put in place to address them. The initiatives in the Plan were guided by a number of key principles:

- Fairness: ensuring fairness to all and supporting a just transition
- Universality: covering all housing types and consumer segments/income deciles
- Customer-centric: designing customer centric solutions to reduce the costs and hassle, making the process easier for those investing in retrofit
- Cost-optimal: encouraging retrofits to cost-optimal level and maximising emissions abatement
- Industry-led: stimulating and supporting industry confidence to invest, grow and take on more workers

The National Retrofit Plan actions continue to be revised annually as part of the yearly Climate Action Plan.

The NDP committed to an unprecedented level of investment in residential retrofit and provided clarity on the annual funding allocations for the coming years, giving the industry a major confidence boost to plan and expand. The overall NDP allocation for residential and community retrofit will be approximately €8 billion to 2030, of which €5 billion will be allocated from carbon tax receipts.

The annual allocations will primarily be used to fund the expansion and enhancement of SEAI residential and community retrofit schemes, including energy poverty schemes as well as other initiatives to support retrofit. The investment committed to 2030 will enable the supply chain to scale up, creating thousands of high-quality jobs and delivering on this critical national objective.

e) SEAI Residential and Community Grant Schemes

In February 2022, the Government launched a package of enhanced supports aimed at making it easier and more affordable for homeowners to undertake home energy upgrades, for warmer, healthier and more comfortable homes, with lower energy bills and emissions. The range of schemes now available allow homeowners to choose the best home upgrade option to suit their needs.

Demand across the SEAI residential and community energy upgrade schemes continued to be exceptionally high in 2023. Key statistics include:

- Capital expenditure of €324.5 million (up 68% on 2022 spend).
- 47,952 home energy upgrades (up 76% on 2022 and 129% of 2023 target).
- 17,599 BER B2 upgrades completed (up 107% on 2022 and 127% of 2023 target).

- 3,769 Heat pumps installed with SEAI grant support (up 66% on 2022 and 66% of 2023 target).
- 5,897 fully funded energy upgrades for low-income households (up 33% on 2022 and 98% of 2023 target).
- 17,904 home energy upgrades under Better Energy Homes, 3,509 of which are to a B2 Building Energy Rating (up 52% and 49% respectively year on year).
- National Home Energy Upgrade Scheme (One Stop Shop Service) delivered 1,336 homes, up 108% year-on-year. There are now 18 One Stop Shops registered.
- Solar PV Scheme supported 22,214 domestic installations in 2023, of which 11,906 are to a B2 Building Energy Rating (up 122% and 136% respectively year on year).
- 67,411 applications for grant support were received by SEAI in 2023 equating to a 34% increase on 2022 levels. This indicates a strong pipeline of works for 2024.
- Data provided by the SEAI Mid-year Review 2024 shows:
- Over 31,500 applications processed across all schemes to mid-year, which remains unchanged over the same period in 2023.
- 25,750 property upgrades were completed to mid-year, up 18% over the same period in 2023.
- Over 10,150 homes were upgraded to a BER B2 or higher to mid-year, up 34% over the same period in 2023.
- Over 3,300 upgrades for energy poverty qualifying households to mid-year, up 41% on the same period in 2023.
- Expenditure across all schemes to mid-year was €186 million, up 44% on the same period in 2023.
- 265 Approved Housing Body upgrades supported under the One-Stop-Shop Scheme, and 124 under the Community Energy Grants scheme to mid-year.

f) National Home Energy Upgrade Scheme

The National Home Energy Upgrade Scheme which offers increased grant levels of up to 50% of the cost of a typical B2 home energy upgrade with a heat pump. The scheme introduced a new way to undertake home energy upgrades with One-Stop-Shops providing an end-to-end service for homeowners. This includes surveying the home; designing the upgrades; managing the grant

process; helping with access to finance; engaging contractors to deliver the work; and quality assuring the work.

Homes and apartments, built and occupied before 2011, and owned by private homeowners, non-corporate landlords and Approved Housing Bodies are eligible for the scheme. This provides an unprecedented opportunity for people all over Ireland to upgrade to a warmer, healthier and more comfortable home, with lower energy bills. In 2023:

- 18 One Stop Shops registered, with 6 new OSSs registered in 2023.
- 1,336 homes delivered in 2023.
- Average costs of works for private homes in 2023 was €62,099; average grant paid €22,689. The corresponding figures for AHB homes are €28,795 and €15,623.
- Most recent figures available from SEAI show an average cycle time of 5.2 months.
- Completion of the OSS registration process is averaging 7 months. Quite often this is due to the time taken by applicants to submit paperwork rather than SEAI delays.

g) Individual Energy Upgrade Grants

The Better Energy Homes Scheme allows homeowners to take a step-by-step approach or self-manage their retrofit project. For fabric measures homes must be built and occupied prior to 2011. For Heat pumps or solar thermal homes must be built and occupied before 2021. In 2023 the scheme provided 17,904 home energy upgrades 3,509 of which are to a B2 Building Energy Rating (up 52% and 49% respectively year on year). 1,831 heat pumps were installed under this scheme.

h) Free Energy Upgrades

The Better Energy Warmer Homes Scheme delivers a range of energy efficiency measures free of charge to low-income households vulnerable to energy poverty. The primary aim of the scheme is to provide energy efficiency upgrades to those living in, or at risk of, energy poverty. The scheme is available to owner-occupied homes built before 2006 where the household meets the Department of Social Protection (DSP) related eligibility criteria. In 2023 there was a record spend of €158 million under the scheme with an increased allocation of almost €210 million in place for 2024. Further key figures include:

- Almost 5,900 homes upgraded, up 33% on 2022 levels.
- Average waiting time from application to completion of works in 2023 was just under 20 months, a decrease from 26 months in 2022. Decrease in waiting times achieved through a number of actions taken by the Department of Environment, Climate and Communications and SEAI.
- Increased awareness of the multiple benefits of retrofit and improvements to the Scheme is driving demand, with almost 14,000 applications received in 2023.
- New 4yr €700 million contractor panel established in September 2023; contractor total is now 36.
- Continued to pilot installation of heat pumps under the scheme.

In addition, €87 million in funding was provided by the Minister for Housing, Local Government and Heritage for the Local Authority Energy Efficiency Retrofit Programme to deliver 2,400 B2 (or equivalent cost optimal) upgrades.

i) Community Energy Grant Scheme

The Communities Energy Grant Scheme funds community-based partnerships to improve the energy efficiency of the building stock in their area. Funding is available for public, commercial, community buildings including Public Sector Organizations, Housing Associations & Local Authorities, private energy poor households, private non-energy poor households and rental properties. In 2023 the expenditure for the scheme was €27 million.

19 contracts were closed in 2023 delivering 601 homes to B2 and 595 with Heat pumps installed. 300 non-domestic projects delivered in 2023.

Demand for the scheme remains strong and a number of contracts approved in 2023 will have works completed in 2024.

The Sustainable Energy Communities (SEC) Programme supports the low carbon energy transition by developing skills and capacity, at a community level, in determining how to use less energy, adopting lower carbon options for transport and heating, shifting energy use to off-peak times or investing in smart technologies.

Based on feedback from the network of communities, and in order to facilitate more local sustainable energy activation, a targeted and more streamlined strand of the Communities Grant Scheme focused on smaller projects for retrofitting homes will also be introduced in Q2, 2022.

j) Retrofit Loan Guarantee

The National Retrofit Plan commits to the introduction of a new residential retrofit loan guarantee scheme. The Home Energy Upgrade Loan Scheme was launched on the 24 April 2024. It was developed by the Department of the Environment, Climate and Communications in conjunction with the Department of Finance, the Strategic Banking Corporation of Ireland, the Sustainable Energy Authority of Ireland, the European Investment Bank and the European Investment Fund.

The Government-backed €500 million Scheme is the first of its kind for both Ireland and the EIB Group and will help reduce the financial challenges for many homeowners, and play a crucial role in helping homeowners to invest in energy efficiency, making their homes warmer, cheaper to run and helping to lower emissions. It will also signal to the banking sector, new sustainable business opportunities associated with retrofit and the transition to a low carbon economy.

Under the Scheme, homeowners can borrow from €5,000 to €75,000 at significantly lower interest rates to those currently on the market, because of the combination of an EIB Group loan guarantee and a government-funded interest rate subsidy.

Loans can be used by homeowners who want to undertake a deep retrofit involving several energy upgrades at the same time or to carry out one or two upgrades that will significantly improve the energy performance of the home. To avail of the low-cost loans, the upgrade projects musts be supported by an SEAI grant and be projected to achieve a minimum 20% improvement in the energy performance (BER) of the building.

75% of the loan must be spent on energy efficiency and renewable energy works that are also being grant-aided by the SEAI and the works must be carried out by an SEAI registered One Stop Shop, Energy Partner or Communities Project Coordinator. Up to 25% of the amount borrowed may be spent on non-energy efficiency works, for example, other home improvement works carried out at the same time as energy upgrade works (excluding any form of installation of fossil fuel boilers).

PTSB, AIB and Bank of Ireland are now offering loans under the Scheme, with rates starting from as low as 3% (pricing varies depending on the finance provider). In addition to the three pillar banks, it is expected that a number of credit unions from the Irish League of Credit Unions will join the scheme, which will allow more people to access these affordable loans in their own communities. Additional finance providers are expected to commence offering loans.

k) Measures to address skill constraints

The Expert Group on Future Skills Needs report 'Skills for Zero Carbon – the Demand for Renewable Energy, residential Retrofit and Electric Vehicle Deployment Skills to 2030' published in November 2021 indicated that the number of Full Time Equivalent workers engaged in carrying out retrofits will need to increase rapidly to approximately 17,000 by the middle of the decade to deliver on the Government targets. The report also makes recommendations to ensure that the future skills needs of activities supporting the transition to a low carbon economy, including home energy retrofit, are fully addressed by stakeholders through the education and training system and any other relevant sources of skills supply. A further report now in preparation for SOLAS will also focus on approaches to green skills provision.

The Government is confident that the provision of €8 billion in funding for retrofitting under the NDP up to 2030, with clarity on the annual allocations for the coming years, should give companies the confidence they need to hire extra staff, plan for the long-term and expand into what is now being transformed into an always on key sector of our economy. The growth and higher profile of this sector should also help to encourage school leavers and those looking at changing jobs to consider a career in retrofitting as they can be assured there will be well-paid work in this sector for the next decade and beyond.

The new SEAI grant scheme processes and expansion of the Local Authority Retrofit Programme are transforming what was previously a stop start sector into an always on key sector of the economy. This will also greatly increase the capacity of the sector to deliver increased numbers of retrofits.

The range of measures in the National Retrofit Plan will encourage new entrants to the retrofit market as well as incentivising existing market players to grow. SEAI will also work with these businesses to encourage them to avail of the range of supports available through the Local Enterprise Offices (LEOs), which include financial supports, training programmes and mentoring.

To date Six Near Zero Energy Building (NZEB) Centres of Excellence are now in operation offering NZEB and retrofit upskilling and reskilling programmes. The courses are free, fast and flexible with weekend and evening provision available.

Availability and uptake of these courses has increased significantly. Provisional Department of Further and Higher Education, Research Innovation and Science data indicates that 4,442 people availed of upskilling and reskilling courses across these Centres of Excellence in 2023 compared to 2,069 in 2022. NZEB awareness will continue to be addressed in relevant craft apprenticeship programmes when they are due to go through a revalidation process.

3.1.11 Land Use

Land Use, Land Use Change and Forestry (LULUCF) sector covers forest land, cropland, grassland, wetlands, settlements, other land and harvested wood products (HWP). The LULUCF sector has been a net source of GHG emissions in all years from 1990. Due to new research and understanding, multiple inventory refinements are expected for the coming decade, resulting in further fluctuations to the LULUCF baseline, in parallel with current and projected emissions trends for the sector out to 2030 and beyond. The latest final inventory data shows that LULUCF net emissions stood at 3.98 MtCO2eq in 2022. Based on the EPA's provisional GHG report for 2024, LULUCF accounted for 9.3% of Ireland's GHG emissions in 2023[15]. Whilst net emissions in 2023, at 5.61 MtCO2eq, were below their 2003 peak of 7.37 MtCO2eq, this represented an increase of 40.9% in 2023 compared to 2022 and of 31% (1.43 Mt) against the 2018 baseline.

CAP 2024 outlines how the LULUCF sector will now pursue an approach that is more aligned to how the EU LULUCF Regulation deals with the fluctuations and limits within the sector. Whilst there is not a sectoral emissions ceiling for LULUCF, there is a sectoral target of a reduction in net emissions of 0.626 MtCO2eq /yr. for 2030 against the baseline (which is based on average of 2016, 2017 and 2018) and to stay within a 4-year budget period based on a downward linear trajectory from 2026-2029, as set out in the amended EU LULUCF Regulation[16]. This EU type approach also retains the core ambition of the Climate Action and Low Carbon Development Act 2015, as amended in 2021 (Climate Act 2021); the LULUCF sector will have binding and ambitious emissions-reduction targets, and actions that are updated annually, as with other sectors, with the Minister for Agriculture, Food, and the Marine, coordinating with the Minister for Housing, Local Government and Heritage having responsibility for its delivery.

On current trends, and taking into account historical land-use factors, meeting this target will be extremely challenging without radical action. Based on the EPA's most recent projections, under both the With Existing Measures (WEM) and With Additional Measures (WAM) scenarios, LULUCF emissions will continue to be a source of emission to 2030, reaching a predicted value of 7.9 MtCO2eq under the WEM scenario, or 4.9 MtCO2eq under the WAM scenario[17].

The trends in both the WEM and WAM scenarios are primarily due to the continuing high emissions from the Grassland and Wetlands categories, along with a decline in removals from forest land as this category becomes a source of emissions during that period. It should be noted

[15] Ireland's Provisional Greenhouse Gas Emissions 1990-2023

[16] Regulation (EU) 2018/ 841 as amended by Regulation (EU) 2023/839.

[17] Ireland's Greenhouse Gas Emissions Projections 2023-2050

that the reported emissions in the LULUCF sector remain in flux as our understanding of emissions and activity for this sector advances.

Notwithstanding the challenges in the sector, CAP 24, which will be updated via the forthcoming CAP25, sets out a pathway to achieve our goals for the sector on the basis of setting key activity targets and annual key performance indicators and sectoral accountability in line with the 2030 emissions reduction target. These activity levels are based on the abatement levers from established research and the LULUCF Marginal Abatement Cost Curve (MACC) published by Teagasc in 2023.

The key performance indicators for LULUCF presented in the CAP 24 include:

- Increasing afforestation rates to 8,000 ha per annum
- Increase the incorporation of straw to at least 85,000 ha of tillage area
- Increasing the inclusion of cover crops in tillage to at least 50,000 ha
- Improving the management of at least 450,000 ha of grasslands on mineral soils
- Reducing the management intensity of at least 80,000 ha of grasslands on drained organic soils
- Rehabilitating 33,000 ha of exploited peatlands
- Planting 2,000 km of new hedgerows

The Land Use Review is ongoing to ensure optimal land use options inform all government decisions. Phase 2 of the Review is now underway and is expected to complete in Q1 of 2025. This review is a cross-departmental initiative from the Department of Environment, Climate and Communications, the Department of Agriculture, Food, and the Marine and the Department of Housing, Local Government and Heritage which will lean on the knowledge and experience of relevant experts through a Technical Working Group and a Citizen Engagement Group to take an overarching view of the land use of the State. This work will be broad in scope and the outcomes from this process will filter into the development of future environmental government policy and will inform future iterations of the Climate Action Plan.

3.1.11.1 Agriculture

The agri-food sector is Ireland's oldest and largest indigenous exporting sector. In 2023, the sector exported goods valued at €18.28 billion, accounting for 9.3% of the value of all merchandised goods exported from Ireland.

It is estimated that the agri-food sector, which is classified as primary production (agriculture, fishing and forestry), food and beverages, and the wood processing sector, accounted for 6% of modified Gross National Income (GNI*) and 3.6% of Gross Value Added at Factor Cost in 2023. Gross Value Added at Factor Cost in the sector has grown from €12.6 billion in 2014 to approximately €17.3 billion in 2023, or 37% growth over the ten-year period. The Food, Drink & Primary Production sector accounted for 36.7% of all export sales by Irish-owned companies in 2022. This significant domestic economic footprint, including its export profile, reflects the natural comparative advantages of Irish production and a long agricultural tradition.

Agri-food exports are dependent on the more than 173,000 people employed in the sector across 135,000 farms, 2,000 fishing vessels & aquaculture sites and over 2,200 food production and beverage enterprises. The sector accounted for approximately 6.5% of total employment in 2023 and is responsible for 4.5 million hectares of agricultural land and 808,848 hectares of forestry, or some 76% of the total land in the State.

The sector employed 173,400 people, accounting for 6.5% of total employment in 2023. In 2023, Agricultural Output amounted to €11.2 billion, while the value of seafood exports was estimated to be in the region of €551 million. Beyond direct employment, the sector plays a key role in the wider rural and local economy, with estimates for output multipliers ranging from around 2.5 for beef, 2.0 for dairy and food processing and 1.75 for seafood. This compares with an average output multiplier of 1.4 for the rest of the economy and 1.2 for foreign owned firms.

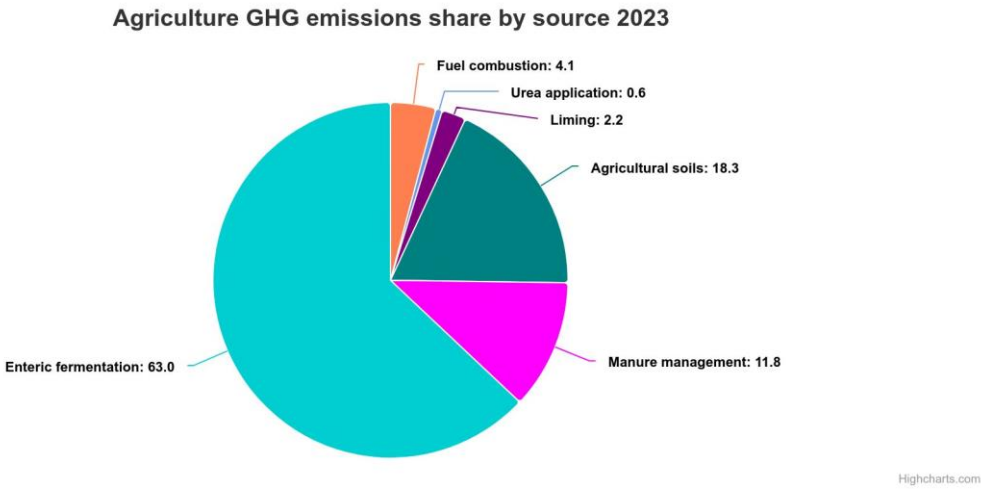
The agri-food sector is globally orientated, exporting over 90% of Irish beef, sheep meat and dairy. In 2023 Irish food and drink was exported to over 180 markets worldwide. The sector produces food and ingredients with a global reputation for quality and safety, with a livestock sector built on an enviable grass-based production system. Global demand for high quality food is increasing with population, urbanization and affluence, and the Irish agrifood sector is well placed to play a role in meeting this demand.

Greenhouse gas emissions from agriculture in 2023

Provisional EPA Inventory data shows that GHG emissions from agriculture in Ireland decreased by 4.6% (or 1.01 Mt CO_2eq) in 2023 following a decrease in 2022 of 0.7%.

GHG emissions from agriculture come from a variety of processes or activities. Further information about each of these in figure 3.16.

Figure 3.16 – Agricultural GHG emissions share by source 2023



Agriculture Activity Trends

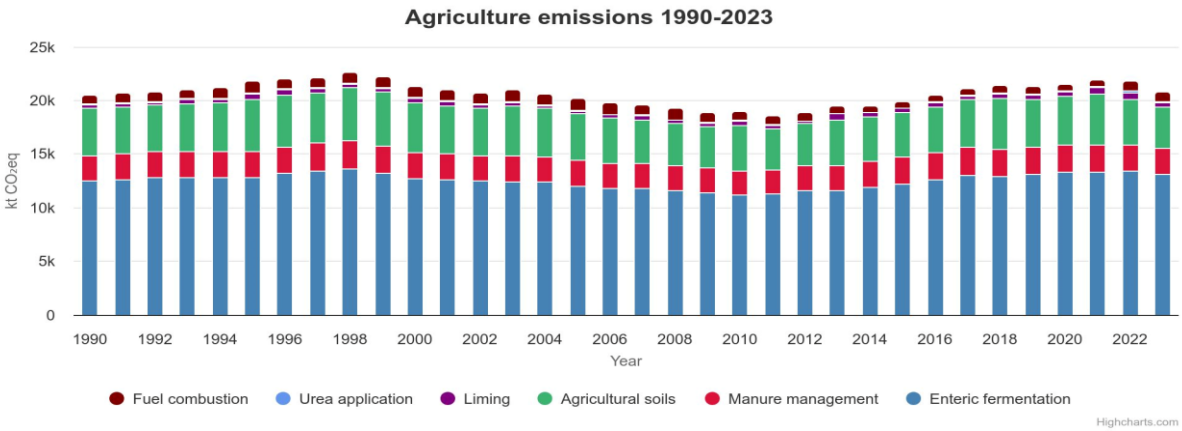
The most significant drivers for the decreased emissions in 2023 was decreased synthetic fertiliser use (-18.0%). Livestock numbers decreased in general, however the size of the dairy herd continued to increase, (+0.6% in 2023), with a 4.5% decrease in milk output per cow.

In the last 10 years 2013 to 2023, dairy cow numbers increased by 40.6% and milk production increased by 56%, both of which are now stabilising. The abolition of milk quotas in the EU in 2015,was reflected in the ambition expressed by the sector in Food Wise 2025[18] for growth in the dairy sector. Ireland's current stakeholder-led strategy for the agri-food sector, Food Vision 2030, was designed using a food systems approach, recognising the requirement to have greater policy coherence to ensure environmental, economic and social sustainability. Its focus is on value growth, not volume.

[18] https://www.gov.ie/pdf/?file=https://assets.gov.ie/109083/cf17ada8-e95a-4a10-b228-7743a8b68c44.pdf#page=null

In the same 10-year period sheep numbers increased by 11.5%, pigs by 1.6% and poultry by 29.4%.

Figure 3.17 – agricultural Emissions 1990 - 2023[19]



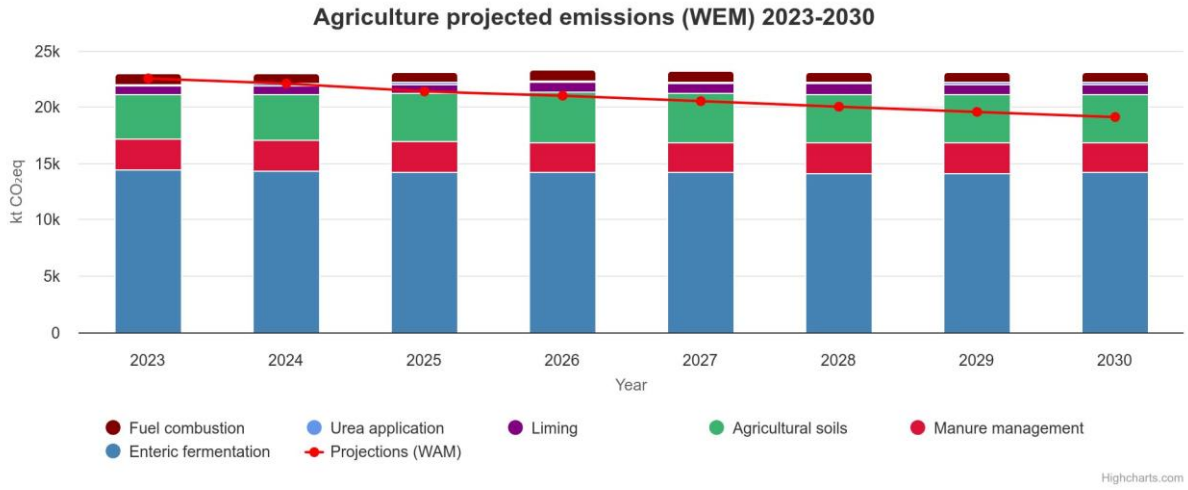
Projected Emissions

Total emissions from agriculture are projected to decrease by 1% over the period 2022-2030 to 23.1 Mt CO_2 eq in 2023 under the With Existing Measures scenario.

Under the With Additional Measures scenario emissions are projected to decrease to approximately 19.1 Mt CO_2 eq by 2030 which is an 18% reduction over the period 2022 to 2030. This scenario assumes the implementation of Ireland's CAP24 (with the exception of diversification measures), and measures in the Teagasc Marginal Abatement Cost Curve.

Figure 3.18 – Agricultural projected emissions WEM 2023-2030

[19] Ireland's Provisional Greenhouse Gas Emissions 1990-2023



Climate Action Plan Measures

CAP24 outlines a series of measures for the agriculture sector that are aimed to deliver necessary emissions reductions. Reductions will be realised by ensuring our agriculture sector operates as efficiently as possible. This includes improving the genetic quality of our herd, adopting more sustainable practices to fertilise land, and adoption of new technologies to mitigate emissions. The agriculture sector will also diversify land use and promote less greenhouse gas-intensive activities. Key actions in CAP24 include:

- expanding the organic sector to 450,000 ha (up from 75,000)
- growing tillage to 400,000 ha (Currently at around 334,450ha)
- production of up to 5.7TWh of biomethane
- Reducing our use of chemical nitrogen fertilizer to a maximum of 300,000 tonnes by 2030; chemical N use dropped 18% in 2023 when compared with 2022 figures.

The plan also sets out ambitious targets for forestry, organic farming, tillage, the production of biomethane and all biobased products.

CAP24 aims to encourage and enable certain farmers to move to farming enterprises that are more carbon efficient. Diversifying our land use and agri-food system will ensure its long-term sustainability. In order to realise the scale of diversification required across the agriculture sector, all opportunities must be explored including new, emerging markets for biobased products. In support of this, the Government published Ireland's first Bioeconomy Action Plan 2023-2025 in October 2023.

It is likely that additional measures will be required later in the decade to achieve our targets for 2030. Significant public investment in research is taking place to develop the science and

innovation that will underpin these measures, such as in the areas of delivery systems for feed additives that mitigate methane in livestock at pasture, breeding and genetics for low emitting animals, among others.

3.1.11.2 Forestry

Since the 1920s, when forest cover in Ireland had fallen to 1% of the national land area, a series of national afforestation programmes have resulted in an increase in forests to 11.6% of the land area of the country (or 808,848 ha) by 2022. In particular, the period from 1990 to present has seen a significant expansion of forest cover through the introduction of annual payments to landowners, for a limited period, to compensate for lost agricultural income. Between 2018 and 2023, an average of 2,710 hectares has been planted per annum. Despite these efforts, forest cover is still quite low when compared with other EU Member States, where the average was 38% in 2020. Broadleaf tree species account for nearly one-third (30.6%) of the stocked forest area while conifer species are the dominant species present (69.4%). The share of broadleaf species nationally increased by 5.9% between 2006 and 2022. The afforestation programme has also resulted in a significant change to the ownership structure of Irish forests, with 50.9% of the national estate now being privately owned.

The acceleration of the afforestation programme over the last quarter of a century, coupled with high levels of reforestation, has resulted in just under three quarters of the national estate being less than 30 years old. Roundwood harvest has been steadily increasing over the past decade as the private estate has matured. In 2022 it reached 4.14 million cubic metres and was primarily used as feedstock for sawn wood and panel products, and fuelwood. According to the latest Forestry Statistics, 57% of the roundwood available in 2022 for processing came from Coillte with the balance coming from the private sector; indeed, the share of private sector roundwood available for processing has increased from 8.2% in 2006 to 43% in 2022, reflecting the maturing private forest estate. The total forecast of net realisable volume production for the Republic of Ireland over the forecast period 2021-2040 is estimated as being 120.4 million cubic metres over bark with an additional 13 million cubic metres potentially available from Northern Ireland sources. Sustaining harvest levels and climate change mitigation will require the continued expansion of forest cover to mid-century and possibly beyond.

There is a close liaison between the Forestry Divisions of the Department of Agriculture, Food, and the Marine and environmental and planning agencies in the regulation of afforestation and other

forestry practices. Ireland operates a licencing system for wood harvesting. Afforestation must be approved by the Department of Agriculture, Food, and the Marine. A forest report entitled 'Forests and wood products, and their importance in climate change mitigation' was published in 2022, which continues to emphasise the climate change mitigation benefits of the forest sector, through both afforestation and the sustainable use of harvested wood products.

Climate change mitigation and the forest sector

As part of the European Green Deal, the EU has set itself a binding target of achieving climate neutrality by 2050. In order to deliver this increased level of ambition, an intermediate target of 55% net emission reduction by 2030 has been agreed. The European Commission has launched its 'Fit for 55%' measures which includes proposals for the Land Use, Land Use Change and Forestry (LULUCF) sector that sets targets for carbon removals by natural sinks. Forests will play an important role in meeting these EU emissions reductions targets during the 2021 to 2030 period.

Amendments to the European LULUCF Regulation entered force in 2023. The accounting rules will now be different for the two commitment periods of 2021-2025 and 2026-2030. For the first period (2021-2025), the original land accounting categories (e.g., afforested land) and the national "no-debit" rule remain in place. The adoption of this reporting format means that the accounting rules established through projected baselines (i.e., Forest Reference Level) and different historic reference periods (i.e., Grasslands, Croplands, Wetlands) will no longer be used. These changes are aimed at making the accounting rules more transparent to provide methodological consistency with the Effort Sharing Regulation (ESR) (Regulation (EU) 2018/842). By changing the accounting rules for 2026-2030, all land emissions must be included in the accounts which will make the distance to the proposed annual targets from 2026-2030 much larger due to increased forest land emissions, which now cannot be factored out. The Commission has calculated Ireland's target to be a reduction in net emissions of 0.626 MtCO2eq for 2030 against the 2018 baseline (based on the average of 2016, 2017, 2018) and to meet a 4-year budget period based on linear trajectory from 2026-2029. Ensuring this figure is attained will require the sustainable management of existing forest lands and the protection of Irish forests, limiting deforestation and continued afforestation efforts.

The Climate Action Plan 2024 outlines the key target of incentivising increased afforestation to 8,000 ha per annum. This will start the process of having planting rates consistent with realising our 2030 ambition and contributing to achieving climate neutrality no later than 2050. The new €1.3bn Forestry Programme 2023-2027 was created in alignment with Ireland's Forest Strategy. It

is designed to provide lasting benefits for many key areas including climate change, biodiversity, wood production, employment and enhanced societal benefits. The Forestry Programme will provide incentives for farmers and other landowners and will provide farm families with the opportunity to increase and diversify their income streams. The afforestation programme plays an important role in mitigating climate change by creating new land-based sinks for CO2 and providing a source of renewable raw materials for use as fuel and wood products.

Forest land contributed a removal of approximately 1.6 MtCO2eq in 2022 with an additional removal of approx. 0.9 MtCO2eq from HWP in the same year. The EPA's most up to date GHG projections[20] with existing measures (WEM) out to 2030 indicate that the strength of CO2 removals from Forest land (incl. HWP) is declining and will become a source of emissions by the year 2024. From the year 2028 the projected with additional measures (WAM) scenario highlights that this category including HWP becomes a source of emissions to the atmosphere. This is due to current low rates of afforestation that have been declining since the 1990's, the age profile of the forest estate and a projected increase in forest harvest. Another factor influencing the transition to a forest source are the continued emissions from organic soils; where forests historically planted on organic soils become net emitters after two to three rotations, due to increased emissions from these organic soils.

3.1.11.3 Peatlands

Peat soils (including grasslands on peat soils) cover around 21%, or 1.47 million hectares, of Ireland's land area. Peatlands include bogs, wet heath and fens and are managed for various extents including forestry, agriculture, renewable energy and nature conservation. Research is ongoing to fully assess the potential for carbon storage and emissions reductions that may be achieved through management, restoration and rehabilitation of Ireland's peatlands.

GHG emissions and sinks associated with human intervention of peatlands are reported to the UNFCCC under three IPCC land use categories: Wetlands, Forest land and Grassland, and identified through analysis of land cover and the specific land declared by land managers. Peatland under forest and grass are assumed to be subject to artificial drainage and carbon losses are estimated using IPCC default methodologies. Peatlands within the Wetlands category are dominated by the area of degraded and pristine peatland ecosystems. These degraded peatlands have largely reverted to habitats which superficially resemble semi-intact peatland habitats but which are, in fact, significantly degraded in ecohydrological terms, a much-reduced resilience and

[20] Ireland's Greenhouse Gas Emissions Projections 2023-2050

carbon sequestration potential. In recent decades traditional practices have been practically entirely replaced by mechanised methods of extraction.

Commercial industrial peat extraction occurred on approximately 80,000 ha of Irish land. The semi-state company, Bord na Móna dominated activity in this sector. Bord na Móna completed its acquisition of lands in the early 1980s, by which time it had largely concluded its operational drainage of lands intended for peat extraction. In early 2021 Bord na Móna announced the cessation of all commercial peat extraction on its lands and is currently developing a long-term strategy for environmentally sensitive management of its resources.

Due to tighter regulations and increased enforcement on unauthorised industrial peat harvesting and a reduction in use for power generation, the cessation of this activity and subsequent peatland restoration efforts have resulted in a declining trend in emissions from this category. The additional contribution of Bord na Móna and NPWS's large scale commitments to rehabilitation of Ireland's exploited and degraded peatlands will see further emissions savings benefits in this category into the future.

The Climate Action Plan 2024 outlines a number of measures relating to peatlands, including a key target to rehabilitate 32,779 ha of post-production peatlands as part of Bord na Móna's Enhanced Decommissioning, Rehabilitation and Restoration Scheme (EDRRS); to date, just over 18,000 ha have been rehabilitated. Opportunities for further peatland rehabilitation will also be sought through European programmes such as LIFE, INTTEREG and others. Wild Atlantic Nature LIFE IP and Peatlands and People LIFE IP are two such projects which are currently targeting peatland restoration. The NPWS-led restoration of Ireland's national raised bog and blanket bog Special Areas of Conservation (SACs) and Natural Heritage Areas (NHAs) is also continuing at pace.

The most recent inventory report[21] from the EPA shows that emissions from the Wetlands category for 2022 were approx. 3.8 Mt CO_2 eq. Going forward, the EPA's latest GHG projections[22] indicate that the emissions from the Wetlands category, with existing measures, will remain relatively stable and continue to contribute in the order of 3.8 Mt CO2 eq each year out to 2030. In the WAM scenario, emissions from the Wetlands category are also predicted to remain relatively stable and continue to contribute in the order of 3.7 Mt CO2 eq each year out to 2030.

3.1.12 Land Use Review

[21] Ireland's National Inventory Report 2024
[22] Ireland's Provisional Greenhouse Gas Emissions, 1990-2023

Land, as natural capital, is an asset not just supporting nature and wildlife, but also underpins our economy through food and energy production and as a tourism and recreational resource. Our land is the vital platform to help us realise our many socioeconomic, climate and biodiversity ambitions. In our transition to a low-carbon and sustainable society, land and how we use it will play a key role.

The Programme for Government: Our Shared Future (2020) committed to a national land use review and this was re-affirmed in the CAP21. This Land Use Review is being delivered in two distinct phases. Phase 1, the 'Evidence Gathering' for the Land-use Review, has been completed and concluded with the publication of a Synthesis Report in March 2023. Phase 1 was chaired by the Department of Environment, Climate and Communications and the Department of Agriculture, Food, and the Marine with the EPA having the key role in setting out the evidence base.

Phase 2 of the Land-use Review was commenced by Minister Ryan (Environment, Climate and Communications), Minister McConalogue (Agriculture, Food and the Marine) and Minister of State Noonan (Heritage and Electoral Reform) in October 2023 with the intention to build on the evidence gathered in Phase 1. The second phase seeks to optimise land use across key Government objectives improving (1) socioeconomic (including food and fibre production; incomes and employment, especially on family farms; maintaining resilient rural communities, and the provision of housing and housing material) (2) climate, (3) biodiversity, (4) water, and (5) air quality outcomes. This Phase will particularly consider the fact that the remaining years of this decade are critical if we are to address the climate and biodiversity crises which threaten our safe future on this planet, and that clean air and water are essential to the health and welfare of all our people.

An oversight group will prepare progress reports and a Final Report considering the outputs of two working groups which have been established to deliver Phase 2. These two groups are a Technical Working Group which will lead on the technical inputs necessary for the Final Report, and a Citizen Engagement Group which will communicate, inform, engage and motivate all stakeholders on the agreed national priorities that comprise a shared vision for the necessary transition in land use.

The Land Use Review's ambition is to a reach a point where land in Ireland is managed in a manner that meets the environmental demands made of land. We also must endeavour to manage the same land to ensure that current and future generations of land users and communities thrive and are more resilient in the face of change.

3.2 Institutional arrangements

3.2.1 Institutional arrangements for tracking progress

The EU's Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action ('Governance Regulation')[23] establishes a governance mechanism and specific arrangements to track the progress of the Union and its Member States towards the implementation and achievement of the EU's climate and energy targets and commitments under the UNFCCC and the Paris Agreement. These arrangements include the monitoring of GHG emissions and removals, the reporting of policies and measures, projections of GHG emissions and removals and progress on adaptation to climate change.

Under the Governance Regulation, the EU has established a Union Inventory System to ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of the data reported by the EU and its Member States. This inventory system includes a quality assurance and quality control programme, procedures for setting emission estimates, and comprehensive reviews of national inventory data to enable the assessment of compliance towards climate goals.

Each EU Member State compiles its GHG inventory in accordance with the requirements of the Paris Agreement[24] and the relevant Intergovernmental Panel on Climate Change (IPCC) guidelines[25]. Inventory data on GHG emissions and removals, including information on methods, are submitted electronically using a reporting system managed by the European Environment Agency (EEA). The submitted data are subject to quality control procedures and feed into the compilation of the GHG inventory of the EU. Net GHG emissions, calculated from emissions and removals reported in the GHG inventory of the EU, are the key information used for tracking progress towards the EU NDC target of a least -55% net emission reduction by 2030 compared to 1990.

Given the scope of the EU NDC related to international aviation and navigation, a specific share of international aviation and navigation emissions as reported in the GHG inventory data is calculated based on the Joint Research Centre's Integrated Database of the European Energy System (JRC-IDEES)[26]. Details on the methodology applied to identify GHG emissions from international aviation and navigation in the scope of the EU NDC, which are added to the national totals from the EU GHG inventory, are given in Annex 2 to this BTR.

23 Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action, http://data.europa.eu/eli/reg/2018/1999/oj.

24 Chapter II of the annex to decision 18/CMA.1, https://unfccc.int/documents/193408; and decision 5/CMA.3, https://unfccc.int/documents/460951.

25 2006 IPCC Guidelines for National Greenhouse Gas Inventories, https://www.ipcc-nggip.iges.or.jp/public/2006gl/; and on a voluntary basis: 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, https://www.ipcc.ch/report/2019-refinement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories/.

26 European Commission, Joint Research Centre, Rózsai, M., Jaxa-Rozen, M., Salvucci, R., Sikora, P., Tattini, J. and Neuwahl, F., JRC-IDEES-2021: the Integrated Database of the European Energy System – Data update and technical documentation, Publications Office of the European Union, Luxembourg, 2024, https://publications.jrc.ec.europa.eu/repository/handle/JRC137809.

Under the Governance Regulation each Member State must report to the Commission biennially on the status of implementation of its integrated national energy and climate plans (NECPs). This process allows the Commission to ensure that the EU and the Member States remain on track to achieve the climate-neutrality objective and progress on adaptation. Under the Governance Regulation, Member States further operate national systems for policies and measures and projections and submit and report standardised information, which is subject to quality and completeness checks. Based on the submitted data, the EEA compiles projections of GHG emissions and removals for the EU. The EU-wide information is summarised annually in the Climate Action Progress Report[27] by the European Commission and in the 'Trends and projections' report by the EEA.[28] Both the Union and the national systems are subject to continuous improvements.

The national energy and climate plans (NECPs) were introduced by the Governance Regulation.

For Member States, the NECP for 2021-2030 play a key role to enabling the tracking of progress towards the 2030 climate and energy targets. The update of the NECPs provides an opportunity for Member States to assess their progress, identify gaps and revise existing measures or plan new ones where needed.

Member States were due to submit their final updated NECPs, taking account of the Commission's assessment and recommendations, by 30 June 2024.

3.2.2 Institutional arrangements for implementation of the NDC

The EU and its Member States have set up a comprehensive system for the implementation of the EU climate change mitigation targets. The European Climate Law sets the goal of climate neutrality by 2050 and the intermediate target of reducing net GHG emissions by at least 55% by 2030 compared to 1990 levels. These targets cover emissions and removals that are regulated in the Union law.

To ensure that the EU and its Member States achieve their target, the 2030 Climate and Energy Framework was put in place. The main policies of this framework are the EU Emissions Trading

27 Climate Action Progress Report 2024, https://climate.ec.europa.eu/document/download/d0671350-37f2-4bc4-88e8-088d0508fb03_en?filename=COM_2024_498_F1_REPORT_FROM_COMMISSION_EN_V4_P1_3729454.PDF

28 Trends and Projections in Europe 2024, https://www.eea.europa.eu/en/analysis/publications/trends-and-projections-in-europe-2024https://www.eea.europa.eu/en/newsroom/news/eea-trends-and-projections

System (EU ETS)[29], which caps GHG emissions in energy, industry, aviation and maritime transport; the LULUCF Regulation which includes national net removal targets for the LULUCF sector; and the Effort Sharing Regulation (ESR) which establishes national reduction targets for GHG emissions not covered by the EU ETS or the LULUCF Regulation i.e. domestic transport (excluding aviation), buildings, agriculture, small industry and waste. The implementation of the ESR is supported by additional sectoral policies and measures (details can be found in this BTR in the chapter on mitigation policies and measures). The legislative acts under the 2030 Climate and Energy Framework require the European Commission and the EU Member States to set up the institutional arrangements for implementing the specific policies and measures.

The revised EU ETS Directive increases the level of ambition in the existing system from 43% to 62% emissions reductions by 2030, compared to 2005 levels and extend the system to also apply to international maritime transport. A separate carbon pricing system will apply to fuel combustion in road transport and buildings and small-emitting sectors (ETS2) with a 42% emission reduction target compared to 2005 across the sectors covered. The amended Effort Sharing Regulation (ESR) increased, for the sectors that it covers, the EU-level GHG emission reduction target from 29% to 40% by 2030, compared to 2005, which translates in updated 2030 targets for each Member State. The new LULUCF Regulation sets an overall EU-level objective of 310 Mt CO_2 equivalent of net removals in the LULUCF sector in 2030.

The ESR sets national targets for the reduction of GHG emissions in the Member States by 2030. Member States are also subject to gradually decreasing annual emission limits for each year from 2021 to 2030. The annual progress towards the national targets under the Effort Sharing Legislation is assessed by comparing GHG emission levels from the sectors covered by the ESR with the relevant annual emission allocations under the legislation (AEAs). To achieve compliance under the ESR, Member States are permitted to use flexibility options to a certain extent.

Progress in the implementation of these policies and measures is monitored under the Governance Regulation. Relevant information which is reported regularly and archived at the EEA include GHG inventories, approximated GHG inventories for the previous year, information on policies and measures, projections, and progress towards the implementation of integrated National Energy and Climate Plans (NECP). This information helps the EU and its Member States to correct their course if progress towards the targets of the 2030 Climate and Energy Framework is behind schedule. As an example, the European Commission assesses the drafts of new or updated NECPs and provides recommendations for improved planning and implementation. In addition, the

29 This refers to the ETS1, i.e. the Emission Trading System for stationary sources (Chapter III of the ETS Directive) and for aviation and maritime transport (chapter II of the ETS Directive). Note that the 'Emissions trading system for buildings, road transport and additional sectors' (ETS2), added in 2023 as Chapter IVa of the ETS Directive, forms an instrument under the Effort Sharing Regulation (ESR).

reported information is subject to quality checks, and the GHG inventories reported by EU Member States are subject to comprehensive reviews in 2025, 2027 and 2032.[30]

All EU legislation, including the legislation under the 2030 Climate and Energy Framework, is subject to a stakeholder engagement process. So-called 'better regulation tools' ensure that policy is based on evidence and the best available practice[31]. During the preparation of legislative proposals, the European Commission invites citizens, businesses and stakeholder organisations to provide their views on the subject of the new legislation. These comments are documented in a dedicated portal[32], and the European Commission reports on how it takes these comments into account in the development of the legislative proposals. Furthermore, the Governance Regulation sets requirements for Member States to ensure that the public is given early and effective opportunities to participate in the preparation of the NECPs.

3.3 Description of NDC

Under their updated NDC[33] the EU and its Member States, acting jointly, are committed to a legally binding target of a domestic reduction of net GHG emissions by at least 55% compared to 1990 by 2030. The term 'domestic' means without the use of international credits.

The NDC consists of a single-year target, and the target type is 'economy-wide absolute emission reduction'. The scope of the NDC covers the 27 Member States of the EU.

The 17 October 2023 updated NDC scope is supplemented by additional information to clarify the precise amount of international aviation and maritime emissions which are covered under the EU NDC.

Table 1: Description of the NDC of the EU

30 Consolidated text (2023) of Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action, https://eur-lex.europa.eu/eli/reg/2018/1999/2023-11-20.

31 Decision-making process, https://ec.europa.eu/info/strategy/decision-making-process/how-decisions-are-made_en.

32 Have your say – Public consultation and feedback, https://ec.europa.eu/info/law/better-regulation/have-your-say_en.

33 The update of the nationally determined contribution of the European Union and its Member States, https://unfccc.int/sites/default/files/NDC/2023-10/ES-2023-10-17%20EU%20submission%20NDC%20update.pdf.

Information	Description
Target and description	Economy-wide net domestic reduction of at least 55% in greenhouse gas emissions by 2030 compared to 1990. The term 'domestic' means without the use of international credits.
Target type	Economy-wide absolute emission reduction.
Target year	2030 (single-year target)
Base year	1990
Base year value	Net greenhouse gas emissions level in 1990: 4 699 405 kt CO_2eq.
Implementation period	2021-2030
Geographical scope	EU Member States (Belgium, Bulgaria, Czechia, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, the Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden) including EU outermost regions (Guadeloupe, French Guiana, Martinique, Mayotte, Reunion, Saint Martin (France), Canary Islands (Spain), Azores and Madeira (Portugal)).
Sectors	Sectors as contained in Annex I to decision 5/CMA.3: Energy, Industrial processes and product use, Agriculture, Land Use, Land Use Change and Forestry (LULUCF), Waste. *International Aviation:* Emissions from civil aviation activities as set out for 2030 in Annex I to the EU ETS Directive are included only in respect of CO_2 emissions from flights subject to effective carbon pricing through the EU ETS. With respect to the geographical scope of the NDC these comprise emissions in 2024-26 from flights between the EU Member States and departing flights to Norway, Iceland, Switzerland and the United Kingdom. *International maritime Navigation:* waterborne maritime navigation is included in respect of CO_2, methane (CH_4) and nitrous oxide (N_2O) emissions from maritime transport voyages between the EU Member States.
Gases	Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6), nitrogen trifluoride (NF_3)

Information	Description
LULUCF categories and pools	The included LULUCF categories and pools are as defined in decision 5/CMA.3.
Intention to use cooperative approaches	The EU's at least 55% net reduction target by 2030 is to be achieved through domestic measures only, without contribution from international credits. The EU will account and report for cooperation with other Parties in a manner consistent with the guidance adopted by CMA1 and any further guidance agreed by the CMA.
Any updates or clarifications of previously reported information, as applicable	The information on the NDC scope contains clarifications/further details compared to the information provided in the updated NDC of the EU.

Note: This table is identical to table 'Description of a Party's nationally determined contribution under Article 4 of the Paris Agreement, including updates,' which has been submitted electronically together with this BTR. This table is also annexed to this BTR.

Source: Updated NDC of the EU[34]

3.4 Indicators, Definitions, Methodologies, and Structured Summary

3.4.1 Indicators used to track NDC

For the tracking of progress towards implementing and achieving the NDC of the EU, an indicator is used which has the same unit and metric as the NDC base year and target values. The chosen indicator is 'annual total net GHG emissions consistent with the scope of the NDC in CO_2eq'. Table 2 provides more information on this indicator.

34 The update of the nationally determined contribution of the European Union and its Member States, https://unfccc.int/sites/default/files/NDC/2023-10/ES-2023-10-17%20EU%20submission%20NDC%20update.pdf.

Table 2: Indicator for tracking progress

Information	Description
Selected indicator	Annual total net GHG emissions consistent with the scope of the NDC in CO_2eq.
Reference level and base year	The reference level is total net GHG emissions of the EU in the base year (1990). The reference level value for the EU is 4 699 405 kt CO_2eq.
Updates	This is the first time the reference level is reported, hence there are no updates. The value of the reference level may be updated in the future due to methodological improvements to the EU GHG inventory and to the determination of international aviation and navigation emissions in the NDC scope.
Relation to the NDC	The indicator is defined in the same unit and metric as the target of the NDC. Hence it can be used directly for tracking progress in implementing and achieving the NDC target.
Definitions	Definition of the indicator 'annual total net GHG emissions in CO_2eq': Total net GHG emissions correspond to the annual total of emissions and removals reported in CO2 equivalents in the latest GHG inventory of the EU. The totals comprise all sectors and gases listed in the table entitled 'Reporting format for the description of a Party's nationally determined contribution under Article 4 of the Paris Agreement, including updates.' Indirect CO2 emissions are included from those Member States that report these emissions.

Note: The information in this table is identical to the information in Common Tabular Format (CTF) tables 1 ('Description of selected indicators') and 2 ('Definitions needed to understand the NDC'), which were submitted electronically together with this BTR.

Source: The reference level is based on the Annual European Union GHG inventory 1990-2022.

3.4.2 Methodologies and accounting approach

The EU use the following accounting approach for tracking progress towards the joint EU NDC: annual GHG data from the national GHG inventory of the EU, complemented for international aviation and navigation with estimations from the Joint Research Centre's Integrated Database of the European Energy System[35] . The total net GHG emissions are provided in the scope of the EU NDC and are compared to the economy-wide absolute emission reduction target as defined in the

35 European Commission, Joint Research Centre, Rózsai, M., Jaxa-Rozen, M., Salvucci, R., Sikora, P., Tattini, J. and Neuwahl, F., JRC-IDEES-2021: the Integrated Database of the European Energy System – Data update and technical documentation, Publications Office of the European Union, Luxembourg, 2024, https://publications.jrc.ec.europa.eu/repository/handle/JRC137809.

NDC. The EU will account for its cooperation with other Parties in a manner consistent with guidance adopted by the CMA.

As far as emissions and removals from the LULUCF sector are concerned, net emissions are used for tracking progress towards the 2030 target of the NDC based on all reported emissions and removals.

Details on methodologies and accounting approaches consistent with the accounting guidance[36] under the Paris Agreement can be found in CTF table 3 ('Methodologies and accounting approaches'), which was submitted electronically together with this BTR.

3.4.3 Structured summary – status of progress

An important purpose of the BTR is to demonstrate where the EU and its Member States stand in implementing their NDC, and which progress they have made towards achieving it. The most recent information on GHG emissions and removals in the scope of the NDC constitutes the key information for tracking this progress. Table 3 summarises the current status of progress.

Table 3: Summary of progress towards implementing and achieving the NDC

	Unit	Base year value	Values in the implementation period			Target level	Target year	Progress made towards the NDC
			2021	2022	2030			
Indicator: Total net GHG emissions consistent with the scope of the EU NDC	kt CO_2eq	4 699 405	3 272 650	3 205 223	NA	(at least 55% below base year level)	2030	The most recent level of the indicator is 31.8 % below the base year level.

NA: Not Applicable.

Note that an annual emissions balance consistent with chapter III.B (Application of corresponding adjustment) will be provided in a subsequent BTR upon finalisation of relevant further guidance by the CMA, based on the annual information reported under Article 6.2.

36 Decision 4/CMA.1, Further guidance in relation to the mitigation section of decision 1/CP21, https://unfccc.int/documents/193407.

Note: More detailed information can be found in CTF table 4 ('Structured summary: Tracking progress made in implementing and achieving the NDC under Article 4 of the Paris Agreement'), which has been submitted electronically together with this BTR.

Source: The indicator values are based on the Annual European Union GHG inventory 1990-2022.

Based on the GHG inventory data and data on international aviation and navigation for 2022, the EU and its Member States reduced net GHG emissions by 31.8 % compared to 1990. The EU and its Member States made progress towards implementing and achieving their NDC. The legal and institutional framework is in place to make further progress in the years ahead and to achieve the NDC target by 2030.

3.5 Mitigation policies and measures

Taking decisive action to confront climate disruption will be a major challenge to every dimension of our society, but the benefits are huge – warmer homes, cleaner air, a sustainable use of the world's scarce resources, more connected communities, authentic values, and quality jobs in enterprises which can compete in a decarbonised world. The government is addressing this challenge through policy, strategies, and the Climate Action Plan, to help Ireland achieve a just transition to a low-carbon society.

Climate Action Plan

Climate Action Plan 2024 is the third annual update to Ireland's Climate Action Plan 2019 and the second to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021. It builds on the introduction of carbon budgets and sectoral emissions ceilings in Climate Action Plan 2023 and sets a course for Ireland's targets to halve emissions by 2030 and reach net-zero no later than 2050. These national targets align with Ireland's obligations under EU and international treaties, most notably the Paris Agreement (2015) and the European Green Deal (2020).

The Plan has adopted significant governance arrangements, including the establishment of a Climate Action Delivery Board within the Department of the Taoiseach. The Delivery Board will ensure coordinated delivery of the actions in the plan and hold each department and public body accountable for its implementation. The Delivery Board will also discuss and review strategic projects and areas of work in the plan and publish Quarterly Progress Reports on action delivery for the government.

Just Transition

The Climate Action Plan commits to delivering a just transition, recognising the significant level of change required and that the burden must be as fairly distributed as possible. Building upon this commitment to a just transition, the Climate Action Plan has adopted an overarching framework for policy development which takes a principles-based approach to support a just transition in Ireland. This framework comprises of four principles, enabling its application across diverse sectors;

- An integrated, structured, and evidence-based approach to identify and plan our response to just transition requirements;
- People are equipped with the right skills to be able to participate in and benefit from the future net zero economy;
- The costs are shared so that the impact is equitable and existing inequalities are not exacerbated;
- Social dialogue to ensure impacted citizens and communities are empowered and are core to the transition process

The wider midlands is the first region in Ireland experiencing a concentrated transition away from carbon intensive activities. Jobs in peat will make way for jobs in renewable energy, bog rehabilitation and other new business opportunities. The Department of the Environment, Climate and Communications established a National Just Transition Fund in 2020 to ensure that workers and the Midlands as a community are fully supported. Whilst this Fund is due to close in 2024, the European Union and the Government are also co-funding the EU Just Transition Fund, which provides €169 million to the region up until 2027.

Just Transition Commission

In 2024 the Government established a new Just Transition Commission to provide advice on how to ensure a just transition to climate neutrality in Ireland. This Commission's main tasks are:

- prepare and analyse strategic evidence-based research in relation to the Just Transition, to anticipate and inform long-term climate policy and investment planning

- evaluate, advise and comment on policy planning and implementation and progress on the application of Ireland's Just Transition principles into national and sectoral climate policies, based on high-quality, evidence-based analysis

- provide strategic advice and engagement on the Just Transition; the Commission will support the National Dialogue on Climate Action, as well as any dialogues on climate/just transition matters within individual sectors

Long-Term Strategy to 2050

Article 15 of the EU Regulation (EU) 2018/1999 of the European Parliament and of the Council on the Governance of the Energy Union and Climate Action requires each Member State to prepare and submit a long-term strategy.

Long-term strategies should contribute to:

- fulfilling the Union's and the Member States' commitments under the United Nations Framework Convention on Climate Change (UNFCCC)
- fulfilling the objective of the Paris Agreement of holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels
- achieving long-term GHG emission reductions and enhancements of removals by sinks in all sectors in accordance with the Union's objective

Ireland's Long-Term Strategy, published in June 2024, identifies pathways beyond 2030, towards decarbonisation to 2050. The Strategy has been informed by public consultation, the Climate Change Advisory Council and will be underpinned by analysis of transition options across all key sectors of the economy. It will examine the potential implications of the deployment of innovative technologies, alternative choices for consumers, investment costs, and socio-economic factors. 3

Climate Action Fund

The Climate Action Fund (CAF) is one of four funds established under the National Development Plan 2018-2027 as part of Project Ireland 2040[37]. The Fund supports initiatives that contribute to the achievement of Ireland's climate and energy targets in a cost-effective manner. It offers the potential for innovative interventions which, in the absence of support from the Fund, would not otherwise be developed.

The Fund seeks to facilitate projects that contribute to other government policy priorities including:

- Supporting innovation and capacity building towards the development of climate change solutions capable of being scaled and delivering benefits beyond a once-off impact
- Generating wider socio-economic benefits such as job creation, air quality improvements, reduction in fuel poverty, bio-diversity and community resilience and development

The Department of the Environment, Climate and Communications has responsibility for implementing the fund, which has an allocation of at least €500 million over the period to 2027.

[37] https://www.gov.ie/en/collection/47215-project-ireland-2040-annual-reports/

National Dialogue on Climate Action (NDCA)

The National Dialogue on Climate Action (NDCA) is a forum for collaboration between citizens, communities, youth, the Government, and relevant agencies on climate change. The NDCA is a Government of Ireland initiative led by the Department of Environment, Climate and Communications with secretariat support provided by the Environmental Protection Agency.

The NDCA has three main objectives with regards to public engagement and deliberation:

- To create awareness, understanding and engagement on climate change.
- To motivate and enable climate action at the level of communities and citizens, including the empowerment of citizens to adopt more sustainable behaviours.
- To empower citizens to have conversations on climate action and to inform policy responses & behavioural research.

Key projects which comprise part of the NDCA activities include:

- Climate Conversations, which facilitates public engagement on annual Climate Action Plans.
- The National Youth Assembly on Climate, which ensures young people's views on climate are heard at a national level.
- The Climate Change Lecture Series, which delivers lectures on a range of climate related topics every year.
- The Annual National Climate Change Conference, which facilitates and encourages discussion on topics related to climate change.

Local Government, Regional Offices and EU Cities Mission

Local authorities are at the forefront of climate action in Ireland. They help make the national climate goals and policies work at a local level to assist in the delivery of the national climate objective. A number of work programmes are being supported by the department in collaboration with the local government sector to drive emission reductions locally. These include:

- Decarbonizing Zones through local authority climate action plans
- Climate Action Regional Offices
- The EU Cities Mission and Pilot Cities Programme

3.5.1 Additional info in tabular format: Name, description, objectives, type of instrument, status, Sector(s) affected, gases affected, starting year of implementation, implementing entities, estimates of expected and achieved GHG reductions.

This table is annexed to this document as Annex 3. The information in this table is identical to the information in Common Tabular Format (CTF) table 5 ('Mitigation policies and measures, actions and plans'), which was submitted electronically together with this BTR.

3.5.2 Methodologies and assumptions used to estimate GHG reductions (can be in annex)

Ireland's quantitative assessment of PaMs is underpinned by the same set of underlying scenario assumptions as those used to produce the national GHG projections and is based energy projections provided by the Sustainable Energy Authority of Ireland (SEAI). Details on the methodologies and assumptions used in this overarching process are outlined in section 3.6.2.4 of this BTR.

For the majority of PaMs, energy savings associated with individual policies and measures are estimated by SEAI through updated analysis carried out in parallel with the energy projections modelling used to produce national GHG projections. The energy savings are then used by the Environmental Protection Agency to estimate the impact of individual PaMs on GHG emission reductions by applying relevant emission factors.

As outlined in section 3.6.2.2 of this BTR, two emissions projections scenarios are presented which show two potential outlooks to 2050 depending on policy development and implementation, a 'with existing measures' scenario and a 'with additional measures' scenario. To become part of the WEM scenario, a policy or measure must be in place by the end of 2022 (the latest inventory year) and the resources and/or legislation already in place or committed to by Government Departments or Agencies. Policies and measures under the WAM scenario are those included in Government plans but not yet implemented. In some cases, an implemented PaM under WEM has a related planned PaM under WAM which represents additional planned ambition. Differences between policies and measures reported under both 'with existing measures' and 'with additional measures' scenarios are outlined in Annex 4 to this document**.**

3.5.3 Actions and measures no longer in place compared to previous reporting

As this is the first Biennial Transparency Report submitted by Ireland, no changes to a previous report are reported. It is envisaged that in future reports that this section will highlight any changes made by Ireland in relation to mitigation efforts.

3.6 Projections of GHG emissions and removals

The Environmental Protection Agency (EPA) is the Competent Authority with responsibility for developing, preparing and publishing projections of GHG emissions for Ireland. The EPA produces national GHG emission projections on an annual basis. These projections are compiled in line with European Union (EU) guidelines to meet EU reporting obligations[38]. At a national level this assessment informs policy and the monitoring and reporting of Ireland's climate action performance to Government under the Climate Action and Low Carbon Development Act (Amendment) 2021[39] and to the public as outlined in the Climate Action Plan 2024[40]. It also provides an assessment of Ireland's progress towards achieving its EU emission reduction targets for 2030 as set out under the Effort Sharing Regulation[41].

This report provides an assessment of Ireland's total projected greenhouse gas (GHG) emissions from 2023 to 2050[42], using the latest inventory data for 2022 as the starting point. The focus of the assessment is out to 2030 given current national and EU 2030 climate targets.

Preparing the EPA projections involves compiling and processing key data such as economic projections (fuel prices, carbon tax prices and modified Gross National Income), energy projections (projected fuel use in households, industry, services, transport and agriculture), developments in the agriculture and land use sectors and projected emissions from industrial products.

[38] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action

[39] Climate Action and Low Carbon Development (Amendment) Act 2021 (irishstatutebook.ie)

[40] https://www.gov.ie/en/publication/79659-climate-action-plan-2024/

[41] Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement

[42] https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/Input-Assumptions-for-Irelands-Greenhouse-Gas-Emissions-2023-2050.pdf

3.6.1 GHG Projections

As described in the Introduction the EPA has produced the projected GHG emissions for 2023 to 2050 using two scenarios: With Existing Measures (WEM) and the more ambitious With Additional Measures (WAM). A Without Measures scenario is not provided.

This section focuses on projected emissions as far as 2030 as most current policies and measures in Ireland are focused on this period. Full emissions projections for WEM and WAM out to 2050 are available publicly[43] and were reported to the European Commission on 15 March 2024 as required by EU reporting obligations. These emissions projections consider projected activity data provided by a number of key data providers including:

• Outputs from an integrated energy, economy and environment model called I3E provided by the Economic and Social Research Institute (ESRI). The economic growth projections from I3E were benchmarked against the Horizon Scanning projections prepared by the Department of Finance in 2023;

• Energy projections provided by the Sustainable Energy Authority of Ireland (SEAI). Anticipated progress in the implementation of energy related policies and measures was determined by EPA in discussion with SEAI and the relevant Government Departments;

• Agricultural projections provided by Teagasc (Agriculture and Food Development Authority) which are aligned with University of Missouri Food and Agricultural Policy Research Institute (FAPRI) Projections (January 2024) for medium-term developments in EU and World agricultural commodity markets. Teagasc assume that agricultural policy continues as currently implemented and the Trade and Cooperation (Brexit) Agreement (TCA) reached between the EU and the UK governs UK-EU trade for the period to 2033. Furthermore, the analysis assumes a lack of new bilateral trade agreements between the EU, UK and other countries. Determination of anticipated progress in the implementation of Agriculture related policies and measures was determined by the EPA in discussion with the Department of Agriculture, Food and the Marine and Teagasc.

Both scenarios use fuel prices from the European Commission recommended harmonised trajectories. The prices were chosen to reflect the likelihood of near-term sustained higher prices and intensified uncertainty around longer-term future fuel prices. Projected emissions data is calculated for the following gases: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and fluorinated-gases and reported as carbon dioxide equivalent[44] (CO2 eq). Emissions are classified

[43] https://reportnet.europa.eu/

[44] Carbon dioxide equivalent (CO2 eq) is a metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential (GWP), by converting amounts of other

into nine sectors: Energy Industries, Transport, Agriculture, Residential, Manufacturing Combustion, Commercial & Public Services, Industrial Processes, Waste and F-Gases.

With Existing Measures (WEM)

The WEM scenario is a projection of future emissions based on the measures currently implemented and actions committed to by Government. To become part of the WEM scenario a policy or measure must be in place by the end of 2022 (the latest inventory year) and, in parallel, the resources and/or legislation already in place or committed to by Government Departments or Agencies. For example, the WEM scenario includes a measure where the carbon tax increases annually and reaches €100 per tonne by 2030. This policy is considered to be implemented because annual carbon tax increases have been committed to in legislation (Finance Act 2020[45]). In contrast, the WEM does not include the Avoid/Shift measures envisaged for the Transport sector as these measures were first introduced in Climate Action Plan 2023, after the end of the latest inventory year.

With Additional Measures (WAM)

The WAM scenario is the projection of future emissions based on the measures outlined in the latest Government plans at the time Projections are compiled. This includes all policies and measures included in the WEM scenario, plus those included in Government plans but not yet implemented. For example, the WAM scenario includes the target of 945,000 Electric Vehicles on the road by 2030 in the Climate Action Plan 2024[46].

3.6.2 Methodology

3.6.2.1 Sectoral Breakdown

Ireland's Greenhouse Gas Emission Sectors are categorised as the following for analysis:

gases to the equivalent amount of carbon dioxide with the same GWP. Global-warming potentials in this report are as laid out in the Intergovernmental Panel on Climate Change's (IPPC's) fifth assessment report (AR5)

[45] https://www.irishstatutebook.ie/eli/2020/act/26/enacted/en/html

[46] gov.ie - Climate Action Plan 2024

1. Energy Industries (electricity generation, waste to energy incineration, oil refining, briquetting manufacture and fugitive emissions);

2. Residential (combustion for domestic space and hot water heating);

3. Manufacturing Combustion (combustion for Manufacturing industries in EU-ETS and ESR);

4. Commercial and Public Services (combustion for Commercial and Public Services space and hot water heating);

5. Transport (combustion of fuel used in road, rail, navigation, domestic aviation and pipeline gas transport);

6. Industrial Processes (process emissions from mineral, chemical, metal industries, non-energy products and solvents);

7. F-Gases (gases used in refrigeration, air conditioning and semiconductor manufacture);

8. Agriculture (emissions from fertiliser application, ruminant digestion, manure management, agricultural soils and fuel used in agriculture/forestry/fishing);

9. Waste (emissions from solid waste disposal on land, solid waste treatment (composting), wastewater treatment, waste incineration and open burning of waste);

10. Land Use, Land-use Change and Forestry (LULUCF) covers the following categories; Forest land, Cropland, Grassland, Wetlands, Settlements, Other land and Harvested Wood products.

3.6.2.2 Scenarios and Input Assumptions

Two emissions projections scenarios are presented which show two potential outlooks to 2050 depending on policy development and implementation. These are called:

• With Existing Measures

• With Additional Measures

The With Existing Measures (WEM) scenario incorporates the anticipated impact of policies and measures that were in place (and legislatively provided for) by the end of 2022.

The With Additional Measures (WAM) scenario accounts for implementation of the With Existing Measures scenario as well as planned policies and measures.

3.6.2.3 Excluded Policies and Measures

In so far as possible, the policies and measures contained in the Climate Action Plan 2024 are included in these projections. However, as detailed below, there are a number of exceptions where policies and measures were not included as the EPA could not see an implementation pathway to merit their inclusion at this point in time.

Electricity

Policies and measures up to 2030

• The target of 80% share from renewable electricity by 2030 is projected. Onshore wind of 7.2 GW, offshore wind of 3.5 GW and solar PV of 6 GW was required to achieve this level of renewable electricity. This compares with 9 GW onshore wind, 5 GW offshore wind and 8 GW of solar PV from CAP 2024.

• The full 2GW target for new flexible gas fired generation is not modelled. However, Eirgrid data[47] was used to produce an adjusted trajectory yielding new gas fired generation of 1.4 GW by 2030.

Policies and Measures post-2030

• 2 GW offshore wind for green hydrogen use in industry post-2030 (as outlined in Chapter 12 of the Climate Action Plan 2024) is not currently included.

Transport

Policies and measures up to 2030

• Climate Action Plan 2023 introduced an Avoid/Shift policy to achieve an abatement of 2.09 Mt CO2 eq by 2030. This policy remains in Climate Action Plan 2024 and encompasses a range of behavioural change and sustainable transport measures that were modelled by the National Transport Authority. One of these modelled measures relating to price increases in petrol and diesel out to 2030 has no supporting policy and is not included in the EPA projections.

Enterprise, Built Environment and Public Sector

Policies and measures up to 2030

• Measures aimed at achieving emissions savings from a decrease in embodied carbon in construction materials (1.0 Mt CO2 abatement by 2030) are not currently modelled.

• The Climate Action Plan 2024 target of a 70-75% share in renewable heat in industry has no pathway to implementation outlined in the Plan and is not specifically modelled.

Policies and Measures post-2030

[47] https://cms.eirgrid.ie/sites/default/files/publications/19035-EirGrid-Generation-Capacity-Statement-Combined-2023-V5-Jan-2024.pdf

• Post-2030 Emissions reductions associated with Carbon Capture and Storage.

Agriculture

Measures up to 2030

• Diversification measures in Agriculture with savings by 2030 of 1.5 Mt CO2 eq: Further information is needed to model an implementation pathway for these measures as they imply a reduction in herd numbers which impacts quantification of all of the other proposed measures.

Overall

• Climate Action Plan 2023 identified unallocated emissions savings of up to 26 Mt CO2 eq in the second carbon budget period from 2026 to 2030. These savings are not modelled in these projections. It is noted that the Climate Action Plan 2024 addresses the issue of unallocated emissions savings and identifies five themes that could deliver savings.

• Further Measures post-2030 detailed in the electricity, industry, built environment, transport and agriculture sectors where no specific measures or emissions savings have been identified are not modelled.

These savings combined are estimated to provide a conservative additional abatement of 8.75 Mt CO2 eq in 2030, based on the modelling used to prepare the Climate Action Plan 2024.

3.6.2.4 Reference/Base Years in the Report

Ireland's EU and national legislative commitments have different levels of emissions reduction requirements, base years and timeframes for achievement. The EU Effort Sharing Regulation (ESR) requires a 42% reduction of emissions compared to 2005 levels by 2030, this is discussed in Section 3. The Climate Act 2021 has specified 2018 as the base year from which a 51% emission reduction is to be achieved by 2030. The percentage changes referred to in Section 4 refer to the period 2018 to 2030.The sectoral analysis uses the latest inventory year (2022) as a base year for projections to align with the current EU projections reporting requirements. Each section of the report outlines the EPA's assessment with reference to the targets and base year specified in the associated legislation or reporting frameworks being discussed.

3.6.2.5 Models and/or approaches used and key underlying assumptions and parameters used for projections (e.g. gross domestic product growth rate/level, population growth rate/level);

Energy demand projections underpinning the latest emissions projections were prepared by the Sustainable Energy Authority of Ireland (SEAI) in conjunction with the Economic and Social Research Institute (ESRI). The ESRI produce energy demand projections using the I3E model (Ireland Environment, Energy and Economy model[48]). Future international fossil fuel prices are given as input to the I3E model. The fuel price assumptions use European Commission recommended harmonised trajectories. A varying carbon tax that increases by €7.50 per annum and reaches €100 per tonne by 2030 and is constant thereafter is used in both scenarios. The recommended EU-ETS carbon prices are based on the EU Reference Scenario. The key underlying macro-economic parameters used were provided in Section 4.5 of the UN ETF Progress Reporting Tool.

To produce the finalised WEM energy projections, SEAI amends the output of the energy demand produced by ESRI to take account of the expected impact of energy efficiency measures put in place before the end of 2022 but which are considered too recent to be detectable in any time-series analysis. The WAM energy projections builds on the WEM projections with adjustments made to account for implementation of additional policies and measures outlined in the Climate Action Plan 2024. The SEAI use the National Emissions Modelling Framework (NEMF) to carry out this work. The National Energy Modelling framework combines sectoral energy models with baseline macroeconomic inputs from ESRI's I3E model. The NEMF simulates consumer decision making and measures uptake under alternative scenarios. The NEMF also assesses the combined impact of policies and measures on energy supply and demand.

3.6.2.6 Assumptions on policies and measures included in the 'with measures' projections and 'with additional measures' projections, if included

The assumptions by sector are provided below with the sectoral analysis.

[48] https://www.esri.ie/current-research/the-i3e-model

3.6.2.7 Sensitivity analysis for any of the projections, together with a brief explanation of the methodologies and parameters used.

A sensitivity analysis of the With Existing Measures emissions scenario has been undertaken for the agriculture emissions projections based on alternative projected activity data that assumes stronger growth in agricultural activity levels. The results are provided below with the agriculture sector analysis.

3.6.3 Projections by sector

This section aims to show the projected trends in total emissions and sectoral GHG emissions from the latest inventory year (2022) to 2030. As explained previously the WAM scenario includes Government policies and measures that have not yet moved into implementation phase and it is a more ambitious scenario than the WEM. The difference between both scenarios is largely attributed to significant emissions reductions in key sectors such as power generation, residential, transport, commercial and public services and agriculture. This is described in more detail for each sector throughout this section.

The agriculture and transport sectors remain the largest contributors of emissions in 2030 in both the WEM and WAM scenarios as a consequence of other sectors of the economy projected to decarbonise faster. Under the WEM scenario, emissions from agriculture and transport are projected to decrease by 1% and 5%, respectively. When we look at the more ambitious WAM scenario, agriculture and transport are projected to decrease by 18% and 26% respectively over the period 2022 to 2030.

The share of total emissions coming from the energy industries sector (mainly power generation) are projected to decline from 17% in 2022 to 8% in 2030 in the WEM scenario and to 9% in the WAM scenario. This reflects the projected ongoing phase out of coal, oil and gas usage in power generation, implementation of Ireland's renewable power generation production targets and increased electricity interconnection capacity.

Figure 3.19 Projected Total Greenhouse Gas Emissions ($MtCO_2$ eq) under the With Existing Measures and With Additional Measures scenarios

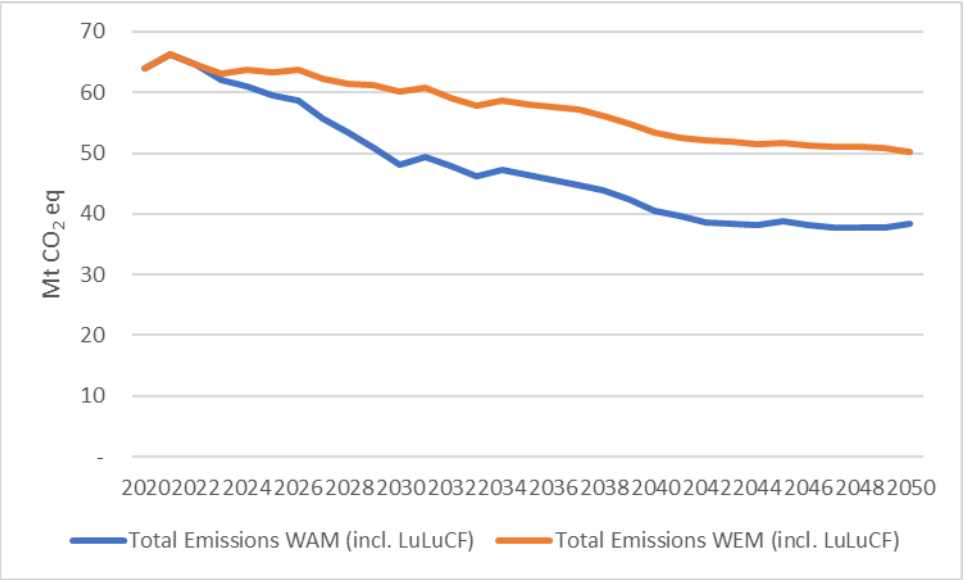


Table 3.6 -Total Greenhouse Gas Emissions ($MtCO_2$ eq) by Sector under the With Existing Measures scenario

Sector	2022	2025	2030	2035	2040	2045	2050
Energy Industries	10.1	7.1	4.3	4.4	3.9	4.3	4.0
Residential	5.8	5.7	4.9	3.1	1.9	1.5	1.5
Manufacturing Combustion	4.3	4.0	3.8	3.5	3.1	2.8	2.7
Commercial / Public Services	1.4	1.3	1.2	1.0	0.9	1.0	1.0
Transport	11.8	11.5	11.2	9.7	7.6	6.0	5.1
Industrial Processes	2.3	2.2	2.4	2.6	2.6	2.6	2.6
F-Gases	0.7	0.7	0.6	0.7	0.8	1.0	1.2
Agriculture	23.4	23.2	23.1	23.3	23.6	23.8	24.1
Waste	0.9	0.8	0.7	0.6	0.5	0.5	0.5
LULUCF	4.0	6.8	7.9	9.4	8.5	8.2	7.6
Total	64.6	63.3	60.1	58.1	53.4	51.7	50.3

Table 3.7 - Total Greenhouse Gas Emissions ($MtCO_2$ eq) by Sector under the With Additional Measures scenario

Sector	2022	2025	2030	2035	2040	2045	2050
Energy Industries	10.1	7.0	3.9	3.8	2.8	3.0	2.7
Residential	5.8	5.8	4.2	2.1	0.6	0.2	0.2
Manufacturing Combustion	4.3	4.0	2.9	2.6	2.1	1.5	1.3
Commercial / Public Services	1.4	1.3	0.6	0.4	0.2	0.1	0.1
Transport	11.8	11.4	8.7	7.1	5.7	5.0	4.7
Industrial Processes	2.3	2.2	2.4	2.6	2.6	2.6	2.6
F-Gases	0.7	0.7	0.6	0.7	0.9	1.1	1.3
Agriculture	23.4	21.4	19.1	19.1	19.0	19.0	18.9
Waste	0.9	0.8	0.7	0.6	0.5	0.5	0.5
LULUCF	4.0	4.9	4.9	7.5	6.3	5.9	6.3
Total	64.6	59.6	48.0	46.4	40.6	38.8	38.5

3.6.3.1 Agriculture

Agriculture sector emissions arise from enteric fermentation (methane emissions arising from digestive process in livestock), manure management and nitrogen and urea application to soils. In addition, fuel combustion from agriculture, forestry and fishing is included. This sector contributed 39% of Ireland's total emissions in 2022 and is projected to rise to 44% by 2030 (in the WEM scenario). The WEM and WAM projections from 2023 to 2030 are described below.

The data underpinning the agriculture projections are based on an updated analysis undertaken by Teagasc of the projected animal populations, crop areas and fertiliser use which are aligned with University of Missouri Food and Agricultural Policy Research Institute (FAPRI[49]) Projections (January 2024) for medium term developments in EU and World agricultural commodity markets.

[49] Agricultural Economics - Teagasc | Agriculture and Food Development Authority

Measures from AgClimatise[50], Nitrates Action Plan, Teagasc MACC[51], and Climate Action Plan 2024 are included.

With Existing Measures scenario

Total emissions from agriculture (including fuel used in agriculture, forestry and fishing) are projected to decrease by only 1% over the period 2022-2030 from 23.4 to 23.1 Mt CO2 eq under the WEM scenario. The WEM scenario assumes that those measures for which there is legislative levers in place prior to the end of 2022 are included in the scenario. These include:

• The Nitrates Action Programme[52]includes actions on these measures such that all slurries on Nitrates derogation farms are required to be spread with Low Emission Spreading technologies (LESS). Current evidence shows that the use of LESS has penetrated to non-derogation farms. Therefore, the target of 90% of slurries spread by LESS by 2027 as per AgClimatise is applied. Use of low emission slurry spreading for pigs has moved from planned (WAM) to implemented (WEM) and is 100% from 01/01/2023 as per the Nitrates Action Plan.

• The target for lime application of 2 Mt per annum by 2030 is reached (AgClimatise), including enhanced nutrient use efficiency as a result.

• Inhibited urea fertiliser use remains at current levels.

With Additional Measures scenario

Under the WAM scenario emissions are projected to decrease to 19.1 Mt CO2 eq by 2030 which is an 18% reduction over the period 2022 to 2030. The WAM scenario assumes the WEM measures plus the measures outlined in Climate Action Plan 2024, the Teagasc GHG MACC, AgClimatise and Teagasc NH3 MACC are in place, these include:

• Reduction in crude protein in pig diets;

• All slurry stores (cattle and pig) to be covered by 2027;

• Drying of poultry manure;

[50] https://www.gov.ie/en/press-release/a8823-publication-of-ag-climatise-national-climate-air-roadmap-for-the-agriculture-sector/

[51] https://www.teagasc.ie/environment/climate-centre/publications/marginal-abatement-cost-curve-2023/

[52] https://assets.gov.ie/218449/f1a6725a-6269-442b-bff1-2730fe2dc06c.pdf

• Further 1% reduction in the crude protein content of Dairy cow concentrates during grazing season;

• Increased adoption of protected urea, 80-90% uptake of protected urea on grassland farms by 2025 and 90-100% uptake by 2030;

• Limit sales of straight urea to 20,000 t per annum from 2025;

• Target fertiliser sales ceilings at 330 kt N by 2025 and 300 kt N by 2030;

• Methane reduction measures including slurry additives to reduce methane emissions, reduced slaughter age for beef cattle, reduced age to first calving, feed additives (cattle), dairy economic breeding index (EBI) optimization;

• Water Table Management (peat soils) to include 80kha of water table manipulation;

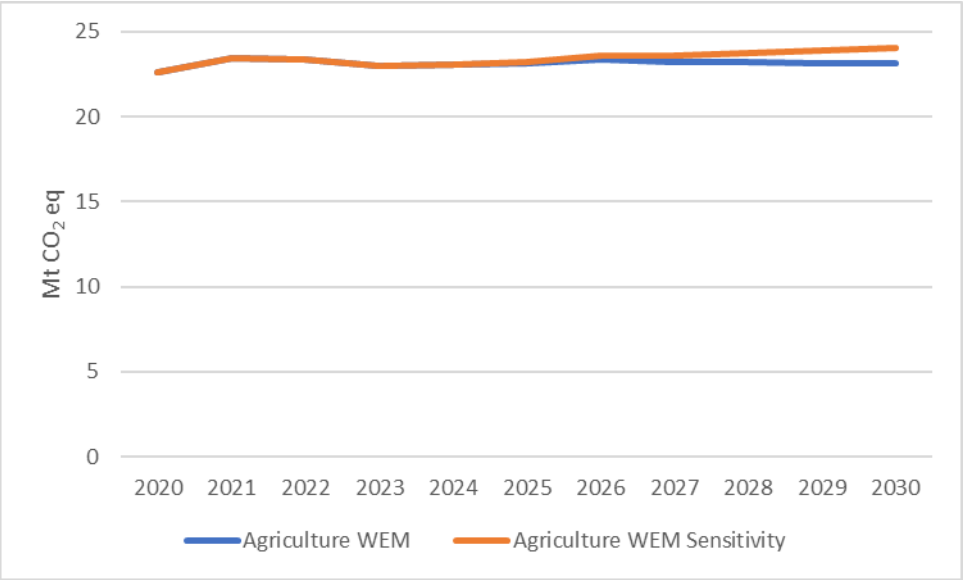
• 75kha of spring crops to have cover crops applied.

Sensitivity Analysis

A sensitivity analysis of the With Existing Measures emissions scenario has been undertaken for the agriculture emissions projections based on alternative projected activity data that assumes stronger growth in agricultural activity levels. The resulting alternative scenario is presented in below alongside the WEM scenario. It shows that stronger growth would likely lead to higher emissions over the projected period.

The sensitivity scenario examines the consequences of continued strong growth in the dairy herd accompanied by beef cow herd that is projected to contract at a slower rate than the rate of decline observed since the end of the milk quota regime in 2015. Under this sensitivity scenario, with stronger milk prices, Irish dairy cow numbers are projected to increase. Dairy cow numbers in 2030, under the sensitivity scenario, are projected to reach 1.743 million. This represents an 11% increase relative to 2022.

Figure 3.20 - Sensitivity assessment of the Agriculture Sector under the With Existing Measures scenario out to 2030



3.6.3.2 Transport

The main source of emissions from the transport sector is road transport. Freight transport energy demand is strongly influenced by the level of commercial activity in the economy. Personal transport energy demand is significantly influenced by both the level of employment as well as the oil price. This sector also includes combustion of fuel used in rail, navigation, domestic aviation and pipeline gas transport. This sector is projected to contribute to 21% of Ireland's total emissions by 2030 in the WEM scenario.

The main policy instruments impacting transport emissions are the electrification of the vehicle fleet, an increase in the mix of renewable fuels in petrol and diesel at the pumps and 'avoid and shift' measures as detailed in Climate Action Plan 2024. Both WEM and WAM have differing levels of ambition in terms of the electric vehicle and biofuel targets. Increased ambition in terms of avoiding transport emissions and moving to sustainable transport is included in the WAM scenario only.

The latest projections indicate that the share of total road transport CO2 emissions from Heavy Duty Vehicles (HDVs) and Light Goods Vehicles (LGVs) is projected to increase from approximately 43% in 2022 to 52% by 2030, and 87% by 2050 in the WAM. This is as a result of continued projected growth in demand for freight transport services as well as faster reduction of emissions from passenger cars.

With Existing Measures scenario

Under the WEM scenario, transport emissions are projected to decrease by 5% over the period 2022-2030 from 11.8 to 11.2 Mt CO2 eq. Measures included in the WEM scenario are:

• A 10% blend for petrol and a 12% blend for diesel at the pumps by 2025 is assumed and blends remain at this level until 2030.

• For uptake of Electric Vehicles, the WEM scenario assumes approximately 693,000 electric vehicles on the road by 2030. This includes approximately 430,000 passenger battery electric vehicles and 263,000 passenger plug-in hybrid electric commercial vehicles.

With Additional Measures scenario

Under the WAM scenario, transport emissions are projected to decrease by 26% over the period 2022 to 2030 from 11.8 to 8.7 Mt CO2 eq. Measures in the WAM scenario include:

• It is assumed that incremental blend increases will occur reaching a 10% blend for petrol and a 20% blend for diesel at the pumps by 2030 as detailed in Climate Action Plan 2024;

• Uptake of electric vehicles up to 945,000 by 2030, as a result of the implementation of the Climate Action Plan 2024. This includes over 845,000 private electric vehicles.

• This scenario also includes a reduction in total vehicle kilometres to be achieved by behavioural and sustainable transport measures outlined in the Climate Action Plan 2024, such as a 50% increase in daily active travel journeys and a 130% increase in daily public transport journeys. As noted above, one of the modelled measures relating to fuel price increase as part of this behavioural change approach has no supporting policy and is not included in the EPA projections.

3.6.3.3 Energy Industries

The majority of emissions within Energy Industries come from power generation and are largely regulated under the EU Emissions Trading Scheme (EU-ETS). In addition, emissions from the manufacture of solid fuels, petroleum refining (also largely included within EU-ETS) and fugitive emissions are included. This sector contributed 17% of Ireland's total emissions in 2022 and is projected to reduce to 8% in 2030 (in the WEM scenario).

Decarbonisation of power generation is a key measure in the Energy Industries sector, with the use of peat in power generation ceased in 2023 and the use of coal at Moneypoint to be phased out at the end of 2025. The majority of Ireland's non-renewable energy generation is projected to come from natural gas by 2030.

Preliminary analysis shows that there was a significant drop of almost 24% in emissions from electricity generation between 2022 and 2023. This was caused by a reduction in fossil fuel usage and an increase in net imports from interconnectors from 1% in 2022 to 9% in 2023 based on the first nine months of both years. This step change in interconnector behaviour is set to increase into the near future but there is uncertainty in the longer term as importation of electricity from other countries outside the EU will require a carbon price to be paid under the EU's Carbon Border Adjustment Mechanism. A Government Policy on Interconnection was published in July 2023 and policy levers on interconnection are included in the WEM and WAM projections scenarios described below.

With Existing Measures scenario

Under the WEM scenario, emissions from the energy industries sector are projected to decrease by 57% from 10.1 to 4.4 Mt CO2 eq over the period 2022 to 2030. Measures in the WEM scenario include:

• Ireland reaching 69% of renewable electricity share by 2030. Renewable electricity generation capacity is dominated by wind and solar sources;

• In terms of inter-connection, the WEM scenario has the Greenlink 500 MW interconnector to the UK coming on stream in January 2025 and the Celtic 700 MW interconnector to France on stream in January 2027. The scenario also includes an increase in capacity of the existing North-South Interconnector to 1,350 MW from 2026;

• New 1.3 GW of net gas-fired generation capacity added by 2030.

With Additional Measures scenario

Under the WAM scenario, emissions from the energy industries sector are projected to decrease by 62% from 10.1 to 3.9 Mt CO2 eq over the period 2022 to 2030. In addition to the WEM measures, the WAM scenario includes:

• A renewable electricity share of 80% by 2030 (as set out in the Climate Action Plan 2024), mainly a result of further and rapid expansion in wind and solar energy;

• Production of up to 5.7 TWh of Biomethane by 2030;

• Additional interconnection LirIC (700 MW) between Northern Ireland and Scotland, and MARES Connect (750 MW) between Ireland and Wales

3.6.3.4 Residential

Emissions from the Residential Sector arise from fuel combustion for domestic space and hot water heating such as natural gas, oil, coal and peat. Residential energy demand is influenced by the weather and fuel prices. This sector contributed 10% of Ireland's total emissions in 2022. By 2030 emissions from the residential sector are projected to reduce to 9% of Ireland's total emissions (in the With Existing Measures scenario). The WEM and WAM projections for residential emissions are described below.

With Existing Measures scenario

Under the WEM scenario, emissions from the residential sector are projected to decrease by 15% between 2022 and 2030 from 5.8 to 4.9 Mt CO2 eq.

The With Existing Measures scenario assumes the following:

- •Domestic heat pump uptake based on grant rates as of February 2022 (funded by National Development Plan 2021-2030 allocation) and, an 'effective' ban on oil boilers (from 2022) and gas boilers (from 2025) in new dwellings;
- Implementation of a range of residential energy efficiency programmes in line with the National Development Plan and the impact of building regulations. These programmes provide funding for renewable heating systems, attic and wall insulation and other energy efficiency upgrades for private households and communities;
- Expected completion of two district heating schemes currently under development with a combined capacity of 0.075 TWh by 2030.

With Additional Measures scenario

Under the WAM scenario, emissions are projected to decrease by 27% between 2022 and 2030 from 5.8 to 4.2 Mt CO2 eq. This scenario assumes full implementation of the relevant WEM scenario and relevant measures in the Climate Action Plan 2024 (with the exception of biomethane), these include:

- The installation of 680,000 heat pumps by 2030 (400,000 in existing homes and 280,000 in new homes);
- Residential Energy Efficiency programmes involving upgrades to homes, and retrofits to achieve the cost optimal equivalent of a BER 'B2' rating in 500,000 dwellings by 2030;

- District heating growth to 1.2 TWh in 2030 in the Residential sector. The remaining 1.5 TWh of the full 2.7 TWh outlined in the Climate Action Plan 2024 is allocated to the Commercial and Public Services Sector.
- An effective ban on fossil fuel boilers in existing residential buildings after 2031 based on advancing the energy and carbon performance requirements of the Building Regulations as indicated in the Climate Action Plan 2024

3.6.3.5 Manufacturing Combustion

Emissions from this sector arise from fuel combustion used in manufacturing industries in Ireland. It also includes combustion for combined heat and power systems for own use in these industries. Fuel combustion in manufacturing contributed 7% of Ireland's total emissions in 2022. This is projected to remain the same in 2030 (in the With Existing Measures scenario)

With Existing Measures scenario

Under the WEM scenario, emissions from manufacturing combustion are projected to reduce by 12% between 2022 and 2030, from 4.3 to 3.8 Mt CO2 eq.

This scenario assumes implementation of existing energy efficiency programmes such as SEAI's Large Industry Programme (to maintain strong energy management and environmental protection practices in industry), Accelerated Capital Allowances programme (aims to improve the energy efficiency of Irish companies by encouraging them to purchase energy saving technologies) and the Excellence in Energy Efficiency Design programme (EXEED), a process for energy efficiency design management in businesses.

With Additional Measures scenario

Under the WAM scenario, emissions from manufacturing combustion are projected to decrease by 32% from 4.3 to 2.9 Mt CO2 eq between 2022 and 2030. This scenario assumes further roll out of energy efficiency programmes including those listed above.

As indicated in the Climate Action Plan 2024, a total of 5.7 TWh of biomethane use across the heat sector by 2030 (split between Commercial/Public Services and Manufacturing Combustion for these Projections);

An increase in carbon-neutral heating in low and high temperature heat in Manufacturing and Industry

3.6.3.6 Commercial and Public Services

Emissions from the Commercial and Public Services Sector arise from fuel combustion for space and hot water heating. This sector contributed 2% of Ireland's total emissions in 2022 and is projected to maintain this proportion out to 2030 (in the WEM scenario).

With Existing Measures scenario

Under the WEM scenario, emissions from the commercial and public services sector are projected to decrease by 19% between 2022 and 2030 from 1.4 to 1.2 Mt CO2 eq.

This scenario assumes implementation of a range of energy efficiency programmes including retrofit of public building stock, with a focus on decarbonisation through schemes such as the Support Scheme for Renewable Heat and Public Sector Capital Exemplars.

With Additional Measures scenario

Under the WAM scenario, emissions from the commercial and public services sector are projected to decrease by 57% between 2022 and 2030 from 1.4 to 0.6 Mt CO2 eq.

This scenario assumes implementation of a range of energy efficiency programmes including the retrofit of public building stock and commercial buildings with a focus on decarbonisation and the Energy Performance Contract scheme (introduced from 2024 to 2030).

As indicated in the Climate Action Plan 2024; a total of 5.7 TWh of biomethane use across the heat sector by 2030 (split between Commercial/Public Services and Manufacturing Combustion for these Projections).

This scenario includes district heating growth to 1.5 TWh in 2030 in the Commercial and Public Services sector. The remaining 1.2 TWh of the full 2.7 TWh outlined in the Climate Action Plan 2023 is allocated to the Residential Sector.

An effective ban on fossil fuel boilers in new non-residential buildings after 2030 based on advancing the energy and carbon performance requirements of the Building Regulations as indicated in the Climate Action Plan 2024.

3.6.3.7 Other (Industrial Processes, Waste, F-Gases)

The Industrial Processes and Waste sectors contributed 4% and 1% of Ireland's total emissions in 2022 respectively.

Emissions from Industrial Processes include process emissions from mineral, chemical, metal industries, non-energy products and solvents. Emissions are projected to increase by 4% between 2022 and 2030 from 2.3 to 2.4 Mt CO2 eq. The majority of emissions come from the production of cement and lime and the projections are based on growth forecasts from the cement industry in Ireland.

Waste sector emissions are projected to decrease by 23% between 2022 and 2030 from 0.9 to 0.7 Mt CO2 eq. The waste sector includes landfill, incineration and open burning of waste, mechanical and biological treatment and wastewater treatment. Emissions are primarily attributable to methane emissions from landfill which reduce over the projected period in line with the projected reduction in waste going to landfill and the age of the waste already placed in them. The amount of landfill gas flared and utilised for energy production is 57% in 2022 and is projected to decrease to 51% in 2030 and 40% by 2050 in line with more recent trends in the latest inventory. Ireland's landfill rate for municipal waste dropped to 16% in 2021, reflecting a steep decline from 80% in 2001 and is on track to comply with the Landfill Directive target of less than 10% of Municipal waste landfilled by 2035.

Fluorinated gases (F-gases) accounted for 1% of Ireland's total national GHG emissions in 2022. The key sources of fluorinated gas emissions in Ireland are production, use and disposal of equipment containing these fluids (e.g. refrigerators, mobile air conditioning systems, heat pumps and electrical switch-gear).

With Existing Measures scenario

Fluorinated-Gas (F-Gas) emissions are projected to decrease by 17% from 0.74 to 0.61 Mt CO2 eq between 2022 and 2030 under the With Existing Measures scenario. This is largely due to the move away from mobile air-conditioning systems in vehicles that contain F-Gases with a high global warming potential.

With Additional Measures scenario

Emissions are projected to reduce by 16% between 2022 and 2030 from 0.74 to 0.62 Mt CO2 eq under the WAM scenario. The results show that in the more ambitious WAM scenario fluorinated-gas emissions are slightly higher than in the WEM scenario by 2030. The reason for this is the different projected uptake rates in heat pumps in each scenario. In the WAM scenario the number of heat pumps being deployed annually is 36% higher than the number in the WEM scenario by 2030. The switch to lower Global Warming Potential gas (R32) in heat pumps and air conditioning units over the projected period in the WAM scenario means that despite this large increase in heat pump numbers, the increase in GHG emissions is small.

3.6.3.8 LULUCF

The LULUCF sector is made up of six land use categories (Forest Land, Cropland, Grassland, Wetlands, Settlements, and Other Land) and Harvested Wood Products. These categories are sub-divided into land remaining in the same category (e.g. forest land remaining forest land) and land converted from one category into another (e.g. grassland converted to forest land).

In 2022 LULUCF accounted for 6% of total national emissions. Emission estimates across the full time series of this sector are now lower than the values presented in last year's projections report reflecting recalculations made in the sector as a result of new scientific research on emissions from grasslands and wetlands. Details on the recalculations in LULUCF can be found in Chapters 6 and 10 of Ireland's National Inventory Report 2024[53].

In addition, the LULUCF Regulation was amended in 2023 to include specific "net removal" targets for each Member State for the second phase of reporting from 2026-2030. Ireland's binding country-specific target by the end of this second phase is to reduce net LULUCF emissions by 626 kt CO2 eq, below an average of 2016, 2017 and 2018 emissions for this sector, to reach a currently estimated target of 3.7 Mt CO2eq. While, compliance with this target in WEM and WAM projections is assessed below, it should be noted that under the LULUCF Regulation the target will be updated with latest data across two compliance checks in 2025 and 2032.

With Existing Measures scenario

Under the WEM scenario, emissions from the LULUCF sector are projected to almost double between 2022 and 2030 with net emissions in 2030 of 7.9 Mt CO2 eq. This 99.4% increase is

[53] https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-national-inventory-submissions-2024.php

largely due to projected forest harvesting given an aging forest estate and will exceed our current LULUCF Regulation target by 4.2 Mt CO2eq.

The WEM scenario assumes that measures for which there are legislative levers in place prior to the end of 2022 are included, these are:

- Savings associated with Bord na Móna rewetting/restoration/rehabilitation under the Peatlands Climate Action Scheme (PCAS).
- The WEM scenario also assumes that afforestation rates are consistent with current practice which are 2,000 hectares per annum.

With Additional Measures scenario

Under the WAM scenario, emissions from the LULUCF sector are projected to increase by 23% between 2022 and 2030 with net emissions in 2030 of 4.9 Mt CO2 eq, exceeding our current LULUCF Regulation target by 1.35 Mt CO2 eq. The WAM scenario assumes that the measures outlined in the Climate Action Plan 2024 are implemented, including:

- Afforestation rates increased to 8,000 hectares per annum from 2026-2030;
- Water table management on 80,000 hectares of grassland on drained organic soils and improved management of 750,000 hectares grassland on mineral soils;
- Use of cover crops and straw incorporation on cropland;
- Additional wetlands rewetted, restored, and rehabilitated over and above those included in PCAS.

3.6.4 Projections by Gas

3.6.4.1 Projections by Gas (WEM scenario)

CO_2 emissions accounted for 61% of national total (excluding LULUCF) emissions in 2022, with CH_4 and N_2O contributing 29% (an increase of 3% since 2020) and 9%, respectively. The combined emissions of HFC, PFC, SF_6 and NF_3 accounted for 1.2 % of total emissions in 2022. By 2030 emissions of CO_2 are projected to decrease to 56% of national total emissions, with CH_4 and N_2O accounting for 33% and 10% respectively. By 2050 emissions of CO_2 are projected to decrease further to 44% of national total emissions, with CH_4 and N_2O accounting for 41% and 13% respectively. The combined emissions of HFC, PFC, SF_6 and NF_3 are projected to increase to

3% by 2050. The table below provide the latest inventory and projected emissions by gas for the 'WEM' scenario.

Table 3.8 - Projections by gas ($MtCO_2$ eq) under the With Existing Measures Scenario

Gas	2022	2025	2030	2035	2040	2045	2050
Carbon Dioxide excluding LULUCF	36.71	34.09	33.88	33.21	33.05	31.76	30.74
Carbon Dioxide including LULUCF	36.36	35.55	36.34	35.76	36.28	34.92	34.14
Methane excluding LULUCF	17.66	17.51	17.32	17.20	17.11	17.06	17.02
Methane including LULUCF	21.60	21.43	21.27	21.18	21.10	21.05	21.01
Nitrous Oxide excluding LULUCF	5.49	5.07	5.27	5.46	5.59	5.47	5.43
Nitrous Oxide excluding LULUCF	5.89	5.30	5.50	5.69	5.82	5.71	5.67
F-gases including LULUCF	0.74	0.73	0.73	0.68	0.65	0.64	0.62
F-gases excluding LULUCF	NO	NO	NO	NO	NO	NO	NO
Total (excluding LULUCF)	60.60	57.39	57.20	56.54	56.39	54.93	53.80

3.6.4.2 Projections by Gas (WAM scenario)

By 2030 in the WAM scenario emissions of CO_2 are projected to make up 57% of national total emissions, with CH_4 and N_2O accounting for 33% and 9% respectively. By 2050 emissions of CO_2

are projected to decrease to 42% of national total emissions, with CH_4 increasing to 42% and N_2O accounting for 12% of national total emissions. The combined emissions of HFC, PFC, SF_6 and NF_3 are projected to increase to from 1% in 2030 to 4% by 2050.

Table 3.9 - Projections by gas ($MtCO_2$ eq) under the With Additional Measures Scenario

Gas	2022	2025	2030	2035	2040	2045	2050
Carbon Dioxide excluding LULUCF	36.71	33.68	33.50	33.72	34.84	35.85	37.47
Carbon Dioxide including LULUCF	36.36	34.37	34.05	34.52	35.79	37.78	39.14
Methane excluding LULUCF	17.66	17.13	16.73	16.19	15.75	15.33	14.90
Methane including LULUCF	21.60	20.99	20.66	20.19	19.79	19.41	19.02
Nitrous Oxide excluding LULUCF	5.49	5.01	4.73	4.37	4.28	4.18	4.08
Nitrous Oxide excluding LULUCF	5.89	5.12	4.84	4.48	4.39	4.29	4.19
F-gases including LULUCF	0.74	0.73	0.73	0.68	0.65	0.64	0.62
F-gases excluding LULUCF	NO	NO	NO	NO	NO	NO	NO
Total (excluding LULUCF)	60.60	56.96	56.17	54.66	53.21	50.72	48.25

3.7 Other Information

According to paragraph 103 of the annex to decision 18/CMA.1, ‘each Party may provide any other information relevant to tracking progress made in implementing and achieving its NDC under Article 4 of the Paris Agreement’. All relevant information can be found in sections 3.1 to 3.6 above. Hence, no additional information is provided here.

4 Climate Change Impacts and Adaptation

4.1 National Circumstances, Institutional Arrangements, and Legal Frameworks

4.1.1 National Circumstances

Ireland is situated off the north-west coast of the continent of Europe between longitude 5.5° and 10.5° West and latitude 51.5° and 55.5° North and comprises 70,282 square kilometres. The greatest length of the island from the north to the south is 486 kilometres and the greatest width, from east to west, is 275 kilometres. There are 3,172 kilometres of coastline. The island consists of a large central lowland of limestone with a relief of hills and a number of coastal mountains, the highest of which, Carrantuohill, is 1,040m.

The Shannon, at 340km, is Ireland's longest river. Ireland's National Parks are home to some of the most unique and spectacular scenery in the country, while wild bog lands occur in mountain and lowland areas and are among the most distinctive natural habitats in the country. The biodiversity of wildlife is comparatively low due to Ireland's isolation from mainland Europe with many species present on the continent being absent. Many other common animals and plants have, in fact, been introduced by human settlers. Ireland has a mild temperate oceanic climate, due to the controlling influence of the Atlantic Ocean. Mean annual temperatures generally range between 9°C and 10°C with the higher values in coastal regions. Summer is the warmest season, followed by autumn, spring and winter. The highest temperatures occur inland during the summer, with mean seasonal maxima between 18°C and 20°C while highest values occur in coastal regions during the winter. July is the warmest month, followed by August and June; the coldest month is January followed closely by February and then December. A long-term average national temperature series for Ireland, derived using data from five centennial stations, shows that temperatures have varied considerably from year to year[54]. Warming periods occurred in the 1930s and 1940s and from the late 1980s to the present time in line with global trends.

The highest rainfall occurs in the Western half of the country and on high ground, while rainfall decreases to the Northeast. The average annual rainfall is approximately 1230 mm, but totals in excess of 3000 mm may occur on high ground. The driest seasons are spring and summer, with an average of approximately 260 mm, while autumn and winter have averages of approximately 350

[54] Temperature - Met Éireann - The Irish Meteorological Service

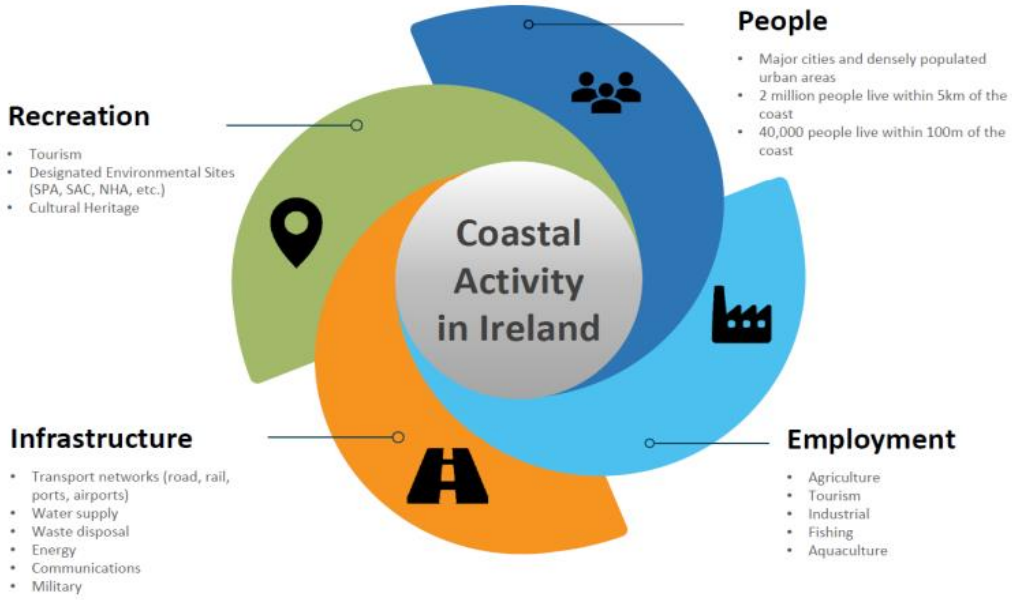
mm. The driest months are April, May, June and July, with an average of approximately 80 mm each month. February, March, August and September have average rainfall totals of approximately 100 mm, while October, November, December and January have averages of approximately 130 mm.

Observations show that Ireland's climate is changing in line with global trends in terms of sea level rise, increases in average temperature, changes in precipitation patterns and weather extremes (i.e. storms, flooding, sea surges and flash floods). The observed scale and rate of change is consistent with regional and global trends and these changes are projected to continue and increase over the coming decades.

Ireland's most recent Census[55], in 2022, shows that Ireland's population stood at 5,149,139 in April 2022, an increase of 387,274 (8.1%) since April 2016. Ireland's population has been steadily growing since the 1990s, and has increased by 46% since 1990, although the increase from 2011 to 2016 has been the slowest over that period. The population growth recorded by the 2022 Census was brought about by natural population increases, offset by a small net migration. With the average age of Ireland's population having increased from 37.4 years to 38.8 years over the same period. New data released in August 2024[56] show a population rise to 5,380,300 (+4.44%) as of April 2024 with migration accounting for +79,300 (+1.54%).

All of Ireland's major cities (Dublin, Cork, Galway, Limerick and Waterford) are situated on coastal estuaries. Likewise, much of Ireland's industry and general infrastructure is coastal, notably power stations, communications and transport hubs. Since the 1980s, the population of Ireland's coastal areas has been increasing as a result of urban expansion. In 2016, there were 1.9 million persons within 5km of the coast, representing 40% of the total population. Of these 40,468 were living less than 100 metres to the nearest coastline. As compared with the EU-28 average of 42%.[57]

[55] Census of Population 2022 - Summary Results - Central Statistics Office
[56] Live Register August 2024 - Central Statistics Office
[57] Annual activity report 2015 - Eurostat - European Commission (europa.eu)



(from Coastal change strategy report)

With fertile soils and a temperate climate, Ireland has many advantages for farming the land to produce food. Agriculture is dominated by grass based (dairy and beef) system with ambitious plans to increase production (e.g. the Foodwise 2025 strategy) over the coming years. Ireland's climate is also particularly suited to forestry with sustainable forest management identified as making a key contribution to delivering abatement of carbon dioxide over the period 2021-2030. Ireland's vision for the ocean economy is provided through 'Harnessing Our Ocean Wealth'. An Integrated Marine Plan[58] for Ireland' and aims to double the value of Ireland's ocean wealth to 2.4% of GDP by 2030 (relative to 2007)

4.1.2 Institutional Arrangements

To address these challenges, Ireland has made considerable progress in a robust institutional framework for adaptation and also in developing climate resilience measures which have progressed from those reported in the 8th National Communication Report. These include developments in capacity building measures, improvements in the research and knowledge base and mainstreaming of adaptation relevant measures into many national policies (Biodiversity, Water Quality, Communications Networks, Electricity and Gas Networks, Flood Risk Management,

[58] Harnessing Our Ocean Wealth | IMDO - Irish Maritime Development Office

Built Environment and Planning, Transport Infrastructure, Water Services Infrastructure, Build and Archaeological Heritage, Health, Agriculture, Forestry, Fishing Aquaculture and Seafood and Tourism).

Local Authorities (LAs) must be equipped with the appropriate skills and resources to plan, develop and implement climate adaptation measures. The implementation of Climate Action Plan 2019, Action 150, led to the development of a climate action training programme for all 29,000 local authority staff and 949 elected members. This programme, funded by the Department of Environment, Climate and Communications, has received full endorsement from relevant associations and has had a strong adaptation focus. Training has covered climate action leadership, general awareness, technical aspects, spatial planning, flood risk assessment, and more. Additional programmes are in development for various staff categories and specialised topics such as green procurement.

To increase LA resource capacity, the Department of Environment, Climate and Communications allocated €3.5 million of funding in 2022 to support staffing resources for Climate Action Officer and Climate Action Coordinator roles. The Department of Environment, Climate and Communications allocated a further €5.5 million in funding for these posts in 2023 and related project costs. Furthermore, as part of the Community Climate Action Programme, €60 million from the Climate Action Fund has been allocated for investment into community climate action projects and initiatives, and capacity building over the next three years. Under the programme, €24 million is allocated to LAs to work with communities to build low carbon communities. 12% of this funding has been allocated to the engagement of a community climate action officer within each LA.

The Department of Environment, Climate and Communications provides funding for environmental and climate change research. The Department of Environment, Climate and Communications has allocated responsibility to the EPA for coordinating funding of this environmental research. The EPA is at the front line of environmental protection and policing. As part of its wide range of functions the EPA manages an environmental research programme that delivers essential scientific support for environmental policy development, implementation and broader decision making.

EPA Research 2030[59] is a ten-year high-level framework for the EPA's research programming (2021-2030), designed to be agile, responsive and flexible; and includes 'addressing climate change evidence needs' as one of its four interconnected hubs. Climate Change research is additionally funded and co-funded by state bodies and organisations such as Met Éireann, Sustainable Energy Authority of Ireland (SEAI), Teagasc, Economic and Social Research Institute

[59] EPA Research 2030 | Environmental Protection Agency

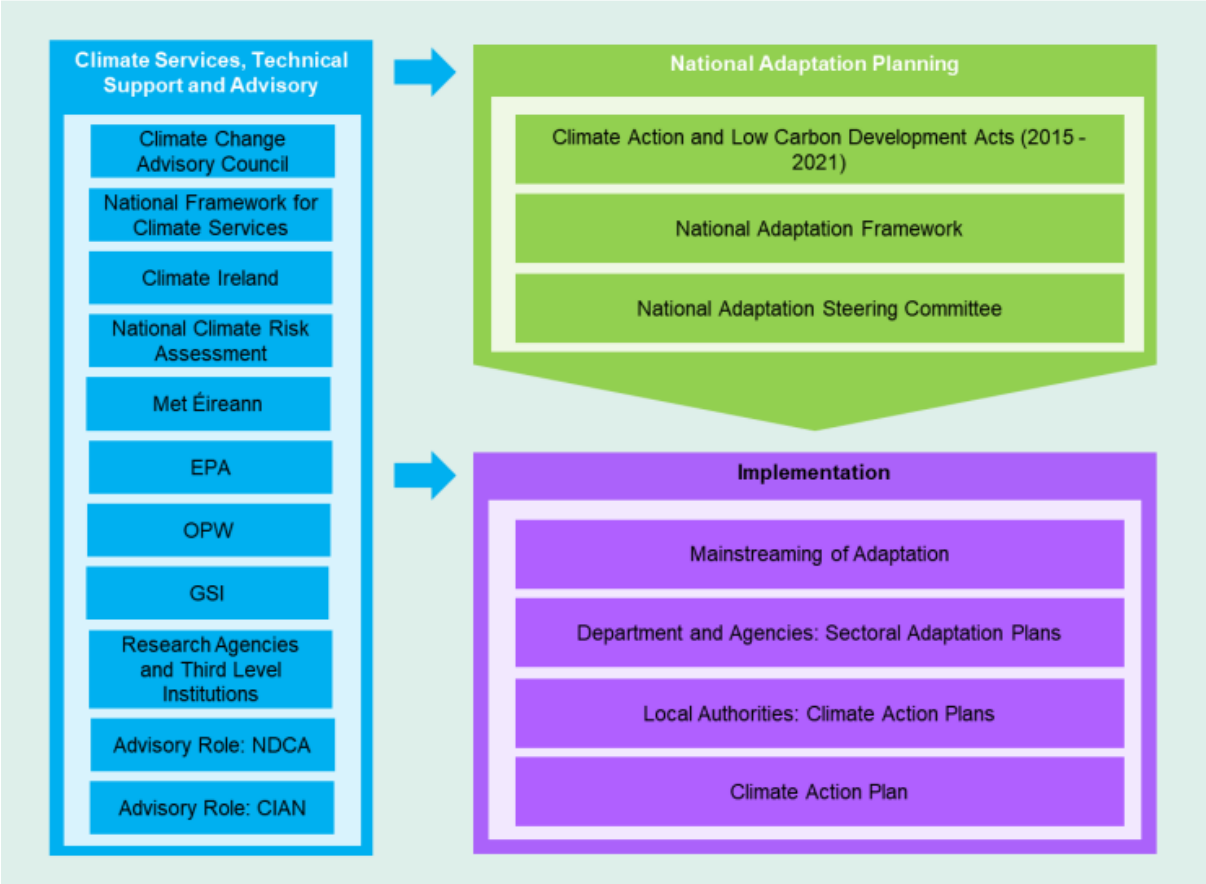
(ESRI), Marine Institute Ireland, Geological Survey Ireland (GSI), Department of Agriculture, Food and the Marine. Department of Transport (DOT),Research Ireland (formerly Irish Research Council (IRC)), and Science Foundation Ireland (SFI).

GSI funds Climate Change research in geoscience. For example, research funding is a key component of Met Éireann's 10-year strategy[60] 'Ready for change - preparing Ireland for changing weather and climate' – which has a mission to contribute to the development of national capacity and to address key scientific questions in response to Ireland's challenges and opportunities resulting from climate change.

CAP24 details Adaptation measures across key sectors, including actions addressing flooding, built environment, transport and energy and communications networks. These actions are mainstreamed into the appropriate sectoral chapters of the Climate Action Plan. Work has commenced on the 2025 Climate Action Plan.

Since the submission of the NC8, Ireland's Second statutory National Adaptation Framework (NAF) has been approved by Government. This new NAF, published in June 2024, provides a structured basis for the development of statutory Sectoral Adaptation Plans (SAPs) covering 13 priority sectors in 2024 and for the implementation of Local Authority Climate Action Plans (LACAPs) by all 31 Irish local authorities (published in 2024).

[60] Met Éireann Strategic Plan



4.1.3 Legal Frameworks

Ireland's climate adaptation policy is given legal effect by the Climate and Low Carbon Development Act 2015-2021[61] (the Climate Act) which, inter alia, requires the development of a NAF which must be reviewed within five years. It also requires that 13 key Sectors Impacted by Climate Change impacts develop Sectoral Adaptation Plans (SAPs).

Significant amendments to the Climate Act in 2021 made provisions for the Government to request two or more Ministers of the Government to jointly make and submit a sectoral adaptation plan in relation to a matter for which such Ministers of the Government share responsibility. LA have a requirement under the Act to develop Local Authority Climate Action Plans which must include adaptation measures. These were adopted in early 2024 and are now in the implementation phase.

[61] Revised Acts (lawreform.ie)

4.2 Impacts, Risks and Vulnerabilities

4.2.1 Current and Projected Climate Trends and Hazards

Ireland's environment is susceptible to the following range of climate related hazards:

- Heatwave, Heatwave and drought, Cold spell.
- Extreme Precipitation, River Flood, Pluvial Flood, Groundwater Flood, Landslide, Drought, Agricultural and Ecological Drought,
- Severe Windstorm
- Heavy Snowfall
- Increase in relative sea level, Storm surge, Coastal flooding, Coastal Erosion

4.2.2 Observed and Potential Impacts of Climate Change

Climate change is expected to have diverse and wide-ranging impacts on Ireland's environment, society and economic development, including on managed and natural ecosystems, water resources, agriculture and food security, human health, and coastal zones. The most immediate risks to Ireland which can be influenced by climate change are predominantly those associated with changes in extremes, including floods, droughts and storms.

The Environment Protection Agency's Irish Climate Change Assessment (ICCA) Report[62] provides an assessment of climate research and human activities in Ireland – synthesising the outcomes and findings from funded research. Building on the scientific assessment provided by the Intergovernmental Panel on Climate Change (IPCC) and Sixth Assessment Report (AR6), this research improves the national understanding of climate change and develops the required analytical capacity and communication structures. The report provides knowledge on research and policy gaps in Ireland, on cross-cutting issues and concepts framing adaptation in Ireland, and on the practical steps required to build community involvement and participation to deliver a more climate-resilient Ireland.

[62] Ireland's Climate Change Assessment (ICCA) | Environmental Protection Agency (epa.ie)

4.2.3 Approach and Methodologies

Establishment of a structured, semi-quantitative risk assessment procedure to identify, evaluate, and prioritise climate change risks has been created. On this basis, the National Climate Change Risk Assessment (NCCRA) will set out the priority impacts of climate change for Ireland. This process will lay the groundwork for informed adaptation planning and action implementation, to support the planning and implementation of targeted, relevant adaptation actions, CAP 2023 (Action AD/25/2) required the development of NCCRA by March 2025. Led by the EPA, the NCCRA is building on and advancing existing understanding of climate change risks for Ireland through the development of tailored solutions to enhance Ireland's resilience against anticipated climate-related challenges. The NCCRA will also set out national and sectoral risk assessment criteria to ensure consistency in the estimation of risk within and across sectors.

As part of the sectoral and local adaptation plan development process, each sector and local authority is required under "Sectoral Planning Guidelines for Climate Change Adaptation" (2018) updated in August 2024 and “Local Authority Adaptation Strategy Development Guidelines” (2018) to undertake an assessment of current and future climate risks. These impact assessments provide a significant addition to the knowledge base in terms of climate impacts across Government.

The Office of Public Works (OPW), through the Catchment Flood Risk Assessment and Management (CFRAM) programme, has undertaken detailed analysis of the potential impacts of climate change on flood extents and hazards and on the potential consequences of flooding in terms of economic damages and assets at risk for two potential future scenarios. This analysis has been undertaken for 300 communities around the country, including cities, towns and other communities at potentially significant flood risk, including 90 coastal communities.

A number of projects and studies have been undertaken throughout Ireland in order to provide assessments on the diverse impacts of climate change and potential vulnerabilities.

The Built Environment, Resilient Futures (BE-Resilient) project undertaken at University College Dublin (UCD) is exploring the adaptation of cities and towns to climate change impacts; The EPA-funded Critical Infrastructure Vulnerability to Climate Change study[63] provides an assessment of the vulnerability of elements (water, energy, transport and communications) of Ireland's critical infrastructure to climate change; The VAPOR project (Renou-Wilson and Wilson, 2018) undertaken at UCD provides an assessment of the vulnerability of peatlands to climate change and extremes; The PhenoClimate project undertaken at University College Cork (UCC) provides an assessment

[63] https://www.epa.ie/publications/research/climate-change/research-369-civic-critical-infrastructure-vulnerability-to-climate-change.php

of the vulnerability of Ireland's biodiversity by determining the impacts of climate change on several phenological events across different flora and fauna; The Ireland/Wales EU programme (i.e. INTERREG) is also very active under its Priority 2 in respect of "Adaptation of the Irish Sea and Coastal Communities to Climate Change". Recently, the governments of the Republic of Ireland and Wales renewed their commitments to the programme through the Ireland-Wales Shared Statement and Joint Action Plan 2021-2025. The programme currently has six projects of direct relevance:

- Eco structure
- Bluefish
- Acclimatize
- Cherish
- CCAT
- ECHOES

The European Joint Programming Initiative on Climate Change (JPI Climate) currently funds projects of relevance to Ireland, including: CE2COAST (Downscaling Climate and Ocean Change to Services: Thresholds and Opportunities), CROSSDRO (Cross-sectoral impact assessment of droughts in complex European basins) CoCliME (Co-development of Climate Services for adaptation to a changing Marine Ecosystem) and WatexR (Integration of climate seasonal prediction and ecosystem impact modelling for an efficient adaptation of water resources management to increasing climate extreme).

4.3 Adaptation Priorities and Barriers

4.3.1 Domestic Priorities and Progress

Planned adaptation in Ireland aims to take measures to counter current or expected climatic impacts, as described in previous sections, within the context of ongoing and expected societal change. LA Adaptation Strategies fall under the NAF (2024) and were developed in line with national guidance issued by the Department of Environment, Climate and Communications to ensure a consistent approach to the development of plans at local level. In addition, updated SAP guidelines were published in August 2024 and these will assist key adaptation sectors to develop the next cycle of SAPs due in Q3 2025.

The NCCRA is expected to be completed in early 2025 and will set out the priority impacts of climate change for Ireland which will provide a basis for making decisions on whether risks are acceptable to society or communities. It will then determine how risks can be reduced and how potential opportunities can be realised.

Sector	2018 (Mt CO_2eq)	2023 (Mt CO_2eq)	% change 2018-2023	Indicative % reduction by 2025	Indicative % reduction by 2030
Electricity	10.24	7.56	-26.2%	~40%	~75%
Transport	12.31	11.79	-4.2%	~20%	~50%
Buildings (Residential)	7.00	5.35	-23.6%	~20%	~40%
Buildings (Commercial and Public)	1.55	1.41	-8.9%	~20%	~45%
Industry	6.95	6.29	-9.6%	~20%	~35%
Agriculture	21.39	20.78	-2.9%	~10%	~25%
Other	2.14	1.83	-14.6%	~25%	~50%
LULUCF	4.19	5.61	34.1%	NA	NA
National Total (incl LULUCF)	**65.77**	**60.62**	**-7.8%**		**51%**

Progress in the reduction of GHG's. EPA, Ireland Provisional Greenhouse Gas Emissions 1990-2023 (July 2024).

4.3.2 Adaptation Challenges

The Climate Change Advisory Council (CCAC) is an independent advisory body tasked with reviewing national climate policy. A key task of the CCAC is to conduct an annual review of progress made over the previous year in furthering the transition to a low-carbon, climate-resilient and sustainable economy and society by 2050. The CCAC published its Annual Review[64] 2024 on 10 September, 2024.

Since the 2023 CCAC annual review, globally, temperatures have exceeded 1.5 degrees warmer than pre-industrial times for 12 straight months for the first time since records began.

In Ireland, we have seen notable extreme events including the flooding in Midleton last Autumn, the extremely wet winter and spring, and the marine heatwave around our shores in summer 2023. These highlight just some of the ways that our changing climate is already negatively affecting citizens and key sectors, with ever increasing threats to both lives and livelihoods. Both the

[64] https://www.climatecouncil.ie/councilpublications/

Midleton flooding and wet winter and spring have been formally linked to our historical and ongoing emissions of greenhouse gases in rapid attribution studies.

The CCAC has advised that while we must continue to relentlessly pursue climate neutrality, Ireland must now develop and deliver measures to adapt to our changing climate with the same urgency. The Council has made a number of specific recommendations within its review that will help to provide a consistent approach to the delivery of actions required by national and local government, as well as semi-state agencies.

Finalisation and implementation of the long-awaited coastal management plan to build resilience in coastal areas and communities, is another area the Council has said needs urgent delivery. This must consider the twin threats of sea level rise and coastal erosion. The Council has also recommended that there is a need to better understand already occurring climate damages through a national register to track the costs and impacts and improve policy responses.

4.4 Adaptation Strategies

4.4.1 Implementation of Actions

The second NAF which was approved in June 2024 and was prepared in line with the requirements of the Climate Act. The NAF (2024) supports the 13 sectors in developing their new SAPs and new Sectoral Adaptation Planning Guidelines for Climate Change Adaptation were published in August 2024. The NCCRA is due to be completed in March 2025.

Climate Ireland[65] is the official National Adaptation Platform provide by the EPA as part of it's climate adaptation work, serving as a key resource for adaptation-related information in Ireland. Suggest adding: Climate Ireland sets out to analyse, consolidate and present existing scientific/technical information of relevance to climate resilience and provide a platform for users to engage with climate adaptation. Climate Ireland facilitates the Climate Ireland Adaptation Network (CIAN) as a practitioner network aimed at sharing expertise and creating learning opportunities around adaptation in Ireland as well as improving the consistency of adaptation implementation. Its focus is to provide a forum for climate risk and adaptation planning practitioners in Ireland and to plan effectively for the future climate and environment of Ireland.

[65] EPA Climate Ireland | Other guidance and reports

The National Framework in Climate Services (NFCS)[66] is a mechanism to coordinate, facilitate and strengthen the collaboration among climate information providers and users.

The NAF will be implemented under the guidance provided by the National Adaptation Steering Committee. This Committee, chaired by the Department of Environment, Climate and Communications, includes representation from key sectoral stakeholders, the EPA, the CCAC and Local Authorities.

4.4.2 Key Actions

Ireland's second statutory NAF, 2024[67] represents Ireland's current national policy response to the challenges posed by the impacts of climate change. The NAF sets out the national strategy for the application of adaptation measures in key sectors and by local authorities in their administrative areas in order to reduce the vulnerability of the State to the negative effects of climate change and to avail of any positive impacts that may occur.

The NAF identifies 13 priority actions and related supporting objectives that are to be progressed in order to support and advance the implementation of climate adaptation policy at national, regional, and local level in Ireland.

Key actions of the NAF include:

1. Guidelines to Sectors for preparation of Sectoral Adaptation Plans (SAP) (published August 2024)

9. Provide funding to research programmes focused on climate change adaptation – focusing on identified research gaps in this Framework and in the forthcoming NCCRA as well as identified future research priorities

12. Continue to develop Climate Ireland as the National Adaptation Platform, providing services as per its Terms of Reference.

In June 2022, the Government agreed to establish a National Framework for Climate Services (NFCS); a mechanism to coordinate, facilitate and strengthen the collaboration among climate information providers and users. The NFCS is co-ordinated by Met Éireann and aims to support the production of standardised and comparable climate services by the climate community in Ireland. These climate services will support climate adaptation through the provision of tailored

[66] NFCS - Met Éireann - The Irish Meteorological Service
[67] https://www.gov.ie/pdf/?file=https://assets.gov.ie/298230/9af802e5-e601-488d-9ec1-db41279803cf.pdf#page=null

information and services that ensure adaptation measures are targeted, leverage up-to-date resources and data, and avoid maladaptation.

4.4.3 Integration of science, gender, indigenous, traditional, and local knowledge

Climate change, a global phenomenon, affects every aspect of our lives, including cultural heritage in both its forms – tangible and intangible. Extreme weather conditions expose these important elements of our cultural identity to serious threats. These threats must be addressed to protect valuable sites and preserve them for future generations. Research on climate change is not a novelty, but climate change as it relates to cultural heritage is a relatively new area of exploration and policy.

The EPA is responsible for coordinating environmental research in Ireland and facilitates this through the National Environmental Research Coordination Group (NERCG). The main purpose of the NERCG is to provide a cross-sectoral, national forum for the strategic coordination of environmental research in Ireland.

The local authority Climate Action Plans (LACAPs) continually reference the need to be conscious of the Cultural Heritage of the counties when implementing the actions listed.

4.4.4 Development priorities related to adaptation and impacts

It is important to note that research priorities may evolve as climate science advances and as new challenges emerge. Continued collaboration between research institutions, government agencies, and the private sector is essential in addressing these priorities and ensuring Ireland’s resilience to climate change. Collaboration is ongoing through the previously referenced EPA 10-year research programme, including through its 3-yearly update of its research priorities through a cross-sectoral consultation process, with its most recent priorities published for the period 2024-2026.

4.4.5 Actions and plans leading to mitigation co-benefits

With the development of 13 new Sectoral Adaptation Plans (SAPs) under the new NAF due Q3 2025, an element considered by the new SAP's will be the co-benefits of adaptation. Apart from the vital decarbonisation aspect, there are several co-benefits associated with mitigation actions. Broadly speaking, mitigation should improve energy efficiency and security, stimulate innovation and the creation of new industries and markets. Beyond this, other positive impacts include improvement in human health due to less air pollution and increased activity. Whilst climate change is the biggest global health threat of the 21st Century, action to combat it is likely to be the greatest global health opportunity of the 21st Century.

4.4.6 Efforts to integrate climate into development efforts and plans

Nationally, progress has been made to integrate Adaptation approaches into various other national policies and programmes. The 4th National Biodiversity National Action Plan and the National Development Plan both reflect Adaptation concerns while the forthcoming National Planning Framework will integrate Climate Adaptation perspectives.

In addition, local government has a key role to play in implementing measures to meet Ireland's national climate targets and in supporting and mobilising climate action at the regional and local levels. This role will increase with the implementation of LACAPs which were published in April 2024.

Under the Climate Act and Action 4 of the NAF, LACAPs for all 31 local authorities were launched by Government on the 11 April, 2024. The plans are subject to a 5 yearly review. With the adoption of the LACAP's. Action 5 will now start producing results to benchmark against the 4000 actions contained in the 31 LACAPs.

Action 8 seeks to "Drive community outreach, educating the public on risks, opportunities and impacts of climate change in Ireland and globally".

4.4.7 Nature-based solutions to adaptation

The new NAF, and revised sectoral adaptation guidelines, place significant emphasis on Nature-based solutions (NbS). These are important at both sectoral and local levels to attain climate resilience and should be considered as a part of SAPs and in the implementation of LACAPs.

Innovative NbS approaches harness the power of nature to address climate challenges effectively. For instance, in the agriculture sector, implementing agroforestry practices helps reduce soil erosion, enhances water retention, and provides windbreaks for crops – reducing vulnerability to extreme weather events. Importantly, NbS also provide for cross-sectoral resilience. For example, creating urban green spaces and wetlands lessens the impact of urban stormwater by absorbing excess rainfall and cooling urban areas during heatwaves, while also bolstering a community wellbeing and cultural heritage. NbS offer a sustainable and cost-effective means of adapting to climate change, illustrating their significance in building resilience and safeguarding our communities and sectors against the unpredictable challenges of a changing climate. Sectors should work together to coordinate and collaborate on the integration of effective NbS that support adaptation and deliver co-benefits for mitigation and biodiversity.

4.4.8 Stakeholder Involvement

In Ireland, there are many relevant stakeholders that hold specific responsibilities and statutory powers that can facilitate the successful mainstreaming and integration of climate adaptation considerations across all levels of Irish policymaking and ensuring alignment with the principles of the NAF.

Government authorities, including departments and local authorities, are tasked with integrating climate resilience into their policies, strategies, and plans, particularly within scheduled and ongoing policy and plan reviews, infrastructure design, and construction. This includes ensuring that climate adaptation becomes a central consideration in decision-making processes, resource allocation and regulatory frameworks. This work is overseen by the NASC.

Sectoral bodies responsible for specific domains including, for example, agriculture, health, and transport, are expected to incorporate climate adaptation into their strategies and operations, developing guidelines and standards for climate-resilient practices within their respective sectors.

Environmental policies are developed in collaboration with key stakeholders and the NAF is no exception. In addition, formal public consultations were undertaken for both the review of the first statutory NAF and for the second statutory NAF.

4.5 Progress on implementation of Adaptation

4.5.1 Implementation of actions

In addition to CAP actions being monitored by the Climate Action Delivery Board and each Departments' actions monitored internally, the CCAC monitors and measures the progress and implementation of adaptation plans at national, sectoral, and local level through the climate adaptation scorecard.

With the publishing of the 2023 CARO annual report, it is envisaged a review of the website structure and content with discussions on the potential use of the website in supporting the Local Authority in monitoring and reporting of LACAPs.

4.5.2 Steps taken to formulate, implement, and publish national and regional programmes

To address these challenges, Ireland has made considerable progress in putting in place a robust institutional framework for adaptation and in developing climate resilience measures since the submission of our 8th National Communication.

There have been developments in capacity building measures, improvements in the research and knowledge base and mainstreaming of adaptation relevant measures into many national policies. As noted above, the second NAF was approved by Government in June 2024 covering 13 priority sectors with updated Sectoral Adaptation Guidelines published in August 2024 and 31 updated LACAPs were published in April 2024.

Work on the first NCCRA is ongoing and should be completed in early 2025 in time to inform the new cycle of SAPs due by Q3 2025.

CARO and Cork County Council have partnered with UCC/MaREI in successfully receiving funding to partake in a Horizon Europe project (A-AAGORA) as part of a European consortium. The A-AAGORA Project relates to Integrated Coastal Zone Management and the use of soft measure approaches to complement hard measures to deliver coastal resilience -including working with coastal communities, biodiversity plans, implementation of biodiversity restoration for example.

CARO ASBN is a project partner with Leave No Trace, MSLETB and the University of Galway on 1 of 18 successful projects being funded under Strand 2 of the Community Climate Action Fund, administered by Pobal on behalf of the Department of Environment, Climate and Communications.

4.5.2.1 Integration of adaptation into planning

The NAF aims to create a unified approach involving both government and society to adapt to climate change. It outlines how various sectors and local authorities can implement adaptation measures to minimise Ireland's vulnerability to climate change's adverse effects, while taking advantage of any beneficial impacts. The NAF emphasises the importance of integrating adaptation strategies into all levels of policy making, infrastructure development, and local planning. This approach not only addresses immediate climate challenges but also promotes long-term sustainability. The new National Planning Framework, in development, will reflect adaptation issues.

4.5.2.2 Cooperation in sharing

Internationally, Ireland has worked and collaborated on Adaptation projects with the British Irish Council jurisdictions in Northern Ireland, England. Scotland, Wales and the Channel Islands and Isle of Man. Ireland works with EU partners on common adaptation issues and challenges.

The European Environment Information and Observation Network (Eionet) serves as a collaborative network between the European Environment Agency (EEA) and its 38 member and cooperating countries. Its primary function is to gather and develop data, knowledge, and advice on Europe's environment for policymakers. Comprising the EEA, around 400 national institutions, and European Topic Centres (ETCs), Eionet plays a crucial role in supporting EU policy formulation and providing valuable information to the public. The EPA leads the Irish National Group Lead on the Climate change impacts, vulnerability and adaptation EIONET Group.

Sub-nationally, in January 2018, the Irish Government established four CAROs. The four CAROs are: Atlantic Seaboard North, Atlantic Seaboard South, Dublin Metropolitan Region, and Eastern and Midlands. These are operated by a lead local authority in each region (Mayo County Council, Cork County Council, Dublin City Council, and Kildare County Council, respectively). The CAROs play an important role in ensuring that cross-sectoral issues are identified and addressed, and in community engagement. They also played a key role in coordinating the development of the local authority adaptation strategies and ensuring their alignment with SAPs.

On the 1st of July 2023 a new Service Level Agreement (SLA) was signed between the four host local authorities of Cork County Council, Dublin City Council, Kildare County Council, Mayo County Council and the Department of Environment, Climate and Communications) This SLA gives effect

to the four CAROs as a shared service working on a regional basis for all 31 local authorities for a six-year duration to 30th June 2029. (CARO23)

4.5.2.3 Area, scale, and types of cooperation

Internationally, Climate action has been identified as a major policy priority of "A Better World", Ireland's international development policy published in February 2019. The policy includes a commitment to 'climate-proof' all of Ireland's development assistance, meaning that climate change will be taken into consideration in all decision-making.

Ireland's international climate support explicitly focuses on the needs of those least responsible for causing climate change, and with most to lose, namely Least Developed Countries (LDCs) and Small Island Developing States (SIDS). At the heart of Ireland's climate action is a commitment to climate justice, especially gender, and a focus on those furthest behind. Ireland provides significant support to the LDC negotiating bloc and supports the consideration of gender equality in climate action. The vast majority of Ireland's climate finance is for adaptation. It is largely grant based.

Ireland is an active member of the Least Developed Country Expert Group of the UNFCCC, one of only 3 developed countries, and the work of the UNFCCC Secretariat in guiding the development of National Adaptation Plans[68]. Ireland has been a strong proponent of adaptation action at international level and has signed up to "A Call for Action: Raising Ambition for Climate Adaptation and Resilience[69]", which was launched at the UN Climate Action Summit in 2019, under the leadership of the UK and Egypt.

Ireland also endorsed the new Principles for Locally Led Action at the Adaptation Summit in the Netherlands, held in January 2021, and is committed to the LDC Initiative for Effective Adaptation and Resilience (LIFE-AR) to which we provide financial support. Currently just 10% of climate finance reaches community level. LIFE-AR aims to increase this to 70% by 2030.

4.5.3 Implementation of adaptation actions identified in NDC

Nationally determined contributions (NDCs) are at the heart of the Paris Agreement and the achievement of its long-term goals. NDCs embody efforts by each country to reduce national

[68] https://unfccc.int/national-adaptation-plans
[69] https://www.adaptation-undp.org/sites/default/files/uploaded-images/call_for_action_on_adaptation_and_resilience_v_18_august_2021.pdf

emissions and adapt to the impacts of climate change. The Paris Agreement (Article 4, paragraph 2) requires each Party to prepare, communicate and maintain successive NDCs that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions. The NDC was last updated by Spain in October 2023 while it was President of the Council of Europe.

4.5.4 Coordination activities and changes in regulations, policies, and planning

The new NAF approved by Government in June 2024 re-enforces Ireland's overarching climate goal to transition to a low carbon, climate resilient and environmentally sustainable economy by 2050.

There have been significant developments in national climate action and climate adaptation policy. These include the 2021 amendment of the Climate Action and Low Carbon Development Act, and the requirement for and publication of annual Climate Action Plans. These developments have been accompanied by advances in climate research on a range of topics such as climate modelling. The availability of climate services and climate resources at national level has also been enhanced. In addition, there has been a growing focus on involving civil society in climate governance while the need for substantial new public financing mechanisms for climate action has also become more evident.

The CAROs coordinate the reporting of local authorities on a combined 2468 actions from across the 31 Adaptation Strategies / Climate Change Action Plans. The fourth and final annual progress report on the adaptation strategies submitted to the Department of Environment, Climate and Communications in October 2023 demonstrated that the sector engaged with climate adaptation in that period and progressed the actions in their individuals plans and strategies.

4.6 Monitoring and evaluation of adaptation actions

4.6.1 Info related to monitoring and evaluation:

4.6.1.1 Achievements, impacts, resilience, review, effectiveness, results

The new NAF specifies 13 actions that requires the Department of Environment, Climate and Communications and other stakeholders to address. Action 1 was completed on the 28th August with the publication of the Sectoral Planning Guidelines for Climate Change Adaptation 2024 which also completed actions 1a resources and skills gap, 1b promote open data sharing , 1c improve expenditure and climate impact and adaptation action monitoring systems and 1d develop and use appropriate adaptation/resilience indicators, areas to be included in the new SAP's and a completion date for the SAP's of Q3 2025.

4.6.1.2 Approaches and systems used and outputs

Monitoring, Reporting and Evaluation (MRE) plays a key role in an iterative adaptation process, enabling adaptation to evolve and improve over time. MRE can support the evaluation of whether a defined objective is being achieved (or not), if measures implemented remain effective and if so, are these measures being delivered in a cost effective and equitable way.

When implementing Key Sectoral adaptation plans, it is essential for them, under the revised guidelines, to consider the SMART framework for setting objectives. Experience gained in recent years by relevant sectors in the development of adaptation actions for the Climate Action Plan should also be a key consideration for the development of sectoral level actions. By ensuring that actions are Specific, Measurable, Achievable, Relevant, and Time-bound (SMART), these plans become more robust and effective. Specificity in the actions clarifies their purpose, making them easier to grasp and implement.

Measurable criteria allow for tracking progress, enabling organisations to gauge the effectiveness of their adaptation efforts. Achievability ensures that the proposed actions are realistic and within reach, preventing undue strain on resources. Relevance guarantees that these actions align with the broader goals of adapting to the changing environment. Lastly, setting time-bound targets creates a sense of urgency, pushing stakeholders to act promptly and decisively. Embracing the SMART approach in adaptation planning can lead to more resilient and successful outcomes, preparing us to better navigate the challenges posed by a changing world.

4.6.1.3 Assessment of and indicators for: how adaptation increased resilience and reduced impacts, when adaptation is not sufficient to avert impacts, how effective measures are

Transport Infrastructure Ireland (TII's) TII/EPA Transport Report[70] has provided a more detailed methodology and assessment of asset categories and groupings, something that will be built upon in the detailed risk assessment that will ultimately inform the development of an adaptation plan and the measures necessary to adapt the network appropriately.

Common impacts identified in both the TII Climate Impact Screening and Department of Transport Risk Assessment include flooding, precipitation, and storm surges, but there are also a number of differences. High temperatures in particular were identified by TII as a high priority in a majority of the asset categories across all asset groupings, however it is rated as only moderate risk in the Department of Transport assessment. This may be due to the fact that it is an emerging issue rather than a long-established one, but it does highlight the need for more in-depth impact analysis in the transport sector and also in other sectors.

4.6.1.4 Implementation of: transparency of planning and implementation, how programmes meet specific vulnerabilities and needs, how measures affect other development goals, good practices, experience, and lessons learned

TII carried out a Climate Impact Screening, concluded in late 2023, which supported understanding on what key asset-hazard vulnerabilities exist. Based on the outcomes of this analysis it was then possible to carry out an informed evaluation of the initial indicator list, provided by Climate Ireland to TII, and based on the Flood et al. (2021) report. The evaluation focussed on the climatological and impact indicators in the first instance, as implementation and ultimately outcome indicators are dependent, on the impact indicators selected.

4.6.2 Effectiveness and sustainability of adaptation actions

[70] epa.ie/publications/monitoring--assessment/climate-change/EPA_ClimateAdaptationIndicators_TransportSector.pdf

4.6.2.1 Ownership, stakeholder engagement, alignment of adaptation with national policies, and replicability

The Department of Environment, Climate and Communications is instrumental in ensuring that climate adaptation actions are included appropriately in the statutory national Climate Action Plans and in other relevant national policy. This is achieved by the NASC and through ongoing engagement with sectors. Through these actions, the Department of Environment, Climate and Communications contributes significantly to Ireland's ongoing efforts to adapt to the challenges posed by climate change. Stakeholder engagement has been enhanced since the last NECP by increasing the staffing in the Department of Environment, Climate and Communications Adaptation Policy unit, and by including providing resources dedicated to communicating Energy and Climate issues.

As noted above, nationally, progress has been made to integrate Adaptation approaches into various other National policies and programmes. The 4th National Biodiversity National Action Plan and the National Development Plan both reflect Adaptation concerns while the forthcoming National Planning Framework will integrate Climate Adaptation perspectives.

4.6.2.2 Results of measures and sustainability of these results

A review of sectors has been undertaken to identify additional sectors of relevance for Ireland where sectoral plans are recommended for the next cycle of adaptation planning. The 2018 NAF identified 12 sectors for assessing climate change risks, integrating adaptation into policy, and implementing resilient actions. The 2024 NAF approved in June 2024 identified 13 sectors that will complete SAPs by Q3 2025 guided by new Sectoral Planning Guidelines for Climate Change Adaptation which were issued in August 2024. MRE will play a key role in an iterative adaptation process in these SAPs, enabling adaptation to evolve and improve over time.

4.7 Info related to averting, minimising and addressing loss and damage

4.7.1 Observed and potential climate change impacts

In line with developments at a European level, Ireland has made strong progress in climate change research. Key actors involved in Ireland's climate change-related research activities are represented in the National Environmental Research Coordination Group, chaired by the EPA, which includes members from the Central Statistics Office, the Department of the Taoiseach, Met Éireann, Research Ireland, amongst others. National climate change research on impacts and adaptation is being progressed across four core areas:

- Observations, monitoring, and analysis
- Modelling of future climate
- Impacts, risk, and vulnerability assessment
- Adaptation information and responses

4.7.2 Activities related to averting, minimising, and addressing loss and damage

The Department of Housing, Local Government and Heritage is the lead Government Department for the Humanitarian Assistance Scheme[71] which is administered by the local Community Welfare Service. Funding provided is income-tested financial support to people whose homes are damaged and because they couldn't get insurance, are not able to meet costs for essential items and, in some cases, structural repair.

The Office of Public Works (OPW) has aided in the form of a Voluntary Rehousing Scheme In the wake of flooding during winter 2015/2016.

4.7.3 Institutional arrangements for 4.7.2 above

The OPW delivers public services for flood risk management, managing government properties and heritage services. Crucially in terms of the NAF, the OPW acts as the leading agency for flood risk management in Ireland with the aim of minimising the impacts of flooding through sustainable planning and it is the competent authority for flooding related climate services. It is also the national authority for the implementation of the EU Directive on the Assessment and Management of Flood Risks (2007/60/EC). The OPW focuses on three strategic and policy areas founded on a robust evidence base developed through data collection, research, and assessment:

[71] Humanitarian Assistance Scheme

- Prevention: e.g., avoiding development in flood-prone areas
- Protection: e.g., taking feasible measures, both structural and non-structural, to reduce the likelihood and impact of floods
- Preparedness: e.g., informing the public about dealing with flood risk and a flood.

4.8 Cooperation, Good Practices, and Lessons Learned

4.8.1 Efforts to share information

4.8.1.1 Science, planning, and policies

Action 1b of the NAF (2024), requires the promotion of national Guidelines open data sharing within and between sectors, where legally permissible, to assist adaptation monitoring, including climate related risk and losses data, to help support adaptation planning and investment.

The Climate Ireland web platform and the CARO website provide the possibility of sharing information, examples and lessons learned. In addition, the EPA and CCAC host workshops on aspects of adaptation policy from time to time.

4.8.1.2 Helping developing countries

Ireland recognises the unique challenges facing SIDS arising from their vulnerability to climate change. We have worked with SIDS to address climate challenges, to improve global climate action, including gender responsive climate action, and to strengthen ocean governance. In recent years, Ireland has intensified our international climate diplomacy, prioritising: adaptation and Loss and Damage; oceans and biodiversity; and climate and security. At COP 26 in 2021, the Government of Ireland pledged to increase our annual climate finance spending to at least €225m per year by 2025. We are committed to ensuring it targets countries most vulnerable to the effects of climate change, prioritising SIDS and LDCs. Ireland recognises that extreme and slow onset weather events often surpass countries' adaptation measures, leading to severe devastation, losses of livelihoods, incomes, homes, and life. To this end, Ireland's International Climate Finance Roadmap has identified Loss and Damage as a priority in the scale up of our funding to 2025 and beyond. This will complement our ongoing diplomacy and advocacy for international progress on Loss and Damage, particularly in the UNFCCC and in close collaboration with SIDS[72].

72 SIDS Strategy 2023

4.8.2 Strengthening scientific research and knowledge

4.8.2.1 Research and observation and early warning systems to inform climate services and decision-making

In addition to the EPA research programme and other research activities previously noted, specific actions are included, relevant to Flood Risk Management[73] from the OPW, the Department of Housing, Local Government and Heritage, GSI and Met Éireann. These included the development of the National Flood Forecasting and Warning Service (NFFWS), implementation of actions from the flood risk sectoral adaptation plan by OPW, and development of groundwater flood maps[74] by GSI as well as ongoing work across Government on coastal change management.

4.8.2.2 Vulnerability and adaptation

National research has been conducted to deepen the understanding of impacts, risk, and vulnerability. The updated EPA Thematic Research Priorities 2024-6 includes a number of priorities under its “Addressing Climate Change Evidence Needs” Research Hub, including: Understanding Vulnerabilities and Identifying Risks to Inform Decision-Making at Local Level; Improving Cross-Sectoral Governance in Climate Adaptation; and Understanding the Impacts of Climate Change across Water and Coastal Environments and Ecosystems, Agriculture, Forestry and Land-Use Sectors, and Built Environment, Critical Infrastructure, Heritage, and Rural Communities. These areas will inform EPA Research Funding in the period 2024-2026.

The EPA is responsible for coordinating environmental research in Ireland and facilitates this through the National Environmental Research Coordination Group (NERCG). The main purpose of the NERCG is to provide a cross-sectoral, national forum for the strategic coordination of environmental research in Ireland. The NERCG comprises relevant Public Organisations, including research funding organisations, policy making actors (i.e., Government Departments) and policy

73 Flood Risk Management

74 groundwater flood maps

implementation actors (i.e., State Agencies). A full list of participating organisations is available on the NERCG Membership page[75]. The forthcoming NCCRA will also focus on this issue.

4.8.2.3 Monitoring and evaluation

A local authority progress reporting template was developed by the CAROs to enable the local authority sector to report on the progress of the implementation of their climate change adaptation strategies / climate action plans on an annual basis to the the Department of Environment, Climate and Communications.[76]

Action LG/24/3 from the 2024 National Climate Action Plan requires the Department of Environment, Climate and Communications to develop a monitoring and reporting system for the LA-CAPs. The LA-CAPs, when combined, contain over 5,000 actions, and these should be streamlined and prioritised with more outcome-oriented key performance indicators. It will be important that the performance of each local authority is monitored and evaluated regularly through this standardised system and that challenges in implementation are speedily identified and addressed.

[75] NERCG Membership page
[76] Annual Progress Report

5 Support Provided and Mobilised

5.1 National Circumstances and institutional arrangements

The overall climate finance provided by Ireland in 2022 was €120,772,589 and in 2021 it was €99,618,603.[77]. Ireland provides international climate finance through several channels of funding: bilateral funding through Ireland's overseas Embassies, and civil society organisations, Multilateral Development Banks, specialized agencies and organisations across the UN system, multilateral climate and environment funds and the European Union.

Ireland produces an annual climate and environmental finance report, which illustrates quantitatively and qualitatively the levels, sources and channels of Ireland's international climate and environmental finance. The report aims to provide a more granular overview of the finance provided and provides the most up to date data on our climate finance.[78] According to our annual climate and environmental finance reports, climate finance provided through bilateral channels (Ireland's overseas Mission network and CSO partners) increased by 29% from €32.9 million in 2021 to €42.6 million in 2022. Climate finance provided through multilateral channels (multilateral development banks, international funds, and specialised bodies including UN agencies) increased by 13% from €61.4 million in 2021 to €69.6 million in 2022. Climate finance provided through other channels that fall outside of the bilateral and multilateral categories also grew, going from €5.3 million in 2021 to €8.6million in 2022 – an increase of 61%. These channels include several strategic partnerships managed by the Department of Foreign Affairs and the Department of Climate, Environment and Communications which contribute to knowledge, capacity-building and climate resilient programming both internationally and in developing countries.

Ireland's climate finance is provided by four government departments – Department of Foreign Affairs, Department of Finance, Department of the Environment, Climate and Communication and the Department of Agriculture, Food, and the Marine. To date, Ireland's international climate finance has been drawn from public sources of funding and is all ODA-eligible.

Ireland is committed to continuing to prioritise Least Developed Countries (LDCs), Small Island Developing States (SIDS) and fragile states in its support for adaptation action. Ireland's bilateral climate finance is 100% grant-based and explicitly targets the needs of those least responsible for

[77] It is important to note that this figure accounts for climate finance that Ireland provided directly. It does not include climate finance provided via the EU budget to which Ireland is a net contributor.

[78] Climate_Finance_report.pdf (ireland.ie); Layout 2 (ireland.ie)

causing climate change and yet most vulnerable to its impacts. In 2022, 84% of Ireland's bilateral climate finance was channelled to LDCs.

Ireland committed to developing a Climate-Proofing Strategy for International Development Cooperation in 2022, which outlines how Ireland will meet commitments made in our international development policy to future-proof all our international development and humanitarian spending and to safeguard the positive impacts of Ireland's ODA against the current and future impacts of climate change.

Ireland's policies and associated priorities are framed on a medium to long-term basis and are developed in line with international agreements and objectives such as the Paris Agreement and the 2030 Agenda for Sustainable Development. This allows for establishing multiannual pledges of support to multilateral funds replenishment cycles or for funding and partners managed by Embassies at country level, and multiannual MOUs signed with partners that pledge indicative amounts of support over three-year timeframes.

Nonetheless, disbursements against multiannual agreements are still subject to an annual budgetary approval process.

In addition, on-going efforts are being made to ensure that funding allocations are matched by sufficient capacity and skills to monitor, track and report activities and outcomes of support.

5.1.1 Description of systems and processes used to identify, track, and report on support provided

As a member of the OECD, Ireland produces annual ODA reports that set out the total amount of development finance provided in the previous year. These reports also include information, via policy marking, on funding that contributes to the objectives of the Rio Conventions on climate change (mitigation and adaptation), biodiversity, and desertification. Rio markers were developed by the OECD to enable the consistent measuring and monitoring of climate and environment finance provided by donor countries and multilateral institutions to developing countries.

Ireland applies the OECD Rio policy markers in the calculation of the climate finance it provides through bilateral channels and via CSOs. Donors are provided with broad-based definitions and guidance on the application of the Rio markers both through development cooperation and Other Official Flows (OOF) which are regarded by the OECD as additional to ODA, but which do not fulfil ODA requirements. Activities are marked as 'Principal', 'Significant', or 'not relevant' for each Rio marker, which then corresponds to the percentage of budget attributed to climate finance. The

appropriate marker is selected on the basis of recommendations in the guidance notes provided by the OECD and European Commission.

Committed and provided amounts were drawn from Ireland's OECD Development Assistance Committee (DAC) Creditor Reporting System (CRS) report and Departmental records. Double counting between committed/provided funds is avoided by expressing commitments on annual and not multiannual basis. Ireland utilises the validated OECD CRS dataset and application of Rio markers to derive bilateral climate finance.

Multilateral climate finance is calculated using different methodologies, including the imputed shares methodology and the application of Rio markers. First, the imputed shares methodology refers to the application of the OECD's imputed multilateral shares for climate development finance. The OECD has developed a set of shares (through percentages) that donor countries can apply to calculate the amount of the funding that they provide to several major international organisations and funds that is climate relevant. Imputed shares are subject to change due to the varied nature in which multilateral institutions spend and report climate relevant finance. Where Imputed Multilateral Shares were available for multilateral organisations, we followed the recommended climate specific calculations respectively utilising the latest share values available on the OECD website.

For those organisations where no Imputed Multilateral Share was available, we apply the Rio markers. We also note the approach of the European Commission and other Member States and used our judgement to determine what percentage of the payments were climate-specific based on the purpose of the organisation/programme.

We have explained the reasoning for certain different payments
below:

1. UNEP Core Budget - we have determined that 80% of core funding to UNEP can be considered as climate-specific based on the purpose of UNEP and its focus on the intersection of the three planetary crises: climate change, nature and biodiversity loss, and pollution and waste. Projects will have direct positive impacts or co-benefits towards addressing climate crisis.

2. Ireland provides payment to a series of conventions under UNEP and UNECE. Based on the purpose of this conventions and the co-benefits provided towards addressing the climate crisis, these payments have been determined as 100% climate specific.

3. Ireland provides payment to Global Shield as a Climate and Disaster Risk Finance and Insurance facility. Based on the purpose of this conventions and the co-benefits provided towards addressing the climate crisis, these payments have been determined as 100% climate specific.

Ireland reports disbursed funding only, i.e. funding that has already been disbursed in the previous year to multilateral funds and institutions, reporting to the DAC as 'Commitment derived from Disbursement'.

5.1.2 Challenges and Limitations

Annual budget cycles can make it difficult to predict future climate finance. In 2022, the Government published Ireland's International Climate Finance Roadmap which lays out the goal of reaching €225 million in climate finance per year by 2025 and the specific steps to achieve this. Having a specific target, rather than a percentage of ODA, as well as a roadmap with clear ownership across government having been approved by Cabinet, enabled us to make clear progress in increasing our climate finance allocations which has more than doubled since 2020 and we are on track to meet the €225 million goal in 2025.

Access to climate finance continues to be a challenge for communities, regions, and countries that are fragile or affected by conflict. This is a focus for Ireland's climate finance and diplomacy. Ireland adopts a considered approach to risk, tailoring the implementation of projects accordingly. Ireland also seeks to follow the Principles for Locally Led Adaptation where possible, with the aim of identifying mechanisms to support local climate action and ensure that local governments and civil society have the skills and capacity to implement effective, conflict-sensitive climate projects. Many countries in conflict-affected settings often carry a high debt burden meaning even highly concessional loans further increase the debt burden. For this reason, Ireland provides its climate finance in the form of grants.

5.1.3 Efforts to enhance comparability and accuracy of reported info

Ireland is committed to clear and transparent reporting of our international climate finance in line with internationally agreed standards and approaches. Each year, Ireland produces an annual climate and environmental finance report, which illustrates quantitatively and qualitatively the levels, sources and channels of Ireland's international climate and environmental finance. The report aims to provide a more granular overview of the finance provided, including a breakdown by source; by purpose (e.g. adaptation, mitigation, cross-cutting); and by channels of support – bilateral funding via Ireland's overseas Missions (Embassies) and Civil Society Organisations, and multilateral funding via climate and environment funds, multilateral development banks, and other

international bodies including UN agencies. The 2022 and 2021 annual climate and environmental finance reports are annexed to this report.

As set out in Ireland's International Climate Finance Roadmap, we continue to work to enhance our reporting through the provision of case studies of climate action in programme countries. Building on this, we will work across Government and with Irish Missions overseas to further define and track climate metrics, for use in Mission strategies, multilateral agreements and CSO partnerships as appropriate.

5.1.4 Information on provision of technology and capacity-building support

The UNFCCC describes capacity building as 'enhancing the ability of individuals, organisations and institutions in developing countries…to identify, plan and implement ways to mitigate and adapt to climate change.' Although the UNFCCC ask countries to report on capacity building support, there is no agreed methodology - the OECD DAC is considering this an area for future development.

The UNFCCC also states that 'promoting the effective development and transfer of environmentally sound technologies is critical in enabling developing countries to pursue their objectives for sustainable development in a climate-friendly manner.' Although wider definitions apply to technology in the development sphere, in the UNFCCC context it is often understood to cover physical technologies, knowledge and techniques. In comparison to larger countries, technology development or transfer has not been a strong feature in Irish support. Although asked to report on technology transfer, there is no agreed methodology - the OECD DAC is considering this as an area for future development. Entries were therefore assessed on a case-by-case basis to determine which payments support technology transfer and/or capacity building.

5.2 Underlying assumptions, definitions, and methodologies

Chosen reporting year

Ireland reports climate finance based on calendar years. This report is based on 2021 and 2022 data.

Currency conversion to USD

Ireland's climate finance is provided in Euro. Conversion to USD is based on OECD reference exchange rates for 2021 and 2022.

	2020	2021	2022
USD->EUR:	0.8775	0.8456	0.9509
EUR->USD:	1.13960114	1.182592242	1.051635293

Funding source

All of Ireland's climate finance counts as Official Development Assistance, and Ireland adheres to the OECD DAC Definitions of ODA/OOF. In line with OECD guidelines and definitions, Ireland follows an activity-based approach for climate finance reporting.

Public finance

All of Ireland's climate finance is public finance provided and mobilised by the government. It does not include private finance.

Disbursed funding

Ireland reports disbursed funding only, i.e. funding that has already been disbursed in the previous year to multilateral funds and institutions, reporting to the DAC as 'Commitment derived from Disbursement'.

Channel

According to our annual climate and environmental finance reports, bilateral climate finance totalled €42,583,681 in 2022. This represents an increase of 29% on the figure for 2021. Of this, €17,659,462 was provided via Ireland's overseas Mission (Embassy) network and related schemes. This figure is 23% higher than in 2021. Irish Aid Missions are continuing work to scale up climate action and to further integrate climate considerations into broader development programming. The remaining €24,924,219 was provided via seventeen civil society organisations (CSOs). This is 34% higher than bilateral CSO climate finance spend in 2021.

Multilateral climate finance totalled €69,587,804 in 2022. This represents an increase of 13% on the figure for 2021. This finance was provided via a broad range channels and includes supports to multilateral climate funds such the Green Climate Fund, international financial institutions such as the African Development Bank, and international bodies such as the UN World Food Programme.

Climate finance provided via other channels of support totalled €8,601,105 in 2022. This represents an increase of 61% on the figure for 2021. These channels include a number of strategic partnerships which contribute to knowledge, capacitybuilding and climate resilient

programming both internationally and in developing countries. These partnerships support Ireland's international development and climate priorities, including themes such as gender equality, climate and security, and ocean protection. They also support our engagement with regions and countries particularly impacted by climate change, such as LDCs and SIDS.

Financial instrument

Ireland prioritises the provision of climate finance in grant form. Following European Commission guidance, inflow contributions to MDBs are marked as grants because they are non-reimbursable payments from Ireland to the MDBs.

Type

According to our annual climate and environmental finance report, more than half (53%) of Ireland's total climate finance was channelled to programmes and projects that targeted resilience and adaptation to climate change (only) in 2022. Cross-cutting, which targets both adaptation and mitigation activities, received 27% of the total. As such, 80% of Ireland's climate finance supported adaptation either as the whole or one component in 2022. If cross-cutting was split 50/50 between adaptation and mitigation, 67% of Ireland's total climate finance can be said to target adaptation. Mitigation-focused activities received the remainder of the support – approximately 20%. The significant share of funding to adaptation is reflective of the on-going effort to better integrate climate resilience into development programmes, particularly bilateral programming. Most payments are cross-cutting, covering aspects of both mitigation and adaptation. The type of support is listed as mitigation or adaptation where we have found that the majority of a fund's activities are primarily mitigation or adaptation focused.

The share of funding going to mitigation activities increased by 16% in 2022 when compared to 2021. A significant proportion of this increase can be attributed to the change in the OECD's approach to Multilateral Imputed Shares. In previous years, much of the climate finance provided by multilateral funds and institutions was recorded as cross-cutting as these organisations sought to target both mitigation and adaptation across their respective programme portfolios. With the aim of providing increased granularity, the OECD's most recently published list of Multilateral Imputed Shares for Climate Finance provides distinct percentage breakdowns for mitigation, adaptation, and cross-cutting. As a result, the climate imputed share of numerous funds such as the African Development Fund, which would have previously been recorded as all cross-cutting is now split between mitigation and adaptation.

Sector

Ireland's climate finance data is derived from OECD DAC CRS data. Where possible OECD DAC CRS sector codes are applied.

Efforts to avoid double-counting

Efforts to avoid double-counting climate finance include only counting climate finance that Ireland provided directly. It does not include climate finance provided via the EU budget to which Ireland is a net contributor. Double counting between committed/provided funds is avoided by expressing commitments on annual and not multiannual basis. We also avoid double-counting of multilateral finance by calculating climate-specific funding for funding to multilateral organisations. Where imputed multilateral shares were available for multilateral organisations we followed the recommended climate specific calculations. This methodology is described in section 5.1.1.

New and additional resources provided and reflection of progression of previous levels

Ireland defines new and additional climate finance as having been newly disbursed in the respective reporting year. The 2022 figure (€120.8 million) represents an increase of 21% in Ireland's climate finance as compared to 2021 (€99.6 million).The 2021 figure represents an increase of 12.8% in Ireland's climate finance as compared to 2020 (€88.3 million).

Ireland's support is subject to annual budgetary decisions and therefore no specific information regarding planned provision of support is available.

At COP26 in Glasgow Ireland pledged to more than double its funding for developing countries to tackle climate change by 2025, increasing the Ireland's annual commitment to climate finance to €255 million over the next four years. In July 2022, Ireland published its International Climate Finance Roadmap which illustrates Ireland's plans for scaling up its international climate financing to meet this target through public sources of finance. While climate finance (and ODA) allocations are agreed through the annual budgetary cycle, Ireland has steadily increased its climate finance spend since 2016. In addition, Ireland continues to improve the detail and analysis of international climate finance annual reports.

Reporting on multilateral finance

The multilateral finance reported is based on the Party's inflow contribution to multilateral institutions. For those that were Imputed Multilateral Shares were unavailable we used our judgement, noted the approach of other countries to determine the climate-specific share, and considered the application of the Rio Policy markers. MDB finance is reported as core/general with the understanding that the climate finance amount depends on programme of the MDB, however, OECD shares are used to estimate.

5.3 Support provided and mobilised under article 9

5.3.1 Bilateral, regional, and other channels (tabular format)

Figure 5.1 Overview of bilateral climate finance by country 2021

Country/ Scheme	Mitigation	Adaptation	Cross-Cutting	Total
Ethiopia		€4,988,000		**€4,988,000**
Malawi	€153,767	€1,182,962	€1,332,000	**€2,668,728**
Tanzania	€10,000	€1,050,000	€557,212	**€1,617,212**
Vietnam & Laos	€180,000	€1,012,571	€96,000	**€1,288,571**
Mozambique	€50,000	€1,158,680	€10,400	**€1,219,080**
Uganda			€1,000,000	**€1,000,000**
Sierra Leone	€3,200	€1,231	€242,800	**€247,231**
Kenya	€4,736	€160,000		**€164,736**
South Africa		€97,916		**€97,916**
Zambia		€4,000		**€4,000**
Nigeria		€4,000		**€4,000**
Fellowships			€950,400	**€950,400**
In-Country Micro Projects	€9,970	€7,280	€20,480	**€37,730**
SIDS			€34,545	**€34,545**
Total	**€411,672**	**€9,666,639**	**€4,243,837**	**€14,322,148**

Figure 5.2 Overview of other climate finance 2021

Partner/Agency	Total Finance Provided by Ireland	Climate-related Share allocated (%)	Total Climate Finance
IISD	€1,073,000	100*	€1,073,000
ADELPHI	€58,300	100*	€58,300
IIED	€2,000,000	100*	€2,000,000
WEDO	€240,000	100*	€240,000
Climate KIC	€410,000	100*	€410,000
ASIF	€600,000	100*	€600,000
Africa AgriFood Development Programme	€100,000	40*	€40,000
Irish Forum for International Agricultural Development	€44,631	40*	€17,852
Regional Conference on climate Change, Peace and Security in West Africa & the Sahel	€115,958	40*	€46,383
International Renewable Energy Agency	€59,882	80	€47,906
Africa Agrifood Development Programme (AADP)	€206,000	40*	€82,400
Teagasc	€716,943	100*	€716,943
Total			**€5,332,784**

Figure 5.3 Overview of bilateral climate finance by country 2022

Country/Scheme	Mitigation	Adaptation	Cross-Cutting	Total
Ethiopia	€0	€5,880,800	€0	**€5,880,800**
Malawi	€2,149,970	€952,678	€1,383,843	**€4,486,491**
Tanzania	€0	€600,000	€840,000	**€1,440,000**
Vietnam, Laos & Cambodia	€65,929	€950,404	€0	**€1,016,333**
Uganda	€0	€0	€1,000,000	**€1,000,000**
Mozambique	€64,150	€398,800	€451,200	**€914,150**
Brazil	€270,000	€0	€230,000	**€500,000**
Sierra Leone	€8,962	€420,000	€0	**€428,962**
Palestine	€300,000	€0	€30,000	**€330,000**
Kenya	€120,000	€19,998	€0	**€139,998**
Zambia	€0	€0	€120,000	**€120,000**
South Africa	€10,000	€0	€0	**€10,000**
In-Country Micro Projects	€4,000	€4,405	€10,802	**€19,207**
Global Programmes support to SIDS	€0	€639,294	€0	**€639,294**
Fellowships	€0	€0	€734,228	**€734,228**
Total	**€2,993,011**	**€9,866,378**	**€4,800,073**	**€17,659,462**

Figure 5.4 Overview of other climate finance 2022

Partner	Total Finance Provided by Ireland	Climate-related Share allocated (%)	Mitigation	Adaptation	Cross-cutting	Total Climate Finance
International Institute for Environment and Development	€2,325,000	100	€0	€0	€2,325,000	€2,325,000
Climate KIC	€1,497,997	100	€0	€0	€1,497,997	€1,497,997
Life - AR	€1,000,000	100	€0	€1,000,000	€0	€1,000,000
International Alert	€800,000	100	€0	€800,000	€0	€800,000
Clean Cooking Alliance	€723,050	100	€0	€0	€723,050	€723,050
Ireland IFC Partnership Program	€700,000	40	€0	€0	€280,000	€280,000
Global Resiliance Partnership	€473,000	100	€0	€473,000	€0	€473,000
Womens Environment & Development Organization (WEDO)	€450,000	100	€0	€0	€450,000	€450,000
IEA Clean Energy Transition Programme	€250,000	100	€250,000	€0	€0	€250,000
Concern Worldwide (EFICA)	€214,998	100	€214,998	€0	€0	€214,998
Fisheries Transparency Initiative	€100,000	100	€0	€0	€100,000	€100,000
Action Ireland Trust (EFICA)	€81,300	100	€81,300	€0	€0	€81,300
FoodCloud (EFICA)	€77,000	100	€77,000	€0	€0	€77,000
International Renewable Energy Agency (IRENA)	€76,818	100	€76,818	€0	€0	€76,818
Adelphi Research gGmbH	€60,000	100	€0	€60,000	€0	€60,000
MwAPATA Institute	€58,826	100	€0	€58,826	€0	€58,826
Dublin City University (EFICA)	€43,096	100	€43,096	€0	€0	€43,096
Rapid Response Initiative	€90,020	100	€0	€90,020	€0	€90,020
Total			**€743,212**	**€2,481,846**	**€5,376,047**	**€8,601,105**

5.3.2 Multilateral channels (tabular format)

This is provided as in Annex 7 and Annex 8 of this document.

5.3.3 Finance mobilised through public intervention

Public interventions are not an element of Ireland's climate finance, therefore there is no information to report in this area.

5.4 Support for technology development and transfer under Article 10

The UNFCCC states that 'promoting the effective development and transfer of environmentally sound technologies is critical in enabling developing countries to pursue their objectives for sustainable development in a climate-friendly manner.' Although wider definitions apply to technology in the development sphere, in the UNFCCC context it is often understood to cover physical technologies, knowledge and techniques. In comparison to larger countries, technology development or transfer has not been a strong feature in Irish support. Although asked to report on technology transfer, there is no agreed methodology - the OECD DAC is considering this as an area for future development. Entries were therefore assessed on a case-by-case basis to determine which payments support technology transfer.

5.5 Information on capacity-building support provided under Article 11

Capacity building is a major feature of all Irish supported activities and Ireland supports several programmes that provided technology support to developing country partners, in line with the United Nations Framework Convention on Climate Change (UNFCCC).

The Green Climate Fund (GCF) provides resources for capacity building, technology development and transfer, and innovative and replicable approaches. The GCF seeks to strengthen country capacities and enable environments for Nationally Determined Contributions, National Adaptation Planning, and Long-Term Strategies implementation, investment planning, and enhanced access to GCF resources. The GCF Readiness and Preparatory Support Programme (RPSP), aims to enhance developing countries' access to GCF resources and financial instruments. When requested by developing countries, the GCF helps their financial institutions build capacities to integrate climate considerations into their investment operations.

Ireland is a funding founder of the Global Shield, a key element of which is building developing country capacity on modelling and data support and developing open-source standardised modelling platforms. This risk modelling supports risk-informed decision making for adaptation planning, disaster risk management and anticipatory action. The Global Shield supports countries in developing comprehensive climate and risk management systems with improved risk modelling and disaster risk financing instruments, feeding into national disaster risk reduction strategies.

The Systematic Observations Financing Facility (SOFF) is a UN Multi-Partner Trust Fund, established by the World Meteorological Organisation, UNDP, and UNEP as a specialised mechanism to provide funding and technical expertise to address weather and climate information gaps in Least Developed Countries and Small Island Developing States. Ireland co-chairs and has funded SOFF since 2022.

6 Improvements in Reporting

The subject of this chapter is ‘information on areas of improvement in relation to its reporting pursuant to chapters II, III, IV, V and VI’. These areas of improvement may be identified by the Party or by the technical expert review team. It is envisaged that in the second and subsequent BTR that this chapter will play a significant role in identifying areas of improvement in further reporting practices.

As this is the first BTR reported by Ireland and the review thereof has yet to take place, there are currently not yet any specific areas of improvement as identified by the technical expert review team that can be listed in this chapter.

7 Annexes

Annex 1: Ireland's Climate and Environmental Finance Report 2022

- Ireland's Climate and Environmental Finance Report 2022

Annex 2: Ireland's Climate and Environmental Finance Report 2021

- Ireland's Climate and Environmental Finance Report 2021

Annex 3: Common tabular formats on information necessary to track progress

Description of a Party's nationally determined contribution under Article 4 of the Paris Agreement, including updates[a]

	Description
Target(s) and description, including target type(s), as applicable[b, c]	**Economy-wide net domestic reduction of at least 55% in greenhouse gas emissions by 2030 compared to 1990.** **The term 'domestic' means without the use of international credits.** **Target type: Economy-wide absolute emission reduction.**
Target year(s) or period(s), and whether they are single-year or multi-year target(s), as applicable	**Single year target, 2030.**
Reference point(s), level(s), baseline(s), base year(s) or starting point(s), and their respective value(s), as applicable	**Base year: 1990.** **Net greenhouse gas emissions level in 1990:** **4 699 405 kt CO_2eq.**
Time frame(s) and/or periods for implementation, as applicable	**2021-2030**
Scope and coverage, including, as relevant, sectors, categories, activities, sources and sinks, pools and gases, as applicable	**Geographical scope: EU Member States (Belgium, Bulgaria, Czechia, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden) including EU outermost regions (Guadeloupe, French Guiana, Martinique, Mayotte, Reunion, Saint Martin (France), Canary Islands (Spain), Azores and Madeira (Portugal)).** **Sectors covered, as contained in Annex I to decision 5/CMA.3:** **Energy** **Industrial processes and product use** **Agriculture** **Land Use, Land Use Change and Forestry (LULUCF)** **Waste** **International Aviation: Emissions from civil aviation activities as set out for 2030 in Annex I to the EU ETS Directive are included only in respect of CO_2 emissions from flights subject to effective carbon pricing through the EU ETS. With respect to the geographical scope of the NDC these comprise emissions in 2024-26 from flights between the EU Member States and departing flights to Norway, Iceland, Switzerland and United Kingdom.** **International Navigation: Waterborne navigation is included in respect of CO2, methane (CH_4) and nitrous Oxide (N_2O) emissions from maritime transport voyages between the EU Member States.** **Gases:** **Carbon Dioxide (CO_2)** **Methane (CH_4)** **Nitrous Oxide (N_2O)** **Hydrofluorocarbons (HFCs)** **Perfluorocarbons (PFCs)** **Sulphur hexafluoride (SF_6)** **Nitrogen trifluoride (NF_3)** **The included LULUCF categories and pools are as defined in decision 5/CMA.3.**

Intention to use cooperative approaches that involve the use of ITMOs under Article 6 towards NDCs under Article 4 of the Paris Agreement, as applicable	**The EU's at least 55% net reduction target by 2030 is to be achieved through domestic measures only, without contribution from international credits.** **The EU will account and report for its cooperation with other Parties in a manner consistent with the guidance adopted by CMA1 and any further guidance agreed by the CMA.**
Any updates or clarifications of previously reported information, as applicable[d]	**The information on the NDC scope contains clarifications/further details compared to the information provided in the updated NDC of the EU.**

Note: This table is to be used by Parties on a voluntary basis.

[a] Each Party shall provide a description of its NDC under Article 4, against which progress will be tracked. The information provided shall include required information, as applicable, including any updates to information previously provided (para. 64 of the MPGs).

[b] For example: economy-wide absolute emission reduction, emission intensity reduction, emission reduction below a projected baseline, mitigation co-benefits of adaptation actions or economic diversification plans, policies and measures, and other (para. 64(a) of the MPGs).

[c] Parties with both unconditional and conditional targets in their NDC may add a row to the table to describe conditional targets.

[d] For example: recalculation of previously reported inventory data, or greater detail on methodologies or use of cooperative approaches (para. 64(g) of the MPGs).

1. Structured summary: Description of selected indicators

Indicator(s) selected to track progress[a]	*Description*
{Indicator}	**Annual total net GHG emissions consistent with the scope of the NDC in CO_2eq.**
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate[b]	**The reference level is total net GHG emissions of the EU in the base year (1990). The reference level value for the EU is 4 699 405 kt CO_2eq.**
Updates in accordance with any recalculation of the GHG inventory, as appropriate	**This is the first time the reference level is reported, hence there are no updates.** **The value of the reference level may be updated in the future due to methodological improvements to the EU GHG inventory and to the determination of international aviation and navigation emissions in the NDC scope.**
Relation to NDC[c]	**The indicator is defined in the same unit and metric as the target of the NDC. Hence it can be used directly for tracking progress in implementing and achieving the NDC target.**

Notes: (1) Pursuant to para. 79 of the MPGs, each Party shall report the information referred to in paras. 65–78 of the MPGs in a narrative and common tabular format, as applicable. (2) A Party may amend the reporting format (e.g. Excel file) to remove specific rows in this table if the information to be provided in those rows is not applicable to the Party's NDC under Article 4 of the Paris Agreement, in accordance with the MPGs. (3) The Party could add rows for each additional selected indicator and related information.

[a] Each Party shall identify the indicator(s) that it has selected to track progress of its NDC (para. 65 of the MPGs).

[b] Each Party shall provide the information for each selected indicator for the reference point(s), level(s), baseline(s), base year(s) or starting point(s) and shall update the information in accordance with any recalculation of the GHG inventory, as appropriate (para. 67 of the MPGs).

[c] Each Party shall describe for each indicator identified how it is related to its NDC (para. 76(a) of the MPGs).

2. Structured summary: Definitions needed to understand NDC

Definitions[a]	
Definition needed to understand each indicator:	
Annual total net GHG emissions	**Total net GHG emissions correspond to the annual total of emissions and removals reported in CO_2 equivalents in the latest GHG inventory of the EU. The totals comprise all sectors and gases listed in the table entitled 'Reporting format for the description of a Party's nationally determined contribution under Article 4 of the Paris Agreement, including updates.' Indirect CO2 emissions are included from those Member States that report these emissions.**
Any sector or category defined differently than in the national inventory report:	
{Sector} **Not applicable**	
{Category} **Not applicable**	
Definition needed to understand mitigation co-benefits of adaptation actions and/or economic diversification plans:	
{Mitigation co-benefit(s)} **Not applicable**	
Any other relevant definitions:	
Not applicable	

Notes: (1) Pursuant to para. 79 of the MPGs, each Party shall report the information referred to in paras. 65–78 of the MPGs in a narrative and common tabular format, as applicable. (2) A Party may amend the reporting format (e.g. Excel file) to remove specific rows in this table if the information to be provided in those rows is not applicable to the Party's NDC under Article 4 of the Paris Agreement, in accordance with the MPGs. (3) The Party could add rows for each additional sector, category, mitigation co-benefits of adaptation actions and/or economic diversification plans, indicator and any other relevant definitions.

[a] Each Party shall provide any definitions needed to understand its NDC under Article 4, including those related to each indicator identified in para. 65 of the MPGs, those related to any sectors or categories defined differently than in the national inventory report, or the mitigation co-benefits of adaptation actions and/or economic diversification plans (para. 73 of the MPGs).

3. Structured summary: Methodologies and accounting approaches – consistency with Article 4, paragraphs 13 and 14, of the Paris Agreement and with decision 4/CMA.1

Reporting requirement	*Description or reference to the relevant section of the BTR*
For the first NDC under Article 4:[a]	
Accounting approach, including how it is consistent with Article 4, paragraphs 13–14, of the Paris Agreement (para. 71 of the MPGs)	**Net GHG emissions, calculated from emissions and removals from the GHG inventory of the EU and supplemented with data on international aviation and navigation collected in the Joint Research Centre's Integrated Database of the European Energy System (JRC-IDEES), are used to quantify progress towards implementing and achieving of the NDC in respect of the NDC target. This approach promotes environmental integrity, transparency, accuracy, completeness, comparability and consistency and ensures the avoidance of double counting, as described below. Existing methods and guidance under the Convention are taken into account, as described below.**

For the second and subsequent NDC under Article 4, and optionally for the first NDC under Article 4:[b]	
Information on the accounting approach used is consistent with paragraphs 13–17 and annex II of decision 4/CMA.1 (para. 72 of the MPGs)	**The European Union accounts for anthropogenic emissions and removals corresponding to its NDC consistent with paragraphs 13–17 and annex II of decision 4/CMA.1, as detailed below.**
Explain how the accounting for anthropogenic emissions and removals is in accordance with methodologies and common metrics assessed by the IPCC and in accordance with decision 18/CMA.1 (para. 1(a) of annex II to decision 4/CMA.1)	**The accounting for anthropogenic emissions and removals is based on the data contained in the EU GHG inventory, which is compiled in accordance with the 2006 IPCC Guidelines. The accounting for emissions from international aviation and navigation in the scope of the NDC is based on activity data, emission factors and methods which are in line with the IPCC guidelines. The accounting approach is also in accordance with decision 18/CMA.1 because the EU GHG inventory conforms with the provisions of chapter II of the Annex to decision 18/CMA.1.**
Explain how consistency has been maintained between any GHG data and estimation methodologies used for accounting and the Party's GHG inventory, pursuant to Article 13, paragraph 7(a), of the Paris Agreement, if applicable (para. 2(b) of annex II to decision 4/CMA.1)	**The GHG data used for accounting is based on the GHG inventory of the EU. The methodology used for accounting consists of a balancing of GHG emissions and removals, which is consistent with the methodologies used in the GHG inventory of the EU.**
Explain how overestimation or underestimation has been avoided for any projected emissions and removals used for accounting (para. 2(c) of annex II to decision 4/CMA.1)	**Not applicable. Projected emissions and removals are not used for accounting.**
For each NDC under Article 4:[b]	
Accounting for anthropogenic emissions and removals in accordance with methodologies and common metrics assessed by the IPCC and adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement:	
Each methodology and/or accounting approach used to assess the implementation and achievement of the target(s), as applicable (para. 74(a) of the MPGs)	**The methodology used to assess the implementation and achievement consists of a comparison of the reduction of net GHG emissions from the GHG inventory national total, including a share of GHG inventory international aviation and navigation emissions in line with the NDC scope, with the NDC target.** **The EU will account for its cooperation with other Parties in a manner consistent with guidance adopted by the CMA.**
Each methodology and/or accounting approach used for the construction of any baseline, to the extent possible (para. 74(b) of the MPGs)	**Progress is tracked by comparing annual net emissions with net emissions in the base year. No baseline is constructed.**
If the methodology or accounting approach used for the indicator(s) in table 1 differ from those used to assess the implementation and achievement the target, describe each methodology or accounting approach used to generate the information generated for each indicator in table 4 (para. 74(c) of the MPGs)	**Not applicable. The methodology/accounting approach used for the indicator in table 1 is the same as the methodology/accounting approach used to assess the implementation and achievement the target.**

Any conditions and assumptions relevant to the achievement of the NDC under Article 4, as applicable and available (para. 75(i) of the MPGs)	**Not applicable. The NDC is unconditional.**
Key parameters, assumptions, definitions, data sources and models used, as applicable and available (para. 75(a) of the MPGs)	**Net GHG emissions are the key parameter used for tracking progress in implementing and achieving the NDC. The GHG inventory of the EU is the data source used. Details on assumptions, definitions and models used for determining net GHG emissions can be found in the National Inventory Document of the EU.**
IPCC Guidelines used, as applicable and available (para. 75(b) of the MPGs)	**2006 IPCC Guidelines; and 2019 refinement to the 2006 IPCC Guidelines for some source categories.**
Report the metrics used, as applicable and available (para. 75(c) of the MPGs)	**100-year time-horizon global warming potential (GWP) values from the IPCC Fifth Assessment Report.**
For Parties whose NDC cannot be accounted for using methodologies covered by IPCC guidelines, provide information on their own methodology used, including for NDCs, pursuant to Article 4, paragraph 6, of the Paris Agreement, if applicable (para. 1(b) of annex II to decision 4/CMA.1)	**Not applicable.**
Provide information on methodologies used to track progress arising from the implementation of policies and measures, as appropriate (para. 1(d) of annex II to decision 4/CMA.1)	**Progress arising from the implementation of policies and measures is expressed in a reduction of GHG emissions or increase of GHG removals. The methodology used to assess such progress is based on the estimation of GHG emissions and removals in the GHG inventory of the EU and on data on international aviation and navigation monitored in the Joint Research Centre's Integrated Database of the European Energy System (JRC-IDEES).**
Where applicable to its NDC, any sector-, category- or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, taking into account any relevant decision under the Convention, as applicable (para. 75(d) of the MPGs)	**Sector-, category- and activity-specific assumptions, methodologies and approaches applicable to the NDC are described in the national inventory document of the EU and are consistent with IPCC guidance.** **Emissions from international aviation and navigation in the scope of the NDC are determined based on activity data from the JRC-IDEES, using emission factors and methodologies consistent with IPCC guidance.**
For Parties that address emissions and subsequent removals from natural disturbances on managed lands, provide detailed information on the approach used and how it is consistent with relevant IPCC guidance, as appropriate, or indicate the relevant section of the national GHG inventory report containing that information (para. 1(e) of annex II to decision 4/CMA.1, para. 75(d)(i) of the MPGs)	**NA**[79]

[79] To determine emissions and removals in the scope of the NDC, the EU does not disaggregate emissions and removals on managed land into those considered to result from human activities and those considered to result from natural disturbances.

For Parties that account for emissions and removals from harvested wood products, provide detailed information on which IPCC approach has been used to estimate emissions and removals (para. 1(f) of annex II to decision 4/CMA.1, para. 75(d)(ii) of the MPGs)	**The EU accounts for emissions and removals from harvested wood products as an integral part of net GHG emissions and removals in the scope of the NDC. GHG emissions and removals from harvested wood products are determined in accordance with the production approach, as defined in Annex 12.A.1 to Volume 4 of the 2006 IPCC Guidelines for National GHG Inventories.**
For Parties that address the effects of age-class structure in forests, provide detailed information on the approach used and how this is consistent with relevant IPCC guidance, as appropriate (para. 1(g) of annex II to decision 4/CMA.1, para. 75(d)(iii) of the MPGs)	**The EU does not address the effects of age-class structure in forests in the accounting approach for its NDC.**
How the Party has drawn on existing methods and guidance established under the Convention and its related legal instruments, as appropriate, if applicable (para. 1(c) of annex II to decision 4/CMA.1)	**The EU has drawn on existing methods and guidance established under the Convention by using an NDC target which is an advancement of the quantified economy-wide emission reduction target for 2020, which was communicated and tracked under the Convention.**
Any methodologies used to account for mitigation co-benefits of adaptation actions and/or economic diversification plans (para. 75(e) of the MPGs)	**The NDC does not consist of mitigation co-benefits of adaptation actions and/or economic diversification plans. Hence these co-benefits were not accounted for, and no related methodologies were used.**
Describe how double counting of net GHG emission reductions has been avoided, including in accordance with guidance developed related to Article 6 if relevant (para. 76(d) of the MPGs)	**GHG emissions and removals from the EU's GHG inventory, complemented with JRC-IDEES data for determining the share of emissions form international aviation and navigation in the NDC scope, are used for tracking the net GHG emission reductions. Emissions and removals are reported in line with IPCC guidelines, with the aim of neither over- nor underestimating GHG emissions.** **GHG emissions and removals are reported by the EU and its Member States in their respective GHG inventories. For tracking progress towards implementing and achieving the EU NDC, only those net GHG emission reductions are counted which are reported at EU level.** **For cooperative approaches under Article 6, corresponding adjustments are made in a manner consistent with guidance adopted by the CMA.**
Any other methodologies related to the NDC under Article 4 (para. 75(h) of the MPGs)	**Not applicable.**
Ensuring methodological consistency, including on baselines, between the communication and implementation of NDCs (para. 12(b) of the decision 4/CMA.1):	
Explain how consistency has been maintained in scope and coverage, definitions, data sources, metrics, assumptions and methodological approaches including on baselines, between the communication and implementation of NDCs (para. 2(a) of annex II to decision 4/CMA.1)	**The scope, coverage, definitions, data sources, metrics and approaches are consistent between the communicated NDC and its implementation, as described in the BTR.**

Explain how consistency has been maintained between any GHG data and estimation methodologies used for accounting and the Party's GHG inventory, pursuant to Article 13, paragraph 7(a), of the Paris Agreement, if applicable (para. 2(b) of annex II to decision 4/CMA.1) and explain methodological inconsistencies with the Party's most recent national inventory report, if applicable (para. 76(c) of the MPGs)	**The GHG inventory of the EU is the primary source for the GHG data used for accounting. The share of GHG inventory emissions from international aviation and navigation in the scope of the NDC have been determined separately based on JRC-IDEES data, using emission factors and methodologies consistent with IPCC guidance. There are no methodological inconsistencies with the most recent national inventory report.**
For Parties that apply technical changes to update reference points, reference levels or projections, the changes should reflect either of the following (para. 2(d) of annex II to decision 4/CMA.1):	
Technical changes related to technical corrections to the Party's inventory (para. 2(d)(i) of annex II to decision 4/CMA.1)	**No technical changes related to technical corrections to the GHG inventory were applied to update reference points, reference levels or projections.**
Technical changes related to improvements in accuracy that maintain methodological consistency (para. 2(d)(ii) of annex II to decision 4/CMA.1)	**No technical changes related to improvements in accuracy were applied to update reference points, reference levels or projections.**
Explain how any methodological changes and technical updates made during the implementation of their NDC were transparently reported (para. 2(e) of annex II to decision 4/CMA.1)	**Methodological changes and technical updates are reported in the chapter entitled 'recalculations and improvements' of the National Inventory Document of the EU.** **GHG emissions from international aviation and navigation in the scope of the EU NDC are reported for the first time in this BTR (see Annex 2 to the BTR).**
Striving to include all categories of anthropogenic emissions or removals in the NDC and, once a source, sink or activity is included, continuing to include it (para. 3 of annex II to decision 4/CMA.1):	
Explain how all categories of anthropogenic emissions and removals corresponding to their NDC were accounted for (para. 3(a) of annex II to decision 4/CMA.1)	**The indicator used for tracking progress towards implementing and achieving the NDC target comprises all categories of anthropogenic emissions and removals corresponding to the NDC.**
Explain how Party is striving to include all categories of anthropogenic emissions and removals in its NDC, and, once a source, sink or activity is included, continue to include it (para. 3(b) of annex II to decision 4/CMA.1)	**The scope of the NDC of the EU covers all categories of emissions and removals reported in the GHG inventory, in line with IPCC guidelines. Member States report some specific source categories as 'not estimated' when the estimates would be insignificant as defined in paragraph 32 of the annex to decision 18/CMA.1. Information on these categories is provided in Common Reporting Table 9 of the respective Member States' GHG inventory submission.** **Besides including all sectors listed in decision 18/CMA.1, a share of emissions from international aviation and navigation are also included in the NDC scope.**
Provide an explanation of why any categories of anthropogenic emissions or removals are excluded (para. 4 of annex II to decision 4/CMA.1)	**All categories of anthropogenic emissions and removals contained in the national total of the EU GHG inventory are included in the NDC.**

Each Party that participates in cooperative approaches that involve the use of ITMOs towards an NDC under Article 4, or authorizes the use of mitigation outcomes for international mitigation purposes other than achievement of its NDC	
Provide information on any methodologies associated with any cooperative approaches that involve the use of ITMOs towards an NDC under Article 4 (para. 75(f) of the MPGs)	**The EU will account and report for its cooperation with other Parties in a manner consistent with the guidance adopted by CMA1 and any further guidance agreed by the CMA, when applicable.**
Provide information on how each cooperative approach promotes sustainable development, consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	**The EU will account and report for its cooperation with other Parties in a manner consistent with the guidance adopted by CMA1 and any further guidance agreed by the CMA, when applicable.**
Provide information on how each cooperative approach ensures environmental integrity consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	**The EU will account and report for its cooperation with other Parties in a manner consistent with the guidance adopted by CMA1 and any further guidance agreed by the CMA, when applicable.**
Provide information on how each cooperative approach ensures transparency, including in governance, consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	**The EU will account and report for its cooperation with other Parties in a manner consistent with the guidance adopted by CMA1 and any further guidance agreed by the CMA, when applicable.**
Provide information on how each cooperative approach applies robust accounting to ensure, inter alia, the avoidance of double counting, consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	**The EU will account and report for its cooperation with other Parties in a manner consistent with the guidance adopted by CMA1 and any further guidance agreed by the CMA, when applicable, when applicable.**
Any other information consistent with decisions adopted by the CMA on reporting under Article 6 (para. 77(d)(iii) of the MPGs)	**The EU will account and report for its cooperation with other Parties in a manner consistent with the guidance adopted by CMA1 and any further guidance agreed by the CMA, when applicable.**

Notes: (1) Pursuant to para. 79 of the MPGs, each Party shall report the information referred to in paras. 65–78 of the MPGs in a narrative and common tabular format, as applicable. (2) A Party may amend the reporting format (e.g. Excel file) to remove specific rows in this table if the information to be provided in those rows is not applicable to the Party's NDC under Article 4 of the Paris Agreement, in accordance with the MPGs.

[a] For the first NDC under Article 4, each Party shall clearly indicate and report its accounting approach, including how it is consistent with Article 4, paras. 13–14, of the Paris Agreement (para. 71 of the MPGs).

[b] For the second and subsequent NDC under Article 4, each Party shall provide information referred to in chapter III.B and C of the MPGs consistent with decision 4/CMA.1. Each Party shall clearly indicate how its reporting is consistent with decision 4/CMA.1 (para. 72 of the MPGs). Each Party may choose to provide information on accounting of its first NDC consistent with decision 4/CMA.1 (para. 71 of the MPGs).

4. Structured summary: Tracking progress made in implementing and achieving the NDC under Article 4 of the Paris Agreement[a]

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate (paras. 67 and 77(a)(i) of the MPGs)	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)		Target level[s]	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			2021	**2022**			
Indicator(s) selected to track progress of the NDC or portion of NDC under Article 4 of the Paris Agreement (paras. 65 and 77(a) of the MPGs):							
Annual total GHG emissions and removals consistent with the scope of the NDC	**kt CO_2eq[80]**	**4 699 405**	**3 272 650**	**3 205 223**	**(at least 55% below base year level)**	**2030**	**The most recent level of the indicator is 31.8 % below the base year level.**
Where applicable, total GHG emissions and removals consistent with the coverage of the NDC (para. 77(b) of the MPGs)	**kt CO_2eq**	**4 699 405**	**3 272 650**	**3 205 223**			
Contribution from the LULUCF sector for each year of the target period or target year, if not included in the inventory time series of total net GHG emissions and removals, as applicable (para. 77(c) of the MPGs)	**NA**		**NA**	**NA**			

[80] Net GHG emissions in the scope of the NDC

Each Party that participates in cooperative approaches that involve the use of ITMOs towards an NDC under Article 4 of the Paris Agreement or authorizes the use of mitigation outcomes for international mitigation purposes other than achievement of the NDC, shall provide (para. 77(d) of the MPGs):							
If applicable, an indicative multi-year emissions trajectory, trajectories or budget for its NDC implementation period (para. 7(a)(i), annex to decision 2/CMA.3)	**kt CO_2eq**		**To be reported in subsequent BTR**	**To be reported in subsequent BTR**			
If applicable, multi-year emissions trajectory, trajectories or budget for its NDC implementation period that is consistent with the NDC (para. 7(b), annex to decision 2/CMA.3)	**NA**		**NA**	**NA**			
Annual anthropogenic emissions by sources and removals by sinks covered by its NDC or, where applicable, from the emission or sink categories as identified by the host Party pursuant to paragraph 10 of annex to decision 2/CMA.3 (para. 23(a), annex to decision 2/CMA.3) (as part of para. 77 (d)(i) of the MPGs)	**kt CO_2eq**		**3 272 650**	**3 205 223**			
Annual anthropogenic emissions by sources and removals by sinks covered by its NDC or, where applicable, from the portion of its NDC in	**kt CO_2eq**		**3 272 650**	**3 205 223**			

accordance with paragraph 10, annex to decision 2/CMA.3 (para. 23(b), annex to decision 2/CMA.3)							
If applicable, annual level of the relevant non-GHG indicator that is being used by the Party to track progress towards the implementation and achievement of its NDC and was selected pursuant to paragraph 65, annex to decision 18/CMA.1 (para. 23(i), annex, decision 2/CMA.3)	**NA**		**NA**	**NA**			
Annual quantity of ITMOs first transferred (para. 23(c), annex to decision 2/CMA.3) (para. 77(d)(ii) of the MPGs)	**kt CO_2eq**		**To be reported in subsequent BTR**	**To be reported in subsequent BTR**			
Annual quantity of mitigation outcomes authorized for use for other international mitigation purposes and entities authorized to use such mitigation outcomes, as appropriate (para. 23(d), annex to decision 2/CMA.3) (para. 77(d)(ii) of the MPGs)	**NA**		**NA**	**NA**			

Annual quantity of ITMOs used towards achievement of the NDC (para. 23(e), annex to decision 2/CMA.3) (para. 77(d)(ii) of the MPGs)	**kt CO_2eq**		**To be reported in subsequent BTR**	**To be reported in subsequent BTR**			
Net annual quantity of ITMOs resulting from paras. 23(c)-(e), annex to decision 2/CMA.3 (para. 23(f), annex to decision 2/CMA.3)	**kt CO_2eq**		**To be reported in subsequent BTR**	**To be reported in subsequent BTR**			
If applicable, the cumulative amount of ITMOs, divided by the number of elapsed years in the NDC implementation period (para. 7(a)(ii), annex to decision 2/CMA.3)	**NA**		**NA**	**NA**			
Total quantitative corresponding adjustments used to calculate the emissions balance referred to in para. 23(k)(i), annex to decision 2/CMA.3, in accordance with the Party's method for applying corresponding adjustments consistent with section III.B, annex to decision 2/CMA.3 (Application of corresponding adjustments) (para. 23(g), annex to decision 2/CMA.3)	**kt CO_2eq**		**To be reported in subsequent BTR**	**To be reported in subsequent BTR**			

The cumulative information in respect of the annual information in para. 23(f), annex to decision 2/CMA.3, as applicable (para. 23(h), annex to decision 2/CMA.3)	**kt CO_2eq**		**To be reported in subsequent BTR**	**To be reported in subsequent BTR**			
For metrics in tonnes of CO2 eq. or non-GHG, an annual emissions balance consistent with chapter III.B (Application of corresponding adjustment), annex, decision 2/CMA.3 (para. 23(k)(i), annex to decision 2/CMA.3) (as part of para. 77 (d)(ii) of the MPGs)	**kt CO_2eq**		**To be reported in subsequent BTR**	**To be reported in subsequent BTR**			
For metrics in non-GHG, for each non-GHG metric determined by participating Parties, annual adjustments resulting in an annual adjusted indicator, consistent with para. 9 of chapter III.B (Corresponding adjustments), annex to decision 2/CMA.3, and future guidance to be adopted by the CMA (para. 23(k)(ii), annex to decision 2/CMA.3)	**NA**		**NA**	**NA**			
Any other information consistent with decisions adopted by the CMA on reporting under Article 6 (para. 77(d)(iii) of the MPGs)	**The EU will account and report for its cooperation with other Parties in a manner consistent with the guidance adopted by CMA1 and any further guidance agreed by the CMA in a subsequent BTR or initial report, when applicable.**						

Notes: (1) Pursuant to para. 79 of the MPGs, each Party shall report the information referred to in paras. 65–78 of the MPGs in a narrative and common tabular format, as applicable. (2) A Party may amend the reporting format (e.g. Excel file) to remove specific rows in this table if the information to be provided in those rows is not applicable to the Party's NDC under Article 4 of the Paris Agreement, in accordance with the MPGs. (3) The Party could add rows for each additional selected indicator.

[a] This table could be used for each NDC target in case Party's NDC has multiple targets.

[b] Parties may provide information on conditional targets in a documentation box with references to the relevant page in their biennial transparency report.

Annex 4: Methodology applied for the identification of GHG emissions from international aviation and navigation in the scope of the EU NDC

The scope of the EU NDC goes beyond national GHG emissions and removals in the scope of the national GHG inventory; it also includes specific emissions from international aviation and navigation. This annex describes the methodology for identifying these emissions.

International aviation and maritime emissions are estimated by using the Joint Research Centre's Integrated Database of the European Energy System (JRC-IDEES).[81] It allows to split the international transport CO2 emissions into intraEU/extraEU and intraEEA/extraEEA and the departing flights from the EU to the UK and Switzerland, categories backwards in time (i.e. 1990) (i.e. for the time period back to 1990).[82]

For international transport, JRC-IDEES applies a decomposition methodology that reconciles the scopes of available primary statistics and harmonises historical data on international aviation and maritime emissions, energy use, and transport activity. The resulting annual dataset covers 1990-2021 and distinguishes domestic, intra-EU/intra-EEA, and extra-EU/extra-EEA activity for each EU Member State, Norway and Iceland.

In aviation, JRC-IDEES distinguishes passenger and freight modes, with three geographical categories of flight origin/destinations for each mode: domestic, intra-EEA + UK, and extra-EEA + UK. Intra-EU, the UK, and EEA[83] categories are also used internally during calibration but aggregated for reporting. For each mode/category combination, JRC-IDEES estimates activity (as passenger-km or tonnes-km), energy use and CO_2 emissions, aircraft stock (expressed as representative aircraft), load factors, and aircraft efficiencies. As country-specific activity statistics are not available, the decomposition first allocates EU-level activity data from

[81] European Commission, Joint Research Centre, Rózsai, M., Jaxa-Rozen, M., Salvucci, R., Sikora, P., Tattini, J. and Neuwahl, F., JRC-IDEES-2021: the Integrated Database of the European Energy System – Data update and technical documentation, Publications Office of the European Union, Luxembourg, 2024, doi:10.2760/614599.

[82] The JRC-IDEES analytical database is designed to support energy modelling and policy analysis, by combining primary statistics with technical assumptions to compile detailed energy-economy-emissions historical data for each key energy sector. For aviation, EEA emissions includes emissions related to the UK but not to Switzerland, where total CO_2 emissions for the scope are additionally estimated from EUROCONTROL data.

[83] In this annex, EEA stands for European Economic Area, which comprises the 27 EU Member States, Iceland, Liechtenstein and Norway.

the Transport Pocketbook[84] of the European Commission's Directorate-General for Mobility and Transport to each country and flight category.

For passenger modes, this allocation calculates average load factors using Eurostat data on total passengers and flights. These load factors and total flight numbers are combined with average flight distances from EUROCONTROL, the pan-European organisation dedicated to air traffic management, to yield an initial estimate for passenger transport activity. For intra-EU activity, a uniform scaling factor is then applied across Member States to match total EU-level Transport Pocketbook data. Freight activity follows a similar process, using a 'representative flight' concept with a common load factor across all Member States to account for mixed passenger-freight flights.

Next, the decomposition estimates fuel use from EUROCONTROL data, by deriving a distance-dependent average aircraft efficiency, then applying it to the country-specific ensemble of flights and routes. The final step scales the estimates to meet Eurostat energy balances for total domestic and international consumption back to 1990 values, maintaining intra-EEA/extra-EEA fuel use ratios derived from EUROCONTROL. JRC-IDEES additionally reports resulting differences with submissions by Parties to the UNFCCC. The above process is followed throughout the entire decomposition period (1990-2021). Data gaps are estimated from the existing indicators as follows:

- The process iterates backwards towards 1990, starting from the oldest years in which data is available in each Member State.
- Average flight distance is kept constant for early years without EUROCONTROL data (generally before 2004).
- If the load factor (passengers per flight) cannot be calculated due to a lack of passenger and/or flight data, it is estimated from the trend of the existing time series.
- Missing numbers of flights are calculated from the load factor and the passengers carried.
- If no passenger data is available, the total mileage is estimated from the energy consumption, and combined with average flight distance to estimate the number of flights. The number of flights is then combined with the load factor to estimate the total passengers carried.

[84] Statistical pocketbook 2023, https://transport.ec.europa.eu/facts-funding/studies-data/eu-transport-figures-statistical-pocketbook/statistical-pocketbook-2023_en.

- For early years without data, constant values are assumed for the factors used to *i)* scale intra-EU activity to the Transport Pocketbook, *ii)* adjust the estimated fuel use to EUROCONTROL data for specific routes, and *iii)* scale this adjusted fuel use to Eurostat energy balances (e.g. before 1995 for Transport Pocketbook data; before 2004 for EUROCONTROL data).

For international maritime transport, JRC-IDEES estimates data both for intra-EU/extra-EU and intra-EEA/extra-EEA geographical categories. The emission estimates in the GHG inventory already include CO_2, CH_4, and N_2O gases. Transport activity (tonnes-km) is estimated from Eurostat data on gross weight of transported goods, using port-level and country-level data for intra-EU and extra-EU categories, respectively. Intra-EU activities are then scaled to match the Transport Pocketbook totals, accounting for domestic coastal shipping (calibrated separately in JRC-IDEES). Next, transport activity is combined with data reported under the monitoring, reporting and verification system for maritime transport under the EU ETS ('THETIS MRV'[85]), namely EU-level mileage data and country-specific vessel sizes to estimate load factors (tonnes per movement). The load factors and resulting annual mileage (km) are calibrated to meet EU-level THETIS MRV mileage. The annual mileage is in turn combined with THETIS MRV average efficiency to yield a total technical energy consumption, with corresponding emissions derived from default emissions factors. This energy consumption is scaled to Eurostat energy balances so as to minimise discrepancy to total intra-EU THETIS MRV emissions. As with aviation, JRC-IDEES reports corresponding differences to submissions under the UNFCCC. Early years with data gaps are estimated from existing indicators as follows:

- The process iterates backwards towards 1990, starting from the oldest years in which data is available in each Member State.
- Average distance of voyages is kept constant for early years without Eurostat activity data (generally before 1997-2000).
- If the load factor (tonnes per movement) cannot be estimated due a lack of activity data, it is kept constant.
- If activity data is not available, it is estimated from Eurostat energy consumption.
- Missing mileage data is derived from the activity and load factor estimates.

85 THETIS MRV, https://mrv.emsa.europa.eu/#public/eumrv.

- For early years without data, constant values are assumed for the factors used to i) scale intra-EU activity to the Transport Pocketbook, ii) scale estimated mileage to meet EU-level THETIS MRV mileage, and iii) scale domestic and intra-EU CO_2 emissions estimated from energy consumption so as to match total THETIS MRV CO_2 emissions.
- Finally, the ratios between the estimated MRV emissions and the CO_2 emissions for the reported transport activity (for intra-EU/EEA and extra-EU/EEA categories) between 2018 and 2021 are used to calculate the MRV compliant estimates back to 1990 levels.

For the year 2022, the international navigation and aviation emissions under the EU NDC scope have been estimated by applying the same share of those emissions on the total international navigation and aviation emissions (as reported in the GHG inventory) as in 2021.

Aviation emissions covered by the EU NDC scope

Emissions	Domestic aviation		Intra-EEA aviation			Extra-EEA aviation
Current NDC commitment	Domestic EU flights (e.g. Palermo Milan	Domestic "non-EU EEA" flights (e.g. Oslo to Bergen)	Flights between "non-EU EEA" countries (from Oslo to Reykjavik)	Flights within the EEA, departing from EU airports	Flights to/from EU airports to OMRs	Departing flights from EU airports to UK and Switzerland
Current NDC commitment	Yes	No	No	Yes	Yes From Jan 2024	Yes

Maritime navigation emissions covered by the EU NDC

Emissions	Domestic maritime navigation	International maritime navigation	International maritime navigation

	Domestic EU flights (e.g. Palermo Milan	Voyages within NO/IS (e.g. Oslo - Bergen	Voyages between two EU MS (e.g. Valencia - Rotterdam)	Voyages between a MS and NO/IS (e.g. Rotterdam - Oslo)	Voyages between an EU MS and a third country	Voyages between NO/IS and a third country (or IS/NO)	Emissions within a port of an EU MS (reported under domestic emissions)	Emissions within a port of NO or IS (or another third country)
Current NDC commitment (CO_2; CH_4; N_2O)	Yes	No	Yes	No	No	No	Yes	No

Annex 5: Additional info in tabular format: Name, description, objectives, type of instrument, status, Sector(s) affected, gases affected, starting year of implementation, implementing entities, estimates of expected and achieved GHG reductions.

Name[c, m]	*Description*[d, e, f]	*Objectives*	*Type of instrument* [g]	*Status*[h]	*Sector(s) affected*[i]	*Gases affected*	*Start year of implementation*	*Implementing entity or entities*	*Estimates of GHG emission reductions (kt CO_2 eq)*[j, k]					
										2020 Achieved[l]	*2025 Expected*	*2030 Expected*	*2035 Expected*	*2040 Expected*
Replacement of coal fired electricity generation with natural gas (With Existing Measures)	This measure is aimed at examining the effect of replacing coal fired electricity generation with natural gas fired electricity generation.	Switch to less carbon-intensive fuels	Research;Planning	Implemented	Energy	Carbon dioxide (CO2)	2019	Department of the Environment, Climate and Communications; Commission for Energy Regulation		1,515.61	1,300.85	997.98	1,019.25	884.31
Renewables - Electricity Generation (With Existing Measures)	The Irish government has set a renewable energy target for electricity generation, aiming to significantly	Increase in renewable energy sources in the electricity sector	Regulatory;Economic	Implemented	Energy	Carbon dioxide (CO2)	2005	Department of the Environment, Climate and Communications; Commissio		2,564.54	3,881.80	6,953.82	9,596.99	11,292.25

	increase the share of renewable sources in the country's energy mix. The target, as outlined in the Climate Action Plan 2021, aims for 70% of Ireland's electricity to come from renewable sources by 2030. It involves the development of renewable energy projects such as wind, solar, and hydroelectric power, as well as encouraging investment in clean energy technologies and infrastructure.							n for Regulation of Utilities						
Renewables - Heat (With Existing Measures)	The Irish government has set a renewable energy target with respect to heating in line with the requirements of Directive 2009/28/EC. The directive stipulates that Ireland should achieve a 12% share of renewable energy in the heating sector by the year 2020. This target	Increase in renewable energy sources in the electricity sector	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2005	Department of the Environment, Climate and Communications; Sustainable Energy Authority of Ireland		973.59	1,845.23	3,018.68	4,299.84	5,365.61

	aims to promote the use of renewable energy sources, such as biomass, solar thermal, and geothermal, to replace traditional fossil fuel-based heating systems.													
Heat Pumps Non-Domestic (With Existing Measures)	The Support Scheme for Renewable Heat (SSRH) is a program administered by the Sustainable Energy Authority of Ireland (SEAI) that provides financial incentives to encourage the use of renewable energy for heating purposes. The program supports the installation of eligible renewable heating systems, such as biomass boilers, heat pumps, and solar thermal systems, in non-domestic buildings. Participants in the SSRH program can receive regular payments over a 15-year period based on the amount of	Increase in renewable energy sources in the electricity sector; Efficiency improvements of buildings	Economic	Implemented	Energy	Carbon dioxide (CO2)	2018	Sustainable Energy Authority of Ireland		10.00	164.39	229.15	230.00	231.52

	renewable heat generated by their systems.													
Heat Pumps - Domestic (With Existing Measures)	A grant of up to €3,500 towards the capital cost of an electric heat pump is available to homeowners through an SEAI scheme. Homes must achieve a minimum heat loss requirement in order to be eligible.	Increase in renewable energy sources in the electricity sector; Efficiency improvements of buildings	Economic	Implemented	Energy	Carbon dioxide (CO2)	2018	Sustainable Energy Authority of Ireland		0.00	0.00	0.00	0.00	0.00
Solar Pilot Scheme (With Existing Measures)	The Solar Pilot Scheme by the Sustainable Energy Authority of Ireland (SEAI) is an initiative designed to promote the deployment of solar energy systems in Ireland. The scheme aims to support the installation of solar panels for electricity generation and solar thermal systems for water heating in residential, commercial, and community buildings. Through the Solar Pilot Scheme,	Increase in renewable energy sources in the electricity sector; Switch to less carbon-intensive fuels	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2019	Sustainable Energy Authority of Ireland		6.20	33.05	16.22	14.19	11.06

	participants can avail of financial incentives and technical guidance to implement solar energy projects. The scheme aims to increase the use of renewable energy sources, reduce reliance on fossil fuels, and contribute to Ireland's renewable energy targets.													
Sustainable Energy Authority of Ireland Large Industry Programme (With Existing Measures)	The Large Industry Energy Network by SEAI (Sustainable Energy Authority of Ireland) supports large industrial energy users in Ireland by providing energy audits, technical assistance, training, benchmarking, funding support, and knowledge exchange. The program aims to improve energy efficiency, reduce costs, and minimize environmental impact for participating companies in	Efficiency improvement in industrial end-use sectors	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2000	Sustainable Energy Authority of Ireland		1,041.61	822.09	725.75	714.14	696.20

	sectors like manufacturing, pharmaceuticals, food and beverage, and data centers..													
Accelerated Capital Allowance for energy efficient equipment (With Existing Measures)	The Accelerated Capital Allowance (ACA) for Energy Efficiency Equipment is a scheme by SEAI (Sustainable Energy Authority of Ireland) that offers tax incentives to businesses in Ireland for investing in energy-efficient equipment. Under the ACA, companies can claim 100% of the capital expenditure on qualifying energy-efficient assets as a tax deduction in the year of purchase, allowing for faster recovery of the investment.	Efficiency improvement of appliances; Efficiency improvement in services/tertiary sector; Efficiency improvement in industrial end-use sectors	Fiscal	Implemented	Energy	Carbon dioxide (CO2)	2008	Department Of Finance; The Office of the Revenue Commissioners		211.16	108.85	56.87	50.72	41.05
Public Sector Programme (With Existing Measures)	The Public Sector Programme by SEAI (Sustainable Energy Authority of Ireland) is an initiative aimed at promoting energy	Efficiency improvement in services/tertiary sector; Efficiency	Economic;Information; Education	Implemented	Energy	Carbon dioxide (CO2)	2011	Department of the Environment, Climate and Communications;		520.14	692.41	692.64	677.27	653.21

	efficiency and sustainability within the public sector in Ireland. The program provides support and guidance to public sector organizations, including government departments, local authorities, and public bodies, to help them reduce energy consumption, lower carbon emissions, and optimize energy management practices. It offers a range of services such as energy audits, technical assistance, funding opportunities, and training to assist public sector entities in implementing energy efficiency measures, adopting renewable energy technologies, and improving overall energy performance.	improvements of buildings						Sustainable Energy Authority of Ireland						
Small and Medium	The Small and Medium	Efficiency improvement	Education;Information	Impleme nted	Energy	Carbon dioxide (CO2)	2008	Sustainable Energy		48.30	52.13	43.84	42.87	41.35

Enterprises (SME) Programme (With Existing Measures)	Enterprises (SME) Programme by SEAI (Sustainable Energy Authority of Ireland) is an initiative specifically designed to support energy efficiency improvements in small and medium-sized enterprises across Ireland. The program offers a range of services and incentives to help SMEs reduce energy consumption, lower operating costs, and enhance sustainability. These services include energy audits to identify energy-saving opportunities, expert advice on implementing energy-efficient measures, access to funding and grants for energy efficiency projects, and technical support to facilitate the adoption of	in services/tertiary sector; Efficiency improvements of buildings						Authority of Ireland						

	energy-efficient technologies.													
2011 Part L Conservation of Fuel and Energy in Dwellings (With Existing Measures)	The 2011 Part L Building Regulations for Dwellings were one of a series of incrementally improved efficiency standards which is now moving towards low to zero carbon housing. This is a set of regulations implemented by the Irish government to enhance energy efficiency and reduce energy consumption in residential buildings. These regulations establish specific standards and requirements for new dwellings and major renovations, focusing on areas such as insulation, air tightness, heating systems, ventilation, and renewable energy usage.	Efficiency improvements of buildings	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2012	Department of Housing, Planning, Community and Local Government		92.19	92.57	92.57	92.57	92.57
Energy Efficient Boiler Regulation	Under the Part L Building Regulations in Ireland, there are	Efficiency improvements of buildings	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2008	Department of the Environment, Climate		279.12	315.29	315.29	315.29	315.29

(With Existing Measures)	specific requirements related to energy efficiency for boilers installed in new dwellings or during major renovations. These regulations mandate that boilers meet certain minimum energy performance standards, known as seasonal efficiency values (SEVs), which measure their efficiency over a typical heating season. The SEVs set out in the regulations ensure that boilers installed in residential buildings are designed to achieve optimal energy efficiency, reducing fuel consumption and carbon emissions.							and Communications						
Domestic Lighting (Eco-Design Directive) (With Existing Measures)	The measure is a phasing out of incandescent lights through the Energy related Products Directive (2009/125/EC) and Commission	Demand management/reduction	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2008	Department of Jobs, Enterprise & Innovation		295.51	68.86	33.80	29.57	23.04

	Regulation (EC) No 244/2009. Commission Regulation (EC) No 244/2009 of 18 March 2009 implements Directive 2005/32/EC (superseded by Directive 2009/125/EC) with regard to eco-design requirements for non-directional household lamps. The regulation provides for the phased introduction of minimum efficiency standards for lamps and effectively phases out incandescent lamps.													
Warmer Homes Scheme (With Existing Measures)	The Warmer Homes Scheme by SEAI offers grants and assistance to improve energy efficiency and comfort in low-income households in Ireland. The scheme focuses on insulation, draught-proofing, and heating	Efficiency improvements of buildings	Economic;Voluntary/negotiated agreements;Information;Education	Implemented	Energy	Carbon dioxide (CO2)	2000	Sustainable Energy Authority of Ireland		96.75	107.94	147.34	146.62	145.49

	system upgrades, helping vulnerable households reduce energy costs and enhance living conditions.													
Better Energy Homes (With Existing Measures)	The Better Energy Homes scheme by SEAI provides homeowners in Ireland with both financial incentives and support for energy-efficient upgrades. Through the scheme, homeowners can access grants to help cover the costs of measures such as insulation, heating system upgrades, and renewable energy installations.	Efficiency improvements of buildings	Economic;Information; Education	Implemented	Energy	Carbon dioxide (CO2)	2011	Department of the Environment, Climate and Communications; Sustainable Energy Authority of Ireland		408.98	444.00	604.75	609.82	617.65
Better Energy Communities (With Existing Measures)	The Better Energy Communities (BEC) program by the Sustainable Energy Authority of Ireland (SEAI) is an initiative aimed at supporting and funding energy efficiency upgrades in communities across Ireland. The program	Efficiency improvements of buildings	Economic	Implemented	Energy	Carbon dioxide (CO2)	2012	Sustainable Energy Authority of Ireland		123.72	211.91	278.31	268.73	253.37

	brings together community organizations, businesses, and homeowners to collectively implement energy-saving measures and reduce energy consumption. Through the BEC program, participants can avail of financial incentives and technical support to undertake energy efficiency retrofits, including insulation, lighting upgrades, heating system improvements, and renewable energy installations.													
Supplier Obligation Scheme (With Existing Measures)_ cross-sectoral	The Energy Efficiency Obligation Scheme (EEOS) was implemented pursuant to the Energy Efficiency Directive 2012, Article 7. The scheme started in 2014. It places obligations on energy suppliers and distributors to deliver energy savings and it	Efficiency improvements of buildings; Efficiency improvement in services/tertiary sector; Efficiency improvement in industrial end-use sectors; Demand management/reduction	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2014	Department of the Environment, Climate and Communications; Sustainable Energy Authority of Ireland		791.50	1,103.33	1,150.98	1,117.46	1,064.45

	applies to all energy types. Companies who sell large amounts of energy are known as obligated parties and they have targets under the scheme. Obligated parties offer supports to make homes and businesses more energy efficient. For every unit of energy saved through these projects, they achieve energy credits towards their targets. Obligated parties must show that they were essential to the work on the home or business. The support provided may be technical, financial or a mixture of both													
Deep Retrofit Pilot (With Existing Measures)	Deep retrofit is the significant upgrade of a building toward nearly zero energy requirements where the whole home is viewed as a system with respect to its energy	Efficiency improvements of buildings	Economic	Implemented	Energy	Carbon dioxide (CO2)	2017	Sustainable Energy Authority of Ireland		3.15	2.57	2.47	2.46	2.44

	performance. The core principle of the Deep Retrofit Pilot Programme is fabric first-maximising insulation to minimise energy demand. A highly efficient heating system will further reduce the energy consumed to meet the reduced energy demand. Mechanical ventilation is also required in order to ensure good indoor air quality. Deep Retrofit Pilot Programme requires that all homes funded through the Deep Retrofit Pilot Programme must achieve a minimum Building Energy Rating (BER) of A3 with an uplift in the BER of a minimum of 150 kWh/m2/yr. Airtightness of no more than 5 m3/hr/m2 must be achieved, hence the requirement for mechanical ventilation. Data													

	monitoring • to monitor whole house performance and heating system performance • must also be provided for a period of three years. SEAI provides funding of up to 50% of the total energy-capital costs, project management and BER design/consultancy costs combined. There is a higher rate of subvention, up to 95%, for voluntary housing association homes and the private homes of those that are in energy poverty. However, this is only available as part of a wider project that includes non-energy poor homes and the energy poor component must make up no more than 25% of the total number of homes in each project. The 95%													

	funding is N/A for local authority housing.													
EXEED Certified Grant (EXEED Grant Scheme) (With Existing Measures)	EXEED Certified (Excellence in Energy Efficiency Design) is an energy efficiency design management process. The process sets out steps for designing in energy efficiency and energy management into design projects, for both new investments and upgrades to existing assets. The EXEED Grant Scheme was launched in 2016 with an incentive of up to €500,000 for industrial and commercial businesses to use the EXEED process to design in energy efficiency and energy management into their new or existing assets. One of the purposes of the EXEED process is to move away	Efficiency improvements of buildings; Efficiency improvement in services/tertiary sector; Efficiency improvement in industrial end-use sectors	Economic	Implemented	Energy	Carbon dioxide (CO2)	2016	Sustainable Energy Authority of Ireland		53.67	101.32	74.22	70.37	64.35

	from looking at energy efficiency measures in isolation. Instead EXEED&#65533;s scope treats an asset as an energy system and converges on a solution that ranks the priority of different energy efficiency investments relative to that system.													
Public Sector Capital Exemplars (With Existing Measures)	The Public Sector Capital Exemplars program by the Sustainable Energy Authority of Ireland (SEAI) is an initiative that supports energy efficiency and sustainability projects in the public sector. The program focuses on identifying and showcasing exemplary projects that demonstrate best practices in energy efficiency and renewable energy integration. Through the Capital Exemplars program, public sector organizations	Efficiency improvements of buildings	Economic	Implemented	Energy	Carbon dioxide (CO2)	2017	Sustainable Energy Authority of Ireland		16.27	87.06	73.22	71.60	69.06

	receive funding and technical support to implement energy-saving measures, upgrade infrastructure, and adopt renewable energy technologies													
Warmth and Wellbeing Pilot (With Existing Measures)	The Warmth and Wellbeing Pilot is a program initiated by the Irish Government aimed at improving the energy efficiency and comfort of homes for vulnerable households. The pilot program specifically targets low-income and energy-poor households to address fuel poverty and promote better living conditions. Through the Warmth and Wellbeing Pilot, eligible households receive support for energy upgrades such as insulation, heating system improvements,	Efficiency improvements of buildings	Economic	Implemented	Energy	Carbon dioxide (CO2)	2016	Department of the Environment, Climate and Communications; Sustainable Energy Authority of Ireland; Department of Health; Health Service Executive		2.14	2.09	2.01	2.00	1.98

	and ventilation enhancements. It serves as a pilot initiative to assess the effectiveness of interventions and inform future policies and programs addressing energy poverty in Ireland.													
2018 Building Regulations - Buildings other than dwellings (With Existing Measures)	The 2018 Building Regulations for Buildings other than dwellings introduced by the Irish government incorporate both energy efficiency and renewable energy targets. The regulations require non-residential buildings to meet specific energy performance criteria, including limits on primary energy consumption and carbon dioxide emissions. Additionally, the regulations mandate the use of renewable energy technologies, such as solar panels or heat pumps, to contribute to the	Efficiency improvements of buildings	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2017	Department of Housing, Planning and Local Government		67.75	248.17	418.25	591.28	762.85

	overall energy needs of the building.													
2019 Building Regulations - Dwellings (With Existing Measures)	The 2019 Nearly Zero Energy Buildings (NZEB) regulations implemented by the Irish government aim to significantly improve the energy efficiency and sustainability of new buildings. These regulations require that all new residential and non-residential buildings meet rigorous energy performance standards, ensuring they consume minimal energy and produce a reduced carbon footprint. The NZEB regulations set specific requirements for building fabric, air-tightness, ventilation, heating systems, renewable energy sources, and overall energy performance.NZEB (Nearly Zero Energy Buildings)	Efficiency improvements of buildings	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2019	Department of Housing, Planning and Local Government		4.94	88.87	226.90	340.75	461.00

	will be introduced to all new domestic buildings, it sees a reduction in the energy performance of approximately 25% compared to the previous 2011 regulations. Also required is a Renewable Energy Ratio of 20%, meaning that 20% of the primary energy use must be from renewables onsite or nearby. The regulations also introduced Major Renovation. For Domestic projects this has been defined in the regulations as applying where external walls are cladded or drylined or structure replaced and requires the heating system and ceiling insulation is upgraded to meet minimum standards or alternatively the building achieves a B2 Building Energy Rating													

Better Energy Finance (With Existing Measures)	The Better Energy Financing (BEF) project initiated by the Irish Government is a program aimed at facilitating the financing of energy efficiency upgrades in homes and businesses. The project provides accessible financing options to support the implementation of energy-saving measures, such as insulation, heating system upgrades, and renewable energy installations. Through BEF, individuals and organizations can access low-interest loans or flexible repayment schemes to fund their energy efficiency projects. The program aims to overcome the financial barriers associated with energy upgrades, making them more affordable and attractive for	Efficiency improvements of buildings; Efficiency improvement in services/tertiary sector	Economic;Fiscal	Implemented	Energy	Carbon dioxide (CO2)	2019	Sustainable Energy Authority of Ireland		0.78	0.62	0.60	0.59	0.59

	homeowners and businesses.													
Major Renovations - Dwellings (With Existing Measures)	Major Renovation is defined within the building regulations and applies to any building where 25% of the external envelope undergoes renovation and it is technically, functionally and economically feasible to apply. For Domestic projects this has been defined in the regulations as applying where external or internal wall insulation is used and requires the heating system and ceiling insulation to achieve minimum standards, or alternatively the building achieves a B2 Building Energy Rating.	Efficiency improvements of buildings	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2020	Department of Housing, Planning and Local Government; Sustainable Energy Authority of Ireland		3.68	10.32	16.99	23.95	30.76
National Home Retrofit Scheme OSS (With Existing Measures)	The National Home Retrofit One Stop Shop (OS) scheme by the Sustainable Energy Authority of Ireland (SEAI) is an initiative aimed at	Efficiency improvements of buildings	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2021	Sustainable Energy Authority of Ireland		NA	15.75	36.28	36.59	37.06

	simplifying and streamlining the process of retrofitting homes for energy efficiency improvements. Under the scheme, homeowners may be eligible for a grant that covers up to 50% of the costs associated with retrofitting their homes for energy efficiency improvements. This grant can help offset expenses related to insulation upgrades, heating system improvements, ventilation enhancements, and other energy-saving measures. The specific grant amount and eligibility criteria may vary depending on the nature of the retrofit project and the homeowner's circumstances. The availability of the grant aims to make energy retrofit projects													

	more affordable and incentivize homeowners to undertake energy-efficient improvements in their homes.													
Smart Meter Roll-Out - Household (With Existing Measures)	The Smart Meter Roll-Out - Household initiative by ESB (Electricity Supply Board) is a program aimed at installing smart meters in households across Ireland. Smart meters are advanced digital devices that measure and record electricity consumption in real-time, providing accurate and detailed information about energy usage. The program involves the replacement of traditional electricity meters with smart meters, enabling homeowners to have better visibility and control over their energy consumption. Smart meters also	Efficiency improvements of buildings; Demand management/reduction	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2021	Electricity Supply Board Networks		NA	0.00	0.00	0.00	0.00

	facilitate the implementation of time-of-use tariffs, allowing customers to take advantage of off-peak electricity rates and make informed decisions to manage their energy usage more efficiently. The Smart Meter Roll-Out - Household program aims to support energy conservation, reduce peak demand, and enable the integration of renewable energy sources into the electricity grid.													
Carbon Tax (With Existing Measures)	Incorporate a price signal for carbon on the non-ETS sector, specifically fuels used for heating and transport. The tax applies to petrol, diesel, kerosene, marked gas oil (for agricultural use), Liquid Petroleum Gas (LPG), fuel oil, natural gas, coal and commercial peat.	Low carbon fuels; Efficiency improvements of buildings; Efficiency improvement in services/tertiary sector	Fiscal	Implemented	Energy; Transport	Carbon dioxide (CO2)	2008	Revenue Commissioners		395.71	935.01	932.49	928.65	924.17

Electric vehicle deployment (With Existing Measures)	The Electric Vehicle Deployment Programme by SEAI (Sustainable Energy Authority of Ireland) is an initiative aimed at promoting the adoption and deployment of electric vehicles (EVs) in Ireland. The program provides financial incentives and support to individuals, businesses, and public sector organizations for the purchase of electric vehicles, including cars, vans, and bikes. Additionally, the program supports the development of public charging infrastructure, offering grants for the installation of EV charging points.	Low carbon fuels	Economic;Fiscal	Implemented	Transport	Carbon dioxide (CO2)	2011	Department of the Environment, Climate and Communications; Sustainable Energy Authority of Ireland		24.32	266.75	1,175.50	2,389.76	4,156.67
Vehicle Registration Tax and Motor Tax Rebalancing (With Existing Measures)	The Vehicle Registration Tax (VRT) and Motor Tax Rebalancing measure implemented in 2008 was a policy initiative introduced by the	Efficiency improvements of vehicles; Demand management/reduction	Regulatory;Education; Fiscal	Implemented	Transport	Carbon dioxide (CO2)	2008	Department of Finance		405.32	385.36	385.25	385.22	385.37

	Irish government to encourage the purchase of low-emission vehicles and discourage the use of high-emission vehicles. The measure involved adjusting the tax rates for vehicle registration and motor tax based on the carbon dioxide (CO2) emissions produced by the vehicle. Vehicles with lower CO2 emissions were subject to reduced tax rates, while those with higher emissions faced higher taxes.													
Improved fuel economy of the private car fleet (EU Regulation) (With Existing Measures)	The EU, through Regulation 443/2009 has mandated an improvement in average new car efficiency to 130 g CO2/km by 2015 with a target of 95 g CO2/km by 2021.	Efficiency improvements of vehicles	Regulatory	Implemented	Transport	Carbon dioxide (CO2)	2012	European Commission; National Standards Authority of Ireland		0.00	0.00	0.00	0.00	0.00
Aviation Efficiency (With Existing Measures)	The UK-Ireland Functional Airspace Block (FAB) established in 2008 aimed to improve the efficiency of	Demand management/reduction	Voluntary/negotiated agreements	Implemented	Transport	Carbon dioxide (CO2)	2008	Irish Aviation Authority; UK National Air Traffic Services		63.57	60.44	60.42	60.42	60.44

	aviation operations between the two countries. By coordinating air traffic control services and implementing advanced technologies, the FAB sought to optimize airspace usage, reduce delays, and minimize fuel consumption and emissions. The initiative aimed to enhance safety, capacity, and environmental sustainability in the shared airspace of the UK and Ireland.													
Renewables - Transport (With Existing Measures)	The Irish government has set a renewable energy target for the transport sector, aiming for 10% renewable energy content in the overall energy consumption of the transport sector by 2020. This target includes a sub-target of 8% renewable energy in the final consumption of	Low carbon fuels	Regulatory;Economic	Implemented	Transport	Carbon dioxide (CO2)	2005	Department of Transport, Tourism and Sport		509.34	1,132.66	1,094.83	935.14	736.72

	energy in the transport sector. The goal is to promote the use of sustainable and low-carbon fuels, such as biofuels, to reduce greenhouse gas emissions and enhance energy sustainability in the transportation sector. The government has implemented measures to support the production, distribution, and use of renewable fuels, including blending obligations and financial incentives.													
Mobile Air Conditioning Directive (Directive 2006/40/EC) (With Existing Measures)	The Mobile Air Conditioning (MAC) Directive (Directive 2006/40/EC) is a European Union directive that sets requirements for the air conditioning systems used in vehicles. The directive aims to reduce greenhouse gas emissions from vehicle air	Replacement of fluorinated gases by gases with a lower GWP value	Regulatory	Implemented	IPPU	Hydrofluorocarbons (HFC)	2011	Department of Transport, Tourism and Sport		41.80	72.26	146.87	171.97	171.97

	conditioning systems by phasing out the use of certain fluorinated greenhouse gases with high global warming potential. It sets standards for the design, construction, and operation of MAC systems, including the use of more environmentally friendly refrigerants and the improvement of system efficiency.													
Low emission slurry spreading (With Existing Measures)	Low-emission slurry spreading (LESS) is an agricultural practice aimed at reducing nitrous oxide (N2O) emissions during the application of slurry. Under the Irish Government Ag Climatise Strategy, targets include achieving a target of 60% of all slurry spread by LESS by 2022, 80% by 2025 and 90% by 2027.	Reduction of fertilizer/manure use on cropland; Improved animal waste management systems	Regulatory	Implemented	Agriculture	Nitrous oxide (N2O)	2020	Department of Agriculture, Food and the Marine		8.00	21.76	25.82	26.02	26.25
Crude protein reduction in	The Nitrates Action Programme is a	Improved livestock management	Regulatory	Implemented	Agriculture	Nitrous oxide (N2O)	2020	Department of Agriculture		0.00	11.83	12.55	12.67	12.67

dairy cows (With Existing Measures)	regulatory framework aimed at addressing water pollution from agricultural sources and promoting sustainable farming practices. It typically includes measures related to nutrient management, fertilization practices, and livestock management to minimize nitrogen and phosphorus losses. The reduction of crude protein in dairy cow concentrates was introduced as part of the 5th Nitrates Action Programme by the Irish government. This states that from 11th March 2022 the maximum permissible level of 15% is to be used on holdings between 15th April and 30th September.							, Food and the Marine						
Peatlands rehabilitation (With Existing Measures)	In 2020 the Irish government approved a €108 million funding for Bord Na Mona	Prevention of drainage or rewetting of wetlands	Regulatory	Implemented	LULUCF	Carbon dioxide (CO_2)	2020	Department of Agriculture, Food and the Marine		0.00	889.93	861.73	858.82	858.24

	(a semi-state body) to undertake restoration activities on 33.5 kha of peatland between the years 2021 and 2025.													
Landfill Directive (1999/31/EC) (With Existing Measures)	The Landfill Directive (1999/31/EC) is a European Union directive that addresses the management and disposal of waste in landfills. The directive aims to reduce the environmental impact of landfills by establishing stringent criteria for the operation, design, and aftercare of landfill sites. It encourages the reduction of waste generation, promotes waste recycling and recovery, and sets targets for the reduction of biodegradable waste sent to landfills.	Improved landfill management; Reduced landfilling; Enhanced CH4 collection and use	Regulatory;Planning	Implemented	Waste	Methane (CH4)	1999	Department of the Environment, Climate and Communications; Environmental Protection Agency		624.70	730.11	801.20	848.46	921.26
CHP Deployment - Public and Business	The CHP Programme by SEAI (Sustainable Energy Authority of Ireland)	Switch to less carbon-intensive fuels; Increase in renewable	Economic	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	3.77	22.62	41.46	60.31

sectors (With Additional Measures)	promotes and supports the implementation of combined heat and power systems in Ireland. It provides technical assistance, funding support, knowledge sharing, policy development, and monitoring and evaluation to encourage the adoption of CHP technology.	energy sources in the electricity sector; Efficiency improvements of buildings												
Replacement of coal fired electricity generation with natural gas (With Additional Measures)	This measure is aimed at examining the effect of replacing coal fired electricity generation with natural gas fired electricity generation.	Switch to less carbon-intensive fuels	Research;Planning	Planned	Energy	Carbon dioxide (CO2)	2023	Department of the Environment, Climate and Communications		NA	0.00	0.00	0.00	0.00
Renewables - Electricity Generation (With Additional Measures)	The Irish government has set a renewable energy target for electricity generation, aiming to significantly increase the share of renewable sources in the country's energy mix. The increased target, as outlined in the	Increase in renewable energy sources in the electricity sector	Regulatory	Planned	Energy	Carbon dioxide (CO2)	2023	Department of the Environment, Climate and Communications; Commission for Regulation of Utilities		NA	83.79	1,295.16	1,675.15	2,119.73

	Climate Action Plan 2023, aims for 80% of Ireland's electricity to come from renewable sources by 2030. It involves a target of target of 9 GW from onshore wind, 8 GW from solar, and at least 5 GW of offshore wind energy by 2030.													
Renewables - Heat (With Additional Measures)	The Irish government is committed to achieving the renewable energy targets set forth in the Renewable Energy Directive II (RED II). The directive sets a binding target for Ireland to reach at least 32% renewable energy in its overall energy consumption by 2030. This includes a proportionate share of renewable energy in the heating and cooling sectors.	Increase in renewable energy sources in the electricity sector	Regulatory	Implemented	Energy	Carbon dioxide (CO2)	2005	Department of the Environment, Climate and Communications		NA	-21.56	157.78	704.49	1,405.13
Heat Pumps Non-Domestic	The Support Scheme for Renewable Heat (SSRH) is a	Efficiency improvements of buildings	Economic	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	-3.01	-10.85	10.35	10.28

(With Additional Measures)	program administered by the Sustainable Energy Authority of Ireland (SEAI) that provides financial incentives to encourage the use of renewable energy for heating purposes. The program supports the installation of eligible renewable heating systems, such as biomass boilers, heat pumps, and solar thermal systems, in non-domestic buildings. Participants in the SSRH program can receive regular payments over a 15-year period based on the amount of renewable heat generated by their systems.													
Heat Pumps - Domestic (With Additional Measures)	A grant of up to €3,500 towards the capital cost of an electric heat pump is available to homeowners through an SEAI scheme. Homes must achieve a minimum heat loss requirement	Efficiency improvements of buildings	Economic	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	-0.09	339.76	325.81	340.03

	in order to be eligible.													
Solar Pilot Scheme (With Additional Measures)	The Solar Pilot Scheme by the Sustainable Energy Authority of Ireland (SEAI) is an initiative designed to promote the deployment of solar energy systems in Ireland. The scheme aims to support the installation of solar panels for electricity generation and solar thermal systems for water heating in residential, commercial, and community buildings. Through the Solar Pilot Scheme, participants can avail of financial incentives and technical guidance to implement solar energy projects. The scheme aims to increase the use of renewable energy sources, reduce reliance on fossil fuels, and contribute to	Increase in renewable energy sources in the electricity sector; Switch to less carbon-intensive fuels	Regulatory	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	12.54	17.74	16.29	11.54

	Ireland's renewable energy targets.													
Sustainable Energy Authority of Ireland Large Industry Programme (With Additional Measures)	The Large Industry Energy Network (LIEN) is a program established by the Sustainable Energy Authority of Ireland (SEAI) to assist large industrial energy users in improving their energy efficiency and sustainability. LIEN acts as a platform for knowledge sharing, collaboration, and best practices among participating industries. Through LIEN, companies gain access to resources, tools, and expertise to identify energy-saving opportunities, implement energy management strategies, and adopt innovative technologies. The program facilitates networking events,	Efficiency improvement in industrial end-use sectors	Voluntary/negotiated agreements	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	55.99	292.06	526.31	740.21

	workshops, and technical support to promote the exchange of ideas and experiences among industrial peers.													
Accelerated Capital Allowance for energy efficient equipment (With Additional Measures)	The Accelerated Capital Allowance (ACA) for Energy Efficiency Equipment is a scheme by SEAI (Sustainable Energy Authority of Ireland) that offers tax incentives to businesses in Ireland for investing in energy-efficient equipment. Under the ACA, companies can claim 100% of the capital expenditure on qualifying energy-efficient assets as a tax deduction in the year of purchase, allowing for faster recovery of the investment.	Efficiency improvement of appliances; Efficiency improvement in services/tertiary sector; Efficiency improvement in industrial end-use sectors	Fiscal	Planned	Energy	Carbon dioxide (CO2)	2023	Department Of Finance; The Office of the Revenue Commissioners		NA	2.65	7.37	11.76	12.19
Public Sector Programme (With Additional Measures)	The Public Sector Programme by SEAI (Sustainable Energy Authority of Ireland) is an initiative aimed at	Efficiency improvement in services/tertiary sector; Efficiency	Economic;Information; Education	Planned	Energy	Carbon dioxide (CO2)	2023	Department of the Environment, Climate and Communic		NA	-0.07	0.05	0.05	0.04

	promoting energy efficiency and sustainability within the public sector in Ireland. The program provides support and guidance to public sector organizations, including government departments, local authorities, and public bodies, to help them reduce energy consumption, lower carbon emissions, and optimize energy management practices. It offers a range of services such as energy audits, technical assistance, funding opportunities, and training to assist public sector entities in implementing energy efficiency measures, adopting renewable energy technologies, and improving overall energy performance.	improvements of buildings						ations; Sustainable Energy Authority of Ireland						

Small and Medium Enterprises (SME) Programme (With Additional Measures)	The Small and Medium Enterprises (SME) Programme by SEAI (Sustainable Energy Authority of Ireland) is an initiative specifically designed to support energy efficiency improvements in small and medium-sized enterprises across Ireland. The program offers a range of services and incentives to help SMEs reduce energy consumption, lower operating costs, and enhance sustainability. These services include energy audits to identify energy-saving opportunities, expert advice on implementing energy-efficient measures, access to funding and grants for energy efficiency projects, and technical support to facilitate the	Efficiency improvement in services/tertiary sector; Efficiency improvements of buildings; Demand management/reduction	Education;Information	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	0.00	0.00	0.00	0.00

	adoption of energy-efficient technologies.													
Warmer Homes Scheme (With Additional Measures)	The Warmer Homes Scheme by SEAI offers grants and assistance to improve energy efficiency and comfort in low-income households in Ireland. The scheme focuses on insulation, draught-proofing, and heating system upgrades, helping vulnerable households reduce energy costs and enhance living conditions.	Efficiency improvements of buildings	Economic;Voluntary/negotiated agreements;Information;Education	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	0.00	-0.10	15.23	30.25
Better Energy Homes (With Additional Measures)	The Better Energy Homes scheme by SEAI provides homeowners in Ireland with both financial incentives and support for energy-efficient upgrades. Through the scheme, homeowners can access grants to help cover the costs of measures such as insulation, heating system	Efficiency improvements of buildings	Economic;Information; Education	Planned	Energy	Carbon dioxide (CO2)	2023	Department of the Environment, Climate and Communications; Sustainable Energy Authority of Ireland		NA	-1.23	134.01	211.28	214.75

	upgrades, and renewable energy installations.													
Better Energy Communities (With Additional Measures)	The Better Energy Communities (BEC) program by the Sustainable Energy Authority of Ireland (SEAI) is an initiative aimed at supporting and funding energy efficiency upgrades in communities across Ireland. The program brings together community organizations, businesses, and homeowners to collectively implement energy-saving measures and reduce energy consumption. Through the BEC program, participants can avail of financial incentives and technical support to undertake energy efficiency retrofits, including insulation, lighting upgrades, heating system improvements, and renewable	Efficiency improvements of buildings	Economic	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	14.85	178.34	316.51	264.99

	energy installations.													
Supplier Obligation Scheme (With Additional Measures)_ cross-sectoral	The Energy Efficiency Obligation Scheme (EEOS) was implemented pursuant to the Energy Efficiency Directive 2012, Article 7. It places obligations on energy suppliers and distributors to deliver energy savings and it applies to all energy types. Companies who sell large amounts of energy are known as obligated parties and they have targets under the scheme. Obligated parties offer supports to make homes and businesses more energy efficient. For every unit of energy saved through these projects, they achieve energy credits towards their targets. Obligated parties must show that they were essential to the work on the home	Efficiency improvements of buildings; Efficiency improvement in services/tertiary sector; Efficiency improvement in industrial end-use sectors; Demand management/reduction	Regulatory	Planned	Energy	Carbon dioxide (CO2)	2023	Department of the Environment, Climate and Communications		NA	83.10	215.92	208.00	192.50

	or business. The support provided may be technical, financial or a mixture of both													
EXEED Certified Grant (EXEED Grant Scheme) (With Additional Measures)	EXEED Certified (Excellence in Energy Efficiency Design) is an energy efficiency design management process. The process sets out steps for designing in energy efficiency and energy management into design projects, for both new investments and upgrades to existing assets. The EXEED Grant Scheme was launched in 2016 with an incentive of up to €500,000 for industrial and commercial businesses to use the EXEED process to design in energy efficiency and energy management into their new or existing assets. One of the purposes of the	Efficiency improvements of buildings; Efficiency improvement in services/tertiary sector; Efficiency improvement in industrial end-use sectors	Economic	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	14.04	457.78	683.89	676.35

	EXEED process is to move away from looking at energy efficiency measures in isolation. Instead EXEED&#xfffd;s scope treats an asset as an energy system and converges on a solution that ranks the priority of different energy efficiency investments relative to that system.													
Public Sector Capital Exemplars (With Additional Measures)	The Public Sector Capital Exemplars program by the Sustainable Energy Authority of Ireland (SEAI) is an initiative that supports energy efficiency and sustainability projects in the public sector. The program focuses on identifying and showcasing exemplary projects that demonstrate best practices in energy efficiency and renewable energy integration. Through the Capital Exemplars program, public	Efficiency improvements of buildings	Economic	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	10.60	75.01	137.91	192.93

	sector organizations receive funding and technical support to implement energy-saving measures, upgrade infrastructure, and adopt renewable energy technologies													
Warmth and Wellbeing Pilot (With Additional Measures)	The Warmth and Wellbeing Pilot is a program initiated by the Irish Government aimed at improving the energy efficiency and comfort of homes for vulnerable households. The pilot program specifically targets low-income and energy-poor households to address fuel poverty and promote better living conditions. Through the Warmth and Wellbeing Pilot, eligible households receive support for energy upgrades such as insulation, heating	Efficiency improvements of buildings	Economic	Planned	Energy	Carbon dioxide (CO2)	2023	Department of the Environment, Climate and Communications; Sustainable Energy Authority of Ireland; Department of Health; Health Service Executive		NA	0.00	0.00	0.00	0.00

	system improvements, and ventilation enhancements. It serves as a pilot initiative to assess the effectiveness of interventions and inform future policies and programs addressing energy poverty in Ireland.													
2019 Building Regulations - Dwellings (With Additional Measures)	The 2019 Nearly Zero Energy Buildings (NZEB) regulations implemented by the Irish government aim to significantly improve the energy efficiency and sustainability of new buildings. These regulations require that all new residential and non-residential buildings meet rigorous energy performance standards, ensuring they consume minimal energy and produce a reduced carbon footprint. The NZEB regulations set specific requirements for	Efficiency improvements of buildings	Regulatory	Planned	Energy	Carbon dioxide (CO2)	2023	Department of Housing, Planning and Local Governmen t		NA	0.00	0.00	0.00	0.00

	building fabric, air-tightness, ventilation, heating systems, renewable energy sources, and overall energy performance.NZEB (Nearly Zero Energy Buildings) will be introduced to all new domestic buildings, it sees a reduction in the energy performance of approximately 25% compared to the previous 2011 regulations. Also required is a Renewable Energy Ratio of 20%, meaning that 20% of the primary energy use must be from renewables onsite or nearby. The regulations also introduced Major Renovation. For Domestic projects this has been defined in the regulations as applying where external walls are cladded or drylined or structure replaced and requires the													

	heating system and ceiling insulation is upgraded to meet minimum standards or alternatively the building achieves a B2 Building Energy Rating													
Better Energy Finance (With Additional Measures)	The Better Energy Financing (BEF) project initiated by the Irish Government is a program aimed at facilitating the financing of energy efficiency upgrades in homes and businesses. The project provides accessible financing options to support the implementation of energy-saving measures, such as insulation, heating system upgrades, and renewable energy installations. Through BEF, individuals and organizations can access low-interest loans or flexible repayment schemes to fund their energy	Efficiency improvements of buildings; Efficiency improvement in services/tertiary sector	Economic;Fiscal	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	0.00	0.00	0.00	0.00

	efficiency projects. The program aims to overcome the financial barriers associated with energy upgrades, making them more affordable and attractive for homeowners and businesses.													
National Home Retrofit Scheme OSS (With Additional Measures)	The National Home Retrofit One Stop Shop (OS) scheme by the Sustainable Energy Authority of Ireland (SEAI) is an initiative aimed at simplifying and streamlining the process of retrofitting homes for energy efficiency improvements. Under the scheme, homeowners may be eligible for a grant that covers up to 50% of the costs associated with retrofitting their homes for energy efficiency improvements. This grant can help offset expenses related to insulation	Efficiency improvements of buildings	Regulatory	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	15.15	208.93	271.08	275.53

	upgrades, heating system improvements, ventilation enhancements, and other energy-saving measures. The specific grant amount and eligibility criteria may vary depending on the nature of the retrofit project and the homeowner's circumstances. The availability of the grant aims to make energy retrofit projects more affordable and incentivize homeowners to undertake energy-efficient improvements in their homes.													
Smart Meter Roll-Out - Household (With Additional Measures)	The Smart Meter Roll-Out - Household initiative by ESB (Electricity Supply Board) is a program aimed at installing smart meters in households across Ireland. Smart meters are advanced digital devices that measure and	Efficiency improvements of buildings; Demand management/reduction	Regulatory	Planned	Energy	Carbon dioxide (CO2)	2023	Electricity Supply Board Networks		NA	34.57	28.54	24.20	15.93

	record electricity consumption in real-time, providing accurate and detailed information about energy usage. The program involves the replacement of traditional electricity meters with smart meters, enabling homeowners to have better visibility and control over their energy consumption. Smart meters also facilitate the implementation of time-of-use tariffs, allowing customers to take advantage of off-peak electricity rates and make informed decisions to manage their energy usage more efficiently. The Smart Meter Roll-Out - Household program aims to support energy conservation, reduce peak demand, and enable the													

	integration of renewable energy sources into the electricity grid.													
Other Domestic Retrofit (With Additional Measures)	This is a catch-all category for the remaining residential savings as required to meet the energy efficiency improvement required by 2030	Efficiency improvements of buildings	Regulatory	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	0.00	197.52	199.24	202.52
Low-Cost Finance for Home Energy Upgrades (With Additional Measures)	The Low-Cost Finance for Home Energy Upgrades program by the Irish government aims to make energy efficiency upgrades more accessible and affordable for homeowners. The program provides low-cost financing options to homeowners for implementing energy-saving measures in their homes, such as insulation upgrades, heating system improvements, and renewable energy installations. This financing helps homeowners overcome the upfront costs	Efficiency improvements of buildings; Efficiency improvement in services/tertiary sector	Economic;Fiscal	Planned	Energy	Carbon dioxide (CO2)	2023	Sustainable Energy Authority of Ireland		NA	0.00	0.00	0.00	0.00

	associated with these upgrades and allows them to repay the loan over time through their energy bills.													
Carbon Tax (With Additional Measures)	Incorporate a price signal for carbon on the non-ETS sector, specifically fuels used for heating and transport. The tax applies to petrol, diesel, kerosene, marked gas oil (for agricultural use), Liquid Petroleum Gas (LPG), fuel oil, natural gas, coal and commercial peat.	Efficiency improvements of buildings; Demand management/reduction	Fiscal	Planned	Energy; Transport	Carbon dioxide (CO2)	2023	Revenue Commissioners		NA	1.64	1.59	1.59	1.58
Electric vehicle deployment (With Additional Measures)	The Electric Vehicle Deployment Programme by SEAI (Sustainable Energy Authority of Ireland) is an initiative aimed at promoting the adoption and deployment of electric vehicles (EVs) in Ireland. The program provides financial incentives and support to individuals, businesses, and public sector	Low carbon fuels	Economic;Fiscal	Planned	Transport	Carbon dioxide (CO2)	2023	Department of the Environment, Climate and Communications; Sustainable Energy Authority of Ireland		NA	23.79	192.33	385.70	101.45

	organizations for the purchase of electric vehicles, including cars, vans, and bikes. Additionally, the program supports the development of public charging infrastructure, offering grants for the installation of EV charging points.													
Renewables - Transport (With Additional Measures)	The Renewable Fuels for Transport Policy Statement 2021-2023 sets out an indicative trajectory of annual increase in the obligation rate for renewable transport fuel supply to meet the 2030 target of the CAP21 - an approximate blend of E10 (i.e., up to 10% by volume bioethanol blend in petrol) and B20 (i.e., up to 20% biodiesel blended into diesel). As proposed in the policy, and subject to enabling legislation, the transition to E10	Low carbon fuels	Regulatory	Planned	Transport	Carbon dioxide (CO2)	2023	Department of Transport, Tourism and Sport		NA	-6.53	358.01	253.23	221.94

	in Ireland is envisaged by 2023.													
Low emission slurry spreading (With Additional Measures)	Low-emission slurry spreading (LESS) is an agricultural practice aimed at reducing nitrous oxide (N2O) emissions during the application of slurry. Under the Irish Government AgClimatise Strategy, targets include achieving a target of 60% of all slurry spread by LESS by 2022, 80% by 2025 and 90% by 2027.	Reduction of fertilizer/manure use on cropland; Improved animal waste management systems	Regulatory	Planned	Agriculture	Nitrous oxide (N2O)	2023	Department of Agriculture, Food and the Marine		NA	74.21	97.51	93.38	93.61
Dairy EBI (With Additional Measures)	The Economic Breeding Index (EBI) for dairy cattle is a breeding tool that focuses on improving the economic and environmental performance of dairy herds. By selecting breeding bulls and cows with favorable genetic traits for milk production efficiency and lower emissions, such as reduced methane output, the EBI	Reduction of fertilizer/manure use on cropland	Voluntary/negotiated agreements;Education	Planned	Agriculture	Methane (CH4)	2023	Department of Agriculture, Food and the Marine		NA	144.17	413.37	702.13	978.82

	contributes to the overall reduction of greenhouse gas emissions associated with dairy farming.													
Reduced pig crude protein (With Additional Measures)	Reduction in the crude protein content in pig feed is a measure aimed at improving nitrogen efficiency and reducing nitrogen excretion in pig farming. By optimizing the protein content and using more precise feeding strategies, it is possible to minimize nitrogen losses in pig manure and reduce the environmental impact associated with nitrogen pollution.	Improved livestock management	Regulatory	Planned	Agriculture	Nitrous oxide (N2O)	2023	Department of Agriculture, Food and the Marine		NA	0.28	0.29	0.30	0.30
Fertiliser use measures (With Additional Measures)	Measures include replacement of calcium ammonium nitrate fertiliser applied to grassland with inhibited urea products and increased liming of soils. Inhibited urea products are designed to	Reduction of fertilizer/manure use on cropland	Regulatory	Planned	Agriculture	Nitrous oxide (N2O)	2023	Department of Agriculture, Food and the Marine		NA	527.43	643.96	611.88	611.88

	release nitrogen more slowly, allowing for better synchronization with crop uptake and minimizing losses through volatilization. Liming refers to the application of lime (calcium carbonate) to agricultural land to optimize soil pH leading to improved availability of nutrients. Combined, these measures can help in achieving more efficient use of nitrogen fertilizers and reduce the environmental impact associated with ammonia and nitrous oxide emissions.													
Slurry additives for reduced methane emissions (With Additional Measures)	Measure to promote the use of slurry additives to reduce methane emissions from slurry. Slurry additives are substances added to livestock manure or slurry to modify its composition and enhance anaerobic digestion	Reduction of fertilizer/manure use on cropland	Voluntary/negotiated agreements;Education	Planned	Agriculture	Methane (CH4)	2023	Department of Agriculture, Food and the Marine		NA	119.31	461.76	468.49	468.49

	processes, thereby reducing methane emissions during storage and spreading. These additives can help optimize the nutrient content of slurry and improve its biodegradability, resulting in lower methane production.													
Other slurry measures (pigs/cattle) (With Additional Measures)	Measures to reduce nitrous oxide emissions rom slurry: all stores to be covered by 2027; and the use of slurry amendments for cattle and pigs. Slurry amendments can optimize nutrient management and improve the breakdown of organic matter, reducing the availability of nitrogen compounds that contribute to nitrous oxide emissions. Covered slurry stores create anaerobic conditions that minimize the	Reduction of fertilizer/manure use on cropland	Voluntary/negotiated agreements;Education	Planned	Agriculture	Nitrous oxide (N2O)	2023	Department of Agriculture, Food and the Marine		NA	1.63	11.56	13.24	13.34

	conversion of nitrogen compounds into nitrous oxide.													
Reduced slaughter age - cattle (With Additional Measures)	Under the Irish Government AgClimatise Strategy specifies mesures to promote earlier slaughter age of cattle, such as improved genetics, feed efficiency, and management practices, to reduce methane emissions associated with enteric fermentation.	Reduction of fertilizer/manure use on cropland	Voluntary/negotiated agreements;Education	Planned	Agriculture	Methane (CH4)	2023	Department of Agriculture, Food and the Marine		NA	526.85	759.95	751.52	751.52
Reduced age first calving - cattle (With Additional Measures)	The Irish Government's AgClimatise strategy specifies a reduced age to first calving for cattle as a measure to mitigate methane emissions associated with enteric fermentation.	Reduction of fertilizer/manure use on cropland	Voluntary/negotiated agreements;Education	Planned	Agriculture	Methane (CH4)	2023	Department of Agriculture, Food and the Marine		NA	52.81	81.99	74.80	74.80
Feed additives (With Additional Measures)	The Irish government has implemented a policy to promote the incorporation of feed additives in cattle diets as a	Reduction of fertilizer/manure use on cropland	Voluntary/negotiated agreements;Education	Planned	Agriculture	Methane (CH4)	2023	Department of Agriculture, Food and the Marine		NA	196.50	1,251.82	1,276.63	1,276.63

	measure to reduce methane emissions. Feed additives are substances added to livestock diets to modify rumen fermentation and improve nutrient utilization.													
Drying poultry manure (With Additional Measures)	The Irish government has implemented a policy to promote the drying of poultry manures as a measure to reduce GHG emissions. Drying poultry manure involves removing moisture from the manure, which helps to minimize the release of GHGs, including methane and nitrous oxide. By reducing the moisture content, the decomposition process is slowed down, resulting in lower GHG emissions during storage and spreading.	Reduction of fertilizer/manure use on cropland	Voluntary/negotiated agreements;Education	Planned	Agriculture	Nitrous oxide (N2O)	2023	Department of Agriculture, Food and the Marine		NA	0.08	0.24	0.25	0.25
New afforestation (With Additional Measures)	Increase annual afforestation rates from approximately 2,000 hectares	Afforestation and reforestation	Regulatory	Planned	LULUCF	Carbon dioxide (CO2)	2023	Department of Agriculture, Food and the Marine		NA	1,493.79	1,079.77	-246.06	345.89

	(ha) per annum in 2021 and 2022 to 8,000 ha per annum from 2023 onwards.													
Water table management on drained organic soils (With Additional Measures)	The Climate Action Plan states a goal of reduced management intensity (water table management) of 80,000 hectares on drained organic soils by 2030.	Prevention of drainage or rewetting of wetlands	Regulatory	Planned	LULUCF	Carbon dioxide (CO2)	2023	Department of Agriculture, Food and the Marine		NA	806.43	1,881.08	1,872.46	1,864.05

Annex 6: Methodologies and assumptions used to estimate GHG reductions

Policy and Measure	*Sector(s) affected*	*WEM*	*WAM*
Replacement of coal fired electricity generation with natural gas	Energy	It is assumed that coal fired electricity generation is replaced with natural gas fired electricity generation by the end of 2025. Currently, there is no difference in what is assumed under the WEM and WAM scenarios.	Currently, there is no difference in what is assumed under the WEM and WAM scenarios and so there are no additional emission reductions reported under WAM for this PaM.
Renewables - Electricity Generation	Energy	Emission reductions for this PaM are underpinned by energy projections for electricity under the WEM scenario. Under WEM, it is expected that 68.9% of electricity demand will come from renewable energy by 2030.	Emission reductions for this PaM are underpinned by energy projections for electricity under the WAM scenario. Under WAM, it is expected that 80.1% of electricity demand will come from renewable energy by 2030.
Renewables - Heat	Energy	Emission reductions for this PaM are underpinned by energy projections for renewable heat under the WEM scenario. Under WEM, it is expected that 21.7% of energy demand for heat will come from renewable heat sources by 2030.	Emission reductions for this PaM are underpinned by energy projections for renewable heat under the WAM scenario. Under WAM, it is expected that 36.6% of energy demand for heat will come from renewable heat sources by 2030.

Heat Pumps Non-Domestic	Energy	While there is no difference in the supports assumed under the WEM and WAM scenarios, savings for this PaM are dependent on underlying fuel projections which are impacted by other policies under WEM.	While there is no difference in the supports assumed under the WEM and WAM scenarios, savings for this PaM are dependent on underlying fuel projections which are impacted by other policies under WAM.
Heat Pumps - Domestic	Energy	Emission reductions from heat pump installations under the WEM scenario are captured through the SEAI domestic retrofit schemes. Therefore, there are no emission reductions reported under WEM for this PaM currently.	It is assumed that the Government target (outlined in the 2024 Climate Action Plan) of 400,000 heat pumps will be installed in existing homes by 2030. This PaM is used to account for the shortfall between heat pump savings projected to be achieved through SEAI domestic retrofit schemes and the target.
Solar Pilot Scheme	Energy	Funding at the 2023 level is provided for one additional year.	Savings are based on an allocated budget for 2024. In addition, a lower level of funding from 2025 to 2030 is assumed with funding at a 2019 level thereafter.
Sustainable Energy Authority of Ireland Large Industry Programme	Energy	Funding is provided for one additional year.	It is assumed that funding for the programme will continue to be provided at the current level until the end of the projection period.
Accelerated Capital Allowance for energy efficient equipment	Energy	The scheme will continue for one additional year.	It is assumed the scheme will continue in its current form until the end of the projection period.
Public Sector Programme	Energy	While there is no difference in the supports assumed under the WEM and WAM scenarios, savings for this	While there is no difference in the supports assumed under the WEM and WAM scenarios, savings for this

		PaM are partially based on carbon tax savings under WEM.	PaM are partially based on carbon tax savings under WAM.
Small and Medium Enterprises (SME) Programme	Energy	Currently, there is no difference in what is assumed under the WEM and WAM scenarios.	Currently, there is no difference in what is assumed under the WEM and WAM scenarios and so there are no additional emission reductions reported under WAM for this PaM.
Warmer Homes Scheme	Energy	Savings are based on expected National Development Plan funding until 2030 and no funding is assumed thereafter.	Savings are based on expected National Development Plan funding until 2030 and funding at a 2018 level is assumed thereafter.
Better Energy Homes	Energy	Funding continues at a 2024 level until 2030 and no funding is assumed thereafter.	Savings are based on expected National Development Plan funding until 2030. It is assumed that funding continues at a 2030 level in 2031 and no funding is assumed thereafter.
Better Energy Communities	Energy	Funding continues at a 2024 level until 2030 and no funding is assumed thereafter.	Savings are based on expected National Development Plan funding until 2030. It is assumed that funding continues at a 2030 level in 2031 for Residential measures and no funding is assumed thereafter. It is also assumed that funding continues at a 2030 level in 2031-2033 for Services measures and no funding is assumed thereafter.

Supplier Obligation Scheme_cross-sectoral	Energy	It is assumed that savings continue at a 2023 level until 2030.	It is assumed that a new annual savings target of 700 GWh will be met each year from 2024 to 2030.
EXEED Certified Grant (EXEED Grant Scheme)	Energy	Funding is provided for one additional year.	It is assumed that funding will continue to be provided at the current level until 2023 for the Services sector and until 2034 for the Industry sector.
Public Sector Capital Exemplars	Energy	Funding is provided for one additional year.	It is assumed that funding will continue to be provided at the current level until the end of the projection period.
Warmth and Wellbeing Pilot	Energy	Currently, there is no difference in what is assumed under the WEM and WAM scenarios.	Currently, there is no difference in what is assumed under the WEM and WAM scenarios and so there are no additional emission reductions reported under WAM for this PaM.
2019 Building Regulations - Dwellings	Energy	Currently, there is no difference in what is assumed under the WEM and WAM scenarios.	Currently, there is no difference in what is assumed under the WEM and WAM scenarios and so there are no additional emission reductions reported under WAM for this PaM.
Better Energy Finance	Energy	Currently, there is no difference in what is assumed under the WEM and WAM scenarios.	Currently, there is no difference in what is assumed under the WEM and WAM scenarios and so there are no additional emission reductions reported under WAM for this PaM.

National Home Retrofit Scheme OSS	Energy	It is assumed funding continues at a 2024 level until 2030 with no funding thereafter. It is also assumed that only 56% of the budget will be spent.	Savings are based on expected National Development Plan funding until 2030. It is assumed that funding continues at a 2030 level in 2031 with no funding thereafter.
Smart Meter Roll-Out - Household	Energy	Currently, no emission reductions are projected for this PaM under the WEM scenario.	It is assumed that in-home displays will be rolled out from 2024 to 2027.
Carbon Tax	Energy; Transport	While there is no difference in the rate of carbon tax assumed under the WEM and WAM scenarios, savings for this PaM are dependent on underlying fuel projections which are impacted by other policies under WEM.	While there is no difference in the rate of carbon tax assumed under the WEM and WAM scenarios, savings for this PaM are dependent on underlying fuel projections which are impacted by other policies under WAM.
Electric vehicle deployment	Transport	693,000 electric cars (430,000 BEV and 263,000 PHEV), 47,500 electric Large Goods Vehicles (equal split of BEV and PHEV) and 1,750 Heavy Goods Vehicle BEVs in 2030 are assumed. It is also assumed that there are no new Internal Combustion Engine (ICE) or Large Goods Vehicles sales post 2035 and no demand reduction measures.	845,000 electric cars (574,000 BEV and 271,000 PHEV), 95,000 electric Large Goods Vehicles (71,250 BEV and 23,750 PHEV) and 3,500 Heavy Goods Vehicle BEVs in 2030 are assumed. It is also assumed that 100% of new car sales are EV by 2030 and some demand reduction measures are also assumed.
Renewables - Transport	Transport	It is assumed there is an increase to E10 and B12 by 2025. It is also assumed these levels remain to 2030 and flat thereafter.	It is assumed there is an increase to E10 and B12 by 2025. It is also assumed there is a further increase to E10 and B20 by 2030 and flat thereafter.

Low emission slurry spreading	Agriculture	For bovines, a target of 60% of all slurry spread by low emissions slurry spreading by 2022, 80% by 2025 and 90% by 2027. For pigs, 100% use of low emission slurry spreading after 31/12/2022 as per Nitrates Action Plan.	As per the WEM scenario.

Annex 7: Information on financial support provided under Article 9 of the Paris Agreement in year 2021

TABLE III.
2
Information on financial support provided under Article 9 of the Paris Agreement in year 2021

Exchange rate used: 1.182592242

Institution[c]			*Recipient*[c, e, g]	*Title of the project, programme, activity or other*[c, e, g, h]	*Funding source*[c]	*Financial instrument*[c, i]	*Type of support*[c]	*Sector*[c, g]	*Additional information*[l]
	Climate-specific[e]								
	Face value								
	Domestic currency	*USD*							
Least Developed Countries Fund	€2,000,000.00	$ 2,365,184.48	Developing countries, unspecified	Support for Least Developed Country (LDCs) to build resilience to climate change	ODA	Grant	adaptation	Cross-cutting	
Least Developed Countries Fund	€500,000.00	$ 591,296.12	Developing countries, unspecified	GLOBAL ENVIRONMENT FACILITY - LEAST DEVELOPED COUNTRIES FUND GEF-LDCF	ODA	Grant	adaptation	Cross-cutting	
UNDP	€788,610.00	$ 932,604.07	South Sudan	UNDP SOUTH SUDAN CLIMATE	ODA	Grant	adaptation	Other - Climate and Security	

				SECURITY MECHANISM					
UNDESA	€50,000.00	$ 59,129.61	Developing countries, unspecified	UNDESA-SPECIAL ENVOY ON OCEANS	ODA	Grant	adaptation	Other - Oceans	
International Fund for Agriculture Development	€2,000,000.00	$ 2,365,184.48	Global	Adaptation for Smallholder Agriculture Programme	ODA	Grant	adaptation	Agriculture	
Caribbean Catastrophe Risk Insurance Facility	€1,000,000.00	$ 1,182,592.24	Caribbean & Central America, regional	CCRIF SPC-COAST	ODA	Grant	adaptation	Other - Capacity Building	
World Bank	€280,000.00	$ 331,125.83	Regional: Least Developed Ccountries & Small Island Developing States	PRO Blue programme that supports the development of integrated, sustainable and healthy marine and coastal resources	ODA	Grant	cross-cutting	Other: Marine	
UNFCCC - Gender Team	€200,000.00	$ 236,518.45	Global	Strengthening Gender Mainstreaming in Climate Change Action	ODA	Grant	cross-cutting	Other - Governance and policy	
United Nations Office of Co-ordination of Humanitarian Affairs	€200,000.00	$ 236,518.45	Niger	Support for the UN Regional Humanitarian Fund for West	ODA	Grant	adaptation	Other - livelihoods	

				and Central Africa (RHFWCA)					
UN-Multi Partner Trust Fund Office	€1,200,000.00	$ 1,419,110.69	Sudan	Funding to support the Sudan Humanitarian Fund	ODA	Grant	cross-cutting	Other - livelihoods	
United Nations Office of Co-ordination of Humanitarian Affairs	€400,000.00	$ 473,036.90	Yemen	Support to Un OCHA for the Yemen Humanitarian Fund	ODA	Grant	cross-cutting	Other - livelihoods	
World Food Programme	€200,000.00	$ 236,518.45	Developing countries, unspecified	Core Funding to support the operational costs and maintainence of UNHRD	ODA	Grant	cross-cutting	Other - livelihoods	
UN-Multi Partner Trust Fund Office	€200,000.00	$ 236,518.45	Somalia	Support to UN OCHA for the Somalia Humanitarian Fund (SHF)	ODA	Grant	mitigation	Other - livelihoods	
United Nations Office of Co-ordination of Humanitarian Affairs	€200,000.00	$ 236,518.45	Myanmar	Support to Un OCHA for the Myanmar Country Based Pool Fund	ODA	Grant	mitigation	Other - livelihoods	
ASIAN DEVELOPMENT BANK	€2,100,000.00	$ 2,483,443.71	Oceania, regional/multi-country	The Ireland Trust Fund for Building Climate Change and Disaster	ODA	Grant	adaptation	Cross-cutting	

				Resilience in Small Island Developing States, managed by the Asian Development Bank, aims to support SIDS member states of the Bank to build resilience to climate change and reduce disaster risk. The grant supports grants and technical assistance related to local government climate and disaster resilience, strengthening policies, enhancing community resilience, and increasing disaster preparedness,					

				and climate adaptation.					
ASIAN DEVELOPMENT BANK	€2,100,000.00	$ 2,483,443.71	Oceania, regional/multi-country	The Ireland Trust Fund for Building Climate Change and Disaster Resilience in Small Island Developing States, managed by the Asian Development Bank, aims to support SIDS member states of the Bank to build resilience to climate change and reduce disaster risk. The grant supports grants and technical assistance related to local government climate and disaster resilience, strengthening policies, enhancing	ODA	Grant	adaptation	Cross-cutting	

				community resilience, and increasing disaster preparedness, and climate adaptation.					
United Nations General Trust Fund	€100,976.40	$ 119,413.91	Global	Voluntary contribution to the Sustainable Development Unit in the Executive Office of the UN Secretary-General. The purpose of the grant is to support The Secretary-General's core sustainable development priorities which include repositioning of the UN Development System, mobilizing more urgent and ambitious	ODA	Grant	cross - cutting	Cross-cutting	

				climate action, building the financing of the 2030 Agenda and strengthening partnerships.					
Unccd Un Convention To Combat Desertification	€10,970.40	$ 12,973.51	Global	Assessed core contribution to the UN Convention to Combat Desertification to support strategic objectives as follows: to improve the condition of affected ecosystems; improving the living conditions of affected populations; to improve the condition of affected ecosystems; to mitigate, adapt to, and manage the effects of	ODA	Grant	cross - cutting	Cross-cutting	

				drought; to generate global environmental benefits; and to mobilize financial and non-financial resources to support the implementation of the Convention.					
UNDP- United Nations Peacebuilding Fund	€800,000.00	$ 946,073.79	Global	Voluntary core contribution to the UN Peacebuilding Fund to support implementation of the Fund's strategy aimed at conflict prevention and sustaining peace, including implementation of peace agreements; supporting dialogue and peaceful coexistence; peace dividends;	ODA	Grant	adaptation	Cross-cutting	

				and re-establishment of basic services.					
Unicef	€400,000.00	$ 473,036.90	Global	The Generation Unlimited partnership initiated UNICEF aims to meet the need for expanded education, training and employment opportunities for young people. The objective of the grant is to support the partnership's four strategic priorities: connect every school and learner to the internet; scale up online/remote learning, skilling, and livelihood platforms; boost entrepreneurial skills and	ODA	Grant	adaptation	Other - Education	

				opportunities; and engage youth as change makers.					
United Nations Development Programme	€3,100,000.00	$ 3,666,035.95	Global	Voluntary core contribution to UNDP to support their strategic objectives which cover: poverty reduction, governance; crisis prevention and increased resilience; environment; clean, affordable energy; and gender equality.	ODA	Grant	adaptation	Cross-cutting	
UN-Multi Partner Trust Fund Office	€200,000.00	$ 236,518.45	Global	Voluntary core contribution to support the Joint SDG Fund's strategic objectives which include integrated multi-sectoral policies to accelerate SDG achievement; greater scope	ODA	Grant	cross - cutting	Cross-cutting	

				and scale of activities to achieve the SDGs; and leveraging additional financing to accelerate SDG achievement.					
UNV- United Nations Volunteers	€440,000.00	$ 520,340.59	Global	Voluntary core contribution comprising funding of the UN Volunteers Programme's Special Voluntary Fund and funding for the placement of Youth Volunteers and Specialist Volunteers in UN agencies in Irish Aid's Key Partner Countries.	ODA	Grant	cross - cutting	Cross-cutting	
United Nations Dept of Economic & Social Affairs	€49,586.78	$ 58,640.94	Developing countries, unspecified	SUPPORT UNDESA SIDS	ODA	Grant	cross-cutting	Other - environment	
World Bank	€1,200,000.00	$ 1,419,110.69	Global	Consultative Group on	ODA	Grant	cross-cutting	Agriculture	

				International Agricultural Research (CGIAR)					
World Food Programme	€5,000,000.00	$ 5,912,961.21	Global	core contribution	ODA	Grant	Cross-cutting	Agriculture	
Food and Agriculture Organisation	€622,938.80	$ 736,682.59	Global	assessed contribution	ODA	Grant	Cross-cutting	Agriculture	
FAO	€176,800.00	$ 209,082.31	Global	- Emergency assistance to safeguard livelihoods of drought-affected pastoralist households in two counties, Kenya	ODA	Grant	Cross-cutting	Agriculture	
Adaptation Fund	€5,000,000.00	$ 5,912,961.21	Global	Adaptation Fund Trust Fund	ODA	Grant	Adaptation	Cross-cutting	The Adaptation Fund finances projects and programmes that help vulnerable communities in developing countries adapt to climate change. Initiatives are based on country needs, views and priorities.
International Fund for Agricultural Development	€2,000,000.00	$ 2,365,184.48	Global	ASAP+ Programme for small-holder climate adaptation	ODA	Grant	Cross-cutting	Agriculture	The Enhanced Adaptation for Smallholder Agriculture Programme (ASAP+) is a 100 per cent climate financing mechanism and is envisioned to be the largest fund dedicated to channeling climate finance to small-scale producers.It

									aims to increase the resilience of small-scale producers to the uncertainty caused by climate change on food security and reducing small-scale agricultural production's greenhouse gas emissions.
Asian Development Bank	€3,000,000.00	$ 3,547,776.73	SIDS	The Ireland Trust Fund for Building Climate Change and Disaster Resilience in Small Island Developing States	ODA	Grant	Cross-cutting	Cross-cutting	The Ireland Trust Fund for Building Climate Change and Disaster Resilience in Small Island Developing States (BCCDR), is a single-partner trust fund that aims to help increase the resilience of small island developing states (SIDS) to disasters caused by natural hazards, and to the impacts of climate change. This fund also aims to help increase investments in climate change mitigation and adaptation among the SIDS.
United Nations Environment Programme	€262,162.14	$ 310,030.91	Global	Climate and Clean Air Coalition (CCAC) Trust Fund	ODA	Grant	Mitigation	Cross-cutting	The objective of this programme is to reduce short-lived climate pollutant (SLCP) emission which can play an instrumental role in curbing climate change while also realizing co-benefits for air quality, health and agricultural productivity. Short-lived climate pollutantsare dangerous air pollutants that are many times more powerful than carbon dioxide and play an outsized role in habitat destruction, biodiversity loss and climate change. SLCPs now can avoid

									up to 0.6°C of global warming by 2050. The important near-term climate benefits that SLCP mitigation delivers will benefit the poor and most vulnerable who often live on the frontlines of climate change.
Green Climate Fund	€4,000,000.00	$ 4,730,368.97	Global	GCF Trust Fund	ODA	Grant	Cross-cutting	Cross-cutting	The GCF is the world's largest climate fund, mandated to support developing countries raise and realize their Nationally Determined Contributions (NDC) ambitions towards low-emissions, climate-resilient pathways.
IPCC	€200,000.00	$ 236,518.45	Global	IPCC Trust Fund	ODA	Grant	Cross-cutting	Cross-cutting	The IPCC is the international body for assessing the science related to climate change. It was set up to provide policymakers with regular assessment of the scientific basis of climate change, its impacts and future risks and options for adaptation and mitigation.
Nationally Determined Contributions (NDC) Partnership	€500,000.00	$ 591,296.12	Global	NDC Partnership Fund	ODA	Grant	Cross-cutting	Cross-cutting	The NDC Partnership operates through the UNFCCC to assist countries access cutting-edge technical and financial knowledge resources to accelerate climate action.
UNFCCC	€98,835.00	$ 116,881.50	Global	Core Budget	ODA	Grant	Cross-cutting	Cross-cutting	The UNFCCC is the United Nations entity tasked with supporting the global response to the threat of climate change. It comprises of three

									agreements - the Unitend Nations Framework Convention on Climate Change, the 2015 Paris Agreement and the 1997 Kyoto Protocol.
Global Environment Facility	€1,201,200.00	$ 1,420,529.80	Global	General Trust Fund	ODA	Grant	Cross-cutting	Cross-cutting	The GEF is the largest multilateral trust fund focused on enabling developing countries to invest in nature and supports the implementation of major international environmental conventions including on biodiversity, climate change, chemicals, and desertification
United Nations Environment Programme	€410,245.60	$ 485,153.26	Global	Core Budget	ODA	Grant	Cross-cutting	Cross-cutting	UNEP is the global authority that sets the environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and serves as an authoritative advocate for the global environment. UNEP works on delivering transformational change for people and nature by drilling down on the root causes of the three planetary crises of climate change, nature and biodiversity loss, and pollution and waste.
United Nations Environment Programme	€3,023.00	$ 3,574.98	Global	FUND 1030 IRE for Vienna CPOL	ODA	Grant	Cross-cutting	Cross-cutting	Vienna Convention Trust Fund for Research and Systematic Observations, to strengthen atmospheric research and monitoring activities in order to address the

									many uncertainties that exist regarding the expected ozone recovery process and interaction between ozone and climate changes. The fund supports national and international research and monitoring activities in developing countries and countries with economies in transition.
United Nations Environment Programme	€11,476.00	$ 13,571.43	Global	Trust FUND 1040 IRE for Montreal Protocol	ODA	Grant	Mitigation	Cross-cutting	The Trust Fund for the Protocol receives contributions earmarked for the participation of LDCs or developing countires in its official meetings
United Nations Environment Programme	€782,325.00	$ 925,171.48	Global	FUND 3030 IRE for the Multilateral Fund (also Montreal)	0DA	Grant	Mitigation	Cross-cutting	The Multilateral Fund for the Implementation of the Montreal Protocol provides funds to help developing countries comply with their obligations under the Protocol to phase out the use of ozone-depleting substances (ODS) at an agreed schedule
International Renewable Energy Agency	€47,905.60	$ 56,652.79	Global	Core Funding	ODA	Grant	Mitigation	Energy	IRENA is an intergovernmental organisation that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international cooperation, a centre of excellence, and a repository of policy, technology, resource and financial knowledge on renewable energy. IRENA promotes the widespread

									adoption and sustainable use of all forms of renewable energy, in puruist of sustinable development, energy access, energy security and low-carbon economic growth and prosperity. IRENA intends to leverage its existing work on renewable energy potential and socio-economic benefits, as well as its robust data portfolio to develop a comprehensive framework for NDC analysis and implementation support noting that renewable Energy, coupled with energy efficiency gains, can provide 90% of the CO2 emissions reductions needed to limit climate change and temperature increase to 1.5°C by 2050.
International Development Association	€7,891,200.00	$ 9,332,071.90	Global	Core contribution	ODA	Grant	cross-cutting		
International Bank for Reconstruction and Development	€1,308,713.00	$ 1,547,673.84	Global	Capital increase	ODA	Grant	cross-cutting		
International Finance Corporation	€1,088,739.00	$ 1,287,534.29	Global	Capital increase	ODA	Grant	cross-cutting		
Asian Development Fund	€517,140.00	$ 611,565.75	Global	Core contribution	ODA	Grant	cross-cutting		

Asian Infrastructure Investment Bank	€814,404.00	$ 963,107.85	Global	Capital subscription	ODA	Grant	cross-cutting		
African Development Bank	€3,905,876.00	$ 4,619,058.66	Global	Core contribution and capital subscription	ODA	Grant	cross-cutting		
African Development Fund	€2,844,779.00	$ 3,364,213.58	Global	Core contribution	ODA	Grant	cross-cutting		
Council of Europe Development Bank	€1,244.00	$ 1,471.14	Global	Core contribution	ODA	Grant	cross-cutting		

Annex 8: Information on financial support provided under Article 9 of the Paris Agreement in year 2022

Information on financial support provided under Article 9 of the Paris Agreement in year 2022

Exchange rate used: 1.051635293

Institution[c]	*Climate-specific*[e]				*Recipient*[c, e, g]	*Title of the project, programme, activity or other*[c, e, g, h]	*Funding source*[c]	*Financial instrument*[c, i]	*Type of support*[c]	*Sector*[c, g]	*Additional information*[l]
	Face value		*Grant equivalent*								
	Domestic currency	*USD*	*Domestic currency*	*USD*							

											The GEF's latest policy and programming strategy focuses on serving the three Rio Conventions, and Agenda 2030 where possible. The LDCF aims to achieve the over-arching aims of the GEF, with a renewed focus on implementation of the Paris Agreement adaptation objectives in-country. This includes the goal of 'enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change,
Global Environment Facility	€1,660,000.00	$ 1,745,714.59	€1,660,000.00	$ 1,745,714.59	Developing Countries	Least Developed Countries Fund	ODA	Grant	Adaptation	Cross-cutting	

											with a view to contributing to sustainable development'. DCAD engages with the LDCF through the UN Framework Convention on Climate Change (UNFCCC) which mandates the work of the LDCF, and the Least Developed Countries Expert Group (LEG) which supports LDCs in climate adaptation.

											The GEF's latest policy and programming strategy focuses on serving the three Rio Conventions, and Agenda 2030 where possible. The LDCF aims to achieve the over-arching aims of the GEF, with a renewed focus on implementation of the Paris Agreement adaptation objectives in-country. This includes the goal of 'enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change,
Global Environment Facility	€340,000.00	*$ 357,556.00*	€340,000.00	*$ 357,556.00*	Developing Countries	Least Developed Countries Fund	ODA	Grant	cross-cutting	Cross-cutting	

											with a view to contributing to sustainable development'. DCAD engages with the LDCF through the UN Framework Convention on Climate Change (UNFCCC) which mandates the work of the LDCF, and the Least Developed Countries Expert Group (LEG) which supports LDCs in climate adaptation.

Global Environment Facility	€1,000,000.00	*$ 1,051,635.29*	€1,000,000.00	*$ 1,051,635.29*	Developing Countries	Special Climate Change Fund	ODA	Grant	Adaptation	Cross-cutting	
UN International Fund for Agricultural Development	€1,416,780.00	$ 1,489,935.85	€1,416,780.00	$ 1,489,935.85	Developing Countries	Core contribution	ODA	Grant	Adaptation	Agriculture	
UN International Fund for Agricultural Development	€125,010.00	*$ 131,464.93*	€125,010.00	*$ 131,464.93*	Developing Countries	Core contribution	ODA	Grant	Mitigation	Agriculture	

Adaptation Fund	€5,500,000.00	$ 5,783,994.11	€5,500,000.00	$ 5,783,994.11	Global	Adaptation Fund Trust Fund	ODA	Grant	Adaptation	Cross-cutting	The Adaptation Fund finances projects and programmes that help vulnerable communities in developing countries adapt to climate change. Initiatives are based on country needs, views and priorities.

Global Environment Facility (GEF)	€575,000.00	$ 604,690.29	€575,000.00	$ 604,690.29	Global	GEF General Trust Fund	ODA	Grant	Mitigation	Cross-cutting	The GEF is the largest multilateral trust fund focused on enabling developing countries to invest in nature and supports the implementation of major international environmental conventions including on biodiversity, climat change, chemicals and desertification.
Global Environment Facility (GEF)	€500,000.00	$ 525,817.65	€500,000.00	$ 525,817.65	Global	GEF General Trust Fund	ODA	Grant	Adaptation	Cross-cutting	

Global Environment Facility (GEF)	€750,000.00	$ 788,726.47	€750,000.00	$ 788,726.47	Global	GEF General Trust Fund	ODA	Grant	Cross-cutting	Cross-cutting	
Green Climate Fund (GCF)	€1,960,000.00	$ 2,061,205.17	€1,960,000.00	$ 2,061,205.17	Global	GCF Trust Fund	ODA	Grant	Mitigation	Cross-cutting	The GCF is the world's largest climate fund, mandated to support developing countries raise and realise their Nationally Determined Contributions ambitions towards low-emissions, climate-resilient pathways.
Green Climate Fund (GCF)	€1,320,000.00	$ 1,388,158.59	€1,320,000.00	$ 1,388,158.59	Global	GCF Trust Fund	ODA	Grant	Adaptation	Cross-cutting	

Green Climate Fund (GCF)	€720,000.00	*$ 757,177.41*	€720,000.00	*$ 757,177.41*	Global	GCF Trust Fund	ODA	Grant	Cross-cutting	Cross-cutting	
Nationally Determined Contributions (NDC) Partnership	€100,000.00	$ 105,163.53	€100,000.00	$ 105,163.53	Global	NDC Partnership Action Fund	ODA	Grant	Cross-cutting	Cross-cutting	The NDC Partnership operates through the UNFCCC to assist countries accorss cutting-edge technical and financial knowledge resources to accelerate climate action.

United Nations Framework Convention on Climate Change (UNFCCC)	€155,015.00	$ 163,019.24	€155,015.00	$ 163,019.24	Global	Core Budget	ODA	Grant	Cross-cutting	Cross-cutting	The UNFCCC is the United Nations entity tasked with supporting the global response to the threat of climate change. It comprises of three agreements - the United Nations Framework Conventions on Climate Change, the 2015 Paris Agreement and the 1997 Kyoto Protocol.

United Nations Environment Programme (UNEP)	€446,677.60	$ 469,741.93	€446,677.60	$ 469,741.93	Global	Core Budget	ODA	Grant	Cross-cutting	Cross-cutting	UNEP is the global environmental authority promoting the coherent implementation of the environmental dimension of Sustainable Development within the United Nations system and serves as an authoritative advocate for the global environment.

United Nations Environment Programme	€782,325.00	$ 822,720.58	€782,325.00	$ 822,720.58	Global	FUND 3030 IRE for the Multilateral Fund for the Implementation of the Montreal Protocol	0DA	Grant	Mitigation	Cross-cutting	The Multilateral Fund for the Implementation of the Montreal Protocol provides funds to help developing countries comply with their obligations under the Protocol to phase out the use of ozone-depleting substances (ODS) at an agreed schedule

United Nations Environment Programme	€175,282.00	$ 184,332.74	€175,282.00	$ 184,332.74	Global	Underpayments FUND 3030 IRE for the Multilateral Fund (also Montreal)	0DA	Grant	Mitigation	Cross-cutting	As above. Underpayments arose due to replenishment of the Multilateral fund for the 2021-2023 triennium only being agreed in July 2022 due to Covid.

											Vienna Convention Trust Fund for Research and Systematic Observations, to strengthen atmospheric research and monitoring activities in order to address the many uncertainties that exist regarding the expected ozone recovery process and interaction between ozone and climate changes. The fund supports national and international research and monitoring activities in developing countries and
United Nations Environment Programme	€2,606.00	$ 2,740.56	€2,606.00	$ 2,740.56	Global	FUND 1030 IRE for Vienna CPOL	ODA	Grant	Cross-cutting	Cross-cutting	

											countries with economies in transition.

United Nations Environment Programme	€8,664.00	$ 9,111.37	€8,664.00	$ 9,111.37	Global	Trust FUND 1040 IRE for Montreal Protocol	ODA	Grant	Mitigation	Cross-cutting	The Trust Fund for the Protocol receives contributions earmarked for the participation of LDCs or developing countires in its official meetings

											The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal aims to protect human health and the environment against the adverse effects resulting from the generation, transboundary movements and management of hazardous wastes and other wastes. The Basel Convention regulates the transboundary movements of hazardous wastes and other wastes and obliges its Parties to
United Nations Environment Programme (UNEP)	€23,894.12	$ 25,127.90	€23,894.12	$ 25,127.90	Global	Basel Convention	ODA	Grant	Cross-cutting	Other - waste	

											ensure that such wastes are managed and disposed of in an environmentally sound manner.

United Nations Environment Programme	€25,109.00	$ 26,405.51	€25,109.00	$ 26,405.51	Global	Stockholm Convention	ODA	Grant	Mitigation	Cross-cutting	The Stockholm Convention is a global treaty to protect human health and the environment from persistent organic pollutants (POPs). The Stockholm Convention focuses on eliminating or reducing releases of POPs. It sets up a system for tackling additional chemicals identified as unacceptably hazardous.

United Nations Environment Programme	€10,710.00	$ 11,263.01	€10,710.00	$ 11,263.01	Global	Minamata Convention	ODA	Grant	Mitigation	Cross-cutting	The Minamata Convention on Mercury is a global agreement on environment and health. Parties work together to control the mercury supply and trade, reduce the use, emission and release of mercury, raise public awareness, and build the necessary institutional capacity to achieve these aims.

UNECE	€75,000.00	$ 78,872.65	€75,000.00	$ 78,872.65	Global	UNECE Aarhus Convention Rapid Response Mechanism	ODA	Grant	Cross-cutting	Cross-cutting	Ireland is joint lead country, together with Austria, for the Aarhus Convention Rapid Response Mechanism (RRM). It is led by Special Rapporteur on Environmental Defenders, Mr Michel Forst. The RRM is concerned with protecting the rights of environmental defenders in Parties to the Aarhus Convention.

UNECE	€12,000.00	$ 12,619.62	€12,000.00	$ 12,619.62	Global	UNECE Aarhus Convention and PRTR Protocol	ODA	Grant	Cross-cutting	Cross-cutting	Ireland makes an annual voluntary contribution to the UNECE for the work programme of the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) and the Pollutant Release and Transfer Registers (PRTR) Protocol. The work of the Aarhus Convention is linked to the UNFCCC ACE efforts.

		$ -		$ -							
International Development Association	€3,660,800.00	$ 3,849,826.48	€3,660,800.00	$ 3,849,826.48	Global	Core contribution	ODA	Grant	mitigation	Cross-cutting	
International Development Association	€5,068,800.00	$ 5,330,528.97	€5,068,800.00	$ 5,330,528.97	Global	Core contribution	ODA	Grant	adaptation	Cross-cutting	
International Bank for Reconstruction and Development	€905,622.00	$ 952,384.06	€905,622.00	$ 952,384.06	Global	Capital increase	ODA	Grant	mitigation	Cross-cutting	
International Bank for Reconstruction and Development	€654,060.00	$ 687,832.58	€654,060.00	$ 687,832.58	Global	Capital increase	ODA	Grant	adaptation	Cross-cutting	

International Finance Corporation	€1,213,912.00	$ 1,276,592.70	€1,213,912.00	$ 1,276,592.70	Global	Capital increase	ODA	Grant	mitigation	Cross-cutting	
International Finance Corporation	€40,644.00	$ 42,742.66	€40,644.00	$ 42,742.66	Global	Capital increase	ODA	Grant	adaptation	Cross-cutting	
Asian Development Fund	€219,912.00	$ 231,267.22	€219,912.00	$ 231,267.22	Global	Core contribution	ODA	Grant	mitigation	Cross-cutting	
Asian Development Fund	€94,248.00	$ 99,114.52	€94,248.00	$ 99,114.52	Regional	Core contribution	ODA	Grant	adaptation	Cross-cutting	
African Development Bank	€2,363,758.00	$ 2,485,811.34	€2,363,758.00	$ 2,485,811.34	Regional	Capital subscription	ODA	Grant	mitigation	Cross-cutting	
African Development Bank	€2,138,638.00	$ 2,249,067.20	€2,138,638.00	$ 2,249,067.20	Regional	Capital subscription	ODA	Grant	adaptation	Cross-cutting	
African Development Fund	€975,353.00	$ 1,025,715.64	€975,353.00	$ 1,025,715.64	Regional	Core contribution	ODA	Grant	mitigation	Cross-cutting	

African Development Fund	€1,788,147.00	$ 1,880,478.49	€1,788,147.00	$ 1,880,478.49	Regional	Core contribution	ODA	Grant	adaptation	Cross-cutting	
Council of Europe Development Bank	€852.00	$ 895.99	€852.00	$ 895.99	Global	Core contribution	ODA	Grant	mitigation	Cross-cutting	
Council of Europe Development Bank	€505.00	$ 531.08	€505.00	$ 531.08	Global	Core contribution	ODA	Grant	cross-cutting	Cross-cutting	
Food and Agriculture Organisation	€112,637.49	$ 118,453.56	€112,637.49	$ 118,453.56	Global	Assessed contribution	ODA	Grant	Cross-cutting	Agriculture	