



Rialtas na hÉireann
Government of Ireland

Annual Transition Statement 2018

Prepared by the Department of Communications,
Climate Action and Environment

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1. Introduction

Section 14(1) of the Climate Action and Low Carbon Development Act 2015,¹ (the 2015 Act), provides that an Annual Transition Statement (ATS) must be presented to both Houses of the Oireachtas not later than 12 months after the passing of the Act and not later than each subsequent anniversary of such passing. This is the third Annual Transition Statement and is being presented to both Houses in line with the statutory deadline under the Act.

In accordance with section 14(2)(a) of the 2015 Act, this Statement contains an ‘annual national transition statement’ which includes an overview of climate change mitigation and adaptation policy measures adopted to reduce emissions of greenhouse gases and to adapt to the effects of climate change in order to enable the achievement of the ‘national transition objective’.² The 2018 Annual Transition Statement contains for the first time both an ‘annual sectoral mitigation transition statement,’ and an ‘annual sectoral adaptation transition statement’ as provided for in sections 14 2(a)-(c) and 14(5) of the 2015 Act, for each of the four sectors covered by the National Mitigation Plan and for each of the twelve sectors covered by the National Adaptation Framework. It also contains a record of emissions of greenhouse gas set out in the most recent inventory prepared by the Environmental Protection Agency (EPA) and a projection of future emissions, together with a report on compliance with obligations of the State under EU law or an international agreement referred to in section 2 of the 2015 Act.

While an Annual Transition Statement must contain information in respect of the year immediately preceding the year in which the statement is presented, (i.e. 2017 in this instance), this year’s Annual Transition Statement also records key policy developments in relation to climate mitigation and adaptation in 2018.

The enactment of the Climate Action and Low Carbon Development Act 2015 was a landmark national climate change policy measure adopted in 2015. At the core of the 2015 Act is a statutory recognition of the ‘national transition objective’ – the goal of pursuing a low carbon, climate resilient and environmentally sustainable economy by 2050. In order to facilitate the achievement of the ‘transition objective,’ the 2015 Act provides for the development and submission to Government for approval of a series of successive National Mitigation Plans and National Adaptation Frameworks which will lead to the achievement of

¹ See <http://www.irishstatutebook.ie/eli/2015/act/46/section/14/enacted/en/html#sec14>

² The objective of transitioning to a low carbon, climate resilient and environmentally sustainable economy by the end of 2050 – see [section 3\(1\) of the Climate Action and Low Carbon Development Act 2015](#).

the national transition objective in 2050. In addition, the 2015 Act also established independent advisory and Oireachtas accountability arrangements of which the Annual Transition Statement forms an important element³.

Ireland's first National Mitigation Plan was published on 19 July 2017.⁴ The National Mitigation Plan takes a whole-of-Government approach to tackling greenhouse gas emissions; each Minister with responsibility for the largest emitting sectors (agriculture, transport, electricity and the built environment) was requested by Government to develop sectoral mitigation measures for inclusion. In accordance with the 2015 Act, the primary objectives of the National Mitigation Plan are to:

- (i) specify the manner in which it is proposed to achieve the national transition objective;
- (ii) specify the policy measures that, in the opinion of the Government, would be required in order to manage greenhouse gas emissions and the removal of greenhouse gas at a level that is appropriate for furthering the achievement of the national transition objective,
- (iii) take into account any existing obligation of the State under the law of the European Union or any international agreement referred to in section 2, and
- (iv) specify the mitigation policy measures (in this Act referred to as the "sectoral mitigation measures") to be adopted by the Ministers of the Government, referred to in subsection (3)(a), in relation to the matters for which each such Minister of the Government has responsibility for the purposes of—
 - a) reducing greenhouse gas emissions, and
 - b) enabling the achievement of the national transition objective.

The 2015 Act also provides for the making and submission to Government of successive National Adaptation Frameworks which specify the national strategy for the application of adaptation measures in different sectors and by local authorities in order to reduce the vulnerability of the State to the negative effects of climate change and to avail of positive effects that may occur. The first National Adaptation Framework was published by Government on 19 January 2018⁵. Publication followed consideration of a draft Framework by Government in December 2017 in accordance with the terms of the Act.

³ Previous Annual Transition Statements are available online at: www.dccae.gov.ie

⁴ See <https://www.dccae.gov.ie/en-ie/climate-action/topics/mitigation-reducing-ireland's-greenhouse-gas-emissions/national-mitigation-plan/Pages/default.aspx>

⁵ The National Adaptation Framework is available online at: www.dccae.gov.ie

Layout of the Annual Transition Statement 2018

Section 1 of this Annual Transition Statement introduces the different reporting elements under the 2015 Act. Section 2 provides an overview of recent international developments while Section 3 summarises recent developments at EU level. Sections 4 and 5 provide an overview of developments in both mitigation and adaptation policy required under Section 14 of the 2015 Act. In respect of mitigation, section 4 of this Statement should be read in conjunction with the Update Report on the National Mitigation Plan Actions and the Update Report on the National Mitigation Plan Measures, which are being published alongside this Statement. Both Reports respectively set out the latest position in relation to the implementation of National Mitigation Plan actions and details the key mitigation measures in place in the respective sectors, the objective for each measure, estimated mitigation potential and funding information, where relevant. Measures listed include those adopted by Government as set out in the National Mitigation Plan, with updates where relevant, reflecting the iterative or 'living' nature of the National Mitigation Plan.

Section 6 of this document sets out the key findings from the latest available EPA emissions inventories and projections. Detailed inventories and projections reports are published by the EPA each year and these are available on the EPA website.

Section 7 provides a summary report on compliance, by the State, with any existing obligation of the State EU law and international agreements referred to in section 2 of the 2015 Act, where relevant in the context of the Annual Transition Statement.

2. International Policy Developments

Ireland recognises climate change as one of the key challenges of this century and that failure to address it effectively will result in major adverse impacts that will affect all countries. Its scale and complexity demand a coordinated approach at both national and international levels. Reflecting our commitment to addressing this global challenge, Ireland is a party to the United Nations Framework Convention on Climate Change (UNFCCC),⁶ the Kyoto Protocol, and the Paris Agreement, which together provide the international legal framework for addressing climate change.

The Paris Agreement, adopted at the twenty-first Conference of the Parties to the UNFCCC (COP 21) in 2015, and which entered into force in November 2016, aims to strengthen the global response to the threat of climate change, including by:

- (i) holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change;
- (ii) increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and
- (iii) making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

The Paris Agreement will achieve its goals through the [Nationally Determined Contributions](#) submitted by the Parties, which set out the climate actions each Party will take and which, as provided for under the Paris Agreement, must increase in ambition over time.

Ireland is contributing to the Paris Agreement via the Nationally Determined Contribution tabled by the European Union (EU) on behalf of Member States which commits to a 40% reduction in EU-wide emissions by 2030 compared to 1990. This 40% reduction comprises a 43% reduction in emissions from the EU Emissions Trading System (ETS) and a 30% reduction in emissions from other sectors by 2020 compared to 2005 levels.

⁶ See UNFCCC website - http://unfccc.int/essential_background/items/6031.php

UNFCCC negotiations since the adoption of the Paris Agreement in 2015 have focused on the design of the rules and structures which will enable the Agreement to achieve its goals. While significant progress has been made to date in this regard, a sizeable body of work remains in order to complete the design of full rulebook for the Paris Agreement. UNFCCC Parties have committed to completing this process at the COP 24 climate conference, which takes place in Poland from 2-14 December 2018.

Ireland's International Climate Commitments

Ireland also supports climate action in developing countries, in conjunction with developed country partners. As part of the outcome of COP 21 in Paris, developed countries were urged to scale-up their level of support with a concrete roadmap to achieve the goal of mobilising US\$100 billion per year by 2020 for climate action in developing countries.

In line with this goal, Ireland made a commitment in 2015 to provide at least €175 million in public funding on climate action between 2016 and 2020, and reported a total of €64.47 million in such funding in 2017. The majority of this funding supports adaptation and mitigation action in developing countries through the Official Development Assistance budget of the Department of Foreign Affairs and Trade.

Total funding of €4.5 million over 2016 and 2017 provided by the Department of Communications, Climate Action and Environment included support for the Green Climate Fund and the Adaptation Fund, as well as to support the work of the Intergovernmental Panel on Climate Change (IPCC).

The IPCC's landmark Special Report on the impacts of global warming of 1.5°C was published in October 2018, highlighting the urgency of global climate action. In addition to financial contributions, Ireland has supported the IPCC through the hosting of meetings of its various working groups in 2017 and again in 2018 to advance the preparation of the forthcoming Special Report on Climate Change and Land, due to be published in 2019. In 2017 Ireland joined the Nationally Determined Contributions (NDC) Partnership, which promotes the exchange of best practice and expertise between developed and developing countries.

3. European Union Policy Developments

2030 Climate Framework

Negotiations regarding Phase IV of the EU ETS which is due to commence in 2021 were completed in December 2017 resulting in the adoption of Directive (EU) 2018/410 (14 March 2018)⁷. The Directive must be transposed into Irish law by no later than 9 October 2019. These reforms are designed to strengthen the ETS as cornerstone of EU climate change mitigation policy by providing a much stronger price signal to encourage deeper emissions reductions, together with provisions for sectors at risk of carbon leakage, and funding for decarbonisation efforts in less developed Member States. The reforms agreed have already had a significant impact on the ETS carbon price: since the conclusion of the Phase IV negotiations, the ETS Emissions Unit Allowance (EUA) price has more than doubled.

The specific details of the contribution to be made by each Member State for the period 2021-2030 in respect of the sectors of the economy outside the EU ETS, primarily in agriculture, transport and buildings, have also been agreed following lengthy negotiations. These are set out in the EU Effort Sharing Regulation (ESR), Regulation (EU) 2018/842 which was adopted on 30th May 2018.⁸ Ireland's target under the Effort Sharing Regulation is to reduce emissions in these sectors by 30% relative to 2005 by 2030.

EU Clean Energy Package

Negotiations on the EU's Clean Energy Package continued in 2017 and 2018, with agreement being reached earlier this year on the proposed recast Renewable Energy and Energy Efficiency Directives as well as the Regulation on the Governance of the Energy Union. The latter is an overarching, consolidating regulation that streamlines a large number of energy and climate planning and reporting requirements. These various reporting requirements will be brought together for each Member State in a National Energy and Climate Plan (NECP), which will replace, or delete, more than 50 different existing sectoral plans and reports with one comprehensive integrated plan. The NECP will also set out, amongst other things, the proposed approach of the Member State to compliance with their Effort Sharing Regulation targets and the Member State's contributions to EU level 2030

⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L0410&from=EN>

⁸ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.156.01.0026.01.ENG.

targets on renewable energy and energy efficiency. The first NECPs are due to be finalised by the end of 2019.

Long-term Low Emissions Strategies

A separate requirement of the governance regulation is the preparation by each Member State of a new long-term low emissions strategy. Each strategy must be prepared by the start of 2020, have at least a 30-year time horizon and contribute to long-term greenhouse gas emissions reductions in the European Union in accordance with the Paris Agreement. The strategy will further elaborate on sectoral pathways for Ireland to meet its long-term decarbonisation objectives to 2050.

4. Annual National Transition Statement

Mitigation refers to actions to reduce emissions of the greenhouse gases that are driving climate change. It includes strategies to reduce activities that give rise to greenhouse gases and to enhance carbon sinks. Section 1 of the Climate Action and Low Carbon Development Act 2015 provides a legal definition of the following terms:

- a. “mitigation” means any human intervention aimed at reducing harmful influences on the earth’s climate system, including action aimed at reducing emissions and creating or enhancing sinks;
- b. “sink” means:
 - i. a process or activity (including photosynthesis), whether natural or man-made that contributes to, or assists in, the removal of one or more greenhouse gases from the earth’s atmosphere, or
 - ii. an ecosystem or a mechanism (whether natural or man-made), or part thereof, that contributes to, or assists in, the removal of one or more of such gases from the earth’s atmosphere.

National Mitigation Plan 2017

The extent of the mitigation challenge presented by climate change and the scale of the transformation required if Ireland is to move to a low carbon and climate resilient economy are evident and have been acknowledged by the Government in the National Mitigation Plan.

The Plan covers greenhouse gas emissions in the Electricity Generation, Built Environment, Transport, and Agriculture, Forest and Land Use sectors. For each sector, the Plan sets out the sectoral policy context, the greenhouse gas emissions trends for each sector, the opportunities and challenges, mitigation measures currently in place and under development, and specific actions to take forward work within each sector. The Plan contains a series of over 70 mitigation measures and 106 related actions to address the immediate challenge to 2020 and to prepare for the EU targets that Ireland has taken on for 2030. It will also begin the development of work to meet the objectives of the National Policy Position for 2050.

This first National Mitigation Plan does not represent a complete roadmap to achieve the 2050 objective, but rather is a work in progress reflecting the reality of where we are in our decarbonisation transition.

Importantly, the National Mitigation Plan is a living document that will be updated as on-going analysis, dialogue and technological innovation generate more and more cost-effective sectoral mitigation options. This continuous review process reflects the broad and evolving nature of the sectoral challenges outlined in the Plan, coupled with the continued development and deployment of emerging low carbon and cost effective technologies across different sectors of the economy.

In this respect, Ireland's first National Mitigation Plan is a critical first step towards decarbonising our economy and this and successive Plans will, over time, build on this foundation with further policy development in the years ahead and expansion of the suite of measures already in place. Under the Plan, 22 actions have now progressed through to completion since its publication in July 2017 and 14 new actions as well as 4 new measures have also been committed to which is again consistent with the Plan being seen as a living document.

Building on the National Mitigation Plan and the measures already in place to reduce Ireland's greenhouse gas emissions, the Minister for Communications, Climate Action and Environment is now preparing a new 'all of government' plan, whose central ambition will be to make Ireland a leader in responding to climate change. The Minister will work with colleagues across Government to develop new initiatives across all sectors that contribute to greenhouse gas emissions in Ireland. The new plan will have a strong focus on implementation, including actions with clear timelines and steps to needed to achieve each action, assigning clear lines of responsibility for delivery. The new plan will also be informed by successful approaches in other countries, where such approaches could be adapted for implementation in Ireland.

National Development Plan 2018-2027

Building on the National Mitigation Plan, the publication in February 2018 of the National Development Plan 2018-2027 (NDP) demonstrates a significant step change in funding available for climate action over the next decade. Reflecting the strong commitment of the Government on this issue, almost €22 billion will be directed, between Exchequer and non-Exchequer resources, to addressing the transition to a low-carbon and climate resilient

society. In addition, the National Development Plan allocated a further €8.6 billion for investments in sustainable mobility. This means that well over €1 in every €5 spent under the National Development Plan will be on climate mitigation and this capital investment will enable us to deliver a significant reduction in greenhouse gas emissions in the period to 2030.

Key investment priorities in the National Development Plan that this Department will continue to progress between now and the next ATS include:

1. energy efficiency upgrades of 45,000 homes per annum from 2021 and providing support for a major roll-out of heat pump technologies;
2. delivering energy upgrades to BER 'B' level in all public buildings and a minimum of one third of commercial buildings;
3. implementing the new renewable electricity support scheme to deliver an additional 3,000-4,500 MW of renewable energy, with the initial focus on shovel ready projects which could contribute to meeting our 2020 targets;
4. the roll-out of the Support Scheme for Renewable Heat (SSRH) and national smart metering programme;
5. transitioning the Moneypoint plant away from coal by the middle of the next decade;
6. having at least 500,000 electric vehicles on the road by 2030 with additional charging infrastructure to cater for planned growth;
7. no new non-zero emission cars will be sold in Ireland post-2030 and no NCT will be issued for non-zero emission cars post-2045; and
8. a Climate Action Fund of at least €500m, for which an initial call for applications received 97 applications that are currently being evaluated by this Department and the CAF Advisory Board, and will leverage investment by public and private bodies in climate action measures that contribute to achievement of Ireland's climate and energy targets.

Both the NMP and the NDP explicitly recognise that the reliance solely on Exchequer expenditure schemes is neither affordable nor adequate to meet the scale of the challenge to be addressed, and that climate mitigation action will require a targeted balance between Exchequer-supported expenditure, taxation measures, regulation and behavioural change.

Financing the Low Carbon Transition

The publication of a Special Report from the UN's International Panel on Climate Change underscores the need for resolute action across all areas of public policy to meet Ireland's commitments under the Paris Agreement. In support of this, the Minister for Finance

announced that Ireland is committed to joining the OECD's Paris Collaborative on Green Budgeting.

The principal objective of the Paris Collaborative is to improve the alignment of budgetary and fiscal policy with environmental goals. Through participation Ireland will seek to embed outcome-based reporting on climate and environmental objectives in the budgetary process. This will be an evolving process over several budgets which will be led by the Department of Public Expenditure and Reform in collaboration with other Departments. A policy paper setting out the Government's commitment and what green budgeting might mean in an Irish context will be published in December 2018. This will fulfil a commitment under Action 12 in the National Mitigation Plan to develop proposals for identifying, monitoring and reporting of climate related expenditure through the Exchequer.

As a first step, the Revised Estimates for Public Services 2019 (REV) will detail all Exchequer climate related expenditure in a dedicated section of the report. This will provide more transparency to Government action on climate change and help to inform evidence-based debate and discussion on sustainable growth.

Significant reforms to the Public Spending Code have also been published which will see more realistic carbon values applied to all public investment projects, along with a discount rate and time horizon which better reflect the estimated long term impacts of these investments.

Ireland's First Green Bond

On 10 October 2018 the NTMA announced the successful issuance of Ireland's first ever green bond. This bond will broaden the funding base for Ireland's debt and, in future, may even allow the financing of climate related expenditure at a lower rate of interest than other expenditures. This €3 billion investment in the bond issuance is a vote of confidence by international investors in Ireland's commitment to financing ambitious climate action through the National Development Plan. Ireland is only the fourth EU Member State to issue a green bond, following France, Belgium and Poland.

The funds received under this bond must be invested in eligible green projects and Ireland will be required to report to investors on an annual basis on direct climate related expenditures and at least biennially on the expected impacts of this expenditure. Proceeds from the issuance will be allocated against eligible green projects, which primarily address

climate change mitigation and adaptation, clean water and wastewater treatment, along with other core environmental policy objectives.

Climate Action Fund

The Climate Action Fund is one of four funds established under the National Development Plan 2018-2027 as part of Project Ireland 2040. The fund will support initiatives that contribute to the achievement of Ireland's climate and energy targets. The Department of Communications, Climate Action and Environment has responsibility for implementing the fund, which will have an allocation of at least €500 million over the period to 2027. The first call for applications by the Climate Action Fund, was initially published in July 2018 and was open to applications from the public and private sectors between 17 September and 1 October 2018, received 97 applications. The applications are currently being evaluated by the Department and the CAF Advisory Board. The first call for applications will provide grant funding to larger scale projects – seeking total support in excess of €1m – that are scheduled to commence development in 2019 or 2020. The focus of the Climate Action Fund will be to support a broad range of projects that, in the absence of support from the Fund, would not otherwise be developed.

Preliminary Impact of NDP Commitments on Ireland's Emissions Projections

The overall non-Emissions Trading Sector (non-ETS) GHG emissions savings attributable to the measures reported in the NDP+ scenario, over the 2021 to 2030 period, is approximately 22 Mt CO₂ equivalent when compared to the EPA's 2018 "With Additional Measures" scenario. The NDP+ scenario includes the key climate NDP commitments plus a number of additional policies that have been modelled, for example, higher biofuels blending (shown as the red line on the graph below). This is a preliminary estimate which will be further refined in the context of the EPA's annual emissions projections reporting. Also shown on the graph below is the further contribution in addition to the NDP+ scenario of the mitigation flexibilities provided for under the EU compliance architecture (green line) as well as the potential emissions savings arising from agriculture mitigation options identified recently by Teagasc (light blue line). Further discussion on these scenarios is provided in section 6.

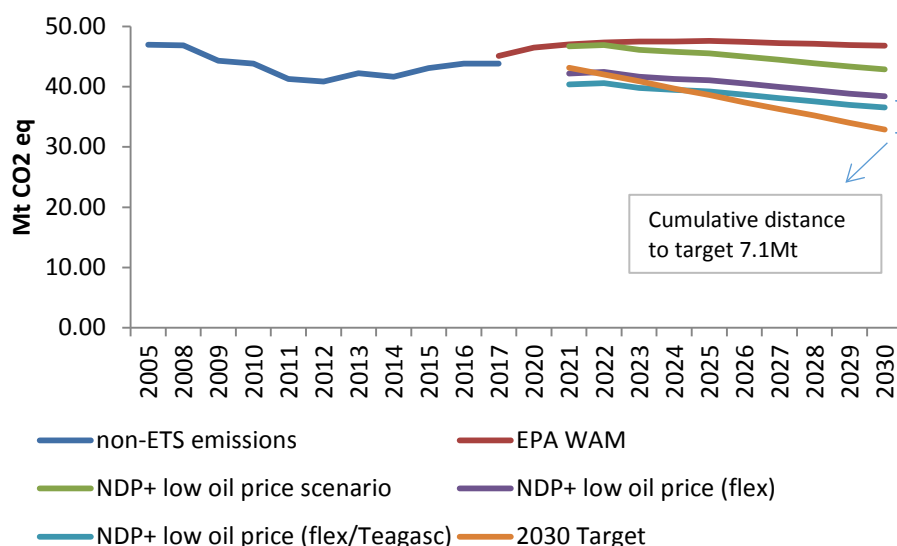


Figure 1: Estimated emissions savings from NDP commitments and other mitigation options

Teagasc Report on Emissions Savings Potential in Agriculture and Land-use Sector

In June 2018, Teagasc published an updated version of its Greenhouse Gas Marginal Abatement Cost Curve (GHG MACC) for Irish Agriculture. This GHG MACC quantifies the opportunities for abatement of agricultural greenhouse gases, as well as the associated costs/benefits and visualises the abatement potential of GHG mitigation measures, and the relative costs associated with each of these measures.

The report identifies a total of 28 different abatement measures that could be employed to reduce emissions. These measures would either reduce emissions of methane and nitrous oxide from agriculture or increase the level of carbon sequestration through additional forestry and bio-energy production.

The research identifies that a total mean abatement potential arising from cost-beneficial, cost-neutral and cost-positive mitigation measures for agricultural emissions (methane and nitrous oxide), assuming linear rates of uptake, is 1.85 Mt of carbon dioxide equivalents (CO₂e) per annum between 2021 and 2030, compared to the baseline scenario.

Relationship between National Mitigation Plan and National Development Plan

The National Development Plan sets out a range of commitments to contribute to Ireland's long-term decarbonisation objectives, many of which build upon measures already in place or planned under the National Mitigation Plan. The four sectoral tables below set out the links between key NDP commitments and National Mitigation Plan measures. Further detail on the progress in implementing NDP commitments is set out in the relevant sectoral mitigation statements in section 4, is also included in the Update Report on the National Mitigation Plan Measures, which is published separately.

Table 1 Key Electricity Sector Investments

National Development Plan Commitment	Existing National Mitigation Plan Measure	NMP Measure Number
Decarbonising electricity generation through the Renewable Electricity Support Scheme	Alternative Energy Requirement Scheme and Renewable Energy Feed-in-Tariff Schemes 1-3	RE1, RE2, RE3, RE4
Conversion of Moneypoint electricity generation plant to end the burning of coal by 2025	To arrive at decisions on optimal future low carbon technical solutions for Moneypoint generation plant.	
Conversion of peat power plants to more sustainable low-carbon technologies by 2030		
Roll-out of the National Smart Energy Metering programme to commence in 2019	Smart Metering	BE21
Ongoing reinforcement of existing power grid		
Develop further interconnection to increase energy security and facilitate more variable electricity generation on the grid, including the Celtic Interconnector to France and further interconnection to the UK.	To increase security of electricity supply and facilitate increased levels of variable renewable electricity on the system.	
Use of energy research funding to accelerate diversification away from fossil fuels to green energy, including, wind, wave, solar, biomass, biofuels, biogas and hydrogen	Ocean Energy Prototype Development Fund.	RE5

Table 2 Key Built Environment Investments

National Development Plan Commitment	Existing National Mitigation Plan Measure	NMP Measure Number
Deep retrofitting of existing housing, commercial and public building stock, with a target of 45,000 homes per annum from 2021 to achieve a minimum of BER Rating 'B' and all public buildings and at least one-third of total commercial premises upgraded to BER Rating 'B'	Better Energy Homes, Better Energy Warmer Homes, Housing Assistance Package, Better Energy Communities, Warmth and Wellbeing Pilot Scheme, Deep Retrofit Pilot Scheme, Social Housing Upgrades Energy Efficiency Obligation Scheme, Large Industry Energy Network, SME Support Scheme	BE1, BE2, , BE4, BE5, BE6, BE7, BE13, BE14, BE15
Supports for changing out of oil-fired boilers to heat pumps, along with the provision of roof-top solar, in at least 170,000 homes	As Above	BE1, BE2, , BE4, BE5, BE6, BE7
Regulating new build to the highest energy efficiency standards.	Building Regulations	BE10 (1-4)
Full roll-out of the new Support Scheme for Renewable Heat	Support Scheme for Renewable Heat	BE20
Deploying broadband, smart meters and new technologies to facilitate more distributed energy generation and 'smart buildings'.	Smart Metering	BE21
Development of gas infrastructure projects to support regional and rural development and the low-carbon transition	N/A	
Promotion of less energy intensive/low-carbon heating	Support Scheme for Renewable Heat	BE20

solutions, including biomass, biogas and the electrification of heat.		
Support new initiatives in district heating (such as the Dublin Docklands' District Heating Scheme) in cities and large towns, with a leading role for State bodies, for example, Gas Networks Ireland, and Local Authorities.	N/A	

Table 3 Key Transport Sector Investments

National Development Plan Commitment	Existing National Mitigation Plan Measure	NMP Measure Number
Transitioning the car transport fleet to electricity and providing additional charging infrastructure, with at least 500,000 electric vehicles on the road by 2030.	National Policy Framework on Alternative Fuels Infrastructure for Transport Low Emission Vehicle Incentivisation Taxation Policy	T3, T4, T7, T19, T20
A commitment to have no new non-zero emission vehicles sold in Ireland after 2030 and no NCT certificate issued from non-zero emission cars post 2045	As Above	
Delivering priority public transport programmes including BusConnects, LUAS Green Line Capacity Enhancement, DART Expansion Programme and Metro Link so that increased transport demand is met by greener public transport.	Public Transport Investment Public Transport Efficiency National Intelligent Transport Systems Strategy	T1, T5, T8, T16, T10
Replacing existing diesel buses for the urban public bus fleet with lower emitting alternatives under the BusConnects programme, with no diesel-only buses purchased from 1 July 2019, while promoting commercial bus services and small public service vehicle industry to use low-emission fleet.	Public Transport Efficiency Public Sector Energy Efficiency Strategy Eco-Driving	T5, T14, T22
Expand the refuelling network for alternately fuelled vehicles to address freight emissions	National Policy Framework on Alternative Fuels Infrastructure for Transport	
Encouraging a significant modal shift through greater levels of investment and further development of	National Policy Framework on Alternative Fuels Infrastructure for Transport	

<p>meaningful alternatives to private car uses under the following three major environmentally sustainable transport schemes:</p> <p>new urban cycling and walking routes which will provide additional sustainable travel options to complement increased capacity and faster, higher quality public transport in our main cities;</p> <p>traffic management, bus priority and other smarter travel projects in the five cities; and</p> <p>pilot initiatives for low emitting technologies in the transport sector.</p>	<p>Active Travel Policy</p> <p>National Intelligent Transport Systems Strategy</p>	
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Table 4 Key Agriculture, Forestry and Land-Use Sector Investments

National Development Plan Commitment	Existing National Mitigation Plan Measure	NMP Measure Number
Ongoing investment in relevant environmental schemes through Rural Development Programme 2014-2020, including Beef Data and Genomics Programme, Green Low Carbon Agri-Environment Scheme (GLAS), Targeted Agricultural Modernisation Scheme (TAMS), and Organic Farming Scheme.	Cross Compliance and Green Direct Payment, Beef Data and Genomics Programme, Knowledge Transfer Programme, Green Low Carbon Agri-Environment Scheme, Targeted Agricultural Modernisation Scheme, Organic Farming Scheme, Smart Farming Programme, Better Farms Programme, Pasture Profit Index, Origin Green, Carbon Navigator	AF1A, AF2A, AF2B, AF2C, 12, AF2E, AF2F, AF3, AF4, AF5, AF7, AF8, AF9
Forestry Programme 2014-2020 providing grants and / or annual premiums for establishment, development and reconstitution of forests, woodland improvement, native woodland conservation.	Forestry Programme 2014-2020	AF10(A-I)
Piloting of 'climate-smart countryside' projects to establish the feasibility of the home and farm becoming net exporters of electricity	N/A	
Town-scale pilots of food and	Animal Byproducts	AF6

agricultural waste to gas in agricultural catchments for local gas networks supply and biogas production		
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4.1 Cross-Sectoral Measures

Carbon Pricing

The Government is committed to carbon pricing as a core element of the suite of policy measures to address and reduce greenhouse gas emissions over time. Carbon pricing has the potential to drive reductions in consumption of fossil fuels and encourage energy efficiency improvements by households and businesses.

Ireland is one of a minority of countries globally to have implemented economy-wide carbon pricing measures. Since 2005, electricity generation sites and large industrial installations have been included in the EU's Emissions Trading System (ETS). Outside of the ETS, a national carbon tax, currently set at €20 per tonne of CO₂ emitted, was introduced on a phased basis from 2009.

Carbon pricing has been recognised by the Climate Change Advisory Council as an important tool for Ireland to achieve its decarbonisation objective in a cost-effective manner by 2050. The National Mitigation Plan notes that it is important that the rate at which carbon tax is set is kept under review to ensure that it is able to send a sufficiently strong signal to drive changes in household and business behaviour. It further notes that clear long-term signalling by Government on the future evolution of carbon tax is vital. A commitment in the National Mitigation Plan to examine the impact of the carbon tax and its future rate, including the distributive impacts of any rate increases was progressed by the Department of Finance which commissioned the ESRI to conduct further analysis to inform the policy direction of the tax. This report was published on Budget Day and is available online.⁹

In Budget 2019, the Minister for Finance welcomed the publication of the ESRI report as a first step in better understanding the environmental, social and economic impact of increasing the carbon tax. The Minister for Finance also committed the Government to putting in place a long-term trajectory for Carbon Tax increases out to 2030 in line with the

⁹ See [The Economic and Environmental Impacts of Increasing the Irish Carbon Tax](http://budget.gov.ie/Budgets/2019/2019.aspx) available online at: <http://budget.gov.ie/Budgets/2019/2019.aspx>

recommendations of the Climate Change Advisory Council and the outcome of the work of the Joint Oireachtas Committee on Climate Action.

National Planning Framework – Ireland 2040

The National Planning Framework, published in 2018 under Project Ireland 2040, addresses a broad range of issues in relation to planning for Ireland's future over the period to 2040.

The Framework coordinates key areas such as housing, jobs, health, transport, environment, energy and communications into an overall coherent strategy. It has statutory backing and provides the overarching strategy from which other, more detailed plans, including city and county development plans and regional strategies, will take their lead. The publication of the Framework has provided a timely and key opportunity to ensure that the climate implications of our spatial choices are fully considered and addressed. Climate considerations were considered extensively during the drafting of the Framework with Chapter 9 dedicated to climate change and sustainability.

National Planning Framework commitments which will support the achievement of Ireland's climate policy objectives include:

- integrating climate considerations into statutory plans and guidelines in order to reduce vulnerability to negative effects and avoid inappropriate forms of development in vulnerable areas;
- more energy efficient development through the location of housing and employment along public transport corridors, where people can choose to use less energy intensive public transport, rather than being dependent on the car;
- the promotion of protection and enhancement of carbon pools such as forests, peatlands and permanent grasslands in planning-related decision making processes;
- grey adaptation which typically involves technical or engineering-oriented responses to climatic impacts, such as the construction of sea walls in response to a sea-level rise; and
- green adaptation which seeks to use ecological properties to enhance the resilience of human and natural systems in the face of climate change, such as creation of green spaces and parks to enable better management of urban micro-climates.

Climate Research

Research on different aspects of climate change is continuous and the two primary research organisations Government supports are the EPA and SEAI. Between 2015 and 2018 SEAI has spent a total of €21.3m on research, a proportion of which would have been spent on climate related projects. Over the last decade (2008-2018) the EPA has invested €26m in

Climate Research, and results from this has been central to national GHG reporting compliance, formulation of the National Mitigation Plan and the National Adaptation Framework, local authority readiness for climate change, climate forcers, and understanding land-use carbon losses and sinks.

The EPA has arranged its research around three pillars of activity including Water, Sustainability & Climate-Air. In relation to its climate research pillar, the EPA has established and chairs a Climate Research Coordination Group (CRCG), whose aims and objectives of the group are to:

- facilitate, support, promote co-ordination, synergies and liaison between relevant funding bodies, public and private to reduce the fragmentation in climate research in Ireland;
- facilitate an exchange forum between research funders and key stakeholders, providing an interface for Irish funders of climate research;
- identify key research needs and emerging policy needs with the aim of informing the research strategy of Irish funders of climate research; review current funding and prepare a roadmap and vision for climate research in Ireland;
- provide a national platform of Irish research funders in liaising/linking with European & international activities related to climate environmental research, such as Joint Programming Initiatives; Technology Platforms, and EU LIFE.

The CRCG will report annually on its activities and provide an assessment and synthesis of key findings from the research programme and wider related research activities every five years. The first annual report will be published in early 2019.

4.2 Annual Sectoral Mitigation Transition Statement - Electricity Generation Sector

Recent Sectoral Developments

The Energy White Paper, Ireland's Transition to a Low Carbon Energy Future 2015-2030, was launched in December 2015.¹⁰ It sets out a vision and framework to guide Irish energy policy up to 2030. The White Paper restates the three pillars of energy policy – ‘sustainability’, ‘security of supply’ and ‘competitiveness’ - and the actions identified have been informed by the national transition objective. The overall aim of the White Paper is to transition to a low carbon energy system which provides secure supplies of competitive and affordable energy to citizens and businesses. It recognises that a radical transformation of our energy system is required to meet national, EU and international climate objectives, including greenhouse gas emissions reductions in the energy sector in the range of 80% to 95% compared to 1990 levels by 2050.

Since the publication of the Energy White Paper, significant progress has been made in the implementation of measures, including the enactment of the Energy Act 2016;¹¹ publication of A Strategy to Combat Energy Poverty in Ireland (February 2016);¹² development of new Public Sector Energy Efficiency Action Plan;¹³ publication of a National Policy Framework on Alternative Fuels Infrastructure (May 2017);¹⁴ Government approval for the high level design of the new Renewable Electricity Support Scheme¹⁵ for commencement in 2019, subject to State aid approval from the European Commission; and commencement earlier this year of a Support Scheme for Renewable Heat. Budget 2018 allocated €7 million to fund the initial phase of the scheme.¹⁶

¹⁰ See <https://www.dccae.gov.ie/en-ie/energy/topics/Energy-Initiatives/energy-policy-framework/white-paper/Pages/White-Paper-on-Energy-Policy-in-Ireland-.aspx>

¹¹ See <http://www.irishstatutebook.ie/eli/2016/act/12/enacted/en/html>

¹² See <https://www.dccae.gov.ie/en-ie/energy/topics/Energy-Efficiency/energy-costs/Pages/Energy-Poverty-Strategy.aspx>

¹³ See <https://www.dccae.gov.ie/documents/Public%20Sector%20Energy%20Efficiency%20Strategy.pdf>

¹⁴ See <http://www.dttas.ie/sites/default/files/publications/public-transport/english/alternative-fuels-framework/6186npfalternative-fuels300517.pdf>

¹⁵ See <https://www.dccae.gov.ie/en-ie/energy/topics/Renewable-Energy/electricity/renewable-electricity-supports/ress/Pages/default.aspx> and <https://www.dccae.gov.ie/en-ie/news-and-media/press-releases/Pages/Minister-Denis-Naughten-secures-Cabinet-Approval-for-.aspx>

¹⁶ See <https://www.dccae.gov.ie/en-ie/energy/topics/Renewable-Energy/heat/Pages/Heat.aspx>

Renewable Energy Feed-in Tariff (REFIT) Schemes

The current primary support mechanisms for renewable electricity are the Renewable Energy Feed-in Tariff (REFIT) schemes. The schemes are designed to provide certainty to renewable electricity generators by providing them with a minimum price for each unit of electricity exported to the grid over a 15 year period. The schemes provide support for onshore wind, hydro and biomass technologies.

All REFIT schemes are now closed to new applications with REFIT 2 projects required to be operational and connected to the grid by March 2020 and REFIT 3 projects by September 2019 in order to contribute to Ireland's 2020 Renewable Energy Targets.

Renewable Electricity Support Scheme (RESS)

The Renewable Electricity Support Scheme (RESS) High Level Design paper was approved by Government on 24 July 2018 and the scheme will now go through the EU State Aid Approval process with the first RESS auction expected in 2019. The RESS will provide pathways for delivering on the 2015 Energy White Paper commitment to ensure communities and citizens are at the centre of the future energy transition in Ireland. Communities are effectively being designed into the fabric of the new scheme and a comprehensive set of policies and support measures to increase community ownership from renewable electricity projects have been proposed. The new scheme will also deliver a broad range of policy objectives including broadening the renewable electricity mix and increasing energy security, energy sustainability and ensuring the cost effectiveness of energy policy. The scheme will provide for a renewable electricity (RES-E) ambition of up to a maximum of 55% by 2030 subject to determining the cost effective level which will be set out in the draft National Energy and Climate Plan.

Offshore Renewable Energy Development Plan (OREDPP)

Action 18 of the NMP committed to an interim review of the Offshore Renewable Energy Development Plan (2014) and following a two phase consultation process (key stakeholders and a public consultation) in 2017 the Interim Review was published in May 2018. The Working Groups under the remit of the Offshore Renewable Energy Steering Group (ORESG) have agreed revised 2018 work plans that take account of recommendations and actions set out in the Interim Review.

Interconnection

Action 21 of the NMP commits the Government to commissioning and completing economic and technical research on the merits of further interconnection for Ireland. Following a public consultation in Q1, DCCAE published a national policy statement on electricity interconnection early in July 2018. The policy statement outlines the main drivers and benefits of interconnection and provides national policy support for electricity interconnection. The statement sets out the official overall perspective on electricity interconnection. The Commission for Regulation of Utilities (CRU) published a paper on interconnection in Q1 2018, outlining its planned approach to the development of the regulatory process for electricity interconnection. Early in Q3 it published a further discussion paper on assessment criteria for electricity interconnection applications, building on the national policy statement. This paper outlines the CRU's planned approach to its assessment of applications. After this consultation, CRU aims to publish its regulatory policy in Q4.

Progress on Renewable Energy Targets

With regard to Ireland's renewable energy targets, the EU Renewable Energy Directive 2009/28/EC set Ireland a legally binding target of meeting 16% of our energy demand from renewable sources by 2020. Ireland is committed to achieving this target through meeting 40% of electricity demand, 12% of heat and 10% of transport from renewable sources of energy, with the latter transport target also being legally binding. While good progress has been made to date, with the Sustainable Energy Authority of Ireland (SEAI) advising that 10.6% of Ireland's overall energy requirements in 2017 were met from renewable sources, meeting the 16% target remains challenging. Details of progress towards the electricity and other sub-targets are set out in table 5 below.

Table 5 Progress towards Renewable Energy Targets in 2017

Sector / Sub-sector	2020 target %	2017 achieved % (Provisional Figures)
RES-E (Electricity)	40	30.1
RES-H (Heat)	12	6.9
RES-T (Transport)	10	7.2
RES Overall	16.0	10.6

Source: SEAI

Looking at renewable energy ambition beyond 2020, in June 2018, the recast Renewable Energy Directive was agreed at EU level which sets a binding renewable energy target for the EU for 2030 of 32%. It takes a fundamentally different approach to the existing Renewable Energy Directive as it does not seek to set individual Member State level targets.

EU Emissions Trading System (EU ETS)

The EU Emissions Trading System (ETS) is the main cornerstone of the EU's policy to combat climate change and operates on the “cap and trade” principle, where a cap is set on the total amount of emissions that can be emitted by installations beyond which allowances must be purchased. This cap is reduced over time, incentivising a reduction in emissions. The ETS covers the CO₂ emissions from power and heat generation and energy-intensive industry and covers just over 100 installations in Ireland, including all power generation installations.

Currently in its third phase since its introduction in 2005, a review was recently undertaken by the Commission to ensure the ETS is fit for purpose in the period 2021-30 (Phase IV). The revised EU ETS Directive, which will apply for Phase IV, will enable the EU to achieve its overall greenhouse gas emissions reduction target for 2030 through a mix of interlinked measures.

Transition Away from Fossil Fuel Based Electricity Generation before 2030

Coal Based Generation

The Moneypoint electricity generation plant in County Clare is a 900 MW plant, comprising of three 305 MW coal fired units. It is owned by ESB Power Generation. Government policy is that coal-fired electricity generation should cease by 2025. Any final decision to replace coal-fired electricity generation must be consistent with stated Government energy and climate policy.

Peat Based Generation

The use of peat will be progressively eliminated before 2030 by converting peat power stations to more sustainable low-carbon technologies. This includes the use of sustainable biomass in place of peat. Bord na Móna has stated that it intends to cease harvesting peat for electricity generation before 2030. The company has committed to replace large-scale peat production with alternative energy sources.

REFIT 3, which is also funded through the PSO, provides support for co-firing of biomass up to 30% of the capacity of each of the three power stations (the ESB's peat powered West Offaly and Lough Ree stations and Bord na Móna's peat powered Edenderry station). This support provides a transitional period to allow Bord na Mona to plan and manage the move away from peat harvesting for electricity production.

Bord na Móna has a key role to play in the transition to decarbonisation. On Wednesday 24 October 2018, the company announced that it has brought forward its target to cease energy peat production by two years to 2028. It has revisited its strategic focus in light of the commitment to decarbonise and intends to accelerate the move away from traditional peat businesses into renewables, resource recovery and new business opportunities to support sustainable employment and associated economic development in the Midlands.

Bord na Móna began a journey of de-carbonisation over a decade ago. In 2008, Bord na Móna committed to not opening new bogs under "A New Contract with Nature". In 2015, Bord na Móna announced it would exit Peat for energy purposes. During this time, they have also increased the co-firing of Peat and Biomass in Edenderry Power Station at a rate now in excess of 40%.

The dual imperatives to finish energy peat production and contribute to economy-wide decarbonisation have had a major impact on the company's business model and have become the primary drivers of Bord na Móna's strategy over the next decade.

The key challenge for Bord na Móna over the next decade is to successfully transition from a business historically based on peat to a business, consistent with Government policy, which is primarily focused on renewable energy, while endeavouring to maintain employment and economic development in the Midlands region.

4.3 Annual Sectoral Mitigation Transition Statement - Built Environment Sector

Progress on Improving Ireland's Energy Efficiency

Improving energy efficiency is central to our transition to a low carbon economy. This is because using less energy, and using it in a more flexible way, is the most cost-effective and accessible way to tackle climate change. This is why conserving energy is the first step to take in the process of decarbonising our built environment. It is also a step everyone can take in some shape or form. In addition, the more energy use is reduced through efficiency measures, the lower the effort required to achieve renewable energy targets. In 2017 Ireland published its second Long Term Renovation Strategy, which sets out the long term vision for the extensive renovation of our building stock. This will need to take place in order to meet both national and international targets for energy savings and emissions reduction by 2050. This must occur across all sectors. The National Development Plan further commits to investing in energy efficiency, specifically the renovation of 45,000 homes per year from 2021 and investment in energy efficiency of existing commercial and public building stock.

The Energy White Paper recognises that, in terms of energy efficiency, attaining the objective of a low carbon future will involve radically changing our behaviour as citizens, industry and Government and becoming significantly more energy efficient. The Government's energy efficiency schemes have already upgraded 350,000 homes throughout Ireland. In Budget 2018 the Minister for Communications, Climate Action and Environment secured €117m in capital and current funding for energy efficiency schemes in 2018. Of this amount, €84m is supporting residential energy efficiency programmes, €9m is supporting projects in the public sector and €14m is supporting the commercial and industrial sector – including small businesses and farms. This investment is expected to save over 120,000 tonnes in CO₂ emissions every year. It will support around 3,500 jobs, and reduce our overall dependence on imported fossil fuels.

In 2019, the Department of Communications, Climate Action and Environment will invest over €164 million in targeted measures to achieve Ireland's energy efficiency and renewable energy objectives, in line with the National Mitigation Plan. In 2019, funding of €90 million will be invested in sustainable energy projects in 26,000 more homes, saving at least 110,000

tonnes in carbon emissions every year and supporting around 3,500 jobs, while also reducing Ireland's dependence on imported fossil fuels.

The Minister for Housing, Planning and Local Government is providing funding of €25 million in 2019 to improve the energy efficiency of a further 9,000 local authority homes through the energy efficiency programme.

Energy efficiency upgrades to the fabric of our buildings by for example, carrying out works such as insulation and airtightness reduces the amount of energy needed for heating and cooling and reduces the CO₂ emissions connected with our energy use in those homes and workplaces. However, this is just the first step. To actually decarbonise our built environment, we need to go further and switch from using fossil fuel as the source for the energy we use in our buildings. The NDP commits to supports for changing out oil fired boilers to heat pumps in 170,000 homes.

In 2014 the Government committed €35m to an Energy Efficiency Fund. This commercial fund attracted additional commitments from private investors totalling €73m. At the end of the Fund's investment period in mid-2018, €10.8m of the Government commitment was drawn down by the Fund. This included the Fund's investment in the energy efficiency upgrade of the Mater Hospital – a flagship project in the context of the obligation on the public sector to improve its energy efficiency by 33% by 2020. The remaining funds will be used for the newly established Climate Action Fund.

Support Scheme for Renewable Heat (SSRH)

The Support Scheme for Renewable Heat will stimulate and support the replacement of fossil fuel heating systems with renewable energy and contribute to meeting Ireland's renewable energy and emission reduction targets. The Government approved the scheme in December 2017 and it is expected to commence operation by the end of 2018 subject to European Commission State Aid approval. The scheme will support commercial, industrial, agricultural, district heating and other non-domestic heat users in the non-ETS sector. The scheme will provide for two types of support mechanism:

- (i) An on-going operational support (which will be paid for a period up to 15 years) for new installations or installations that currently use a fossil fuel heating system and convert to using biomass heating systems or anaerobic digestion heating systems; The Scheme is expected to open for applications for operational support later in 2018, subject to European Commission State aid approval; and

- (ii) A grant (of up to 30%) to support investment in renewable heating systems that use heat pumps. This phase of the SSRH opened on 12 September 2018.

Residential Sector Developments in Energy Efficiency

In the residential sector, Budget 2018 allowed for the expansion of the Better Energy Homes grant programme. A grant for heat pumps was launched in mid-September 2018 and increased grant amounts for all other measures are also now available to households. In addition there will no longer be any Better Energy Homes grant funding for oil or gas boiler replacements, a significant step towards decarbonising heating in the residential sector. Work has also commenced on restructuring the programme examining options for homeowners to achieve higher levels of energy efficiency. The funding will also provide for the expansion of the Better Energy Communities and a new guarantee of funding for every small community group that wants to engage in energy efficiency. In 2018, a review of the Better Energy Communities programme was undertaken by DCCAE with a view to broadening the reach of this pivotal programme. Some changes based on the early results of this review will be included in the Communities programme for 2019. Activity has significantly ramped up on the Warmth & Wellbeing scheme which will demonstrate the effect that energy efficiency can have on health and wellbeing and more than 9,000 low income homes will receive a free energy efficiency upgrade under the Warmer Homes scheme.

€5m was allocated in 2017 to carry out a number of new approaches for deep retrofit as part of a pilot programme. The initial focus will be on the residential sector. Deep retrofit is the significant upgrade of a building towards nearly zero energy requirements where is practically feasible and achievable. The aim of the pilot is to fund fuel switching to low carbon heating technologies to demonstrate the multiple benefits of energy efficiency and investigate how best to support consumer decision making and investment in deep retrofit. Funding will be given to upgrade homes to an 'A' Building Energy Rating Certificate. Early results have shown high levels of customer satisfaction with their upgraded homes, and homeowner reports of feeling healthier, warmer and using less heating post upgrade.

Commercial Sector Developments in Energy Efficiency / EXCEED Programme

The commercial sector has significant potential to contribute to national energy efficiency and climate change objectives. Businesses (both public and private) who participated in the new Excellence in Energy Efficiency Design (EXCEED) certification programme pilot, launched by the Minister for Communications, Climate Action and Environment in 2017, are seeing an impressive 28% energy efficiency improvement on average. This helps to improve the competitiveness and resilience of Irish businesses. This programme has been expanded in 2018 with an extended pilot budget of €10 million. The programme has developed considerable interest with value proposition across all sectors, for both large, small and medium enterprises, and the public sector. There are currently circa 90 assets /organisations pursuing “EXCEED Certified”, which range from entire manufacturing sites, universities, hotels to commercial offices and small business. There is a notable take-up in 2018 from the agri-business, property management and hospitality sectors. The EXCEED project pipeline initially required time to develop however it is now strong and energy savings will accrue from 2018.

The EXCEED Certified Program was developed by the SEAI as a mechanism to independently certify assets as Energy Efficient Design entities. The objective is to apply a standardised framework for energy efficient design management in greenfield, brownfield, major renovation and major energy upgrade of assets. The process is centred on lifecycle energy performance and energy management and standardises a method to identify and implement energy performance improvement opportunities. The EXCEED grant scheme supports EXCEED Certified and provides grant support of up to 30% of incremental investment or €500,000. The grant level may be extended by 20% for small enterprises and by 10% for medium enterprises. Results achieved over the 2016-7 period involving over 90 projects in different stages of development. EXCEED Certification includes measurement and verification of savings so actual energy savings impact can be reported as certification stages are completed. Estimated saving provided with grant application indicate saving in the range of €0.10 - €0.20 per kWh of investment. For 2017, EXCEED supported 24 projects with grant assistance of €1.885m which resulted in 2.62 GWh of efficiency gains. To complement the EXCEED programme, the tax code provides for accelerated capital allowances (ACAs) for energy efficient equipment supporting the reduction of energy use in the workplace and the awareness of energy efficiency standards in appliances. This measure was extended in Budget 2018 to the end of 2020. SEAI EXCEED Certified is designed for application in future policy options. It is already being utilised within the new Support Scheme

for Renewable Heat (SSRH) to assure energy efficiency prior to aid for renewable heat. SEAI EXCEED Certified and SSRH will operate in parallel and be complementary schemes.

Public Sector Developments in Energy Efficiency

It should be noted that the public sector has already made a very significant contribution to national energy efficiency objectives, having already achieved energy efficiency gains of 20%. In the education sector SEAI have been working with schools through the Energy in Education programme which supports schools to undertake audits and implement energy projects. Participating schools reduced their energy bills by more than 40% on average. The first Public Sector Energy Efficiency Strategy was launched in 2017 and was accompanied by new support schemes for the renovation of public buildings and schools. These are focussed on identifying scalable models for public sector buildings and school retrofits and are delivered by SEAI and OPW and the Department of Education and Skills in partnership. Given the promising results, the Department of Communications, Climate Action and Environment funding allocation for these works has nearly doubled in 2018. It is hoped that this will identify the optimal approaches and standards that can be replicated and scaled more widely across the public sector.

Near Zero Energy Buildings (NZEB)

The existing 2018 Energy Performance of Buildings Directive requires that all new buildings (public and private) are Near Zero Energy Buildings (NZEB) by 2020. It also requires that new buildings owned and occupied by public authorities are NZEB after 2018. NZEB is classified as a building that has a very high energy performance and that the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby. Part L of the Building Regulations for Buildings other than Dwellings was amended in 2017 in order to establish the NZEB performance requirement and this will set a performance level representing an improvement in the order of 60% over current standards. It also includes mandatory renewables on all new buildings and major renovations to a cost optimal level.

Part L for dwellings already requires an advanced performance for new dwellings which is typically a BER of A3 with mandatory renewables. To implement NZEB draft legislation for Part L of the Building Regulations for dwellings (NZEB) was published for public consultation in April 2018 and it is anticipated it will be signed in Q3 of 2018. This represents a 70% improvement in energy efficiency and 70% reduction in CO₂ emissions when compared with

2005 Part L requirements. It also requires 20% renewables as a percentage of total building energy use.

The revised Energy Performance of Buildings Directive was published in May 2018. It promotes the use of smart technology in buildings and streamlines the existing rules. The transposition deadline is March 2020. The most significant implications are the following:

- Installation of Electric Vehicle Charging points for new residential buildings and those undergoing major renovation and for non-residential buildings;
- Introduction of a Smart Readiness Indicator; and
- Introduction of Building Automation and Control Systems.

New EU 2030 Target for Energy Efficiency

As part of the EU's Clean Energy package revisions to the Energy Efficiency Directive have been agreed at an EU level. This includes a 32.5% headline target for energy efficiency for the EU as a whole in 2030. Ireland will set out its contribution to that target in the first National Energy and Climate Plan.

4.4 Annual Sectoral Mitigation Transition Statement - Transport Sector

Changes in Transport Journeys and Future Investment in Infrastructure

Decarbonising the transport sector represents a significant challenge for Ireland. The scale of transition required is substantial; significant changes in how we travel and the types of fuels we use are needed. Fortunately, in 2017 alone, there were an additional 16.3 million public transport passenger journeys made in Ireland alongside a marked increase in walking and cycling trips within the Dublin area. The transport system is responding to this additional demand whilst remaining aware of the related congestion, climate mitigation and air quality concerns.

In 2017, the transport sector continued to implement the mitigation measures outlined in the National Mitigation Plan; central to decarbonising the sector is the provision of meaningful alternatives to the private car (which accounted for over 52% of all transport emissions in 2016). Therefore, continued investment in improving sustainable transport capacity and promoting modal shift is a key policy focus. In 2017, €367m was invested in public and sustainable transport infrastructure; €278m was allocated to fund the operation of public transport and rural services, and just over €10m was spent on smarter travel projects and greenways. In addition, measures were taken to reduce emissions from the existing vehicle fleet through better EU efficiency and emission standards and increasing the biofuel obligation rate from 6% to 8% in 2017 (with an additional rise to 10% announced for 2019). There is also a commitment to continually examining the potential role of taxation (both motor and vehicle registration taxes) as a means of promoting low carbon emitting vehicles.

In addition to these cycling-specific investments, some other infrastructure investments over the next four years will provide enhancements that will benefit cyclists. The considerable investment of about three-quarters of a billion euro for re-configuring the bus network and infrastructure (Bus Connects) will also entail construction of significant new cycling facilities alongside bus routes on the key radial routes into the city centre and provide safe cycling arrangements, largely segregated from other traffic along those corridors.

The Minister for Finance will be introducing a new accelerated capital allowances scheme for gas-propelled vehicles and refuelling equipment. This is designed to encourage the uptake of gas-propelled commercial vehicles as an economic and environmentally friendly alternative to diesel.

In line with several other EU States and in support of climate and public health policy, the Minister for Finance is also providing for a 1 per cent surcharge for diesel vehicles to apply across all VRT bands.

The Green Public Transport Fund was established to support the uptake of low carbon, energy efficient technologies within the public transport sector and as set out in the National Development Plan, Ireland will no longer purchase diesel-only buses for the urban public service obligation (PSO) bus fleets after July 2019.

Also as set out in the National Development Plan, as part of the annual Estimates process, the multi-annual capital allocations will be reviewed and extended annually on a rolling basis to cover the coming 5-year period. This will provide Government with an annual opportunity to review the allocations in light of any implementation issues arising and/ or new priorities which may emerge as the National Development Plan is implemented.

Ireland's First Compressed Natural Gas Facility

Action 53 in the NMP to deploy a network of 14 Compressed Natural Gas (CNG) refuelling stations and a renewable gas injection facility is being progressed. In May 2018 Gas Networks Ireland and Clean Ireland Recycling opened Ireland's first Compressed Natural Gas (CNG) re-fuelling station in Smithstown Industrial Estate, Shannon, Co. Clare.

Progress by the Low Emissions Vehicle (LEV) Taskforce

In 2017, the 'National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland to 2030' was published; building on this Framework, the National Development Plan sets out a national ambition that no new non-zero emission cars to be sold in Ireland post 2030 and that no NCT certificate will be issued for non-zero emission cars post-2045. To help achieve this target, and as committed to in the Programme for Partnership Government, a Low Emissions Vehicle Taskforce was established to accelerate the deployment of low carbon transport technologies. The Taskforce is co-chaired by the Departments of Communications, Climate Action and Environment and Transport, Tourism and Sport.

Phase 1 of the Taskforce's work focused solely on EVs and resulted in the introduction of a package of generous incentives in Budget 2018, including the continuation of taxation incentives (VRT relief and motor tax), purchase grants and access to an extensive free recharging network with many of these measures being continued as part of Budget 2019. Furthermore, a number of supplementary incentives were introduced during 2018 including a reduced tolling regime, a new home charger installation grant, a new purchase grant for taxis/hackneys/limousines and funding to support the operation and expansion of the public charging network.

Biofuels Obligation Scheme

The Biofuels Obligation Scheme places an obligation on fuel suppliers to include a proportion of biofuels in fuel supplied to the road transport sector. In April 2017, a policy statement on the scheme was published which set out the increases that would be made to the obligation from the current level of 8% to 10% from January 2019 and to 11% from January 2020. The first of these increases has been enacted by Statutory Instrument 198 of 2018. The policy statement also sets out how the scheme will continue to be developed in line with European energy policy with progressive increases in the level of obligation post 2020.

Promotion of Sustainable Transport and Electric Vehicles

Based on current forecasts, transport emissions are projected to increase further due to a rise in population, economic growth and an increase in the national car fleet. In this context, developing cost-efficient mitigation measures for the transport sector is challenging.

Nevertheless, both Budgets 2018 and 2019 as well as the National Development Plan clearly reflect the Government's determination to address emissions through:

- (i) enhancing the capacity and quality of public transport to ensure that – where feasible - our increased transport demand is met by greener public transport (over €400m will be invested in public transport infrastructure in 2018 with a 4 year capital envelope of €2.7bn);
- (ii) investment of over €100m is committed to a multi-annual urban cycling and walking programme to support greater uptake of active travel and promote modal shift away from private car use; and

based on the recommendations of the Low Emitting Vehicle Taskforce a suite of tax and expenditure measures, supported by Exchequer funding of €10m was provided in Budget 2018 while Budget 2019 will provide funding of €13 million, have been announced that

clearly indicate the Government's commitment to a low-carbon electric vehicle future.

Following on from Budget 2019 these include:

- VRT relief of up to €5,000 for new battery electric vehicles (to the end of 2021) and up to €2,500 for new plug-in hybrid electric vehicles to the end of 2019 as per Budget 2019);
- A purchase grant of up to €5,000 for electric vehicles;
- A Benefit-in-Kind rate of 0% for battery electric vehicles (introduced in Budget 2018 and extended in Budget 2019 for a further three years – with €50,000 cap introduced);
- A grant of up to €600 to support the installation of a home charger for purchasers of new and second-hand electric vehicles;
- A 50% toll discount for battery electric vehicles and 25% for plug-in hybrid electric vehicles up to a maximum amount of €500 per year with greater reductions off-peak on the M50;
- A grant of up to €7,000 for electric vehicles in the taxi/hackney/limousine sector;
- Accelerated Capital Allowances for electric vehicles and charging infrastructure; and
- Low motor tax of €120 for battery electric vehicles.

Following the conclusion of Phase 1 of the LEV Taskforce a summary report of the Taskforce progress since its establishment in December 2016 was published on 17 October 2018¹⁷.

Phase 2 of the LEV Taskforce's work programme, examining the role of other alternative fuels in road transport, such as Compressed Natural Gas, Biogas and Hydrogen, began in September 2018.

Minister Bruton noted that thanks to the work of the Taskforce there has been significant uptake in electric vehicles in Ireland with over 6,000 now on Irish roads. The Sustainable Energy Authority of Ireland launched an awareness campaign as part of its electric vehicle public engagement programme in April 2018 and a dedicated website –

www.DrivingElectric.ie – provides answers to the questions drivers have about electric vehicles.

¹⁷ See <https://www.dccae.gov.ie/en-ie/energy/publications/Documents/21/LEV%20Taskforce%20Phase1%20Progress%20Report.pdf>

4.5 Annual Sectoral Mitigation Transition Statement - Agriculture, Forestry and Land Use Sector

CAP Measures to Reduce Agricultural Emissions

Progress has continued on implementing agriculture sector measures which have been identified in the National Mitigation Plan. These measures not only focus on the mitigation of greenhouse gases and improving resource efficiency but are also aimed at restoring, preserving and enhancing ecosystems related to building resilience of agricultural production systems (i.e. adaptation). Furthermore, good farming practices supported by the Common Agriculture Policy under Pillar 1 and the Rural Development Programme under Pillar II contribute to the protection of the carbon pool stored in Irish farmland. Pillar I sets the environmental baseline through greening and cross-compliance, with more targeted measures to meet specific priorities in a more targeted manner under Pillar II.

The focus on environmental protection has been strengthened under the current Common Agricultural Policy (CAP) 2014-2020. There are seven Good Agricultural and Environmental Conditions (GAEC standards) under the Basic Payment Scheme under CAP Pillar I. The Department of Agriculture, Food and the Marine held a public consultation on the configuration of the new CAP 2021-2027 earlier this year. The objective of the consultation was to allow members of the public to outline their views on the issue, having regard to the challenges facing the sector. These challenges included the need to configure CAP supports to strengthen the contribution of the agriculture sector to the environment. Ireland is working constructively on the CAP proposals with the European Commission and other EU Member States in an effort to reach agreement on the proposals.

Increased environmental ambition and climate change action will be key elements of the new CAP. The competent authority for the environment must participate in drawing up the national CAP Strategic Plan. Plans must commit to a more significant environmental achievement than the current CAP supported schemes. The Strategic Plan should demonstrate a coherent design of schemes to support environmental objectives. There will be greater environmental conditionality on direct payments with links to requirements from other areas including the Water Framework Directive and mandatory nutrition management plans. Of the overall CAP budget 40% must contribute to climate mainstreaming, while 30% of the Rural Development Plan, excluding payments for areas of natural constraints, must be focused on biodiversity, environment and climate related measures.

The draft CAP Post 2020 proposal states that “Member States shall provide support for voluntary schemes for the climate and the environment”. Member States are obliged to offer at least one scheme. This is an agri environment scheme applied for on an annual basis. Member States must draft a list of practices beneficial for agriculture and the environment. Payments are only provided in those cases where the beneficiary goes beyond:-

- Relevant statutory management requirements and standards of good agricultural and environmental conditions.
- Minimum requirements for fertilizers and plant protection products and animal welfare.
- Conditions established for the maintenance of the agricultural area.
- Differ from the commitments granted in the Rural Development Programme.

Teagasc Report on Potential Sectoral Mitigation Options

Teagasc published a report earlier this year titled “*An Analysis of Abatement Potential of Greenhouse Gas Emissions in Irish Agriculture 2021-2030*”¹⁸. The report highlights the potential for Greenhouse Gas abatement to limit the emissions from the agriculture sector over the period 2021 to 2030 based on current scientific knowledge against the likely level of future greenhouse gas emissions if no action is taken to address emissions. While it outlines the types of abatement options available further consideration will be required of how these measures and to what extent they could be mobilised.

RDP Measures to Reduce Agricultural Emissions

The Rural Development Programme (RDP) contains a range of measures built around the themes of innovation, efficiency and economic/environmental sustainability and contains a number of agri-environment and climate actions designed to deliver overarching benefits for the rural environment while addressing issues regarding climate change mitigation, water quality and the preservation of priority habitats and species.

Additional climate related measures across this sector which will be introduced in 2019 include:

- €103.5 million for improvements in grant and premium rates for planting forests;
- Introduction of the new €20 million Beef Environmental Efficiency Pilot (BEEP) scheme which is a new pilot scheme targeted at suckler farmers, aimed at further improving the economic and carbon efficiency of Irish beef production.

¹⁸ Available on Teagasc website

- €70 million for the Targeted Agriculture Modernisation Scheme (TAMS);

In terms of the RDP Pillar 2 schemes, approximately 49,000 farmers are currently active in GLAS, which has a range of actions to address climate change, biodiversity and water quality. Some high level achievements in this area to date include:

- (i) Almost 4,600 farmers are using Low Emission Slurry Spreading techniques within GLAS, with consequent reductions in CO₂ and Ammonia of the order of 1,420 tonnes of ammonia and 3,260 tonnes of CO₂.
- (ii) Carbon sequestration and biodiversity benefits from the planting of 1,200km of new hedges, 1,100 Traditional Orchards and 5,000 groves of native trees consisting of over 2 million native plants. The carbon sequestration potential of the 5,000 groves of trees on their own which equates to approximately 450 hectares of woodland is c. 900 tonnes of CO₂ annually.
- (iii) Almost 25,000 farmers are participating in the Beef Data and Genomics Programme with over 900,000 animals genotyped to date.

Of total funding of €626 million for the Rural Development Programme in 2018, €203 million of this will be for agri-environmental schemes, including the Green, Low Carbon, Agri-environment Scheme (GLAS) and Organic Farming measures. In addition, funding of €70m has been allocated in 2018 to the Targeted Agricultural Modernisation Schemes (TAMS II); €50m to the Beef Data and Genomics Programme, and €23m to the Knowledge Transfer Programme. These programmes drive climate efficiency improvements in energy and fertiliser use, animal breeding and other know-how improvements.

The European Innovation Partnerships initiative (EIP) under the Rural Development Programme 2014 – 2020 allows local groups and rural communities to access funding for innovative projects across the agri-food sector. The ultimate aim of the innovation partnerships is to road test new ideas and practices which can then be used more widely by farmers and others to improve productivity, enhance resource efficiency and pursue sustainable farming practices. A number of climate change proposals have been submitted in relation to the European Innovation Partnership (EIP) under the Rural Development Plan (RDP). Twelve projects have been selected from the first open call, ten are up and running with the final two due to start later this year. These projects have beneficial climate elements under the RDP. Nineteen projects from the second open call have been selected to go

through stage two of the EIP process. These projects have received funding from the Department of Agriculture, Food and the Marine to complete a project proposal. Successful projects are due to be selected later this year.

Bioenergy and the Bioeconomy

Bioenergy has an important part to play in the renewable energy mix for Ireland. The main role of the agriculture sector is in the supply of bioenergy feedstock including forest thinning and animal by-products (ABPs) such as residues from the meat processing, slurries and other agricultural by-products. The Department of Agriculture, Food and the Marine continues to encourage and facilitate the innovative use of animal by-products (ABP) for energy production in accordance with EU regulations. Given the renewed interest in the production of biogas and biomethane, the Department of Agriculture, Food and the Marine is also collaborating closely with the Department of Communications, Climate Action and the Environment to consider further the potential for the agriculture sector to contribute to Ireland's significant renewable energy and Greenhouse Gas targets, and promote the development of Ireland's bioeconomy.

In March 2018 the Government published the first National Policy Statement on the Bioeconomy. The National Policy Statement sets out the economic and environmental case for the bioeconomy and outlines the key actions needed to further develop the bioeconomy and sets out a framework for implementation. The Government has mandated a high-level implementation group jointly chaired by the Departments of Agriculture, Food and the Marine and Communications, Climate Action and Environment to take forward a number of major actions, in close collaboration with bioeconomy industries. This group will ensure policy coherence between the sectors which impact on the bioeconomy and bring forward recommendations to further develop the bioeconomy. The national implementation group is examining sectoral coherence, network & awareness raising, research & innovation and the circular bioeconomy. The high level implementation group is scheduled to report to Government by the end of 2018.

In 2016 there were over 34,700 tonnes of agricultural by product and processed residues and almost 21,900 tonnes of fish meal and oil available for biomass supply.

Forestry related Measures to Reduce Sectoral Emissions

Forests play an important role in climate change mitigation as they have the potential to sequester and store large amounts of carbon dioxide from the atmosphere which can then be harvested as wood products that continue to store carbon over the long term and employed as a sustainable source of fuel. In this way forests and wood products directly sequester carbon and substitute other materials that are associated with higher levels of emissions, such as steel, concrete and fossil fuels. The Department of Agriculture, Food and the Marine supports the enhancement and protection of forest sinks through the afforestation scheme, regulation of felling and other policies, and supports the development of the forest and wood processing sector, including the promotion of a greater use of wood in the wider economy.

Forests will play an important role in meeting EU emissions reductions targets during the 2021 to 2030 period. Based on the accounting rules of the LULUCF Regulation agreed in 2018, 2.2 Mt of CO₂ per annum is forecast to be accountable against Ireland's Effort Sharing Regulation targets from afforested land. Ensuring this figure is attained will require ongoing support for sustainable forest management and the protection of Irish forests, avoiding deforestation and continued afforestation efforts. In 2017, 5,536 ha of new forests were planted in Ireland by private landowners under the afforestation scheme. In addition, over 90km of forest roads were grant aided through the forest road scheme. Based on the most recent National Inventory Report to the UNFCCC, forests in Ireland sequestered over 3.6 Mt of CO₂ in 2016 with a further 0.8 Mt of CO₂ being added to the carbon pool of harvested wood products.

As part of the Forestry Programme 2014-2020, €106 million has been made available for forestry measures in 2018. This can support the establishment of 6,600 hectares of new forests and the construction of 100 km of forest roads, which will help to produce sustainable wood products and renewable fuels. The overall target is to expand Ireland's forest estate from 11% to 18% by mid-century. A mid-term review of the Forestry Programme was completed and published in 2018. The review focused on meeting the targets of the programme and a set of recommendations have been agreed and implemented. These include increases in the rate of financial support across all categories with larger increases for broadleaf planting, an increase in the proportion of broadleaf planting in all applications to 15% and new initiatives to promote alternative silvicultural practices. A change in supports for road building was also made to further assist landowners with the mobilisation of the existing forest estate.

5. Annual Sectoral Adaptation Transition Statement

Adaptation refers to the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects (IPCC, 2014). Section 1 of the Climate Action and Low Carbon Development Act 2015 provides a legal definition for adaptation as follows:

- a. “adaptation” means any adjustment to:
 - a) any system designed or operated by human beings, including an economic, agriculture or technological system, or
 - b) any naturally occurring system, including an ecosystem, that is intended to counteract the effects (whether actual or anticipated) of climatic stimuli, prevent or moderate environmental damage resulting from climate change or confer environmental benefits.

Adaptation is the approach for addressing the current and future risks posed by a changing climate. The aim of adaptation is to reduce vulnerability of our environment, society and economy and increase resilience. Adaptation also brings opportunities through green growth, innovation, jobs and ecosystem enhancement as well as improvements in areas such as water and air quality. Adaptation measures are typically categorised as “soft” (e.g. alteration in behaviour, regulation or system of management), “green” (measures that seek to utilise ecological properties to enhance the resilience of human and natural systems to climate change impacts) and “grey” (measures that involve technical or engineering solutions to climate impacts).

Most adaptation measures to date have been reactive in nature, taken in response to, for example extreme weather events such as Storms Brian and Ophelia in 2017 and Storms Desmond and Frank in 2015. Given the increased knowledge of climate change impacts, it is now necessary to adopt a planned approach to adaptation so that we are better placed to deal with its impacts. This planned approach is the result of a deliberate policy decision, based on the awareness that conditions have changed or are expected to change, understanding of vulnerabilities and that some form of action is required to reduce risk or avail of opportunities. By planning and anticipating climate change risk, it is possible to reduce the cost and maximise the effectiveness of adaptation actions.

While the impacts of climate change are more likely to increase sectoral risks opportunities may also emerge for a number of sectors. For example, increasing temperatures may lead to a lengthening of the growing season for the agricultural sector and improve growing conditions for tree species such as oak and ash in the forestry sector. Warmer winter temperatures may lead to fewer cold-related mortalities in the health sector, for example.

5.1. Adaptation Policy Measures

Climate Impacts for Ireland

The Global community has agreed to limit the increase in global temperatures to 2 degrees (under the 2015 Paris Agreement) and is looking to extend this level of ambition by limiting this temperature rise to 1.5 degrees. Even if we achieve the 2 degrees target we also know that such a scenario recognises a significant level of 'lock-in' terms of climate change impacts, some of which are becoming more and more obvious in terms of recent climatic events. If we also consider that there are uncertainties associated with how effective global actions will be to limit the extent of global climate change, then it is imperative that the global community, including Ireland, take measures to adapt to these changes and ensure climate resilience into the future.

Observations show that Ireland's climate is changing and the observed scale and rate of change is consistent with regional and global trends. The most immediate risks to Ireland which can be influenced by climate change are predominantly those associated with changes in extremes, such as floods, precipitation and storms.

The Environmental Protection Agency (EPA) first published "A Summary of the State of Knowledge on Climate Change Impacts for Ireland" in 2009. In 2017 the EPA published its second "State of Knowledge" report to take account of new data, analyses and knowledge. This report provides a more comprehensive picture of how Ireland might be impacted by climate change. While uncertainties remain on the exact scale of the impacts, it is becoming apparent that trends in the temperature and precipitation records as well as those relating to sea level measurements and ecosystems are a cause for concern and that projections indicate these trends are set to continue. Table 6 provides a summary of the main observed and projected impacts of climate change for Ireland.

Table 6 Summary of observed and projected climate changes and impacts for Ireland

Parameter	Observed	Projected	Example of Biophysical Impacts
Temperature	<p>Average temperatures have increased by 0.8°C since 1900, an average of 0.07°C per decade.</p> <p>The number of warm days (over 20°C) has increased while the number of cold days (below 0°C) has decreased.</p>	<p>Projections indicate an increase in average temperatures across all seasons (0.9-1.7°C).</p> <p>The number of warm days is expected to increase and heat waves are expected to occur more frequently.</p>	<p>Incidences of cold stress are likely to decrease while incidences of heat stress will increase.</p> <p>The duration of the growing season will increase, occurring earlier and extending farther.</p>
Precipitation	<p>Increase in average annual national rainfall of approximately 60mm or 5% in the period 1981-2010, compared to the 30-year period 1961-1990. The largest increases are observed over the west of the country.</p>	<p>Significant reductions are expected in average levels of annual, spring and summer rainfall.</p> <p>Projections indicate a substantial increase in the frequency of heavy precipitation events in Winter and Autumn (approx. 20%).</p>	<p>The increased occurrence of dry spells will result in increased pressure on water supply.</p> <p>An increase in the frequency of extreme precipitation events will result in increased fluvial and pluvial flood risk.</p>
Wind Speed and Storms	<p>No long-term change in average wind speed or direction can be determined with confidence.</p>	<p>Projections indicate an overall decrease in wind speed and an increase in extreme wind speeds,</p>	<p>Increases in extreme wind speeds may impact on wind turbines and the continuity of power</p>

Parameter	Observed	Projected	Example of Biophysical Impacts
	The number and intensity of storms in the North Atlantic has increased by approx. three storms per decade since 1950.	particularly during winter. The number of very intense storms is projected to increase over the North Atlantic region. Projections suggest that the winter track of these storms may extend further south and over Ireland more often.	supply. Infrastructure will be at risk due to the increased occurrence of intense storms (e.g. winter 2013/2014).
Sea Level and Sea Surface Temperature	Historically, sea level has not been measures with the necessary accuracy to determine sea level changes around Ireland. However, measurements from Newlyn, in southwest England, show a sea level rise of 1.7cm per decade since 1916. These measurements are considered to be representative of the situation to the South of Ireland. Sea surface temperatures have	Sea levels will continue to rise for all coastal areas, by up to 0.8 m by 2100. The south of Ireland will likely feel the impacts of these rises first. Sea surface temperatures are projected to continue warming for the coming decade. For the Irish Sea, projections indicate a warming of 1.9°C by the end of the century.	Significant increase in areas at risk of coastal inundation and erosion. Increased risk to coastal aquifers and water supply. Change in distribution fish species; Implications for fisheries and aquaculture industries.

Parameter	Observed	Projected	Example of Biophysical Impacts
	increased by 0.85°C since 1950, with 2007 the warmest year in Irish coastal records.		

Source: Table 2, Page 33, National Adaptation Framework

In 2012, Ireland published the first policy response to climate change impacts with the National Climate Change Adaptation Framework.¹⁹ The development and publication of Ireland's first statutory National Adaptation Framework (NAF)²⁰ in 2018 represents Ireland's current national policy response to the challenges posed by the impacts of climate change. The NAF, which was prepared under Section 5 of the Climate Action and Low Carbon Development Act 2015 (the Climate Act) was approved by Government on 19 December 2017 and was subsequently published and laid before both Houses of the Oireachtas on 19 January 2018.²¹ Its publication followed a six week public consultation on a draft National Adaptation Framework in September/October 2017.

The National Adaptation Framework sets out the national strategy for the application of adaptation measures in different sectors and by local authorities in their administrative areas in order to reduce the vulnerability of the State to the negative effects of climate change and to avail of any positive impacts that may occur. The National Adaptation Framework does not identify specific locations or propose adaptation measures or projects in relation to sectors. Respecting the principle of subsidiarity, detailed adaptation measures will be developed across sectors and local government, in accordance with the National Adaptation Framework.

¹⁹ <https://www.dccae.gov.ie/en-ie/climate-action/publications/Pages/National-Climate-Change-Adaptation-Framework.aspx>

²⁰ <https://dccae.gov.ie/en-ie/climate-action/publications/Documents/10/FINAL%20National%20Adaptation%20Framework-Planning%20for%20a%20Climate%20Resilient%20Ireland.pdf>

²¹ A draft NAF was the subject of a statutory [public consultation](#) held between 15 September and 27 October 2017. The NAF was also the subject of a public consultation held in Spring 2016 prior to its development.

The NAF identifies 12 priority actions and related supporting objectives that are to be progressed in order to support and advance the implementation of climate adaptation policy at national, regional and local level in Ireland Table 7 contains a summary of the progress made in progressing each of these priority actions since the Framework's publication in January 2018.

Table 7 Implementation of the National Adaptation Framework

	Timeline	Stakeholders	Progress to date
Government to request Ministers to submit sectoral adaptation plans within a specified period.	Within three months of laying before Oireachtas	Government, DCCAE, Relevant Departments	Completed.
Sectoral Ministers to prepare and submit a sectoral adaptation plan to the Government for approval.	Within the period specified by Government	Government, DCCAE, National Adaptation Steering Committee, Relevant Departments	Ongoing. Sectoral plans must be submitted to Government approval no later than 30 September 2019.
Formally establish a revised Sectoral Adaptation Steering Committee reporting to the Government High Level "Climate Action" Steering Group chaired by the Minister established under the <i>National Mitigation Plan</i> .	2018	DCCAE, Relevant Departments	Completed. Further details on these arrangements are available in the "Revised Governance Arrangements" section below.
Formalise status of <i>Local Authority Adaptation Strategy Development Guidelines</i> to be used in the preparation of Adaptation Strategies at	2018	Local Government, DCCAE	Ongoing. Draft Guidelines are currently being updated with a view to publication in Q4 2018.

regional or local level.			
Each local authority to make and adopt local and/or regional adaptation strategies.	Ongoing	Local Government, DCCAE, Relevant Departments	Ongoing. A deadline for the completion of local adaptation strategies has been set for 30 September 2019. This work will be advanced by individual local authorities supported by the Climate Action Regional Office (CARO) in their region.
Formalise Status of <i>Sectoral Guidelines for Planning for Climate Change Adaptation</i> at sectoral plan level.	2018	Local Government, DCCAE, Relevant Departments	Completed. "Sectoral Planning Guidelines for Climate Change Adaptation" were published in May 2018. ²²
Put in place arrangements to ensure <i>Climate Ireland</i> - Ireland's Climate Information Platform is developed to its full potential as a long term operational support for climate action in Ireland.	2018/2019	Local Government, DCCAE, Relevant Departments, EPA, Met Éireann, OPW, Marine Institute	Ongoing. Proposals in relation to the future of Climate Ireland are currently being developed by officials in DCCAE in conjunction with the EPA via a Technical

²² <https://dcca.gov.ie/en-ie/climate-action/publications/Documents/13/SPG%20Climate%20Change%20Adaptation.pdf>

			Advisory Committee.
Advance proposals to establish regional climate action offices to coordinate Local Authority response to climate change in parallel with Action 9 of the <i>National Mitigation Plan</i> .	2018	Local Government, DCCAE, Relevant Departments	Completed. Four Climate Action Regional Offices (CAROs) have been established following a commitment of funding of €10 million from DCCAE over 5 years.
Implement programme of awareness-raising to address climate adaptation and resilience through local and regional level partnership with National Dialogue on Climate Action (NDCA) including promoting better societal response in the context of the increased risk of extreme weather events in a changed climate.	Ongoing	Local Government, DCCAE, Relevant Departments, EPA, Met Éireann, OPW, Marine Institute	Ongoing. The first regional meeting of the NDCA took place in Athlone on 23 June 2018. The National Dialogue covers both climate change mitigation and adaptation including the impacts of climate change in Ireland. A series of further regional meetings of NDCA are currently being organised with one further regional meeting scheduled to take place before the end of 2018.
Integration of climate	Ongoing	Local Government,	Ongoing. Under

adaptation within all relevant national policy and legislation (budgetary process, Capital Investment Planning etc.).		DCCAE, Relevant Departments	the new National Development Plan (NDP), exchequer funding of €7.6 billion, together with non-exchequer investment of €14.2 billion will ensure a step change in strategic climate action investments. Under the NDP 2018-27 the Government has committed €940m to flood defences.
Ensure climate proofing considerations are fully integrated into arrangements and reforms arising from the new <i>Ireland 2040 - National Planning Framework</i> including Guidelines, updated guidance on adaptation proofing of SEA and EIA and also in revisions of building standards.	Ongoing	Local Government, DCCAE/ DHPLG, Relevant Departments, EPA, National Standards Authority of Ireland, Met Éireann	Ongoing. Project Ireland 2040 sets out the Government's ambitions in regard to building a low-carbon and climate resilient society. As set out in the NAF the implementation of Project Ireland 2040 must ensure that the planning system responds successfully to the challenges of climate change.

Framework to be updated at a minimum of every 5 years and Sectoral Plans as requested by Government.	Minimum of every 5 years	Government, DCCAE, Relevant Departments	NAF to be reviewed and updated before December 2022.
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Sectoral Adaptation Plans

In outlining a whole of Government approach to climate adaptation, the NAF identifies twelve key sectors under the remit of seven Government Ministers where sectoral adaptation plans are to be prepared. On 27 March 2018 the Government requested (in line with its obligations under the Climate Act) that those Ministers begin the preparation of their sectoral plans and to submit final plans to Government for approval no later than 30 September 2019. Plans are to be developed in line with the “Sectoral Planning Guidelines for Climate Change Adaptation”²³ which were published in May 2018. Table 8 below sets out the sectors and lead government departments required to prepare plans under the NAF.

Table 8 Sectors and lead Departments required to prepare Sectoral Adaptation Plans

Theme	Sector Level	Lead Department for Sectoral Adaptation Plans
Natural & Cultural Capital	Seafood	Department of Agriculture, Food and the Marine
	Agriculture	
	Forestry	
	Biodiversity	Department of Culture, Heritage and the Gaeltacht
	Cultural, Built and Archaeological Heritage	

²³ <https://dcca.gov.ie/en-ie/climate-action/publications/Pages/Sectoral-Planning-Guidelines-for-Climate-Change-Adaptation.aspx>

Critical Infrastructure	Transport infrastructure	Department of Transport, Tourism and Sport
	Electricity and Gas Networks	Department of Communications, Climate Action and Environment
	Communications Networks	
Water Resource & Flood Risk Management	Flood Risk Management	Office of Public Works
	Water Quality	Department of Housing, Planning and Local Government
	Water Services Infrastructure	
Public Health	Health	Department of Health

Some sectors (i.e. Agriculture and Forestry²⁴; Transport; Electricity and Gas Networks²⁵ and Flood Risk Management²⁶) have already developed non-statutory plans during 2017 and 2018 under the 2012 National Climate Change Adaptation Framework. These plans will be revised and updated in line with the requirements of the NAF and the Climate Act to align with the agreed deadline of 30 September 2019.

A summary of the progress made by each sector in developing their statutory sectoral adaptation plans is provided in the Adaptation Sector Measures part of the separate Measures Table which will be published alongside this document. In addition this year, Ministers responsible for the preparation of sectoral adaptation plans have been requested for the first time under Section 14(5) of the Climate Act to present an annual sectoral adaptation transition statement to both Houses of the Oireachtas as part of this year's ATS. This requirement will continue in future years as part of the overall requirements for the ATS.

²⁴ <https://www.agriculture.gov.ie/media/migration/ruralenvironment/climatechange/ApprovedAdaptationPlanning040817.pdf>

²⁵ <https://dcca.gov.ie/en-ie/news-and-media/publications/Documents/25/DCCAE%20National%20Adaptation%20Plan%20for%20Electricity%20and%20Gas%20Networks.pdf>

²⁶ <https://www.opw.ie/en/climatechange/>

Revised Governance Arrangements

Since 2015 sectoral coordination of national adaptation policy has taken place under the auspices of the National Adaptation Steering Committee which is chaired by the Department of Communications, Climate Action and Environment. As a key action under the NAF, the National Adaptation Steering Committee has been reviewed and restructured to ensure that a coordinated, comprehensive and coherent approach continues to operate in implementing actions under the NAF. The need for appropriate cross sectoral coordination and consultation is identified as crucial in the NAF and the Climate Act and the Steering Committee will have a key role to play in promoting and encouraging work in this regard. Members of the Steering Committee include: Departments preparing sectoral plans under the NAF; Department of Foreign Affairs and Trade; Irish Water; EPA; regional and local government; the National Standards Authority of Ireland; and Met Éireann.

The National Adaptation Steering Committee reports to the Climate Action High Level Steering Group, which was established under the National Mitigation Plan and is chaired by the Minister for Communications, Climate Action and Environment. Since summer 2018, this group now addresses both climate mitigation and adaptation. In terms of adaptation, the High Level Steering Group will:

- monitor progress by sectors and agencies in delivering on climate change adaptation actions for which they are responsible; and
- ensure that a coordinated and coherent approach is adopted and maintained towards achieving a climate resilient Ireland.

Regional and Local Level Adaptation

National climate action policy recognises the significant potential which exists within the local government sector to contribute to a low carbon, climate resilient transition. Local government is also aware of the challenges that exist where there are a number of Government Departments and agencies tasking local authorities with delivering on various climate change initiatives and projects at local level.

The National Adaptation Framework identifies the critical role to be played by local authorities in addressing climate change adaptation and in January 2018 the Minister for Communications, Climate Action and Environment announced that his Department would

provide €10m to the local authority sector to establish four Climate Action Regional Offices (CAROs). This commitment recognises the significant obligation which has been placed on local government to develop and implement its own climate action measures, as well as the need to build capacity within the sector to engage effectively with climate change – both in terms of mitigation and adaptation.

The Climate Action Regional Offices are being operated by a lead local authority in four different regions grouped according to shared climate change risks (see Table 9 below). The establishment of these offices will enable a more coordinated engagement across the whole of government and will help build on the experience and expertise which exists across the sector.

Service level agreements have been put in place between the Department of Communications, Climate Action and Environment and each lead authority. Substantial progress has been made in establishing these offices including putting in place appropriate governance arrangements for the sector at both regional and national level.

Under the NAF each local authority will also be developing their own adaptation strategies in line with guidelines to be developed for the sector (these are currently being reviewed and updated with a view to publication in Q4 2018). Work on the development of strategies will be undertaken by individual local authorities with support from the Climate Action Regional Office in their region. Local authorities have also been set a deadline for the completion of local strategies of 30 September 2019. In order to prepare the sector for this requirement a number of training and capacity building seminars were held in May and in September 2018 supported by the Climate Ireland research team based in the marine and renewable energy research and development centre (MaREI), University College Cork.

Table 9 Climate Action Regional Office Structure

Climate Action Region	Local Authority Functional Areas	Lead Authority
Atlantic Seaboard North	Donegal, Sligo, Mayo and Galway City and Galway County	Mayo County Council
Atlantic Seaboard South	Clare, Limerick, Kerry, Cork County and Cork City	Cork County Council
Dublin Metropolitan Region	South Dublin, Fingal, Dun Laoghaire-Rathdown and Dublin City	Dublin City Council
Eastern and Midlands Region	Louth, Meath, Wicklow, Wexford, Kildare, Carlow, Kilkenny, Laois, Offaly, Westmeath, Longford, Leitrim, Tipperary, Cavan, Monaghan, Roscommon and Waterford	Kildare County Council

6. EPA Greenhouse Gas Emissions Inventory and Emissions Projections

Greenhouse Gas Emissions Inventory

The EPA is responsible for compiling the inventories of greenhouse gas emissions for Ireland in accordance with internationally agreed standards and for annual reporting on Ireland's inventories to the EU and the UN. The EPA compiles Ireland's national greenhouse gas emission inventory on an annual basis. This inventory is submitted to the European Commission and UNFCCC each year by 15 January and 15 April respectively. An inventory report for 2017 will be available in early December. The most recent EPA inventory report (April 2018), contains the estimates of Ireland's greenhouse gas emissions for the years 1990-2016. For 2016, total national greenhouse gas emissions were estimated to be 61.55 million tonnes carbon dioxide equivalent (Mt CO₂eq). This is 3.6% or (2.12 Mt CO₂ eq) higher than emissions in 2015. Headline data from this report includes:

- (i) In 2016, emissions in the European Union's Emissions Trading Sector (ETS) sector increased by 5.4% and non-ETS emissions (covered by the Effort Sharing Decision- ESD) increased by 2.8%.
- (ii) Agriculture emissions increased by 2.7% in 2016. Over the past 4 years, there has been an increase of 22% in the number of dairy cows and an increase of 27% in milk production. This reflects national plans to expand milk production under Food Wise 2025 and the removal of the milk quota in 2015.
- (iii) Emissions from the Transport sector increased by 4.1% in 2016. This is the fourth successive year of increases in transport emissions. In road transport in 2016, gasoline use continued to decrease by 6.7% while diesel use increased by 8.0% and biofuels use decreased by 8.0%.
- (iv) Greenhouse gas emissions from the Residential sector slightly increased by 0.1%. Within the different fuels used in household space and water heating, kerosene use increased by 5.2%, gasoil by 5.0% and natural gas by 1.4%, whereas coal and peat use continued to decline by 13.3% and 1.9% respectively in 2016.

- (v) Emissions from the Industrial Processes sector continue to increase by 7.1% (0.14 Mt CO₂eq) in 2016 following a 10.3% increase in 2015, mainly from increased cement production. Total process emissions from the mineral products subsector (including cement) increased by 7.5%. These emissions are included in the ETS sector and contribute significantly to the ETS sector increase in 2016.
- (vi) Sectoral emissions in the Energy Industries sector show an increase of 6.0% (0.71 Mt CO₂ eq) which is attributable to an increase in natural gas use for electricity generation by 27.7% and reductions of 6.5% and 15.6% respectively for electricity generated from wind and hydro renewables. This is reflected in a 3.3% increase in the emissions intensity of power generation in 2016 (480 g CO₂/kWh) compared with 2015 (465 g CO₂/kWh).
- (vii) Emissions from the Waste sector increased by 0.9% or 0.01 Mt CO₂eq in 2016.
- (viii) Emissions from F-gases have increased by 11% in 2016. This is mainly due to the increase in mobile air conditioning and refrigeration units.

Greenhouse Gas Emissions Projections

The most recent projections were published by the EPA in May 2018 and it provides an updated assessment of Ireland's progress towards meeting its emission reduction targets set under the 2009 Effort Sharing Decision for the years 2013-2020. Ireland's 2020 target is to achieve a 20% reduction of non-ETS sector emissions (i.e. agriculture, transport, residential, commercial, non-energy intensive industry and waste) on 2005 levels with annual binding limits set for each year over the period 2013-2020. The May 2018 projections indicate that Ireland's non-Emissions Trading System emissions in 2020 could be in the range of 0-1% below 2005 levels under the 'With Existing Measures' and 'With Additional Measures' scenarios respectively.²⁷ The projections also indicate that, by 2030, total non-ETS emissions will be between +1% to -0.5% compared to 2005 levels. For comparison, Ireland's emissions reduction target under the EU Effort Sharing Regulation for 2030 is 30% below 2005 levels, before taking into account any of the flexibilities in the Regulation.

²⁷ The 'With Existing Measures' scenario assumes that no additional policies and measures, beyond those already in place by the end of 2016 (latest national greenhouse gas emission inventory), are implemented. The 'With Additional Measures' scenario assumes implementation of the With Existing Measures scenario in addition to, based on current progress, further implementation of Government renewable and energy efficiency targets for 2020, as set out in the National Renewable Energy Action Plan (NREAP) and the National Energy Efficiency Action Plan (NEEAP).

It should be noted that the estimates of greenhouse gas emissions to 2030 assume a continuation after 2020 of the effects of policies and measures that are now in place, but do not include further policies or measures being implemented including National Development Plan measures.

Preliminary Impact of NDP Commitments on Emissions Projections

As referred to in Section 4, work is progressing to incorporate NDP measures into EPA Emissions Projections. An explanation of how the preliminary estimates referred to in Section 4 were reached and differences to previous estimates is below.

The EPA published “With Existing Measures” and “With Additional Measures” Projections in May 2018, which did not include the impact of NDP measures due to NDP measures being published after the cut-off for input assumptions under EU reporting requirements.

As part of its 2018 energy projections, SEAI has produced two additional scenarios called “NDP+” that attempted to capture the impact of most of those extra measures. The first uses a low oil price scenario and the second a high oil price scenario. Both scenarios assume common underlying policy assumptions with the key ones being a higher biofuel blend, acceleration of retrofit activity and heat pump deployment in buildings, and achieving a level of 500,000 electric vehicles and 55% renewable electricity by 2030.

Building on the new SEAI energy scenarios, the EPA has prepared a preliminary estimate of the projected emissions savings based on the difference between the 2018 EPA “With Additional Measures” scenario and the NDP+ low oil price scenario (which includes NDP measures and some additional measures agreed after the NDP was published). The projected emissions savings from these new scenarios are based on an updated set of input assumptions to those used for the 2018 “With Additional Measures” scenario and are subject to ongoing refinement by the EPA. Differences in input assumptions may therefore affect the accuracy of the savings estimates presented below. Work to refine this data will continue over the coming months in advance of finalisation of the EPA’s 2019 greenhouse gas emissions projections.

The 2018 EPA projections (WAM scenario) indicated a “gap to target” of approximately 47 Mt CO₂ eq between the projected cumulative Annual Emission Allocation (AEA) budget for 2021-2030 and projected non-ETS emissions for the period. This is the remaining gap after

assuming the LULUCF and ETS flexibilities are fully utilised for the 2021-2030 period under the Effort Sharing Regulation (ESR).

These NDP+ based estimates of a 22 Mt CO₂e saving therefore suggest a significant “gap to target” will remain even after the new measures are incorporated into the next round of EPA Projections. It is noted that the gap to target will also be influenced in future rounds of projections by changes (updates) to economic and price assumptions - as well as changes to the assumed package of policies and measures.

Links to most recent Inventories and Projections Reports

EPA Inventories Latest Report: Ireland’s Final Greenhouse Gas Emissions 1990-2016 (April 2018)

http://epa.ie/pubs/reports/air/airemissions/ghgemissions2016/Report_GHG%201990-2016%20April_for%20Website-v3.pdf

EPA Projections Latest Report: Ireland’s Greenhouse Gas Emissions Projections 2018-2035 (May 2018)
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http://epa.ie/pubs/reports/air/airemissions/ghgprojections2017-2035/EPA_2018_GHG_Emissions_Projections_Summary_Report.pdf

7. Compliance with EU and International Obligations

This section sets out a summary report on compliance, by the State, with any existing obligation of the State EU law and international agreements referred to in section 2 of the 2015 Act, where relevant in the context of the Annual Transition Statement.

Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment – the SEA Directive; and Directive 92/43/EEC on the appropriate assessment to be carried out in accordance with the Habitats Directive.

A Strategic Environmental Assessment (SEA) was undertaken for the National Mitigation Plan in accordance with the requirements of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment, as implemented in Ireland through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations (S.I. 435 of 2004 as amended by S.I. 200 of 2011). In July 2017, a Strategic Environmental Assessment SEA Statement and Natura Impact Statement (which supports the Appropriate Assessment process) were published alongside the National Mitigation Plan. The SEA Statement was prepared on foot of the SEA process and helped to evaluate, the range of environmental consequences that may occur as a result of implementing the National Mitigation Plan.

A Natura Impact Statement was prepared as part of the overall Appropriate Assessment process for the National Mitigation Plan in compliance with Article 6 of EU Directive 92/43/EEC of 21 May 1992, on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended). The purpose of the Appropriate Assessment is to ensure that the National Mitigation Plan does not result in any adverse effects, from a conservation perspective, on the integrity of any Natura 2000 European Sites, which are comprised of Special Areas of Conservation and Special Protection Areas.

A screening for the purpose of determining whether a Strategic Environmental Assessment (SEA) or Appropriate Assessment (AA) was also required in respect of the development of the National Adaptation Framework was undertaken in 2016, having regard to the SEA and

Habitats Directives and implementing regulations. An examination of the proposed NAF, guided by section 5(2)(a) of the 2015 Act, concluded that, when finalised, the National Adaptation Framework will be a policy framework or strategy for the application of adaptation measures in different sectors. It will not identify specific locations, be they Natura 2000 sites or otherwise, nor will it propose adaptation measures or projects in respect of those sites. It will, in effect, set out general principles and generic actions that will facilitate the preparation of lower level operational plans, including the identification of locations or sites and adaptation approaches. In view of this core approach, it has been screened out for the purposes of SEA/AA.

Directive 2003/87/EC relating to a scheme for greenhouse gas emission allowance trading.

The European Union Emissions Trading System (ETS) is one of the key policy measures in the EU to reduce power generation and industrial greenhouse gas emissions in a cost-effective manner. The ETS includes some 11,000 stationary installations across the EU Member States plus Iceland, Liechtenstein and Norway. In the Irish context, 103 Irish installations fall within the ETS (as of August 2018) including installations in the power generation, dairy, food processing and pharmaceuticals sectors.

Emissions trading is a 'cap and trade' scheme whereby an EU- wide limit or cap is set for participating installations. The cap is reduced over time so that total emissions across the EU are reduced. Within that limit, allowances for emissions are auctioned or allocated for free, depending on the sector in which the installation is located. Individual installations must report their CO₂ emissions each year and surrender sufficient allowances to cover their emissions. If emissions exceed available allowances, an installation must purchase allowances. If an installation has succeeded in reducing its emissions, it can sell its leftover surplus allowances or retain these for a later compliance period.

The ETS is designed to bring about reductions in emissions at least cost, while incentivising decarbonisation across major EU industries, and to date has played an increasingly important role in incentivising the European power generation and industry sectors to implement the emissions reductions required to meet the EU objective of achieving a 20% reduction of greenhouse gas emissions on 2005 levels by 2020. The ETS came into being in 2005, with Phase I introduced as a three-year pilot which ran until 2007. Phase II operated between 2008 and 2012, and Phase III from 2013 until 2020.

Significant reforms to Phase IV of the EU ETS, which will run from 2021 to 2030, have been agreed and were adopted on 14th March 2018²⁸ This reform of ETS will see a significantly strengthened ETS with higher carbon prices anticipated. It also allows for significant funding to be made available for low-carbon and innovative technologies.

Decision No. 406/2009/EC (Effort Sharing Decision) on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.

Progress, and projected headway, towards compliance with the 2009 Effort Sharing Decision (ESD) targets is measured by the EPA in their annual greenhouse gas inventory and greenhouse gas projections respectively and this is addressed in Sections 6 and 7 above , respectively.

For each year between 2013 and 2020, Ireland has a greenhouse gas emission reduction target under the 2009 ESD. For the year 2020 itself, the target set for Ireland is that emissions should be 20% below their value in 2005. This is jointly the most demanding 2020 reduction target allocated under the ESD and one shared only by Denmark and Luxembourg.

The latest EPA projections of emissions for the period to 2020, published in May 2018, indicate that Ireland's emissions in 2020 could be in the range of 0-1% below 2005 levels. To facilitate compliance under the Effort Sharing Decision, any overachievement of the binding emission limit in a particular year can be banked and used towards compliance in a later year. On a cumulative basis over the period 2013-2020, Ireland is projected to have a deficit of between 17 (With Existing Measures) and 16.3 Mt CO²eq (With Additional Measures). This takes into account the overachievement against annual limits in the period 2013-2015,

²⁸ Directive (EU) 2018/410 to enhance cost-effective emission reductions and low-carbon investments ("ETS revision") was published in the Official Journal on 19 March 2018:

L 76 2018 page(s) 3-27

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2018:076:0003:0027:EN:PDF>

allowances for which can be banked for use in later years. On the basis of these projections, Ireland is likely to have insufficient banked allowances from 2018 onwards and will need to implement additional emissions reduction measures or purchase further allowances for compliance.

International Agreements

The United Nations Framework Convention on Climate Change, its Kyoto Protocol and the Paris Agreement are taken as the relevant international agreements which apply for the purposes of section 14 of the 2015 Act.

As a Party to the UNFCCC, Ireland is required to report regularly on its implementation of the Convention. Ireland submitted its Seventh National Communication in March 2018²⁹, outlined its climate action and emissions over the four year period 2013 to 2017. As a developed country Party, Ireland is also required to provide additional climate information to the UNFCCC. Ireland's Third Biennial Report was also submitted in March 2018 as an annex to the National Communication. Ireland's national reports are subject to an in-country review process. This in-country review, which took place in November 2018, provided a comprehensive, technical assessment of Ireland's implementation of its reporting commitments under the Convention.

The Kyoto Protocol is an international agreement adopted in 1997 under the UNFCCC, which commits its Parties to binding emissions reduction targets. The Kyoto Protocol was amended in 2012 (the Doha Amendment), with new targets for developed countries over the 2013-2020 period. While Ireland and the EU have ratified the Kyoto Protocol and the Doha Amendment and are implementing its goals through the EU Effort Sharing Decision (described above), the Doha Amendment has not yet entered into force. The EU continues to encourage its global partners to ratify the Doha Amendment as a matter of urgency.

The Paris Agreement was adopted in December 2015 and entered into force in November 2016. The Agreement is designed to achieve its objectives through the Nationally Determined Commitments (NDCs) submitted by each Party. These will increase in ambition over time and represent a progression by which the level of global greenhouse gas emissions should reach a peak as soon as possible, and rapid reductions thereafter. Progress made by Parties through their NDCs will be measured on a regular basis through a

²⁹ See https://unfccc.int/sites/default/files/resource/63014825_Ireland-NC7-BR3-1-Seventh%20National%20Communication%20Ireland.pdf

series of Global Stocktakes, beginning in 2023, which will assess international progress towards achievement of the goals of the Paris Agreement. In advance of the first Global Stocktake in 2023, the Talanoa Dialogue will take stock of collective efforts to reduce emissions and build greater resilience, in line with the long-term goals of the Paris Agreement. Ireland, through the EU, has engaged in the preparatory phase of the Talanoa Dialogue in 2018 and will also participate in the political phase, which will take place during the high-level segment of the COP 24 climate conference in December 2018.