

9 Greenhouse gas related financial transactions

9.1 Cutting greenhouse gas (GHG) emissions is arguably the most pressing environmental challenge for all nations. The critical nature of the challenge facing Ireland is set out in the Government's recently published *Climate Action Plan 2019*.

9.2 The Department of Public Expenditure and Reform revised the *Public Spending Code*¹ in July 2019 to, *inter alia*, introduce an abatement cost model to be used by departments and state agencies for valuing the likely future GHG emissions attributable to public investment decisions.²

¹ The *Public Spending Code* is the set of rules and procedures for the appraisal, management and evaluation of public expenditure which must be applied by public sector entities in Ireland.

² Application of the abatement cost model involves estimating the level and timing of future emissions and then applying a shadow price for carbon based on the likely cost to Ireland of removing those emissions from the atmosphere. The previous method for valuing GHG emissions was based on the market value of allowances in the EU Emission Trading System.

³ The Kyoto Protocol was adopted in December 1997 and entered into force in February 2005.

⁴ The Department of Public Expenditure and Reform has published a paper which outlines its approach to implementing green budgeting. (<https://igees.gov.ie/wp-content/uploads/2019/01/The-Implementation-of-Green-Budgeting-in-Ireland.pdf>)

⁵ The system was previously known as the emissions trading scheme. The terminology was changed to EU emissions trading system under EU Directive 2018/410 of March 2018.

9.3 GHGs such as carbon dioxide, nitrous oxide and methane play an important role in sustaining a habitable temperature for the planet. These gases, through the 'greenhouse effect', are responsible for absorbing and emitting thermal radiation which in turn creates a liveable environment.

9.4 However, increases in industrial activity have led to a substantial increase in long term consumption of fossil fuels. As a result, the amount of GHGs in the atmosphere is at the highest level ever recorded. This concentration of GHGs has affected the climate system and contributed to global warming.

9.5 The United Nations Framework Convention on Climate Change and its Kyoto Protocol set the basis for international action to address climate change.³ The Kyoto Protocol set binding targets for 37 industrialised nations (including Ireland) and the EU to reduce GHG emissions over two commitment periods, 2008 – 2012 and 2013 – 2020. In 2015, Ireland also signed up to the Paris agreement which sets other targets for emissions reductions between 2021 and 2030.

9.6 Following on from these commitments, Ireland and the EU are pursuing climate targets through a combination of carbon pricing and taxation, public expenditure, regulation and public awareness policies, some of which give rise to certain financial transactions. A significant number of GHG-related transactions are occurring in Ireland but because these are spread across a wide range of State organisations, the net impact on Exchequer finances is not readily visible. The planned introduction of a green budgeting framework, announced in Budget 2019, has the potential to bring greater transparency to the impact of climate change policies on public finances.⁴

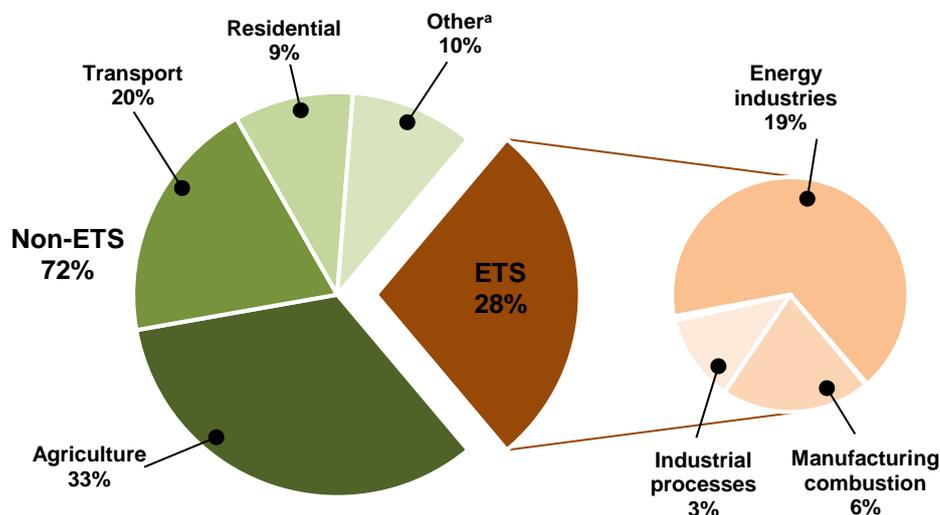
9.7 The purpose of this report is to present an overview and consolidate information about current financial transactions related to

- Ireland's GHG emissions
- the European emissions trading system (ETS)⁵
- climate action targets, and
- carbon taxes.

Ireland's GHG emissions

- 9.8** The Department of Communications, Climate Action and Environment monitors Ireland's GHG emissions through the Environmental Protection Agency (EPA). The EPA is responsible for compiling and reporting on Ireland's emissions, for submission to the EU and UN as well as publication for national stakeholders. A national inventory report is published annually to inform all relevant stakeholders of emission levels. While the EU's Monitoring Mechanism Regulation (525/2013/EU) requires biennial reporting on current and projected emissions, the EPA produces annual reports to meet national stakeholder needs.¹
- 9.9** Figure 9.1 provides an overview of the source of Ireland's GHG emissions in 2017, the latest year for which verified data is available. In 2017, Ireland emitted nearly 61 million tonnes carbon dioxide equivalent (Mt CO₂e), up from 55 Mt CO₂e in 1990.
- 9.10** In the context of EU climate policies, emissions in each member state are split into two categories; sectors of activity subject to the EU Emissions Trading System (ETS) and sectors not within the ETS (non-ETS). The ETS, first launched in 2005, covers approximately 11,000 power stations and manufacturing plants across the EU, Iceland, Liechtenstein and Norway, as well as aviation activities in those countries. All other emissions (e.g. transport, agriculture, built environment) are captured by the non-ETS sector.
- 9.11** For the first commitment period of the Kyoto Protocol (2008 – 2012), Ireland's national emissions targets covered both ETS and non-ETS emissions. However, since 2013, emissions from the ETS sector do not count towards national emissions targets.

Figure 9.1 Ireland's greenhouse gas emissions by sector, 2017



Source: Environmental Protection Agency

Note: a The other sources of non-ETS emissions include some emissions from manufacturing combustion, commercial services, waste, energy industries, the public sector and F-gases. The F-gases are hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and nitrogen trifluoride.

¹ The preparation of the EPA inventories and projections is a collaborative process involving government departments and State agencies, including the Sustainable Energy Authority of Ireland and Teagasc.

- 9.12** Around 28% of Ireland's emissions fall within the scope of the ETS. In other EU member states, the average proportion of emissions covered by the ETS is about 40%. The lower share in Ireland is mainly due to the relatively low level of heavy industry and the relatively large scale of the agricultural sector — emissions from agriculture are not covered by the ETS. Details of how the ETS operates are provided in the next section.
- 9.13** The non-ETS sector incorporates all other types of emissions and is dominated in Ireland by emissions from agriculture and transport. Non-ETS producers account for 72% of Ireland's total GHG emissions.

EU Emissions Trading System

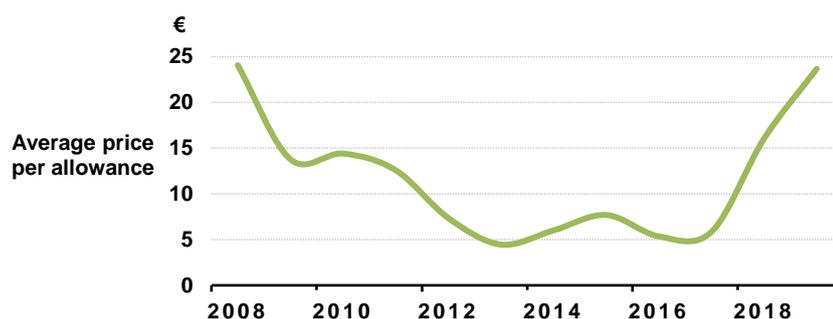
- 9.14** The ETS sets a Europe-wide cap on the level of emissions by the sectors covered and establishes a market where GHG allowances can be traded by participating operators in those sectors. The overall emissions cap is decreased each year. In the current trading period (2013 – 2020), the cap reduces by 1.74% each year, with the aim of ensuring an aggregate decrease of 21% on 2005 emissions levels by 2020. Over the next trading period (2021 – 2030), the cap will reduce by 2.2% each year, with the aim of achieving an aggregate reduction of 43% on 2005 levels by 2030.
- 9.15** The trading system effectively puts a price on carbon emissions, allowing operators the choice to either reduce their emissions below a certain limit, or to continue with business as usual and buy a commensurate amount of compensating credits from the market.
- 9.16** The system is designed around trading periods, with the rules being modified from one period to the next in order to improve the overall integrity of the system. Participation in the EU ETS is mandatory for companies that operate in an activity set out in Annex 9A of the ETS Directive. Smaller institutions with emissions falling below certain thresholds are excluded. The activity under which most of Ireland's operators qualify for the ETS is combustion of fuels with total installed capacity above 20 MW.
- 9.17** In Ireland, there are currently 104 stationary sites and 13 aircraft operators participating in the EU ETS, including entities involved in power generation and in the cement, lime and oil refining sectors. The list also includes large companies in the food and drink, pharmaceuticals, electronic and aviation sectors.¹

¹ See Annex 9A for a list of installations in Ireland holding a GHG permit as at 1 July 2019.

Price of emission trading allowances

- 9.18** The unit used for emissions trading is referred to as an ‘allowance’. This is equivalent to one metric tonne of carbon dioxide. Auctions of allowances take place on a daily basis within participating member states, but are open to buyers from all other states within the system. The price for allowances fluctuates over time (see Figure 9.2). During 2018, the market price on a common auction platform used by Ireland and 24 other states ranged from below €10 during the first quarter of the year to a high of nearly €25 during August.
- 9.19** Since 2009, there has been an excess of emission allowances on the market largely as a consequence of the economic downturn at EU level following the financial crisis in 2008. Reductions in emissions were far greater than anticipated, leading to a surplus of allowances and lower allowance prices. To alleviate this, following amendments to the EU ETS legislation, the EU Commission first postponed auctioning 900 million allowances until 2020 and subsequently introduced a ‘market stability reserve’. From 2019, allowances from postponed auctions and excess allowances in circulation will be transferred to the market stability reserve instead of the ETS market. These new policies have led to the market tightening and have driven up the price for allowances.

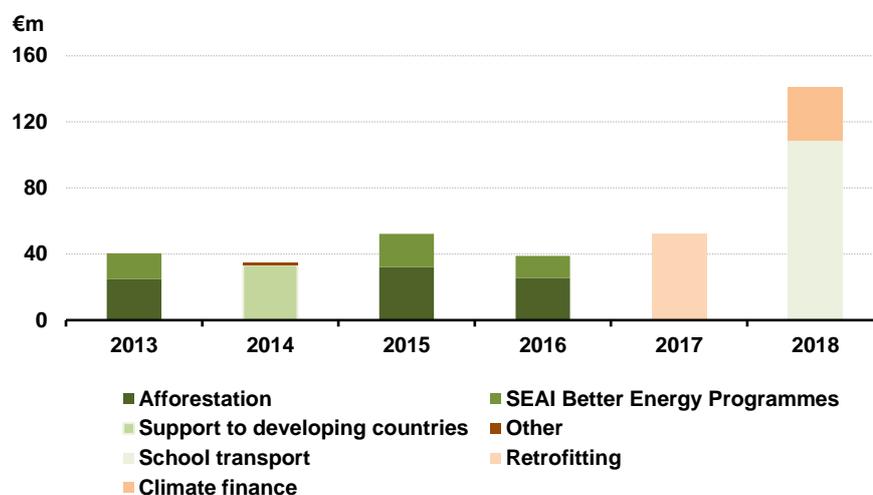
Figure 9.2 Market price for ETS allowances, 2008 to 2019



Source: Sandbag — Carbon Pricing Viewer

Revenue from trading

- 9.20** Revenue generated from the auction of allowances is divided between the member states, mainly based on their overall ETS emissions as a proportion of total EU ETS emissions. Ireland’s receipts totalled €367.3 million between 2013 and 2018 (see Figure 9.3). The increase in revenue for 2018 reflects the higher price for allowances.
- 9.21** Under Directive 2003/87/EC, at least 50% of the revenue generated from auctions should be used by member states to finance specific climate and energy programmes. The EU Monitoring Mechanism Regulation requires each member state to report on their use of such revenues. The Department of Communications, Climate Action and Environment has stated that while Ireland does not formally ring-fence ETS auction revenues for specific purposes, amounts equivalent to 100% of such revenue (less administration costs) in each year have been attributed to emission reduction activities. The composition of the declared activities has varied from year to year, as indicated in Figure 9.3, with the overall expenditure on declared activities varying also in line with fluctuating ETS auction revenues.

Figure 9.3 Application of receipts from ETS auctions, 2013 to 2018^a

Source: Department of Communications, Climate Action and Environment

Note: a EPA administration costs for the period were deducted from receipts prior to application as shown above.

- 9.22** The European Commission noted in 2017 that Ireland is one of ten member states where revenue raised through the auction of allowances is not earmarked or ring-fenced in its budget.¹ Along with nine other member states, Ireland was also deemed to provide a low level of detail on the application of revenue to projects aimed at reducing emissions.

Performance of individual operators in Ireland

- 9.23** Individual operators covered by the EU ETS must report their emissions for each calendar year by 31 March of the following year and must surrender sufficient allowances to cover excess emissions by 30 April.² Failure to surrender the necessary allowances incurs a penalty of €100 per tonne of excess emissions. Payment of the penalty does not release the operator from their obligation to surrender an amount of allowances equal to the excess in the following calendar year.
- 9.24** Prior to 2018, all Irish operators had been fully compliant with their obligations under the ETS. Two operators failed to surrender sufficient allowances in respect of 2017 by the deadline of 30 April 2018. In accordance with SI 490 of 2012 (as amended), the EPA imposed fines of €201,100 on St James's Hospital Board and €51,171 on Vodafone Group Services Ireland Limited. All operators surrendered the necessary allowances in respect of 2018 by 30 April 2019.

¹ European Commission Report: *Analysis of the use of auction revenues* by the member states, March 2017. (https://ec.europa.eu/clima/sites/clima/files/ets/auctioning/docs/auction_revenues_report_2017_en.pdf).

² Allowances are held and surrendered by operators through their accounts on the union registry controlled by the European Commission. Each member state administers a section of the registry for its own operators.

Climate action targets

- 9.25** As previously outlined, Ireland's national emissions targets covered both ETS and non-ETS emissions in the context of the first Kyoto Protocol commitment period (2008 – 2012). Since then, separate targets have applied for the ETS and non-ETS sectors.
- 9.26** Whereas annual targets are set to reduce Europe-wide emissions for the ETS sector, legally binding national targets are set at EU level for participating countries to reduce their non-ETS emissions. Figure 9.4 sets out the relevant targets for both Ireland and the EU as a whole over the period from 2008 to 2030.

Figure 9.4 Climate action targets for Ireland and the EU

Reference periods	Targets to be achieved by end of reference period	
	Irish targets	EU targets
2008 – 2012^a	Limit overall Irish emissions to 13% above 1990 levels	Reduce overall EU emissions to 8% below 1990 levels
2013 – 2020	Reduce non-ETS emissions to 20% below 2005 levels ^b	Reduce non-ETS emissions to 10% below 2005 levels
	16% total energy to come from renewable energy sources	20% total energy to come from renewable energy sources
	20% improvement in energy efficiency, relative to 2001-2005 period	20% improvement in energy efficiency
2021 – 2030^c	Reduce non-ETS emissions to 30% below 2005 levels ^b	Reduce non-ETS emissions to 30% below 2005 levels
		32% total energy to come from renewable energy sources
		At least 32.5% improvement in energy efficiency

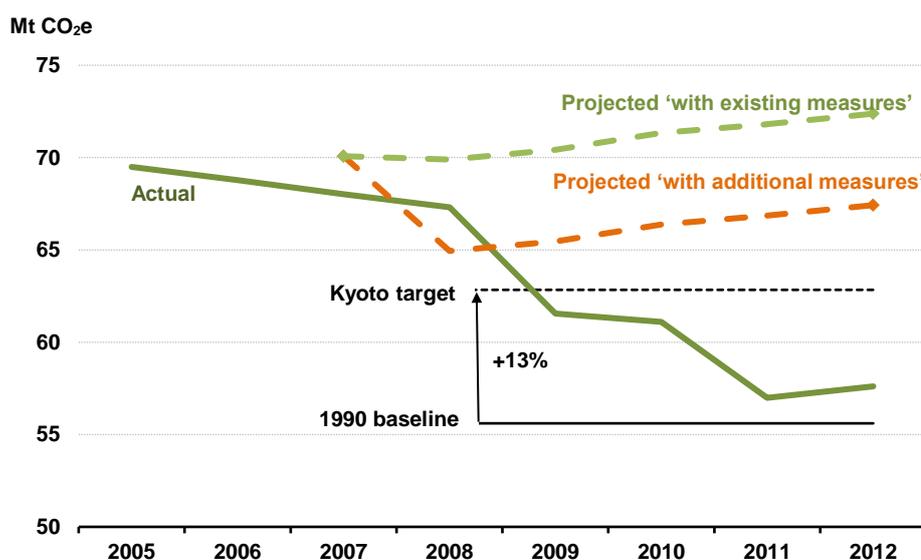
Source: Kyoto Protocol 1997, Paris Agreement 2015

- Notes:
- a The Kyoto Protocol allowed groups of countries to meet their targets jointly, with the EU's overall 8% reduction broken down into legally binding national targets. Ireland received an 'emission limitation' target, as opposed to an 'emission reduction' target.
 - b Binding annual limits have also been set for each year within the commitment period.
 - c The Department of Communications, Climate Action and Environment has stated that national targets for energy efficiency and renewable energy will be finalised in the National Energy and Climate Plan, by end 2019.

Commitment period 2008 to 2012

- 9.27** In 2005, under the Kyoto Protocol, the EU set an overall reduction target of 8% below 1990 levels that was broken down into national targets. These targets were tailored to the relative wealth of each country under a 'burden sharing' agreement, included in Decision 2002/358/EC as part of the approval of the Kyoto Protocol. While the target for the EU as a whole was to reduce emissions to at least 8% below 1990 levels, Ireland's target was to limit its annual average GHG emissions for the 2008 – 2012 period to not more than 13% above the 1990 baseline.¹ This equated to an annual target of 62.8 Mt CO₂e.
- 9.28** In this commitment period, separate targets were not specified under the Protocol for the ETS and non-ETS sectors — it was up to each participating country to decide how best to achieve the national target. In Ireland, responsibility for achieving the target was divided between the State i.e. non-ETS sector (40.5 Mt CO₂e or 64%) and the ETS sector (22.3 Mt CO₂e or 36%) in accordance with a national allocation plan approved by Government.
- 9.29** Figure 9.5 plots Ireland's progress against the national GHG emissions target set for the first Kyoto commitment period. The *National Climate Change Strategy (2007 – 2012)*, published in 2007, projected that emissions in Ireland would exceed the limit set in each year of the commitment period, for two scenarios: 'with existing measures' (WEM) or 'with additional measures' (WAM).²
- 9.30** According to the latest inventory data for the period, reported to the UN Framework Convention on Climate Change in April 2019, Ireland's actual GHG emissions over the 2008-2012 reference period were just under 305 Mt CO₂e, which was about 10 million units below the target level.³ However, the reduction in emissions achieved was due mainly to the contraction in economic activity over the commitment period, rather than the impact of abatement measures implemented.

Figure 9.5 Ireland's total greenhouse gas emissions, 2005 to 2012



¹ The level of Ireland's GHG emissions in 1990 was 55.607 Mt CO₂e. The first Kyoto target for Ireland was to keep emissions below 314.18 Mt CO₂e for the five-year period from 2008 to 2012 inclusive.

² Separate projections were produced for the WEM and WAM scenarios to reflect the estimated impact of emission-reducing initiatives that could be implemented during the period.

³ The emissions figure for the 2008 – 2012 period reported to the UNFCCC in April 2014 was 308.5 Mt CO₂e. The difference is due to changes over time in the methodology used to calculate GHG emissions.

Unused carbon credits

- 9.31** As illustrated in Figure 9.5, it was initially projected that Ireland's GHG emissions would exceed the national limit set for the 2008 – 2012 period, notwithstanding the impact of planned abatement measures. A Government decision of March 2006 approved the establishment of a carbon purchasing programme, whereby the State could purchase up to 18 million carbon credits over the period.¹ A carbon fund was set up to record the transactions. The fund is managed by the National Treasury Management Agency (NTMA). As the designated purchasing agent on behalf of the State, the NTMA administers and manages purchases of carbon credits.
- 9.32** The State, through the NTMA as appropriate, may use the following mechanisms to obtain carbon credits
- direct purchase from other Kyoto Protocol parties
 - direct investment in joint implementation measures and clean development mechanism projects²
 - investment in managed funds³
 - direct market purchase of carbon credits.
- 9.33** By the end of 2012, the State had spent €89.5 million on purchasing carbon credits. Separately, the State has invested €31.8 million to date in managed funds. Details of these transactions are set out in Figure 9.6.
- 9.34** At the end of the first Kyoto commitment period, the State surrendered 3 million carbon credits to comply with Ireland's obligations for that period (each member state was required to transfer units to a retirement account to show compliance with its emissions commitment under Article 3, Paragraph 1 of the Kyoto Protocol). Ireland was able to carry forward 5.27 million unused credits to contribute towards the State's obligations under the EU Effort Sharing Decision (coinciding with the second Kyoto commitment period ending in 2020).

Figure 9.6 Transactions to obtain carbon credits

NTMA market transactions	Credits	Average price €/credit^a	Cost €m
Settlements 2008	3,455,000	15.09	52.1
Settlements 2009	1,800,000	12.00	21.6
VAT	-	-	15.8
Subtotal	5,255,000	14.03	89.5
Fund transactions	Fund units		Commitment €m
Multilateral Carbon Credit Fund	1,661,130		20.0
Carbon Fund for Europe	244,169		4.1
BioCarbon Fund	1,536,872		7.7
Subtotal	3,442,171		31.8
Total	8,697,171		121.3

Source: Department of Communications, Climate Action and Environment

Note: a Average price (€/credit) net of VAT.

1 A carbon credit is equivalent to one metric tonne of carbon dioxide.

2 Joint implementation measures are climate protection projects part-financed by one country but located in another. The clean development mechanism involves developed countries engaging in climate change projects designed to reduce emissions in developing countries, as an alternative to more expensive emission reduction measures in their own countries.

3 The total number of carbon credits, if any, to be received by Ireland in return for its investment is only known once the carbon reducing projects are complete.

Commitment period 2013 to 2020

9.35 The 2020 EU climate and energy framework is a package of legislation to ensure the EU meets its climate and energy targets for the year 2020. Arising from the framework, Ireland has three key sets of commitments to meet for the 2013 to 2020 period.¹

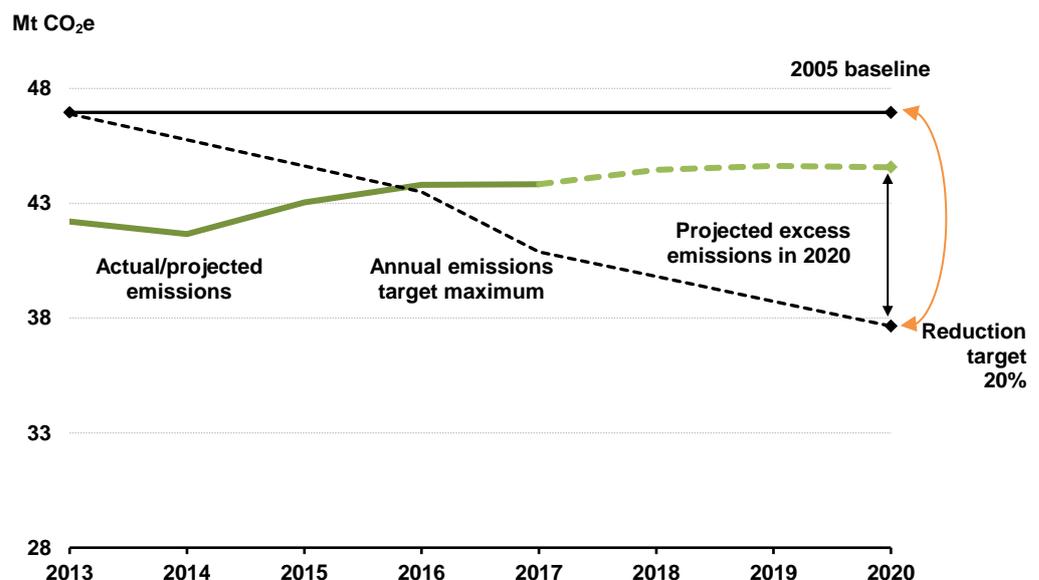
- Ireland's commitments under the second period of the Kyoto Protocol will mostly be discharged through its membership of the EU via the 2009 EU Effort Sharing Decision (ESD).² The ESD has set binding annual targets for non-ETS emission reductions by each member state.
- The EU Renewable Energy Directive aims to increase the growth in renewable energy in Ireland and the EU.³ The Directive sets out two mandatory targets for increasing the share of renewable energy in Ireland to be met by 2020.
- In response to the EU Energy Efficiency Directive, Ireland has adopted a national non-binding target of a 20% increase in energy efficiency by 2020 relative to the 2001 – 2005 baseline.⁴

Emissions targets

9.36 Ireland's binding target for the year 2020 is for non-ETS emissions to be 20% below their level in 2005. Annual targets are also set for each year within the commitment period. Figure 9.7 shows Ireland's performance against emissions targets up to 2017 and projections for the period 2018 to 2020.

9.37 Ireland failed to meet its emissions target for 2017 and is expected to do so again each year to 2020. The latest EPA projections indicate that Ireland's emissions in 2020 will only be between 5% and 6% below 2005 levels, under the 'with existing measures' and 'with additional measures' scenarios respectively.

Figure 9.7 Ireland's greenhouse gas emissions (non-ETS), 2013 to 2020



¹ See <https://ec.europa.eu/clima/policies/strategies/2020>

² Decision No 406/2009/EC, of 23 April 2009. ESD compliance doesn't fulfil Kyoto Protocol compliance fully. Kyoto Protocol accounting rules will describe in detail when the Doha Amendment has been ratified by a sufficient number of parties and enters into force.

³ Directive 2009/28/EC on the promotion of the use of energy from renewable sources.

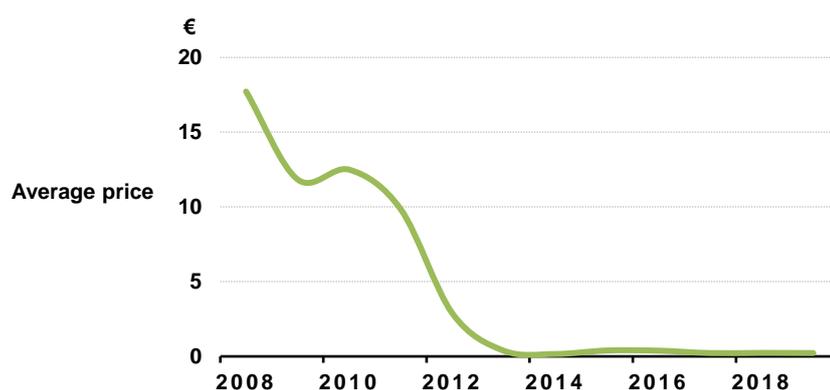
⁴ Directive 2012/27/EU on energy efficiency.

Source: Environmental Protection Agency, 2019

Note: a Projections are based on the 'with existing measures' scenario. Projections to 2020 using the 'with additional measures' scenario do not differ significantly.

- 9.38** Where excess emissions are produced in a given year, the ESD allows member states to meet their targets by applying unused credits from earlier years, or by purchasing credits from other member states or on international markets. These credits are different to those sold on the ETS market. Some of these credits e.g. certified emissions reductions (CERs), can be purchased in an over-the-counter market. Figure 9.8 tracks the price of CERs which currently stands at €0.20 per credit. Other credits, such as emissions reduction units (ERUs) are generated by investing in emission reduction projects in other countries.

Figure 9.8 Trend in prices for certified emission reductions, 2008 to 2019



Source: Department of Communications, Climate Action and Environment

- 9.39** After applying the 5.27 million unused carbon fund credits eligible for use in ESD compliance from the 2008 – 2012 commitment period, it is expected that Ireland will still need to buy additional credits. The Department estimates that purchasing the required credits will cost in the range of €2–€14 million, depending on the final quantity needed and the prevailing market price.¹ This range is based on sensitivity analysis carried out by the Department (see Figure 9.9). The Department used the EPA's estimated shortfall of 15.8 Mt CO₂e (based on a low fuel price scenario)² and current spot price (€0.20) to determine the lower estimate of €2.10 million. The higher limit of the range was set by assuming the shortfall increases by 20% (to 18.96 Mt CO₂e) and the spot price rises to €1.

Figure 9.9 Estimated cost of purchasing credits to meet 2020 target

	Projection (2019)	Sensitivity analysis	
		(+10%)	(+20%)
Cumulative shortfall (2013 to 2020)	15.8 Mt	17.38 Mt	18.96 Mt
ESD-eligible international credits held in reserve	5.27 Mt	5.27 Mt	5.27 Mt
Estimated purchasing requirement	10.53 Mt	12.11 Mt	13.69 Mt
Cost @ €0.20 spot price (current)	€2.10m	€2.42m	€2.74m
Cost @ €0.50 spot price	€5.27m	€6.06m	€6.85m
Cost @ €1.00 spot price	€10.53m	€12.11m	€13.69m

Source: Department of Communications, Climate Action and Environment

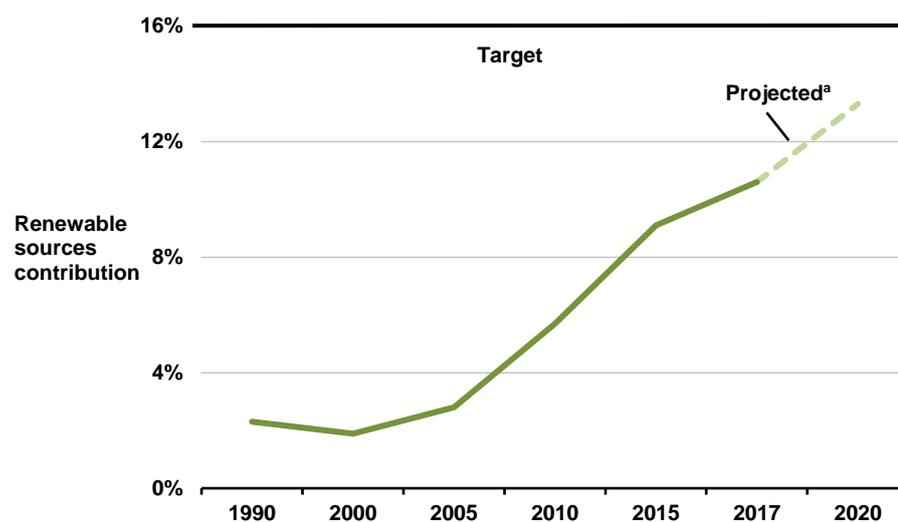
¹ This is in addition to the €121 million (see Figure 9.6) that has already been spent as part of Ireland's strategy to meet its targets under the first commitment period.

² Under a high fuel price scenario, the cumulative shortfall would be lower which would reduce the number of credits to be purchased.

Renewable energy targets

- 9.40** In terms of renewable energy, Ireland's target is for at least 16% of gross final energy consumption to come from renewable sources by 2020. Figure 9.10 shows progress to date and projections to 2020.

Figure 9.10 Ireland's progress towards 2020 renewable energy targets



Source: Sustainable Energy Authority of Ireland

Note: a The projected figure for 2020 is shown as the midpoint (i.e. 13.3%) of the range projected by the Sustainable Energy Authority of Ireland.

- 9.41** The Sustainable Energy Authority of Ireland (SEAI) projects that Ireland will achieve between 12.3% to 14.3% renewable energy use by 2020.¹ Relative to the binding target of 16%, Ireland therefore faces a projected shortfall of circa 3% of its energy demand from renewable sources by 2020.
- 9.42** The EU Renewable Energy Directive provides for member states falling short of their mandatory target to purchase 'statistical transfers' from other member states that have excess renewable statistics at the end of the commitment period. The Department of Communications, Climate Action and Environment has stated that any requirement for the purchase of statistical transfers to meet compliance, within the framework of the Renewable Energy Directive 2009, will be undertaken against a background of discussions by the Irish authorities with the EU Commission and relevant member states. To date, Ireland has not purchased statistical transfers from another EU member state. Indications based on trades between other member states suggest that the shortfall could result in costs of the order of €110 million, subject to prevailing market conditions.
- 9.43** The Department has stated that the actual cost of acquiring statistical transfers would be spread over a period and the full cost would not be known with certainty until 2021.

¹ SEAI National Energy Projections 2019.

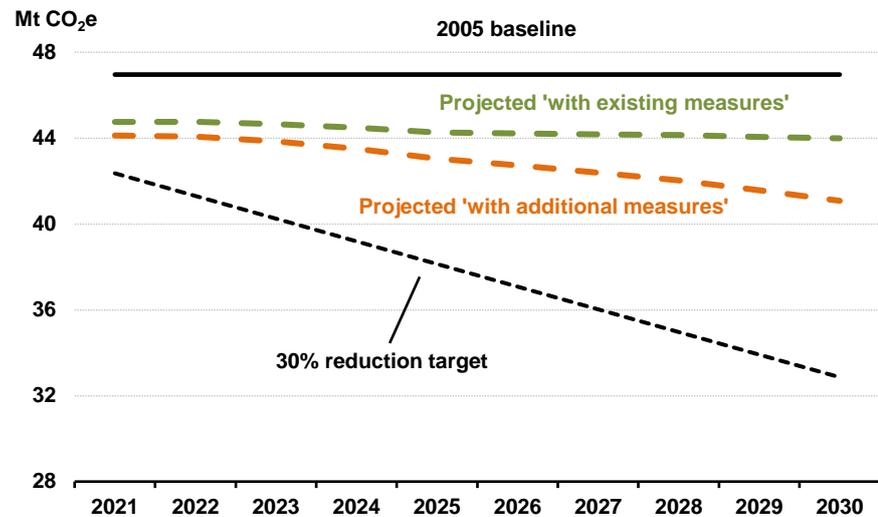
Energy efficiency targets

- 9.44** In addition to renewable energy, Ireland's 2020 target of a 20% increase in energy efficiency is a non-binding national target adopted in response to the EU Energy Efficiency Directive. Notwithstanding expenditure under a range of grant schemes and programmes delivered by the SEAI on behalf of the Government and a broader suite of policies and measures as detailed in Ireland's draft *National Energy and Climate Plan*, the SEAI projects that Ireland will fall short of this target, with a forecasted energy efficiency improvement of 16% relative to the 2001 – 2005 baseline. While there is no direct financial penalty for failure to achieve the energy efficiency target, underperformance in this area may impact Ireland's ability to meet the binding renewable energy and emissions targets.

Post-2021

- 9.45** The Paris Agreement was adopted by members of the UN Framework Convention on Climate Change in December 2015. It aims to limit the rise in global temperature to well below 2°C above pre-industrial levels, with a further ambition to pursue efforts to limit the increase to 1.5°C.
- 9.46** The agreement is designed to meet its objective through nationally determined contributions (NDCs) submitted by all parties. Ireland will contribute via the NDC submitted by the EU on behalf of its member states, committing to a 40% reduction in EU-wide emissions by 2030, compared to 1990. The overall commitment for 2030 is based on EU-wide reductions of 43% in the ETS sector and 30% in the non-ETS sector.
- 9.47** The contributions to be made by the non-ETS sectors in each member state are laid down in the EU Effort Sharing Regulation (ESR), which sets out binding annual national targets for the 2021 – 2030 period.¹ The reductions required by individual member states range from 0% to 40% on 2005 levels. Ireland's target under ESR is a reduction in non-ETS emissions of 30% on 2005 levels (see Figure 9.11).
- 9.48** Two flexibility options built into the ESR may contribute to the achievement of member states' non-ETS targets for emissions reduction. Ireland may transfer credits, representing 4% of 2005 non-ETS emissions, from the ETS sector to contribute towards its 2030 non-ETS target. This would require Ireland to forfeit the revenue that it would otherwise be due from the proceeds of auctioning those ETS allowances, and would therefore represent a cost to the Exchequer. Separately, Ireland may attribute a pre-determined maximum number of credits, set out in the ESR, from sustainable land use, land-use change and forestry measures, towards its non-ETS target.
- 9.49** The EPA prepares an annual set of projections of Ireland's future emissions under two scenarios; with existing measures (WEM) and with additional measures (WAM). Figure 9.11 tracks these projections along with the 2030 targets.

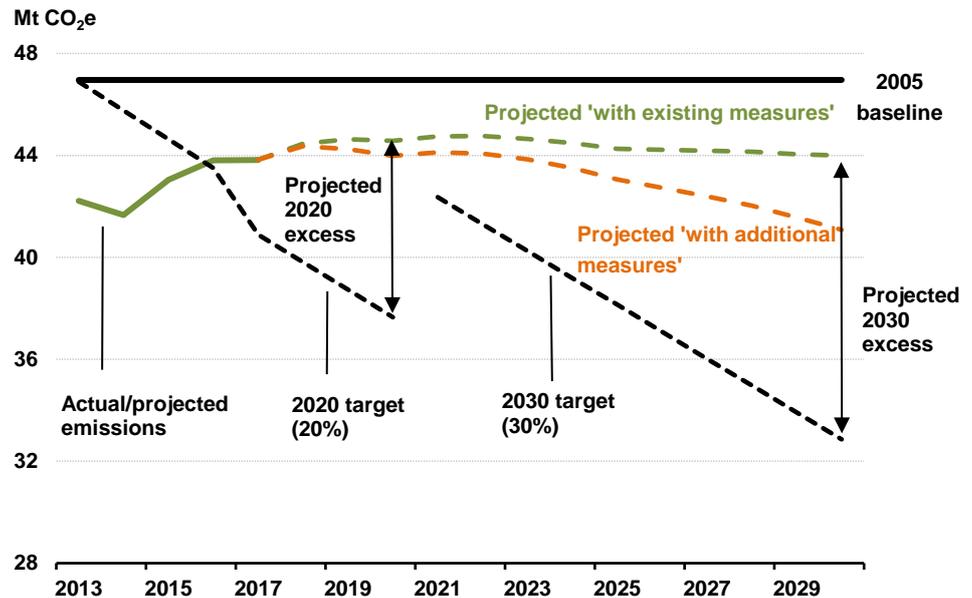
¹ The ESR recognises the different capacities of member states to take action by setting differential targets according to gross domestic product per capita across member states.

Figure 9.11 Projections of Ireland's non-ETS emissions, 2021 to 2030

Source: Environmental Protection Agency, 2019

- 9.50** The EPA's latest projections indicate that over the 2021 – 2030 period, Ireland will not meet the 30% target for reduction in emissions. Even allowing for the full impact of planned abatement measures under Project Ireland 2040 and assuming the flexibilities within the ESR are used to full effect, emissions are projected to exceed the allowable limit for the period. Figure 9.12 shows Ireland's actual and projected emissions for the period 2013 to 2030 along with the targets due to be met in 2020 and 2030. These projections do not yet incorporate the policies and measures set out in the *Government's Climate Action Plan*, published in 2019.
- 9.51** In order to meet its obligations under the ESR, the EPA projections indicate that Ireland will need to implement additional abatement measures. In the event that the planned policies and measures contained in the Climate Action Plan are insufficient to meet Ireland's annual targets under the ESR, Ireland may need to purchase additional credits during the 2021 – 2030 period. While credits have been available to buy from over-performing states at relatively low prices during the current commitment period, there is no guarantee that this will continue to be the case from 2021 onwards, particularly given that all outstanding over-performance will effectively be cancelled from 31 December 2020.
- 9.52** In 2011, the EU published plans to reduce GHG emission to 80–95% below 1990 levels by the year 2050. This target was updated in 2018, when the Commission presented its strategic long-term vision for a climate-neutral economy by 2050. The communication from the Commission identified eight different emissions reduction pathways for 2050, including pathways to achieve a net zero emission objective in this timeframe.

Figure 9.12 Ireland's non-ETS emissions, 2013 to 2030



Source: Environmental Protection Agency, 2019

Environmental taxes

- 9.53** In 2018, €5.1 billion in environmental taxes was collected by the State.¹ Those environmental taxes included energy taxes such as duties on hydrocarbon oil products (€2.2 billion), as well as transport taxes like motor tax (€1 billion) and vehicle registration taxes (€871 million). Environmental taxes generate substantial sums but are not considered further in this chapter, with the exception of carbon tax.

Carbon tax

- 9.54** Carbon tax is a tax on fossil fuels such as natural gas, hydrocarbon oils, coal and peat. It is based on the amount of carbon dioxide (CO₂) emitted when the fuel is combusted. The tax, initially calculated at a rate of €15 per tonne of CO₂ emitted, was introduced in Ireland with effect from 2010. It was first applied to the two main transport fuels (petrol and auto-diesel) as a carbon component of mineral oil tax, known as a mineral oil tax carbon charge (MOTCC). Carbon tax was extended to other hydrocarbon fuels (principally marked gas oil, kerosene, fuel oil and liquefied petroleum gas) in May 2010, when a natural gas carbon tax (NGCT) was introduced.

- 9.55** The tax rate was increased to €20 per tonne of CO₂ emitted for transport fuels in December 2011 and for liquid heating fuels in May 2012. The NGCT rate was also increased to €20 per tonne of CO₂ emitted in May 2012.

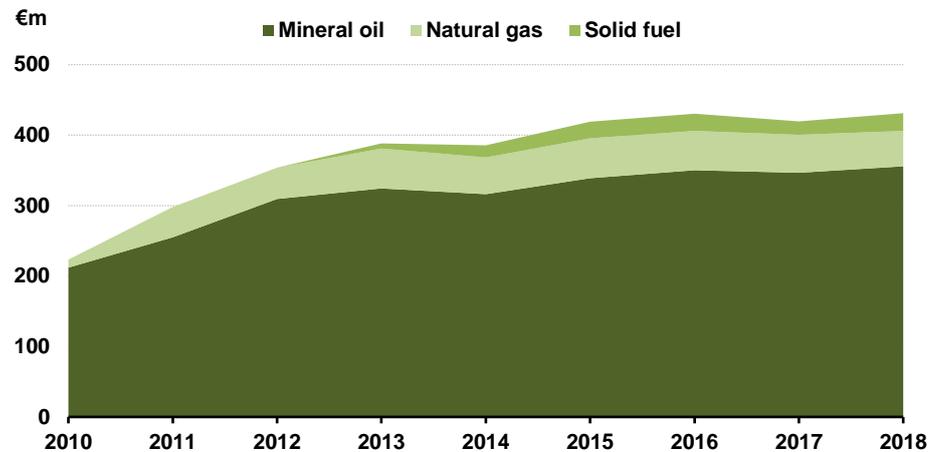
- 9.56** In May 2013, a solid fuel carbon tax (SFCT) was introduced initially at a reduced rate of €10 per tonne of CO₂ emitted — it applied to coal, peat and peat products supplied in Ireland. The full rate of €20 per tonne of CO₂ emitted has been applied to supplies of solid fuel from May 2014.

- 9.57** The current rates for MOTCC, NGCT and SFCT are €20 per tonne of CO₂ emitted.² The combined receipts for all three taxes in 2018 were over €431 million. Receipts from each of the carbon taxes are tracked in Figure 9.13.³

¹ See <https://www.cso.ie/en/releasesandpublications/er/eaet/environmenttaxes2018>.

² Legislation provides for certain reliefs from carbon taxes in respect of fuels used in installations in possession of greenhouse gas emissions permits. The reliefs operate by way of remission or repayment of the tax.

³ A breakdown of excise receipts by commodity is available on the Revenue website at <https://www.revenue.ie/en/corporate/documents/statistics/excise/net-receipts-by-commodity.pdf>

Figure 9.13 Carbon tax receipts, 2010 to 2018

Source: Office of the Revenue Commissioners

Government action plan

- 9.58** The Government's *Climate Action Plan* was published in June 2019. The Department of Communications, Climate Action and Environment has stated that the plan sets out, for the first time, how Ireland can reach its 2030 targets to reduce greenhouse gas emissions and also puts Ireland on a trajectory towards net-zero carbon emissions by 2050. The plan focuses on actions to be implemented, providing specific timelines and responsibilities. The plan is to be updated annually, including an analysis of progress towards 2030 targets.
- 9.59** The Department has stated that the action plan clearly identifies the nature and scale of the challenge facing Ireland. It outlines the current state of play across key sectors including electricity, transport, built environment, industry and agriculture and charts a course towards ambitious decarbonisation targets. It also sets out governance arrangements including carbon-proofing policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas.
- 9.60** It is noted that implementation of the action plan is to be funded through *Project Ireland 2040*, which provides €30 billion for low carbon and sustainable mobility investments in the period to 2027.

Conclusions

- 9.61** Through its membership of the EU and participation in various international agreements, Ireland has a number of clear targets in the climate change area, some of which are binding. There are significant financial consequences of not meeting those binding targets.
- 9.62** Ireland met its GHG emissions target under the first commitment period of the Kyoto Protocol from 2008 to 2012, but this was mainly due to an unanticipated contraction in economic activity rather than the impact of abatement measures adopted. The EPA projects that Ireland will not meet its emissions targets in the non-ETS sector for the 2013 to 2020 period.
- 9.63** A total of €121 million was spent on acquiring carbon credits as part of Ireland's strategy to meet its targets under the first commitment period of the Kyoto Protocol (2008 – 2012). Ireland retired 35% of the credits to comply with its obligations for that period. The remaining carbon credits are available for use in the second commitment period from 2013 to 2020. However, those credits are expected not to be sufficient to meet Ireland's obligations for the 2013 – 2020 period. The Department of Communications, Climate Action and Environment estimates that the cost to Ireland of purchasing the additional credits required will fall in the range €2–€14 million.
- 9.64** In terms of renewable energy, Ireland has a mandatory target for at least 16% of gross final energy consumption to come from renewable sources by 2020. The SEAI projects that Ireland will fall short of this target. The Department has stated that this could result in costs of the order of €110 million, subject to prevailing market conditions.
- 9.65** Ireland also has a national target for 2020 of increasing energy efficiency by 20% on 2001 – 2005 levels. The SEAI projects that the actual increase will be around 16%. As the energy efficiency target is non-binding, there is no direct financial penalty for failing to achieve it.
- 9.66** A significant number of GHG-related transactions are occurring in Ireland but because the income and expenditure is spread across a wide range of state organisations, the net cost is not visible. Accurate and comprehensive information on relevant costs (including costs of abatement measures and carbon credit purchases) and incomes (including auction revenues and tax yields) would assist in informing future decisions on climate change initiatives.
- 9.67** One of the actions from the 2017 *National Mitigation Plan*¹ is to develop proposals for identifying, monitoring and reporting of climate related expenditure through the Exchequer. In Budget 2019, the Minister for Finance indicated his intention to introduce a green budgeting framework with the aim of embedding climate change in the budgetary process.² Implementation of the framework offers the opportunity to develop a comprehensive national account capturing income and expenditure relating to climate change initiatives.
- 9.68** Given the increasing level of related income and expenditure, it would be timely for relevant accounting officers to consider the potential to provide additional information and disclosures in respect of climate change initiatives in the statutory accounts they produce.

¹ *National Mitigation Plan*, Department of Communications, Climate Action and Environment, July 2017.

² The *Revised Estimates for Public Services 2019* included, for the first time, an appendix identifying climate-related Exchequer expenditure.

Annex 9A ETS stationary sites

**Figure 9A.1 Installations in Ireland holding a GHG permit as at 1 July 2019
stationary operators**

Account holder	Number of permits
Abbott Ireland	1
Alexion Pharma International Operations Unlimited Company	1
Allergan Pharmaceuticals Ireland	1
Amazon Data Services Ireland Limited	5
Anglo Beef Processors Ireland Unlimited Company	2
Arrabawn Cooperative Society Limited	1
Aurivo Dairy Ingredients Limited	1
BASF Ireland Limited	1
Baxter Healthcare SA	1
Bord Gais Energy Limited	1
Bord na Mona Fuels Limited	2
C&D Foods Unlimited Company	1
Carbery Food Ingredients Limited	1
College Proteins Unlimited Company	2
CRH plc	4
Cushaling Power Limited	1
DAA Public Limited Company	1
Dairygold Co-Operative Society Limited	2
Diageo Ireland	1
Dublin Products Limited	1
Edenderry Power Limited	1
EdgeConneX Ireland Limited	1
Electricity Supply Board	8
Eli Lilly Kinsale Limited	1
Equinix (Ireland) Enterprises Limited	2
FMC Manufacturing Limited	1
Gas Networks Ireland	1
Genzyme Ireland Limited	1
Glanbia Ireland Designated Activity Company	3
Google Ireland Limited	1
Guerbet Ireland Unlimited Company	1
Health Service Executive West	1
Hovione Limited	1
Huntstown Power Company Limited	1
Intel Ireland Limited	1
Irish Distillers Limited	1
Irving Oil Whitegate Refinery Limited	1
Janssen Sciences Ireland UC	1
K2 Critical Facilities Management (Ireland) Limited	1
Kerry Ingredients (Ireland) Limited	2
Lagan Brick Limited	1
Lagan Cement Limited	1
Lakeland Dairies Co-operative Society Limited	3
Limerick Alumina Refining Limited	1

Account holder	Number of permits
Masonite Ireland Unlimited Company	1
Medite Europe Designated Activity Company	1
Microsoft Ireland Operations Limited	1
Minch Malt Limited	1
Mondelez Ireland Production Limited	1
MSD International GmbH	2
Novartis Ringaskiddy Limited	1
Nutricia Infant Nutrition Limited	2
Pelagia Feed (Ireland) Limited	1
Pfizer Ireland Pharmaceuticals	3
Premier Periclase Limited	1
PSE Kinsale Energy Limited	1
Quinn Cement Limited	1
Regeneron Ireland Unlimited Company	1
Runways Information Services Limited	1
Saint-Gobain Construction Products (Ireland) Limited	1
Smartply Europe Designated Activity Company	1
SSE Generation Ireland Limited	4
St James's Hospital Board	1
Synergen Power Limited Power Plant	1
Tipperary Co Operative Creamery Limited	1
Tynagh Energy Limited	1
Upjohn Manufacturing Ireland Limited	1
Vermilion Exploration and Production Ireland Limited	1
Viridian Power Limited	1
Vodafone Group Services Ireland Limited	1
Waspar Limited	1
Wexford Proteins Limited	1
Wyeth Nutritionals Ireland Limited	1
Total	104

Source: Environmental Protection Agency