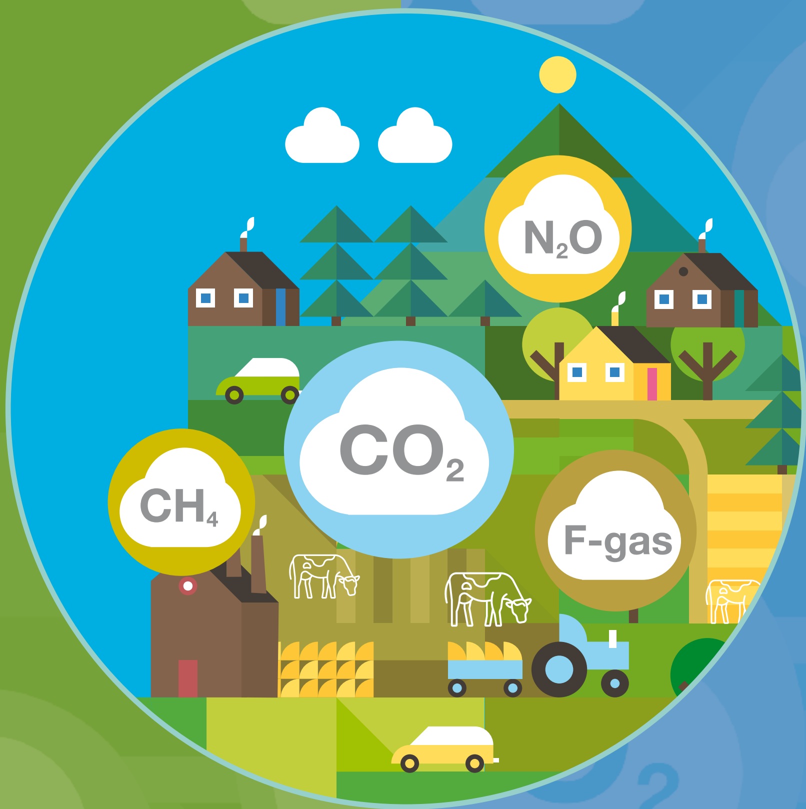
epa
Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

Ireland's Provisional Greenhouse Gas Emissions

1990-2025

July 2026



Environmental Protection Agency

The EPA is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. We are committed to protecting people and the environment from the harmful effects of radiation and pollution.

The work of the EPA can be divided into three main areas:

- **Regulation:** Implementing regulation and environmental compliance systems to deliver good environmental outcomes and target those who don't comply.
- **Knowledge:** Providing high-quality, targeted and timely environmental data, information and assessment to inform decision making.
- **Advocacy:** Working with others to advocate for a clean, productive and well-protected environment and for sustainable environmental practices.

Our responsibilities include:

LICENSING

- Large-scale industrial waste and petrol storage activities;
- Urban wastewater discharges;
- The contained use and controlled release of genetically modified organisms;
- Sources of ionising radiation;
- Greenhouse gas emissions from industry and aviation through the EU Emissions Trading Scheme.

NATIONAL ENVIRONMENTAL ENFORCEMENT

- Audit and inspection of EPA-licensed facilities;
- Drive the implementation of best practice in regulated activities and facilities;
- Oversee local authority responsibilities for environmental protection;
- Regulate the quality of public drinking water and enforce urban wastewater discharge authorisations;
- Assess and report on public and private drinking water quality;
- Coordinate a network of public service organisations to support action against environmental crime;
- Prosecute those who flout environmental law and damage the environment.

WASTE MANAGEMENT AND CHEMICALS IN THE ENVIRONMENT

- Implement and enforce waste regulations including national enforcement issues;
- Prepare and publish national waste statistics and the National Hazardous Waste Management Plan;
- Develop and implement the National Waste Prevention Programme;
- Implement and report on legislation on the control of chemicals in the environment.

WATER MANAGEMENT

- Engage with national and regional governance and operational structures to implement the Water Framework Directive;
- Monitor, assess and report on the quality of rivers, lakes, transitional and coastal waters, bathing waters and groundwaters, and measurement of water levels and river flows.

CLIMATE SCIENCE AND CLIMATE CHANGE

- Publish Ireland's greenhouse gas emission inventories and projections;
- Provide the Secretariat to the Climate Change Advisory Council and support to the National Dialogue on Climate Action;
- Support National, EU and UN climate science and policy development activities.

ENVIRONMENTAL MONITORING & ASSESSMENT

- Design and implement national environmental monitoring systems: technology, data management, analysis and forecasting;
- Produce the State of Ireland's Environment and Indicator Reports;
- Monitor air quality and implement the EU Clean Air for Europe Directive, the Convention on Long Range Transboundary Air Pollution and the National Emissions Ceiling Directive;
- Oversee the implementation of the Environmental Noise Directive;
- Assess the impact of proposed plans and programmes on the Irish environment.

ENVIRONMENTAL RESEARCH AND DEVELOPMENT

- Coordinate and fund national environmental research activity to identify pressures, inform policy and provide solutions;
- Collaborate with national and EU environmental research activity.

RADIOLOGICAL PROTECTION

- Monitoring radiation levels and assess public exposure to ionising radiation and electromagnetic fields;
- Assist in developing national plans for emergencies arising from nuclear accidents;
- Monitor developments abroad relating to nuclear installations and radiological safety;
- Provide, or oversee the provision of, specialist radiation protection services.

GUIDANCE, AWARENESS RAISING, AND ACCESSIBLE INFORMATION

- Provide independent evidence-based reporting, advice and guidance to government, industry and the public on environmental and radiological protection topics;
- Promote the link between health and wellbeing, the economy and a clean environment;
- Promote environmental awareness including supporting behaviours for resource efficiency and climate transition;
- Promote radon testing in homes and workplaces and encourage remediation where necessary.

PARTNERSHIP AND NETWORKING

- Work with international and national agencies, regional and local authorities, non-governmental organisations, representative bodies and government departments to deliver environmental and radiological protection, research coordination and science-based decision making.

MANAGEMENT AND STRUCTURE OF THE EPA

The EPA is managed by a full-time Board, consisting of a Director General and five Directors. The work is carried out across five Offices:

- Office of Environmental Sustainability
- Office of Environmental Enforcement
- Office of Evidence and Assessment
- Office of Radiation Protection and Environmental Monitoring
- Office of Communications and Corporate Services

The EPA is assisted by advisory committees who meet regularly to discuss issues of concern and provide advice to the Board.

Ireland's Provisional Greenhouse Gas Emissions 1990-2025

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Disclaimer

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Key Findings

Reduction in overall GHG emissions driven by decreases in all key sectors	For the third year in succession, Ireland's emissions are below the 1990 baseline. 2025 total national greenhouse gas emissions (excluding LULUCF) are estimated to have decreased by 2.3% on 2024 levels to 52.65 million tonnes carbon dioxide equivalent (Mt CO_2eq). Emissions per capita decreased from 10.0 t CO_2eq to 9.6 t CO_2eq in 2025.
Emissions from electricity generation hit a 36-year low, marking four consecutive years of reductions in emissions	Emissions from the Energy Industries sector decreased for the fourth consecutive year by 7.1% in 2025 to an all-time low of 6.59 Mt CO_2eq. Electricity supply from renewables grew by 5.6% in 2025 and the share in renewable energy generation increased slightly from 39.8% in 2024 to 40.6% in 2025. Imported electricity was 16.4% of electricity supply in 2025 compared to 14.1% in 2024. The emissions intensity of power generation decreased from 224 g CO_2/kWh in 2024 to a historic low of 197 g CO_2/kWh in 2025.
Declines in cattle numbers reduce Agriculture emissions	Agriculture emissions decreased by 0.2% or 0.04 Mt CO_2eq in 2025. This was primarily due to a 3.3% reduction in the cattle herd. A 12.7% increase in fertiliser nitrogen use diminished the impact of reduced cattle numbers on emissions.
Decrease in Transport emissions	Greenhouse gas emissions from the Transport sector decreased by 1.5% or 0.17 Mt CO_2eq in 2025, following a decrease of 1.2% in 2024. In 2025, the 14.9% increase in use of biofuels contributed to the majority of this emission reduction. In addition, the increasing number of electric vehicles on Irish roads curtailed emissions growth that might otherwise have resulted from a growing workforce and 3.4% increase in the national vehicle fleet.
Residential emissions increase after two consecutive years of all-time lows	Greenhouse gas emissions from the Residential sector decreased by 5.0% or 0.27 Mt CO_2eq in 2025 after an increase of 4.9% in 2024, with 2025 being the lowest point in emissions since 1990. Residential usage of coal, oil and gas declined by 13.5%, 4.8% and 5.2% on 2024 respectively, whilst energy used by heat pumps increased by 21.9%. This can be attributed to 2025 having 4.1% less heating degree days than 2024.
Decrease in emissions from cement sector	Manufacturing Combustion and Industrial Processes emissions decreased by 3.3% to 6.0 Mt CO_2eq in 2025 due to declines in coal oil and gas usage. Total emissions (combustion and process) from the cement sector decreased by 3.6% or 0.08 Mt CO_2eq in line with a reduction in clinker production.
EU Effort Sharing limits exceeded	Ireland is not in compliance with the EU's Effort Sharing Regulation (ESR) in 2025 or cumulatively from 2021-2025. Since 2005, ESR emissions have decreased by 11.8% or 5.59 Mt CO_2eq, considerably short of Ireland's 42% reduction commitment by 2030.
National Compliance and First Carbon Budget 2021-2025	Provisional estimates of national greenhouse gas emissions (including LULUCF) in 2025 are 14.5% below 2018, well off the National Climate objective of a 51% reduction by 2030. The data indicate that from 2021-2025, Ireland has used 99.6% (293.9 Mt CO_2eq) of the 295 Mt CO_2eq Carbon Budget for the 5-year period 2021-2025.

Sectoral Emissions Ceilings 2021-2025	Provisionally, 4 sectors have stayed within their SEC; *Buildings (Residential)*, *Buildings (Commercial and Public)*, *Agriculture* and *Other*. The other 3 sectors have exceeded their SEC; *Electricity*, *Transport* and *Industry*. For *Agriculture* this was largely driven by refinements to the agricultural inventory. The National Climate objective of a 51% reduction by 2030 will be unattainable unless every sector meets its indicative percentage reduction target. Consequently, sectoral ceilings must be revised to account for updated science in emissions inventory data.

1. Introduction

The EPA is responsible for compiling the inventories of greenhouse gas emissions for Ireland and for reporting the data to the relevant European and international institutions. As such, Ireland's legal reporting obligations require that we submit preliminary and final data for the period 1990-2025 in January 2027, March 2027 to the European Commission and by April 2027 to the United Nations Framework Convention on Climate Change (UNFCCC).

The EPA publish the provisional inventory data in July 2026 to facilitate the early monitoring and reporting processes associated with the National Climate Objective and associated carbon budgets, annual review of the Climate Action Plan and greater level of sectoral reporting and more in-depth assessment and reporting of Policies and Measures.

The provisional estimates of Ireland's greenhouse gas figures for the years 1990-2025 are based on interim energy balances provided by the Sustainable Energy Authority of Ireland (SEAI) in May 2026 and the latest available data from other data providers such as the Central Statistics Office and the Department of Agriculture, Food and the Marine (DAFM). These are compiled using methodologies in accordance with UNFCCC reporting guidelines. Verified emissions data from installations within the EU's Emissions Trading System (ETS) are included.

Ireland's Emissions Targets

Ireland's EU and National legislative commitments have different emissions reduction requirements and timeframes for achievement. Ireland's revised 2030 target under the EU's Effort Sharing Regulation[1] (ESR) is to deliver a 42% reduction of emissions compared to 2005 levels by 2030. There are also annual binding emission allocations over the 2021-2030 period to meet that target. Ireland's compliance status in 2030 can only be determined when the 2030 inventory is compiled. Under the ESR, two flexibilities may be utilised (use of EU ETS allowances and credit from action undertaken in the Land Use, Land Use Change and Forestry (LULUCF) sector) to allow for a fair and cost-efficient achievement of the targets.

The revised Annex III of the LULUCF Regulation (2023)[2] sets out Member State LULUCF targets for 2030. Ireland's target is an emission reduction of 626 kt of CO_2eq by 2030 on an average baseline of 2016 to 2018. There is a high degree of uncertainty relating to the estimation of emission/removals from the LULUCF sector; however, significant research is currently underway to address this uncertainty.

Ireland's national emission reduction objectives as set out in the Climate Acts[3], are to achieve a 51% emissions reduction (including LULUCF) by 2030 compared to 2018 and achieve a climate neutral economy by no later than the end of 2050. The Act provides for the establishment of carbon budgets to support achievement of Ireland's climate ambition. The 51% target, relative to 2018, is the primary constraint on carbon budgets over the course of the first two budget periods ending on 31 December 2030; see Table 1. The Climate Action Plan 2025 (CAP 25), and previous CAPs, sets out a major programme of policies and measures that aim to achieve significant progress towards those objectives.

1 Regulation (EU) 2018/842 Annex I: http://data.europa.eu/eli/reg/2018/842/2023-05-16

2 Regulation (EU) 2023/839 Annex III: https://data.europa.eu/eli/reg/2023/839/oj

3 The Climate Acts: https://revisedacts.lawreform.ie/eli/2015/act/46/revised/en/html

Ireland's emissions inventory has been compiled using Global Warming Potentials (GWPs) as specified in the 5th IPCC assessment report (AR5)[4]. Ireland's national emissions reduction objective, carbon budgets and European target under the ESR are estimated on an AR5 basis.

Table 1: European Union and National GHG Targets comparison

	Base Year	Reduction required by 2030	Scope	Other key points to note
European Union Target: Effort Sharing Regulation	2005	42% The 42% reduction defines the trajectory, but it is the annual limits that are binding	Sectors covered by the Effort Sharing Regulation (excludes ETS)	Annual binding emission limits (AEAs) define the permitted budget and some flexibilities are available.
European Union Target: LULUCF Regulation	Average 2016-2018	-626 kt CO_2 eq	LULUCF sector	Annex III Regulation (EU) 2023/839
National Targets	2018	51%	Economy-wide target (includes ETS)	Unlike the EU target, the national target includes LULUCF. Binding carbon budgets set the required reduction trajectory.

This report provides a summary of the 2025 provisional emission estimates accompanied by an assessment of annual changes relative to the 2024 emissions. The recent and long-term trends in greenhouse gas emissions across key sectors, and their significance in relation to Ireland's targets under the EU's Effort Sharing Regulation and the Climate Acts are also presented.

4 IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change https://www.ipcc.ch/report/ar5/wg1/

2. Ireland's Provisional Greenhouse Gas Emissions in 2025

Total national greenhouse gas emissions in 2025 (excluding LULUCF) are estimated to be 52.65 million tonnes carbon dioxide equivalent (Mt CO_2eq) which is 2.3% lower (or 1.22 Mt CO_2eq) than emissions in 2024 (53.87 Mt CO_2eq) and follows a 1.9% decrease in emissions reported for 2024. Emissions in 2025 are 5.5% lower than the historical 1990 baseline. This marks the third successive year these emissions have been under this key international baseline.

National total emissions including LULUCF decreased by 2.2% to 55.16 Mt CO_2eq. ETS[5] and ESR emissions decreased by 5.5% and 1.5%, respectively. LULUCF emissions are discussed in more detail in section 4.7.

Emissions per capita decreased from 10.0 tonnes CO_2eq/person in 2024 to 9.6 tonnes CO_2eq/person in 2025. Over the past 10 years, Ireland's average tonnes of CO_2eq/person is 11.5 tonnes. With recent CSO 2025 data showing a population of 5.5 million people and with population projected to increase to 5.7 million in 2030, 6.0 million in 2040 and 6.3 million by 2050, per capita emissions need to reduce significantly in order to meet reduction targets. At current per capita emission levels, each additional 500,000 people would contribute an additional five million tonnes of CO_2eq annually.

The inter-annual change in total greenhouse gas emissions is presented in Figure 1 and sectoral share of emissions (excluding LULUCF) in Figure 2 and Table 5. The annual reduction in 2025 at 1.2 Mt CO_2eq follows a 1.1 Mt CO_2eq reduction in 2024. Detailed sectoral data are shown in Table A.1 in the Appendix.

Agriculture is the largest contributor to the overall emissions at 38.7% of the total (excluding LULUCF). *Transport* and *Energy Industries* are the second and third largest contributors at 22.0% and 12.5%, respectively. *Residential* and *Manufacturing Combustion* emissions account for 9.9% and 7.9%, respectively. These five sectors accounted for 91.1% of national total emissions in 2025. The remainder is made up by the *Industrial Processes* sector at 3.5%, *F-Gases* at 1.2%, *Commercial Services* at 1.4%, *Public Services* at 1.3% and *Waste* at 1.6%. Figure 2 shows the contributions from each of the sectors in 1990 and 2025.

5 ETS emissions in this report refers to CO_2 emissions from stationary installations and from domestic aviation. It does not include emissions from intra-EU aviation as those are not considered part of Ireland's total reportable greenhouse gas emissions.

Figure 1: Inter Annual Changes in GHG Emissions 1990-2025

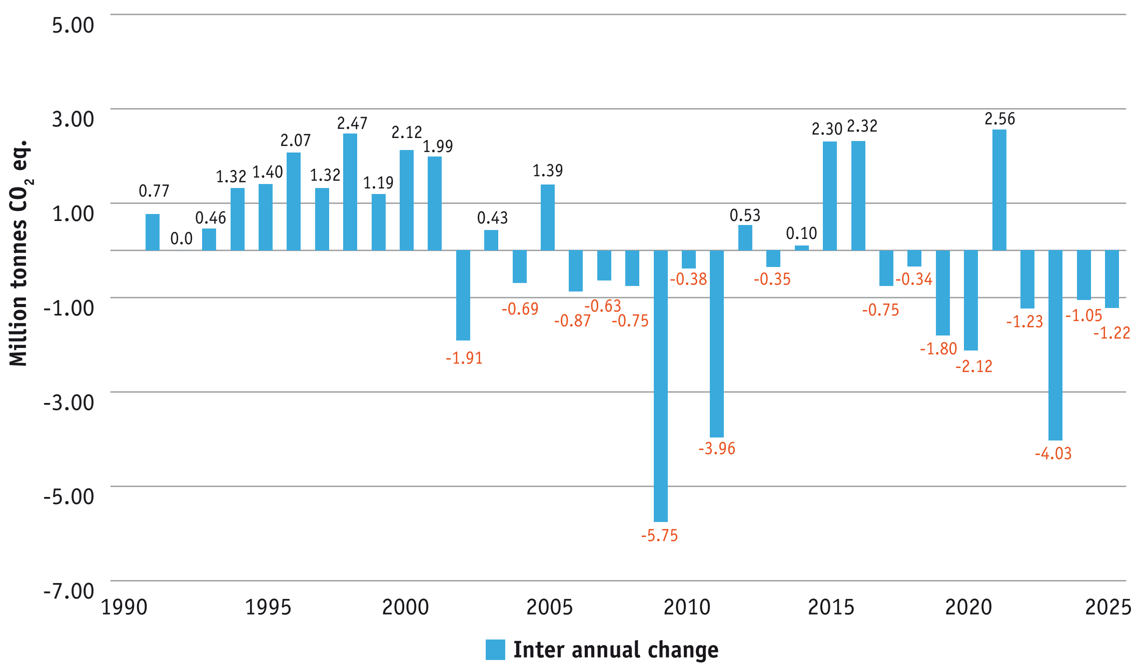
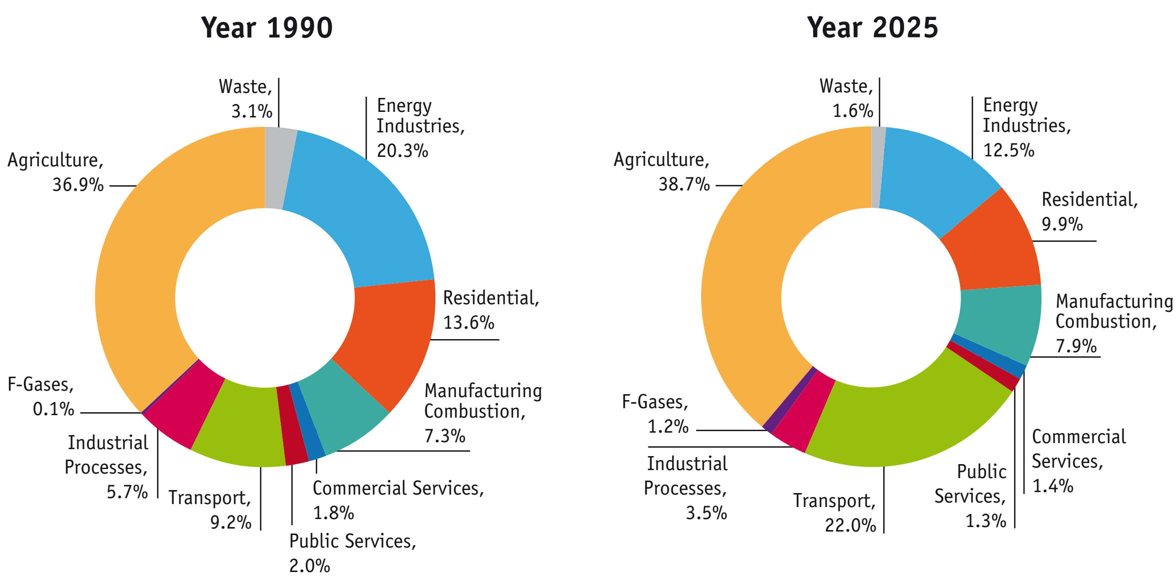


Figure 2: Profile of GHG Emissions (excluding LULUCF) in 1990 and 2025 by Sector



3. Compliance with National and EU Commitments

Ireland has several greenhouse gas emission reduction commitments, both set out in national legislation and by virtue of its EU membership and commitment to UN goals under the Framework Convention on Climate Change (UNFCCC). These various commitments have different scopes and interim targets associated with them, but all ultimately require Ireland playing its part in achieving the collective goal of limiting global temperature rise.

3.1 National Climate Objective

The Climate Acts set a national climate objective of achieving a climate resilient and climate neutral economy by 2050. A key milestone in achieving this aim is the 2030 reduction target of 51% of total emissions (including LULUCF) over the period 2018 to 2030.

Climate Action Plan (CAP) 2025, submitted for Government approval in December 2024, approved by Government and published in April 2025, outlines many of the policies and measures to be implemented to achieve the objective. The CAP 2025 largely reiterates the policies and measures in the CAP 2024. Progress towards Ireland’s climate objective is shown in Table 3.

Carbon Budgets

The Climate Acts provide for the establishment of carbon budgets in support of achieving Ireland’s climate ambition. The 51% target is the primary constraint on carbon budgets over the course of the first two budget periods ending on 31 December 2030, relative to 2018. The final carbon budget proposed for 2031 to 2035 continues the trajectory towards climate neutrality by 2050.

Three carbon budgets for the period up to 2035 have been approved[6,7] by the Oireachtas and came into force on 6th April 2022. Figure 3 illustrates a linear emissions reduction trajectory towards achieving the 51% reduction target, along with the extent to which the First Carbon Budget (for the period 2021-2025) has been ‘used up’ based on emissions from 2021 to 2025. In order to achieve Ireland's climate ambition of a 51% reduction by 2030, annual emission reductions of over 10% are required for the next 5 years.

- Budget 1 from 2021-2025 has been set at 295 Mt CO_2eq.
- Budget 2 from 2026-2030 has been set at 200 Mt CO_2eq.
- Budget 3 from 2031-2035 has been set at 151 Mt CO_2eq.

In December 2024, the Climate Change Advisory Council published a final proposed Budget 3 from 2031-2035 of 160 Mt CO_2eq and provisional Budget 4 from 2036-2040 of 120 Mt CO_2eq.[7] At time of publication of this report, the final proposed Budget 3 and provisional Budget 4 were not adopted by Government.

Provisional emission estimates for the years 2021 to 2024, in addition to national total emissions including LULUCF for 2025 in this report, represent 293.9 Mt CO_2eq or 99.6% of the first five-year carbon budget of 295 Mt CO_2eq. This leaves 1.1 Mt CO_2eq of the budget available to be carried over into budget 2 for 2026-2030.

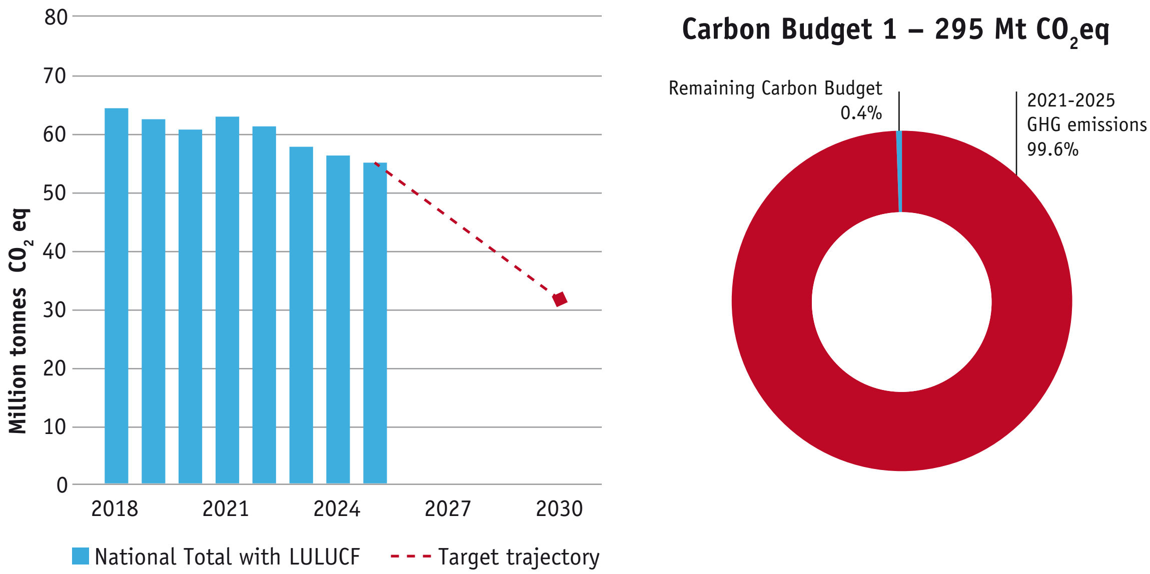
6 Carbon Budgets: https://www.gov.ie/en/publication/9af1b-carbon-budgets/

7 Carbon Budget Proposal Report: https://www.climatecouncil.ie/media/CCAC%20Carbon-Budget%20Proposal%20 2024-final.pdf

Figure 3 below highlights the amount of the First Carbon Budget that has now been used in the 5-year period. Section 6D, paragraph 5 of the Climate Acts state that non-achievement of the First Carbon Budget would see the excess emissions carried forward into the second budget period and the second carbon budget would be reduced by that amount.

If this occurs this would make achievement of the second budget more difficult.

Figure 3: Climate Act Target and Carbon Budgets



Sectoral Emissions Ceilings

Sectoral Emissions Ceilings (SECs) for the two carbon budget periods (2021-25 and 2026-30) have been approved by government to divide up the responsibility of carbon budget achievement across the key greenhouse gas emitting sectors[8]. The sectors (*Electricity*, *Transport*, *Built Environment* (Residential and Commercial and Public), *Industry*, *Agriculture* and *Other*) do not correspond directly to the sectors defined in the inventory as they take consideration of the division of Departmental responsibility. However, it has been possible to map the inventory data onto the SEC sectors to assess usage of the budgets to date and what is required to achieve ceiling compliance.

Four sectors, *Agriculture*, *Buildings* (Commercial and Public), *Buildings* (Residential) and *Other* are provisionally under budget and 3 sectors, *Industry*, *Transport* and *Electricity*, are over budget. See Table 2 below, and Figure 4 presents the sectoral ceilings along with the amount used to date by sector. In the case of the *Electricity* sector, the sectoral emissions ceiling was exceeded by a small margin and this sector has also achieved the largest emissions reduction; see Table 3.

8 Sectoral Emissions Ceilings: https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/sectoral-emissions-ceilings/

Table 2: Sectoral Emissions Ceilings 2021-2025

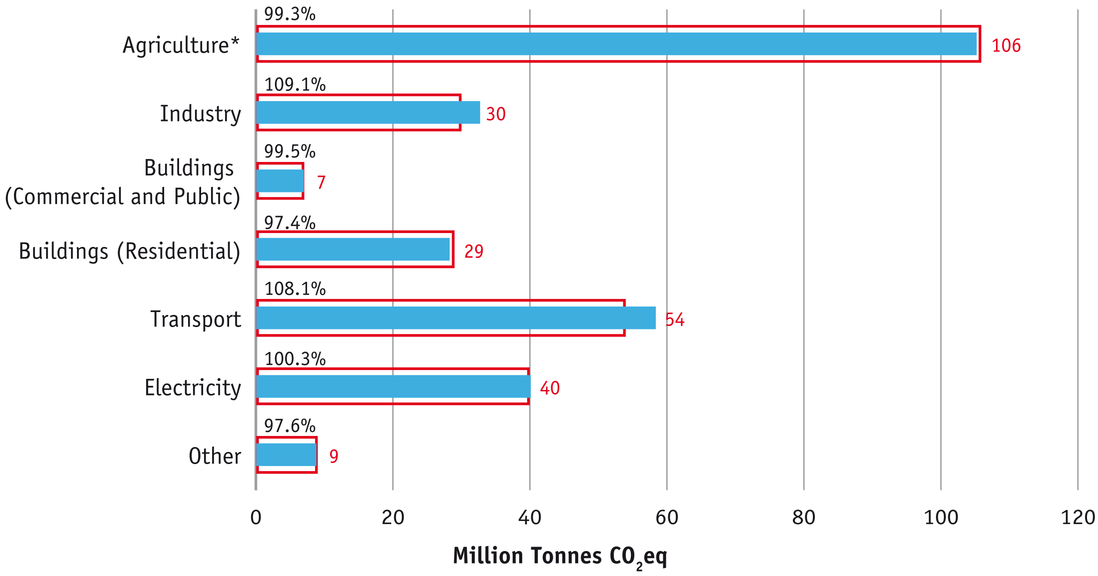
	2021	2022	2023	2024	2025	Total	Sectoral Ceiling 2021-2025	% SEC used
	Mt CO_2 eq							
Electricity	9.819	9.620	7.497	6.885	6.297	40.118	40.000	100.3%
Transport	11.193	11.883	11.931	11.782	11.608	58.397	54.000	108.1%
Buildings (Residential)	6.709	5.621	5.230	5.486	5.212	28.258	29.000	97.4%
Buildings (Commercial and Public)	1.417	1.381	1.337	1.442	1.392	6.968	7.000	99.5%
Industry	7.253	6.819	6.472	6.199	5.995	32.738	30.000	109.1%
Agriculture*	21.968	21.780	20.720	20.436	20.398	105.301	106.000	99.3%
Other**	1.821	1.847	1.733	1.636	1.748	8.784	9.000	97.6%
LULUCF***	2.872	2.469	2.965	2.514	2.514	13.334	N/A	N/A
National Total (incl LULUCF)	**63.052**	**61.420**	**57.884**	**56.380**	**55.164**	**293.899**	**295.000**	**99.6%**

* A direct comparison of emissions in the Agriculture sector against its Sectoral Emission Ceilings is no longer viable

** Waste, F-gases and Petroleum Refining

*** National objective includes LULUCF

Figure 4: First Sectoral Ceilings 2021-2025 and usage



* Due to the impact of updated science to the agricultural inventory in 2023, the Sectoral Emissions Ceilings for Agriculture is no longer aligned with the reduction target for the sector.[9]

It should be noted that improvements to the inventory in the Agriculture sector (National Inventory Document (NID) 2025) and the LULUCF sector (NID 2026) have reduced the level of emissions over the 5-year budget period by 12-14 Mt CO_2 eq since the carbon budgets were published, making it possible to stay within the 295 Mt CO_2 eq budget for the 5-year period.

The two largest sectors with budgets, *Agriculture* and *Transport*, have reduced emissions by the lowest amounts, 4.7% and 6.4% since 2018 and have a long way to go to achieve their indicative percentage reduction targets. The *Electricity* sector has achieved the largest percentage reduction, 38% and has exceeded its sectoral budget by 0.3% or 0.1 Mt CO_2 eq.

However, the overall national climate objective of a 51% reduction by 2030 will not be achieved unless all sectors meet the indicative percentage reduction targets for 2025 and 2030 as set out in Table 3.

9 Ireland's Final Greenhouse Gas Emissions 1990-2023: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-final-greenhouse-gas-emissions-1990-2023.php

Table 3: Sectoral Emissions reduction targets and progress

Sector	2018 (Mt CO_2eq)	2025 (Mt CO_2eq)	% change 2018-2025	Indicative % reduction by 2025	Indicative % reduction by 2030
Electricity	10.164	6.297	-38.0%	~40%	~75%
Transport	12.396	11.608	-6.4%	~20%	~50%
Buildings (Residential)	6.824	5.212	-23.6%	~20%	~40%
Buildings (Commercial and Public)	1.532	1.392	-9.2%	~20%	~45%
Industry	7.125	5.995	-15.9%	~20%	~35%
Agriculture	21.402	20.398	-4.7%	~10%	~25%
Other	2.097	1.748	-16.7%	~25%	~50%
LULUCF	2.998	2.514	-16.2%	NA	NA
National Total (incl LULUCF)	**64.539**	**55.164**	**-14.5%**		**51%**

* Change in distance to SEC is largely a result of refinements to the Agricultural inventory as outlined in the Final 1990-2023 Greenhouse Gas Inventory Report. The indicative percentage reduction for Agriculture is ~10% by 2025 and ~25% by 2030 to support the achievement of the national target of a 51% reduction by 2030 on 2018 levels.

‡ As detailed on page 8 of this report, updated data and science within the LULUCF sector, specifically forestry, have reduced national total emissions estimates and emissions reductions required to meet the First Carbon Budget.

3.2 European Targets

The greenhouse gas emission inventory for 2025 is the fifth of ten years over which compliance with targets set in the European Union's Effort Sharing Regulation (EU 2018/842) will be assessed. This Regulation sets 2030 targets for emission reductions (known as ESR emissions) outside of the ETS and annual binding national limits for the period 2021-2030. Ireland's target is to reduce ESR emissions by 42% by 2030 compared with 2005 levels, with a number of flexibilities available to assist in achieving this.

Compliance Assessment

Annual Emissions Allocation

Ireland's ESR emissions annual limit for 2025 is 36.85 Mt CO_2eq. Ireland's provisional 2025 greenhouse gas ESR emissions are 41.95 Mt CO_2eq; this is 5.10 Mt CO_2eq more than the annual limit for 2025 (see Table 4 and Figure 5). This value is the national total emissions less emissions generated by stationary combustion, i.e. power plants, cement plant, and domestic aviation operations that are within the EU ETS (see Figure 6). Cumulatively from 2021-2025 Ireland exceeded its Annual Emissions Allocation by 14.4 Mt CO_2 eq. After using the ETS flexibility, Ireland is not in compliance with the ESR by a net distance to target of -4.86 Mt CO_2eq. Agriculture and Transport accounted for 76.1% of total ESR emissions in 2025.

The revised LULUCF Regulation (2023)[10] incorporates new rules around LULUCF flexibilities for the period 2021-2025 and 2026-2030. There is a high degree of uncertainty relating to the availability of the LULUCF flexibility and, if available, the quantity of flexibility in each budgetary period, until reporting of final LULUCF inventories for all Member States in March 2027 and subsequent compliance assessment.

Emissions Trading System

Since 2005, emissions in the ETS sector have decreased by 52.4% or 11.8 Mt CO_2eq whereas emissions under the ESR decreased by 11.8% or 5.6 Mt CO_2eq, considerably short of Ireland's 42% reduction commitment by 2030. Within the ETS sector, electricity generation and the cement sectors are responsible for most of the decrease. Since 2005, emissions under the ESR decreased in the *Transport*, *Residential*, *Commercial Services*, *F-Gases* and *Waste* sectors, with the *Public Services* and *Agriculture* sectors increasing.

Table 4: Compliance with EU ESR Targets 2021-2025 (all numbers in the table are rounded to the nearest kt CO_2eq)

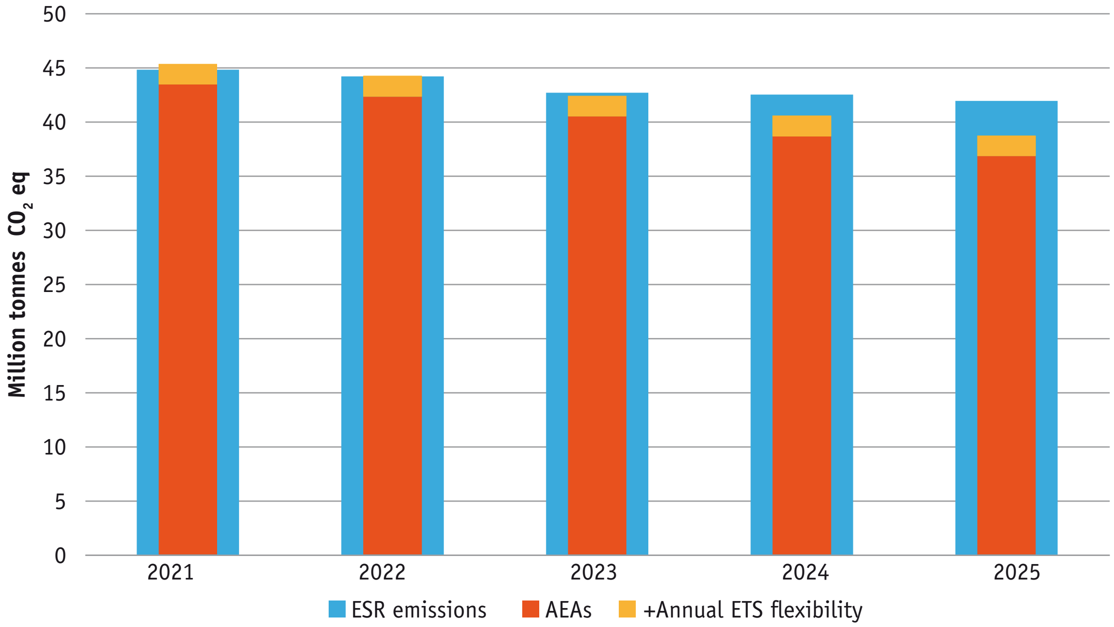
	2021	2022	2023	2024	2025
Total greenhouse gas emissions without LULUCF	60,180	58,951	54,919	53,866	52,650
- Total verified emissions from stationary installations under Directive 2003/87/EC	15,320	14,686	12,194	11,294	10,761
- CO_2 emissions from domestic aviation	20	22	23	26	28
Total ESR emissions	44,840	44,243	42,702	42,546	41,951
EU ESR Targets†	43,479	42,357	40,520	38,683	36,845
Gross distance to target	-1,361	-1,886	-2,182	-3,863	-5,106
+ annualised ETS flexibility †	1,908	1,908	1,908	1,908	1,908
Net distance to target	547	22	-274	-1,955	-3,198

† Set out in Annex II and Annex III of Commission Implementing Decision (EU) 2020/2126 with additional potential flexibilities arising from LULUCF[11]

10 Regulation (EU) 2018/841, Article 14: http://data.europa.eu/eli/reg/2018/841/oj

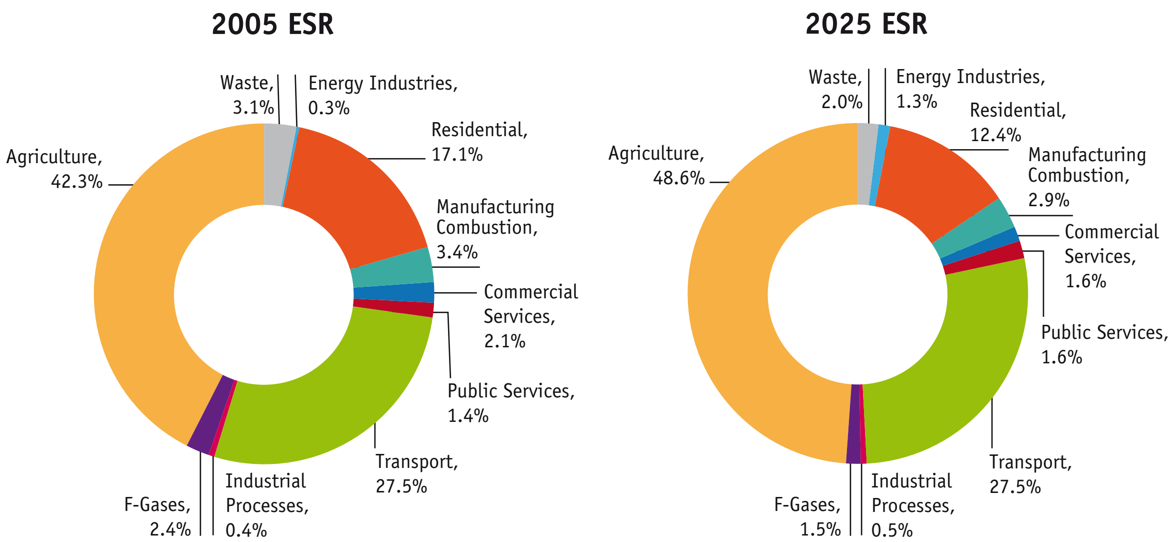
11 Commission Implementing Decision (EU) 2020/2126: http://data.europa.eu/eli/dec_impl/2020/2126/oj

Figure 5: Compliance with ESR Targets 2021-2025



The data presented in Figure 6 shows the sectoral shares of emissions covered by the Effort Sharing Regulation in 2005 and 2025.

Figure 6: Profile of Effort Sharing Regulation relevant GHG Emissions in 2005 and 2025 by Sector



4. Greenhouse Gas Emissions by Sector

For the purposes of this report emissions are classified into ten key sectors and fluorinated gases (F-gases). Although F-gases can be emitted from any sector it is helpful to group them collectively as the emissions from any one sub-sector are seldom significant, and measures to reduce them are often cross-sectoral in nature. The sectoral breakdown used in this report, and changes in emissions for those sectors between 2024 and 2025, are presented in Table 5 below and described in more detail in the Appendix.

This sectoral breakdown is produced for national reporting purposes and is generally in alignment with the classification used for UNFCCC reporting. Key energy subcategories: *Energy Industries* (largely electricity generation), *Residential*, *Manufacturing Combustion*, *Transport*, *Commercial Services* and *Public Services* are also shown separately rather than as part of an overarching Energy category as reported to the UNFCCC.

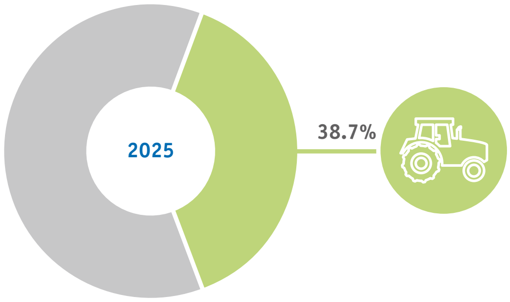
In this section, the time series since 1990 is graphically presented, as 1990 is the historical base year used for UNFCCC reporting.

Table 5: Ireland's Provisional Greenhouse Gas Emissions for 2024 and 2025 by Sector

Million tonnes CO_2eq	2024	2025	% Change
Agriculture	20.436	20.398	-0.2%
Transport	11.782	11.608	-1.5%
Energy Industries (including electricity generation)	7.095	6.590	-7.1%
Residential	5.486	5.212	-5.0%
Manufacturing Combustion	4.332	4.162	-3.9%
Industrial Processes	1.867	1.834	-1.8%
F-Gases	0.603	0.636	5.4%
Commercial Services	0.742	0.712	-4.0%
Public Services	0.700	0.679	-3.0%
Waste	0.823	0.820	-0.4%
LULUCF*	2.514	2.514	0.0%
National Total excluding LULUCF	**53.866**	**52.650**	**-2.3%**
National Total including LULUCF	**56.380**	**55.164**	**-2.2%**

* No provisional estimates are available for this sector. Data for 2025 is final data for 2024.

4.1 Agriculture



Total emissions from the *Agriculture* sector in 2025 were 20.40 Mt CO_2eq, a decrease of 0.2% on 2024.

The most significant driver for the reduction in emissions in 2025 was a decrease in total cattle numbers of 3.3%. While the total poultry population increased by 6.3%, livestock numbers in general decreased. The number of sheep decreased by 7.9%, pigs by 4.0%, non-dairy cattle by 4.0% and dairy cows decreased by 0.9%, however milk output per cow increased by 5.6% and overall milk production increased by 4.8%.

Methane (CH_4) emissions originate from enteric fermentation, manure management and fuel combustion. In 2025, CH_4 emissions contribute 70.1% to the Agriculture sector and decreased by 1.7% since 2024.

Nitrous oxide (N_2O) emissions originate from manure management, agricultural soils and fuel combustion.

In 2025, N_2O emissions contribute 23.2% to the Agriculture sector and increased 5.0% since 2024, reflecting the 12.7% increase in fertiliser nitrogen use to 349.9 kilotonnes in 2025.

Carbon dioxide (CO_2) emissions originate from liming, urea application and fuel combustion. In 2025, CO_2 emissions contribute 6.6% to the Agriculture sector and have decreased by 0.8% since 2024. In 2025, the application of lime to soils decreased by 9.8% compared to 2024, using 0.93 million tonnes of lime. It should be noted that as a mitigation measure, elevated levels of lime application improve soil fertility, leading to sustained reductions in fertiliser nitrogen usage and a net reduction in greenhouse gas emissions.

Agriculture emissions by source category and by gas are presented in Figures 7 and 8. Increasing methane emissions are evident in the gas share trend, 14.3 Mt CO_2eq (70.1% share) in 2025 compared to 14.3 Mt CO_2eq (69.5% share) in 1990, slightly increasing in level by 0.05%.

2025 followed 2024 with a second annual decrease in dairy cow numbers (after 13 consecutive years of increases up to 2023). There was a notable increase in milk output per cow of 5.6% in 2025 and an overall increase in milk production of 4.8%, despite the 0.9% decrease in dairy cow population.

Total fossil fuel consumption in agriculture/forestry/fishing activities in 2025 increased by 8.6%.

Figure 7: Trend in Agriculture 1990-2025

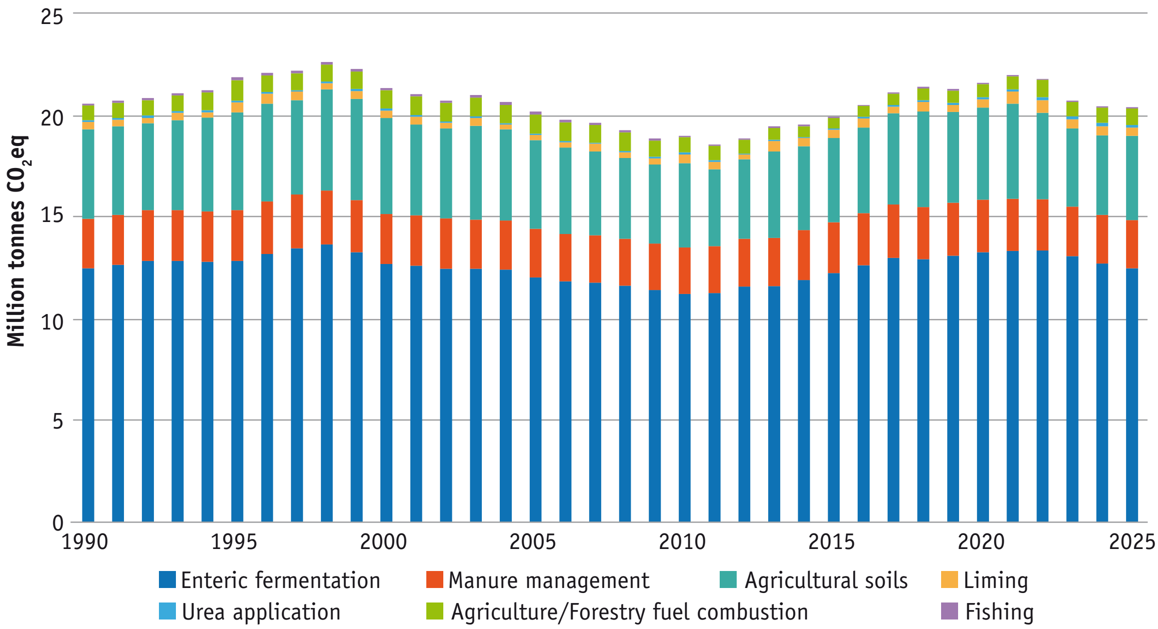
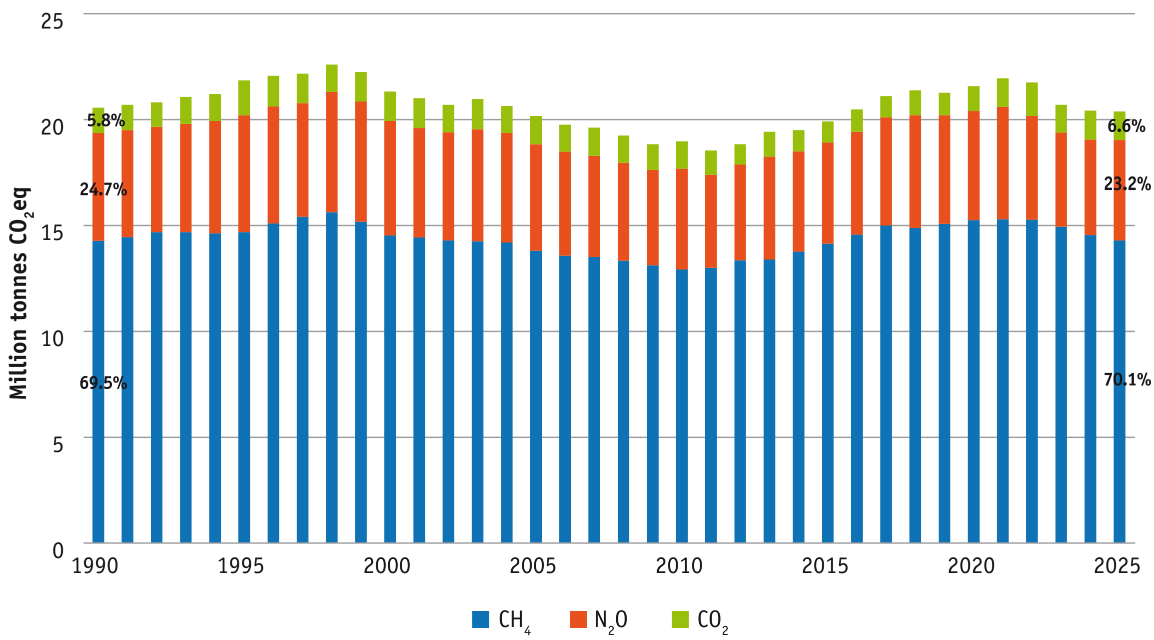
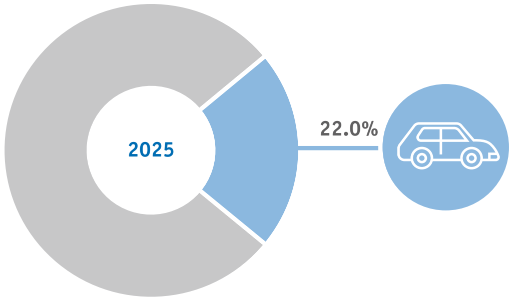


Figure 8: Trend in Agriculture, by Gas 1990-2025



4.2 Transport



In 2025, *Transport* emissions decreased slightly by 1.5% on 2024 and, at 11.6 Mt CO_2eq, represent 22.0% of national total emissions. Despite the post-COVID rebound, Transport emissions in 2025 are 6.6% below pre-COVID levels. Following the ending of COVID travel restrictions, emissions increased by an average of 6.5% per annum in 2021-2022 while there was a slight increase in emissions by 0.4% in 2023. 2024 is the first year since 2020 which has reported a decrease in emissions in this sector followed by a similar decrease this year; however, emissions have remained relatively stable at 11.7 Mt CO_2eq for the period 2021-2025. With regards to biofuel, bioethanol and biodiesel consumption increased by 13.7% and 15.4%, respectively, whereas petrol consumption increased by 4.5% and diesel consumption decreased by 3.0%. Electricity consumption for road transport in 2025 increased by 31.1%.

Emissions from road transport were relatively stable for the period 2015-2019, at an average 11.7 Mt CO_2eq but reduced to 9.9 Mt CO_2eq in 2020. However, with the easing and ending of travel restrictions in 2021 and 2022, road transport emissions rebounded to a relatively stable average of 11.0 Mt CO_2eq for the period 2021-2025. In 2025, road transport emissions decreased for the second year in a row since 2020 by 1.7% on 2024. While the fleet increased by 3.4% in 2025, the total road transport energy consumption decreased by 0.6%, with increases in biofuel and electricity use.

At the end of 2025, there were just over 110,200 battery electric vehicles (BEVs) and over 94,600 plug-in hybrid electric vehicles (PHEVs) in Ireland, approximately 105% of the Climate Action Plan target for 2025 of 196,000 or 22% of the 2030 policy target of 941,500 vehicles. As a result, the continued uptake of electric vehicles has meant the annual target in 2025 was exceeded; see Figure 9. The impact of electric vehicles in reducing Transport emissions is still very small due to the low number in the vehicle fleet but they are projected to contribute substantially to emissions reductions towards the latter half of the 2020s. Evidence of this shift is notable in 2021, with new registrations of fully electric and plug-in hybrid electric cars increasing by almost double to a 20% share of all new registrations. This led to an average 27% share of new registrations per annum in 2022-2024 and a peak 36% share in 2025.

Passenger cars were responsible for 52% of road transport emissions in 2025, with heavy goods vehicles and buses responsible for 30% and light goods vehicles for 18%. Transport emissions by source category are presented in Figure 10.

Figure 9: Total Electric Vehicles and Climate Action Plan target 2025

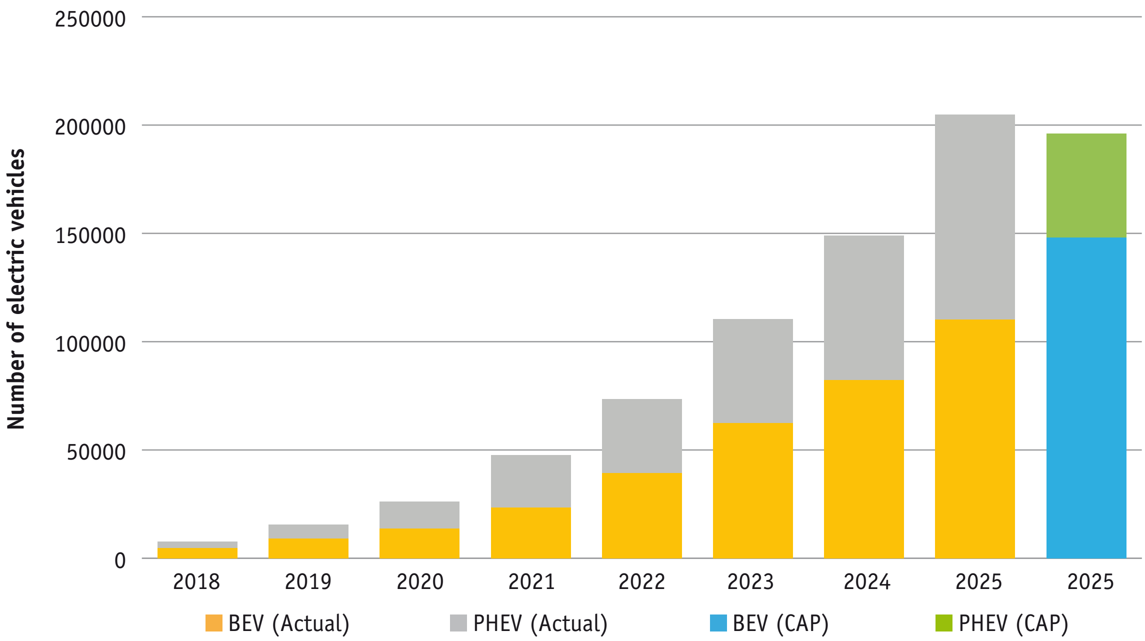
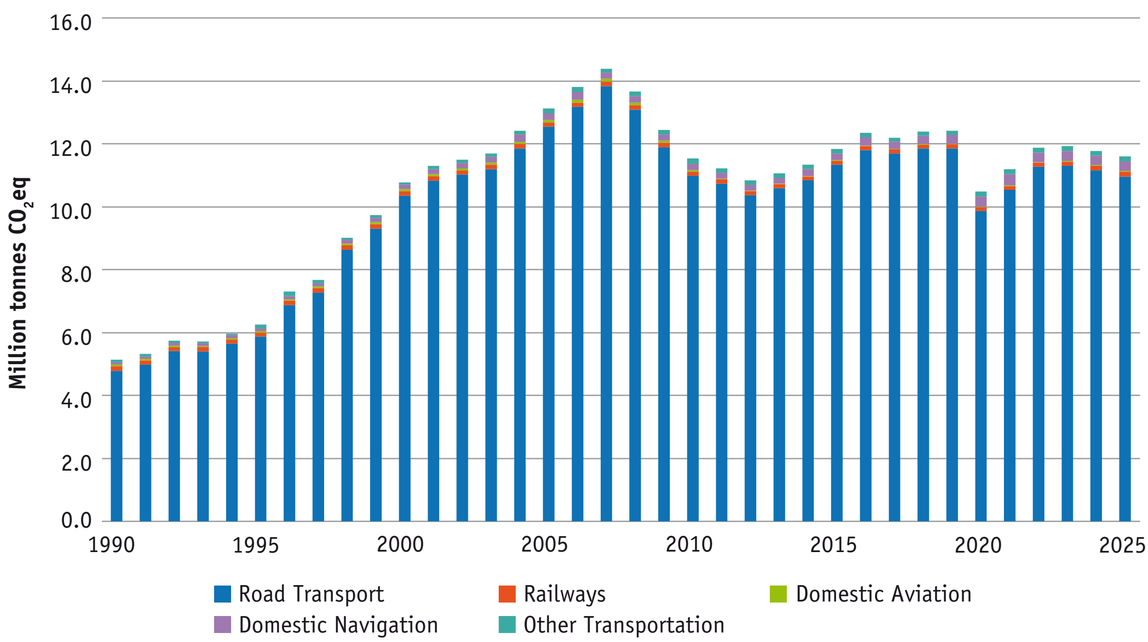
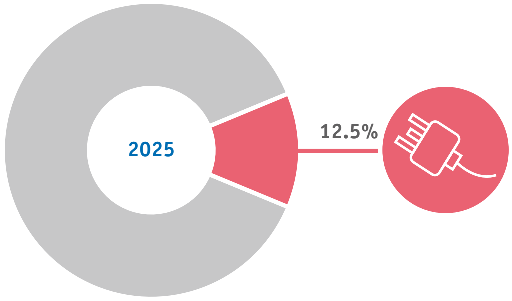


Figure 10: Trend in Transport 1990-2025



4.3 Energy Industries



Sectoral emissions in the *Energy Industries* sector decreased for the fourth consecutive year by 7.1% in 2025, now at an all-time low across the 1990 to 2025 time series at 6.6 Mt CO_2eq. This reduction in emissions is partly due to an increase in the amount of imported electricity, accounting for 16.4% of electricity supply in 2025 compared to 14.1% in 2024. Imported electricity amounted to 6,130 GWh, which would have resulted in additional emissions of over 1.3 Mt of CO_2eq if generated in Ireland.

Renewables provided 5.8% more electricity in 2025, with an increase in the renewable share in electricity generation from 39.8% in 2024 to 40.6% in 2025, with wind accounting for 31.7% of electricity supply (down from 31.8%). Natural gas accounted for 40.2% of electricity generated in 2025, with coal and oil together accounting for 1.9% of electricity generated (see Figures 11 and 12). Solar now accounts for 4.4% of electricity generated in Ireland, increasing by 49.7% in 2025.

There was an annual reduction of 6.4% in total fossil fuel used for electricity generation with reductions of 63.1%, 24.7% and 1.6% in coal, oil and natural gas respectively in 2025. The large share of renewables combined with the increase in imported electricity from interconnectors caused emissions intensity of power generation to decrease by 11.7%, from 224 g CO_2/kWh in 2024 to a historic low of 197 g CO_2/kWh in 2025.

Emissions from electricity generation had decreased year-on-year from 2016 to 2020, but 2021 and 2022 had seen increases in emissions of 1.4-1.6 Mt CO_2eq when compared to 2020 due to the return to using more carbon intensive fuel along with less renewables. In 2023, this trend reversed with a 2.1 Mt CO_2eq reduction on 2022 despite electricity demand increasing by 3.0%. Emissions continued to decrease by 0.6 Mt CO_2eq in 2024 and 2025, with electricity demand increasing by 4.5% and 3.6%, respectively.

The emission categories relevant under the Energy Industries sector are: Public electricity and heat production, Petroleum refining, Manufacture of solid fuels and other energy industries, and Fugitive emissions (Figure 13).

Figure 11: Emissions Intensity of Electricity Generation 1990-2025

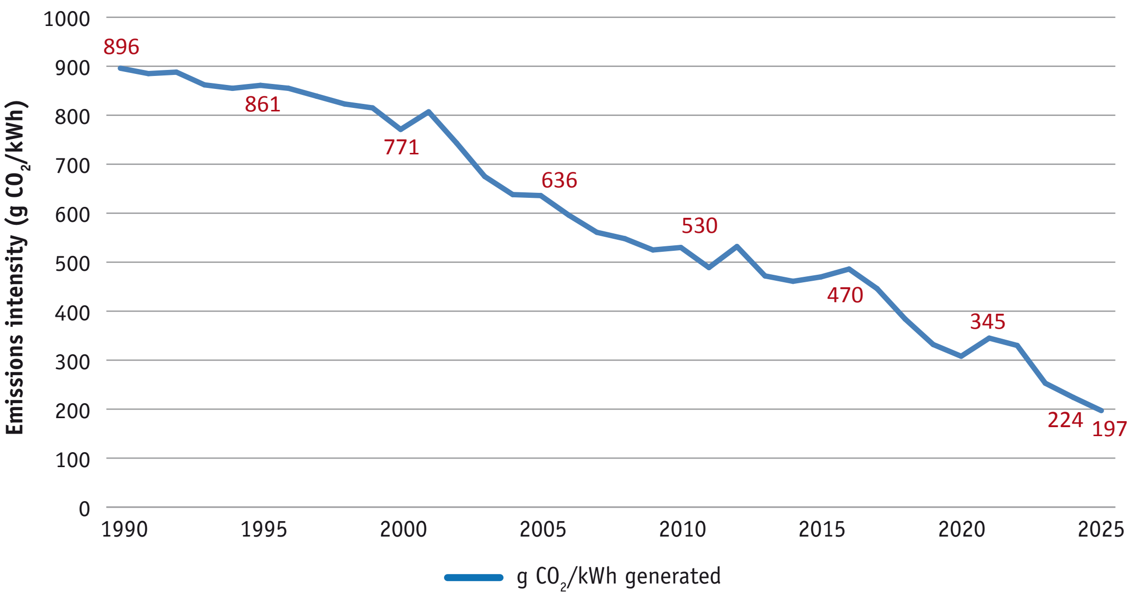


Figure 12: Electricity Generated by Fuel 1990-2025

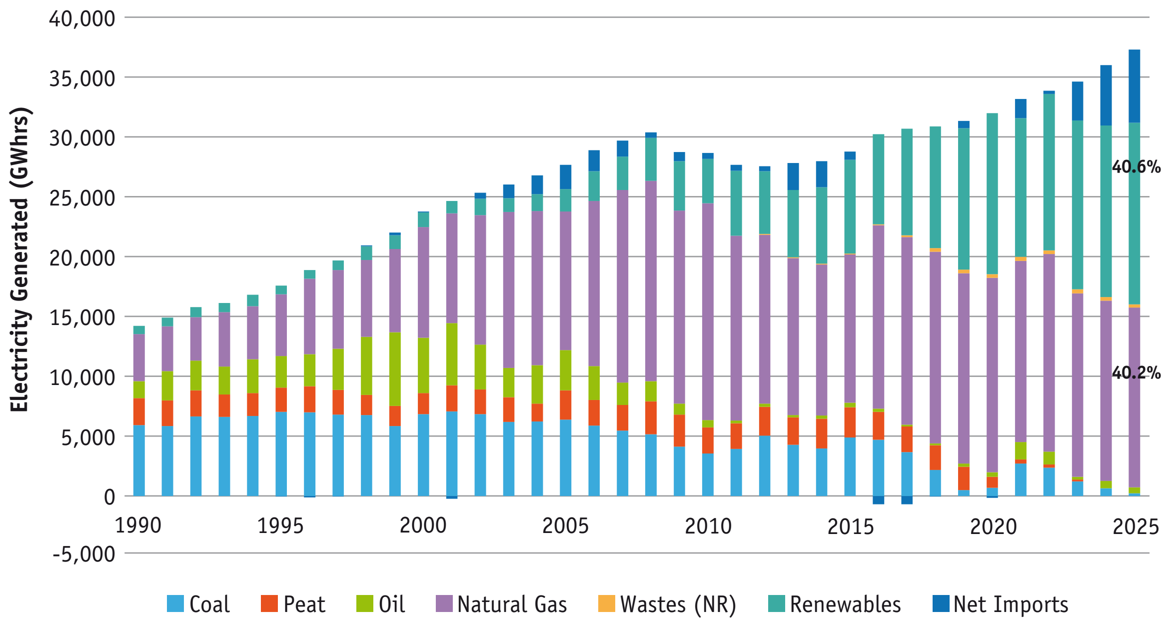
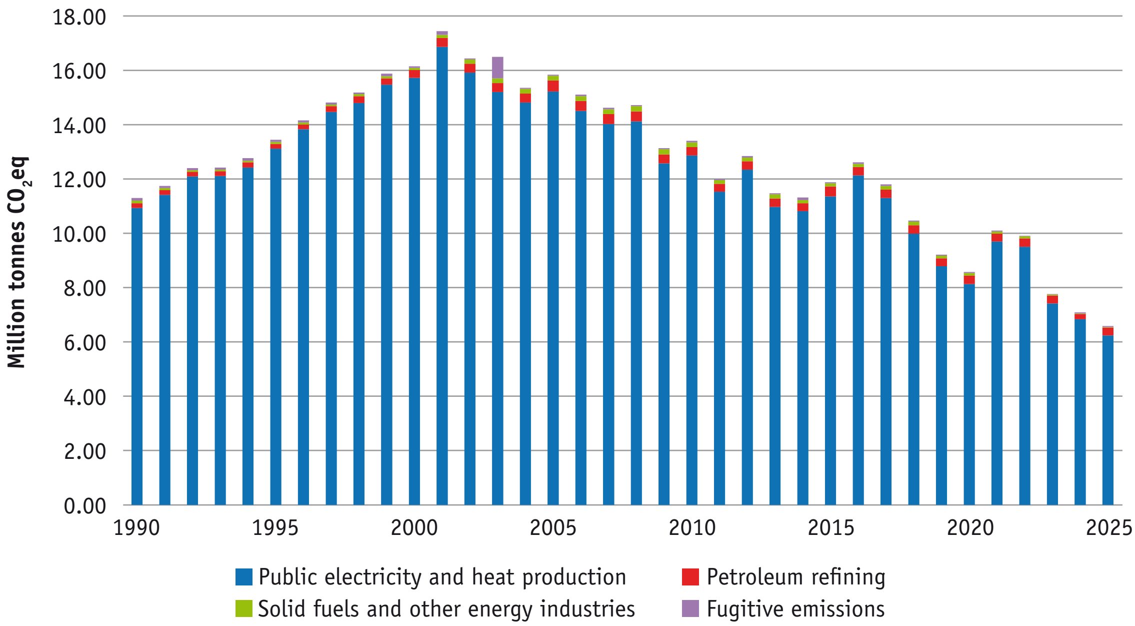
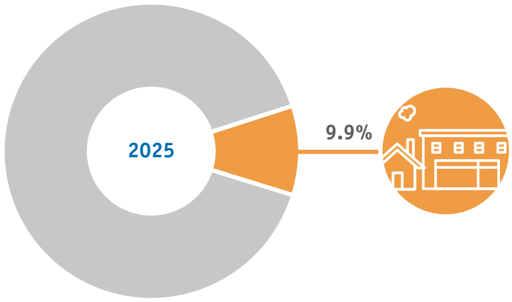


Figure 13: Trend in Energy Industries 1990-2025



4.4 Residential



Emissions in the *Residential* sector are 5.21 Mt CO_2eq or 9.9% of national total emissions in 2025 and decreased by 5.0% or 0.27 Mt CO_2eq since 2024. 2025 shows emissions returning to 2023 levels, having increased in 2024 due to a colder winter. The start of the COVID-19 pandemic in 2020 which saw emissions of 7.2 Mt of CO_2eq, the highest for the sector since 2011. Within the different fuels used in household space and water heating, decreases were seen in 2025 for most fossil fuels; coal, oil and natural gas usage decreased by 13.5%, 4.8% and 5.2% respectively, while peat usage remained unchanged.

There were 4.1% less heating degree days[12] in 2025 than in 2024, underpinning the decrease in emissions in 2025 and reinforcing that weather continues to be a key driver of residential emissions from year to year. Emissions per household, in Figure 14, shows the need for increased retrofit activity and heat pump use in order to achieve future emissions reduction commitments. Preliminary data show that over 37,000 heat pumps were installed in Irish homes in 2025, bringing the total to over 197,000 with renewable ambient heat increasing by almost 22%.

Fuel switching, from coal and peat to oil and natural gas use, as well as improvements in buildings regulations helped reduce emissions per household from 7.5 t CO_2eq per year in 1990 to a low of 3.6 t CO_2eq per year in 2014. From 2015 to 2021, CO_2eq emissions per household averaged 3.7 t per annum. 2025 had 2.7 t CO_2eq of emissions per household, an all-time low since 1990, driven by further fuel switching away from fossil fuels, increased uptake in heat pumps, and expansion of energy efficiency programmes (see Figures 14 and 15).

12 Degree days are a measure of the heating or cooling requirement on a given day with reference to a level where neither is required (typically 15.5°C). The number of degree days in a year is a strong indicator of the annual Residential energy demand.

Figure 14: CO_2eq emissions per Household 1990-2025

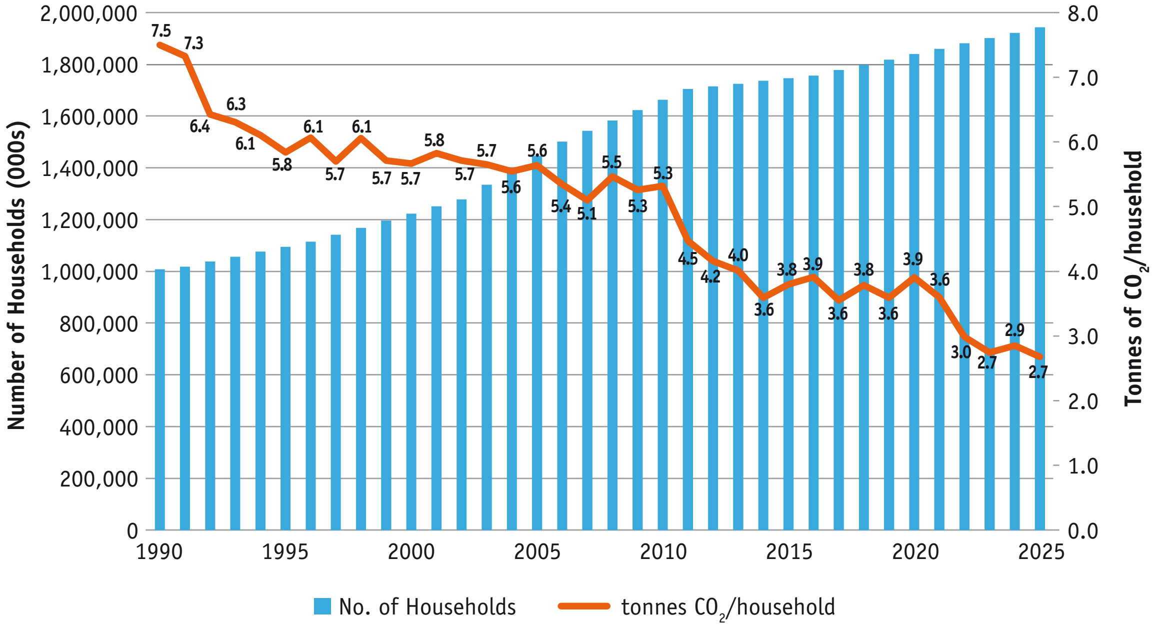
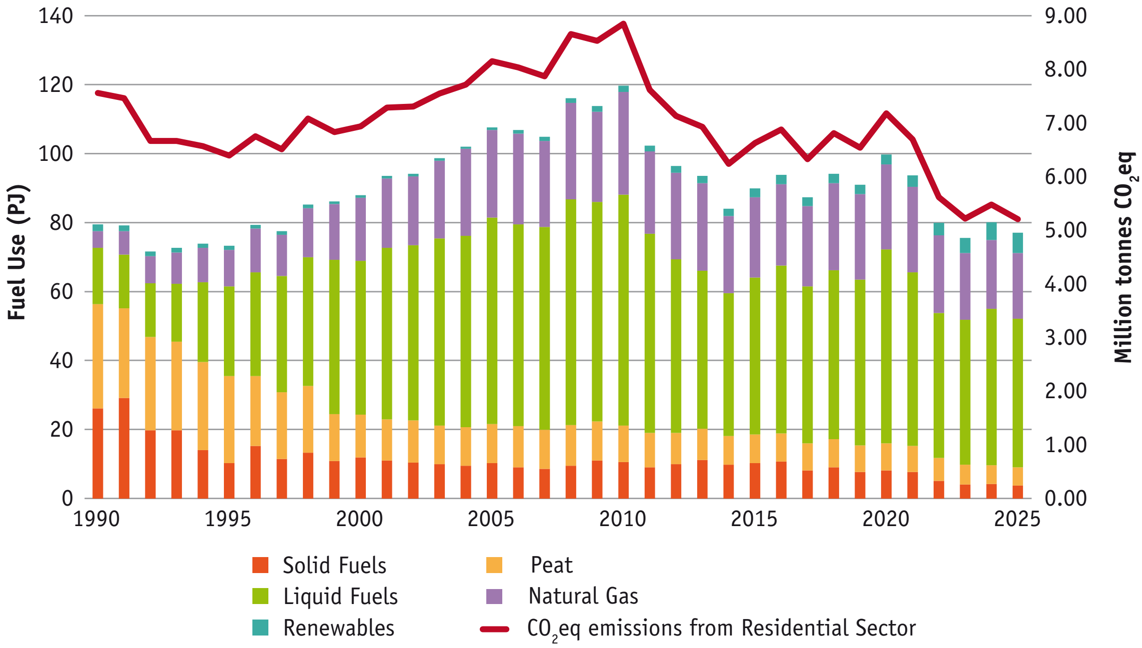
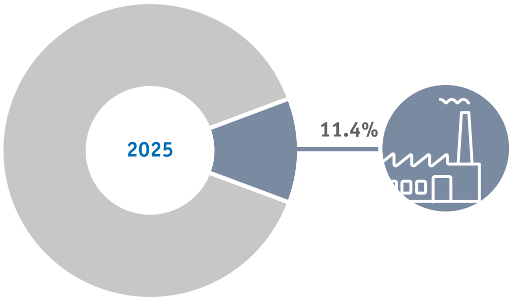


Figure 15: Trend in Residential 1990-2025



4.5 Manufacturing and Industry

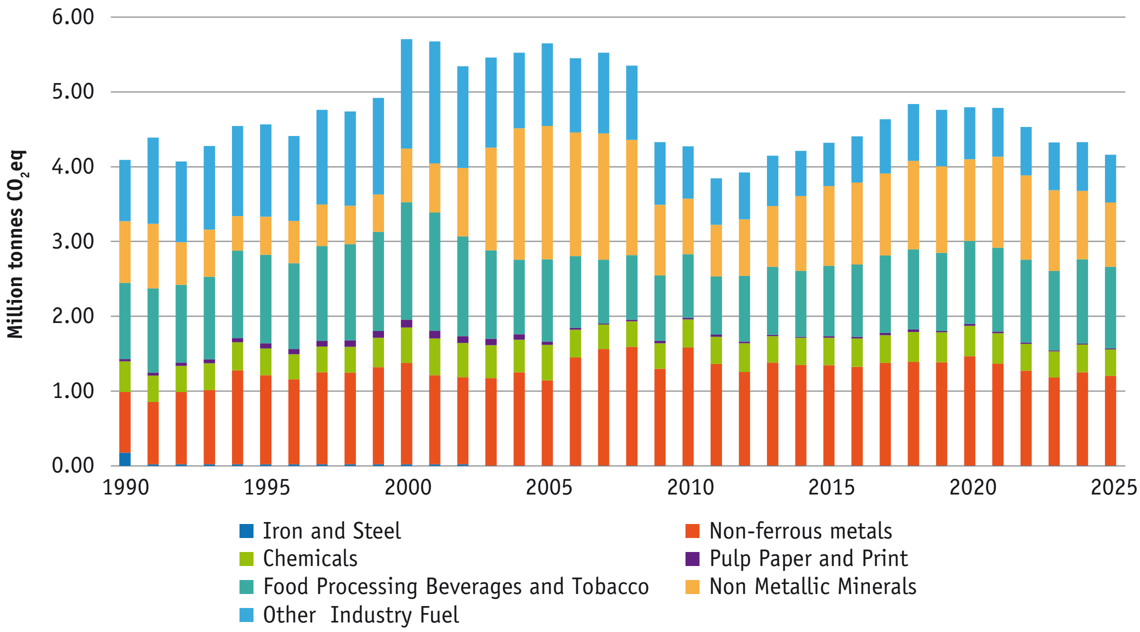


Emissions relating to *Manufacturing Combustion* and *Industrial Processes* combined accounted for 11.4% of Ireland's total emissions in 2025, or 6.00 Mt CO_2eq.

Emissions from the *Manufacturing Combustion* sector decreased by 3.9% in 2025. There were decreases in combustion emissions from most of the major sub-sectors, including non-ferrous metals, chemicals and food processing, beverages and tobacco sectors, i.e. 2.4%, 2.5% and 2.1%, respectively (see Figure 16).

In 2025, significant fuel reductions occurred in this sector with coal, oil and natural gas use decreasing by 25.5%, 6.5% and 2.7% respectively, whereas renewable fuels increased by 7.9%.

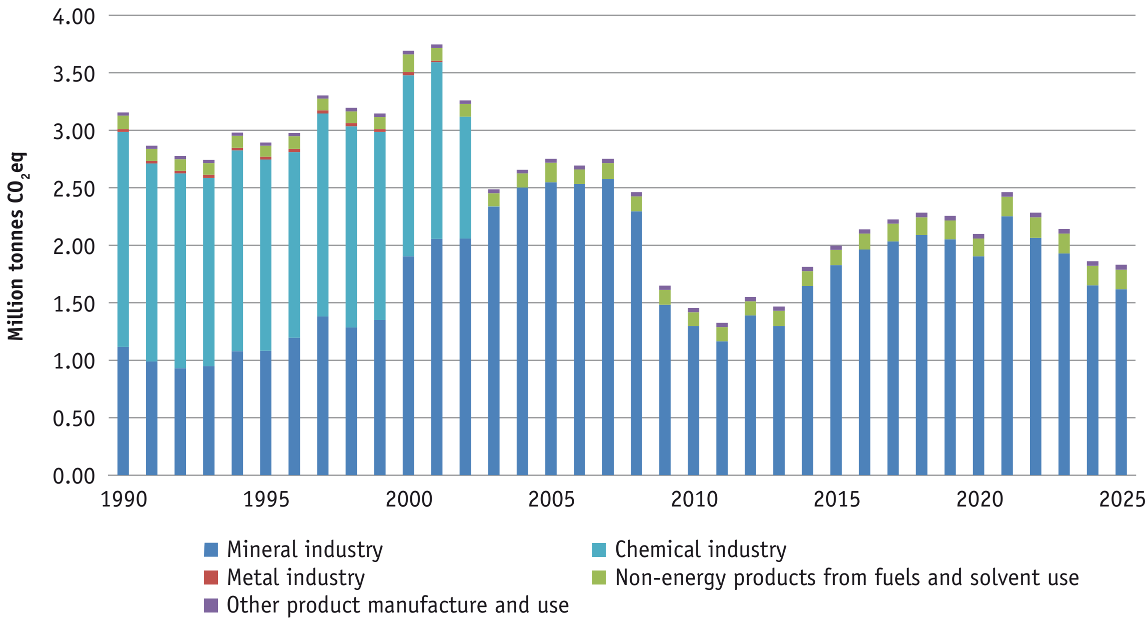
Figure 16: Trend in Manufacturing Combustion 1990-2025



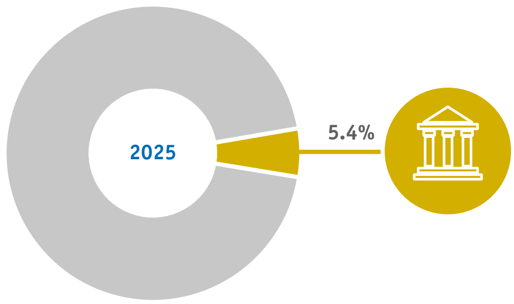
Emissions from the *Industrial Processes* sector decreased by 1.8% (0.03 Mt CO_2eq) in 2025 from 1.87 Mt of CO_2eq to 1.83 Mt CO_2eq, following a 13.1% decrease in 2024. Total process emissions from the mineral products subsector (including cement) decreased by 1.9% in line with a reduction in production.

In 2025, total emissions (combustion and process) from the cement sector decreased by 3.6% and amounted to 2.20 Mt CO_2eq, or 4.2% of national total emissions. Cement sector emissions are now 44.6% higher than in 2011 during the economic recession (see Figure 17).

Figure 17: Trend in Industrial Processes 1990-2025



4.6 Other Sectors



Emissions from *F-Gases*, *Commercial Services*, *Public Services* and *Waste* account for 5.4% of total national emissions in 2025.

Commercial and Public Services

Emissions from *Commercial Services* and *Public Services* decreased by 4.0% and 3.0%, respectively, in 2025. Natural gas and oil usage decreased by 2.8% and 4.7%, respectively, within these sectors.

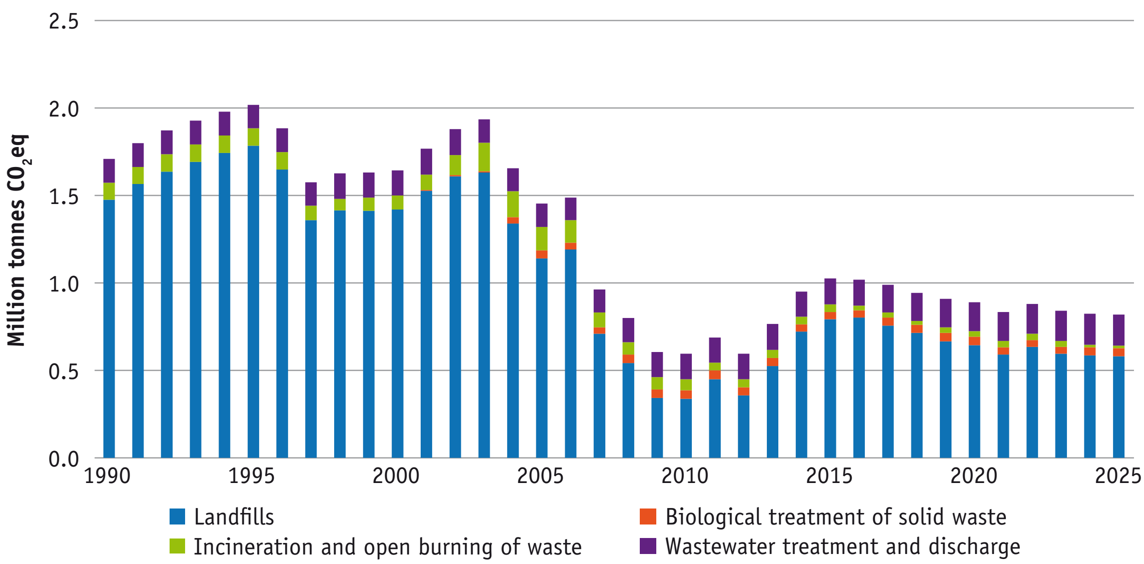
Waste

Emissions from the Waste sector, which account for 1.6% of total national emissions, decreased by 0.4% in 2025 because of a reduction in emissions of methane from landfills by 0.9%. Actual generation of methane at landfills fell 3.2% in 2025, with methane flared and utilised for electricity generation decreasing by 5.0% with a net overall decrease in emissions. See Figure 18.

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.

The emissions associated from combustion at WtE plants are estimated under electricity generation in Energy Industries. Improved management of landfill facilities, including increased recovery of landfill gas utilised for electricity generation and flaring is also a big driver in decreased emissions from the waste sector.

Figure 18: Trend in Waste 1990-2025



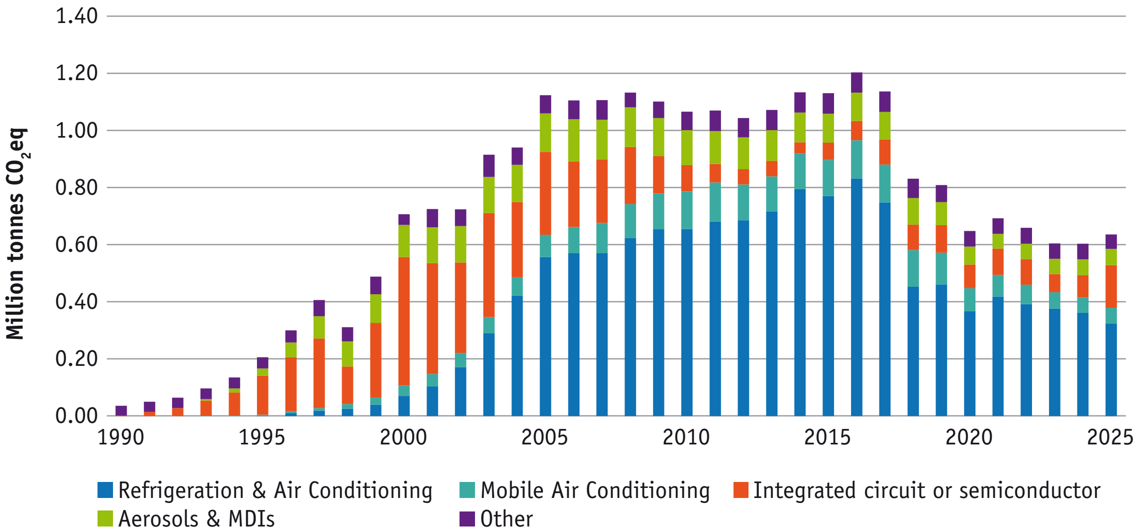
Fluorinated Gas Emissions

F-Gas emissions in 2025 are 5.4% higher than in 2024, following a decrease of 0.2% in the previous year.

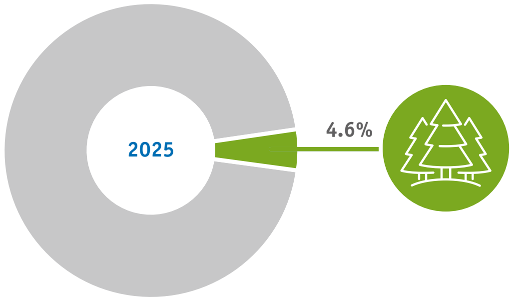
The change is based on an increase in PFCs and NF_3 use in the semiconductor industry. Emissions of F-gases (HFCs, PFCs, SF_6 and NF_3) were 0.64 Mt CO_2eq in 2025 compared to 0.04 Mt CO_2eq in 1990, a 18-fold increase over the time series; see Figure 19. However, F-gas emissions have risen from a very low base and only accounted for 1.2% of the national total in 2025. F-gases include a wide range of substances that are used in a diverse range of products and manufacturing processes.

The main reason behind the more recent decreases in F-gas emissions has been the phasing out of refrigerant and air conditioning (AC) gases with high global warming potentials (GWPs), due to the implementation of the F-Gas Regulation (EU) No. 573/2024. These refrigerant gases are being replaced with products containing a blend of HFCs and hydrofluoroolefins (HFOs) with low GWPs in this subcategory, Refrigeration and Air Conditioning.

Figure 19: Composition and Trend in F-Gas Emissions 1990-2025



4.7 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. This sector accounts for 4.6% of national total emissions (including LULUCF). See Figure 20.

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).

The provisional LULUCF emissions data are based on the 1990-2024 final inventory data. It is not yet known the full consequences of Storms Darragh (Dec 2024) and Eowyn (Jan 2025) in terms of the forest carbon stock. The volume of timber windthrown in these events is equivalent to what would typically be felled over a 2.5-year period. The impacts of the above and the impact of replanting on projected emission and removal estimates with be incorporated in final inventory estimates which will be reported in January 2027 and emission projections in March 2027.

The sector is a net source of CO_2eq emissions in all years. The net CO_2 emissions to, or removals from, the atmosphere are estimated with respect to overall carbon gain or loss for relevant carbon pools for the defined land categories. These pools[13] are above-ground biomass, below-ground biomass, litter, dead wood, soils and harvested wood products. Emissions from biomass burning (wildfires), drainage of organic soils and emissions from mineralisation in soils are also estimated.

The main sources of emissions are the drainage of grasslands on organic soils and the drainage of wetlands for peat extraction. Forest land and Harvested wood products are a carbon sink (CO_2 removal) for all years (Figure 21).

A complex dynamic exists between land use categories and the relative contributions between the carbon pools in biomass and soils lead to fluctuations in emissions and removals over the period 1990-2025. In any one year the Croplands land use can act as either a small sink (removal) or a small source of emissions. This results from the dynamic of using temporary grassland as part of cropping rotations. The Settlements and Other Land uses are comparatively less important and do not affect the absolute level of emissions or the trend over time to a significant extent.

Provisional emissions from the LULUCF sector in 2025 (reported here as 2024 data) were 60.2% lower than those in 1990. There has been a considerable long-term decline in the area of land afforested annually. Afforestation rates have declined from c. 17,000 ha per annum in the 1990s to c. 2,500 ha in 2025 resulting in a decreasing carbon sink in land converted to forest land. Afforestation rates are well below those suggested in the CAP25.

13 A carbon pool is a reservoir of carbon that has the capacity to both take in and release carbon

Figure 20: Profile of GHG Emissions (including LULUCF) in 1990 and 2025 by Sector

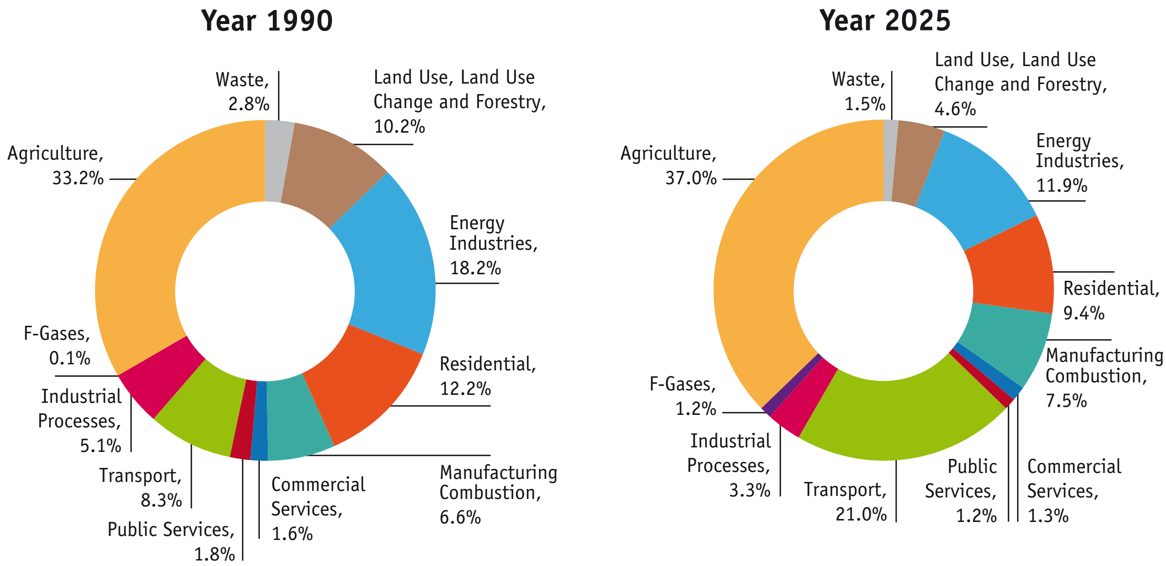
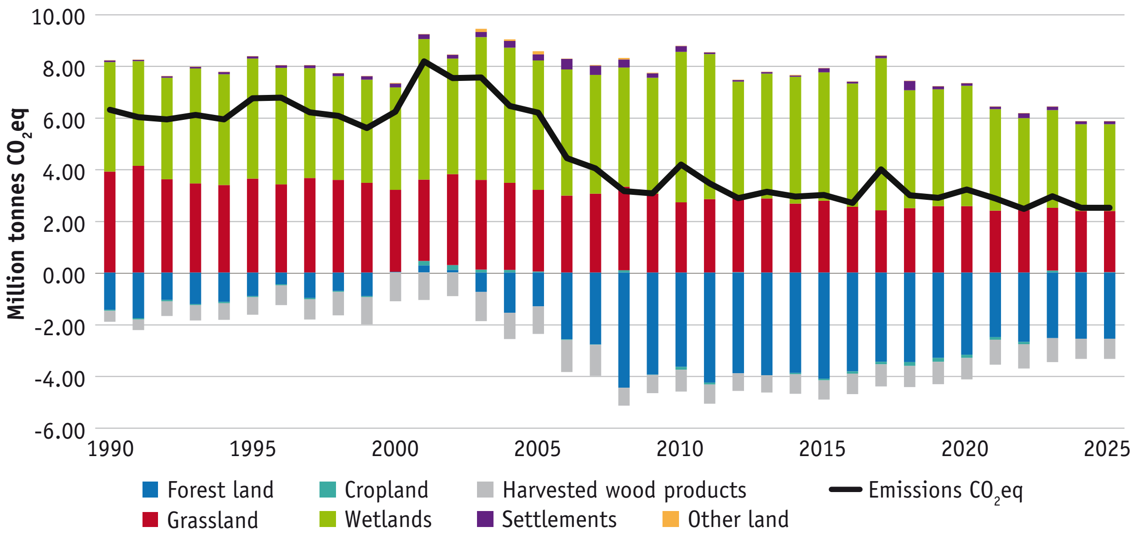


Figure 21: Trend in LULUCF 1990-2025



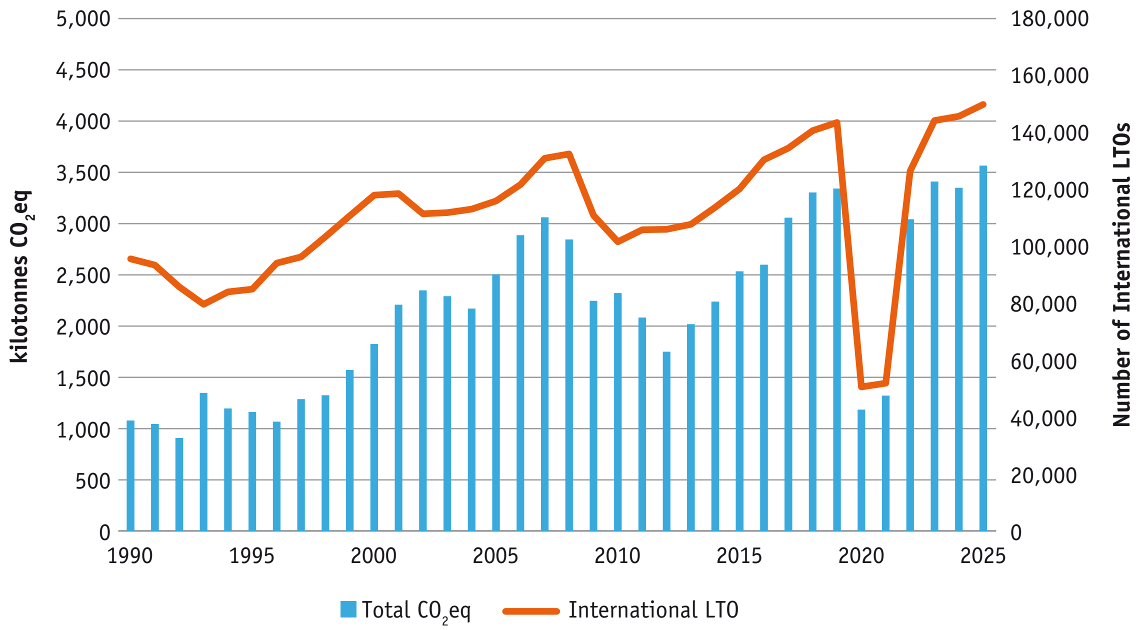
5. International Aviation and Maritime Emissions

Emissions from international aviation and maritime navigation are reported as "Memo items" in the national emission inventory. This means they are not counted as part of Ireland's national total emissions but are reported by Ireland to the UNFCCC and EU for information purposes. A substantial proportion of Ireland's international aviation emissions is included in the EU ETS, such as all intra EU flights and flights within the European Economic Area (EEA) including Iceland, Norway and Liechtenstein. In 2025, total international aviation contributed 3.57 Mt CO_2eq from almost 150,000 return flights from Irish airports (see Figure 22), an increase of 0.22 Mt CO_2 since 2024.

In recent years, CO_2 emissions from international aviation have increased very rapidly and it is therefore important that they are closely monitored for comparison with other emission sources and for the benefit of the international organisations that will have to develop control strategies for them in the future.

International marine navigation is another important source of emissions that is also excluded from Ireland's national total emissions and any EU or UN reduction commitments. In 2025, emissions from this source amounted to 0.35 Mt CO_2eq, which is a decrease of 8.2% on 2024.

Figure 22: Trend in International Aviation 1990-2025



6. Long-term Changes in Sectoral Emissions 1990-2025

As 1990 is the historical base year used by most countries in relation to UNFCCC reporting, it is instructive to look at how emissions have evolved over the longer timeframe from 1990 to the present. The share of CO_2 in total greenhouse gas emissions has increased to 59.9% of total greenhouse gas emissions in 2025 compared to 59.1% in 1990. The share of CH_4 and N_2O emissions, primarily from the agriculture sector, have fallen from 40.8% of total greenhouse gas emissions in 1990 to 38.9% in 2025 as emissions (primarily CO_2) from other sectors grew at a faster rate. Emissions from F-gases account for 1.2% of the total in 2025. The trend in national total emissions (excluding LULUCF) from 1990 to 2025 is -5.5%. See Figures 23 and 24 and Table A.1 in the Appendix.

Between 1990 and 2025, ***Transport*** shows the greatest overall increase of GHG emissions at 125.7%, from 5,143.2 kt CO_2eq in 1990 to 11,607.6 kt CO_2eq in 2025, with road transport increasing by 128.9%. Fuel combustion emissions from Transport accounted for 9.2% and 22.0% of total national greenhouse gas emissions in 1990 and 2025, respectively. The increase in emissions up to 2007 can be attributed to general economic prosperity and increasing population, with a high reliance on private car travel as well as rapidly increasing road freight transport. Over the time series passenger car numbers increased by 214.7% and commercial vehicles increased by 201.6%. Both the increase in transport emissions up to 2007 and the subsequent fall during the financial crisis highlight that transport emissions have not yet been effectively decoupled from economic activity through sustainable planning or electrification.

Energy Industries show a decrease in emissions of 41.8% over the period 1990 to 2025. Over the time series, emissions from electricity generation have decreased by 42.8% whereas total electricity consumption has increased by 162.4%. Emissions from electricity generation increased from 1990 to 2001 by 54.3% and have decreased by 62.9% between 2001 and 2025. This decrease reflects the improvement in efficiency of modern gas fired power plants replacing older peat and oil-fired plants and the increased share of renewables, primarily wind power, along with increased interconnectivity. 2024 was the first year with no peat fired electricity generation in the time series. Emissions from electricity generation had decreased year-on-year from 2016 to 2020 but increased in 2021 by 19.0% compared to 2020 due to an increase in coal and oil use, driven by a number of factors including the war in Ukraine. Coal in electricity generation decreased by 81.2% in 2025 compared to 2023.

The latest estimates show that total emissions in the ***Agriculture*** sector have decreased by 0.8% from 1990 to 2025. This is mainly driven by a 0.1% decrease in emissions from Enteric Fermentation, a 6.0% decrease in emissions from agricultural soils and a 2.7% decrease in emissions from manure management over the same period. Long term changes in the use of liming and urea show increases of 15.2% and 48.9% respectively, over the time series.

After initially showing a rising trend in emissions in the 1990s, the ***Agriculture*** sectoral emissions began to decrease steadily between 1998 until 2011. However, since 2011, emissions have trended upwards again with an overall peak in emissions reported in 2021. Fossil fuel combustion emissions from agriculture/forestry/fishing activities have decreased by 7.7% since 1990. In the last 10 years, dairy cow numbers have increased by 21.4% with a corresponding milk production increase of 38.2%. This reflects national plans to expand milk production under Food Wise 2025 and the removal of the milk quota in 2015. In the same 10-year period, other cattle and sheep numbers decreased by 5.7% and 5.4% respectively, while pigs and poultry numbers increased by 0.5% and 24.1%, respectively.

Emissions in 2024 from the ***Residential*** sector were 31.1% below the 1990 level and 5.0% below the 2024 level. Increased housing stock and a growing population had driven a gradual upward trend in the emissions after 1997 following emission reductions in the early 1990s due to fuel switching. The latest three years are the lowest three years for the ***Residential*** sector emissions across the entire inventory time series since 1990.

The number of households has increased by 92.7% and population by 55.7% between 1990 and 2025 with winter heating demand remaining an important annual variable driving emissions from this sector.

Figure 23: GHG Emissions by Gas 1990-2025

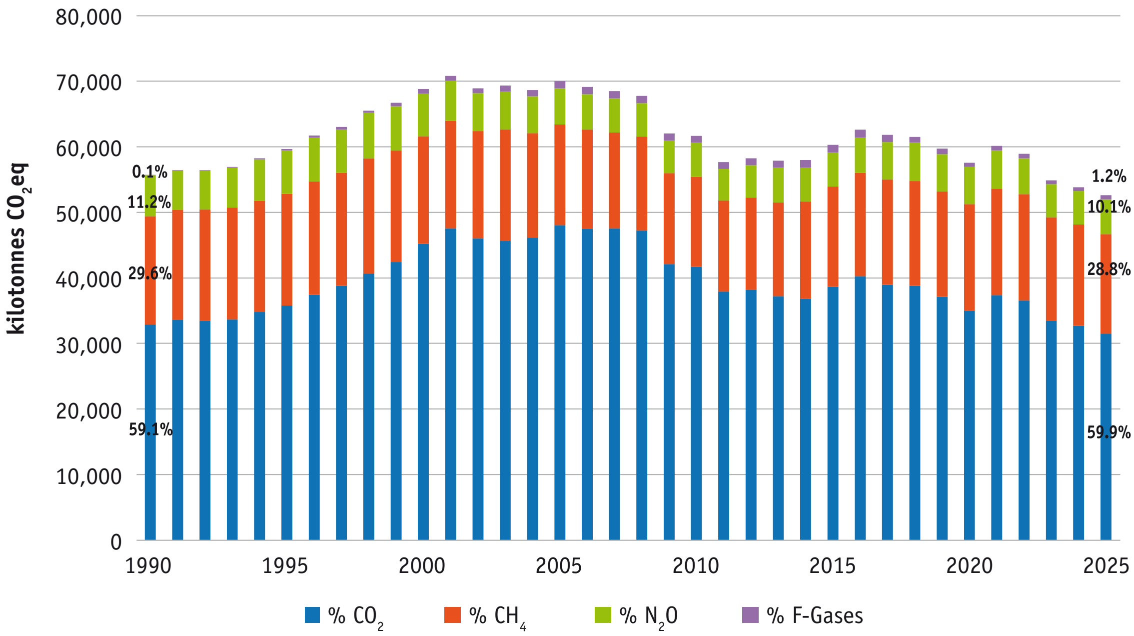
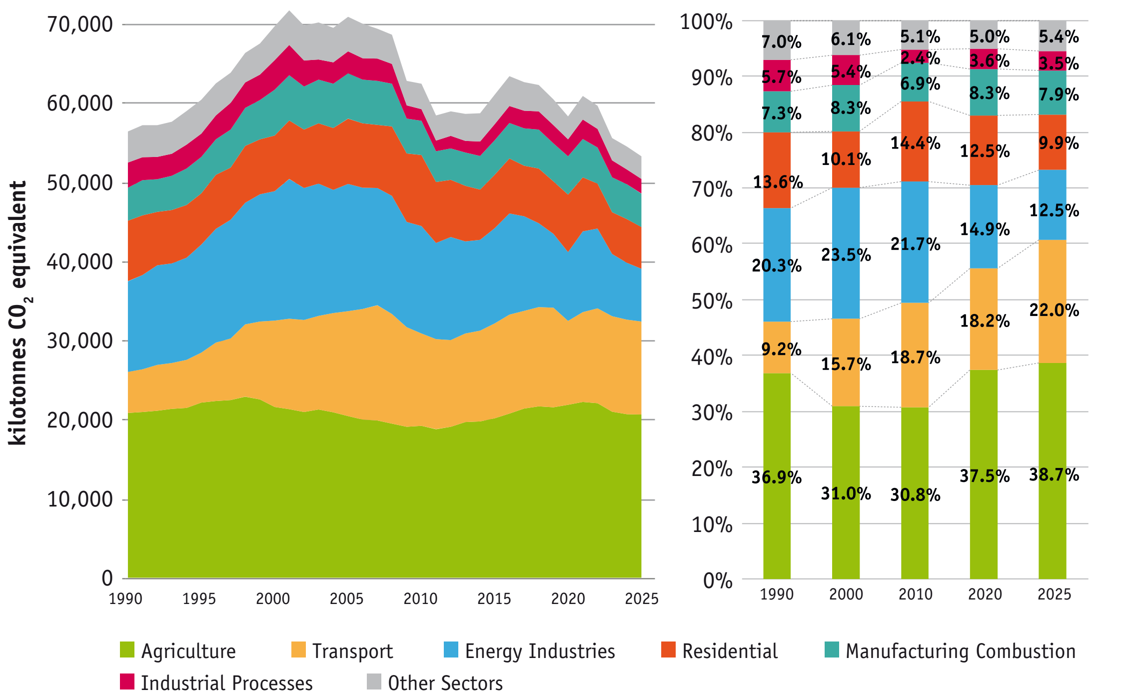


Figure 24: Trend in Emissions for Largest Sectors 1990-2025



Appendix

Additional Tables

Table A.1 Ireland's Provisional GHG Emissions by Sector 1990-2025 (kilotonnes CO_2 equivalent)

1990-2025 Submission 2027 Provisional	1990	1995	2000	2005	2010	2015	2017	2018	2019	2020	2021	2022	2023	2024	2025	% Share	% Share 2025 incl LULUCF	Annual change
Energy Industries	**11315**	**13458**	**16169**	**15863**	**13412**	**11898**	**11810**	**10486**	**9236**	**8590**	**10113**	**9928**	**7784**	**7095**	**6590**	**12.5%**	**11.9%**	**-7.1%**
Public electricity and heat production	10947	13126	15747	15235	12880	11380	11319	9995	8809	8152	9704	9521	7432	6841	6258	11.9%	11.3%	-8.5%
Petroleum refining	169	181	275	412	310	359	311	322	275	301	294	308	287	210	292	0.6%	0.5%	39.1%
Solid fuels and other energy industries	101	69	87	171	173	114	129	118	107	92	81	67	34	4	5	0.0%	0.0%	18.2%
Fugitive emissions	99	82	60	45	49	45	50	51	45	45	34	32	31	40	34	0.1%	0.1%	-13.2%
Residential	**7570**	**6407**	**6944**	**8164**	**8859**	**6641**	**6331**	**6824**	**6546**	**7192**	**6709**	**5621**	**5230**	**5486**	**5212**	**9.9%**	**9.4%**	**-5.0%**
Manufacturing Combustion	**4094**	**4568**	**5706**	**5653**	**4273**	**4321**	**4636**	**4837**	**4763**	**4794**	**4786**	**4531**	**4325**	**4332**	**4162**	**7.9%**	**7.5%**	**-3.9%**
Commercial Services	**1010**	**1080**	**1030**	**1086**	**982**	**926**	**786**	**853**	**805**	**663**	**719**	**691**	**688**	**742**	**712**	**1.4%**	**1.3%**	**-4.0%**
Public Services	**1123**	**908**	**842**	**652**	**520**	**605**	**633**	**678**	**705**	**664**	**698**	**690**	**649**	**700**	**679**	**1.3%**	**1.2%**	**-3.0%**
Transport	**5143**	**6264**	**10779**	**13126**	**11534**	**11839**	**12202**	**12396**	**12424**	**10484**	**11193**	**11883**	**11931**	**11782**	**11608**	**22.0%**	**21.0%**	**-1.5%**
Domestic aviation	48	46	70	80	49	16	18	17	18	14	20	22	23	26	28	0.1%	0.1%	7.4%
Road transportation	4789	5878	10359	12547	10988	11344	11694	11850	11852	9877	10543	11272	11298	11154	10963	20.8%	19.9%	-1.7%
Railways	147	123	136	135	135	121	128	129	135	108	116	130	137	146	155	0.3%	0.3%	6.1%
Domestic navigation	86	92	153	211	200	222	235	260	277	339	362	306	324	300	301	0.6%	0.5%	0.1%
Other transportation	73	125	62	153	161	137	127	140	142	148	152	153	149	156	160	0.3%	0.3%	3.1%
Industrial Processes	**3162**	**2901**	**3699**	**2757**	**1458**	**2002**	**2231**	**2288**	**2260**	**2103**	**2467**	**2289**	**2147**	**1867**	**1834**	**3.5%**	**3.3%**	**-1.8%**
Mineral industry	1117	1084	1909	2553	1299	1830	2040	2095	2058	1907	2257	2068	1934	1654	1622	3.1%	2.9%	-1.9%
Chemical industry	1875	1668	1577	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO			
Metal industry	26	25	29	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO			
Non-energy products from fuels and solvent use	116	95	155	171	123	134	153	154	162	155	170	179	171	170	168	0.3%	0.3%	-1.0%
Other product manufacture and use	28	29	30	33	36	37	38	39	39	40	40	41	42	43	43	0.1%	0.1%	1.5%
F-Gases	**36**	**205**	**707**	**1124**	**1066**	**1131**	**1137**	**832**	**809**	**648**	**693**	**659**	**605**	**603**	**636**	**1.2%**	**1.2%**	**5.4%**
Agriculture	**20571**	**21868**	**21335**	**20184**	**18988**	**19921**	**21127**	**21402**	**21284**	**21588**	**21968**	**21780**	**20720**	**20436**	**20398**	**38.7%**	**37.0%**	**-0.2%**
Enteric fermentation	12480	12827	12685	12016	11205	12226	12978	12917	13091	13260	13329	13357	13060	12696	12474	23.7%	22.6%	-1.8%
Manure management	2435	2496	2463	2396	2281	2500	2639	2567	2609	2594	2551	2511	2453	2406	2368	4.5%	4.3%	-1.6%
Agricultural soils	4393	4808	4715	4356	4154	4155	4469	4693	4460	4515	4684	4238	3823	3903	4130	7.8%	7.5%	5.8%
Liming	355	495	366	267	428	401	333	461	344	399	597	624	458	454	409	0.8%	0.7%	-9.8%
Urea application	97	86	92	61	98	64	84	90	96	110	106	144	139	173	144	0.3%	0.3%	-17.0%
Agriculture/Forestry fuel combustion	723	998	900	944	746	510	555	590	610	650	642	853	723	739	809	1.5%	1.5%	9.3%
Fishing	88	158	113	145	76	65	71	84	73	59	58	54	63	65	65	0.1%	0.1%	0.0%
Waste	**1709**	**2020**	**1643**	**1454**	**594**	**1026**	**988**	**943**	**908**	**889**	**834**	**880**	**841**	**823**	**820**	**1.6%**	**1.5%**	**-0.4%**
Landfills	1476	1784	1420	1140	337	792	756	714	664	644	589	634	594	586	580	1.1%	1.1%	-0.9%
Biological treatment of solid waste	NO	NO	NO	48	50	42	47	46	49	48	43	39	39	46	45	0.1%	0.1%	-1.7%
Incineration and open burning of waste	98	101	80	133	62	42	27	24	33	31	35	36	35	15	15	0.0%	0.0%	0.0%
Wastewater treatment and discharge	135	135	143	134	146	149	158	160	162	166	167	170	173	176	179	0.3%	0.3%	1.6%
Land use, land-use change and forestry	**6321**	**6764**	**6246**	**6208**	**4192**	**3009**	**4005**	**2998**	**2905**	**3218**	**2872**	**2469**	**2965**	**2514**	**2514**		**4.6%**	**0.0%**
Forest land	-1450	-918	29	-1320	-3670	-4123	-3476	-3479	-3325	-3195	-2508	-2700	-2550	-2572	-2572		-4.7%	
Cropland	-48	-45	1	43	-113	-71	-92	-155	-142	-125	-101	-83	82	11	11		0.0%	
Grassland	3925	3648	3176	3167	2728	2790	2419	2499	2573	2577	2407	2425	2432	2373	2373		4.3%	
Wetlands	4245	4669	3989	5025	5842	4990	5904	4581	4541	4675	3936	3576	3793	3373	3373		6.1%	
Settlements	61	84	147	237	229	156	101	362	115	102	102	183	136	110	110		0.2%	
Other land	0	9	18	120	15	15	14	14	13	13	12	12	8	6	6		0.0%	
Harvested wood products	-413	-683	-1114	-1064	-838	-747	-865	-823	-870	-827	-976	-943	-936	-787	-787		-1.4%	
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
National Total	**55732**	**59680**	**68854**	**70064**	**61687**	**60309**	**61881**	**61540**	**59739**	**57615**	**60180**	**58951**	**54919**	**53866**	**52650**	**100.0%**	**100.0%**	**-2.3%**
National Total with LULUCF	**62053**	**66444**	**75100**	**76271**	**65879**	**63318**	**65885**	**64539**	**62644**	**60834**	**63052**	**61420**	**57884**	**56380**	**55164**	**100.0%**	**100.0%**	**-2.2%**

Background Notes

Units: 1 Mt = 1,000 kilotonnes

CO_2 Equivalent: greenhouse gases other than CO_2 (i.e. methane, nitrous oxide and F-gases) may be converted to CO_2 equivalent using their global warming potentials (GWPs).

F-gases: These gases comprise HFCs (Hydroflurocarbons), PFCs (Perfluorcarbons), SF_6 (Sulphur Hexafluoride) and NF_3 (Nitrogen Trifluoride). They are much more potent than the naturally occurring greenhouse gas emissions (carbon dioxide, methane and nitrous oxide).

Ireland's GHG Sectors: include the following eleven sectors for analysis:

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 of fuels for heating, steam generation and powering machinery)
4. Commercial Services (combustion for Commercial Services space and hot water heating)
5. Public Services (combustion for Public Services space and hot water heating)
6. Transport (combustion of fuel used in road, rail, navigation, domestic aviation and pipeline gas transport)
7. Industrial Processes (process emissions from mineral, chemical, metal industries, non-energy products and solvents)
8. F-gases (gases used in refrigeration, air conditioning and semiconductor manufacture)
9. Agriculture (emissions from fertiliser application, ruminant digestion, manure management, agricultural soils and fuel used in agriculture/forestry/fishing)
10. Waste (emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste).
11. Land Use, Land-use Change and Forestry (LULUCF) covers the following categories: Forest Land, Cropland, Grassland, Wetlands, Settlements, Other Land and Harvested Wood Products.

GWPs

Industrial designation or common name	Chemical formula	GWP for 100-year time horizon IPCC 5th assessment report (AR5)
Carbon dioxide	CO_2	1
Methane	CH_4	28
Nitrous oxide	N_2O	265
Hydrofluorocarbons	HFCs	4 to 12,400
Perfluorinated compounds	PFCs	6,630 to 11,100
Sulphur hexafluoride	SF_6	23,500
Nitrogen trifluoride	NF_3	16,100

An Ghníomhaireacht um Chaomhnú Comhshaoil

Tá an GCC freagrach as an gcomhshaol a chosaint agus a fheabhsú, mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaol a chosaint ar thionchar díobhálach na radaíochta agus an truaillithe.

Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

- Rialáil: Rialáil agus córais chomhlíonta comhshaoil éifeachtacha a chur i bhfeidhm, chun dea-thorthaí comhshaoil a bhaint amach agus díriú orthu siúd nach mbíonn ag cloí leo.
- Eolas: Sonraí, eolas agus measúnú ardchaighdeáin, spriocdhírithe agus tráthúil a chur ar fáil i leith an chomhshaoil chun bonn eolais a chur faoin gcinnteoireacht.
- Abhcóideacht: Ag obair le daoine eile ar son timpeallachta glaine, táirgiúla agus dea-chosanta agus ar son cleachtas inbhuanaithe i dtaobh an chomhshaoil.

I measc ár gcuid freagrachtaí tá:

CEADÚNÚ

- Gníomhaíochtaí tionscail, dramhaíola agus stórála peitril ar scála mór;
- Sceitheadh fuíolluisce uirbigh;
- Úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe;
- Foinsí radaíochta ianúcháin;
- Astaíochtaí gás ceaptha teasa ó thionscal agus ón eitlíocht trí Scéim an AE um Thrádáil Astaíochtaí.

FORFHEIDHMIÚ NÁISIÚNTA I LEITH CÚRSAÍ COMHSHAOIL

- Iniúchadh agus cigireacht ar shaoráidí a bhfuil ceadúnas acu ón GCC;
- Cur i bhfeidhm an dea-chleachtais a stiúradh i ngníomhaíochtaí agus i saoráidí rialáilte;
- Maoirseacht a dhéanamh ar fhreagrachtaí an údaráis áitiúil as cosaint an chomhshaoil;
- Caighdeán an uisce óil phoiblí a rialáil agus údaruithe um sceitheadh fuíolluisce uirbigh a fhorfheidhmiú
- Caighdeán an uisce óil phoiblí agus phríobháidigh a mheasúnú agus tuairisciú air;
- Comhordú a dhéanamh ar líonra d'eagraíochtaí seirbhíse poiblí chun tacú le gníomhú i gcoinne coireachta comhshaoil;
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaol.

BAINISTÍOCHT DRAMHAÍOLA AGUS CEIMICEÁIN SA CHOMHSHAOL

- Rialacháin dramhaíola a chur i bhfeidhm agus a fhorfheidhmiú lena n-áirítear saincheisteanna forfheidhmithe náisiúnta;
- Staitisticí dramhaíola náisiúnta a ullmhú agus a fhoilsiú chomh maith leis an bPlean Náisiúnta um Bainistíocht Dramhaíola Guaisí;
- An Clár Náisiúnta um Chosc Dramhaíola a fhorbairt agus a chur i bhfeidhm;
- Reachtaíocht ar rialú ceimiceán sa timpeallacht a chur i bhfeidhm agus tuairisciú ar an reachtaíocht sin.

BAINISTÍOCHT UISCE

- Plé le struchtúir náisiúnta agus réigiúnacha rialachais agus oibriúcháin chun an Chreat-treoir Uisce a chur i bhfeidhm;
- Monatóireacht, measúnú agus tuairisciú a dhéanamh ar chaighdeán aibhneacha, lochanna, uiscí idirchreasa agus cósta, uiscí snámha agus screamhuisce chomh maith le tomhas ar leibhéil uisce agus sreabhadh abhann.

EOLAÍOCHT AERÁIDE & ATHRÚ AERÁIDE

- Fardail agus réamh-mheastacháin a fhoilsiú um astaíochtaí gás ceaptha teasa na hÉireann;
- Rúnaíocht a chur ar fáil don Chomhairle Chomhairleach ar Athrú Aeráide agus tacaíocht a thabhairt don Idirphlé Náisiúnta ar Ghníomhú ar son na hAeráide;
- Tacú le gníomhaíochtaí forbartha Náisiúnta, AE agus NA um Eolaíocht agus Beartas Aeráide.

MONATÓIREACHT AGUS MEASÚNÚ AR AN GCOMHSHAOL

- Córais náisiúnta um monatóireacht an chomhshaoil a cheapadh agus a chur i bhfeidhm: teicneolaíocht, bainistíocht sonraí, anailís agus réamhaisnéisiú;
- Tuairiscí ar Staid Thimpeallacht na hÉireann agus ar Tháscairí a chur ar fáil;
- Monatóireacht a dhéanamh ar chaighdeán an aeir agus Treoir an AE i leith Aeir Ghlain don Eoraip a chur i bhfeidhm chomh maith leis an gCoinbhinsiún ar Aerthruailliú Fadraoin Trasteorann, agus an Treoir i leith na Teorann Náisiúnta Astaíochtaí;
- Maoirseacht a dhéanamh ar chur i bhfeidhm na Treorach i leith Torainn Timpeallachta;
- Measúnú a dhéanamh ar thionchar pleananna agus clár beartaithe ar chomhshaol na hÉireann.

TAIGHDE AGUS FORBAIRT COMHSHAOIL

- Comhordú a dhéanamh ar ghníomhaíochtaí taighde comhshaoil agus iad a mhaoiniú chun brú a aithint, bonn eolais a chur faoin mbeartas agus réitigh a chur ar fáil;
- Comhoibriú le gníomhaíocht náisiúnta agus AE um thaighde comhshaoil.

COSAINT RAIDEOLAÍOCH

- Monatóireacht a dhéanamh ar leibhéil radaíochta agus nochtadh an phobail do radaíocht ianúcháin agus do réimsí leictreamaighnéadacha a mheas;
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as taismí núicléacha;
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta;
- Sainseirbhísí um chosaint ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

TREOIR, ARDÚ FEASACHTA AGUS FAISNÉIS INROCHTANA

- Tuairisciú, comhairle agus treoir neamhspleách, fianaise-bhunaithe a chur ar fáil don Rialtas, don tionscal agus don phobal ar ábhair maidir le cosaint comhshaoil agus raideolaíoch;
- An nasc idir sláinte agus folláine, an geilleagar agus timpeallacht ghlan a chur chun cinn;
- Feasacht comhshaoil a chur chun cinn lena n-áirítear tacú le hiompraíocht um éifeachtúlacht acmhainní agus aistriú aeráide;
- Tástáil radóin a chur chun cinn i dtithe agus in ionaid oibre agus feabhsúchán a mholadh áit is gá.

COMHPHÁIRTÍOCHT AGUS LÍONRÚ

Oibriú le gníomhaireachtaí idirnáisiúnta agus náisiúnta, údaráis réigiúnacha agus áitiúla, eagraíochtaí neamhrialtais, comhlachtaí ionadaíocha agus ranna rialtais chun cosaint chomhshaoil agus raideolaíoch a chur ar fáil, chomh maith le taighde, comhordú agus cinnteoireacht bunaithe ar an eolaíocht.

BAINISTÍOCHT AGUS STRUCHTÚR NA GNÍOMHAIREACHTA UM CHAOMHNÚ COMHSHAOIL

Tá an GCC á bainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóir. Déantar an obair ar fud cúig cinn d'Oifigí:

- An Oifig um Inbhunaitheacht i leith Cúrsaí Comhshaoil
- An Oifig Forfheidhmithe i leith Cúrsaí Comhshaoil
- An Oifig um Fhianaise agus Measúnú
- An Oifig um Chosaint ar Radaíocht agus Monatóireacht Comhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tugann coistí comhairleacha cabhair don Ghníomhaireacht agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair imní agus le comhairle a chur ar an mBord.

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