# CLIMATE ACTION PLAN 2021

## Securing Our Future

Rialtas na hÉireann
Government of Ireland

Contents

# Glossary of Acronyms

| | |
|---|---|
| ACA | Accelerated Capital Allowance |
| AFIR | Alternative Fuels Infrastructure Regulation |
| AHBs | Approved Housing Bodies |
| AR4 | (IPCC) Assessment Report 4 |
| AR5 | (IPCC) Assessment Report 5 |
| BAI | Broadcasting Authority of Ireland |
| BAU | Business as Usual |
| BER | Building Energy Rating |
| BEV | Battery Electric Vehicle |
| BSN | Broadcasting Sustainability Network |
| CARO | Climate Action Regional Office |
| CAF | Climate Action Fund |
| CAP | Climate Action Plan |
| CAP | Common Agricultural Policy |
| CBAM | Carbon Border Adjustment Mechanism |
| CSP | Common Agricultural Policy Strategic Plan |
| CCAC | Climate Change Advisory Council |
| CCAP | Community Climate Action Programme |
| CCS | Carbon Capture and Storage |
| CCSAP | Climate Change Sectoral Adaptation Plan |
| CIRI | Construction Industry Register Ireland |
| CIT | Cork Institute of Technology |
| CLT | Cross Laminated Timber |
| CO2 | Carbon Dioxide |
| CEG | Community Energy Grant |
| CRU | Commission for the Regulation of Utilities |
| DART | Dublin Area Rapid Transit |
| DAFM | Department of Agriculture, Food and Marine |
| DCEDIY | Department of Children, Equality, Disability, Integration and Youth |
| DEC | Display Energy Certificate |
| DECC | Department of the Environment, Climate and Communications |
| DFA | Department of Foreign Affairs |
| DHLGH | Department of Housing, Local Government and Heritage |
| DMAP | Designated Marine Area Plan |
| DOT | Department of Transport |
| DPER | Department of Public Expenditure and Reform |
| DSP | Department of Social Protection |
| DTCAGSM | Department of Transport, Culture, Arts, Gaeltacht, Sports & Media |
| EGFSN | Expert Group on Future Skills Needs |
| EI | Enterprise Ireland |
| EEOS | Energy Efficiency Obligation Scheme |
| EPA | Environmental Protection Agency |
| EPBD | Energy Performance of Buildings Directive |
| EPC | Energy Performance Contracting |

| | |
|---|---|
| ESB | Electricity Supply Board |
| ESD | Education for Sustainable Development |
| ESRI | Economic, Social Research Institute |
| ETB | Education and Training Board |
| ETS | Emissions Trading System |
| EU | European Union |
| EU TEN-E | Trans-European Energy Networks |
| EV | Electric Vehicle |
| EXEED | Excellence in Energy Efficiency Design |
| GAA | Gaelic Athletic Association |
| GDP | Gross Domestic Product |
| GHG | Greenhouse Gas |
| GWP | Global Warming Potential |
| HGV | Heavy Goods Vehicle |
| HLI | Heat Loss Indicator |
| ICA | Irish Countrywomen's Association |
| ICE | Internal Combustion Engine |
| IDA | Industrial Development Agency |
| IEA | International Energy Agency |
| IFS | International Financial Services |
| IT | Information Technology |
| IoT | Institute of Technology |
| IPCC | Intergovernmental Panel on Climate Change |
| KPI | Key Point Indicator |
| LDA | Land Development Agency |
| LDCs | Least Developed Countries |
| LEV | Low Emitting Vehicles |
| LARES | Local Authority Renewable Energy Strategies |
| LECP | Local Economic and Community Plan |
| LEEF | Labour Employer Economic Forum |
| LEO | Local Enterprise Office |
| LPG | Liquified Petroleum Gas |
| LULUCF | Land Use, Land Use Change and Forestry |
| MAP | Maritime Area Planning Bill |
| MDB | Multilateral Development Bank |
| MPA | Marine Protected Area |
| M&R | Monitoring and Reporting |
| MRTT | Midlands Regional Transition Team |
| MSS | Microgeneration Support Scheme |
| Mt $CO_2$eq | Million Tonnes of carbon dioxide equivalent |
| MARA | Marine Area Regulatory Authority |
| NAIDEA | National Artificial Intelligent Dairy Energy Application |
| NAF | National Adaptation Framework |

| | |
|---|---|
| NBP | National Broadband Plan |
| NDCA | National Dialogue on Climate Action |
| NDFA | National Development Finance Agency |
| NDP | National Development Plan |
| NESC | National Economic and Social Council |
| NewERA | New Economy and Recovery Authority |
| NGO | Non Governmental Organisation |
| NHRS | National Home Retrofit Scheme |
| NMP | Nutrient Management Planning |
| NMPF | National Marine Planning Framework |
| NPF | National Planning Framework |
| NPWS | National Parks and Wildlife Service |
| NRP | National Retrofit Plan |
| NRRP | National Recovery and Resilience Plan |
| NSAI | National Standards Authority of Ireland |
| NCSF | National Climate Stakeholder Forum |
| NTA | National Transport Authority |
| NTMA | National Treasury Management Agency |
| NZEB | Nearly Zero Energy Building |
| ODA | Overseas Development Aid |
| OPR | Office of the Planning Regulator |
| OPW | Office of Public Works |
| ORESS | Offshore Wind under the Renewable Electricity Support Scheme |
| OREDP II | Offshore Renewable Energy Development Plan |
| OSS | One-Stop-Shop |
| PHEV | Plugin Hybrid Electric Vehicle |
| PV | Photo Voltaic |
| PSO | Public Service Obligation |
| QQI | Quality and Qualifications Ireland |
| RESS | Renewable Electricity Support Scheme |
| REPS-2 | Rural Environmental Protection Scheme 2 |
| SBLAS | Sustainable Beef and Lamb Assurance Scheme |
| SDGs | Sustainable Development Goals |
| SDAS | Sustainable Dairy Assurance Scheme |
| SEAS | Sustainable Egg Assurance Scheme |
| SEAI | Sustainable Energy Authority of Ireland |
| SEC | Sustainable Energy Communities |
| SIDS | Small Island Developing States |
| SFI | Science Foundation Ireland |
| SME | Small and Medium Enterprise |
| SOLAS | An tSeirbhís Oideachais Leanúnaigh agus Scileanna, 'Further Education and Skills Service' |
| TCO | Total Cost of Ownership |

| | |
|---|---|
| TWh | Terawatt-hour |
| UNCLOS | United Nations Convention on the Law of the Sea |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VRT | Vehicle Registration Tax |
| YCA | Youth Climate Assembly |

# Executive Summary

As the world gathers in Glasgow to tackle global warming, we are publishing the Climate Action Plan 2021. This plan sets a roadmap for taking decisive action to halve our emissions by 2030 and reach net zero no later than 2050, as we committed to in the Programme for Government.

The science is indisputable and the effects of climate change are already clear. Extreme weather events are becoming more frequent with devastating consequences. Climate change is here and is already impacting our world, with risks to global security including food supplies. Ireland is also at risk of more frequent storms and flooding.

We know we must act, and by acting now we can build a cleaner greener economy and society, which creates opportunities for us all. Implementation of the Climate Action Plan will create jobs, new economic opportunities and protect people and the planet. By delivering on this plan, we will secure the future for our children and grandchildren. It's our chance to make the right choice.

## CITIZEN ENGAGEMENT

We must ensure we bring people with us and that the transition is fair. The National Dialogue on Climate Action will give everyone in society the opportunity to play their part. We will engage with people, ensuring that they are empowered to take the actions needed to build an Ireland where:

- Our communities are healthy and secure, enjoy cleaner air and water, and where homes are warmer and cheaper to heat
- Thousands of new jobs are created by investing in areas like offshore wind, retrofit and cutting-edge agriculture
- We cut our dependence on imported fossil fuels, and power comes from our own indigenous renewable resources including wind and solar
- Walking and cycling are safe and accessible, public transport is cleaner and more frequent, and the rollout of electric vehicles is supported nationwide
- Farmers have certainty that their industry has a viable future where farmers can continue producing world-class food with an even lower carbon footprint

## JUST TRANSITION

The plan acknowledges that some sectors will be more impacted than others, and we will need to help people with the costs of the transition to ensure that it happens. Just transition principles are embedded in the plan, including the principle that people need to be equipped with the skills to benefit from changes and that costs need to be shared. A Just Transition Commission will be established to support Government policy development in this area. All increases in carbon tax receipts amounting to €9.5 billion out to 2030 are earmarked for targeted social protection measures, an expansion of retrofitting particularly for social and low-income homes, and agri-environment projects.

The Midlands region is the first in Ireland to directly experience the negative impacts of the transition away from fossil fuels, with the ending of peat extraction for power generation, and this plan sets out a just transition implementation plan for this region.

## INVESTMENT

Every sector must adapt rapidly. This will allow our society and economy to realise the opportunities of the transition, and to remain competitive and resilient. Detailed analysis has informed the identification

in this plan of abatement technologies that will need to be implemented across sectors key sectors. Considerable investment will be required to reduce our greenhouse gas emissions by 51% by 2030, and this must influence both public and private capital investment choices.

There will be unprecedented levels of investment in climate action over the next decade.

The recently published NDP sets out a total public investment of €165 billion over the period 2021 to 2030. This will bring public investment to 5 per cent of GNI*, well above the recent EU average of 3 per cent of GDP. Extensive efforts have been made to ensure that the NDP will support the Government's climate ambitions. For the first time in Ireland, climate and environmental assessment of the NDP measures has been undertaken, along with an assessment of the alignment of the plan as a whole with the ideals of a green recovery plan. Commitments are made to further reforms of the Public Spending Code and to the treatment of Energy Performance Contracts. Most significantly, €5 billion of the total €9.5 billion in additional carbon tax receipts over the period of the NDP have been allocated to increase capital investment levels in energy efficiency. In addition, our National Resilience and Recovery Plan commits €518 million to prioritising advancing the green transition to significantly reform and direct relevant funding towards decarbonising projects such as retrofitting, ecosystem resilience and regeneration, climate mitigation and adaptation, and green data systems.

## ELECTRICITY

Among the most important measures in the plan is to increase the proportion of renewable electricity to up to 80% by 2030, including an increased target of up to 5 Gigawatts of offshore wind energy. This will not just reduce our emissions from electricity, it will allow us to electrify other sectors such as transport and heat and reduce our emissions in these sectors too. In addition to the upcoming microgeneration support scheme for householders the government will introduce a small-scale generator scheme for farmers, business, and communities to generate their own electricity and feed into the grid. As well as developing improved storage, we will also begin to deploy renewable gas such as biomethane and green hydrogen. The government will review its strategy on data centres to ensure that the sector will be in alignment with sectoral emissions ceilings and support renewable energy targets. [62%-81% reduction in emissions by 2030]

## ENTERPRISE

The green economy, including retrofitting, renewable energy, clean mobility, and sustainable agriculture will create high quality employment, and the IDA will also seek to attract businesses to invest in decarbonisation technologies. The IDA, Enterprise Ireland and the SEAI will work to help decarbonise industry and align grants and other supports with emissions reductions. The government will also produce a Climate Toolkit for business. Among the measures to cut emissions are increasing the uptake of carbon-neutral heating, and decreasing the embodied carbon in building materials through using more wood in construction. [24-37% reduction in emissions by 2030]

## BUILDINGS

Government has already committed to retrofit 500,000 homes by 2030 (including increased funding through the National Development Plan particularly for free upgrades for low-income households) and will install 680,000 renewable energy heat sources in both new and existing residential buildings. We recognise that we will need work out ways to assist broader society with the costs of retrofitting. The new National Retrofit Plan will drive demand, make retrofitting more affordable, and expand the capacity of the industry including training of workers. A further 3 specialist training centres will be established. Other measures include increased targets for district heating and the public sector and strengthening building standards for all buildings. [44-56% reduction in emissions by 2030]

## TRANSPORT

The plan calls for a significant cut in transport emissions by 2030 through measures including:

- 500,000 extra walking, cycling and public transport journeys per day by 2030
- Increasing the proportion of kilometres driven by passenger electric cars to between 40 and 45% by 2030, in addition to a reduction of 10% in kilometres driven by the remaining internal combustion engine cars
- All replacements for bus and commuter rail vehicles and carriages to be low or zero carbon by 2030
- Increased rollout of rural public transport through Connecting Ireland. [42-50% reduction in emissions by 2030]

## AGRICULTURE

Farmers know the land better than anyone. We will empower farmers with a science-based approach, backed by robust research. Farm practices that enable farmers to produce world-class food with a lower carbon footprint are key. The plan commits to using less chemical nitrogen and more targeted use of fertiliser, while maintaining the same level of grass growth through multi-species swards. Other measures include improving the genetics of our herds to reduce emissions and improve productivity. We will also incentivise increased organic farming and diversification into forestry, biomethane and energy production. [22-30% reduction in emissions by 2030]

## LAND USE

Ireland's land use, land use change and forestry sector is currently a carbon source rather than a carbon sink. To reduce emissions and move to being an overall store of carbon, will involve further bog rehabilitation, increased afforestation, improved management of grasslands on mineral soils, increasing the use of cover crops in tillage, and the rewetting of organic soils. A new forestry programme will be prepared for launch in 2023. [37-58% reduction in emissions by 2030]

## CIRCULAR ECONOMY

The Circular Economy and the Bioeconomy offer alternatives to today's linear 'take-make-waste' model of production. This will be supported by the publication of a Whole-of-Government Circular Economy Strategy, the enactment of the Circular Economy Bill 2021, and the development of a Bioeconomy Action Plan. We will reduce food waste by 50% and will ensure that all plastic packaging is reusable or recyclable by 2030. We will also increase our capacity to recycle packaging waste by 70%, and plastic package waste by 55%.

## PUBLIC SECTOR

The Public Sector will lead by example in this transition by reducing emissions by 51% by 2030, by mandating public sector employers, colleges and other public sector bodies to move to 20% home and remote working, by introducing a sustainable mobility policy, by replacing all buses with electric vehicles by 2035 and by tripling the length of electrified rail by 2030.

## GOVERNANCE

Our actions to deliver the ambition will be supported by a robust governance structure. The Climate Action Delivery Board will hold each Department and public body accountable for the delivery of actions set out in the Climate Action Plan and will present a delivery report to Government each quarter.

The Government will annually update the new Climate Action Plan and the roadmap of actions to reflect developments in the previous year, developments in technology and research in relation to climate action and to ensure the required emissions reductions are achieved. The 2022 Plan will reflect the legally binding carbon budgets and sectoral ceilings which will be adopted by Government in the coming months following consideration by the Oireachtas.

## SUSTAINABLE DEVELOPMENT AND INTERNATIONAL CLIMATE ACTION

Climate Action Plan 2021 reflects Ireland's commitment to achieving the 2030 Agenda for Sustainable Development. Ireland will work with its international partners to ensure that climate action remains a major policy priority, in recognition of the grave threat climate change poses to the achievement of the Sustainable Development Goals globally. This will be achieved by engaging proactively in international negotiations relating to climate action, by providing increased financial supports for climate action to developing countries, and by working with like-minded international partners to promote climate action. This will be supported by our expanding diplomatic network under the Government's Global Ireland initiative.

## ADAPTATION

As well as taking measures to reduce greenhouse gas emissions, we will continue to adapt to certain climate change impacts that are already locked in and will continue to evolve for the foreseeable future.

# The Critical Nature of the Challenge

# 1

# 1. The Critical Nature of the Challenge

The current changes in the planet's climate are transforming the world. Each of the last four decades have been warmer than any previous decade since 1850 and the last two decades have included 18 of the warmest years on record. Extreme weather events, such as forest fires, heatwaves and floods, are becoming more frequent in Europe and elsewhere.

Evidence for warming of our climate system is beyond dispute. There is unequivocal evidence that human influence has warmed the climate at a rate that is unprecedented in the last 2,000 years. It is also becoming increasingly clear that the weather and climate extremes now being experienced are being driven by climate change which is caused by our actions.

Observations show that global average temperatures have now increased by more than 1°C since pre-industrial times. Scientists warn that without urgent action, global warming is likely to be more than 2°C above pre-industrial levels by 2060, and could even be as much as 5°C above pre-industrial levels by the end of the century.

The atmosphere and oceans have warmed, the amount of snow and ice has reduced, and sea levels have risen as the concentrations of greenhouse gases (GHGs) have increased. The impacts of climate change are now affecting every part of the world. Projections of future global and regional climate change indicate that continued emissions of GHGs will cause further warming and further changes to our climate. The evidence now suggests that as global temperatures increase the extremes of weather and climate we experience will also increase.

Climate change will have a devastating impact on nature, bringing about irreversible changes to many ecosystems, with a consequent loss of biodiversity and the ecosystem functions and services that human well-being depends on. Higher temperatures and extreme weather events will result in huge costs to Ireland's and the EU's economy and society.

These changes will cause extensive direct and indirect harm to Ireland and its people, as well as to other countries more exposed and less able than we are to withstand the associated impacts, which are predicted to include:

- Rising sea-levels threatening land and particularly coastal infrastructure
- Extreme weather, including more intense storms and rainfall affecting our land, coastline and seas
- Further pressure on our water resources and food production systems with associated impacts on river and coastal ecosystems
- Increased likelihood and scale of river and coastal flooding
- Greater political and security instability
- Displacement of populations with increased numbers of climate refugees
- Heightened risk of the arrival of new pests and diseases
- Poorer water quality
- Changes in the timing of lifecycle events for plants and animals on land and in the oceans

In addition, pollutants (such as methane, nitrous oxide and others), which together with carbon dioxide are responsible for climate change, are also damaging to human health and have, for example, been shown to be linked to respiratory diseases.

The impact of climate change will be felt by every individual, household, and community in Ireland and there is now a high level of awareness and understanding of this. The work of the Citizens' Assembly in its report on climate change illustrates that there is a near consensus on the need for strong and early action to reduce Ireland's GHG emissions and to make Ireland resilient to future climate impacts. There is, therefore, an onus on us to mitigate the magnitude of long-term climate change by taking action to reduce GHG emissions, and to increase the capacity of carbon sinks such as forests and wetlands.

The European Green Deal frames Europe's response to these challenges. It is the new growth strategy that will lead the transformation in Europe to a climate-neutral, fair and prosperous society, with a modern, resource-efficient and competitive economy. It also aims to protect, conserve and enhance the EU's natural capital, and to protect the health and well-being of citizens from environment-related risks and impacts. At the same time, this transition must be just and inclusive: It must put people first, and pay attention to the regions, industries and workers who will face the greatest challenges. The Green Deal commits to delivering net-zero GHG emissions at EU level by 2050. It also increases the EU-wide GHG emissions reduction target to at least 55% for 2030 in order to limit warming to 1.5 degrees Celsius and align with the goal of the Paris Agreement. The EU is working on the revision of its climate, energy and transport-related legislation under the 'Fit for 55 Package' in order to align current laws with the 2030 and 2050 ambitions. This means that additional effort will be asked of all Member States, including Ireland. Ireland fully supports the enhanced ambition at EU level.

In line with EU ambition, the Programme for Government, Our Shared Future commits to achieving a 51% reduction in Ireland's overall GHG emissions from 2021 to 2030, and to achieving net-zero emissions no later than 2050. These legally-binding objectives are set out in the Climate Action and Low Carbon Development (Amendment) Act 2021, the enactment of which was a key priority in the Programme for Government. The Climate Act will support Ireland's transition to net-zero and the achievement of a climate neutral economy no later than 2050. It also establishes a legally binding framework with clear targets and commitments, to ensure the necessary structures and processes are in place to deliver our national, EU and international climate goals and obligations in the near and long term. Against this background, strategies must be devised to reduce and manage climate change risks through a combination of mitigation and adaptation responses. This Climate Action Plan sets out a roadmap to deliver on our climate ambition. It will be updated annually, including in 2022 to align with the legally binding economy-wide carbon budgets and sectoral ceilings that we will adopt in the coming months. As envisaged in the Programme for Government, we are not in a position to identify all the emerging technologies, changing scientific consensus or policies to meet our full ambition. This will require a further allocation within our overall carbon budget, subject to intense evaluation. This approach, which mirrors the Danish model, is reflected in the Climate Action and Low Carbon Development (Amendment) Act 2021 and will be a feature of the iterative nature of our annual Climate Action Plans.

The recently published report (August 2021) by the Intergovernmental Panel on Climate Change as part of its Sixth Assessment, sets out the most up-to-date physical science basis for our understanding of climate change. The joint EPA, Marine Institute and Met Éireann's Climate Status Report for Ireland 2020 also sets out the most up-to-date climate observations for Ireland. These reports confirm, among other things, that we have a limited window for real action to reduce emissions to ensure that current and future generations can live sustainably in a low-carbon and climate-resilient world.

It is, therefore, essential that the international community steps up its efforts towards meeting the Paris Agreement objectives of:

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

The Paris Agreement and Agenda 2030 Sustainable Development Goals (SDGs) recognise that the impacts of climate change will be felt by all, but that these impacts will be uneven. Vulnerable communities and people around the world – in particular women and girls – face devastating impacts to their livelihoods and greater challenges in adapting to the long-term effects of climate breakdown. As a party to the Paris Agreement, Ireland recognises the Principle of "common but differentiated responsibility and respective capabilities" within the Agreement, which acknowledges a diverse range of capacities and responsibilities by Parties. Ireland also recognises both the right and responsibility of all countries to pursue low-carbon, climate-resilient development, and is supporting initiatives – within the framework of both the Paris Agreement and the United Nations SDGs – to support less-developed countries in achieving these objectives. In light of this, our clear ambition is to continue to deliver a step-change in our emissions performance over the coming decade, so that we will not only meet our EU targets for 2030 but will also be well placed to meet our mid-century decarbonisation objectives.

In light of the increase in ambition under this plan, we have introduced significant additional measures, to be undertaken across the whole of Irish society and across the economy, in order to achieve the level of change required. This plan also assumes full implementation of the 2019 plan.

The National Development Plan 2021 - 2030 (NDP) sets out the investment priorities that will underpin the implementation of the National Planning Framework, through a total investment of approximately €165 billion. The NDP has been designed to ensure that it supports the government's climate ambitions. For the first time in Ireland, climate and environmental assessment of the NDP measures has been undertaken, along with an assessment of the alignment of the NDP as a whole with the principle of a green recovery.

The COVID-19 pandemic has placed an enormous burden on our society and economy. As we emerge from the current crisis and rebuild, it is crucial that we embed climate resilience as part of our recovery. We must make structural changes that will break the link between fossil fuels and economic progress and ensure that our post-COVID-19 recovery is fully consistent with the transformation to a decarbonised economy over the coming decades. Ireland's National Recovery and Resilience Plan (NRRP) prioritises a sustainable, equitable, green and digital recovery, in a manner that complements and supports the government's broader climate ambition.

Focusing on climate action as part of a 'green' recovery offers the opportunity to rebuild our economy and generate new jobs, while responding effectively to climate change. This plan, together with the NDP and the NRRP, adopts this approach in recognising the profound nature and scale of the decarbonisation challenge, while underscoring the new opportunities for businesses and for jobs in embracing the challenge ahead.

It is impossible to predict how the next decade will unfold. The pace of individual, technological, scientific, societal and economic change will not be precisely in line with our assumptions today. Therefore, we will update this plan every 12 months, in line with the Climate Action and Low Carbon Development (Amendment) Act 2021, and following consultation with key stakeholders. These updates will be informed by the latest analyses and by our performance against targets; and will include any new or corrective actions that we may need in order to stay on track towards our overall 2030 targets and our ultimate objective of achieving a transition to a climate resilient, biodiversity rich and carbon neutral economy no later than 2050.

While much of this plan focusses on climate mitigation – the imperative to reduce our emissions of GHGs and thereby reduce warming – we also need to focus on climate adaptation. This is addressed in Chapter 21 of this plan. People throughout Ireland have already experienced first-hand the likely impacts of climate change, particularly through recent floods and storms, and the subsequent damage caused. Events like these, and the expected increase in their frequency and intensity, highlight the need for adaptation measures to help the country cope with the effects of climate change. The National Adaptation Framework, published in January 2018, sets out the actions we are taking to reduce our vulnerability and increase our resilience in response to climate change. The Framework is due to be updated in 2022.

# Where We Stand 2

# 2. Where We Stand

## 2.1 Trends in Ireland's Emissions to Date

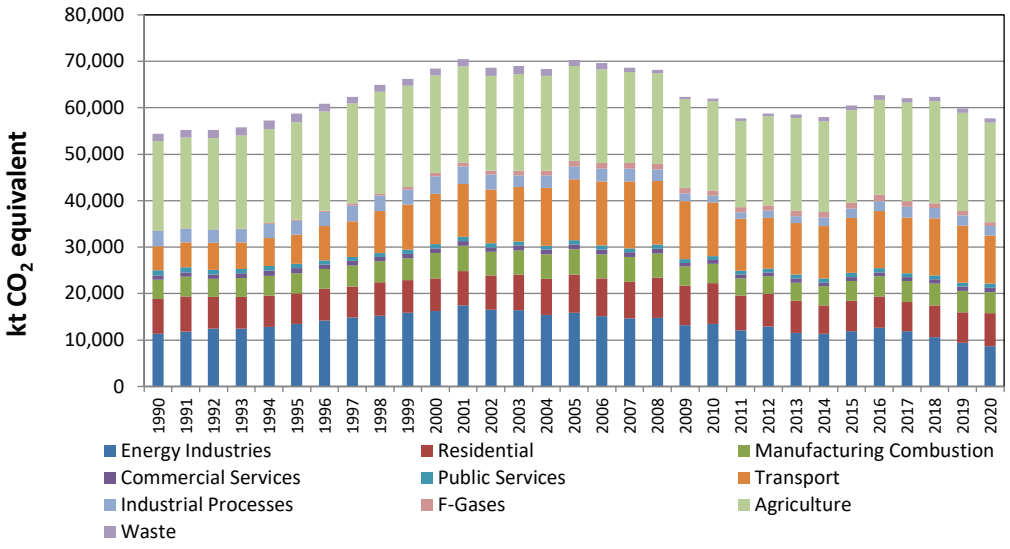
Ireland's greenhouse gas (GHG) emissions have undergone considerable shift in the three decades since 1990[1]. According to the Environmental Protection Agency (EPA) inventory data, the rate of emissions reduction was modest up to 2008, with efforts to decarbonise constrained by strong economic activity. Since 2011, emissions have trended upwards again with an overall peak in emissions reported in 2018. Agriculture is the largest source of emissions, representing 37.1% of total national emissions in 2020, based on provisional estimates. The transport and energy (primarily power generation) sectors represent 17.9% and 15.0% respectively, of total GHG emissions in 2020. The transport sector has been the fastest growing source of GHG emissions, showing a 100 per cent increase between 1990 and 2020. These three key sectors - agriculture, transport and energy industries - consistently have the largest share of emissions.

Despite the economic impact of COVID-19, GHG emissions in Ireland decreased by only 3.6% in 2020, demonstrating the scale of the decarbonisation challenge for Ireland over the coming decade. As set out in Figure 2.1, the decrease in emissions is evidenced in most sectors with the exception of increases in the residential, agriculture and public service sectors.

Key drivers of recent reductions in emissions include reduced use of peat and increased renewable power generation in the electricity sector; reduced emissions due to the impact of COVID-19 restrictions on passenger car and public transport journeys; and decreases in combustion and process emissions due to reduced cement production with most plants having extended closures due to COVID-19.

Increases in emissions in 2020 in the residential sector were driven by an increased number of heating days in 2020 due to a colder winter, as well as low kerosene prices and increased working from home. Increased activity in the agriculture sector was evidenced through increase in nitrogen fertiliser use and liming, as well as higher dairy cow numbers and milk production.

**Figure 2.1** – *Ireland's CO2eq. Emissions Inventories 1990-2020*[2]




[1] Greenhouse gas emissions trends and inventories published by the EPA. See https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/

[2] Chart data available from https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/key-messages/

## 2.2 Ireland's National Climate Targets

The Climate Action and Low Carbon Development (Amendment) Act 2021 commits Ireland to reach a legally binding target of net-zero emissions no later than 2050, and a cut of 51% by 2030 (compared to 2018 levels). Under the 2021 Act, Ireland's national climate objective requires the State to pursue and achieve, by no later than the end of the year 2050, the transition to a climate-resilient, biodiversity rich, environmentally sustainable and climate-neutral economy.

Our statutory national climate objective and 2030 targets are aligned with Ireland's obligations under the Paris Agreement and with the European Union's objective to reduce GHG emissions by at least 55% by 2030, compared to 1990 levels and to achieve climate neutrality in the European Union by 2050.

**Box 2.1**

### Ireland's EU climate targets

In its approach to decarbonising, the EU has split GHG emissions into two categories, namely the Emissions Trading System (ETS) and the non-ETS.

Emissions from electricity generation and large industry in the ETS are subject to EU-wide targets which require that emissions from these sectors be reduced by 43% by 2030, relative to 2005 levels. Within the ETS, participants are required to purchase allowances for every tonne of emissions, with the amount of these allowances declining over time to ensure the required reduction of 43% in GHG emissions is achieved at EU-level.

Emissions from all other sectors, including agriculture, transport, buildings, and light industry are covered by the EU Effort Sharing Regulation. This established binding annual GHG emission targets for member states for the period 2021–2030. Ireland will need to reduce its emissions from these sectors by 30% by 2030, relative to 2005 levels.

Under the EU Green Deal, the targets for the ETS and non-ETS sectors will be revised upwards in order to achieve the commitment, at EU level, to reach an economy-wide 2030 reduction in emissions of at least 55%, compared to 1990 levels. Legislative proposals to implement these targets were published in July 2021 and these are currently being negotiated at EU level.

## 2.3 Impact of Existing Policies

Ireland's latest projections of GHG emissions to 2030, published by the EPA, show total emissions decreasing from the latest inventory (2020) levels by 19% with the impact of adopted and planned policies, before the additional impact of this Climate Action Plan is factored in. These projections assume significant reductions in key sectors such as power generation, residential, transport, commercial and public services, and agriculture, with full and early implementation of existing policy commitments. These include, by 2030, achieving at least 70% of electricity demand from renewable sources, retrofitting 500,000 homes to a B2-equivalent BER standard, and increasing the number of electric vehicles on our roads to almost 1 million. Early implementation of these policy commitments will also enable Ireland to meet its EU Effort Sharing Regulation targets for 2021-2030 (see Box 2.1).

## 2.4 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 1 | Finalise Ireland's long-term climate strategy |

# Policy to Date and Expected Impact of Planned Policies

# 3

# 3. Policy to Date and Expected Impact of Planned Policies

The Climate Action Plan 2021 sets out a detailed sectoral roadmap designed to deliver a 51% reduction in greenhouse gas (GHG) emissions by 2030. This doubles the ambition of our 2019 Plan, and will require significant reductions from all sectors, recognising that the abatement potential will vary by sector.

We have already started the transition with significant progress made over the last two years. As well as the massive capital investment programmes recently committed to under the National Development Plan (NDP) out to Q4 2025, some key achievements by sector include:

## Electricity

- First Renewable Electricity Support Scheme (RESS) auction
- Finalisation of the Framework for Offshore Electricity Transmission System and publication of the National Marine Planning Framework
- Community benefit funds and community energy projects supported under first RESS auction
- Consultation on first auction to supply electricity from offshore wind under the RESS

## Transport

- New grant scheme launched to assist in the purchase of more sustainable trucks, buses, vans and coaches
- €360 million granted to support the delivery of improved walking and cycling infrastructure
- First Luas tram extension delivered
- New Scheme to deliver annually 200 on-street public charge points for electric vehicles
- Electric Vehicle Policy Pathway Report published

## Buildings

- Development of 'One-Stop-Shop' mode for residential and commercial energy efficiency upgrades
- Establishment of a dedicated training centre for upskilling construction workers to Nearly Zero Energy Building standards, paving the way to expand to a total of 5 centres of excellence nationwide
- Two large-scale district heating projects, supported by the Climate Action Fund, now underway

## Enterprise

- Eco-design legislation updated, which will improve the energy efficiency of products on the market
- Climate Action Enterprise Fund launched to support client companies through Enterprise Ireland

## Agriculture

- Launch of pilot project to link farmers' payments with environmentally friendly farming practices
- Organic farming scheme reopened to support farmers to farm more sustainably
- New Signpost Farm Programme developed demonstrating mitigation measures that won't impact on farm profitability

## Carbon Pricing

- New legislation put in place giving greater clarity and transparency on carbon tax rates to 2030
- Introduction of new shadow price of carbon to ensure public investment projects take account of climate impacts

## Public Sector

- Resource Efficiency Action Plans for all government departments published
- New regulations to phase out fossil fuel vehicles in public fleets

## Circular Economy

- Waste Action Plan for a Circular Economy published
- Draft Circular Economy Bill published

Over time these achievements will be reflected in reducing GHG emissions. In terms of the step-up in effort now required, Table 3.1 shows proposed emissions reductions by sector to achieve the ambition in this Plan.

**Table 3.1** *Proposed Emissions Reductions by Sector*

| Sector[3] | 2018 emissions ($MtCO_2eq.$) | 2030 target emissions ($MtCO_2eq.$) | % reduction relative to 2018[4] |
|---|---|---|---|
| **Electricity** | 10.5 | 2-4 | 62-81% |
| **Transport** | 12 | 6-7 | 42-50% |
| **Buildings** | 9 | 4-5 | 44-56% |
| **Industry** | 7.9 | 5-6 | 24-37% |
| **Agriculture** | 23[5] | 16-18 | 22-30% |
| **LULUCF** | 4.8 | 2-3 | 37-58% |
| **Unallocated Savings** | N/A | 4[6] | N/A |

The details of the planned policies, measures and actions to deliver these emissions reductions are set out in the sectoral chapters of this plan.

[3] Emissions from Waste and Public Sector not shown separately in table

[4] Ranges will be finalised in Climate Action Plan 2022 following the legal adoption of carbon budgets and sectoral emissions ceilings

[5] Projected figure to be confirmed when inventories based on the Fifth Assessment Report (AR5) of the United Nations Intergovernmental Panel on Climate Change are published

[6] $4MtCO_2eq.$ are unallocated on an economy-wide basis – see reference to Danish model (cited in PfG) below

Land Use, Land Use Change and Forestry (LULUCF) emissions are dealt with as a distinct sectoral category in this plan, separate from agriculture sector emissions. In 2018, net emissions from LULUCF were 4.8 $MtCO_2eq$. A 51% reduction would mean a 2030 target of 2.4 $MtCO_2eq$., as it is not currently envisaged that the non-LULUCF sectors can contribute more than is set out in the table above. However, this net emissions target for LULUCF is more challenging than it appears. The 4.8 $MtCO_2eq$. net emissions in 2018 represents non-forest land as a source of emissions with our forest sink netted off. The forest sink is declining and on a BAU basis it is expected that net-LULUCF emissions will be at least 7 $MtCO_2eq$. in 2030.

The Climate Change Advisory Council (CCAC) has advised that in setting and accounting for targets for LULUCF emissions to 2030, the government should take account of the unavoidable delay between actions and outcomes in terms of actual removals, with the understanding that many of the actions taken will bear fruit in the post 2030 period. For example, planting a hectare of forest today, will remove carbon dioxide from the atmosphere as the trees grow, but will deliver most of its sequestration potential in the period after 2030. The inventory reflects the gradual accumulation of carbon into the trees, which in younger and mature trees is limited. In order to incentivise activity, provision could be made in regulation to account for the committed removal in a shorter timeframe, while avoiding double counting. The government has followed this advice. This plan identifies measures to deliver 2.5 $MtCO_2eq$., with potential to account for a further 2.1 $MtCO_2eq$. of future savings from afforestation in the period to 2030, creating the right incentives to achieve afforestation rates consistent with meeting our 2030 target, and becoming climate neutral by 2050.

The Programme for Government recognised that we would not yet be in a position to identify all the emerging technologies, changing scientific consensus or policies to meet our full ambition. This will require a further allocation within the overall carbon budgets as the decade progresses and will be subject to intense evaluation. This approach, which mirrors the Danish model, is reflected in the Climate Action and Low Carbon Development (Amendment) Act. This Climate Action Plan leaves savings of 4 $MtCO_2eq$. unallocated on an economy-wide basis pending identification of additional abatement measures.

It should be noted that while this plan is consistent with a 51% reduction in GHGs by 2030, it was prepared prior to consideration and adoptation by the government and Oireachtas of the proposed programme of carbon budgets recently published by the Climate Change Advisory Council. The Climate Action Plan 2022 will fully reflect the legally adopted carbon budgets and sectoral ceilings.

## 3.1 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 2 | Conduct a review of greenhouse gas emissions on a consumption basis, with a goal of ensuring that Irish and EU action to reduce emissions supports emission reductions globally, as well as on our own territories |

# Choosing the Pathways which Create the Least Burden & Offer the Most Opportunity for Ireland

4

# 4. Choosing the Pathways which Create the Least Burden and Offer the Most Opportunity for Ireland

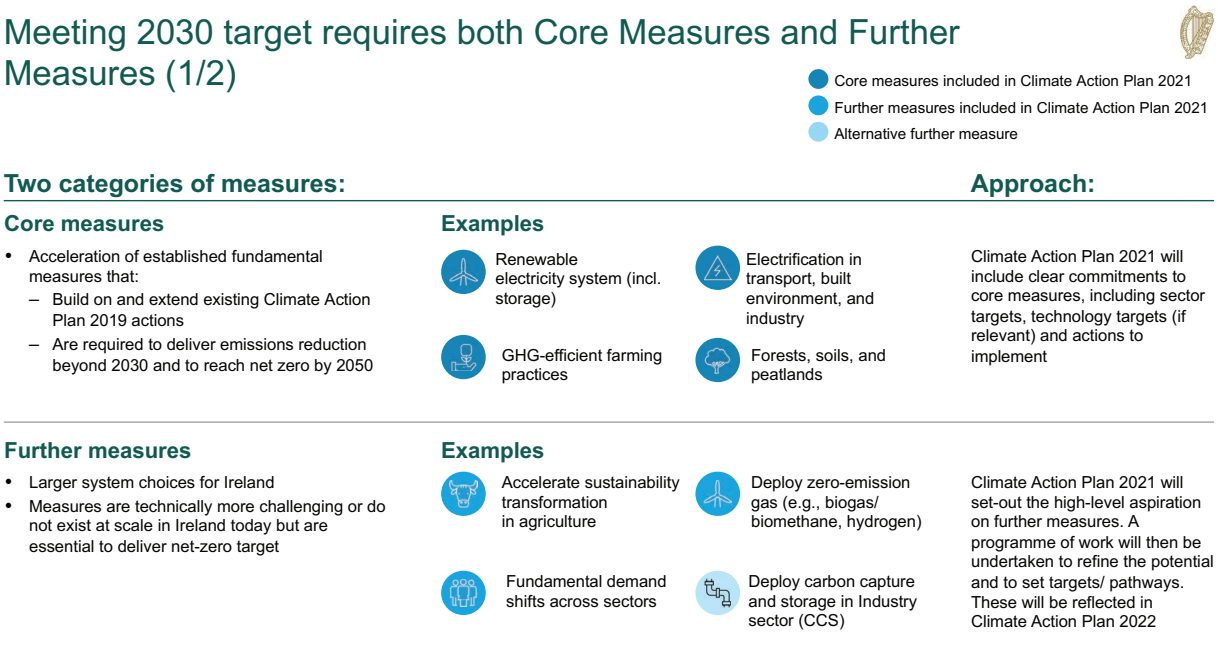
## 4.1 Introduction

The Climate Action Plan 2019 (CAP19) was based on a marginal abatement cost curve (MACC), and relied largely on known and well-understood measures and technologies to reduce emissions. The measures and technologies set out in the 2019 plan remain unchanged. The Climate Action Plan 2021 (CAP21) will build on these in order to deliver the greater ambition.

Given the significant increase in ambition required for CAP21, a larger range of measures are required. Some of these are still relatively new and their potential impact and cost will evolve over the coming decade. To reflect this, the measures in CAP21 are divided into two categories: core measures and further measures.

Core measures cover the established fundamentals of decarbonisation, such as developing renewable power for electricity supply, electrification across demand sectors, and demand management measures. These build on the existing CAP19 actions. These core measures are necessary but not sufficient to achieve the CAP21 targets. In order to deliver the -51% target by 2030, further measures are required that are more technically challenging or are not yet available at scale in Ireland. Examples of further measures include biogas/biomethane with currently limited supply; green hydrogen, where electrolysis technologies are still being developed and costs are relatively high; and Carbon Capture and Storage (CCS) which requires capital expenditure and the development of transport and storage infrastructure.

**Figure 4.1**

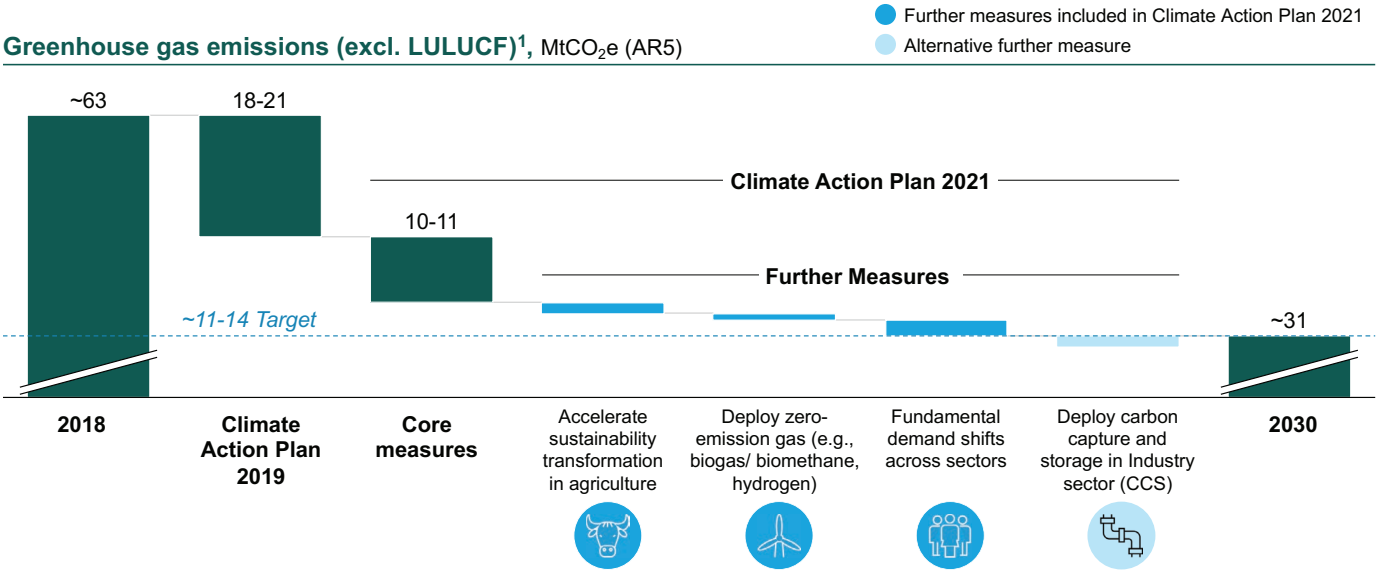



Deploying all core measures would reduce emissions by 10-11 $MtCO_2eq.$ by 2030. Three sets of further measures could close the gap (set out below). Given that these further measures are more challenging, a programme of work will be undertaken to refine the potential of these measures and to set relevant targets and pathways. These will be reflected in future Climate Action Plans.

**Figure 4.2**

## Meeting 2030 target requires both Core Measures and Further Measures (2/2)

**Greenhouse gas emissions (excl. LULUCF)[1],** $MtCO_2e$ (AR5)




Excludes LULUCF and unallocated savings of 4Mt CO2 eq

1. GHG emissions and abatement impact based on AR5 2021 EPA methodology
Source: Climate Action Plan 2019; Programme for Government 2020

## 4.2 Sector Abatement Ambition

Delivering these core and further measures will mean a step-up in ambition across all sectors. The figure below shows a sectoral split of the implied emission targets by 2030 and identifies the relevant core and further measures.

**Figure 4.3**

## Sector abatement ranges are more ambitious in Climate Action Plan 2021 compared to the 2019 plan

% Abatement impact ranged from implementing only core measures to both core and further measures

Emission reduction potential from Further Measures

| GHG emissions[1] $MtCO_2e$ (AR5) | 2018 | 2030 Climate Action Plan 2019 | 2030 Climate Action Plan 2021 | | Key drivers from Climate Action Plan 2021: Core Measures | Key drivers from Climate Action Plan 2021: Further Measures |
|---|---|---|---|---|---|---|
| Electricity | 10 | ~4-5 | ~2-4 | -60-80% | Build-out renewable generation capacity incl. zero carbon system services and increased deployment of RES – solar, microgen, offshore wind | Deploy zero-emission gas: e.g., biogas/biomethane, hydrogen<br>Produce hydrogen for consumption in other sectors |
| Transport | 12 | ~7-8 | ~6-7 | -40-50% | Electrify road transport<br>Increase biodiesel blendrate<br>Shift towards transportation modes with lower energy consumption per kilometre | Drive modal shift to extensively reduce passenger car use |
| Buildings | 9 | ~5-6 | ~4-5 | -45-55% | Continue phase out fossil fuels in new homes<br>Ramp up zero-emission heat in commercial buildings<br>Build out district heating in cities | Blend in zero-emission gas<br>Reduce heat demand' |
| Industry[2] | 7.9 | ~8-9 | ~5-6 | -30-40% | Accelerate uptake of carbon-neutral heating in industry and enable electrification of high-temperature heating<br>Phase-out high-GWP F-Gases | Blend in zero-emission gas<br>Further decrease embodied carbon in construction materials<br>Alternative measure[3]: deploy CCS in hard to abate industry sectors |
| Agriculture | 23 | ~20-21.5 | ~16-18 | -20-30% | Increase uptake of GHG efficient farming<br>Diversify farm activities (e.g., through forestry, bioenergy) and create new biomethane business opportunities | Accelerate sustainability transformation in agriculture |
| LULUCF | 5 | N/A[4] | ~2-3 | -40-60% | Maintain afforestation and limit deforestation<br>Rewet peatlands<br>Improve grassland management | |

An additional **4 Mt $CO_2$e of unallocated savings** will be required by 2030 to achieve the -51% target

1. GHG emissions and abatement impact based on AR5 2021 EPA methodology | 2. Including waste management | 3. Not included in Climate Action Plan 2021 | 4. No target set in Climate Action Plan 2019
Source: Climate Action Plan, 2019; Programme for Government 2020

The analysis demonstrates that sustained efforts across sectors will be required to meet targets. The timeline to realise the benefits differs between sectors and interventions, but each sector requires action now to deliver by 2030:

**Electricity:** The proposed pathway includes a more rapid build-out of renewable generation capacity (wind and solar power generation technologies), increased storage, and the deployment of zero-emissions gas. The decarbonisation pathway for the electricity sector is challenging given the rapid growth in demand for power, as well as the need to ensure security of supply through the decarbonisation journey.

**Transport:** The proposed pathway in transport is focused on accelerating the electrification of road transport, the use of biofuels, and a modal shift to transport modes with lower energy consumption (e.g. public and active transport).

**Buildings:** The proposed pathway includes delivering the retrofit ambition in CAP19, rollout of district heating in cities, and acceleration of zero-emissions heating in commercial buildings.

**Industry:** The proposed pathway includes accelerating uptake of carbon-neutral heating in industry; enabling electrification of high-temperature heating; phase-out of high-GWP F-Gases; blending of zero-emission gas; and decreasing embodied carbon in construction materials. In addition, there may be a role for CCS in difficult-to-abate industry sectors.

**Agriculture:** Key measures in agriculture include increasing the uptake of GHG efficient farming practices and diversifying farm activities (e.g., through afforestation, forest management and bioenergy), and creating new biomethane business opportunities.

**LULUCF:** In addition to the ambitious afforestation targets in CAP19, the pathway includes significant reduced management intensity of our peatlands, and more efficient management of grasslands to reduce emissions.

Figure 4.4 shows the core measures outlined above by sector, setting specific ambitions (indicated by KPIs) to be achieved by 2030. Articulating the KPIs will enable each sector to regularly monitor progress, and to gauge whether the most appropriate policy tools have been identified and are being deployed, or whether there is a need to reconsider the policy and/or the ambition.

**Figure 4.4**

# A set of Core Measures have been identified for inclusion in Climate Action Plan 2021 (1/2)

Measures from Climate Action Plan 2019 measures without additonal uptake in Climate Action Plan 2021

Core measures included in Climate Action Plan 2021

| | Core measures | | Technology | KPI 2030 Climate Action Plan 2019 | KPI 2030 Climate Action Plan 2021 |
|---|---|---|---|---|---|
| Electricity | E1 | Build-out renewable generation capacity | Total RES in generation mix, %[1] | 70 | 80 |
| | | | Onshore wind, GW[1] | ~8.2 | Up to ~8 |
| | | | Offshore wind, GW[1] | ~3.5 | ~5 |
| | | | Solar PV, GW[1] | ~0.4 | ~1.5-2.5 |
| Transport | T1 | Electrify road transport | Passenger EVs, # | 840k BEVs and PHEVs | 845k with a focus on BEVs |
| | | | Zero emissions vans and heavy goods vehicles, # | ~95k | ~95k vans and ~3.5k heavy goods vehicles |
| | T2 | Increase biodiesel blend-rates | Bioethanol blend, Vol% | E10 | E10 |
| | | | Biodiesel blend, Vol% | B12 | B20 |
| | T3 | Transition to zero emission mass transportation | Transport modes transitioned to low-carbon | Electrification of bus transport (~1.2k low-emission buses) | 1.5k EV buses and expanding electrified rail services |
| | T4 | Sustainable Transport Journeys and Demand Management Measures | Demand shifts | | 500,000 (14%) additional public transport and active travel journeys per day |
| Buildings | | Retrofit residential dwellings | Retrofitted homes[2], # dwellings | ← | 500,000 (B2 BER /cost optimal equivalent or carbon equivalent) → |
| | | Deploy zero-emission heating in existing homes | Existing homes with zero-emission heating[1], # dwellings | ← | 400,000 → |
| | B1 | Continue to phase out fossil fuels in new homes | New homes with zero-emission heating, # dwellings | 200,000 | 250,000-280,000 |
| | B2 | Ramp-up zero-emission heat in commercial buildings | Commercial buildings with zero-emission heating[1], # buildings | 25,000 | 50,000-55,000 |
| | B3 | Increase targets for roll-out of district heating | District heating demand, TWh | ~0.1 | ~2.7 TWh |
| | B4 | Increase targets for public sector buildings | Emission abatement from public buildings, % | 30 | 50 |

1. RESS competitive auctions will determine the final generation mix
2. Only additional installments, excluding existing building stock with applied technology

Source: Climate Action Plan 2019; Programme for Government 2020

# A set of Core Measures have been identified for inclusion in Climate Action Plan 2021 (2/2)

Measures from Climate Action Plan 2019 measures without additonal uptake in Climate Action Plan 2021

Core measures included in Climate Action Plan 2021

| | Core measures | | Technology | KPI 2030 Climate Action Plan 2019 | KPI 2030 Climate Action Plan 2021 |
|---|---|---|---|---|---|
| Industry | | Switch to alternative fuels in cement | Share of energy mix from zero-emission fuels, % | 80 | 80 |
| | I1 | Accelerate uptake of carbon-neutral heating in industry | Share of carbon neutral heating in total fuel demand, % | Food industry[1]: 80 | All industries: ~50-60[2] |
| | I2 | Phase-out high-GWP F-Gases | Emission reduction vs 2014, % | *No target* | 80 |
| | I3 | Decrease embodied carbon in construction materials | Emissions from non-metallic mineral products by 2030 | *No target* | N/A |
| | I4 | Enable electrification of high-temperature heat generation | Emission reduction of non-ferrous metals manufacturing vs 2018 | *No target* | N/A |
| Agriculture | A1 | Increase adoption of GHG-efficient farming practices | Implementation of GHG-efficient farming practices | Deliver GHG-efficient farming practices | Increase adoption of GHG-efficient farming practices |
| | A2 | Diversify farm activities (e.g., through forestry, bioenergy) | Area impacted by diversified farm activities, kha | *No target* | TBD |
| | A3 | Create new biomethane business opportunities | Biomethane production, TWh | *No target* | TBD[3] |
| LULUCF | L1 | Increase sequestration through forestry (afforestation, extended rotations, improved forest management) | Yearly planting rate, ha/yr | 8,000 | 8,000 |
| | L2 | Limit deforestation trends | Yearly deforestation rate, ha/yr | *No target* | <900 |
| | L3 | Reduced peatlands and wetlands management intensity | Area of peatlands and wetlands rewetted, kha | *No target* | ~44-77 |
| | L4 | Increase mineral grassland carbon sequestration | Area of grassland better managed, kha | ~250 | ~450 |
| | L5 | Manage organic grasslands better (farmed peatlands) | Area of organic grassland soils rewetted, kha | ~40 | ~80 |
| | L6 | Increase use of cover crops | Area of cover crops planted, kha | *No target* | ~50 |
| | L7 | Incorporate excess straw into tillage | Share of cereal area directly incorporating straw into soil, % | *No target* | 10 |

1. Food industry represents ~15% of total industry fuel demand (in TJ) in 2018
2. Excluding measures I3, I4 and I6
3. Subject to the outcome of SEAI study

Source: Climate Action Plan 2019; Programme for Government 2020

## 4.3 Investments Required

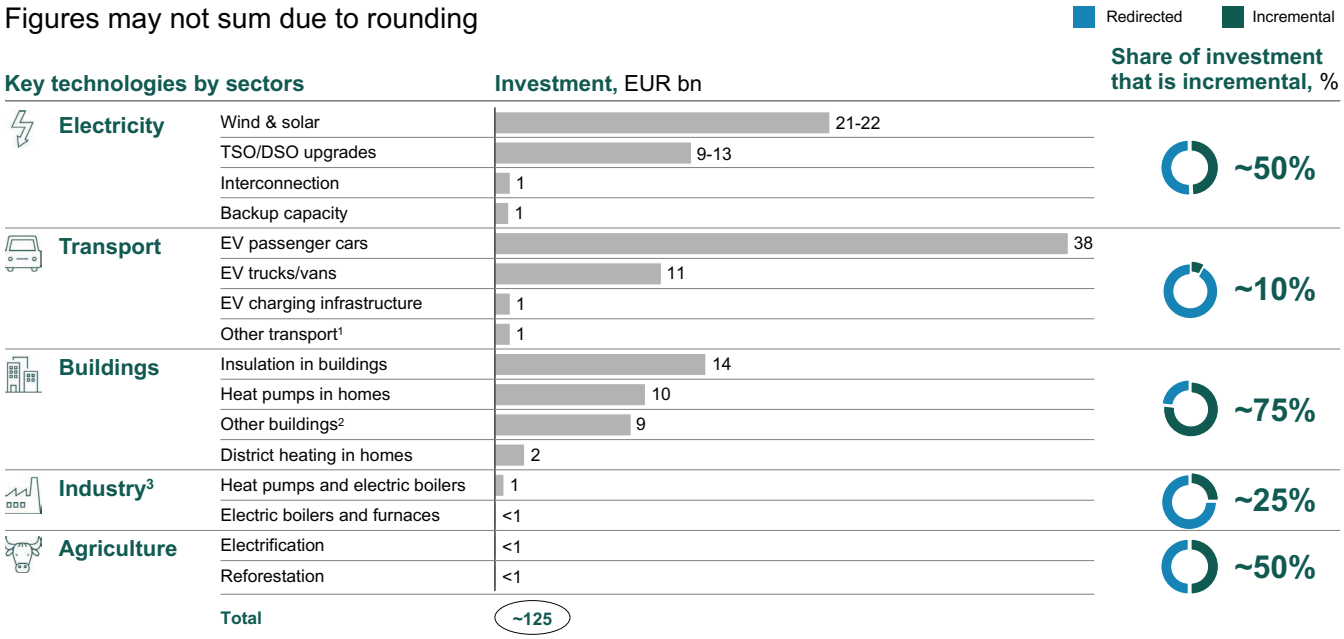
Reducing our greenhouse gas emissions by 51% by 2030 must influence both public and private capital overall investment (public and private) choices. A modelled estimate[7], based on available information at the time of writing the plan, suggests that delivery of CAP21 could require ~€48 billion additional investment compared to if Ireland were to take no climate action at all. This figure is purely investment cost and does not include the operational savings that could follow. For example, the operating costs of renewables are expected to be much lower than those for coal generation. Of the additional ~€45 billion in capital expenditure, ~€28 billion (~58%) is estimated to be invested in the buildings sector, ~€15 billion (~35%) in the power sector, and ~€5 billion (~10%) in transport.

Delivery of CAP21 could require a further ~€80 billion of reallocated funds (public and private) that could otherwise be invested in incumbent technologies, based on a comparison of investment associated with a pathway consistent with CAP21 and a "no climate action" baseline. Figure 4.5 shows that this results in a total of ~€125 billion – summing additional and reallocated – capital investment in low-carbon technologies and infrastructure in the period 2021 to 2030. This measure of "total capex" is for the total initial investment required (e.g. a battery electric vehicle) and is agnostic of (i) the operational savings that may follow and (ii) the investment that would have otherwise been invested in incumbent technologies (which is considered only in the additional figure above). As shown below, investment required this decade is expected to be driven by transport (~€51 billion) and buildings (~€35 billion). These are two sectors that are expected to transition earlier than some others. For example, industry is harder to abate and investment is expected to come in the following decades. The analysis suggests that the most significant share of capital could flow into electric vehicle passenger cars, renewables, and building insulation. For calibration, the incremental investment for 2021-30 per head is broadly comparable, once scaled, to that of the UK's Climate Change Committee's equivalent projection for the UK[8].

**Figure 4.5**

### ~€125bn investments will need to be mobilized in key technologies; share of incremental cost is highest in buildings

Figures may not sum due to rounding




1. Includes for example buses, trains, 2- and 3-wheelers
2. Includes for example, heat pumps and insulation in commercial buildings, electrical cooking
3. Additional investments of ~2bn EUR in industry if selecting CCS as an alternative

Source: McKinsey DSE (2021)

6

[7] These estimates will continue to be updated as the plan evolves over time

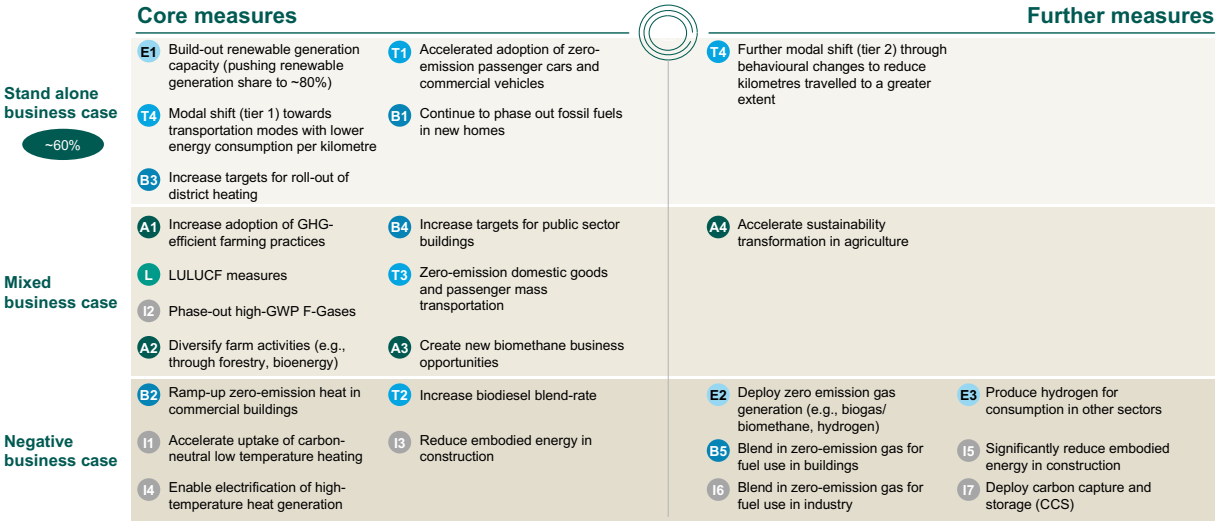
[8] Climate Change Committee (2020) UK Sixth Carbon Budget

Figure 4.5 highlights that the share of total additional investment could vary substantially by sector. For example, a comparison of the investment required in a decarbonised scenario versus a 'no climate action' scenario, suggests that the buildings sector has a particularly high share of its total investment that is additional because most of the retrofits would not be implemented in a 'no climate action' scenario. Alternatively, power has a moderately high share of its total investment that is additional, and this is driven by the higher capex of renewables versus fossil fuel power generation, together with the need to expand the grid capacity as electrification occurs. By contrast, a relatively low share of total transport investment is expected to be additional because vehicles are replaced regularly and the price difference between electric vehicles and internal combustion vehicles is expected to decline over the decade.

Annualising the total capital expenditure figure assessed above suggests that delivery of CAP21 could require a total of €14bn p.a., on average, over the ten-year period 2021-30.

The recently published NDP sets out a total public investment of €165 billion over the period 2021 to 2030. This will bring public investment to 5 per cent of GNI*, well above the recent EU average of 3 per cent of GDP. Extensive efforts have been made to ensure that the NDP will support the Government's climate ambitions. For the first time in Ireland, climate and environmental assessment of the NDP measures has been undertaken, along with an assessment of the alignment of the plan as a whole with the ideals of a green recovery plan. Commitments are made to further reforms of the Public Spending Code and to the treatment of Energy Performance Contracts. Most significantly, €5 billion of the total €9.5 billion in additional carbon tax receipts over the period of the NDP have been allocated to increase capital investment levels in energy efficiency. By way of further example, measures in the energy area will be financed through a variety of mechanisms in combination with private investment: direct Exchequer capital supports; displacing fossil fuel imports; the Public Service Obligation (PSO) Levy; and, in respect of investment in the regulated gas and electricity networks by the system operators, through network charges. In addition, our National Resilience and Recovery Plan commits €518 million to prioritising the advancement of the green transition to significantly reform and direct relevant funding towards decarbonising projects such as retrofitting, ecosystem resilience and regeneration, climate mitigation and adaptation, and green data systems.

## About 60% of the required Climate Action Plan 2021 measures have a stand-alone business case



Business case analysis suggests that ~€75 billion (60%) of identified investments could have positive standalone investment cases through displacing fossil energy costs. However, the remainder of ~€50 billion (40%) includes measures that are expected to pay back sometimes, dependent on context and others that are not expected to ever pay back. As shown above, the analysis illustrates that the share of investments with a positive investment case could vary significantly by sector. For example, most of the transport and power investments have standalone business cases. Battery electric vehicles are an example of a technology that is expected to have a standalone business case, with a payback of about 9 years without a carbon price if purchased in 2025 (lowering to about 7 years with the Irish carbon price trajectory). This works because the higher initial price (compared to a diesel car) will then be recouped through lower operating costs over time.

For buildings and industry, while there may not be a pure financial business case for some investments, there will be associated co-benefits, such as cleaner air and comfort that are important and could drive the transition.

It should be noted that reliance solely on Exchequer expenditure schemes is neither affordable nor adequate to the scale of the challenge to be addressed. Government recognises that climate action will require a targeted balance between Exchequer-supported expenditure, and taxation policies and regulation. Private investment will be needed to work alongside public funding to achieve our targets. In certain cases, taxation policy may have a stronger role to play in changing individual or business behaviour. In addition, the financial cost and resulting benefits will be evaluated in accordance with the Public Spending Code as policies are put in place to support the delivery of Ireland's climate targets.

## 4.4 Benefits for Ireland

Besides the critical contribution to limiting global warming, decarbonisation can deliver broad benefits for Ireland. Analysis (spanning financing, employment, competitiveness and household bills) suggests that delivery of CAP21 could have significant net positive socioeconomic implications, contingent on careful management. However, it also highlights that there could be variation in impacts.

Delivery of CAP21 could benefit Irish businesses in various ways. For Irish business, the stakes are high. The strong global commitment to net-zero and the 'race to the top' that is underway means that not acting carries a real risk of being left behind – producing outdated products for changing markets and consumer demands. Change is inevitable, maintaining the status quo is not an option. The choice is between helping key sectors transition at pace or delaying and facing a later scramble to catch-up. The CAP21 also creates opportunities. For example, by increasing job needs for higher-skilled roles (e.g. offshore wind installation engineers), and by positioning Ireland well to seize new high-growth green export and import substitution opportunities (e.g. horticulture, harvested wood products).

CAP21 levers can benefit individuals also. Embracing active travel (e.g. walking and cycling) can have improved health benefits, in addition to the positive environmental impact, while the shift to renewable fuel sources improves air quality.

However, analysis also highlights that these impacts could be unevenly distributed. For example, certain sectors and associated occupations could decline, households with certain characteristics could incur higher than average costs, and energy prices are likely to increase, impacting particular industrial groups more than others.

The purpose of this plan is to set out the actions required to ensure that Ireland's response to climate change maximises the potential benefits and ensures that the impacts are fairly distributed.

# Governance of the Challenge

# 5

# 5. Governance of the Challenge

## 5.1 Governance Structure

Since the publication of the Climate Action Plan 2019, there has been a significant strengthening of the governance structure to support ambitious climate action, underpinned by the enactment of the Climate Action and Low Carbon Development (Amendment) Act 2021. We now have a legally binding target to be climate neutral no later than 2050, and to reduce emissions by 51% by 2030.

## 5.2 Delivery of the Climate Action Plan

The Climate Action Plan has been placed on a statutory footing, with required annual updates to focus on the near- and medium-term time horizon. Once the programme of carbon budgets has been legally adopted, future Climate Action Plans must be consistent with their achievement, and provide a roadmap of actions, including sectoral actions, that are needed to ensure such compliance.

The Climate Action Delivery Board will ensure that each department and public body is held to account for the delivery of actions set out in the Climate Action Plan. The Board will also review key strategic projects and areas of work.

The Cabinet Committee on Environment and Climate Change, supported by the associated senior officials group, will be central to climate policy formulation and implementation on a whole-of-government basis.

A delivery report will be provided to the Cabinet and the Cabinet Committee on Environment and Climate Change each quarter ahead of its publication. We will streamline the reporting process to distinguish between key actions that deliver significant emissions abatement, and supporting actions. This will allow for greater transparency on progress towards decarbonisation.

We will ensure that capacity exists across all departments to deliver on climate action.

## 5.3 Carbon Proofing of Government Policy

We will continue the process, incorporated into Cabinet procedures, of ensuring that all government memoranda and major investment decisions are subject to a climate mitigation and adaptation evaluation.

## 5.4 Carbon Budgets and Sectoral Emissions Ceilings

### Carbon Budgets

The Climate Action and Low Carbon Development (Amendment) Act 2021 establishes a system of carbon budgeting with three five-year economy-wide budgets included in each carbon budget programme. The carbon budgets will be consistent with furthering the achievement of our national climate objectives and include all greenhouse gases (GHGs). The first carbon budget programme will comprise carbon budgets for the following periods: 2021-2025; 2026-2030 and 2031-2035. Each five-year carbon budget set a limit on an economy-wide basis to the amount of GHGs that can be emitted in the period.

### Sectoral Ceilings

The economy-wide carbon budgets will be supplemented by sectoral emissions ceilings, setting the maximum amount of GHG emissions that are permitted in a given sector of the economy during each five-year carbon budget. The Minister for the Environment, Climate and Communications, in consultation with other relevant Ministers, will develop a sectoral emissions ceiling for each relevant sector within each five-year budget, once the overall carbon budget has been adopted. These sectoral emission ceilings will be approved by government.

### Adopting Carbon Budgets and Sectoral Ceilings

Under the Act, the Climate Change Advisory Council (CCAC) will propose a programme of three successive five-year carbon budgets to the Minister for the Environment, Climate and Communications. The detailed process from submission of the budgets to their final adoption by government, including the role of the Oireachtas in the process, is set out at Section 9 of the Act.

Once carbon budgets and sectoral ceilings have been adopted, they will be reflected in the Climate Action Plan 2022. As part of that process, a decision will be taken by government on the allocation of sectoral responsibility for emissions across the relevant Ministers.

### What happens if sectoral targets and carbon budgets are not achieved?

If required, corrective or additional measures may be introduced to ensure targets are achieved. However, at the end of a five year carbon budget period, any excess emissions will be carried forward to the next budget period, which will be reduced accordingly. In addition to the provisions of the Act, we will consult on how individual sectors could bear any compliance costs for the State arising from failure to reach sectoral targets.

## 5.5 Oversight of Government

The Environmental Protection Agency's annual GHG inventory and projection reports, and the CCAC annual report, will inform monitoring of compliance with national and sectoral progress towards each carbon budget and sectoral emissions ceiling.

Each year, the CCAC must report by 30 October, following which relevant Ministers will be required to give account to an Oireachtas Committee on performance both in implementing Climate Action Plan actions and in adhering to their sector's emission ceiling under the carbon budget period. Where Ministers are not in compliance with the targets, they will need to outline what corrective measures are envisaged. Ministers will have to respond to any recommendations made by the Committee within 3 months. This 'comply or explain' approach will ensure greater scrutiny and accountability is provided.

The annual revision to the Climate Action Plan acts as a further review mechanism and an opportunity to re-adjust or refocus actions to ensure targets are achieved.

## 5.6 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 3 | Streamline the reporting process to distinguish between key actions that deliver significant emissions abatement, and supporting actions, to allow for greater transparency on progress towards decarbonisation |
| 4 | Activate a process, incorporated in Cabinet procedures, to ensure that all Government memoranda and major investment decisions are subject to a climate mitigation and adaptation evaluation |
| 5 | Undertake a capacity review across all departments to ensure that both the people and systems are configured to deliver on climate action |
| 6 | Complete the statutory process for the legal adoption of economy-wide carbon budgets and sectoral ceilings |
| 7 | Prepare Climate Action Plan 2022 to fully reflect the legally adopted carbon budgets and sectoral ceilings |
| 8 | Consult on how individual sectors could bear any compliance costs for the State arising from failure to reach sectoral targets |
| 9 | Identify common challenges to climate action implementation within the Civil Service and develop a proposal to address any challenges identified |

# Ensuring a Just Transition to a Climate Neutral Ireland

# 6

# 6. Ensuring a Just Transition to a Climate Neutral Ireland

## 6.1 Introduction

The Climate Action and Low Carbon Development (Amendment) Act 2021 sets Ireland on the path to a 51% reduction in emissions by the end of this decade and to net-zero emissions no later than 2050.

Delivering a just transition is based on recognising the transformational level of change required to meet these targets and having a shared understanding that the transition is fair, just, and that the costs are shared equitably. Our climate policies should, therefore, seek to protect the most vulnerable.

A just transition requires a framework to structure how Ireland's economy and society will transition to a low carbon future. Important elements of this are already in place in Ireland. Strong climate governance and progressive policies contained in this Climate Action Plan are enabling Ireland respond to the challenges and opportunities ahead. A refreshed National Dialogue on Climate Action will have just transition at its core. The National Economic and Social Council (NESC) will continue to provide strategic advice, research and analytical support for a just transition. We are developing an enterprise, education training system that is responsive, targeted and effective, and we are committed to ensuring that our carbon taxation policies are progressive by complementing future increases with targeted increases in social welfare and other initiatives to address fuel poverty.

Ireland has already been demonstrating leadership in a just transition by explicitly recognising and aligning it with our climate policy framework through: the predecessor to this Climate Action Plan; the Climate Action and Low Carbon Development (Amendment) Act 2021; the appointment of a Just Transition Commissioner; and the establishment of a range of financial supports for the Midlands region in its transition away from peat harvesting for power generation.

A just transition framework for Ireland will be about ensuring that we effectively monitor and manage our transition through the structures and responses already in place and planned, that our responses remain flexible so that we can respond to future transition challenges, and that we target the areas in need of support.

## 6.2 Defining a Just Climate Transition

There is no single internationally agreed definition of a 'just transition' and there are many different ways to understand the term. In Ireland, the National Economic and Social Council (NESC) has proposed the following definition: *"A just transition is one which seeks to ensure transition is fair, equitable, and inclusive in terms of processes and outcomes"*.[9] A just transition can, therefore, refer both to the broader policy framework of climate action to support individuals and communities in the transition, as well as the process of ensuring that individuals and communities have a voice and a role in informing and shaping these supports.

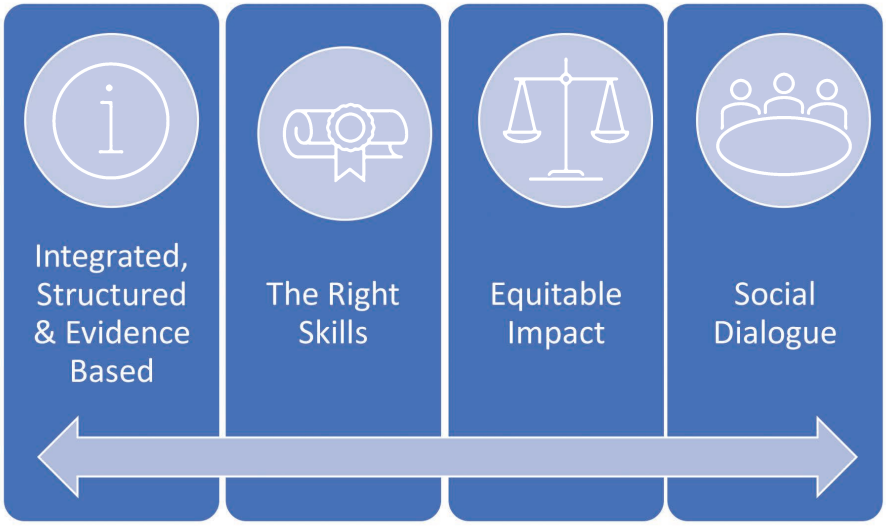
Building on this, the Climate Action and Low Carbon Development (Amendment) Act 2021 situates a just transition to a climate neutral economy as a process, within the wider statutory framework of climate action, which endeavours, in so far as is practicable, to maximise employment opportunities, and support persons and communities that may be negatively affected by the transition.

[9] NESC (2020) Addressing Employment Vulnerability as Part of a Just Transition in Ireland http://files.nesc.ie/nesc_reports/en/149_Transition.pdf

While just transition can also be applied in other policy contexts to refer to policy considerations which require fairness, inclusion and protection of the most vulnerable, in the context of climate policy the term is used specifically in relation to the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy.

Our climate policies have huge potential to open up new employment and enterprise opportunities. A just transition can mean new jobs, new skills, new investment opportunities, and the chance to create a more productive and resilient economy. While the transition will require targeted supports to help particularly impacted groups, regions and communities adapt, we are also working to support our citizens, communities and regions to realise the benefit of these opportunities.

**Figure 6.1** – *Our Principles for a Just Transition*




## 6.3 Just Transition Framework

The just transition framework is made up of four principles:

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

The instruments, policies and regulations deployed in the delivery of our climate policy will need to align with these four principles, and ensure they are taken into account in their design and implementation.

### 6.3.1 Principle 1: An integrated, structured, and evidence-based approach to identify and respond to just transition needs as they emerge

In the Midlands region the impact from the end of peat as a power generator has been regionally concentrated. Based on our current understanding, it is likely that the future impacts of our transition to a climate neutral economy will be both incremental and broadly-based, affecting occupations most closely linked to consumption of fossil fuels, arising from increases in heating, energy and transport costs, or resulting from changes in agricultural practices.

This does not exclude the possibility of concentrated impacts in different parts of the country or income groups (e.g. with higher reliance on private cars for mobility, on solid fuels for domestic heating, or on particular types of agricultural production).

For the transition to be just, it must be structured in such a way as to allow the state to identify and respond to just transition needs as they are likely to emerge.

Our response to the acute crisis that emerged in the Midlands region in the electricity generation sector required the appointment of a Just Transition Commissioner to assist the Government in its response. The Commissioner has been very effective in acting as a mediator in the affected region, facilitating dialogue, and bringing forward concerns from affected communities, residents, workers and businesses.

However, given the incremental and broad-based nature of the transition challenges which lie ahead, a permanent Commissioner role is not envisaged, though the option will remain to appoint a Commissioner if specific and acute challenges arise in particular sectors or regions which require a targeted response. Affected regions and sectors may also require specific structures to assist them in effectively managing the transition, supported by a lead department where required.

At a national level, the long-term agenda of a just transition to a climate-neutral economy and society will be managed through the establishment of a new Just Transition Commission and integrating its role with our existing governance and engagement structures, which will allow us to deliver a more integrated approach that fully embeds our just transition principles into the delivery of climate policy.

#### *An Integrated and Structured Approach*

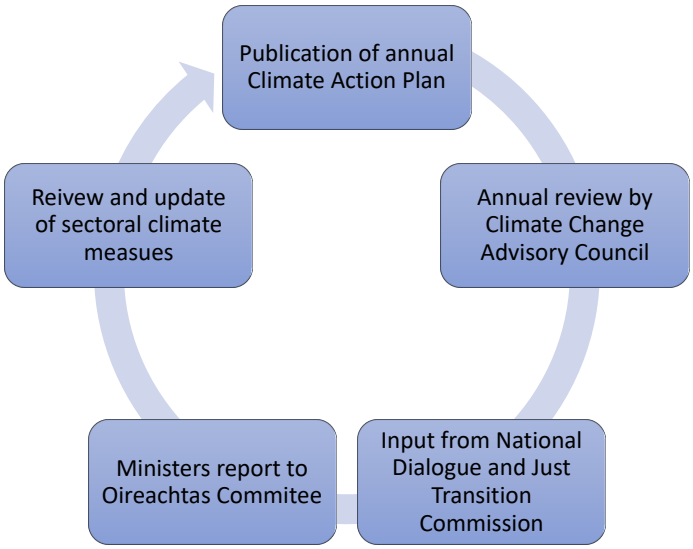
We will fully integrate our approach to the management of a just transition into the annual policy development and reporting cycle provided for under the Climate Action and Low Carbon Development (Amendment) Act 2021. This will include:

- We will establish a Just Transition Commission supported by a secretariat to ensure policy is developed and closely aligned with the Climate Action Plan. The Just Transition Commission will make recommendations to Government, building on research, engagement through the National Dialogue on Climate Action, and the annual review from the CCAC, on how Government policy can further the Just Transition
- The Minister and the Government having regard to the requirement for a just transition to a climate neutral economy which endeavours, in so far as is practicable, to maximise employment opportunities, and support persons and communities that may be negatively affected by the transition in the preparation of the *Climate Action Plan* and *National Long-term Climate Action Strategy*
- Each department needing to consider their climate policy development and implementation against the four principles for a just transition set out above and the recommendations of the Just Transition Commission

- The National Dialogue on Climate Action gathering input, on a rolling basis, about the key challenges facing individuals and communities in the transition, and this will be complemented by the development of a set of indicators for a just transition.
- The National Economic and Social Council providing analysis and dialogue of sectoral issues, to include in the first phase of the plan work on agriculture, climate and just transition
- Progress reporting, by each relevant Minister, to the Oireachtas on how our principles for a just climate transition are being addressed under the most recently approved Climate Action Plan, including the policies, mitigation measures and adaptation measures for each sector

In addition, the Climate Change Advisory Council is addressing just transition issues in its *Annual Review* and the Council will continue to do so as part of its general mandate (under Section 12 of the 2015 Climate Action and Low Carbon Development Act), to review and report and to make recommendations as it considers necessary or appropriate in order to enable the achievement of the national transition objective. The CCAC review will be an integral part of the Just Transition Commission's considerations in forming their recommendations to government.

**Figure 6.2** – *Incorporation of Just Transition into Annual Climate Policy Cycle*




Examples of where we are already integrating just climate considerations into our policy development through this Climate Action Plan include:

- Integration of community participation mechanisms in the Renewable Electricity Support Scheme
- Provision of 100% grant funding for retrofitting to lower income households under the Warmer Homes Scheme
- Commitment to a new Connecting Ireland Rural Mobility Plan to reduce our reliance on private cars
- Establishment of a *'Future of Farming in Ireland'* Dialogue under the Ag-Climatise Roadmap for the agriculture sector
- Integration of just transition into our national rural development policy, *Our Rural Future*, as an essential building block to achieve a sustainable, resilient and climate neutral economy and society
- Inclusion of climate change and just transition actions and associated themes in the new *Social Inclusion* and *Community Activation Programme*, and support for the provision of training and capacity building in relation to climate change with a focus on just transition, social inclusion and anti-poverty for Local Community Development Committees and Local Development Companies

### *Developing our Evidence Base*

Our capacity to anticipate and plan for a just transition requires the development of a robust evidence base to support policy development and effective ongoing monitoring.

As our climate action progresses, there are incremental risks and opportunities in the context of a just transition. These will occur throughout the country, in particular regions, sectors or occupations. Identifying these shifts requires a structured approach informed by the most up-to-date evidence base which provides the information required to make informed decisions.

Data will play a critical role in assisting the local authorities in forecasting where changes will occur (or are already underway), and who will be most impacted.

A number of methodologies are already available, or are under development, to provide a quantitative evidence baseline, as well as to inform qualitative considerations for policy design and implementation. These include:

- The National Economic and Social Council report, *'Addressing Employment Vulnerability as Part of a Just Transition in Ireland'*, and related publications from the Council
- A 2020 Climate Change Advisory Council working paper, on *'Designing and Implementing Policy for a Just Transition'*
- ESRI research into the distributional impacts of increases in carbon tax that informed recent Budgets
- Teagasc analysis, based on the annual National Farm Survey, to examine the micro-economic, environmental and other socio-economic and socio demographic indicators relating to the principal Irish economic farm types
- Ongoing work to develop the evidence base of impacts to inform the *Ireland's Territorial Just Transition Plan* for the EU Just Transition Fund
- The forthcoming report of the Expert Group on Future Skills Needs (EGFSN) on Skills to Enable the Low Carbon Economy

The forthcoming EPA Five Year Climate Research Assessment, which will include a volume on realising the benefits of transition and transformation

Developing a strong evidence base will be critical to defining a baseline of risk, to the design and targeting of actions, and for the objective measurement of impacts that particular actions will have in order to manage a fair and equitable just transition over time. This will provide Ministers and the Government with a strong base from which to progressively embed just transition principles into the delivery of climate action through each annual Climate Action Plan.

We will establish a research and policy working group to coordinate the provision of strategic advice and research to the proposed Just Transition Commission including the, NESC, EPA and other stakeholders. This group will have four core functions:

- Commission, review and assess work to support the development of indicators and ensure that targeted and timely data is available to guide the overarching assessment of just transition
- Commission anticipatory research and dialogue work, through NESC or otherwise, on current and future anticipated transitions to ensure actions to provide for a just transition are implemented
- To support a research fellowship to examine how assessment and review of just transition can be more systematically embedded into the annual climate policy cycle. This will include consideration of existing Irish and international methodologies, processes of dialogue and engagement, including

with the social partners, and effective institutional arrangements

- Review input from CCAC annual review and make recommendations to the Just Transition Commission.
- To review the impacts of, and make recommendations to improve, existing just transition policy initiatives

We will develop a suite of the suitable indicators for adoption by Government, guided by measurement tools that currently exist, and by the processes that have been put in place to develop and report on our progress towards the Sustainable Development Goals, as well as the development of a national well-being framework. Such indicators will also be important to inform our public engagement processes under the National Dialogue on Climate Action and to complement both the quantitative and qualitative data that will be gathered directly from these public engagement processes.

Development of indicators will also be complemented by ongoing, relevant research and reports on a just climate transition from the National Economic and Social Council, from other public bodies, and from Ireland's wider research system.

### 6.3.2 Principle 2: People are equipped with the right skills to be able to participate in and benefit from the future net zero economy

*Ireland's Decarbonisation Opportunity*

A climate neutral Ireland will bring new, green employment opportunities. The Climate Action Plan sets out a number of key measures which will drive the creation of new jobs with new skills requirements in a number of sectors, in particular building retrofits, renewable energy generation, our move to sustainable mobility, and new farming practices.

Meeting Ireland's renewable energy targets will increase demand for a range of engineering and technician roles, including: civil; electrical/electronic; mechanical; marine; production and process; quality control and planning; telecommunications; IT; and energy.

There will also be demand for a range of built environment jobs, including: construction and building trades; supervisors; construction occupations; health and safety officers; chartered surveyors; as well as other roles such as: environment professionals; finance and investment analysts; advisers; physical scientists; solicitors; accountants; and tax experts.

According to the Expert Group on Future Skills Needs estimates, this could raise demand for roles in these activities from a 2020 estimate of approximately 5,000 to potentially 22,000 – 27,000 by 2030.

There is also scope for additional job creation as we seek to decarbonise and embed sustainability practices across all sectors of the economy.

Climate action presents opportunities for existing supply chains and new businesses formation. Finding the right balance between regulation and incentives to progress decarbonisation will be crucial to maintaining our national competitiveness and ability to create jobs. As progress is made in the transition to a carbon neutral economy, changes in regulatory requirements (nationally and internationally), a higher carbon price, supply chain patterns, and evolving consumer preferences, will drive growth and innovation in our enterprise base. As businesses take steps towards decarbonisation and reducing their climate impact, there is a need to ensure that the new employment opportunities these offer are seized. Climate action and the regional skills needs will, therefore, be key themes in the refresh of the nine *Regional Enterprise Plans* for the period to 2024.

### *Ireland's System of Skills Development*

Developing a greener economy will not be socially inclusive by default and coherent policies are needed to maximise opportunities and cushion the social cost of the transition. People need to be equipped with the skills to be able to participate in and benefit from our future climate neutral economy. To maximise these opportunities, continuous pre-emptive workforce development is required. For individuals, this means reskilling and lifelong learning to have the capacity to be able to access, and create, future opportunities.

The Irish higher and further education systems have been responding well to providing in-demand training to respond to the decarbonisation of the economy by adapting provision and putting in place additional training spaces where needed. Ireland's further education model is centred on apprenticeships, transferrable skills and lifelong learning to keep pace with future changes. Ireland's skills architecture will minimise skills mismatches and ensure our approach to skills development is routed towards the green transition and broader areas of opportunity and growth.

As set out in the *National Economic Recovery Plan*, reskilling and upskilling are central to addressing the employment transition and an additional 50,000 education and training places will be rolled out. This is being further enhanced through SOLAS's *Recovery Skills Response Programme* and further support for the *Technological University Transformation Fund*. Lifelong pathways between, and within, further education and training, and higher education will advance lifelong leaning rates and the new Action Plan for Apprenticeship 2021 – 2025 will grow new apprentice registration to 10,000 per annum by 2025.

The Programme for Government has committed to developing a *Green Further Education and Skills Development Plan*, ensuring that learners are equipped with the environmental awareness and green skills that can drive future change. Building capacity for green apprenticeships will be an important element of this plan.

### *Forecasting Future Skills Needs*

The EGFSN, which advises the Irish Government on current and future skills needs of the Irish economy, will shortly finalise its study on *'Skills to Enable the Low Carbon Economy to 2030'*. This research will determine the demand for, and nature of, the skills required to deliver on key elements of Ireland's Climate Action Plan over the period to 2030. It will identify the nature and quantify the scale of the skills needs of enterprises supporting the transition to a low carbon economy, and develop a suite of recommendations that can be drawn upon to ensure that these future skills needs are fully addressed.

The Regional Skills Fora will also play an important role in identifying future skills needs emerging from the greener economy as they feed directly into the regional skills development pipelines through Education and Training Boards at regional level. Ongoing regional engagement from the employment, enterprise, education, and skills sectors is also required, such as from Local Enterprise Offices, Enterprise Ireland, the Department of Further and Higher Education, Skillnet, Education and Training Boards, Teagasc, and the Expert Group of Future Skills Needs.

### *Support for Employees at Risk and Labour Market Activation*

An upcoming challenge for training providers will be to identify which jobs are at risk and in demand, and this will require monitoring the types of new jobs emerging. Linked to this is continually reviewing the skills needs of these new employment opportunities. It will be important to assess the types of opportunities emerging and their skills levels, and to work with employers in developing opportunities across a range of skill levels and job types. Ongoing horizon scanning is required to identify employment opportunities from the green transition, and mapping these to current training provision, setting out where new training and education courses are needed.

Existing research on the impact on employees in declining sectors shows that it is critically important to enhance the skills and training advice and supports to workers before they may become unemployed, delivering one-to-one coaching, counselling and mentoring. This can be supported by making greater use of skills audits with at-risk workers to better identify transferable skills and competencies, including informal occupational skills, which may link workers to new opportunities they had not considered or did not think they had the qualification for. This will be also be informed by closer alignment between the work of the *Regional Enterprise Plans* and Regional Skills Fora.

Finally, employment activation for those on the *Live Register*, and also creating supported job placements, will play a key role in providing opportunities for people at the margins to be part of Ireland's transition to a greener economy. This could include the long-term unemployed, people keen to return to the workplace after taking time out for caring duties, those recovering from illness, and people with disabilities or severe needs. Developing additional community-based projects and supported employment places in green sectors will provide opportunities for individuals to contribute and develop new skills and experience.

### 6.3.3 Principle 3: The costs are shared so that the impact is equitable and existing inequalities are not exacerbated

To ensure a just transition to a climate neutral Ireland, the costs must be shared so that the impact is equitable and that existing inequalities are not exacerbated.

If compensatory measures are not taken, increases in the carbon tax can have a regressive effect on low-income households as they spend a greater share of their income on carbon intensive goods, such as heating fuel. However, the Government has ensured that increases in the carbon tax are progressive through targeted social welfare and other initiatives to prevent fuel poverty and ensure a just transition.

The Government has sought to ensure that revenue from increases in the carbon tax will be ring-fenced to protect those who are most exposed to higher fuel and energy costs, to provide support for displaced workers, and to invest in new climate actions. This includes expenditure on a socially progressive national retrofitting programme and an agri-environment programme to encourage and incentivise farmers to farm in a greener and more sustainable way. We have also committed to use approximately one-third of all additional carbon tax revenues over the next decade on targeted measures to ensure that the carbon tax increases are progressive.

Analysis undertaken by the ESRI on the distributional impacts of increasing carbon tax has informed our decisions in Budgets 2021 and 2022 to provide a targeted package of social protection supports that offset impacts on lower-income households. As a result of Budget 2022, for example, analysis has demonstrated that households in the bottom four income deciles will see all of the cost of the carbon tax increase offset, with the bottom three deciles being better off as a result of the compensatory measures.

Considerations around costs and equity are not limited to the carbon tax and will also apply to other fiscal measures, as well as to the provision of grants or other supports to assist the implementation of climate policy.

A just transition is about ensuring that people experience the benefits of a greener future and are not hit with disproportionately high costs if they wish to participate. An example is the cost of retrofitting a home to update its energy efficiency level. Government has invested additional funding in supporting

lower income households to participate in these schemes based on their ability to pay, and the *Warmer Homes Scheme* will continue to deliver a range of energy efficiency measures free of charge to low-income households vulnerable to energy poverty.

This additional investment in energy efficiency brings a range of benefits to the economy and also to the individual. Homes also become cheaper to run, leading to energy bill savings and reduced energy poverty, and can improve health and wellbeing, particularly for the young and elderly, through better internal dwelling temperatures and air quality.

### 6.3.4 Principle 4: Social dialogue to ensure impacted citizens and communities are empowered and are core to the transition process.

Social dialogue is core to developing a vision for how to implement the just transition framework, and impacted citizens, businesses (including the self-employed) must be a part of the conversations on climate policies and climate impacts, and the processes to manage these.

NESC's research on just transition has found that co-designing an inclusive, focused and participatory process with those most impacted at an early stage is key to ensuring that a transition is just. There are many ways of ensuring engagement with those impacted, including meaningful dialogue, engagement from local, regional and national agencies, bringing in community leaders, and clustering support networks.

The National Dialogue on Climate Action (NDCA) will be the key mechanism for facilitating the social dialogue process as part of the just transition. The NDCA will include processes of awareness-raising, communications and activation, and ensure community engagement and participation, using a model that has been co-designed with stakeholder participation and informed by broad public participation and social and behavioural research. Citizen engagement sessions will be held throughout the year and will be supported by ongoing research. In particular, the planned *National Climate Stakeholder Forum* will be a key event in engaging all relevant stakeholders in a just transition.

The strong participative approach of the NDCA will assist all stakeholders in identifying and prioritising what the challenges of transitioning are, and how to respond to them.

The NDCA will complement engagement activities undertaken by departments and agencies at sectoral, local, regional and national levels, including through local authorities, Public Participation Networks, SEAI Sustainable Energy Communities, Local Community Development Committees, Climate Action Regional Offices, the Labour Employer Economic Forum (LEEF), NESC, and other key national and sectoral dialogues.

Building on the model of the Midlands Regional Transition Team, established by the Midlands local authorities to coordinate all local actors in their response to the ending of peat-fired power generation, affected regions and sectors may also require specific structures to assist them in effectively managing the transition, including to design and implement local-led, bottom-up responses.

Mediation approaches may also be deployed as a tool to facilitate dialogue between affected groups, and this could involve impacted communities, employees, enterprises, and public bodies, depending on the particular situation. Consideration of the potential role for mediatory processes, in which issues can be raised and discussed, will be taken forward as part of our ongoing implementation of the NDCA.

## 6.4 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 10 | Establish a Just Transition Commission |
| 11 | Integrate just transition considerations into sectoral policy development through the Climate Action Plan |
| 12 | Support the provision of strategic advice and research on just transition in Ireland, including future priorities and spatial and sectoral impacts |
| 13 | Deliver the Programme for Government commitment to develop a Green Further Education and Skills Development Plan |
| 14 | Promote the implementation of the study "Skills for Zero Carbon - The Demand for Renewable Energy, Residential Retrofit and Electric Vehicle Deployment Skills to 2030" |
| 15 | Include climate action and just transition as themes for stakeholder consultation as part of the refresh of the nine Regional Enterprise Plans |
| 16 | Promote timely and tailored activation and training responses for workers whose jobs are at risk by the decarbonisation process |
| 17 | Create additional community workplaces and supported workplaces in green sectors for people who are economically inactive, long-term unemployed, and/or with severe needs |
| 18 | In line with the Programme for Government, ensure that targeted social welfare measures are put in place to prevent fuel poverty and support a just transition |

# A Just Transition Implementation Plan for the Midlands Region

7

# 7. A Just Transition Implementation Plan for the Midlands Region

## 7.1 Peat in the Midlands Region

The Midlands region is the first in Ireland to directly experience the negative impacts of the transition away from fossil fuels with the ending of peat extraction for power generation. Peat extraction in Ireland is highly concentrated in the Midlands (counties Laois, Longford, Offaly, Westmeath), and extends into adjoining counties, including Kildare, Roscommon, East Galway, and North Tipperary.

Ireland has extensive peat resources, much of which has been managed for commercial-scale peat extraction over a number of decades by the semi-state company Bord na Móna.

The land under management by Bord na Móna extends to about 80,000 hectares, with over 130 individual bogs organised and managed by the company as bog groups. Commercially extracted peat has been used as a feedstock for power generation, for the production of peat briquettes for domestic heating, and as an input for the horticultural industry.

The peat industry and related power generation have been hugely significant for the Midlands region economically, culturally and socially. Bord na Móna and the ESB have been key sources of employment while contributing to maintaining communities which have traditionally been economically dependent on agriculture, peat harvesting and the energy industry. Both companies have had a strong economic and social role for several decades through the provision of well-paid employment, housing for employees, and support for local communities.

At the end of 2020, a number of years earlier than had been planned, two of the three peat-fired power stations operating in the Midlands region, ESB's West Offaly Power Station in County Offaly and Lough Ree Power Station in County Longford, ceased operations. The sole remaining peat power station, Bord na Móna's Edenderry Power Station, is scheduled to continue to operate using biomass and peat under its current configuration and planning permissions until 2023.

The exit from peat from power generation will bring climate, biodiversity and economic benefits. At least 1.25 million tonnes of carbon will be saved each year, and emissions will reduce by up to 9 million tonnes up to 2027 as a result of peat no longer being combusted in power stations.

Notwithstanding these benefits, the accelerated closure of the two ESB power stations and the decision of Bord na Móna to cease all peat harvesting has had a significant impact on the regional economy, as well as the affected employees and communities, and has required the region to rapidly respond to and put in place resources to manage a transition which had previously been planned to take a number of years.

## 7.2 Responding to the Transition

The government has already committed significant resources, supported by carbon tax revenues, to supporting the region through this transition and will continue its programme of investment in the region over the coming years. This includes the largest programme of bog rehabilitation in the State's history to a value of up to €108 million, matched with a contribution of €18m from Bord na Móna, a Just Transition Fund to assist local communities and businesses to adjust to the low carbon transition, and €20 million in funding to deliver targeted social housing upgrades in the region.

Our key focus has been to support the transition of the existing workforces and the creation of new enterprise and employment opportunities so that the region remains vibrant and innovative, and makes the most of the opportunities that decarbonisation will bring.

The appointment by the government of a Just Transition Commissioner in late 2019, and his extensive engagements within the region, has informed the government's approach to date and this implementation plan responds and builds on the recommendations that have been made by the Commissioner. Our approach is also in line with the principles for a just transition set out in Chapter 6.

Other regions or sectors are likely to be affected by future transition challenges emanating from the move to a carbon neutral economy, and our approach in the Midlands will also help to inform future just transition responses.

## 7.3 Measures to Deliver a Just Transition in the Midlands

### 7.3.1 The Just Transition Commissioner and Regional Coordination Structures

Recognising the key role of wide stakeholder engagement and social dialogue in the design of the transition process, a Just Transition Commissioner was appointed by the government in November 2019. His mandate has been to engage with those affected by the accelerated exit from peat for electricity generation in the Midlands region and recommend to the government the essential elements of a just transition for those workers and communities. The work of the commissioner will continue to be supported by government to ensure the successful implementation of just transition measures for the remainder of the commissioner's current mandate to the end of 2021.

A Midlands Regional Transition Team (MRTT) was established by the Midlands' local authorities in late 2018 and has worked closely with the Just Transition Commissioner to develop and coordinate regional and local strategic partnerships. Its mandate is to pursue funding opportunities to mitigate the impact of job losses on individuals and the regional economy, develop alternative forms of employment, attract investment, and maximise existing employment opportunities and resources. The MRTT has established four working groups to focus on specific strands of activities creating viable enterprise and employment opportunities and sustaining impacted communities in the region.

### 7.3.2 Peatlands Restoration Measures

Returning peatlands to more natural conditions will deliver a range of climate benefits through reduced carbon emissions, long-term carbon storage, increased carbon sequestration, and enhanced resilience to the locked-in impacts of climate change. The improvements to peatlands will enrich Ireland's natural capital, increase ecosystem services, strengthen biodiversity, and improve water quality and storage attenuation, as well as developing amenity potential.

#### *Bord na Móna Peatlands Climate Action Scheme*

The government has approved funding of up to €108 million for Bord na Móna's large-scale peatlands restoration project. This will involve a wide array of engineering and ecology works designed to encourage and accelerate natural processes and, once rehabilitated, the peatlands will include peat-forming bogs and a mosaic of wetlands, grasslands and native woodlands. These measures will protect the storage of 100 million tonnes of carbon, enhance biodiversity and contribute to Ireland's target of being carbon-neutral no later than 2050, while supporting local communities by developing their capacity to respond to challenges faced by transitioning to a low-carbon economy. Through the implementation of the scheme, it is also estimated that over the period to 2050, 3.3 million tonnes of $CO_2$ emissions will be avoided in comparison to standard rehabilitation processes.

#### *National Parks and Wildlife Service Peatlands Restoration Programme*

€19 million has been allocated in 2020 and 2021 to commence restoration measures on almost 4,400 hectares of protected raised bogs in the Midlands region, along with other peatland management and conservation measures. Bord na Móna was engaged to project manage and undertake restoration works within the protected raised bog network, and local contractors have also been appointed for smaller scale restoration projects.

#### *EU LIFE Peatlands and People Project*

Funding of almost €10 million is being provided under the EU LIFE Programme for a Peatlands and People Integrated Project[10], which will highlight the power of peatlands to effect significant climate benefit. This seven year project, being coordinated by Bord na Móna, is a major initiative which will engage people with the benefits of peatlands restoration. The project will work with peatlands in Ireland's Midlands, and the communities in the region, to deliver capacity and support related to a decarbonising economy. It will establish a Peatlands Knowledge Centre of Excellence that will explore and carry out best practices in peatland restoration and rehabilitation, and design methodologies to monitor and analyse carbon fluxes. It will also establish a Just Transition Accelerator Programme that will focus on low-carbon and circular economy opportunities, as well as developing plans for an immersive People's Discovery Attraction to introduce the importance of climate action and peatlands to citizens.

[10] (LIFE19 IPC/IE/000007) Further details of the project can be found here: https://peatlandsandpeople.ie/

### 7.3.3 Agricultural and Geological Research and Development Projects

*European Innovation Partnership Projects*

The Department of Agriculture, Food and the Marine is funding European Innovation Partnership (EIP) projects in the Midlands, including for Wetlands Surveys Ireland, Green Restoration Ireland, and the Danú Farming Group.

- The objectives of the Wetlands Surveys Ireland Midlands project are to design and develop a pilot, results-based agri-environmental programme, with the aim of improving the environmental quality of agricultural lands surrounding a selection of raised bogs in Roscommon, Offaly and Westmeath. This project includes a central educational and community outreach programme to enhance understanding of the transition required towards sustainable use of the peatland resource for the benefit of local communities and the environment
- The Green Restoration Ireland co-operative project aims to develop clear, workable guidelines for a transition programme to carbon farming. The project's practical implementation aspect will engage a cohort of pilot 'lighthouse farms' in Laois, Offaly and Westmeath as 'living laboratories' using a citizen/farmer-science strategy, supported by the relevant expertise
- The Danú Farming Group project involves setting up control and trial plots in the Midlands with the aim of developing clear, workable guidelines for a transition programme to biological farming based on a sound understanding of soil structure, chemistry, biology, and plant nutrition

*Investigation and Evaluation of Potential Geological Resources in the Midlands*

Geological Survey Ireland will carry out a range of investigations and evaluate the geological potential of the Midlands, including producing a map and report outlining available resources and potential associated management considerations. It will also evaluate the possibility for communities and local economies to use resources, such as groundwater or geothermal energy, as part of the just transition, including assessing the feasibility of such use.

### 7.3.4 Midlands Retrofit Programme for Local Authority Homes

The Midlands Retrofit Programme is a government-funded programme to complete retrofitting works to homes owned by local authorities. Funding for this programme has been provided through carbon tax revenues and will provide for energy efficiency renovations, aiming to make these homes warmer, more comfortable, and more efficient to heat. Homes will be retrofitted to a Building Energy Rating of B2, or the most appropriate cost-optimal level, and the programme intends to benefit at least 750 homes in the Midlands. Retrofitting works typically include insulation of attics and walls; upgrading of windows and doors; replacement of heating systems; and the installation of LED lighting. Retrofitting is particularly beneficial for those in low-income households who often spend a higher proportion of income on fuel than the average household and, for this reason, has been targeted at these households. The Midlands Retrofit Programme has also helped to inform the development of our new retrofit delivery framework set out Chapter 14.

### 7.3.5 Tailored Just Transition Fund Measures

*National Just Transition Fund*

The government established a Just Transition Fund in 2020 to provide competitive funding for proposals from the Midlands region to support the transition away from employment in peat harvesting in the affected communities, to new areas of opportunity. The fund will support projects that contribute to the economic, social and environmental sustainability of the region, and which have employment and enterprise potential. Projects have been approved under the following categories:

- Business development
- Education, training and upskilling
- Development of co-working and enterprise hubs
- Renewable energies and retrofitting
- Tourism, heritage and restoration
- Community development and capacity building
- Greenways and walking

**Case Study: National Just Transition Fund Projects**

**Developing a Green HQ in Offaly**
Offaly Local Development Company has been awarded a grant of €960,349 to set up a Climate Action and Green Enterprise Centre in County Offaly. It involves the conversion of an old dance hall – Fiesta Hall, Kilcormac – into a centralised headquarters for climate action research, green business enterprises and sustainability training programmes for County Offaly.

**Expanding a Green Energy Park in Offaly**
Offaly County Council will carry out infrastructure works to complete the Rhode Green Energy Park at the site of the former Rhode Power Station, and will also commission a feasibility study to explore the integration of renewable energy and green hydrogen in the region with data centres, supported by a grant of €738,820.

**A Midlands Retrofit One-Stop-Shop**
Not-for-profit Superhomes Ireland, will lead this project across all eight counties of the wider Midlands region to provide a one-stop-shop service for deep retrofits. The project will work with 30 contractors to provide a retrofitting service to homeowners in the region, and will deliver a minimum of 175 deep retrofits by 2023, employing engineering, customer service and sales staff for a new Midlands regional office. They received grant funding of €407,576.

**New Digital Learning Hub in Longford Town**
Longford Westmeath Education and Training Board (ETB) has been awarded a grant of €1 million to develop a further education and training digital learning hub to benefit individuals and communities in Longford, Westmeath and Roscommon. An old military barracks on the ETB campus will be restored to host an online test centre, and audio-visual facilities for upskilling and re-skilling programmes; and to deliver practical workshops on, for example, energy conservation, construction, and horticulture.

### *EU Just Transition Fund*

The EU Just Transition Fund has been established as part of the EU Green Deal, to support the most affected regions in EU member states to meet the challenges associated with achieving the EU's climate targets for 2030 and climate neutrality by 2050. It will invest in areas that will contribute to alleviating the impact of the transition, by financing the diversification and modernisation of the local economy, and by mitigating the negative repercussions on employment in the territories most impacted by the transition away from fossil fuel use. Ireland has secured €84.5 million (in current prices) under the EU Just Transition Fund for investments over the period 2021 to 2027. The government will shortly finalise a Territorial Just Transition Plan which will set out the proposed investments and targeted sectors and regions under this Fund.

## 7.3.6 Training, Education and Enterprise Supports

### *Regional Enterprise Plans 2021 - 2024*

The preparation of Regional Enterprise Plans for the 2021-2024 period is currently underway, led by the eight regional enterprise committees, in a bottom-up, collaborative approach involving development agencies, Enterprise Ireland and IDA Ireland, local enterprise offices, local authorities, higher and further education bodies, and businesses. The Midlands Regional Enterprise Plan will have a key focus on supporting a just transition in the Midlands region.

### *Reskilling and Training Opportunities*

There has been significant investment in the region to ensure that affected workers and those living in the region can access training courses which open up future employment opportunities, particularly in green sectors. Education and Training Boards have been coordinating events across the impacted counties to connect with affected employees through apprenticeships, traineeships, and providing information on funded opportunities. Retrofitting centres of excellence, such as the SOLAS NZEB Training Facility at Mount Lucas, provide high standards of training and qualifications to people attending them.

Laois Offaly Education and Training Board (ETB) has partnered with Bord na Móna to provide employed traineeships that focus on enhanced peatland rehabilitation. Skillnet Ireland has invested to deliver a number of courses to upskill Bord na Móna workers, including programmes such as: logistical and transportation operators; micro-solar photovoltaic systems – QQI Level 6; and micro-generator electrical installations - QQI Level 6. The ETB is also rolling out further training provision for former Bord na Móna employees during 2021 and is working with local communities to develop community-based initiatives to support former employees to contribute to their communities, retain social supports, and transfer their skillsets to future generations.

The government has granted technological university status to Athlone and Limerick institutes of technology, and the resulting new Technological University of the Shannon: Midlands Midwest was formally established on 1 October 2021. This will increase higher education access, drive enhanced regional development, and increase opportunities for students, staff, business and enterprise, and local communities. This new unified, multi-campus, higher education institution will serve a number of counties in the Midlands and adjoining regions, and will act as an important catalyst for balanced regional development.

### *Enterprise Hubs and Co-Working Spaces*

The move to greater levels of remote work is accelerating and has potential for the Midlands region which experienced high levels of outward commuting to the greater Dublin area prior to COVID-19. Increasing provision for people to work on a part/full- or flexi-time basis, from a locally based co-working/remote working hub, and travel to the office if and when needed, will retain vibrancy and economic activity within the region and make it more attractive to enterprises and employers. Putting in place the framework for remote working set out in *Making Remote Work*: *National Remote Working Strategy*, is a key action of *Our Rural Future: Rural Development Policy 2021 – 2025*, and is being facilitated, inter alia, through the provision of broadband connection points under the *National Broadband Plan*.

### *Tourism and Recreational Offerings*

Tourism and 'slow tourism' have been identified as key areas of opportunity for the Midlands. Local authorities, Fáilte Ireland, Waterways Ireland, Coillte, the ESB and Bord na Móna are working together to progress the development of a number of important tourism infrastructure opportunities including: the Galway-Dublin Cycleway; the Midlands Cycling Destination; the Slieve Bloom Mountain Bike Trail; and the Shannon Master Plan. Scoping work will also be carried out to explore the eco-tourism potential for the peatlands, including for a network of peatland trails and aligned industrial heritage story.

### *Renewable Energy Infrastructure and Community Participation*

The renewable energy potential of the Midlands could be further developed using existing grid-connected infrastructure, as well as greenfield investment opportunities. Both Bord na Móna and the ESB have announced major investment plans for the region during 2021, which will support continued employment growth over the coming years. A number of private energy companies are also planning investments.

There will also be support for the development of community-based energy master planning, led by the Sustainable Energy Authority of Ireland (SEAI). This will provide a strong platform for community participation in future calls under the Renewable Electricity Support Scheme.

The SEAI Sustainable Energy Communities Programme will provide support to Midlands' communities, through local mentors and co-ordinators, to assist on their decarbonisation journey. The mentors provide free guidance on how to form a sustainable energy community and develop an energy master plan, including establishing a baseline for energy used in the community and a register of opportunities for projects. By the end of 2024, it is estimated that investment of €450,000 will have supported the development of 30 energy master plans in the Midlands region.

## 7.4 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 19 | Support the work of the Just Transition Commissioner in the Midlands region for the successful implementation of just transition measures |
| 20 | Develop and coordinate regional and local strategic partnerships in the Midlands region to address the specific challenges posed by the transition to a low-carbon economy |
| 21 | Deliver the NPWS/DHLGH Peatlands Restoration Programme for the raised bog habitat within the Special Area of Conservation and Natural Heritage Area networks |
| 22 | Deliver the EU LIFE Peatlands and People Project |
| 23 | Deliver the European Innovation Partnership projects in the Midlands |
| 24 | Support feasibility studies on biomass and anaerobic digestion in the Midlands through the Just Transition Fund |
| 25 | Investigate and evaluate potential geological resources in the Midlands to provide supporting information for just transition and climate mitigation planning |
| 26 | Support delivery of projects under the Just Transition Fund |
| 27 | Develop the EU Just Transition Fund with a focus on the most impacted territories in the Midlands region |
| 28 | Support enterprise development in the Midlands region, centred on the role of the new Regional Enterprise Plans to 2024 |
| 29 | Enhance delivery of further and higher education in the Midlands region to equip people for future employment opportunities in green growth sectors |
| 30 | Develop and expand enterprise hubs and remote working hub infrastructure in the region |
| 31 | Examine opportunities to further develop tourism, outdoor and recreation amenities/facilities for the Midlands region |
| 32 | Develop the potential for renewable energy hubs in the Midlands through existing and planned investments by State Owned Entities and support from Just Transition Fund |
| 33 | Deliver the Enhanced Decommissioning, Rehabilitation and Restoration (EDRR) Scheme for Bord na Móna peatlands |

# Citizen Engagement

# 8

# 8. Citizen Engagement

## 8.1 State of Play

Scientific research is unequivocal in its view that climate change is the result of human activity; that the impacts of climate change will be profound; but these impacts will not be felt equally by everyone in society. To minimise the impacts of climate change we need to limit global warming to 1.5° to 2°C above pre-industrial levels as reflected in the Paris Agreement. To achieve this requires a significant and immediate reduction in our carbon emissions.

In December 2019, the European Green Deal[11] was published which aims to transform the EU into a modern, resource-efficient, and competitive economy with net zero emissions of greenhouse gases by 2050. In April 2021, the European Climate Law[12] turned this political commitment into a legal obligation. This is to be supported, in part, through the European Climate Pact[13], which is an EU-wide initiative inviting people, communities and organisations to participate in climate action by sharing knowledge and implementing solutions.

The Programme for Government commits to a 51% reduction in carbon emissions by 2030 with an objective to achieve a climate-neutral economy no later than 2050. These commitments are now reflected in the Climate Action and Low Carbon Development (Amendment) Act 2021.

The transition to climate-neutrality will require changes across our society and economy, including in the built environment, energy, transport, waste, and agriculture. This will require a collaborative effort by government, business, communities, and individuals to implement new and ambitious policies, technological innovations, systems and infrastructures. This will also require changes in individual behaviours, including how we work, heat our homes, travel, consume goods and services, and manage our waste. Delivering on this ambition is the responsibility of everyone in society.

In 2021, as part of the National Dialogue for Climate Action (NDCA), a series of in-depth climate conversations took place which captured the views of over 3,800 people, including inputs from over 200 individuals, 16 public participation networks (PPNs), 100 young people from 12 Comhairle na nÓg groups, and 70 people from 12 years of age and upwards. These conversations gave voice to a public who are responsive to this crisis and feel a sense of urgency around climate action. It demonstrated an enthusiasm to work with the government, agencies, and organisations across society to deliver on more ambitious targets. It identified areas where people are already making changes and where individuals and communities feel they lack information, knowledge and resources, or the capacity to pursue these changes. In particular, many expressed the view that there is a need for innovation in finance (e.g. removing bureaucracy, providing low-cost finance options), and a need to enhance the capacity of local authorities and the community sector, in order to meet our ambitions.

Our experience to date shows that, as we move forward, we need systematic and active engagement with stakeholders and the public across Ireland at local and national level. The NDCA will be the primary vehicle through which this will be delivered.

[11] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

[12] https://ec.europa.eu/clima/policies/eu-climate-action/law_en

[13] https://ec.europa.eu/clima/policies/eu-climate-action/pact_en

## 8.2 Targets

Following on from the successful piloting of the NDCA between 2017 and 2019, and informed by the outputs from the public consultation for the Climate Action Plan, a new structure for the NDCA has been devised.

The NDCA will be led by the Department of the Environment, Climate and Communications (DECC) with a secretariat provided by the Environmental Protection Agency (EPA). The NDCA will be coordinated through an Interdepartmental Working Group on Citizen Engagement and Dialogue which will include governmental departments and agencies who are actively involved in delivering on climate action goals across key sectors.

The vision of the NDCA is to empower everyone in society to help deliver on our goal of reducing Ireland's carbon emissions and to actively participate in the transition towards a climate neutral economy by 2050.

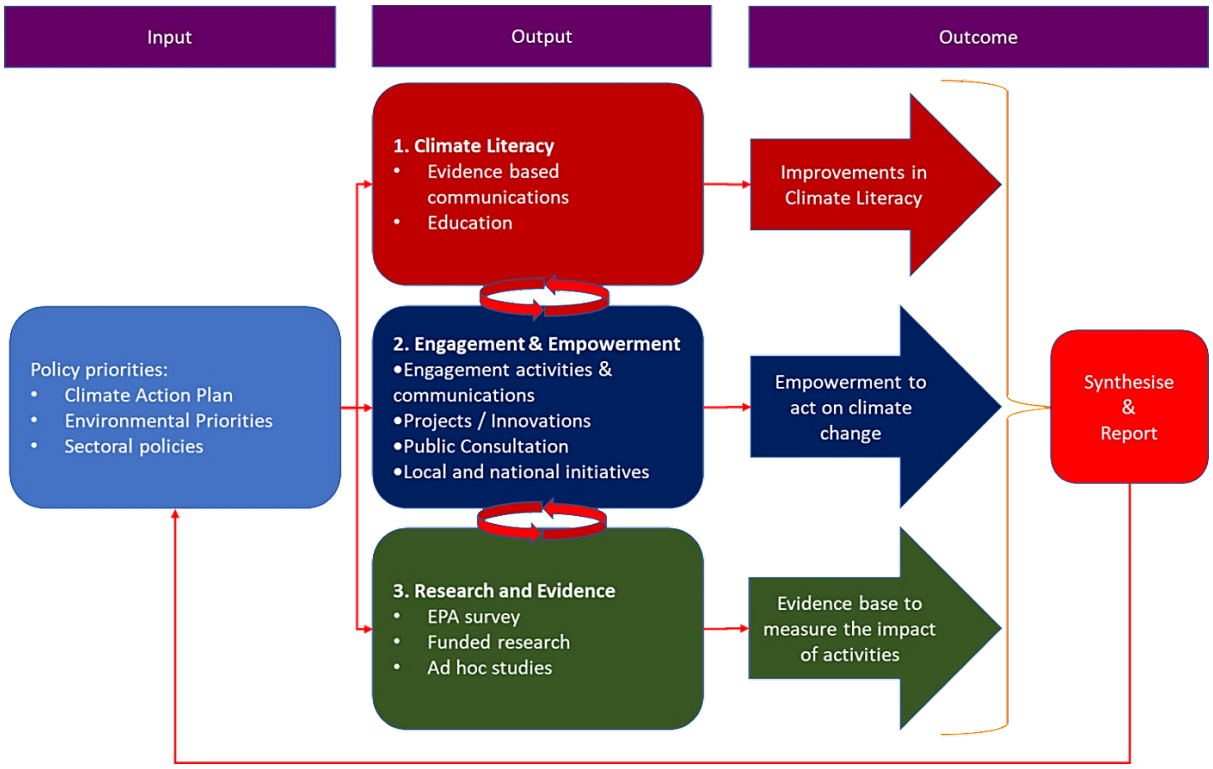
The purpose of the NDCA is to create a comprehensive structure to support widespread public and stakeholder engagement on climate change, empower people across all of society to adopt more sustainable behaviours, and be a vehicle to facilitate public participation in the Climate Action Plan.

The vision and purpose of the NDCA will be realised through three key objectives:

1. Improving climate literacy by creating awareness about, and promoting understanding of, climate change.
2. Funding, supporting, and enabling active engagement in climate action at a local and national level, conducting public consultations, and promoting self-efficacy by empowering the public to adopt more sustainable behaviours.
3. Capturing insights from engagement activities and conducting social and behavioural research to measure behavioural change and provide an evidence base to inform the Climate Action Plan and sectoral climate policies.

The vision, purpose and objectives above will be delivered through a systematic and cyclical process that will run, on an annual basis, in parallel with the annual review of the Climate Action Plan as illustrated below (Figure 8.1). This approach will ensure that activities from inputs to outputs are linked, and the impacts of these activities are measured as outcomes.

**Figure 8.1:** *NDCA Work Programme Annual Cycle*




In adopting this approach, the NDCA will have a strong focus on measures that lead to public, sectoral and regional involvement in delivering actions which enable long-term behavioural change. This will support those who are already active, empower those not engaged to get involved, and support those who are likely to be most affected by climate change.

As part of the annual implementation of its work programme, the NDCA will also monitor progress on the delivery of outputs and will carry out an annual evaluation of the programme to ensure that best practice is being applied and objectives are being met.

## 8.3 Measures to Deliver Targets

### 8.3.1 Climate Literacy

Climate literacy involves empowering people to understand sometimes complex information about the climate. Improvements in climate literacy can best be achieved through the promotion of evidence-based communications and through the national education system. Improving climate literacy will enhance our capacity to make small changes in our daily lives, to engage with climate action at a local level, and to participate at national level in the co-design of policy.

#### *Evidence-based Communications*

The NDCA will support the delivery of an evidence-base which will underpin communications on climate action, building on insights gained from our engagement with people and from social and behavioural research. Our aim will be to communicate and engage in activities in a clear, consistent and accessible manner.

#### *Education*

The NDCA will work to support the development and delivery of education modules which build climate literacy into the national education system at primary and secondary levels, and in adult education programmes with our partners in the Department of Education, Department of Further and Higher Education, Research, Innovation and Science and the Department of Children, Equality, Disability, Integration and Youth (DCEDIY).

### 8.3.2 Engagement and Empowerment

The majority of the NDCA work programme will involve the design and delivery of activities to help people and stakeholders take an active role in delivering on climate action. This includes providing funding for innovative projects and ideas, organising and hosting events, promoting networking and capacity building, and empowering people to make changes in their daily lives. These activities will be run in parallel at national and local level.

#### *National Activities*

At national level the NDCA will facilitate, support, and coordinate a series of climate conversations, a national stakeholder forum, a youth climate assembly, an open public consultation, and will host a series of conferences and lectures. The purpose of these national level dialogues is to allow a broad range of stakeholders and the public to communicate with each other and with policy makers. Each of these actions will run at least once a year as part of our programme to provide input into the annual Climate Action Plan.

- **National Climate Stakeholder Forum**
  A National Climate Stakeholder Forum (NCSF) will be established by DECC to function as a consultative forum on climate issues, with administrative support being provided by the EPA. The participants will include a broad range of stakeholders from across society including elected politicians; government departments and local authorities; state agencies and national organisations; academics; representative bodies; community, local and voluntary groups; and representatives of stakeholders and communities most at risk from the impacts of climate change or the transition to a carbon neutral society. The NCSF will be established and run in a manner similar to the National Economic Dialogue and will meet at least twice a year. It will inform stakeholders of the latest scientific and policy developments and will act as a core mechanism to facilitate inputs into the Climate Action Plan and sectoral policies relating to climate change.

- **Youth Climate Assembly**
  A Youth Climate Assembly (YCA) will be established by DCEDIY to function as a consultative forum on climate issues. The assembly will include children and young people between the ages of 12 and 24 and will facilitate inputs from young people to the Climate Action Plan. DECC will be the policy lead for matters brought before the YCA. This will include determining policy priorities emerging from the Climate Action Plan, from research, from young people, and issues of importance to other departments and agencies wishing to consult the Assembly. The YCA will also be represented on the NCSF.
- **Climate Conversations: Public Consultation on Climate Action**
  The NDCA will co-design and run an annual public consultation on the Climate Action Plan. This will build on the success of the Climate Conversations held in 2021 and will be in line with the provisions of the Climate Action and Low Carbon Development (Amendment) Act 2021. It will allow for the exploration of new policy priorities, emergent sectoral challenges, and examine insights from engagement activities, funded projects, and research.
- **EPA National Dialogue – Climate Conference, Climate Lecture Series and Support Workshops**
  The EPA will host a series of annual engagement events, including an annual climate conference, climate lecture series and workshops on engagement and participation with practitioners, academics and the Climate Action Regional Offices (CAROs). This will provide an opportunity for the research and academic community, and for local organisations to share findings from innovations and research, to debate the approaches taken, and to examine their scalability. It will also facilitate communication and debate on the findings of the EPA's behavioural research programme.

### *Local and Community Activities*

Central to the delivery of the Climate Action Plan is empowering local communities to address the challenges they face in transitioning to carbon neutrality. The NDCA will provide financial support for local innovations, host climate conversations allowing local actors to share ideas, support networking and capacity building, and host an annual local climate action conference.

- **Financial Supports**
  The Community Climate Action Programme under the Climate Action Fund (CAF) will use outputs from the public consultations, research, and other engagement activities to ensure that there is alignment between local activation measures and available funding. The aim of the community call under the CAF is to engage and empower communities to shape and build low carbon, sustainable communities.
  Two strands are proposed to progress this:

  - Strand 1 – Building Low Carbon Communities
  - Strand 2 – Education, Capacity Building and Learning by Doing

  Under Strand 2, the Creative Ireland Programme, in collaboration with DECC, is providing a Creative Fund that will deliver, through cultural and creative projects, individual and community awareness of the need for climate-related behavioural change.

  The projects funded under the CAF will provide insight, innovative ideas, and scalable solutions to the challenges of climate change. The NDCA will ensure that innovations emerging in these projects will be recorded and their scalability in other areas examined.

- **Climate Conversations: Local Climate Conversations**
  The NDCA will organise a series of Climate Conversations on an annual basis designed to inform people about what actions are being undertaken by government and local actors in relation to climate change, and the actions and solutions they can undertake to overcome climate-related challenges. These conversations will take the form of discussion and workshops led by the NDCA at the national level, and supported by the local authorities, CAROs, DCEDIY and the Department of Rural and Community Development. They will also engage existing structures and networks such as the PPNs and Comhairle na nÓg.

- **Network and Capacity Building between Organisations**
  The NDCA will support existing networks and organisations to help empower communities to explore new initiatives, expand existing activities, and encourage wider participation in existing actions. These include:

  - CAROs and local authorities whose climate work programmes already include communications and outreach on climate awareness and engagement
  - An Taisce through their Green Schools, Green Flags campaigns, Young Reporter for the Environment, and Climate Ambassadors Programme
  - Tidy Towns
  - Community networks including local groups such as the Gaelic Athletic Association, Irish Countrywomen's Association, religious groups, as well as industry specific initiatives such as Smart Farming and small and medium-sized enterprise supports
  - Voluntary organisations, non-governmental organisations, other local organisations, and individuals.

  A review of digital assets that support stakeholder and public engagement will also be part of our engagement activities.

- **National Climate Conversation on Local Actions**
  The outputs of local engagement activities and the climate conversations will be analysed and inform the programme for the National Climate Conversation on Local Actions (NCCLA). The NCCLA will be a forum to allow communities and organisations to showcase projects, engage in practical discussions, share best practice, and explore the scalability of local activity or individual innovations. This event will be held annually and take the form of workshops hosted in various locations around the country. This will serve to critically reflect on activities, build capacity, examine best practice and its scalability, inform policy, and provide insights which will feed into the annual Climate Action Plan and the NDCA work programme cycle.

### 8.3.3 Research and Evidence

The delivery of the objectives of the NDCA will be measured through qualitative and quantitative research. The NDCA work programme annual cycle will be implemented in a manner that facilitates the analysis of insights gained from research and from engagement activity. These insights will constitute an evidence base to inform the NDCA, sectoral plans, and the Climate Action Plan. To facilitate this, a behavioural study will be carried out every two years, together with ad-hoc qualitative research. A national climate change behavioural insights and implementation unit will be established in the EPA, and a national social and behavioural advisory group on climate action will also be established.

#### *Behavioural Survey*

This study, to be undertaken by the National Climate Change Behavioural Insights and Implementation Unit, will produce nationally representative data and allow for the examination of challenges to realising behavioural change across different demographics in society and in different sectoral areas. It will be based on the Yale University Six Americas study, tailored for an Irish context. It is envisaged that the study will act as a benchmark and run every two years to allow measurement of behavioural change over time.

#### *Ad-hoc Qualitative and Behavioural Studies*

A series of ad-hoc research studies, undertaken by DECC and the EPA will examine specific issues and augment the findings of the behavioural survey. This will include a series of qualitative studies, including in-depth interviews or focus groups with a broad range of stakeholders and the public. These studies will further help identify challenges specific to individual sectors stakeholders and suggest practical solutions in a way that supports a just transition.

#### *Synthesising Outputs, Measuring Outcomes, Informing Policy, and Providing Sectoral Support.*

The NDCA will work with the National Climate Change Behavioural Insights and Implementation Unit to establish the national social and behavioural advisory group on climate action, made up of leading national and international social and behavioural scientists active in climate research, to oversee the synthesis of the outputs of these research studies and broader research in the area. The outputs of these studies and synthesis reports will be presented to relevant government departments, agencies, and stakeholders, and published in an annual report.

## 8.4 Actions

The NDCA will be the key mechanism through which climate actions related to public engagement, participation, community action, networking and capacity building is delivered in Ireland. It will function as the coordinating structure facilitating broad public and stakeholder dialogue across society. It will give everyone in society the opportunity to fully engage in delivering on climate action in a fair, just, and equitable manner. The NDCA will also act as a national vehicle to coordinate social and behavioural research on climate action. Insights gained from engagement, consultations and the research programme will be consolidated and shared with government, state bodies and the public.

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 34 | Advance coordinated climate action communications from the centre of Government |
| 35 | Provide support for the development of relevant media content, including in the independent production sector |
| 36 | Build Climate Literacy through primary and secondary curriculum |
| 37 | Support, through the education system, the required initiatives to support the development of a climate neutral economy |
| 38 | Deliver the National Climate Change Action and Awareness Programme to support the international Foundation for Environmental Education programmes through Green-Schools, Green-Campus and Young Reporters for the Environment |
| 39 | Support initiatives and activities that deliver practical and innovative solutions to address climate change at the local level |
| 40 | Build a new national and local citizen engagement model through the National Dialogue on Climate Action |
| 41 | Design and conduct annual Climate Conversations and Public Consultation on the Climate Action Plan |
| 42 | Continue to support the delivery of projects approved for funding as part of the first round of support from the Climate Action Fund |
| 43 | Support the provision of training and capacity building in relation to climate change to community development and local development organisations |
| 44 | Employ the latest research to provide an evidence base to support work of the NDCA, communications and the Inter-departmental Working Group, drive sectoral demand shifts and behavioural change, and provide input into policy |
| 45 | Design and implement a robust project management system to monitor NDCA progress |

| Action Number | Action |
|---|---|
| 46 | Provide funding to the Broadcasting Authority of Ireland for a round of the Sound and Vision Scheme with the core theme of Climate Change and Climate Action |
| 47 | Promote sustainable destination management |
| 48 | Further develop and embed a comprehensive well-being framework for Ireland, with a strong focus on sustainability |
| 49 | Progress the establishment of a Citizens' Assembly on Biodiversity |
| 50 | Supporting Climate and Biodiversity progress through relevant strategic advice to enhance evidence-based decision-making |
| 51 | Examine national and international sources of funding that could be used to support the transition to a low-carbon economy and society |
| 52 | Prioritise the development of supply chain opportunities through appropriately designed and complementary energy and enterprise policies and measures of priority |

# Public Sector Leading by Example

9

# 9. Public Sector Leading by Example

## 9.1 State of Play

The public sector will lead by example, inspiring the necessary climate action in wider society to reduce Ireland's greenhouse gas (GHG) emissions by 51% by 2030, and to become climate neutral no later than 2050. It can do this in many ways. For instance, as a large purchaser of goods and services, the public sector can influence suppliers into offering greener products through its procurement practices.

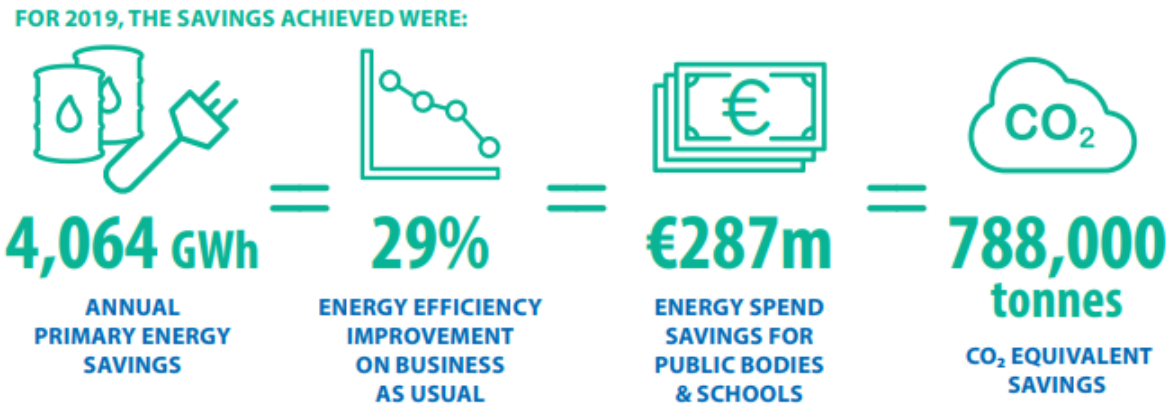
Public sector buildings accounted for 1.4% of Ireland's GHG emissions in 2018. Adding in the sector's electricity and transport use, as well as emissions from commercial semi-state bodies, emissions in 2018 amounted to 3.3% of Ireland's GHGs. Although the sector's share of emissions is relatively small, it will play a broader leadership role as a catalyst for ambitious climate action.

**Table 9.1** – *Public Sector Buildings GHG Emissions, 2018*[14]

| Public Sector Buildings Emissions $CO_2$eq. | Share of Total GHG Emissions | Public Services Emissions $CO_2$eq. per person |
|---|---|---|
| 0.9 Mt | 1.4% | 0.2 t |

The government-funded Public Sector Energy Efficiency Programme, administered by the Sustainable Energy Authority of Ireland (SEAI), supported public bodies in achieving a 29% improvement in energy efficiency performance by the end of 2019 (against a 2020 target of 33%). Under this programme, all public sector bodies are required to submit their annual energy consumption data so as to track the progress of the sector.

**Figure 9.1**




The Climate Action and Low Carbon Development (Amendment) Act 2021 now gives legal underpinning to climate action by the public sector. It requires all public bodies to perform their functions in a manner consistent with our climate ambition.

Local authorities, in particular, have a pivotal role to play in the decarbonisation transition, including through spatial planning, the provision of public housing and transport infrastructure, and the maintenance of biodiversity. Under the act, each must now prepare their own Climate Action Plan. These plans are to cover both mitigation and adaptation, and must be updated at least once every five years.

[14] SEAI Public Sector Annual Report – 2017, 2018, 2019

**Table 9.2** – *Trends in Public Sector Buildings GHG Emissions*

| Timeframe | Percentage Change | Absolute Change, $CO_2$ eq. |
|---|---|---|
| **2005-11** | -12.4% | -0.1 Mt |
| **2011-18** | 12.9% | 0.1 Mt |

While emissions by public sector buildings showed modest improvement in the period to 2011, that pattern has not continued and emissions have risen over the period to 2018.

## 9.2 Targets

### To meet the required level of emissions reduction by 2030 we will:

- Reduce $CO_2$eq. from the sector by 51%
- Increase the improvement in energy efficiency in the public sector from the 33% target in 2020 to 50% by 2030
- Mandate public sector employers, colleges, and other public sector bodies to move to 20% home and remote working
- Introduce a Sustainable Mobility Policy in the public sector
- Replace all buses with electric vehicles nationally by 2035
- Triple the length of electrified rail on the network by 2030

## 9.3 Measures to Deliver Targets

### 9.3.1 Public Sector Target Setting

In order to achieve a 51% reduction in GHGs from the public sector by 2030:

- An overall sectoral target for schools of 51% will apply
- Each other public sector body will be assigned an individual target to meet in accordance with the methodology for measuring, accounting, reporting and recording set out below.

**Box 9.1** – *Setting Public Sector Decarbonisation Targets*

*Nature of Target*

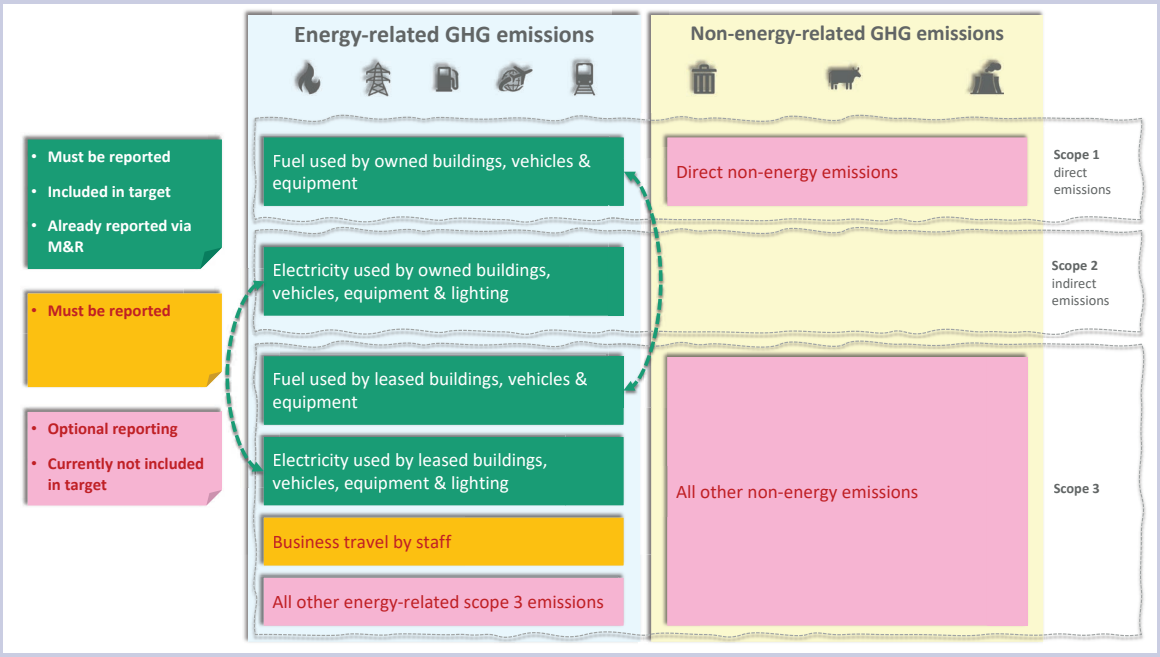
Emission reduction targets will be based on an absolute tonnage of GHG emissions. The total tonnage target will be a 51% reduction of direct energy-related emissions (thermal and transport consumption), plus projected supply side reductions in indirect energy-related emissions (i.e. electricity – as a result of the achievement of the up to 80% renewable electricity target).
The baseline for the methodology is the period 2016-18, with a scaling factor applied to ensure the individual targets equal the total ambition.

*Application*

The definition of public sector body for the purpose of tracking emissions is based on that used in *S.I. No. 426/2014 – European Union (Energy Efficiency) Regulations 2014*. This means that all public bodies that report under the Energy Efficiency Monitoring and Reporting (M&R) System will be assigned an emissions reduction target.

*Scope of Emissions*

The table below sets out the emissions within the scope of the target, and these must be reported annually via the M&R system.




*Allowed Savings*

The target will be achieved through energy efficiency measures, electrification, and the use of on-site renewables (e.g. rooftop solar panels, and geothermal heat sources). Emissions reductions from purchasing energy from a "green" energy supplier, or through the use of offsets, cannot be used to meet a public sector body's target.

*Growth*

If an increase in a public sector body's emissions can be demonstrated to lead to an overall net economy-wide emissions reduction, and is 'additional' (e.g. expanding the public transport fleet removes private vehicles), an 'emissions credit' can apply. To count this credit towards emissions reductions, approval for the associated emissions impact should be sought and granted, in advance of the works commencing or investment being made.

*Governance*

The SEAI will support the capture of data using its M&R system, and provide guidance and support to public sector bodies in reducing their emissions from energy use. Each public sector body will be required to:

- Individually report on their progress towards an absolute tonnage target
- Be part of a sectoral group, which includes a given government department and all public bodies under their aegis. Each public sector body will be assigned to the same sectoral group as they are in for energy efficiency target measurement. The key progress indicator for the public sector to meet its target will be the sectoral groups

*Reporting*

The current Annual Report on Public Sector Energy Performance will be widened to include the public sector decarbonisation target. The SEAI and the Environmental Protection Agency (EPA) will collaborate on the elements of this report related to the public sector decarbonisation target, which will be combined with energy efficiency performance in a single 'Annual Public Sector Energy Performance and Greenhouse Gas Emissions Report'.

- The SEAI and the EPA will collaborate in supporting public sector bodies in relation to targets, including publishing guidelines and establishing a new Public Sector Monitoring and Reporting System
- A review will be undertaken to assess the potential to widen the scope of the emissions captured in the public sector target, to include Scope 3 emissions[15]

### 9.3.2 Climate Action Mandate

To support public sector bodies leading by example, a Climate Action Mandate will apply to all bodies covered by the decarbonisation targets, with the exception of local authorities and commercial semi-state bodies (where sector-specific mandates have already been developed), and the school sector (for which a climate action mandate specific to the particular circumstances in schools will be published in 2022). Both the Climate Action Mandate, and the School Sector Climate Action Mandate, will be reviewed annually.

[15] Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting body. Scope 3 includes all other indirect emissions that occur in a body's value chain

**Box 9.2** – *Climate Action Mandate*

*Our Targets*

- Reduce GHG emissions by 51% in 2030
- Increase the improvement in energy efficiency in the public sector from the 33% target in 2020 to 50% by 2030
- Put in place a Climate Action Roadmap by the end of 2022

*Our People*

- Establish and resource Green Teams, reporting to senior management, to become integrated drivers of sustainability in every public sector body
- Nominate a member of the Management Board as the Climate and Sustainability Champion with responsibility for implementing and reporting on the mandate
- Incorporate appropriate climate action and sustainability training (technical and behavioural) into learning and development strategies for staff
- Organise staff workshops (at least annually) to engage on climate issues, including a focus on decreasing the organisation's carbon footprint

*Our Way of Working*

- Report GHG emissions and sustainability activities in the annual report
- Review any paper-based processes, and evaluate the possibilities for digitisation so it becomes the default approach
- Achieve formal environmental accreditation for large public sector bodies, such as ISO 50001 (Energy Management Standard) or ISO 14001 (Environmental Management System), with a view to achieving EMAS (Eco Management and Audit Scheme)

*Our Buildings and Vehicles*

- Create bicycle friendly buildings for employees and visitors, by putting bicycle parking in place by 2022 – which is secure, accessible, and simple for cyclists to recognise and use
- Display an up-to-date Display Energy Certificate in every public building that is open to the public to clearly show energy use
- The public sector will not install heating systems that use fossil fuels after 2023, unless at least one of the following exceptions applies:
  - the fossil-fuel use is only through the use of electricity from the grid
  - there is no technically viable non-fossil alternative (generally only related to applications for a purpose other than space heating)
  - the installation of a renewable space heating system would increase final $CO_2$ emissions
  - the fossil-fuel use is provided for backup, peaking, or operational purposes (and makes up less than 10% of annual heating energy)
  - where the direct replacement of existing fossil fuel heating is required for an emergency maintenance purpose
- Purchase only zero-emission vehicles where available and operationally feasible from end of 2022, enabling Ireland to go beyond the requirements of the Clean Vehicle Directive and act as an international leader in this area

- The lead department of each sectoral group will advise the relevant public sector bodies of the requirements of the Climate Action Mandate
- The new Public Sector Monitoring and Reporting System, for energy efficiency and decarbonisation targets, will also be developed to track implementation of the Climate Action Mandate

### 9.3.3 Public Sector Bodies Climate Action Roadmaps

Public sector bodies vary by size, role, activity location, and many other factors. Each body will develop a Climate Action Roadmap setting out how it will deliver on its energy efficiency and GHG emissions reduction targets. While large public bodies will require bespoke plans, smaller public bodies can use a more generic template. Large public bodies include: government departments (smaller departments may be aggregated as strategically appropriate); organisations that consume over 50 GWh of energy per annum; and homogenous sectors such as education and health. These large public bodies, together with the 31 local authorities, cover approximately 90% of public sector emissions.

- We will prepare a new Public Sector Energy Efficiency and Decarbonisation Strategy
- Public sector bodies will complete Climate Action Roadmaps by the end of 2022, and these will be monitored at sectoral group level. The lead body of the sectoral group will be responsible for ensuring that the roadmaps are in line with the Climate Action Mandate
- The SEAI and the EPA will collaborate to publish guidance for preparing Climate Action Roadmaps, including providing for bespoke roadmaps for large public bodies, and standardised plans for smaller ones. Use of the SEAI 'Gap to Target' tool will allow organisations to understand the steps and investments required to meet their targets

### 9.3.4 Local Authorities

The Climate Action Regional Offices will continue to play a central role in supporting and coordinating climate action by local authorities including: developing capacity through training; supporting behavioural change initiatives; identifying and sourcing funding opportunities; and measuring and recording performance.

- Each local authority will prepare a Climate Action Plan at least once every five years, containing both mitigation and adaptation measures
- Each local authority will develop a decarbonisation zone within its administrative area that will become the focus for a range of climate mitigation, adaptation and biodiversity measures. This process will include the identification of projects and their associated outcomes that will contribute to achieving our national climate targets

### 9.3.5 Commercial Semi-State Companies

The New Economy and Recovery Authority (NewERA) has designed a Climate Action Framework for commercial semi-state bodies, reflecting the exemplar role they are to play in decarbonisation, while also recognising the need for commercial independence in their respective operating environments. Ministers will communicate their expectations on climate action to these bodies through the shareholder expectation letter.

**Box 9.3** - *Climate Action Framework for Commercial Semi-state Bodies*

This framework contains a series of five commitments by companies in relation to their climate action objectives. By adopting, the framework each company will be entering into each of these commitments as follows:

*Governance of Climate Action Objectives*

- The company's climate action objectives will be integrated into strategic business planning and there will be oversight at Board level, including reporting to the relevant minister

*Reduction Target and Emissions Measurement*

- The company will formally adopt the government's emission reduction target for the public sector and the SEAI measurement methodology

*Measuring and Valuing Emissions in Investment Appraisals*

- The value of emissions will be considered by the company as part of its investment decision-making process

*Circular Economy and Green Procurement*

- The company will promote circular economy measures and green procurement

*Climate-Related Disclosures in Financial*

- The company will identify a climate-related financial disclosures framework that is relevant and appropriate to the company's activities and sector(s)

This framework will be subject to periodic review.

### 9.3.6 Retrofitting and Improving the Energy Efficiency of Public Sector Buildings

There are about 12,500 (of which 20% are leased) public sector buildings, accounting for approximately half of the sector's overall GHG emissions. In order to achieve the 51% emissions reduction and 50% energy efficiency targets, buildings will need to undergo deep retrofit. Public bodies' Climate Action Roadmaps will target at least a 50% overall contribution from renewable space heating (heat pumps, biomass, and district heating) by 2030. The target contribution for the school sector will be confirmed as part of the School Sector Climate Action Roadmap.

- A new Public Sector Energy Efficiency and Decarbonisation Programme will address all major building portfolios in the sector
- Initial scaling support funding for public sector energy efficiency and decarbonisation will be provided under the Public Sector Pathfinder Programme, with major investments to be funded from within bodies' own capital allocations under the National Development Plan combined with innovative project delivery mechanisms, such as Energy Performance Contracts (EPCs), which will be developed with a more flexible approach to their use
- We will publish updated guidance for bodies on the use of EPCs for energy efficiency and decarbonisation projects, including in relation to value for money assessment and off-balance sheet treatment
- We will develop an EPC delivery vehicle for up to €1 billion of privately-funded EPCs in public buildings

- A targeted review of Public Private Partnerships (PPPs) will be undertaken. This work will be progressed with the existing PPP steering group with a series of recommendations to be finalised shortly
- We will accelerate the removal of obstacles to the wider adoption of renewable space heating, and district heating, in new and retrofitted public buildings, proactively addressing technical and regulatory barriers. This will include consideration of the outcome of the Office of Public Works study examining when and how fossil-fuel heating systems could be phased-out of public buildings, and electricity sector enablers to support wider scale deployment
- The SEAI will assist in supporting public sector retrofitting through the dissemination of best practice guidance/lessons learned, and the tracking of progress

### 9.3.7 Decarbonisation of Public Sector Transport

Emissions from transport account for about 30% of the public sector's overall GHG emissions, the second largest portion after buildings. Increased use of electric vehicles (EVs) by the public sector will help to demonstrate their value to wider society, improve urban air quality, and reduce noise pollution, supporting sustainable urban communities in line with the National Planning Framework.

- We will ensure that public sector fleets use the Public Procurement Framework for EVs, where appropriate
- We will transition public bus fleets to zero emissions models though the renewal and expansion of the fleet, allowing for the full electrification of double-decker buses in Dublin, Cork, Waterford, Limerick and Galway by 2035
- We will transition the rail fleet towards an electric model, increasing the length of electrified rail network from 50 kilometres to 150 kilometres by 2030, including the DART+ project which will extend DART services to Drogheda in the north; Maynooth in the west; Hazelhatch in the southwest; and Greystones in the southeast
- We will accelerate the removal of obstacles to decarbonisation of our transport fleet, proactively addressing technical and regulatory barriers

### 9.3.8 The Capacity of the Public Sector to Deliver Climate Action

It is essential that the public service has the capacity to deliver ambitious climate action. We have already established a Climate Action Delivery Board at secretary-general level, as well as Climate Action Units within every government department.

- We will review the capacity, skills and structures within the public sector to tackle the challenges emerging due to climate change
- The SEAI and EPA will collaborate to devise a single programme to support decarbonisation, and energy and resource efficiency, within the public sector
- We will review the skills requirements for civil servants and provide new training opportunities to close any emerging skills gaps
- We will put in place a communications framework on climate action across all government departments

### 9.3.9 Greener Public Procurement

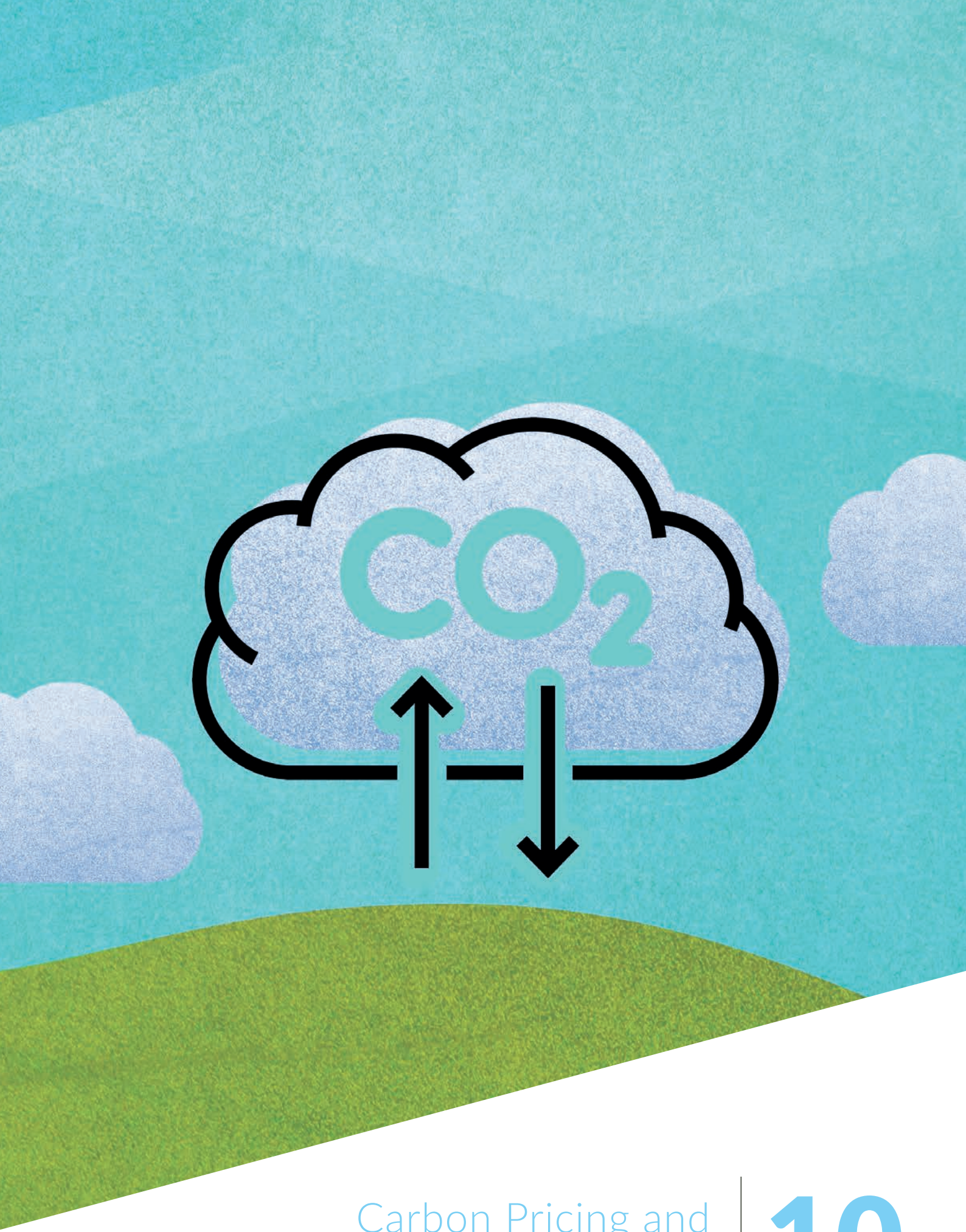
The Programme for Government commits to developing and implementing a sustainable public procurement policy, to ensure that what we are buying and building is consistent with our climate ambition.

- The Office of Government Procurement will update all procurement frameworks, in line with green procurement practice by 2023
- We will review food procurement policies for the public sector, with the aim of introducing procurement of nutritious, locally-sourced food
- We will mandate the purchase of zero-emission electric vehicles where available and operationally feasible by end of 2022

## 9.4 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 53 | Develop a strategy to achieve at least a 51% reduction in GHG emissions and a 50% improvement in public sector energy efficiency by 2030 |
| 54 | Expand the successful public sector energy efficiency monitoring and reporting programme to incorporate GHG emissions reduction |
| 55 | Introduce a Climate Action Mandate for every public body |
| 56 | Strengthen supports to enable Climate and Sustainability Champions to deliver on public sector targets |
| 57 | Support the retrofit of public sector buildings |
| 58 | Mandate the inclusion of green criteria in all procurements using public funds, introducing requirements on a phased basis and providing appropriate support to procurers |
| 59 | Devise a revised mileage rate structure that reflects changing driving patterns including increased use of EVs and hybrids |
| 60 | Enhance communications on Climate Agenda in schools sector with a particular focus on pilot deep energy retrofit projects delivered under Pathfinder Programme in partnership with SEAI |
| 61 | Set a trajectory for commencing and implementing a deep energy retrofit programme for the higher and further education sectors |
| 62 | Establish an appropriately resourced Climate Action Unit in every Government Department to ensure Climate considerations are at the core of policy development |
| 63 | Understand the effects of climate change on telecoms networks |
| 64 | Understand the potential role that regulators of electronic communications sectors can play in decarbonisation |




# Carbon Pricing and Cross-cutting Policies

# 10

# 10. Carbon Pricing and Cross-cutting Policies

## 10.1 Introduction

While the evaluation of adopting different technologies has delivered a pathway to achieving a 51% reduction in greenhouse gas (GHG) emissions by 2030, the successful deployment of these technologies will require specific policies to remove barriers at sectoral level and a broad national policy framework designed to promote the transition. Government policies on taxation, expenditure, sustainable finance, spatial planning, and research and development provide an important enabling framework for individual, household, community, and company-level climate action. These policies also act as enablers for a wide range of other government policies and activities within individual sectors.

## 10.2 Targets

**To meet the required level of emissions reduction, by 2030 we will:**

- Implement successive carbon tax increases as legislated for in the 2020 Finance Act
- Continue to examine environmental taxation measures across the taxation system
- Mobilise public and private investment for climate action
- Promote the development of a sustainable and climate resilient financial system
- Fully implement the National Planning Framework
- Implement decarbonising zones in each local authority
- Increase the number of Sustainable Energy Communities to 1,500 by 2030
- Support research, development and innovation in climate action
- Promote the digital transformation, sustainable remote working practices and the roll-out of the National Broadband Plan

## 10.3 Measures to Deliver Targets

### 10.3.1 Environmental Taxation and Carbon Pricing

Taxation policy can play a central role in incentivising the behavioural change necessary to reduce our GHG emissions and to support additional environmental benefits. We are committed to having in place a taxation framework, which plays its full part in incentivising, along with other available policy levers, the necessary actions to reduce our emissions. There are already a number of environmentally progressive elements to Ireland's taxation regime:

- A carbon tax, in place since 2010, is a broadly-based system, applying to carbon dioxide emissions in the heat and transport sectors, with legislation in place to increase the annual rate until at least 2030 while also offseting the impact on the most vulnerable through ring-fenced funding for social welfare measures
- A generous regime of taxation incentives to promote the uptake of EVs, including substantial VRT relief and BIK exemptions
- A $CO_2$ emissions-based VRT and motor tax regime for private motor cars that imposes a higher tax liability on vehicles with higher emissions

We are committed to annually reviewing and reforming key environmental tax measures including:

- Examining the introduction of an emissions-based tax regime for light goods vehicles
- Examining gradually phasing out VAT rebates on commercial fuel use where electric alternatives exist
- Examining the gradual equalisation of the diesel and petrol excise rates
- Introducing environmental criteria into the vehicle BIK regime, with its commencement sensitive to typical fleet renewal timescales
- Supporting the use of the accelerated capital allowance regime to promote business investment in energy efficient equipment and gas-powered commercial vehicles. These regimes will be reviewed in advance of their respective sunset clauses
- Assessing the role for taxation measures in meeting building retrofit targets set out in this plan

All EU Member States implement carbon pricing through the EU Emissions Trading System (ETS) and Ireland is also one of eleven member states to have economy-wide pricing through the ETS and a separate domestic carbon tax applied to sectors not included in the ETS. As part of the EU's 'Fit for 55' legislative package, the European Commission has proposed further revisions to the EU ETS; changes to the Energy Taxation Directive to align the taxation of energy products with EU energy and climate policies and to promote clean technologies; and a new carbon border adjustment mechanism that would place a carbon price on imports of certain goods from outside the EU, in order to encourage EU partners to raise their climate ambition and reduce the risk of carbon leakage.

### *Our Commitment on Carbon Taxation*

We have legislated for increasing the rate of carbon tax that applies in Ireland on a phased basis to €100 per tonne by 2030 and to ring-fencing all additional revenues for measures that support the achievement of our climate action objectives. The planned carbon tax increases are expected to raise an additional €9.5 billion in revenue over that period. This revenue will be allocated to programmes such as energy efficient retrofits (€5 billion); addressing fuel poverty and providing for a just transition (€3 billion); and the promotion of sustainable agriculture practices (€1.5 billion).

Carbon tax revenue of €412 million has been allocated to the programmes below for 2022:

- €174 million on targeted social welfare and other initiatives to prevent fuel poverty and ensure a just transition
- €202 million to part fund a national retrofitting programme targeting all homes, but with a particular emphasis on households in or at risk of energy poverty
- €36 million to other sectors to support programmes such as peatlands rehabilitation and the Midlands Just Transition Fund

### *Shadow Price of Carbon*

The Public Spending Code is the tool that the government uses to evaluate the consequences of the capital investment decisions it faces. Every public investment project with a value above €20 million must conduct a full analysis on all the potential costs and benefits associated with that project, using rules set by the Department of Public Expenditure and Reform (DPER).

In 2019, the government tripled the price of carbon that is applied in the code. This update was based on the estimated costs associated with achieving a 30% reduction in greenhouse gas emissions by 2030. Since then, the government's climate ambitions have been considerably strengthened. Now Ireland intends to cut GHG emissions by 51% by 2030 and to reach a climate neutral economy no

later than 2050, with any remaining emissions balanced by the removal of GHG emissions from the atmosphere. This means that the Public Spending Code must be updated to reflect this enhanced ambition.

The government will implement a programme of revisions the Public Spending Code to ensure that it is compatible with Ireland's enhanced climate ambition, including increasing the cost associated with any release of additional GHGs into the atmosphere.

This will include work with the Organisation for Economic Co-operation and Development (OECD), funded by the EU Commission through DG REFORM's Technical Support Instrument, on progressing a new model for assessing the emissions impact of infrastructure investment. This is to ensure that the full range of potential consequences for this type of investment are captured and valued appropriately. Secondly, our work with the OECD will examine how government should consider and appraise investments that may be vulnerable to the impacts of climate change.

Over the longer term we will also examine the role that the Public Spending Code can play in the achievement of broader environmental objectives.

### 10.3.2 Mobilisation Investment for Climate Action

#### *National Development Plan 2021-2030*

The revised National Development Plan (NDP), published in October 2021, sets out a ten-year capital expenditure framework that will support our transition to a low-carbon society over the period to 2030. The revised NDP incorporates an investment package of €165 billion across all sectors of the economy. The investment it will support is necessary to meet our climate ambition, in areas such as renewable electricity generation, retrofit and public transport. The revised NDP was also informed, for the first time, by a climate and environmental assessment of the impact that each proposed measure was likely to have on seven specific climate and environmental outcomes:

- Climate mitigation
- Climate adaptation
- Water quality
- Air quality
- Waste and the circular economy
- Nature and biodiversity
- Just transition

The approach to this assessment will be refined further, based on international best practice, and supplements appraisal and evaluation under the Public Spending Code.

#### *Project Ireland 2040 Funds*

The four Project Ireland 2040 funds, comprising the Climate Action Fund (CAF); Disruptive Technologies Innovation Fund; the Urban Regeneration and Development Fund; and the Rural Regeneration and Development Fund, will have a collective budget amounting to an estimated €4 billion to 2027. Each of the four funds will continue to promote investments for climate action within the scope of their mandates.

The CAF will continue to fund initiatives that contribute to the achievement of Ireland's climate and energy targets in a cost-effective manner. It offers the potential for innovative interventions in these

sectors which, in the absence of support from the fund, would not otherwise be developed. Seven projects spanning the electricity, heat, transport, and agriculture sectors, with both an urban and rural focus, have been approved for funding of up to €77 million under the first call from this fund. By requiring a minimum contribution from each project, the fund's commitment will leverage a total investment of over €300 million. The government will shortly launch a new call for proposals under the CAF.

### *Green Budgeting*

Green budgeting is the use of the budgetary system itself to promote and achieve improved environmental outcomes. It is an explicit recognition that the budgetary process is not a neutral process but reflects long standing societal choices about how resources are deployed. This process builds on the implementation of gender and equality budgeting, which is already at an advanced stage in Ireland and the development of wellbeing budgeting, as committed to in the Programme for Government. Ireland committed to the implantation of a series of progressive green budgeting reforms in 2018 and joined the Paris Collaborative on green budgeting shortly thereafter.

While specific reforms would be guided by the international best practice emerging from groups such as the OECD-led Paris Collaborative on Green Budgeting and the Coalition of Finance Ministers for Climate Action, we will also be guided in the development of our methodological approach, by two key principles:

#### *Transparency*

- Reporting on green expenditures has been progressed through the inclusion of material in budgetary documentation. In particular, the annual Revised Estimates for the Public Services provides detailed programme-by-programme allocations on expenditure that the government has deemed to be "green". We will continue to refine our methodology, informed by international experience, for defining climate related expenditures.
- We will also develop and apply definitions to identify and track government spending that may be having a negative impact on climate and environmental outcomes. Assessing spending that may be having a negative impact on climate and environmental outcomes will be informed by the ex-post assessment of fossil fuel and similar subsides conducted by the Central Statistics Office and international best practice. We will also publish supporting information on methodologies used to arrive at our assessments.

#### *Effectiveness*

- We will continue our in-depth ex-post examinations of individual programmes through the Irish Government Economic Evaluation Service's spending review programme. Reports already published include examinations of the effectiveness of government incentives for electric vehicle take-up, grant schemes for energy efficiency and the beef data genomics programme.
- We will also develop complementary high-level metrics on the performance of individual climate and environmental programmes, including those funded by the carbon tax, in future Performance Budget Reports. This means that spending levels will be tracked via budgetary documentation and the revised estimates volume but the performance information, which can inform conclusions on the effectiveness of government climate and environmental expenditure, will be contained in a dedicated section in future iterations of this report. DPER is working with all departments responsible for climate and environmental related expenditures to develop impact metrics that are meaningful and relevant to gauging the performance of these programmes. We will be guided in this area by emerging international best practice on green budgeting and work to date on general performance budgeting.

### *Green Bonds*

In 2018, the National Treasury Management Agency (NTMA) issued Ireland's first Sovereign Green Bond of €3 billion to provide a new funding channel for green projects aimed at mitigating climate change. These were issued using Green Bond Principles developed by the International Capital Market Association, and the NTMA reports strong demand for the issuances since this initial bond, with additional auctions bringing the total raised to over €6 billion. The NTMA will continue to support the government's climate agenda through engagement with the sovereign green bond market.

### *Mobilising Private Sector Investment*

The low-carbon transition will require significant private investment alongside Exchequer expenditure on a sustained basis over a number of decades. This investment will cover a range of activities:

- Developing disruptive innovations
- Expanding new types of infrastructure, including for clean sources of energy
- Adapting existing infrastructures, such as retrofitting existing homes and offices to make them more energy efficient

In order to meet Ireland's climate and energy targets for 2030, it is necessary to direct private sector investments towards meeting the targets and objectives of this Climate Action Plan. This investment will need to be financed. We are taking the lead in developing innovative approaches to financing our decarbonisation objectives and are committed, for example, to rolling out a residential loan guarantee scheme. To meet the scale of this challenge, the financial sector will also need to bring innovative solutions to the market.

Through the commercial state sector and other public bodies, we will seek to leverage the significant volumes of private sector capital that is available for well-structured projects, including wind and solar electricity generation, interconnection and major transport infrastructure.

The New Economy and Recovery Authority (NewERA) will continue to work with the commercial state companies, the Ireland Strategic Investment Fund (ISIF), the Strategic Banking Corporation of Ireland (SBCI), and other public bodies, to identify priority opportunities in key sectors to mobilise private investment towards assisting in meeting our climate objectives.

### *Promoting a Sustainable Financial System*

Financial institutions, when they are funding the acquisition of assets, must pay far greater attention to the climate resilience of assets where they risk locking into high-carbon technologies, or other climate vulnerabilities, and in turn, show a greater willingness to fund investment in changes which can make those assets more climate resilient.

For large firms, the proposed new Corporate Sustainability Reporting Directive and the Sustainable Finance Disclosures Regulation, which is in force as of 2021, will impose new disclosure obligations on financial product sellers/advisors, and require that information on financial products' sustainability risks and adverse impacts on sustainability is made available to investors.

To support the financial system in directing essential investments into climate action, the EU has developed a new taxonomy to scale up sustainable investment, to both underpin the ambitions of the European Green Deal and to support the achievement of the member states' own climate action objectives. By providing a consistent classification framework to companies, investors and policymakers, through which economic activities can be considered environmentally sustainable, the EU

taxonomy will provide greater certainty for investors, protect private investors from greenwashing, help companies to plan for the decarbonisation transition, reduce market fragmentation, and eventually help shift investments where they are most needed. The taxonomy will come into force during 2022 and 2023.

We will maintain and grow our existing International Financial Services (IFS) sector by exploiting opportunities and meeting any emerging challenges in this sector. We have published a new IFS strategy, Ireland for Finance, which includes the development of Ireland's sustainable finance sector as a key horizontal priority. Sustainable Finance Ireland, a public-private initiative, has published Ireland's Sustainable Finance Roadmap. The roadmap sets out targeted measures that will result in Ireland being a leading sustainable finance centre by 2025.

The Central Bank of Ireland works closely with European Supervisory Authorities and as a member of the Network for Greening the Financial System, to develop supervision of climate risks and to mobilise capital for green and low-carbon investments. The Central Bank is also directly engaging with financial service providers, with climate and environmental risks being assessed for banks and insurers, as well as investment firms and intermediaries.

At EU-level, the European Commission has published a renewed EU Strategy for Sustainable Finance to build on progress to date in terms of boosting investments, managing risks, and embedding a long-term perspective. It is also targeting the inclusion of social and governance objectives in the taxonomy.

### 10.3.3 Spatial and Planning Policy

Under the National Planning Framework, Ireland's five cities are targeted for 50% of overall growth by 2040, with the four cities of Cork, Limerick, Galway and Waterford each targeted to grow by at least 50% within that period. This will mean ensuring more compact forms of growth in the development of settlements of all sizes, with a focus on urban infill and the re-use of brownfield lands. 'Brownfield' sites are to deliver at least 40% of all new homes nationally within the built-up footprint of existing settlements, comprised of at least 50% of all new homes in the five cities, and at least 30% of all new homes in settlements elsewhere.

Better spatial planning will reduce the carbon emissions of new developments, and deliver a better quality of life, including shorter commute times, better connections between our places of work and homes, and more vibrant, people-focused environments. Changing the pattern of development will be buttressed by new policy tools in the planning system, including those planned as part of the government's Housing for All strategy. Implementation of the approach set out in our planning and housing policies will support our climate ambition through:

- Reduced travel distances between home, work and services, which will enable a greater proportion of journeys by bicycle or on foot (zero emissions)
- Greater urban density will ensure more viable public transport leading to reduced transport emissions
- Higher density residential development, which tends to comprise smaller units and, therefore, require less energy to heat – NPF targets require the proportion of apartments to treble, from 13% in 2019, to 39% by 2030
- Closer proximity of multi-storey and terraced buildings, which will require less energy and make renewables-based systems of energy distribution, such as district heating, or area-wide technology upgrades, more feasible

The next Census of Population, due to take place in 2022, will provide important insights in respect of the current spatial distribution of the population, including information on commuting patterns and transport mode share. Integrated measures to influence the spatial pattern of development, urban

structure and mobility will have a positive impact on commuting and sustainable mode share.

The establishment of the Land Development Agency and the Office of the Planning Regulator has provided additional structures to deliver compact, low carbon and sustainable development.

The Land Development Agency, established in 2020, has a particular focus on co-ordinating the provision of land within state control for housing and its functions include:

- Enabling the sustainable development of new and regenerated communities, well served by essential services
- Developing sustainable communities with a particular focus on enhancing the stock of climate resistant, low carbon and affordable housing

The Office of the Planning Regulator has a range of functions, including independent assessment of all local authority and regional assembly forward planning, including zoning decisions.

### 10.3.4 Action at Community Level

Local communities need to be empowered to address the challenges that they face in transitioning to a carbon neutral economy and society. The National Dialogue on Climate Action (NDCA) will be the key mechanism for public engagement, participation, community action, networking, and capacity building, giving everyone the opportunity to fully engage constructively in climate action. The NDCA will host Climate Conversations allowing local actors share ideas for concrete climate action, culminating in an annual Local Climate Action conference.

Following on from the recent Climate Conversations, a new Community Climate Action Programme will be funded from the Climate Action Fund to support action by communities. The programme is designed to support and empower communities to shape and build low-carbon, sustainable communities, including using nature-based solutions, in a coherent way to contribute to our national climate and energy targets. In addition to providing funding opportunities for relevant community projects and initiatives, this programme also aims to build capacity to act within communities, aimed at facilitating and encouraging enduring behavioural change and voluntary action. Local authorities will play a key role in developing partnerships with local communities and community development organisations to progress community activation and climate action.

Initiatives such as Sustainable Energy Communities; Renewable Energy Communities; Energy Cooperatives; and the Renewable Electricity Support Scheme will provide enabling frameworks for community participation in renewable and low carbon energy projects. The nationwide network of Sustainable Energy Communities, underpinned by government grant assistance and SEAI mentors, has been a major driver of engaging local actors to work together to promote decarbonisation. These communities have been able to undertake ambitious changes across multiple locations, often in cooperation with energy providers.

We will continue to scale-up and improve the Sustainable Energy Communities programme and seek to enlist a wider range of organisations, including working with local authorities, to anchor the collective approach of the programme within local communities. This will be done through developing new partners, creating more visibility within communities, and introducing new support mechanisms. Sustainable Energy Communities will be supported as ‘activators’ in their community.

The Local Authority Climate Action Training Programme, funded by government, supports building climate action leadership capacity within local authorities. The training programme is currently underway and will be completed by 2023.

We will introduce specific supports for Gaeltacht areas, including enhancing the energy efficiency of community infrastructure in the Gaeltacht, supports for client companies of Údarás na Gaeltachta, and ensuring that climate-related assessments are integrated into capital funding provided under the Action Plan for the Irish Language.

### 10.3.5 Research, Development and Innovation

*National Research Policy Supporting Climate Action*

We are committed to introducing a transformational programme of research and development, to ensure that Ireland is at the cutting edge of scientific and technological innovation in order to meet our climate change and inter-related environment targets, spanning GHG emission mitigation; climate adaptation; water and air quality; the circular economy and waste; and nature and biodiversity. This will include developments in areas such as climate science; biodiversity science; geoscience; energy-system decarbonisation; the bioeconomy; carbon sequestration and utilisation (including nature-based solutions); natural capital and ecosystem services; green hydrogen; marine research (including marine renewable energy, floating offshore wind turbines); and in agriculture, to improve breeding programmes; feed additives to reduce biogenic methane; agroforestry; paludiculture; nutrient management; and smart and data-driven agriculture.

Ireland has strategically programmed and built a strong climate research and innovation infrastructure in recent years, with funding provided to Ireland's research producing organisations to carry out science and policy-relevant research, as well as establishing dedicated Enterprise Ireland (EI) technology centres and Science Foundation Ireland (SFI) research centres.

The government is preparing a new National Strategy for Research and Innovation. This strategy will underpin the role of research and innovation in addressing key economic and societal challenges, including positioning research and innovation at the heart of delivering on Ireland's climate action. It will ensure that the best scientific evidence and advice is available to underpin government policy and support the implementation of climate action, and to ensure that Ireland's research and innovation infrastructure progressively builds capacity and capability to support the fundamental transition that Ireland's economy will undergo over the next three decades.

Furthermore, in its strategy, Shaping our Future, SFI highlights climate change as a key research priority – as a critical global issue, but also as an opportunity for Ireland to become a leader in developing climate action solutions. Climate change research is critical if we are to develop the technological and other solutions to reduce emissions, and create just and sustainable jobs and opportunities for Irish people.

We have introduced a National Grand Challenges Programme of mission-orientated funding which is being rolled out by SFI. Through this programme, SFI will seek to support the development of innovative solutions that will directly contribute to addressing Ireland's climate targets. SFI will further support fundamental and applied research, recruit research talent, support skills development, and invest in research infrastructure relevant to climate action across its strategic themes, ranging from individual research grants, to research centres, to community and public engagement.

The Environmental Protection Agency (EPA) has recently published its EPA Research 2030, a ten-year high-level framework for the EPA's research programming for the period 2021 to 2030, which will provide public funding through annual competitive research calls for focus on four key themes:

- Addressing climate change evidence needs
- Facilitating a green and circular economy
- Delivering a healthy environment
- Protecting and restoring our natural environment

In line with its statutory role, the EPA has established a national coordination group to facilitate the specification of knowledge needs which involves 11 government departments and 34 national agencies and bodies. Membership also includes non-governmental organisations and Northern Ireland Executive representation. The EPA also leads the National Climate Research Coordination Group and the production of its annual report on climate research activity.

The government also provides public funding, through the SEAI's National Energy Research Development and Demonstration (RDD) Funding Programme, to invest in innovative energy research projects, which contribute to Ireland's transition to a clean and secure energy future. It aims to:

- Accelerate the development and deployment in the Irish marketplace of competitive energy-related products, processes and systems
- Support solutions that enable technical and other barriers to market uptake to be overcome
- Grow Ireland's national capacity to access, develop and apply international class RDD
- Provide guidance and support to policy makers and public bodies through results, outcomes and learning from supported energy projects

The programme runs an annual competitive call, with applications accepted from: private enterprises; universities, institutes of technology, and state-funded research organisations; and public sector bodies and semi-state bodies, based in Ireland. The programme invites co-funders to contribute to research themes and, to date, a number of funding collaborations have been established to help direct and fund research topics.

The government's new agri-food strategy to 2030, *'Food Vision 2030 – A World Leader in Sustainable Food Systems'*, sets out to embed the role of research and innovation in the development of an innovative, competitive and resilient agri-food sector over the coming decade. This will be achieved through a number of inter-linked research-related goals, including: moving to a challenge-focused innovation system, with a focus on sustainable food systems; providing a strategic funding approach for research, development and innovation; and developing a dynamic knowledge exchange environment.

The strategic approach of the Department of Agriculture, Food and the Marine's (DAFM) Research and Innovation Programme supports the development and application of cutting-edge and emerging scientific and technological innovations to provide the basis for climate action and policy implementation. The department's mission-orientated research calls support the development of a sustainable, climate resilient and neutral, agri-food, forest and bio-based system and promotes an open knowledge economy that fosters the outputs of research for the climate challenges faced by industry, policy, the environment, and society. The research programme also embeds research collaboration and innovation with other funding and research partners both nationally and internationally in areas of strategic relevance and shared auspices to combat our shared challenges and priorities to climate change.

Significant public investment has already been made (€157 million in 2018), and further investment is planned, through DAFM, Teagasc, Bord Iascaigh Mhara, SFI, and EI in the development of science-

led research centres, industry led-technology centres, regional clusters, innovation for piloting and demonstration, to support the Irish agri-food industry in the implementation of its innovation agenda, including to respond to the climate change and biodiversity challenges faced by the sector.

### 10.3.6 Building the Supply and Use of Renewable Gases

Scenarios for net zero emissions by 2050 include a potentially significant role for the use of zero-emissions gases (in particular biomethane and green hydrogen) and, in planning for the longer-term, we must ensure that they can meet their full potential. It is critical however that the use of zero-emissions gases are directed towards sectors that maximise emissions abatement in hard to abate sectors. That involves deciding on clear targets and supporting measures – with 2030 as a key milestone – but with the clear understanding that the groundwork for deployment needs to begin now.

Given longer term decarbonisation scenarios, it is important now to consider the potential future role for the existing gas network to facilitate the deployment of biomethane, as well as to explore the potential of sustainable feedstocks from waste, agriculture and other sources for the production of renewable gas for use in hard to abate sectors such as high temperature industrial heat.

Green hydrogen has been identified as having the potential to support decarbonisation across several sectors, and in particular, in high-temperature heat for industry and in electricity generation. Hydrogen is a versatile energy carrier that may store excess renewable energy from the grid. Green hydrogen, produced from renewable energy, has a significant role to play in sector coupling (the increased integration of energy end-use and supply sectors with one another), and minimising the overall cost of decarbonisation across all sectors. Sector coupling is already happening, with the increased electrification of the heat and transport sectors. Some of the challenges that this presents for the electricity sector can be solved by renewable green hydrogen, including as back-up for intermittent renewables; seasonal storage of renewable energy to replace today's fossil fuel storage systems (used in electricity, industry, heating in buildings, and transport); and to ensure security and resilience in energy supplies.

In order for a renewable gases supply chain to be developed in Ireland, there will need to be measures taken to ensure an economic, steady, resilient, and reliable supply. Key measures to develop a renewable gas industry are captured across various sectoral chapters of this plan.

### 10.3.7 Digital Transformation and Remote working

#### *Digital Transformation*

The pandemic has accelerated the pace of digital transformation of our economy and society, including the move to online and digital services, remote working, and automation. As these trends continue, new opportunities will open up to accelerate our climate action. We are committed to developing a new cross-government National Digital Strategy to ensure we fully harness these opportunities. Through initiatives such as eHealth, the digital transformation of enterprise, and the use of 5G technologies, we will drive a greener, more innovative Ireland, fully aligned with our climate objectives.

#### *Remote Working*

The sudden and large-scale adoption of remote working for many members of the workforce has led to a major transformation in how and where we work. We have adapted to new technologies, such as video conferencing platforms, in a very short space of time. In January 2021, the government published Making Remote Work: National Remote Working Strategy that aims to support the adoption of remote working as a long-term policy. The strategy will build on the benefits of remote working that came to light in 2020, but also address some of the challenges that it presents including access to connectivity.

The strategy is built on three pillars:

- Creating a conducive environment
- Developing and leveraging remote work infrastructure
- Building a remote work policy and guidance framework

Making Remote Work will facilitate remote working in a way that maximises the economic, social and environmental benefits, including increasing participation in the labour market; enabling balanced regional development; improving work/life balance; reducing commuting times; and reducing transport-related carbon emissions.

### *National Broadband Plan*

The National Broadband Plan (NBP) will deliver high-speed broadband services to over 1.1 million people in areas where there is no existing or planned commercial network. The intervention area includes 544,000 premises, including 56,000 farms, 44,000 businesses, and 695 schools. The NBP network will offer those premises a high-speed broadband service with a minimum download speed of 500Mbps from the outset. The NBP will ensure that households and businesses in rural parts of Ireland will have a similar level of connectivity as households and businesses in urban areas.

Over the lifetime of the NDP, every home, school and business in Ireland, regardless of how remote or rural, will be provided with high-speed broadband. This will be achieved through a combination of Exchequer investment of €2.7 billion under the NBP, complemented by multi-billion euro investment programmes by commercial operators primarily in cities, towns and villages. During deployment of the network, reuse of existing infrastructure and materials (i.e. existing poles and underground ducts) will be maximised; this will increase resource-efficiency and reduce emissions associated with fabrication, transport and installation of new physical network materials.

The high-speed broadband network will deliver a range of environmental benefits. For each new remote worker, an estimated average net saving of up to 10 kWh per day will be achieved, reducing commuter transport energy use and carbon emissions. Availability of better online conferencing and collaboration tools will reduce the need for business travel and the associated carbon emissions.

High-speed broadband also increases the creation of local employment opportunities, which allows more people to work closer to their homes, reducing the emissions associated with longer commuter journeys. A standard petrol car will emit 0.876 $tCO_2$ over the course of a year, while the average diesel car emits 0.742 $tCO_2$ over the same period (according to 2016 EU averages). The provision of high-speed broadband will increase opportunities for remote working, resulting in a potential mitigation of 0.7-0.9 $tCO_2$ per annum or more, per employee, from our national GHG emissions. This reduction will have a long term positive climate impact. 'Smart Homes' technologies will allow the remote management of domestic energy consumption through smart metering, heating and lighting systems; and enable consumer autonomy over their domestic energy consumption. This will play an important contributory role in decarbonising the residential sector.

As opportunities for *'Smart Agriculture'* are leveraged, lower carbon emissions from national agricultural output will result, as precision farming generates a higher-yield per animal and hectare through data-driven herd and crop management.

### 10.3.8 Tourism and Media Sectors

The quality of our natural and physical environments is critical to our national tourism product and the state has a key role to play in supporting the tourism sector to create unique visitor experiences which celebrate and preserve our natural heritage and environment. In December 2019, the government adopted the eight Guiding Principles for Sustainable Tourism Development, and the development of a new national tourism policy based on these principles will begin before the end of 2021. The new policy will mainstream sustainability, from an environmental but also social and economic perspective, and will act to help tourism contribute to the achievement of Ireland's climate targets.

In the audio-visual sector, the government will implement green sustainable certification criteria as a requirement for productions supported through future funding schemes. All productions currently in receipt of Section 481 funding have to report on the production's efforts to reduce their carbon footprint and, when submitting skills development plans, outline details of any environmentally sustainable initiatives undertaken on their production to Screen Ireland.

In 2019 the Broadcasting Authority of Ireland established the Broadcasting Sustainability Network, following consultation with the sector, in the context of its strategic commitment to demonstrate and show leadership in environmental, social and economic best practice. The network is a voluntary sector-wide sustainability group of Irish broadcasters and representatives of their supply chains that aims to foster best practice and to provide the support to make the Irish broadcasting sector a sustainability leader that uses its collective voice to create a greener, more inclusive, more resilient future for all. A roadmap has been developed to support individual organisations in the broadcasting industry to develop their own sustainability plan, and to create a collective approach to the implementation of the UN Sustainable Development Goals.

## 10.4 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| **Expenditure and Taxation Policies** | |
| 65 | Continue to work with all Departments to ensure that the central policies adopted in relation to expenditure and taxation are conducive to the achievement of the Government's climate objectives |
| 66 | Monitor and review successive carbon tax increases as legislated in the 2020 Finance Act |
| 67 | Ongoing examination of environmental taxation measures across all relevant tax heads as part of the annual budgetary process |
| 68 | Continue to reform budgetary process and procedures to provide transparency on the Government's financial commitments to the climate change agenda |
| 69 | Keep the Public Spending Code under ongoing review in line with international best practice to ensure that it includes tools to evaluate the climate and environmental consequences of investments |
| 70 | Engage to ensure best environmental outcomes in EU negotiations on revisions to Energy Tax Directive and on new Carbon Border Adjustment Mechanism proposal as part of Fit for 55 package |
| 71 | Examine green budgeting practices from a tax perspective |

| Action Number | Action |
|---|---|
| **Mobilisation of Investment and Sustainable Finance** | |
| 72 | Support sustainable State infrastructure projects through the National Development Finance Agency |
| 73 | Use the mandate of the New Economy and Recovery Authority (NewERA) to support the mobilisation of private finance for climate-related investment |
| 74 | Explore opportunities for financing mitigation in agriculture and food sectors through the Ireland Strategic Investment Fund |
| 75 | Promote the further development of the sustainable finance sector to facilitate increased investment in zero-emission sectors in Ireland |
| 76 | Consider opportunities for issuance of new Irish Sovereign Green Bonds, and monitor allocation and impact of funds raised through existing Irish Sovereign Green Bonds |
| 77 | Promote opportunities for EIB investment in relevant climate projects in Ireland through EIB Financing Ireland |
| **Spatial and Planning Policy and Action at Community Level** | |
| 78 | Implement the National Planning Framework |
| 79 | Develop and include a module on climate change into the Guidelines for the development of new Local Economic and Community Plans (LECPs) |
| 80 | Support, monitor and assess Local Authority Climate Action |
| 81 | Enhance the energy efficiency of community infrastructure in the Gaeltacht |
| **Research, Development, and Innovation and Digital Transformation** | |
| 82 | Strengthen our delivery of public funding for basic and applied research to meet climate action objectives |
| 83 | Support climate and biodiversity progress through relevant strategic advice to enhance evidence-based decision-making |
| 84 | Continue to provide research funding and to coordinate national initiatives for the delivery and continuous improvement of national predictive capability and capacity in the areas of weather, climate, and hydrology |
| 85 | Implement and monitor the National Remote Work Strategy to ensure optimal alignment with climate action objectives |
| **Irish Language, Media, Sport and Tourism** | |
| 86 | Apply sector-specific climate appraisal methodology to programmes, schemes and projects funded by DTCAGSM |
| 87 | Create a national Sustainable Tourism Policy |
| 88 | Improve evidence base for sustainable tourism |
| 89 | Minimise negative environmental impact of tourism |
| 90 | Grow the awareness and understanding of sustainability in tourism |
| 91 | Develop a Major Sports Events Policy and Strategy that includes sustainability as a key part of the assessment of potential events |
| 92 | Support the modification of sports facilities in order to reduce energy consumption |
| 93 | Support environmentally friendly initiatives through the Action Plan for the Irish Language |

| Action Number | Action |
|---|---|
| 94 | Enhance the sustainability of Screen Ireland |
| 95 | Facilitate the development of sustainable practices in the wider media sector and the increased production of climate and sustainability related programming |
| 96 | Improve environmental performance of Ireland's Creative and Cultural Sector |
| 97 | Invest in developing our outdoor tourism offering, including outdoor activities, that enhances Ireland's international reputation of being a green, clean and sustainable destination |
| 98 | Increase nature connectedness and promote pro-environmental behaviours by developing outdoor recreation |

# Electricity 11

# 11. Electricity

## 11.1 State of Play

Electricity accounted for 16.2% of Ireland's greenhouse gas (GHG) emissions in 2018. We will continue to decarbonise the electricity sector by taking advantage of our significant renewable energy resources, in a competitive cost-effective way, while also ensuring the security of our electricity supply. By doing this, we will also decrease our dependence on imported fossil fuels.

**Table 11.1** – *Electricity GHG Emissions, 2018*

| Electricity Emissions $CO_2$eq. | Share of Total GHG Emissions | Electricity Emissions $CO_2$eq. per person |
|---|---|---|
| **10.6 Mt** | **16.2%** | **2.2 t** |

Overall, electricity emissions reduced by one-third between 2005 and 2018, underpinned by the growth of generation from renewables and higher efficiency conventional generation. Emissions from the sector were on a downward trend between 2005 and 2011, and this trend continued between 2011 and 2018, when there was a 11.8% decrease in GHG emissions. This equates to an absolute change of 1.4 Mt$CO_2$eq.

**Table 11.2** – *Trends in Electricity GHG Emissions*

| Timeframe | Percentage Change | Absolute Change, $CO_2$ eq. |
|---|---|---|
| **2005-11** | -24.2% | -3.7 Mt |
| **2011-18** | -11.8% | -1.4 Mt |

The share of electricity from renewable energy increased almost five-fold between 2005 and 2018 – from 7.2% to 33.7% – an increase of over 26 percentage points in 13 years. This increase in the share of renewables came despite a rise in the total demand for electricity. In absolute terms, there has been a more than six-fold increase in the volume of renewable electricity generated, from 1,873 GWh in 2005 to 11,780 GWh in 2019.

**Table 11.3** – *Electricity GHG Emissions International Comparisons, 2018*

| | Ireland | Denmark | Austria | Finland | EU 27 |
|---|---|---|---|---|---|
| **Share of Total GHG** | 16.2% | 19.3% | 8.9% | 29.7% | 23.4% |
| **Emissions, $CO_2$eq. per person** | 2.2 | 1.6 | 0.8 | 3.0 | 2.0 |
| **Change Since 2005** | -33.1% | -54.8% | -45.3% | -12.5% | -26.5% |

Ireland's share of emissions from electricity as a percentage of our overall GHG emissions is less than the EU27 overall. As late as 2016, Irish electricity emissions per person were 13% above the EU average, due to our use of high-carbon fuels, such as coal and peat. By 2018, our electricity emissions per person had reduced close to EU27 level.

Additional electricity generation and transmission infrastructure will be a critical enabler to achieve our renewable energy and emissions targets. Public acceptance of that additional generation and transmission infrastructure will be crucial to this transition, which will have impacts right across the state. Community investment and participation in renewable energy projects, as well as community benefit schemes, will help ensure fairness in the transition to a zero-carbon power system. Achieving decarbonisation of the electricity sector will not be possible without the social licence given by local communities, making it vital that we bring them with us on the energy transition. Electricity price impacts on consumers, particularly those experiencing energy poverty, as well as impacts on Ireland's international business competitiveness, will need to be monitored and mitigated. There will be costs associated with meeting a higher demand for electricity. Some of these costs will be offset by reductions in expenditure on fossil fuels, particularly in the heat and transport sector.

**Table 11.4** – *Required Level of Decarbonisation in Electricity*

| 2018 Emissions | 2030 Required Emissions Based on CAP 2021 |
|---|---|
| 10.1 Mt | 2-4 Mt |

In 2018, emissions from electricity were 10.1 $MtCO_2eq$. Implementation of existing policies and measures would reduce electricity emissions to 4-5 $MtCO_2eq$. by 2030. A significant step-up in ambition is now required, not only to meet our more ambitious 2030 target, but also to set us on course to deliver substantive decarbonisation of our economy and society no later than 2050. The electricity sector will also enable further emissions reductions in the region of 6 $MtCO_2eq$ in the business, residential and transport sectors, through significantly expanding electricity output to meet additional demand from the electrification of heat in business and buildings, and of transport vehicles.

In Ireland, total electricity demand over the next ten years is forecast to grow by between 19% and 50%, largely driven by new large energy users, many of which are data centres, based on existing policies and strategies. In the high demand scenario outlined in the Programme for Government, electricity demand will almost double by 2030, while electricity emissions are to be reduced by 60-80% at the same time. Underlying drivers of changes in electricity demand include:

- Data centres are forecast to continue to grow by up to ~9 TWh in 2030 (~23[16]% of total demand)
- Transport electricity demand is forecast to grow (~23% p.a.) as a result of fast uptake of EV charging
- Electrical heating in industry will increase by more than 2.5 times in 2030 from 2017 levels
- Building energy efficiency improvements from an extensive retrofit programme will moderate the growth in electricity demand from new heat pumps in buildings

These changes in demand for electricity will also alter the profile of demand. For example, increased use of electricity for heating will present supply challenges, particularly in winter.

The forecast growth of data centres clearly represents a challenge to Ireland's emissions targets. To deal with this, the government will review its strategy on data centres to ensure that growth of such users can only happen in alignment with our sectoral emissions ceilings and renewable energy targets. The impact of data centre growth on security of supply will also be considered. Further regulatory measures will be considered to manage demand from large users, such as data centres, in the context of climate targets and future network needs.

[16] Per Median scenario from Generation Capacity Statement 2021-2030, EirGrid

**Table 11.5** – *Potential Metrics to Deliver Further Abatement in Electricity*

| Key Metrics | KPI 2030 | Additional Abatement Impact, $MtCO_2eq.$ |
|---|---|---|
| **Core Measures** | | |
| Share of Renewable Electricity, % | Up to 80 | 6-8 |
| Indicative Onshore Wind Capacity, GW | Up to ~8 * | |
| Indicative Offshore Wind Capacity, GW | At least ~5 * | |
| Indicative Solar PV Capacity, GW | ~1.5-2.5 * | |
| **Further Measures** | | |
| Zero-emission Gas Generation, TWh | 1-3 | 0.2-0.4 |

* Electricity technologies will compete with each other on cost through competitive auctions

## 11.2 Targets

### To meet the required level of emissions reduction, by 2030 we will:

- Reduce $CO_2eq.$ emissions from the sector to a range of 2 to 4 $MtCO_2eq.$ by 2030
- Carry out a work programme to identify a route to deliver 1-3 TWh of zero emissions gas (including green hydrogen) by 2030, potentially equivalent to 0.2-0.4 MtCO2eq. abatement

Our climate targets will be delivered through a set of enabling targets by 2030:

- Increasing the share of electricity demand generated from renewable sources to up to 80% where achievable and cost effective, without compromising security of electricity supply[17]
- At least 500 MW of these renewables will be delivered through local community-based projects, subject to competition as appropriate
- Deliver circa 2 GW of new flexible gas-fired power stations in support of a high variable renewable electricity system
- Delivery of three new transmission grid connections or interconnectors to Northern Ireland, Great Britain, and the EU
- Explore further interconnection, including hybrid interconnectors (combined cross border transmission network with offshore renewable generation), to other countries
- Expand and reinforce the grid – through the addition of lines, substations, and new technologies
- Complete the phase-out of coal and peat-fired electricity generation
- Ensure that 20-30% of system demand is flexible by 2030

[17] Electricity technologies will compete with each other on cost through competitive auctions to reach the above target.

The grid infrastructure projects needed are at both transmission and distribution level, including the 1,500 MW North-South Interconnector and other network reinforcements identified by EirGrid and ESB Networks. It will be essential to deliver at least 2 GW of additional gas generation capacity by 2030 to ensure security of supply, underpin our increased renewable targets, and give investment certainty. In general, increased use of variable renewable electricity generation will require continued improvements in areas such as power system stability, network loading, and constraints.

These projects will incorporate advanced technologies that provide increased flexibility of operation, and implement arrangements for enhanced system services from generators, interconnectors, and electricity demand, facilitated by flexible electrical networks.

All of these challenges will have to be met while ensuring the security of our electricity supply, and a cost-effective delivery of new electricity generation on the system.

Unlocking the flexibility of large electricity demand users will be a key challenge as the electricity system is decarbonised. Energy demand, including data centres, will be expected to operate within sectoral emissions ceilings and further signals will be required to locate demand where existing or future electricity grid is available and close to renewable energy generation. Research and development (such a science challenge to industry), to put Ireland on a pathway to net-zero-carbon data centres, will be required.

Under the National Smart Metering Programme[18], new electricity meters, systems and processes are being implemented by ESB Networks to provide energy users with improved and more accessible information that will help them to better understand and manage their energy consumption, and to enable higher renewable electricity by encouraging flexible demand. Smart meters will give access to new tariffs and services, and support participation in the transition to a carbon neutral economy and society.

Our ability to use and store renewable energy when it is available will be critical to how quickly, securely and efficiently we can achieve the targets set out in this Climate Action Plan. ESB Networks has established the National Networks, Local Connections Programme which is addressing the range of issues needed to make this possible.

## 11.3 Measures to Deliver Targets

### 11.3.1 Electricity Demand Management

The management of electricity demand will be a central part of our approach to achieving emissions reductions. The significant increase in electricity demand expected from data centres, as well as from the electrification of industry, heat and transport means that Ireland needs a new approach to electricity demand management:

- The 'Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy 2018' will be reviewed to ensure alignment with: sectoral emissions ceilings and our renewable energy targets; ongoing security of supply concerns; and the demand flexibility measures that are now needed. Further regulatory levers will also be considered to manage demand from large energy users in the context of emissions and future network needs
- The Commission for the Regulation of Utilities (CRU) will deliver a new Demand Side Strategy which will aim to have industrial, commercial and residential demand fully participating in supporting

[18] The NSMP is a plan for transforming how electricity and gas retail markets operate and support the transition to a low carbon energy network

system needs with high levels of renewable generation, and seek to facilitate active participation by consumers and communities in the energy market

- The Sustainable Energy Authority of Ireland (SEAI), the CRU and the system operators, will work with large energy users and enterprise development agencies, to develop approaches to enhance reporting and usage of lower carbon energy sources, including increased transparency of electricity emissions data to enable large energy users to address their electricity emissions across time (hourly) and geographic locations
- EirGrid and ESB Networks will undertake an in-depth analysis of local, regional and system level flexibility requirements, and modify their own approaches and procedures to facilitate demand flexibility, to drive down costs to the consumer and provide the necessary flexibility to meet the needs of the energy transition to 2030

### 11.3.2 Large Scale Renewable Generation

- Achieving the renewable electricity target of up to 80% will entail investment of tens of billions of euro, including in the installation and maintenance of generation assets, and associated infrastructure and services, as well as in the development of supply chains and port infrastructure
- The SEAI's Methodology for Local Authority Renewable Energy Strategies (LARES) will be revised, with input from relevant bodies, to provide a best practice approach to identifying and assessing renewable energy resources in spatial planning at local authority level. Based on the indicative targets for onshore wind energy and grid-scale solar deployment, the Department of the Environment, Climate and Communications (DECC) will set out a target for the total onshore capacity that should be planned for on a national and regional level. The regional assemblies will be required to develop and implement regional renewable electricity strategies based on the overall national targets, renewable energy objectives contained in each of the Regional Spatial and Economic Strategies, and the support of relevant guidance, including the SEAI LARES. National renewable energy objectives, and those set out in the regional strategies, should be reflected in County Development Plans, which are evaluated and assessed by the Office of the Planning Regulator
- In line with the requirements of the Renewable Energy Directive, a single contact point will be designated to guide applicants through the administrative permit application and granting process for renewable electricity installations
- A new Offshore Renewable Energy Development Plan (OREDP II) will be completed to quantify the offshore renewable energy potential in Ireland's maritime area. The OREDP II will also provide an evidence base for the assessment of areas suitable for deployment of offshore renewable energy. The OREDP II will be an important planning tool as Ireland transitions to a plan-led regulatory regime for future development of offshore renewable energy underpinned by the National Marine Planning Framework
- The Maritime Area Planning (MAP) Bill, when enacted, will put in place a comprehensive and coherent marine planning regime for the development of offshore renewable energy in the maritime area
- Based on the MAP Bill, a new consenting regime will replace existing state and development consent regimes. The new consenting regime is designed to provide clarity and consistency for applicants, streamline the consenting process, and ensure offshore renewable energy projects are in line with State environmental and marine spatial planning policy
- We will continue to roll out regular competitive auctions under the Renewable Electricity Support Scheme (RESS) to deliver our targets and ensure a steady supply pipeline of projects and efficient use of the network. We will publish an indicative RESS auction timetable every three years to provide clarity for investors

- EirGrid will carry out further grid, operational and market studies to understand any additional measures, beyond current plans, to facilitate reduced sectoral emissions ceilings and, therefore, support annual renewable electricity share of up to 80%

### 11.3.3 Microgeneration and Community Based Projects

Microgeneration and small scale generation has an important role to play in empowering and driving engagement and participation. It creates opportunities for domestic, community, farming, and small commercial customers to take the first steps towards investment in renewable technologies, which can play a role in shaping electricity demand and decarbonising homes and businesses:

- Communities will play an important role in planning new renewable electricity projects. We will further strengthen the community energy framework, including consideration of community-benefit funds and community ownership provisions in the RESS
- We will introduce a Microgeneration Support Scheme (MSS) which supports deployment of an expected 260 MW of new micro (<50 kW) renewable generation by 2030, including an export payment for all micro- and small-scale generators that reflects the market value of their electricity to the grid, society and the environment
- We will amend the Planning and Development Regulations 2001 to extend exemptions for solar installations, reducing barriers to rooftop and ground-mounted micro- and small-scale generation
- We will develop a Small-scale Generation Scheme (>50 kW) to support the deployment of rooftop and ground-mounted solar PV in cohorts that are not as suited to other support measures, such as the MSS and the RESS; and also develop the rules for the Enduring Connection Policy 2.0, to provide a more streamlined and efficient grid connection process for installation sizes up to 200 kW. This will enable farmers, auto-generators and communities to maximise their participation in the energy transition. We will identify appropriate targets for small scale generation in 2022

### 11.3.4 Supporting Measures

A range of supporting measures will also be needed to enable this transformation of the electricity generation sector. These will include providing the conventional capacity that will be essential to ensure the security of the system, grid investments, interconnectors, and storage facilities. Every aspect of the management of the network will be improved:

- We will complete the review of the Security of Supply of Ireland's Electricity and Natural Gas Systems
- Significant amounts of new capacity are going to be required over the near and longer term to ensure that we have sufficient capacity to meet demand. In the context of growing demand during the transition to a net zero carbon electricity system, all aspects of policy and regulation will be examined. There will be a need for circa 5,000 MW of conventional generation capacity in 2030, of which 2,000 MW is likely to be new capacity constructed in the coming years
- The CRU and EirGrid will ensure an adequate level of conventional dispatchable generation capacity, to guarantee security of electricity supply, by publishing annually the levels of conventional dispatchable generation capacity required in each of the following 10 years. The CRU will ensure through market mechanisms, or other means, sufficient existing and new conventional dispatchable generation capacity is available to meet the levels they set
- The electricity system will be strengthened through advanced building/upgrading of the grid and supporting infrastructure at key strategic locations, addressing regions that are likely to see an increased requirement based on projected increases in renewable generation connecting to the system. The building of new substations, associated infrastructure and new technologies will also be incorporated, along with strategic upgrading of existing substations, to ensure efficient long-term and timely development of the system

- A cross-Departmental Offshore Renewable Energy Team, chaired by DECC, is being established to capture wider economic and business opportunities associated with the development of offshore renewables in Ireland. This will include the identification of supporting infrastructure development and supply chain opportunities as Ireland's offshore wind industry is developed
- We will update the National Policy Statement on Electricity Interconnection to reflect the amendment to the EU TEN-E Regulation, Brexit challenges, and the increased significance of hybrid interconnectors
- The CRU will review the regulatory treatment of storage, including licensing, charging and market incentives. In combination, DECC will develop a storage policy that supports the 2030 targets and aligns with our renewable gas ambition, security of supply, and flexibility policy drivers[19]
- EirGrid will develop a Power System Operational Policy Change Roadmap, setting out how power system operational policy will need to evolve to facilitate the integration of high levels of intermittent, non-synchronous renewable generation, including the reduction or removal of minimum generation constraints and increasing System Non-Synchronous Penetration (SNSP)
- EirGrid will evolve the operational tools and policies to facilitate the integration of new interconnection, both in development and new interconnectors yet to be identified
- EirGrid and ESB Networks will undertake analysis and implement the necessary measures to facilitate the integration of new power generation technologies, including hybrid power plants. A new framework to facilitate zero-carbon system services will be put in place as soon as possible to enable delivery of the 2030 targets
- EirGrid will commence implementation of the Control Centre of the Future Roadmap
- Grid codes connection and market arrangements will be reviewed to facilitate greater deployment of hybrid power plants. This will enable, for example, the co-location, of new solar capacity alongside existing windfarms
- The CRU will monitor electricity prices, and ensure that regulatory costs to consumers are minimised through well-regulated markets and networks to deliver the least cost pathway (in the long-term) to meeting the electricity sector targets set out in Section 11.2 above

### 11.3.5 Further Measures

Additional emissions savings will need to be identified to reach the lower end of the 2030 target range for electricity emissions:

- The development of Carbon Capture and Storage (CCS) by 2030 is challenging but could remove further emissions from the system. We will develop a policy framework and roadmap for the provision of CCS
- Once the renewable electricity share of generation increases above 80% the system abatement cost becomes very expensive with current technologies. Reducing emissions beyond 2-4 Mt will require the development of a variety of long duration storage technologies and renewable gases. The addition of a moderate amount of relatively high cost, clean dispatchable power (~€100-200/MWh) would lower the carbon cost substantially. We will investigate:
- Methods to incentivise electrolyser production and grid connection of hydrogen from renewable energy to fuel zero emission dispatchable generation
- Developing storage capacity to demonstrate long duration and seasonal storage of renewable energy
- Co-location of electrolysis with renewable energy production infrastructure

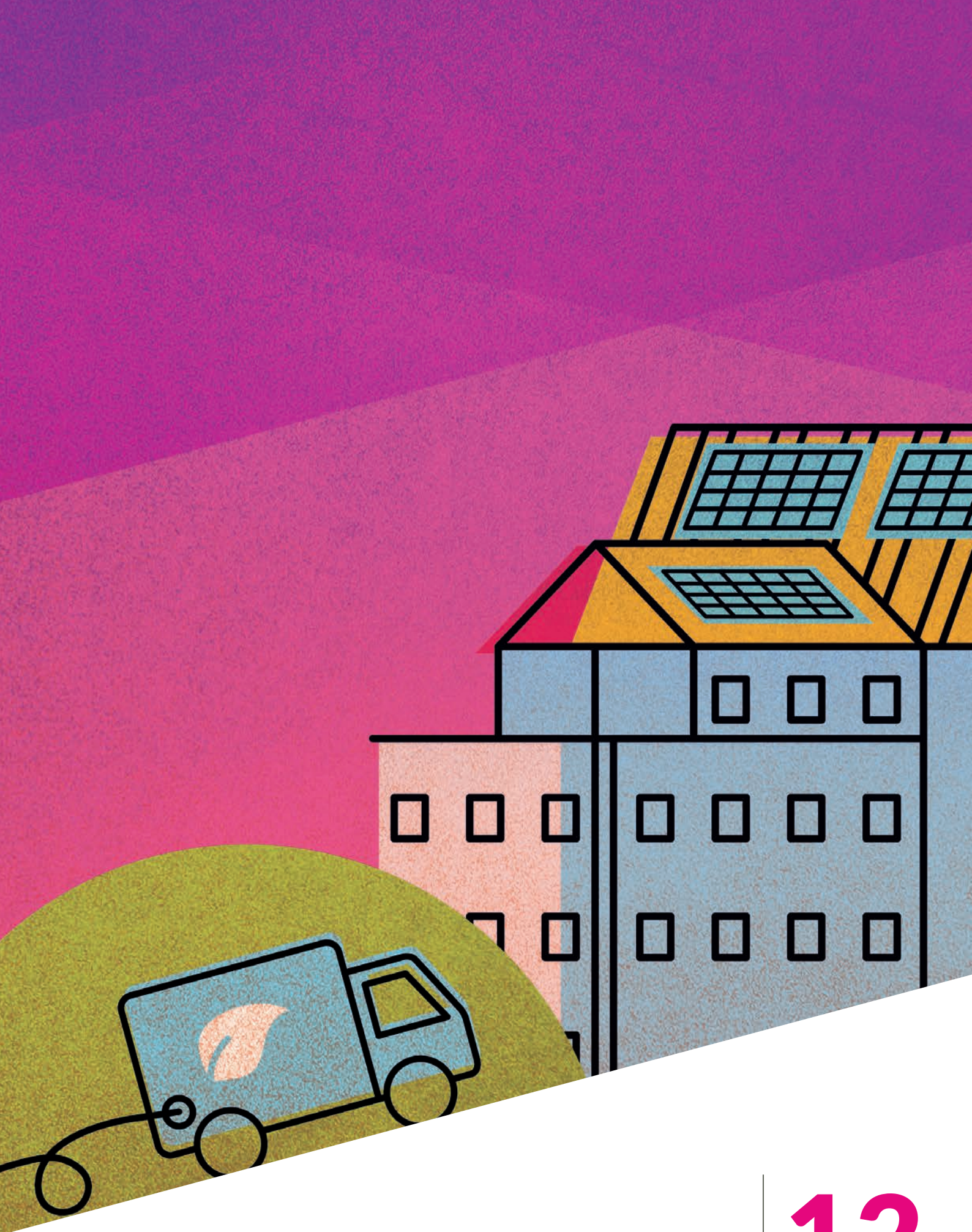
[19] Electricity storage and interconnection projects designated as priority EU electricity infrastructure, including electricity EU Projects of Common Interest (PCI), will continue to receive preferential treatment as provided for by the EU TEN-E Regulation, subject to cost benefit analyses. However, the absence of priority EU infrastructure status should not preclude project development

## 11.4 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 99 | Review the policy context for Large Energy Users (including Data Centres), ensuring alignment of enterprise policy and wider regulatory environment with electricity emission targets and security of supply |
| 100 | Publish and implement a new Demand Side Strategy |
| 101 | Enable and incentivise demand side flexibility |
| 102 | Ensure supportive spatial planning framework for onshore renewable electricity generation development |
| 103 | Transpose Internal Market for Electricity Directive (EU) 2019/944 |
| 104 | Deliver regular Onshore Renewable Electricity Support Scheme auctions that aligns with spatial and planning policy and efficient use of the network |
| 105 | Deliver a Microgeneration Policy Framework |
| 106 | Ensure communities benefit from renewable energy projects in RESS – benefit funds and ownership |
| 107 | Conclude the review of the current planning exemptions relating to solar panels, to ensure that households, schools, and communities can be strong champions of climate action |
| 108 | Deliver a Solar and Small-Scale Generation Policy Framework |
| 109 | Ensure security of electricity supply |
| 110 | Update the Interconnection Policy to reflect the amendment to the EU TEN-E Regulation, Brexit challenges and the increased significance of hybrid interconnectors |
| 111 | Review the existing electricity transmission and distribution network tariff structures to assess what changes may be necessary to deliver equitable, cost reflective and transparent charges that facilitate investment in our low carbon transition and the new ways in which the network will be used in the future |
| 112 | Assess the network development required to integrate higher levels of RES-E and develop a high-level network development plan to (and beyond) 2030 |
| 113 | Facilitate very high penetration of variable renewable electricity through system services and market arrangements |
| 114 | Develop the onshore electricity grid to support renewable energy targets |
| 115 | Review the policy position on the development of private networks/direct lines |
| 116 | Develop a new Offshore Renewable Energy Development Plan (OREDP II) |
| 117 | Facilitate the development of offshore wind, including the connection of at least 5 GW of offshore wind, based on competitive auctions, to the grid by 2030 |
| 118 | Develop a clear Offshore Renewable Energy Grid Connection Policy |

| Action Number | Action |
|---|---|
| 119 | Complete the mapping of all Irish offshore waters through the INFOMAR Programme to support all marine activities including climate effect monitoring and site selection for offshore energy |
| 120 | Ensure offshore renewable energy requirements are delivered in the Maritime Area Planning Bill |
| 121 | Develop a new consenting system for offshore renewable energy post Maritime Area Planning Bill enactment |
| 122 | Finalise design and rollout of dedicated offshore RESS auction |
| 123 | Support the offshore and ocean energy research, development and demonstration pathway for technologies and associated test infrastructure |
| 124 | Develop a storage policy framework that supports the achievement of electricity emissions targets |
| 125 | Facilitate the connection of hybrid technologies that minimise grid reinforcement |
| 126 | Examine and oversee the feasibility of the utilisation of Carbon Capture and Storage in Ireland |
| 127 | Carry out power system modelling required to meet renewable energy and electricity emissions targets and analysis to underpin a Net Zero Roadmap |
| 128 | Establish Cross-Departmental Offshore Renewable Energy Team |
| 129 | Make time-of-use tariffs and smart bills available to electricity consumers |



Enterprise | 12

# 12. Enterprise

## 12.1 State of Play

As Ireland and the world aim for a climate neutral economy by 2050, the transition to low carbon has become a defining force for business. Building sustainable, low-carbon, businesses is becoming increasingly imperative, not only from a social and environmental perspective, but also from a market-competitive and financial one. Business models which are sustainable and focused on decarbonisation are crucial to long-term resilience. Equally, companies and sectors that fail to decarbonise will become increasingly uncompetitive. This has the potential to have far reaching negative impacts for the economy, including locking us into a redundant fossil-fuel based economic model. As a small open economy, we need the enterprise sector to be resilient and competitive in international markets.

Enterprise will play a pivotal role in reducing our emissions by 51% by 2030, and in Ireland becoming a climate neutral and resilient economy by no later than 2050. It influences the way scarce resources are managed along supply chains, from raw materials to the consumption of final products and the disposal of waste. It constructs and uses a large share of our building stock and manages significant transport flows. However, emissions from enterprise in the greenhouse gas inventory include only those associated with production processes, i.e. manufacturing combustion, industrial processes and F-gases. In 2018, these were 7.9 $MtCO_2eq.$, or 12.7% of Ireland's total emissions, which is less than the EU average of 21.2%. Of this total, 5.6 $MtCO_2eq.$, or 71% fall within the EU Emissions Trading System (ETS) (emissions from buildings, transport and waste are not included).

The biggest share of enterprise emissions comes from a small number of large companies in the manufacturing sector, mostly in alumina, food processing, beverages and cement. These manufacturers (comprising 64 separate installations) are covered by the EU ETS. Emissions from enterprise that fall outside the EU ETS are highly diverse, with a large proportion arising from Small and Medium Enterprises (SMEs), including those working with industrial gases (also known as fluorinated or F-Gases). These are gases with high global warming potential, which are used in refrigeration, air conditioning and semiconductor manufacturing. According to the Central Statistics Office, the population of enterprises in Ireland was over 270,000 in 2018, with SMEs accounting for 99.8% of the total.

**Table 12.1** – *Enterprise GHG Emissions, 2018*

| ETS/Non-ETS | Enterprise Emissions $CO_2eq.$ | Share of Total GHG Emissions | Enterprise Emissions $CO_2eq.$ per person |
|---|---|---|---|
| ETS | 5.6 Mt | 9.0% | 1.1 t |
| Non-ETS | 2.3 Mt | 3.7% | 0.5 t |
| **Total** | **7.9 Mt** | **12.7%** | **1.6 t** |

Emissions in the enterprise sector fell dramatically (by one third) between 2005 and 2011 as a result of the economic recession, but have since rebounded by over a quarter, demonstrating how strongly correlated industry emissions still are with economic activity.

**Table 12.2** – *Trends in Enterprise GHG Emissions*

| Timeframe | ETS/Non-ETS | Percentage Change | Absolute Change, $CO_2$ eq. |
|---|---|---|---|
| 2005-11 | ETS | -41.1% | -2.7 Mt |
| | Non-ETS | -19% | 0.6 Mt |
| | **Total** | **-34.6%** | **-3.3 Mt** |
| 2011-18 | ETS | 44.7% | 1.7 Mt |
| | Non-ETS | -0.4% | -0.01 Mt |
| | **Total** | **28.4%** | **1.8 Mt** |

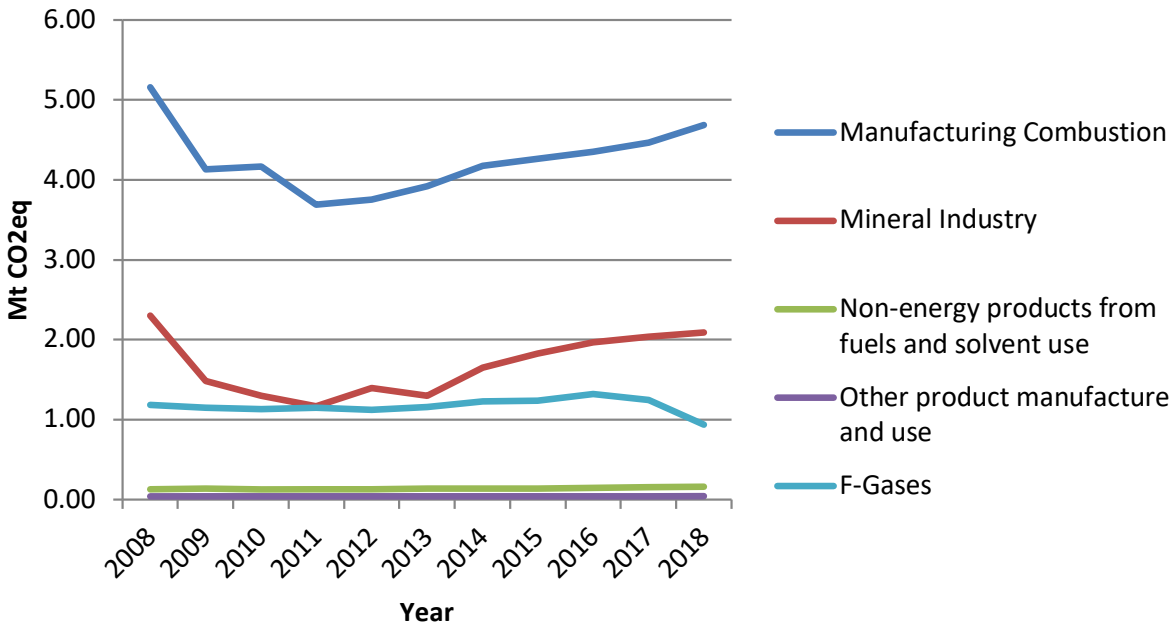
Compared to other EU Member States, Ireland's carbon intensity in the sector, at 1.6 $MtCO_2$eq. per person, is only slightly below the EU average, despite the sector accounting for a smaller share of total emissions relative to other EU countries.

**Table 12.3** – *Enterprise GHG Emissions International Comparisons, 2018*

| | Ireland | Denmark | Austria | Finland | EU 27 |
|---|---|---|---|---|---|
| Share of Total GHG | 12.7% | 12.5% | 33.4% | 22.5% | 21.2% |
| Emissions, $CO_2$eq./person | 1.6 t | 1.0 t | 3.0 t | 2.3 t | 1.8 t |
| Change Since 2005 | -16.0% | -26.7% | -2.7% | -30.2% | -20.0% |

A sectoral breakdown of industry emissions is shown in Figure 12.1, indicating that manufacturing combustion and process emissions from the mineral industry (primarily cement manufacturing) account for the most significant share of emissions in this sector.

**Figure 12.1** – *Sectoral Disaggregation of Enterprise Emissions*



While the recovery in enterprise activity since 2011 has seen some switching of the sector's energy requirements from fossil fuels to renewable energy, the link between economic growth and emissions has still not been broken.

The EU "Fit for 55" package proposes that emissions from the current EU ETS sectors (including the extension to maritime transport) be reduced by 61% by 2030, relative to 2005 levels. This represents an increase of 18 percentage points compared to the current -43% contribution from the ETS to the EU's climate target. If enterprise is to contribute to our climate objectives, and particularly for the Irish ETS sector to meet the proposed new EU ETS target, a dramatic turnaround is required from the sector's recent trend of a 44.7% increase in emissions between 2011 and 2018.

In addition, reducing the sector's buildings and transport emissions will take leadership at enterprise level. A large proportion of buildings within the sector have a poor Building Energy Rating (BER), with a low level of renewables penetration, while transport is currently 97% dependent on fossil fuels.[20] Specific actions to target emissions from space and water heating in commercial buildings, and from transport, are included in the built environment and transport chapters respectively. The electrification of manufacturing and industrial processes, and enterprise policy related to high-demand sectors, such as data centres, will be aligned and consistent with the renewable energy and carbon abatement targets in the electricity sector.

While it is encouraging to see major companies committing to significant emissions reduction[21] by 2030 and beyond, this level of ambition must become the norm across the enterprise sector. Companies and sectors that fail to decarbonise their activity across their entire business model will become increasingly uncompetitive, with potential far-reaching negative impacts for the economy – including undermining our long-term sustainable competitiveness and locking us into a redundant fossil-fuel based economic model. However, embracing the transition will support further job creation through the development of new and emerging sectors. The green economy, including the retrofitting and renewable energy sector, the circular economy, clean mobility, green and blue infrastructure, sustainable agriculture and the bioeconomy will create high quality employment opportunities that will be a source of significant employment growth over the coming decades. For its part, the IDA will seek to attract multinational corporations based overseas to invest in the green economy in Ireland, targeting those active in developing decarbonisation infrastructure and technologies. Both EI and the IDA will also support clients to expand their sustainability capability and create new roles in sustainable supply chain management, procurement, environmental and energy management, analytics, green finance, and circular economy enablement.

It is clear that policy measures to date will not achieve the level of decarbonisation now required in the industry sector, which is a reduction from 7.9 $MtCO_2eq.$ in 2018 to approximately 5 $MtCO_2eq.$ in 2030.

**Table 12.4** – *Required Level of Decarbonisation in Enterprise*

| 2018 Emissions | 2030 Required Emissions Based on CAP 2021 |
|---|---|
| 7.9 Mt | 5-6 Mt |

Analysis of a potential emissions reduction pathway that would enable Ireland to reduce total emissions from enterprise to 5-6 $MtCO_2eq.$ indicates there are six additional measures that could further reduce emissions in the sector.

[20] Page 22 - https://www.seai.ie/publications/Energy-in-Ireland-2019-.pdf

[21] https://sciencebasedtargets.org/companies-taking-action

**Table 12.5** – *Potential Metrics to Deliver Further Abatement in Enterprise*

| Key Metrics | KPI 2030 | Additional Abatement Impact, $MtCO_2eq.$ |
|---|---|---|
| **Core Measures** | | |
| Accelerate uptake of carbon-neutral heating in industry | ~50-60% share of carbon neutral heating in total fuel demand[22] | ~0.4 |
| Phase-out high-GWP F-gases | -80% emissions versus 2014 | ~0.5 |
| Decrease embodied carbon in construction materials | 10% decrease in embodied carbon in construction materials | ~0.3 |
| Enable electrification of high-temperature heat generation | 100% of steam production from gas-electric hybrid heating | ~0.5 |
| **Further Measures** | | |
| Further decrease embodied carbon in construction materials | ~10-60% decrease in embodied carbon in construction materials | 0.5 -1.9 |
| Deploy Carbon Capture and Storage (CCS) | 2 out of 4 cement/lime plants retrofit CCS | ~1.5 |

## 12.2 Targets

### To meet the required level of emissions reduction, by 2030 we will:

- Reduce Ireland's enterprise emissions by approximately 40%, from 7.9 $MtCO_2eq.$ in 2018 to a range of 5-6 $MtCO_2eq.$ in 2030
- Commit to core measures delivering emissions reductions of ~1.7 $MtCO_2eq.$ in 2030
- Undertake a programme of work to refine the potential and set targets/pathways for further measures to deliver ~2-3.4 $MtCO_2eq.$ in 2030

Irish enterprise will be required to implement a detailed agenda of transition and change if it is to ensure that our sectors are climate resilient and can remain competitive in a decarbonising world. This agenda will include:

- Improving the energy efficiency of processes, buildings and transport
- Replacing fossil fuels with renewables in their processes, buildings and transport
- Improving the way in which resources are used in their supply chain to reduce emissions and conform to circular economy principles
- Being innovative across production, distribution, and marketing to realise the opportunities arising
- Developing new skills and techniques as necessary
- Developing metrics on the climate and environmental impact of activities, which will become more widely expected in the marketplace

[22] Excluding measures to decrease embodied carbon in construction materials; and enable electrification of high-temperature heat generation

While some of the required measures currently have mixed or negative business cases, it is critical to bear in mind that change is inevitable. Given the strong global commitment to net-zero and the "race to the top", maintaining the status quo is not an option. Failure to act carries a real risk of being left behind, producing outdated products for changing markets and consumer demands.

Leadership from within enterprise must be supported by national-level climate action to drive change in key sectors at pace, in order to protect and expand our industrial competitiveness and prosperity. This includes appropriate policy support, including ensuring a level playing field and bridging cost gaps; incentivising the required system-level changes, such as making sure green power is available for manufacturing; and supporting collaborative multi-stakeholder approaches, for instance in pooling demand to get critical mass for Carbon Capture and Storage (CCS).

Action by central government must be reinforced by the wider public service. The enterprise agencies, having regard to their statutory mandates, must prioritise decarbonisation as part of their strategies. It is also important that all enterprise sector associations and local chambers recognise and support their members so that networks quickly form to emulate companies and sectors pioneering in decarbonising. Public bodies should form partnerships with such stakeholders so that shared endeavour can deliver more quickly. We need to see the emergence of clusters within which sectors' efforts can be aggregated and scaled.

## 12.3 Measures to Deliver Targets

The global trading environment is highly competitive. To succeed, companies need to think about how their sector will develop in the next five to ten years. Environmental sustainability and responsible production will be key drivers of business success into the future. Now is the time for all Irish businesses to prepare for that future. Businesses that take action to mitigate against the risks of climate change and those with environmental credential requirements can potentially benefit from increased access to environmentally conscious customers, markets and workers, green equity and loan funding, and support from local communities. Climate action presents opportunities for existing supply chains and new business formations. But it also creates the need to comply with enhanced regulations, as well as the demands of investors and customers for credible sustainability impact and reporting.

We will launch an online *Climate Toolkit 4 Business* to assist all businesses, and small and micro-enterprises, in particular, to make a good start in understanding and adapting their activities to assist in climate mitigation. The kit will include a simple carbon calculator and will generate a tailored company climate action plan for each business.

Larger businesses and high emitters will continue to require energy audits, and under the proposed EU Corporate Sustainability Reporting Directive will be mandated to provide public reporting of their environmental impact.

### 12.3.1 Emissions Trading System

- The key industry measure addressing greenhouse gases is the EU ETS, which covers 71% of emissions from this sector, including both combustion and process-related emissions. A strong price signal, as part of a reformed EU ETS, including progressively more restrictive rules on how many allowances will be available within the EU ETS, is expected to drive decarbonisation over the coming decade by increasing the cost to firms in the EU ETS of doing nothing to reduce their emissions. We are committed to continuing to work proactively with our EU partners, including considering the further reforms proposed under the "Fit for 55" package or supplementary measures, to ensure that the EU ETS can effectively deliver reductions in greenhouse gas emissions, while addressing the challenges faced by sectors most exposed to international competition.

### 12.3.2 Carbon Pricing

- Enterprise sectors outside the EU ETS will be incentivised by the general carbon price trajectory set by Government in successive budgets which is now set at €41 per $tCO_2$ and is legally required to reach €100 per $tCO_2$ by 2030, but will also be exposed to carbon price movements within the EU ETS in circumstances where such prices can be passed on by ETS sectors. As we progressively decarbonise our economy, policy must prevent a large gap emerging between carbon pricing in the EU ETS and non-ETS sectors to ensure an ongoing strong signaling effect for decarbonisation.

### 12.3.3 SEAI Initiatives

- The Large Industry Energy Network (LIEN), a network of 199 of Ireland's largest energy users (some of which are in the EU ETS), together consume 21% of the entire energy demand in Ireland. LIEN members are companies with an annual energy spend of €1 million or more. These are supported by SEAI through mentoring, energy management systems, training and networking, and compliance with legal requirements. Through SEAI, we will continue to support and promote decarbonisation by the members of this network.
- Investments by enterprises in energy efficiency increase their competitiveness, protect the environment, boost their reputation and elevate their branding. Through SEAI, we will continue to support energy audits, provide free training for businesses and provide financial supports to those who want to invest in energy efficiency, particularly SMEs.
- SEAI will continue to expand the Excellence in Energy Efficient Design (EXEED) Programme to deliver new best practices in design, construction, and commissioning processes for new investments and upgrades to existing assets, with the focus now on greenhouse gas emissions reductions.
- Through the Government-funded Support Scheme for Renewable Heat, SEAI will continue to support the adoption of renewable heating systems by commercial and industrial heat users not covered by the EU ETS.

### 12.3.4 Regulation

- Emissions from industrial gases and refrigerants are controlled by EU Regulation (No. 51/2014) on *Fluorinated Greenhouse Gases*, which targets a 67% reduction in emissions from these sources by 2030 compared with 2014 levels. Following the example of other EU Member States, we will commit to bringing forward additional measures to reduce F-gas emissions by 80% by 2030 relative to 2014.

### 12.3.5 Ireland's National Recovery and Resilience Plan

- Our National Recovery and Resilience Plan prioritises advancing the green transition. We will:
    - Accelerate decarbonisation of the enterprise sector, through providing supports for Irish SMEs and exporters to address their emissions, and by investing in carbon measurement and abatement technologies for manufacturing companies
    - Roll out, through Science Foundation Ireland, a National Grand Challenges Programme of mission-orientated funding

### 12.3.6 Enterprise Agency Leadership

- Existing enterprise agency programmes, such as EI's *Green Offer* and IDA's *Go Green Offer*, already encourage client companies to incorporate sustainable practices into the running of their business, leading to better environmental performance; improved resource efficiency; direct cost savings; and improved access to customers who are increasingly demanding more environmentally friendly products and services.

- EI and the IDA will use other transformational supports such as training, and Research, Development and Innovation (RDI) grant programmes to enable client companies improve their sustainability capability. Innovation will play an even greater role in the evolution of firm-level productivity over time. Through specific and targeted actions, investment will be leveraged in RDI, such as in technology centres and applied research programmes, to assist in the low carbon transition.
- Decarbonisation of enterprise is about far more than supporting the introduction of energy efficiency measures. It is fundamentally about decarbonising processes which are adopted by industry to produce goods and services. EI and the IDA will work to further integrate climate change considerations into their overall strategies and the specific supports provided to client firms over the coming period of radical transition by:

    - Aligning grant funding and supports with progress towards achieving our emissions reductions targets for enterprise, including amending project appraisal methods
    - Enabling the preparation of detailed decarbonisation implementation strategies by client companies in the highest emitting enterprise sectors
    - Working closely with the SEAI and third-party energy providers to encourage client companies to plan to decarbonise not only their Scope 1 (fuel combustion; company vehicles; and fugitive emissions) and Scope 2 (purchased electricity, heat and steam), but also all other Scope 3 indirect emissions that occur in a company's value chain (purchased goods and services; business travel; employee commuting; waste disposal; use of sold products; transportation and distribution – up- and downstream; investments; and leased assets and franchises)
    - EI administering the Climate Enterprise Action Fund to help companies reduce emissions and embed sustainability in how they work
    - EI implementing the €100 million Capital Investment Fund for the Agri-Food Sector for the Processing and Marketing of Agricultural Products
    - EI promoting a focus on emissions reduction and sustainability under the Seed and Venture Capital Scheme
    - All relevant State agencies (such as EI, the IDA, LEOs, Bord Bia, Teagasc, and Bord Fáilte), in partnership with SEAI, developing decarbonisation programmes and sectoral networks to drive this agenda in key sectors

### 12.3.7 Decarbonising Heating in Industry

- A large amount of the emissions from the enterprise sector arise from satisfying the demand for heat. To reduce these emissions, we must both reduce this demand and replace fossil fuels with renewable energy sources. We will bring forward measures to support the entire sector, as well as specifically focusing on high-emitting industries. We will:

    - Introduce a renewable heat obligation to ensure a certain proportion of energy for heat comes from renewable sources
    - Assess the feasibility of using the gas grid for renewable gases
    - Accelerate the uptake of carbon-neutral low-temperature heating in the food and beverages sector
    - Enable the electrification of high-temperature heat generation by deploying hybrid gas-electric heating in alumina
    - Undertake a programme of work to refine the potential to decrease embodied carbon in construction materials, by displacing between 10% and 60% of their embodied carbon, with a view to setting targets and pathways – e.g. the use of low-carbon cement blends, or cross-laminated timber as alternative construction materials

### 12.3.8 Carbon Capture and Storage

- Some sectors, such as cement and lime, can only fully decarbonise with CCS. However, pre-2030 adoption of CCS is a challenging and high-cost solution as it requires deploying extensive infrastructure in less than ten years. We will undertake a programme of work to assess the potential of picking two sites with the best CCS opportunities with a view to setting a pathway to its deployment.

### 12.3.9 Enterprise Leadership in the Wider Community

- Enterprises can play a prominent role as leaders beyond their immediate business activities, including:
    - Participating in wider community initiatives such as Sustainable Energy Communities and Better Energy Communities
    - Supporting business networks of SMEs where experience could be shared, for example through local chambers of commerce
    - Supporting employees to actively contribute to decarbonisation in work and their wider lives
    - Working with industry-led initiatives, such as Business in the Community Ireland, to support decarbonisation programmes, such as low carbon pledges

**Box 12.1** *Cement and Construction Sector Evolution*

Construction of new homes, offices and infrastructure has significant environmental impacts, and in particular the production of clinker to make cement – used in concrete – is extremely carbon-intensive. Nonetheless, our society needs this activity to deliver on our housing, health, education, transport and economic needs. An evolution in both the cement and construction sectors is, therefore, required as we decarbonise our economy and society. Many of the measures outlined in this plan are designed to facilitate this evolution. Key elements include:

- Facilitating the use of alternative fuels and non-recyclable wastes in cement kilns
- Prioritising longer-life and lower-carbon cement blends in public contracts (Green Public Procurement) and promoting their use by the private sector through awareness raising, standards and requirements for construction project carbon life-cycle analysis
- Facilitating and promoting the development and use of alternative construction materials, such as timber, and techniques such as pre-fabrication, using embodied carbon and performance-based approach
- Extensive retrofitting programme and prioritisation of brownfield and compact development

## 12.4 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 130 | Develop an online climate action portal for enterprises with relevant tools and content to include a carbon calculator, template action plan and signposting to relevant agency programmes |
| 131 | Develop networks in key industry sectors and a roadmap of actions to support decarbonisation of large industry |
| 132 | Action Number not used in 2021 Climate Action Plan |
| 133 | Action Number not used in 2021 Climate Action Plan |
| 134 | Establish a focus group comprised of the relevant stakeholders to develop the actions required to achieve the Climate Action Plan target of a *"10% (and up to 60%) decrease in embodied carbon in construction materials"* including low carbon cement |
| 135 | Continue to develop and support its Offshore Wind Industry Cluster which comprises over 50 Irish supply chain companies |
| 136 | Assist SEAI through registration of insulation installers for retrofit of buildings |
| 137 | Adapt national structural design codes for physical infrastructure to take account of changes in climate |
| 138 | Publish a standard recommendation for the design, installation, and commissioning of solar PV panels in new and existing dwellings |
| 139 | Adopt the international technical standard - "ISO TS 14092:2020" - to provide guidance for local governments and communities in planning for adaptation for climate change (e.g., sea level rise, coastal erosion, and flooding) |
| 140 | Define and develop inspection methodology and regulations for compliance of electric charging meters for charging electric vehicles |
| 141 | Offer the certification scheme "ISO14064:2019 – *Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals"* to assist enterprises to quantify and report their Greenhouse Gas Emissions |
| 142 | Develop a certification scheme for SR54 Energy Efficient Retrofit of Dwellings |
| 143 | Update the Eco-design Regulations for energy efficient products |
| 144 | Negotiate and implement the revised EU Corporate Sustainability Reporting Directive which includes environmental information |
| 145 | Promote a focus on CO2 reduction/sustainability credentials across venture capital funds delivered under the EI Seed & Venture Capital programme |
| 146 | Deliver the programmes to decarbonise enterprise outlined in the NDP and Resilience and Recovery Fund Submissions |

| Action Number | Action |
|---|---|
| 147 | Promote the potential of innovation and applied research in Artificial Intelligence, Machine Learning and Data Analytics to solve complex challenges related to sustainability and the low carbon transition |
| 148 | Build a Pilot Technology Gateway in the North East Region to harness the expertise of Dundalk IoT in terms of Energy Efficient and Energy Optimisation of products |
| 149 | Perform research and encourage Irish researchers to contribute to the EU Green Deal research programme with respect to metrological assistance for the development of clean energy technologies |
| 150 | Promote the benefits of adapting to low carbon technologies and processes to SMEs through a new Low Carbon Business Award within the existing Seedcorn Investor Readiness Competition |
| 151 | Incorporate measurement of climate-related impacts into capital grant decisions by the enterprise agencies |
| 152 | Enterprise Ireland to develop and publish their new corporate strategy 2022-2025, including a focus on climate action and sustainability |
| 153 | Align Enterprise Ireland and IDA grant funding and supports with progress towards achieving the carbon abatement targets for enterprise, ensuring resilience in the transition to a low carbon economy |
| 154 | Put in place training and educational programmes on sustainability and climate action for IDA executives |
| 155 | Experiment with initiatives to incorporate new content or modules relating to climate and sustainability into Client Management Development programmes |
| 156 | Develop a strategy specifying optimum sustainability solutions and additional carbon abatement opportunities in IDA's property portfolio |
| 157 | Introduce pilot biodiversity measures in one of IDA's Business Parks |
| 158 | Enable the preparation of detailed firm-level decarbonisation implementation strategies by large food & drink businesses |
| 159 | Implement the €100m Capital Investment Fund for Agri-Food Sector for the Processing and Marketing of Agricultural Products |
| 160 | Develop certification of recycled construction products scheme |
| 161 | Publish an Irish Standard to enable organisations apply a systematic approach to Energy Efficient Design throughout the various steps of design, construction, and commissioning of investment projects |
| 162 | Develop and publish the IntertradeIreland 2022 Business Plan, to include a priority of 'Adaption to the low carbon Economy' |
| 163 | Continue development of the second phase of the Dairy Processing Technology Centre to develop technologies and approaches that will deliver reduced carbon and greenhouse gas footprints in the dairy industry |

| Action Number | Action |
|---|---|
| 164 | Enable the preparation of detailed decarbonisation implementation strategies by client companies in high-impact sectors such as Pharmaceuticals, Cement, Construction, Engineering, and other manufacturing |
| 165 | Develop Corporate Climate Action Plans with key clients for their Irish sites |
| 166 | Identify and engage client companies using the most emissions-intensive fuels (e.g., coal, pet coke and fuel oils) and support them to develop proportionate decarbonisation plans to remain competitive |
| 167 | Engage with the alumina manufacturing sector and key stakeholders to progress measures to support the achievement of the identified potential abatement |
| 168 | Support businesses to decarbonise through the provision of capital support programmes to enhance energy efficiency |
| 169 | Develop renewable gas in the gas grid |
| 170 | Develop the pipeline of high potential start-ups with low-carbon and sustainable solutions |
| 171 | Continue development of the second phase of the Irish Manufacturing Research Technology Centre as a hub of sustainable manufacturing expertise |
| 172 | Consider introducing a renewable energy obligation in the heat sector |
| 173 | Undertake research into business engagement with the low carbon agenda, including support needs to invest and commitment to low carbon adaptations |
| 174 | Proactively engage with opportunities to support business cluster and network development which will support the all-island circular economy |
| 175 | Win ten environmental sustainability investments in 2021 |
| 176 | Facilitate licencing of fuel-switching in industrial processes |
| 177 | Introduce new legislation to reform the judicial review process, in compliance with EU legal requirements, so that reforms come into effect on the establishment of a new Division of the High Court dealing with planning and environmental issues |
| 178 | Progress sustainability through business planning |
| 179 | Promote and market sustainable tourism |
| 180 | Implement Údarás na Gaeltachta's Gaeltacht Ghlas (Green Gaeltacht) project |
| 181 | Promote sustainable practices in the Screen Production industry |

# Built Environment

# 13

# 13. Built Environment

## 13.1 State of Play

One of the greatest decarbonisation challenges facing Ireland relates to how we can decarbonise our existing stock of residential and commercial buildings (primarily those constructed pre-2006), so that they require less energy, and draw on fossil fuels to the lowest extent possible.

The transition to an energy efficient and fossil fuel free built environment will provide extensive social, economic and environmental benefits in the short- as well as long-term. This process will bring about reduced energy costs and more comfortable, healthier, safer, and less costly to heat and cool, homes enhancing our living standards, improving our air quality and helping to address energy poverty. It will also improve energy security and reduce Ireland's dependence on fossil fuels in addition to other significant co-benefits for the environment and socio-economic development.

**Table 13.1** – *Built Environment GHG Emissions, 2018*[23]

| Sub-Sector | Built Environment Emissions $CO_2$eq. | Share of Total GHG Emissions | Built Environment Emissions $CO_2$eq. per person |
|---|---|---|---|
| **Residential** | 7.0 Mt | 11.2% | 1.4 t |
| **Commercial** | 0.9 Mt | 1.4% | 0.2 t |
| **Total** | **7.9 Mt** | **12.7%** | **1.6 t** |

We have already had some success in decarbonising our buildings with emissions falling by 8.6% between 2005 and 2011, and falling again by 6% between 2011 and 2018. This decrease occurred despite an overall increase in construction of buildings in that period, and the exceptionally low temperatures experienced in early 2018.

The reduction reflects continued improvement to building regulations and standards, which have advanced the energy and carbon emissions performance of our buildings through: the introduction of NZEB performance requirements; the use of more energy efficient and renewable, low carbon technologies and decarbonised heating sources in our buildings; the replacement of coal and peat as sources of heating with oil and gas; as well as the improved efficiency of our pre-existing building stock supported by Government schemes through the Sustainable Energy Authority of Ireland (SEAI) and Local Authorities; and minimum performance requirements for buildings undergoing major renovation.

The decrease in emissions from the commercial sector in the period 2005-2011, and subsequent increase in the period 2011-2018, is a reflection of the economic conditions in those periods.

Emissions from the built environment accounted for 12.7% of Ireland's greenhouse gases in 2018, an increase from 11.7% in 2017. This increase is mainly due to the lower temperatures experienced in spring 2018, which led to more energy being used to heat buildings.

[23] https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/greenhouse-gas-emissions-final-2019.php

Data published by the EPA indicates that emissions from the residential sector in 2020 increased 9% from 2019 levels, due to the increase in home working and restrictions on movement that forced more people to spend more time at home.[24] Covid-19 has also placed a focus on the need to maximise ventilation opportunities in our homes and other buildings. Therefore, it is important that when we improve the energy efficiency of our buildings, we consider it in a holistic way, and also take account of risks such as fire safety, ventilation and durability. This will improve our living standards by making our buildings more comfortable, healthier, safer, and less costly to heat.

We have already committed to retrofitting 500,000 homes to BER B2 standard by 2030, and installing 680,000 renewable energy heating sources in both new and existing residential buildings.

Progress also continues to be made on the installation of heat pumps. Based on an analysis of the BER database, it is estimated that 85% of new dwellings in 2020, built to Technical Guidance Document L 2019, installed heat pumps and, since 2015, 51% of all new dwellings use heat pumps as their main heating system. Oil boiler installation in new dwellings has dropped from 35% in the period 2000-2004 to 4% in the period 2015-2020.[25]

**Table 13.2** – *Trends in Built Environment GHG Emissions*

| | Percentage Change | Absolute Change, $CO_2$ eq. |
|---|---|---|
| **2005-11** | | |
| **Residential** | - 7.5% | -0.6 Mt |
| **Commercial** | - 17.5% | - 0.2 Mt |
| **Total** | **- 8.6%** | **-0.8 Mt** |
| **2011-18** | | |
| **Residential** | - 7.2% | -0.55 Mt |
| **Commercial** | 4.8% | 0.04 Mt |
| **Total** | **- 6%** | **- 0.5 Mt** |

Notwithstanding progress to date, particularly in the residential sector, Ireland's emissions reduction from buildings since 2005 is well below that of countries such as Denmark, Austria and Finland, and our associated $CO_2$eq. per person is greater. Households account for around a quarter of the energy used in Ireland and are also responsible for a quarter of the energy-related $CO_2$ emissions.

Furthermore, Irish homes use 7% more energy than the EU average, and emit almost 60% more $CO_2$ than the average EU home.[26] Currently, our buildings are 70% reliant on fossil fuels, and over 80% of our homes and other buildings assessed for their BER have a rating of C or worse.

**Table 13.3** – *Built Environment GHG Emissions International Comparisons, 2018* [27]

| | Ireland | Denmark | Austria | Finland | EU 27 |
|---|---|---|---|---|---|
| **Share of Total GHG** | 12.7% | 5.6% | 10% | 4.5% | 12.1% |
| **Emissions, $CO_2$eq. per person** | 1.6 t | 0.5 t | 0.9 t | 0.5 t | 1.0 t |
| **Change Since 2005** | -14.1% | -45.2% | -37.9% | -37.3% | -21.4% |

[24] https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-Irelands-Greenhouse-Gas-Emissions-Projections-report_2020-2040.pdf

[25] https://www.cso.ie/en/releasesandpublications/er/dber/domesticbuildingenergyratingsquarter12021/

[26] SEAI (2018), Energy in the Residential Sector 2018 Report

[27] EEA Annual European Union greenhouse gas inventory 1990–2018 and inventory report 2020

In order to deliver the most efficient pathway to reach our overall national emissions reduction targets for 2030, we must reduce our built environment sector emissions to 4-5 Mt $CO_2$eq. by 2030.

This will require the introduction of a range of further measures, in addition to those already committed to in the 2019 Climate Action Plan, including:

- Improving the fabric and energy efficiency of our existing buildings
- Rolling out zero-carbon heating solutions, predominantly heat pumps and district heating networks
- Planning for the full phase out of fossil fuels in buildings by 2050
- Progressive strengthening of building standards for all types of buildings
- Promoting the use of lower carbon alternatives in construction
- Promoting behavioural change in how households use energy

**Table 13.4 –** *Required Level of Decarbonisation in the Built Environment*

| Sub-sector | 2018 Emissions | 2030 Required Emissions Based on CAP 2021 |
|---|---|---|
| **Residential** | 7 Mt | 3.5-4.5 Mt |
| **Commercial** | 0.9 Mt | 0.5 Mt |
| **Total** | **7.9 Mt** | **4-5 Mt** |

**Table 13.5 -** *Potential Metrics to Deliver Further Abatement in the Built Environment*

| Key Metrics | KPI 2030 | Additional Abatement Impact, $MtCO_2$eq. |
|---|---|---|
| **Core Measures** | | |
| Strengthen NZEB requirements for new dwellings to effectively ban fossil fuels in new homes | +280,000 new homes without fossil heat[1] | ~0.2 |
| Ramp-up zero emissions heat in commercial buildings | 50,000 buildings | ~0.3 – 0.4 |
| Increase targets for roll-out of district heating | Up to 2.7 TWh of district heat supplied | ~0.3 |

## 13.2 Targets

**To meet the required level of emissions reduction, by 2030 we will:**

- Effectively phase out the use of fossil fuels for space and water heating in all new buildings
- Plan for the phase out of fossil fuels in existing buildings
- Complete 500,000 residential retrofits to achieve a B2 BER/cost optimal equivalent or carbon equivalent
- Install 680,000 heat pumps in residential buildings (of which 400,000 to be installed in existing buildings)
- Deploy zero-carbon heating to the meet the needs of 50,000 typical commercial buildings
- Deliver up to 2.7 TWh of district heating, with the exact level to be informed by the outcome of the National Heat Study
- Develop the calculation framework and databases in order to set performance standards to promote the construction of low-carbon technologies on a phased basis

## 13.3 Measures to Deliver Targets

### 13.3.1 A New Retrofit Delivery Framework

The commitment to deliver the equivalent of 500,000 homes retrofitted to a BER of B2/cost optimal or carbon equivalent, and the installation of 400,000 heat pumps in existing homes, by the end of 2030 is a key element of our strategy to decarbonise the residential sector. Currently, almost half of the Irish housing stock has a BER of D1 or worse, and only 10% is B2 or better. In order to meet the targets set, it will be necessary to bring 40% of homes up to a BER B2 or better standard, and to improve the energy rating of a significant portion of the remainder of the residential building stock.

The Government's approach to achieving these targets is built on the following four pillars:

- Driving demand and activity
- Financing and funding models
- Supply chain, skills and standards
- Structures and governance

Detail on initiatives under each pillar is set out in Chapter 14.

### 13.3.2 Phasing out Fossil Fuels by 2050 in Buildings

In order to reach net zero, an almost complete phase out of fossil fuels in the building sector will be needed. It is imperative that these signals are given with sufficient notice so that industry, consumers and regulators can prepare for the appropriate phasing out of fossil fuel use, and we avoid consumers investing in technology that will need to be phased out before its economic life has been reached. The SEAI's National Heat Study will provide the detailed pathway, the identification of alternative heating sources by use type, and the emissions reductions required. The process of phasing out fossil fuel for heating must consider the needs of households in energy poverty.

A range of regulatory tools, supports and disincentives are in place across various European countries that could be modelled in Ireland, including retrofit programmes similar to the national retrofit programmes in Germany, phasing out gas networks at a neighbourhood level in the Netherlands, widespread district heating from waste heat in Denmark, and the ending of sale of kerosene for heating in Upper Austria in 2035.

We will identify the required actions to progress this objective in 2022 and these will be reflected in Climate Action Plan 2022.

### 13.3.3 Decarbonising Our Commercial Buildings

Commercial buildings include offices, retail outlets, warehouses, and buildings used by the hospitality sector. The SEAI estimates that there are approximately 136,000 commercial buildings in Ireland, of which 50% are owner-occupied. Hospitality buildings are the largest user of fossil fuels in this sector. The SEAI's National Heat Study will provide information that will allow us to develop long-term policies and supports for the commercial sector. Viable solutions in the immediate term are the retrofit of buildings, electrification of heat sources, and introduction of district heating. The skills in building retrofit, and in the installation of low-carbon technologies, that are required by the residential sector are equally applicable to the commercial sector.

Measures to support and incentivise the increased energy efficiency and decarbonisation of commercial buildings include:

- Supporting businesses in retrofitting their premises and moving away from fossil fuel-based heating sources
- Continuing to develop and implement a suite of services such as energy audits, technical supports, training and advice
- Acting on the outcome of the SEAI's National Heat Study, which will inform the development of targeted future policies and supports for the commercial building sector
- Maintaining a regime of Accelerated Capital Allowances (ACA) for energy efficient equipment, which is supporting the reduction of energy use in the workplace, and the awareness of energy efficiency standards in appliances and products
- Providing capital funding which, subject to the availability of Exchequer resources, will support the decarbonisation of the commercial buildings sector
- Implementing a revised Energy Efficiency Obligation Scheme (EEOS) from 2022, to support energy users (financially or otherwise) to implement energy saving practices or to carry out energy upgrades on their properties
- Building on the OPW/SEAI pilot project for the retrofitting of traditional/historic buildings to roll out a sustained programme of retrofitting for Ireland's public sector building stock

### 13.3.4 District Heating

District heating offers the potential to supply low- and zero-carbon heat to homes, businesses and public buildings from a central source. Work is underway to inform the development of district heating policy, including the completion of the comprehensive assessment to support the rollout of district heating in Ireland, and the finalisation of the National Heat Study. In addition, there are two district heating projects in development in Tallaght and Dublin City.

We will:

- Establish a system of governance for the development of district heating policy
- Conduct appropriate research to inform and support the rollout of district heating in Ireland
- Develop a regulatory framework to protect consumers and suppliers, and to ensure that district heating is developed in a structured way
- Ensure that national, regional and local planning frameworks encourage and facilitate the development of district heating, and facilitate zoning of suitable areas for district heating based on the SEAI National Heat Study
- Identify appropriate financing mechanisms to support the delivery of district heating projects, including appropriate financial incentives similar to the retrofit grant programs
- Update relevant regulatory and legislative tools to enable the roll out of district heating infrastructure

### 13.3.5 Geothermal Heating

In 2020, we published *'Geothermal Energy in Ireland – A Roadmap for a Policy and Regulatory Framework'*, and *'An Assessment of Geothermal Energy for District Heating in Ireland'*.[28] In conjunction with the National Heat Study, this analysis will also inform the development of geothermal energy in Ireland, in particular identifying locations most suited to the deployment of district heating.

We will develop a robust regulatory framework to address issues such as ownership, licencing for exploration, development and production, and reporting. The development of policy on geothermal energy commenced in 2021 with implementation to commence in 2022.

[28] gov.ie - Geothermal Energy in Ireland - A Roadmap for a Policy and Regulatory Framework (www.gov.ie)

### 13.3.6 Standards for New Buildings and Renovations

The introduction of NZEB for new dwellings has resulted in the effective phasing out of fossil fuels as the heat source. We will continue to see the effects of high regulatory standards as new building construction gains momentum towards delivering the targets set out in *Housing for All*. As technology and construction are constantly evolving, policy and regulation must also evolve, and continue setting high standards and targets in relation to construction and materials to ensure that we can achieve a climate neutral built environment by 2050.

We will:

- Review NZEB and cost optimal calculations within our building standards
- Review energy efficiency standards for major renovations for domestic and commercial buildings, subject to the results of the cost optimal review. This will act to promote widespread installation of zero-carbon heating systems to replace fossil fuel heating during major renovations
- Build on the detailed sectoral analysis of the National Heat Study, developing proposals for regulatory options to achieve the complete phase-out of fossil fuel heating throughout our building stock in line with our net zero climate objective
- Increase the number of homes, businesses and rental properties with BERs and a Display Energy Certificate as a precursor to regulating for a minimum level of BER upgrade
- Develop mechanisms that take into account appropriate triggers, such as Government-funded schemes, and potential negative impacts to the supply of rented properties to the market
- Research and develop alternatives to traditional building materials, and the increased use of low carbon materials in construction
- Introduce life-cycle assessment requirements for buildings and construction products and processes
- Publish a standard recommendation for the design, installation, commissioning and maintenance of solar PV panels in new and existing dwellings
- Develop a certification scheme for Standard Recommendation 54 – Energy Efficient Retrofit of Dwellings, to ensure that energy upgrades of buildings are carried out according to best practice
- Supporting the SEAI through the registration of insulation installers for the retrofit of buildings, reducing the carbon emissions of buildings

The forthcoming National Policy on Architecture has, as one of its objectives, the design of places for climate neutrality, climate resilience, circularity and sustainability. The policy will prioritise and support the integration of sustainable practices in architecture with respect to new construction, and the reuse, refurbishment and conservation of existing structures, as flexibility and adaptability are essential to environmental sustainability.

Traditional buildings occur in the residential, commercial and public sectors, and it is estimated that some 18% fall into the traditionally built category. Because some approaches to energy insulation retrofit are not suitable for these buildings, a retrofitting guidance document for these types of buildings is currently being developed.

In the residential rental sector, the incentives to invest in energy efficiency upgrades are misaligned between landlords and tenants, which impacts negatively on the energy performance of the sector. This complex problem, referred to as the split incentive issue, is seen in many countries. New policies and measures will be required to address the split-incentive, and increase the number of rented properties undergoing energy upgrades. These initiatives will be informed by the findings of a public consultation held last year. It will be important to strike the right balance between ensuring a sufficient supply of rented accommodation, and taking action to ensure that those living in rental properties can participate in the retrofit programme. *Housing for All* commits the Government to taking action in this area.

Policies and measures are also required to address the split incentive issue in the commercial sector, where 50% of building users in that market are not building owners.

### 13.3.7 Promoting Low Carbon Construction

We are committed to working with industry stakeholders to increase the use of low carbon materials and technologies in the construction and renovation of buildings in Ireland, informed by evolving EU standards and by best practice in other jurisdictions.

Recent experience with defective materials in new home construction underlines the need to take a robust performance-based approach to the adoption of low-carbon materials. Alternative materials must meet the requirements of all parts of the building regulations, including requirements relating to durability, fire safety, structure, and resistance to moisture.

We will base our approach on environmental certification, and a framework for calculating the embodied carbon of a building, taking into account the outcome of the review of the EU Construction Products Regulation, with a view to the implementation of Basic Works Requirement 7 'Sustainable Use of Natural Resources' (BWR7) and the environmental certification of construction products.

The SEAI has commissioned a life-cycle analysis study to compare the contribution of different construction materials to the embodied carbon in buildings. Building on this work, and other inputs, we will develop a framework methodology as an essential step towards the phased implementation of a performance-based approach to the amount of embodied carbon that is included in a building project.

Our approach will include distinct steps for demonstration, certification, standardisation, and commercialisation of construction products. This will include the research and development of alternatives to traditional building materials and the increased use of low carbon materials in construction. It will also allow for the decarbonisation and re-certification of existing construction products, when lower-carbon manufacturing processes are implemented.

In line with its leadership role for the public sector, the OPW is currently developing a roadmap to promote the use of low carbon building alternatives in construction, and we will identify opportunities to locate and build an exemplar public building using best available sustainable materials and, in particular, buildings using wood.

## 13.4 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| **Phase out of Fossil Fuel Heating** | |
| 182 | Carry out research to inform the development of options, policies and measures to decarbonise the heating and cooling sectors to 2050 |
| 183 | Develop proposals to achieve complete phase out of fossil fuel heating throughout our building stock in line with our climate neutrality objective |
| **Decarbonising Commercial Buildings** | |
| 184 | Develop and enhance initiatives to educate and enable organisations to contribute to our national energy and emissions targets |
| 185 | Develop an approach to retrofit commercial buildings |
| **District Heating** | |
| 186 | Support the delivery of district heating projects under the Climate Action Fund |
| 187 | Establish a system of governance for the development of district heating policy |
| 188 | Conduct appropriate research to inform and support the growth and development of district heating in Ireland |
| 189 | Develop a regulatory framework to protect consumers, and to ensure that district heating is developed in a structured way |
| 190 | Ensure national, regional and local planning frameworks encourage and facilitate the development of district heating where appropriate to facilitating compact urban development |
| 191 | Identify appropriate financing mechanism to support the delivery of district heating projects |
| 192 | Assess the viability of district heating systems within higher density urban/peri-urban developments through a demonstration project |
| **Geothermal Heating** | |
| 193 | Develop a policy and regulatory framework for geothermal energy to support its use as a secure, environmentally sustainable and cost-effective source of renewable energy |
| **Standards for New Buildings and Renovations** | |
| 194 | Undertake regulatory review of cost optimal performance requirements for Part L (Conservation of Fuel and Energy) of the Building Regulations |

| Action Number | Action |
|---|---|
| **Promoting the Uptake of Low Carbon Construction** | |
| 195 | Support the current review by the European Commission of the Construction Products Regulation and proposed implementation of Basic Works Requirements 7+ for sustainability of construction products |
| 196 | Develop a framework methodology and certification scheme for products, as an essential step towards implementing a performance-based approach on a phased basis for measuring and limiting the embodied carbon emissions of building projects and construction products |
| 197 | Work with industry stakeholders to increase the use of low carbon materials, taking into account international best practice |
| 198 | Develop an embodied carbon Building Rating calculation methodology |
| 199 | Support the development of a tool for early design stage comparative analysis of embodied carbon in typical Irish construction typologies |
| 200 | Design and construct two exemplar public sector buildings using alternative construction techniques and materials, and monitor their performance |
| 201 | Pilot project to assess the adaptive re-use potential of existing traditionally built structures as residential accommodation |
| **Driving Demand Reduction** | |
| 202 | Evaluate potential for further emissions savings through changing consumer behaviour to lower household heat demand |
| **Adaptation** | |
| 203 | Develop specific climate maps and data for use in building design to enhance resilience in support of climate change adaptation |
| 204 | Assess and monitor climate impacts on heritage sites and identify threatened heritage sites |
| 205 | Cooperate actively and share knowledge with international partners and climate-proof planning procedures for heritage properties |
| 206 | Build public awareness of the risks of climate change (in general and for heritage) and of efforts to mitigate it and adapt to it |
| 207 | Integrate climate change adaptation into all heritage-management plans and policies as these are updated |

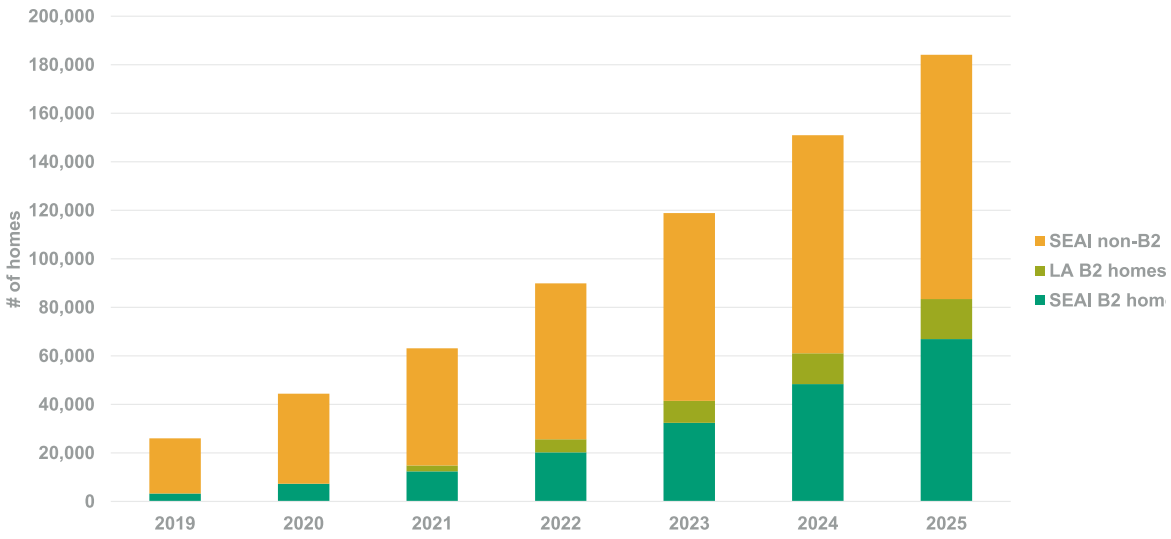
# 14. National Retrofit Plan

## 14.1 Introduction

As indicated in Chapter 13, emissions from the Residential sector must reduce from 7 Mt $CO_2$ eq. in 2018 to between 3.5 and 4.5 Mt $CO_2$eq. in 2030. A comprehensive retrofit programme will be a key measure to support the achievement of this target alongside other initiatives such as the roll-out of district heating systems. This National Residential Retrofit Plan (NRP)aims to achieve the equivalent of 500,000 homes retrofitted to a Building Energy Rating (BER) of B2/ cost optimal or carbon equivalent and the installation of 400,000 heat pumps in existing homes to replace older, less efficient heating systems by end-2030.

A total of 18,400 home retrofits were completed in 2020[29]. However, just 4,000 were to a B2 standard and 1,600 installed a heat pump. We need to greatly increase the depth and volume of retrofits as well as the number of heat pumps installed in order to deliver the required emissions reductions.

**Figure 14.1**




As indicated in Figure 14.1, it is estimated that between 2019[30] and 2025 almost 185,000 home energy upgrades will be delivered with over 83,000 to a B2/cost optimal level. When the carbon savings from the non-B2 upgrades are included, this is the equivalent of 120,000 B2 upgrades over the period. This means that we will need to deliver, on average, approximately 75,000 B2-equivalent home upgrades per year from 2026 to 2030 to achieve the overall target of 500,000 by 2030[31].

This will require hundreds of thousands of homeowners to make the decision to invest in decarbonising and making their properties more efficient as well as the State playing a central role through the retrofitting of social homes. It will necessitate a larger retrofit sector with the capacity to deliver much higher numbers of retrofits to the required standard as well as approaches to financing that can fund the necessary work.

[29] Activity was impacted due to COVID-19 related restrictions

[30] The 500,000 retrofit targets were set in the 2019 Climate Action Plan

[31] By 2025, it is expected that 88% of B2 upgrades (excluding the Solar PV scheme) will involve installation of a heat pum

### 14.1.1 What is a Retrofit?

A retrofit or home energy upgrade enhances the energy performance of a home. A deeper home energy retrofit involves carrying out multiple energy upgrade measures together, and may include wall and attic insulation, replacing windows and doors, addressing air tightness and ventilation and installing an efficient renewable heating system (such as a heat pump), as well as other renewable energy technologies (such as solar PV panels).

### 14.1.2 What is a Heat Pump?

A heat pump system harnesses energy from free renewable sources outside the building, in order to both heat the house and produce its hot water[32]. Heat pumps are an environmentally friendly, decarbonised and extremely efficient alternative to oil, gas and solid fuel home heating systems. The most common heat pumps work by converting energy from the air outside of the home into useful heat inside, in the same way a fridge extracts heat from its interior.

### 14.1.3 Multiple Benefits of Retrofit

As recognized by the International Energy Agency (IEA), the traditional focus on energy savings as the main goal of energy efficiency policy has, at times, led to an underestimation of the full value of energy upgrades. Retrofit/home energy upgrades can bring multiple benefits, such as enhancing the sustainability of the energy system, supporting strategic objectives for economic and social development, promoting environmental goals and increasing prosperity. As such, the benefits of a home energy upgrades and decarbonisation include:

- Warmer and more comfortable homes
- Cheaper to run homes which helps to alleviate energy poverty
- Improved health and wellbeing, particularly for the young and elderly, through improved internal dwelling temperatures and air quality
- Improved asset values
- Reduced GHG emissions and air pollution
- Increased economic activity and high-quality jobs created throughout the country
- The ability to heat our homes using the electricity generated through renewable energy projects in Ireland

### 14.1.4 The Role of Retrofit in Our Economic Recovery

This NRP is a key element of the Government's plans for economic recovery. The significant budgets now provided for retrofit (as outlined in section 14.3 below) will help to stimulate the creation of high-quality jobs throughout the country and support the development of supply chains for products and services that will be required to transform Ireland's housing stock. This will help to support a just transition. The Government's investment and prioritisation of this sector of the economy is also intended to stimulate innovation which can drive down costs as well as develop knowledge and expertise that can lead to export opportunities.

[32] Electrical heat pumps use a compressor to draw heat from a low temperature source, such as external air or ground to heat the building interior. While conventional heating systems such as storage heaters and boilers cannot produce more heat than that contained in their fuel source, a heat pump typically will produce three to four units of heat for every unit of electricity

### 14.1.5 Designing Our Approach

Experience internationally and in Ireland makes it clear that there is no single policy or measure that can cause the required increase in the rate of retrofit. A broad range of policy levers must instead be implemented alongside clear market signals. This NRP provides an outline of the key elements of our approach for the remainder of 2021 and 2022, with some clear signals for later years. This will enable the development and expansion of the retrofitting supply chain capacity as we progress to the middle of the decade followed by a further scaling up of activity in later years.

It is important to note that these actions are just the next steps. The Department, in conjunction with the Sustainable Energy Authority of Ireland (SEAI) and a new National Retrofit Steering Group, will continue to track and monitor progress against our national targets, evaluate the impact of measures introduced and make adjustments to enhance our approach as we go. This will inform annual residential retrofit plans to include additional measures such as further regulatory and taxation initiatives.

A systematic approach has been taken in determining the measures for inclusion in this Plan. This involved firstly identifying the main barriers to retrofit and then determining the initiatives necessary to address those barriers. This process was informed by:

- Engagement, consultation and workshops with homeowners, the supply chain and financiers
- Collaborative working across relevant Government Departments and Agencies
- Reviewing national and international experience of retrofitting programmes
- The Government is committed to continuing to work in a collaborative way with stakeholders in relation to the implementation of the Plan.

The initiatives in this Plan were also guided by a number of key principles:

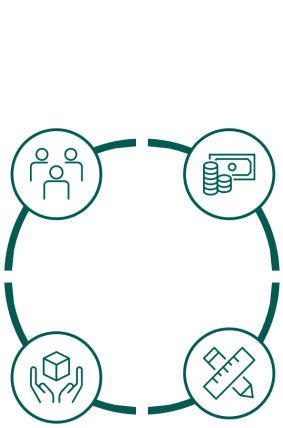
- **Fairness** – ensuring fairness to all and supporting a just transition
- **Universality** – covering all housing types and consumer segments
- **Customer-centric** – designing customer-centric solutions to reduce the costs and complexity, making the process easier for those investing in retrofit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

These principles will continue to apply as we move from the design stage to the implementation stage.

### 14.1.6 The Four Pillars of Our Retrofit Plan

The NRP is built on four key pillars as outlined in Figure 14.2 below with actions and initiatives flowing from each. Collectively, these actions will create the conditions necessary for our targets to be achieved.

**Figure 14.2** – *Pillars of the National Residential Retrofit Plan*



**1. Driving demand and activity**

Stimulate demand by building confidence in quality, ensuring value for money and simplifying the customer journey

**2. Financing & funding**

Clarify Exchequer financial commitment to residential retrofit and introduce measures to make home energy upgrades more affordable for households

**3. Supply chain, skills and standards**

Expand the capacity of the supply chain, introduce measures to increase the number of skilled workers while maintaining quality

**4. Structures and governance**

Ensure that the required structures and governance arrangements are in place to drive delivery

The success of our approach depends on ensuring that effective policy action is taken, and balanced progress is made under each pillar simultaneously. For instance, there is little point in driving demand when the supply chain is not sufficiently developed to satisfy this demand. The importance of this cannot be overstated – bottlenecks could otherwise emerge hampering progress and exacerbating the existing imbalances within the retrofit sector.

This points to the need for an all-of-Government approach to implementation of this Plan. It is only by taking such an approach that we can ensure alignment of priorities and actions with a sharp focus on delivery.

The initiatives to be taken under each pillar are described in the following sections.

## 14.2 Pillar 1 – Driving Demand and Activity

While many homes are retrofitted each year in Ireland, experience indicates that a range of new measures will be required in order to sufficiently increase demand from homeowners. Engagement with stakeholders as well as SEAI research has identified several key challenges and barriers to achieving sufficient demand for deeper retrofits. These align with the barriers seen in other jurisdictions and include:

- A lack of awareness of what retrofit is and the multiple benefits it delivers
- A lack of familiarity with some technologies such as heat pumps
- Homeowners being overwhelmed by the apparent complexity and number of decisions involved
- Affordability and the high upfront cost of works
- Hassle throughout the retrofit experience from the grant application phase, through to the delivery of works in the home

The planned approaches for addressing these barriers and increasing the motivation of homeowners to proceed with retrofits are outlined below. These initiatives will be supported by other clear market signals, such as the increases in the carbon tax planned for the years to come.

### 14.2.1 A National Awareness and Demand Generation Campaign

Effective communication of the multiple benefits of retrofit and information on various technologies and supports available will be a core building block for driving demand for retrofit. A comprehensive national awareness and demand generation campaign will take place throughout Q4 of 2021.

This campaign will be informed by qualitative and quantitative research among homeowners as well as the research insights and expertise of the SEAI's behavioural economics team. The campaign will emphasise the comfort, financial and environmental benefits of home energy upgrades and will inform homeowners about the availability of relevant supports including free services for eligible energy poor homes. The relevant sections of the SEAI website will also be revised to allow homeowners to more easily determine the right grant scheme for their particular circumstances.

Community-based social marketing approaches will also be deployed with events taking place in locations around the country. These targeted marketing campaigns, underpinned by behavioural economics insights, will take place in 2022 and will build on existing initiatives such as the heat pump ready homes campaign. Engagement with the supply chain will also take place.

### 14.2.2 Provide a personalised roadmap for homeowners on how to upgrade their home to a BER B2 in the new BER Advisory Report

While media campaigns help to inform homeowners broadly on the benefits of retrofit, the recently launched BER Advisory Report will provide personalised home energy upgrade advice for their home.

When a building is assessed by an independent BER assessor, a detailed Advisory Report is now generated and provided to the homeowner. This focuses not just on the present performance of the building but also on its potential for improved performance. The reports include information for homeowners on how to upgrade their home to a target of a B2 energy rating (or better) and identify heat pumps as the preferred solution where appropriate.

The new advisory report will help to:

- Make homeowners more aware of the potential of their home, and the steps and supports to get them there
- Drive investment decisions by making the options clear and uncomplicated, and making it easier for the homeowner to act on investment decisions by clearly presenting the next step(s) in the upgrade process
- Maximise the investment in energy performance to reach the highest performance standards possible

In addition to the BER Advisory Report, a new interactive homeowner BER tool will be launched by SEAI to inform homeowners of the impact a BER has on comfort levels, energy costs and carbon emissions in the home. Based on the information provided, the tool will give an estimate of the energy usage in the home, approximate energy costs, carbon emissions, comfort, and air quality levels. This information will act as a high-level guide for homeowners, prompting them to consider carrying out a BER assessment and seek tailored advice on upgrading their home.

### 14.2.3 A network of registered retrofit one-stop-shops will be developed to simplify the customer journey and enhance confidence

Research indicates that homeowners can feel overwhelmed by the numbers of decisions associated with retrofitting their properties and this can be compounded by a lack of independent advice as well as a lack of trust in contractors. Homeowners can also experience hassle associated with the process from coordinating contractors, disruption in the home and the paperwork associated with applying for grants.

A core element of our Retrofit Plan is the development of a network of registered One-Stop-Shops (OSSs) to simplify the customer journey as well as enhancing quality and confidence. These OSSs will offer homeowners all the services required for a complete home energy upgrade. These registered private operators will manage the entire process for homeowners, from the initial assessment of the home, through to the final BER. The range of services to be provided by the OSSs includes:

- *Home energy assessment* – a technical surveyor will advise on the best upgrades to bring homes to a B2 energy rating or better
- *Grant application* – they will apply and accept all SEAI grants for the project and deduct the grant values upfront from the cost of works
- *Project management* – they will manage all the works in the home and ensure quality checks are carried out
- *Contractor works* – they will assign a contractor to carry out the works on the home
- *Follow up BER* – a registered BER Assessor will complete a post-works BER assessment and publish the certificate

- *Finance Options* – some OSSs can offer finance option through their finance partners

The OSSs will also bring together groups of homes for retrofit, delivering economies of scale and facilitating new efficiencies.

### 14.2.4 A new National Retrofit Scheme (One-Stop-Shop Service) will be launched

Since 2000, over 450,000 homeowners have upgraded their homes with support from SEAI grant schemes, representing nearly one home in four across the country. SEAI grant schemes will continue to be a central element of the Government's strategy to encourage homeowners to retrofit their homes and to support the development of the network of OSSs. These schemes will be enhanced and improved to ensure alignment with our national targets and attractiveness to homeowners. The flagship development in this regard will be a new National Home Retrofit Scheme (NHRS) One Stop Shop Service which will focus on the development and expansion of the OSS market, as well as the delivery of B2 retrofits with heat pumps.

This scheme will also facilitate continuous, year-round working and multi-year planning, which has long been identified as a crucial requirement by the supply chain and homeowners.

To support the launch of the NHRS, the SEAI is developing a formal registration process for OSSs as well as multi-annual contract frameworks. These contract frameworks will include service level agreements between the SEAI and the OSSs, which will be reviewed quarterly to ensure the OSSs are meeting the necessary customer and quality performance indicators, and that their project pipeline is developing at the agreed rate. In parallel, SEAI processes and administration are being significantly streamlined. This will be of benefit to homeowners and assist the cash flows in OSSs. Additional detail on the registration system for OSSs is set out in section 14.4 below.

The existing SEAI grant schemes will be aligned with the NHRS to make it easier for homeowners to clearly identify the best route to get a home energy upgrade based on their circumstances.

### 14.2.5 Sustainable Energy Communities will be used to drive Community Activation

Sustainable Energy Communities (SECs) were first set up in 2015 to support communities in the transition to a low carbon society. Under this NRP, SECs will be supported by Government to continue and expand their roles as 'activators' in their community. There are currently over 580 SECs in the SEC Network with a target to grow this number to 1,500 by 2030. Based on feedback from the network of communities, and in order to facilitate more local sustainable energy activation, a targeted and more streamlined strand of the Communities Grant is being developed. A call for projects under the Communities Energy Grant Scheme will take place in Q4 2021, and the new strand of the scheme focused on smaller projects for retrofitting homes will also be introduced in 2022. The new strand will remain available on an ongoing basis for SECs and will provide additional time for projects to be completed.

### 14.2.6 Those least able to afford to retrofit will be supported to participate

In line with the design principles of fairness and universality, there is a need to ensure that all housing types and consumer cohorts can participate. Specific measures to stimulate retrofit activity among households vulnerable to energy poverty and Approved Housing Bodies (AHB), and in the private rented sector will, therefore, also be required.

As well as significant income supports through the Department of Social Protection[33], Government funds free retrofits for lower income households through the SEAI Warmer Homes Scheme. Funding for this scheme has increased significantly in recent years with a budget of over €100 million in 2021.

To date, over 143,000 homes have received free upgrades under the scheme. In the first six months of 2021, the average value of the energy efficiency measures provided per household was approximately €17,100.

Recommendations on the implementation of changes to the scheme to ensure that it better targets those most in need will be finalised this year. B2 retrofits will be targeted and heat pumps will also be installed in a number of Warmer Homes Scheme upgrades as part of a pilot to gather evidence to inform the appropriate process and approach to increasing the number of B2 upgrades and heat pump installations under the scheme.

In the residential rental sector, the incentives to invest in energy upgrades are misaligned between landlords and tenants, which impacts negatively on the energy performance of the sector. This is a complex problem seen in many countries. A key step associated with addressing this issue will be the introduction of a minimum BER rating requirement for private rental properties where feasible from 2025, in line with the commitment in the *Housing for All Plan*. SEAI grant support will also continue to be made available to help landlords to retrofit their properties as well as the planned low cost loan scheme for retrofit (see Section 14.3 below).

The Government's *Strategy to Combat Energy Poverty* was published in 2016. The Strategy set out several actions to alleviate the burden of energy poverty on the most vulnerable in society. The focus of the strategy was on high impact actions which aimed to make a real difference to the lives of those in energy poverty. A review of the implementation of this strategy will be completed and will inform next steps in relation to the development of a new strategy. The research findings of the Warmth and Wellbeing Study will also be published.

### 14.2.7 The Local Authority Retrofit Programme will be expanded

Approximately 36,500 local authority homes will be retrofitted in the next decade under the Local Authority Retrofit Programme. These homes will be brought to a B2/cost optimal standard with a heat pump. This programme of work will not only benefit Local Authorities in assisting them in the upgrade and maintenance of their housing stock, but will also directly benefit householders with an enhanced level of comfort and lower fuel costs.

In 2022, the Energy Efficiency Retrofitting Programme will see approximately 2,400 homes nationally being upgraded to a B2 or equivalent standard with a significant increase in funding support to Local Authorities to €85 million.

### 14.2.8 The new Energy Efficiency Obligation Scheme will be launched

An energy efficiency obligation scheme (EEOS) is a legal requirement placed on energy suppliers and/or distributors ('obligated parties') to help energy users save energy, including by carrying out energy upgrades in their property. In doing so, obligated parties (OPs) deliver the savings they are required to make across a number of sectors (e.g. commercial, residential, and public sector), through their own programmes and/or by working with the existing Government energy upgrade schemes offered through the SEAI.

Ireland has used an EEOS to help deliver on its binding energy savings obligation under the Energy Efficiency Directive since 2014. The 2014-2020 EEOS supported energy efficiency actions in more than

[33] Government is providing an estimated €300 million in 2021 for a Fuel Allowance payment as well as an electricity or gas allowance under the Household Benefits scheme at an estimated cost of €265 million in 2021

300,000 dwellings. The scheme to operate from 2022-2030 has been redesigned to align more closely with the commitments of the *Programme for Government*, particularly in relation to the residential sector, thereby better supporting the delivery of Ireland's broader energy and climate ambition and targets.[34]

## 14.3 Pillar 2 – Financing and Funding Models

Evidence shows that a key barrier to scaling up the number of home energy upgrades is the financial constraints of households. These are exacerbated by high upfront costs of home energy upgrades and long payback periods associated with such investments. Lack of funds also curtails the number of retrofit measures homeowners choose to implement at the same time.

The work required and associated cost of bringing a home to a BER B2 is determined by a number of factors including: the size and type of home (apartment, terrace, semi-detached, detached, bungalow); walls type (solid or cavity); as well as the age and starting condition of the home (when built and any works carried out subsequently). For instance, the average cost of upgrading a B3-rated house will be less than the cost of upgrading a similarly sized G-rated house. In the same way, the cost of installing a heat pump is dependent on variables including building type and size as well as the extent of re-plumbing required.

For that reason, the calculation of an average cost for the future programme of work is challenging because we do not have certainty on which 500,000 houses will be retrofitted over the coming decade. However, estimates compiled for the Department of the Environment, Climate and Communications indicate that the cost to retrofit the fabric of a house to a BER B2 and install a heat pump can range between €14,000 and €66,000. Using a cross-section of the entire housing stock, this would imply a total cost of up to €28 billion[35] for the retrofit programme. These figures show the extent of the challenge as well as why affordability is frequently cited as the biggest barrier to retrofit among homeowners. Other financing related challenges to be addressed in this Plan include:

- A perceived absence of a multi-year funding commitment from Government
- Substantial private funding will be required
- A different mix of funding models will be required

While SEAI grant schemes referred to in the demand section above will clearly assist with addressing affordability issues for homeowners, a range of other supporting measures are planned and outlined below.

### 14.3.1 The NDP has provided clarity on the Exchequer multi-annual funding commitment for retrofit

The Government recently finalised its review of the National Development Plan (NDP) allocations for retrofitting. This review resulted in an unprecedented level of investment in retrofit. €5 billion of additional carbon tax revenues have been allocated to support residential retrofit to 2030. Crucially, the NDP also provided clarity on the annual allocations for the coming years as well as the total allocation to the end of the decade, giving the sector the confidence to plan and expand. It will also facilitate grant funding being made available across calendar years, thus enabling year-round business continuity. The annual allocations set out in the table below will primarily be used to fund the expansion and enhancement of SEAI residential and community retrofit schemes, including energy poverty schemes as well as other initiatives to support retrofit. The consistent and very significant increase in the annual allocations will help the sector to grow in a sustainable way.

[34] A transition scheme is in operation for 2021 with the newly designed EEOS commencing on 1 January 2022.

[35] The €28 billion euro estimate is based on the total cost to the end of 2030. A house retrofitted in 2030 will cost more than a similar house this year due to construction inflation. For that reason, the estimate of the total cost incorporates construction inflation (estimated at 7% per annum.

**Table 14.1** – *NDP Annual Allocations for Retrofit*

| Year | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|---|
| Planned allocation (million) | €202 | €291 | €380 | €469 | €641 | €898 | €1,257 | €1,760 | €2,000 |

As indicated in the table, further funding in addition to the €5 billion will be available for residential retrofit, predominantly in the second half of the decade, funded by the overarching DECC NDP allocation of a minimum of €12.9 billion to 2030. This means that the overall allocation for residential retrofit will be approximately €8 billion to 2030. Additional funding will also be available to fund the DHLGH's Local Authority Retrofit Programme.

### 14.3.2 Further research will be carried out to understand the needs of homeowners

Irish consumer research shows that almost half of the respondents would consider taking out a loan to pay for energy efficiency improvements. The findings have shown that grants encourage households to undertake a home energy upgrade while low-cost finance helps encourage people to choose a deeper, more comprehensive package of retrofit measures. This reinforces the argument that a combination of different funding approaches, suitable for various consumer groups, is necessary. Additional research is currently being conducted to further develop the understanding of retrofit financing needs of the market.

### 14.3.3 A new Residential Retrofit Low-cost Loan Scheme will be launched

As mentioned above, Government has committed a significant level of funding to support retrofit in the NDP. However, it is clear that Exchequer funding alone will not be sufficient to cover the entire cost of achieving Ireland's retrofit targets and private finance will be required.

In this regard, the Government is working with the Strategic Banking Corporation of Ireland and the European Investment Bank to develop a retrofit loan guarantee scheme and associated low-cost residential retrofit loans. This project forms part of Ireland's NRRP. The part-Exchequer and part-EU funded loan guarantee will provide risk protection to retail credit institutions participating in the scheme. This will enable them to offer loans with reduced interest rates to make comprehensive home energy efficiency upgrades more affordable to households and non-corporate landlords. The project has a high market creation potential and, over time, should lead to the development by financial institutions of follow-on financing products customised to home energy upgrades and provided without reliance on Exchequer support. In this way, the scheme will contribute to developing a sustainable residential retrofit lending market in Ireland.

### 14.3.4 European Union funding will be pursued

The use of various EU-funding streams in the pursuit of the EU *Renovation Wave* agenda and Ireland's residential retrofit ambition has many potential advantages. In the period 2021-2027, European Structural and Investment Funds will support *"a greener, low-carbon Europe"* as a policy priority by promoting a clean and fair energy transition, green and blue investment, the circular economy, climate adaptation, and risk prevention and management. In addition to the EU Recovery and Resilience Facility funding already committed to the retrofit loan guarantee scheme, the Government will further examine the potential for allocating more funding from the European Regional Development Fund to retrofit supports while preparing a new generation of operational programmes.

### 14.3.5 The potential for new tax incentives for retrofit will be explored

With a view to further increasing retrofit activity levels, the potential for the introduction of an energy efficiency focused tax incentive will be also considered during the lifetime of this Plan. Past experience has shown that a dedicated tax incentive can be a catalyst for home improvement activity. A correctly designed tax break could have a similar effect on driving energy efficiency home improvements. Stakeholder engagement also suggests that this type of incentive could be an effective way to address the issue of misaligned incentives between tenants and landlords, which impedes the uptake of energy efficiency measures in the private rented sector.

## 14.4 Pillar 3 – Supply Chain, Skills and Standards

In order to achieve the required level of retrofit activity, it is essential that we develop the supply chain and ensure that we have the required number of appropriately skilled workers necessary to satisfy that demand. Building up of capacity in the market from its current levels to a point where it can deliver approximately 75,000 home renovation projects per year will require the right initiatives to stimulate and support the market to invest and attract new entrants. For this to happen, a number of challenges affecting the existing supply landscape must be addressed:

- A lack of industry certainty about Government intentions and commitment
- A shortage of workers with the necessary skills, driven by high demand in the construction sector overall and advances in building envelope and low carbon heat technologies
- The existing complex supplier journey (e.g. red tape required to receive payment for work)
- Fragmentation resulting in limited ability to engage and mobilise

As the retrofit industry transforms to accommodate much higher levels of output, quality must be maintained at a high level to sustain consumer confidence and demand. Standards and the existing quality management model will need to evolve to cope with much greater scale of activity.

The retrofit sector is going to require ongoing support through to 2030 to overcome these challenges. Much of the support is needed in the early years of this decade in order to grow the capacity of the retrofit industry to upskill, expand and innovate. Over time, supply chain supports will evolve in line with the progress made on the path towards Ireland's 2030 carbon abatement objectives.

Some of the initiatives previously mentioned under the demand and financing pillars of this Plan will simultaneously help the supply chain. For instance, the commitment of a very significant Exchequer budget for retrofit, and clarity on the annual allocations for the years to come, will provide confidence to the sector to grow, due to the resulting large and stable pipeline of work that it will support. The commencement of new SEAI grant schemes and expansion of the Local Authority Retrofit Programme will also allow year-round working. This in itself will greatly increase the capacity of the sector to deliver increased numbers of retrofits because it transforms as 6-month industry into a year-round industry. However, a range of other initiatives are planned and outlined below.

### 14.4.1 Carryout a skills forecast for the retrofit sector to 2030

The Expert Group on Future Skills Needs (EGFSN) will soon publish a report titled *'Skills for Zero Carbon- The Demand for Renewable Energy, Residential Retrofit and Electric Vehicle Deployment Skills to 2030'*. The EGFSN advises the Irish Government on the current and future skills needs of the Irish economy, as well as on any labour market issues that impact on enterprise and employment growth. The report

will analyse the nature and quantify the scale of the skills required by enterprises over the coming decade, in order to deliver on key enabling measures for the zero-carbon transition, including the energy efficient retrofit of the existing housing stock. The report will set out labour demand estimates, including at detailed occupational level, for the delivery of the Government's retrofit ambitions for the next decade. It will also set out a comprehensive suite of recommendations for the education and training system, as well as other sources of skills supply, in order meet the projected level of skills demand.

### 14.4.2 Deliver the necessary increase in upskilling, reskilling and apprenticeship supports

The Government will continue to support the development of the skills necessary to further Ireland's climate agenda, including skills associated with energy efficiency in buildings. As part of the response to the impacts of the COVID-19 pandemic, the Government expanded investment in upskilling and reskilling in areas of key skills priorities, including the low carbon transition. New specialist retrofitting training courses to support non-craft and operative roles in the retrofit sector are delivering the infrastructure required to support skills development as demand increases, including developing targeted opportunities for unemployed persons.

There has been substantial progress on delivering an infrastructure for upskilling existing craftspeople as well as other interested learners. Near Zero Energy Building (NZEB) and retrofit training is being delivered across two specialist centres, with three further centres of excellence in development. An NZEB specific train the trainer programme is in place with the first cohort due to graduate in autumn 2021. In addition to regional distribution of upskilling and reskilling opportunities, work is underway to provide blended learning and virtual reality supported training which will deliver additional flexibility in relation to geographic reach of the programmes.

Apprenticeship is well embedded in the construction sector and provides a clear opportunity to give those entering the workforce the skills required for more energy efficient construction, and to support delivery of the Government's targets in retrofitting the housing stock. In addition to scheduled reviews of curriculum content of existing craft apprenticeships, which provide a significant contribution to the range of skills required to support the transition to the zero-carbon economy, the recently launched *Action Plan for Apprenticeship 2021-2025* sets out a five-year strategy to expand the number of available apprenticeships and to embed apprenticeship as a clear choice for learners and employers wishing to upskill or reskill.

Actions under the plan will make apprenticeship visible, promote the potential of apprenticeship in new areas, and seek to support employers to increase engagement with existing apprenticeships and the development of new programmes. Doubling annual apprentice registrations to 10,000 new registrations per year by 2025 provides clear opportunity to support the development of the skillsets necessary across the retrofit industry.

Funding has been provided under *Springboard and the Human Capital Initiative* for programmes and innovation projects targeting the development of professionals in areas such as building analysis and climate adaptation; sustainable building technology; and retrofit, conservation and sustainability.

### 14.4.3 Initiatives to ensure the required number of BER assessors

There are a number of initiatives planned to ensure that the required number of registered BER assessors, to meet the scaling up of BER activity, is available. These initiatives will support both the retention of experienced assessors and the recruitment of new assessors. Initiatives include:

- The development of a new quality assurance architecture to support both a scaling-up of activity and continuous improvement
- The development of a competency framework and a continuous professional development policy to support career development
- The identification of challenges for assessors and barriers to registration
- The review and update of BER training course content and delivery to improve accessibility
- The promotion of the new advisory report, and of BER assessors as independent advisors to homeowners on improving their BER

### 14.4.4 Supports for Enterprise

It is expected that the range of measures in this plan will encourage new entrants to the retrofit market as well as incentivising existing market players to grow. However, new and expanding businesses in the retrofit sector can face challenges as they develop and expand. The SEAI will work with these businesses to encourage them to avail of the range of supports available through the Local Enterprise Offices (LEOs), which include financial supports, training programmes and mentoring.

### 14.4.5 Registration for One-Stop-Shops

Entities seeking to operate as OSSs will need to meet the criteria and standards, including core capabilities, set by the SEAI to be eligible for inclusion on the national register. OSSs will be required to provide strategic 2/3-year plans against which SEAI will enter multi-annual agreements with each OSS for home energy upgrades and ensure appropriate ongoing funding commitments are available for the support of these upgrades to the level of grant incentives published by the SEAI.

This will allow OSSs and homeowners to upgrade their homes at a time that suits them, rather than having to wait for projects to fit with open and closing periods of annual grant programmes within the SEAI as was the case previously.

An OSS needs to be able to provide a unified and cohesive offering to homeowners to upgrade their homes, with no visible handovers of customer communication or relationships within the energy upgrade project. The SEAI will monitor the performance of OSSs to ensure high quality of energy efficiency works and robust customer service in order to build consumer confidence in the benefits associated with this new retrofit delivery model. The registration of OSSs will commence by the end of 2021 with further work packages to fine-tune the new delivery system to be finalised in 2022.

The existing Community Energy Grant (CEG) Scheme will remain open as a development call and available for those project co-ordinators who are not successful in registering as an OSS. The CEG Scheme will encourage the development of a pipeline of OSS service providers.

### 14.4.6 Carry out a study into the Heat Loss Indicator criteria for the installation of heat pumps

Under SEAI grant schemes, the current Heat Loss Indicator (HLI) criterion for heat pump installation in homes is 2.3 W/K $m^2$ or less. This means that homes with a HLI greater than 2.3 W/K $m^2$ after any building fabric works are not eligible for SEAI heat pump supports. The SEAI will carry out an action-based research study with the intention of informing and providing evidence on the optimum performance from the heat pump relative to the fabric and ventilation specification and control strategies. The objective of this research is to test the efficacy of installing a heat pump in homes with a HLI of >2.3 and ≤2.6 W/K $m^2$. If proven to be effective at this range of HLI, with acceptable increases in heating bills, this could allow heat pumps to be installed in many homes that:

- Currently find it either cost prohibitive to achieve a BER B2 and achieve a HLI of 2.3 W/K $m^2$
- Are excessively disruptive to perform an energy upgrade
- Have been deemed ineligible by the SEAI for a grant for a heat pump installation when undertaking retrofit works in the past

### 14.4.7 New Standards and Guidance Documents

The National Standards Authority of Ireland (NSAI) recently published "*S.R. 50-4:2021 Building Services – Part 4: Heat pump systems in dwellings*". This document provided guidelines for the design installation, commissioning and maintenance of heat pump system. The NSAI will also publish a standard recommendation for the design, installation, commissioning and maintenance of solar PV panels in new and existing dwellings. In addition, the main guidance document on the *Energy Efficient Retrofit of Dwellings (S.R. 54)* will be updated to take account of new developments and ensure that the guidance will continue to support work being carried out in line with best practice.

A significant proportion of homes and buildings that will need to be retrofitted are "traditionally built". This term generally applies to buildings built before 1940, and includes significant numbers of Victorian and Georgian structures. It is estimated that some 18% of dwellings fall into the traditionally-built category. Uncertainty about what retrofit treatments were allowable or appropriate has contributed to a limited amount of energy efficiency retrofit on these buildings. To provide clarity and guidance on undertaking this retrofit appropriately a new Guidance document is being developed for building professionals particularly specifiers and installers. Any relevant, available SEAI retrofit supports will align with the best practice guidance when published.

### 14.4.8 Building Regulations

Building regulations continue to play a central role in driving the decarbonisation of our housing stock under this plan. The NZEB Regulations will ensure that all homes built in the future will meet our expectations in terms of comfort and functionality, while also significantly reducing energy use and $CO_2$ emissions. Since 2015, less than 4% of new dwellings installed oil boilers and approximately 85% of new dwellings built to 2019 NZEB Building Regulations installed heat pumps. It is expected the installation of fossil fuel boilers in new homes will be effectively banned by 2023.

The regulations will also help to address the legacy of older housing with poor energy efficiency performance and high levels of emissions, through the requirement that dwellings undergoing major renovations (where more than 25% of the surface area is renovated) must meet a BER B2 or cost optimal equivalent. Minimum BER standards will also be implemented, where feasible, for private rental properties commencing in 2025 in line with Energy Performance of Buildings Directive (EPBD).

Registers of competent builders will also be established by placing the Construction Industry Register Ireland (CIRI) on a statutory footing.

The development of NZEB training courses, NSAI standards and BER advisory report information will also aid compliance, in parallel with existing building control requirements.

## 14.5 Pillar 4 – Structures and Governance

The NRP incorporates actions to be delivered across a number of Government Departments and Agencies. As such, implementation will require collaboration across Government, and appropriate structures and governance arrangements are essential.

### 14.5.1 A cross-Departmental National Residential Retrofit Oversight Steering Group will be established

Reporting on the actions in the NRP will be incorporated within the reporting structures for the Climate Action Plan.

In addition, a cross-departmental steering group, chaired by DECC will be established. This group will oversee and monitor progress against our national targets and develop new initiatives as required.

### 14.5.2 Further develop and resource the SEAI as the National Retrofit Delivery Body

The SEAI has been designated as the National Retrofit Delivery Body. In this role, the SEAI will act as the lead agency in driving the delivery of our retrofit targets.

The responsibilities of the SEAI in this capacity include: driving delivery of our retrofit targets; promoting retrofit uptake through marketing campaigns; enhancing the appeal of the retrofit supports and improving the customer journey; setting standards for, and developing and registering, OSSs; increasing the number of BER assessors; monitoring and managing the quantum and quality of retrofit service provision; and supporting the supply chain in the area of retrofit.

Significant additional funding is being provided by the Government to continue to increase the capacity of the agency. The process of developing, restructuring and recruiting the necessary expertise commenced in 2021 and will continue in parallel with the delivery of the NRP.

### 14.5.3 Enhance the collection and monitoring of retrofit activity data delivered with Government support

The restructured and resourced SEAI will also help support energy policy and budgeting decisions of the Government. This will include enhanced collection and monitoring of data on retrofit activity across Government-supported retrofit. It will also continue to deliver insights from energy statistics, programme/policy evaluation and impact assessment, energy modelling, behavioural science, technology expertise, and research. This analytical basis is considered essential for driving Ireland's ambitious emissions reduction targets in the built environment sector to 2030 and beyond.

### 14.5.4 The capacity of Local Authorities to deliver their retrofit programme will be enhanced

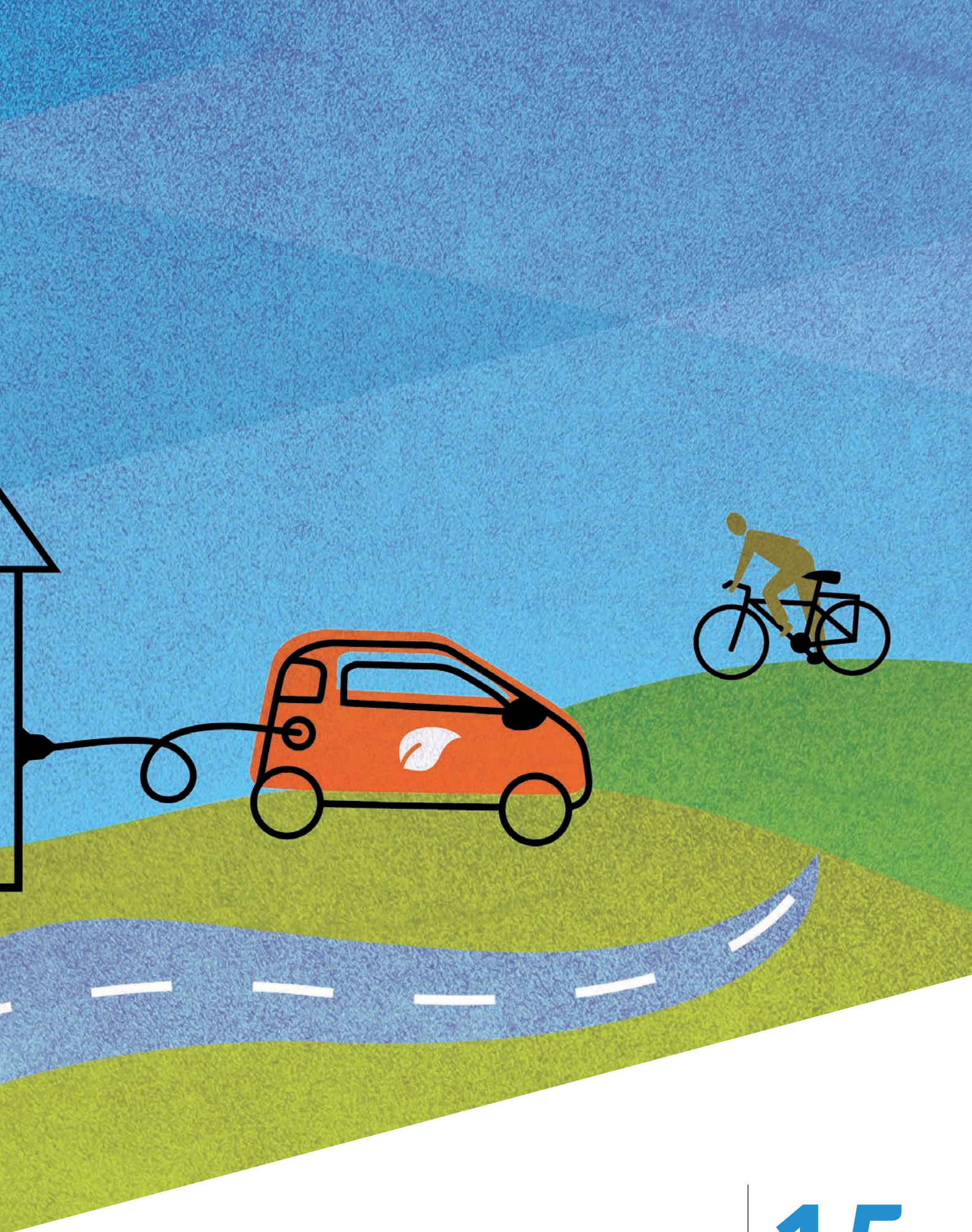
Local Authorities will continue to play a key role in supporting the achievement of our national retrofit targets, particularly through the expansion of the Local Authority Retrofit Programme. Local Authorities will be supported with increased project management support through direct funding from the DHLGH, and with advice, guidance, knowledge sharing and best practice examples from the Housing Delivery Co-ordination office based in the Local Government Management Agency (LGMA).

## 14.6 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| **Driving Demand and Activity** | |
| 208 | Implement a national awareness and demand generation campaign for residential retrofit |
| 209 | Provide a personalised roadmap for homeowners on how to upgrade their home to a BER B2 in the new BER advisory report |
| 210 | Develop a network of retrofit One-Stop-Shops to simplify the customer journey and enhance consumer confidence |
| 211 | Launch new SEAI National Retrofit Scheme (One Stop Shop Service) to drive the delivery of B2 retrofits with heat pumps and facilitate year-round working |
| 212 | Utilise Sustainable Energy Communities to drive community activation |
| 213 | Support those least able to afford to retrofit |
| 214 | Rollout of Social Housing National Retrofitting Programme in 2021 with retrofitted properties required to reach BER B2 or equivalent |
| 215 | Launch a new Energy Efficiency Obligation Scheme |
| **Financing and Funding Models** | |
| 216 | Allocate funding to residential/community retrofit from Departmental capital envelope in line with NDP funding trajectory |
| 217 | Carry out research to further understand the needs of homeowners in relation to financing retrofit |
| 218 | Introduce a residential retrofit loan guarantee scheme |
| 219 | Pursue funding through EU initiatives as appropriate |
| 220 | Explore the potential for new tax measures to support retrofit |
| **Supply Chain, Skills and Standards** | |
| 221 | Publish a forecast of the skills required to deliver on our retrofit target as part of the Expert Group on Future Skills Needs report on "Skills for Zero Carbon- The Demand for Renewable Energy, Residential Retrofit and Electric Vehicle Deployment Skills to 2030" |
| 222 | Deliver the necessary increase in upskilling, reskilling and apprenticeship supports for residential retrofitting |
| 223 | Introduce initiatives to ensure the required number of BER assessors |
| 224 | Launch a study into the Heat Loss Indicator criteria for the installation of heat pumps |
| 225 | Publish new Standards and Guidance Documents for retrofit |
| 226 | Help to address the split incentive issue for rental properties |

| Action Number | Action |
|---|---|
| **Structures and Governance** | |
| 227 | Establish a cross-Departmental group to oversee implementation of the National Retrofit Plan |
| 228 | Further develop and resource the SEAI as the National Retrofit Delivery Body |
| 229 | Enhance the collection and monitoring of retrofit activity data delivered with Government support |
| 230 | Enhance the capacity of local authorities to deliver their retrofit programme according to budgets allocated |



# Transport 15

# 15. Transport

## 15.1 State of Play

The population of Ireland is expected to reach 5.7 million by 2040 from a current estimate of 4.9 million in 2021. In parallel, over the next two decades there are projections of both employment and economic growth that may stimulate greater transport activity and demand. Without significant changes in travel patterns, modal share, and technology, a growth in current transport activity and demand will further diminish our national competitiveness, quality of life, and decarbonisation goals.

Transport accounts for approximately 20%[36] of Ireland's greenhouse gas (GHG) emissions. Road transport is responsible for 96% of those GHG emissions and is also directly responsible for a range of air pollutants that negatively impact both human health and the environment. The levels of noise, accidents, and congestion associated with road transport reduces quality of life, deters active travel, and costs society hundreds of millions of euro per annum[37] in wasted time. Promoting cleaner, safer and more sustainable mobility is critical for climate policy, and it also represents an opportunity to improve our health, boost the quality of our lives, meet the needs of our growing urban centres, and connect our rural, urban and suburban communities.

**Table 15.1** *Transport GHG Emissions, 2018*[38]

| Transport Emissions $CO_2$eq. | Share of Total GHG Emissions | Transport Emissions $CO_2$eq. per person |
|---|---|---|
| 12.2 Mt | 19.6% | 2.5 t |

Transport emissions peaked at 14.4 Mt$CO_2$eq in 2007, falling during the economic recession to 10.9 Mt$CO_2$eq. in 2012. As the economic recovery took hold, the sector's emissions began to rise once more, illustrating a continued relationship between transport emissions and economic activity in Ireland that must be addressed. The emissions inventory reported a slight increase in transport emissions from 12 Mt$CO_2$eq in 2017 to 12.2 Mt$CO_2$eq. in 2018. This was despite the introduction of increased biofuel use, improving vehicle efficiencies and a growing number of EVs in the fleet. These measures, alongside the ongoing development of the broader sustainable travel ambitions of the first Climate Action Plan, still offer a pathway towards a low-emitting and sustainable transport sector. However, it is clear that to deliver a 51% GHG emission reduction by 2030, the level of ambition and supporting actions must increase and the rate of change must be significantly accelerated.

The impact of the COVID-19 pandemic, with the introduction of severe travel restrictions and greater remote working practices, is estimated to have resulted in a reduction of approximately 16% of transport emissions (excluding aviation) in 2020 compared to 2019 levels[39]. This conveys some sense of the scale of the challenge we face in delivering a 51% reduction in transport emissions by 2030. The goal is to successfully reduce emissions from the transport sector while maximising the benefits of the transition, without negatively damaging economic wellbeing, and without adversely impacting different social groups. The pandemic has also shown us that large scale behaviour change is achievable and that new patterns of mobility and working can play a part in the transition to a cleaner, safer

[36] This total excludes international aviation

[37] Analysis undertaken by the Department of Transport in 2017 indicated that the time costs of traffic congestion could grow by over 75% up to 2025 and more than treble between then and 2033 – reaching a peak cost as high as 2.08bn in the Greater Dublin Area alone - Costs of Congestion: An Analysis of the Greater Dublin Area

[38] https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/greenhouse-gas-emissions-final-2019.php

[39] https://www.seai.ie/publications/Energy-CO2-emissions-2020-Short-Note-FINAL.pdf

and more sustainable transport system for all. Improved planning and radical redesign are required to shift our built environment from being "vehicle centered" to being "people centered". The concept of the "15-minute neighbourhood", which gained prominence during the COVID-19 pandemic, is representative of this broad ambition. Specifically, promoting and supporting communities in which people can live and access most of their daily needs within a 15 -minute journey, mainly by sustainable modes (public transport, cycling and walking).

**Table 15.2** *Trends in Transport GHG Emissions*

| Timeframe | Percentage Change | Absolute Change, $CO_2$ eq. |
|---|---|---|
| **2005-11** | -14.5% | -1.9 Mt |
| **2011-18** | 8.9% | 1 Mt |

The immediate challenges faced by Ireland for the transport sector are common to many EU countries. The headline actions include a strong shift to sustainable travel modes and the electrification of vehicle fleets. The challenge is not so much then in setting the pathway to transport decarbonisation, but rather in delivering the requisite policy supports, investment, infrastructure and information, so that the behavioural and technological changes are easy, plausible and attractive for citizens, and that the necessary rates of change can be delivered. Strong governance is required.

**Table 15.3** – *Transport GHG Emissions International Comparisons, 2018* [40]

| | Ireland | Denmark | Austria | Finland | EU 27 |
|---|---|---|---|---|---|
| **Share of Total GHG** | 19.6% | 27.9% | 31.1% | 20.7% | 22.0% |
| **Transport Emissions, $CO_2$eq. per person** | 2.5 t | 2.3 t | 2.8 t | 2.1 t | 1.9 t |
| **Change Since 2005** | -6.9% | -1.0% | -2.0% | -9.8% | -2.3% |

## Supporting National Plans

The Climate Action Plan for transport will support and build from several key national policy plans that are driving the necessary changes, including Project Ireland 2040, the National Planning Framework (NPF), the National Remote Work Strategy, the National Adaptation Framework, Our Rural Future - Rural Development Policy 2021-2025, and the forthcoming Sustainable Mobility Policy. These plans align with climate action goals by supporting relevant changes such as more compact, connected developments that offer better public transport, as well as safer, longer and better-connected walking and cycling networks to support active travel choices and changes. The forthcoming land transport investment framework will set out a hierarchy for making investments in the transport sector, with sustainable travel, starting with active travel and then public transport, being encouraged over the private car.

**Table 15.4** – *Required Level of Decarbonisation in Transport*

| 2018 Emissions[41] | 2030 Required Emissions based on CAP 2021 |
|---|---|
| 12.2 Mt | 6-7 Mt |

[40] EEA Annual European Union greenhouse gas inventory 1990–2018 and inventory report 2020

[41] Ireland's Provisional Greenhouse Gas emissions 1990 2019

**Table 15.5** *Potential Metrics to Deliver Further Abatement in Transport*

| Key Metrics | 2018 | 2025 | 2030 (Based on CAP 2021) | Additional Abatement Impact, $MtCO_2eq.$ |
|---|---|---|---|---|
| **Core Measures** | | | | |
| **Sustainable Transport Journeys and Demand Management Measures**[42] | N/A | 125,000 additional public transport and active travel journeys, and the rolling out of sustainable demand management measures | 500,000 (14%) additional public transport and active travel journeys per day<br><br>Reduce ICE car kilometres by c. 10% | c. 1.4 |
| **Electrification of Passenger Cars** | c. 2000 | 175,000 | 845,000 with a focus on BEVs | c. 2.7 |
| **Transition to Low Emission Vans** | c. 85 | 20,000 | 95,000 with a stronger focus on BEVs | c. 0.2 |
| **Improved HGV Technology** | c. 20 | 700 | 3,500 low emission HGVs | c. 0.3 |
| **Increased Bio-fuel Blend Rate** | E5<br>B4.5 | E10<br>B12 | E10<br>B20 | c. 1.1 |
| **Electrify Mass Transportation** | N/A | 300 EV buses and expanding electrified rail services | 1,500 EV buses and expanding electrified rail services | c. 0.3<br><br>c. 0.1 |
| **Further Measures** | | | | |
| Undertake a programme of work which will review progress and further refine measures that will seek to deliver the additional c. 0.9 MtCO2 reduction by 2030 in a fair and equitable manner | | | | c. 0.9 |

[42] Includes the impact of reduced fuel tourism practices

## 15.2 Targets

**To meet the required level of emissions reduction, by 2030 we will:**

- Provide for an additional 500,000 daily public transport and active travel journeys
- Develop the required infrastructural, regulatory, engagement, planning, innovation and financial supports for improved system, travel, vehicle and demand efficiencies
- Increase the fleet of EVs and low emitting vehicles (LEVs) on the road to 945,000, comprising of:
  - 845,000 electric passenger cars
  - 95,000 electric vans
  - 3,500 low emitting trucks
  - 1,500 electric buses
  - an expanded electrified rail network
- Raise the blend proportion of biofuels to B20 in diesel and E10 in petrol
- Reduce ICE kilometres by c. 10% compared to present day levels
- Undertake a programme of work which will review progress and further refine measures that will seek to deliver the additional c. 0.9 $MtCO_2$ reduction by 2030 in a fair and equitable manner

## 15.3 Measures to Deliver Targets

### 15.3.1 Sustainable Mobility

Expanding sustainable mobility options to provide meaningful alternatives to everyday private car journeys is necessary to reduce transport emissions. Continued and enhanced investment in our walking, cycling and public transport infrastructure and services across the country is required on a scale not previously seen. We are committing to delivering an additional 500,000 daily sustainable journeys by 2030 (*c.* 14% increase on current levels) through the implementation of major transport projects such as:

- BusConnects
- Connecting Ireland
- Expanding rail services and infrastructure in, and around, major urban centres
- A significant increase in our walking and cycling investments

New technology will also increasingly play a key role in the realisation of our climate action goals, with electric bicycles, electric cargo bicycles, and (when legalised) e-scooters, extending both the number and length of sustainable trips across Ireland.

A key ambition is, therefore, to provide citizens with reliable and realistic sustainable mobility options to enable better mobility choices. To this end, a broad suite of supports will be utilised, including: additional area mobility management planning; further pedestrianisation of city centres and school streets; investments in active travel infrastructure; improvements to the capacity, frequency, reliability and journey time of public transport services; and promoting greater awareness of these improved walking, cycling and public transport options. Modal shift from the private car to sustainable transport will also be supported through the new 10-year *Sustainable Mobility Policy* which will be published later this year. Alongside continued significant investment and expansion of active travel and public transport infrastructure and services, the new policy will include actions in the areas of behaviour change; demand management; and transport-led development – including multi-modal transport hubs, transforming how we travel through the greater use of sustainable transport.

The new approach to public transport will be based on a vision of an integrated public transport network, enabling short, medium and long-distance trips for people in every part of Ireland. This will mean increasing the frequency of existing rail and bus services and expanding the bus network through the Connecting Ireland approach, while ensuring their timetabling to enable connected journeys. This expansion in public transport capacity will both drive and cater for the planned transfer of modes. Together with major medium- and long-term infrastructural investment, the following are some of the other key actions designed to promote greater sustainable mobility that will be implemented:

- Legislating for electric scooters
- Supporting Local Authorities in expanding shared mobility (or mobility as a service) schemes
- Encouraging cargo bicycle use
- Creating a greater awareness of road safety amongst all road users

**Box 15.1** *Behavioural Change: Workplace/Area Travel Plans and Safe Routes to School*

Supporting behavioural change can have a significant impact on travel demand regardless of the level of infrastructure investment. Mobility Management Plans in workplaces, educational establishments and residential developments have had a significant impact on the travel choices of employees, students and residents. The NTA helped over 150 large employers and 23 campuses nationally, covering over 250,000 employees, develop Mobility Management Plans. Where workplaces actively engaged with their Workplace Travel Plan, an average reduction in car commuting of 18% has been recorded.

The Safe Routes to School programme was launched in 2021 to support walking, scooting and cycling to primary and post-primary schools. The programme will invest to create safe walking and cycling routes within communities, to alleviate congestion at the school gates and increase the number of students who walk, scoot or cycle to school.

### 15.3.2 System Efficiency and Demand Management

Reducing internal combustion engine (ICE) car trips is essential if we are to achieve our transport emission targets. Realising this objective can offer many co-benefits in terms of public health, reduced congestion, and facilitating more accessible and vibrant communities. It is estimated that, by 2030, fossil fuelled passenger vehicle kilometres would need to decrease by up to 10% from 2019 levels in order to fully achieve a 51% emissions reduction overall. Reducing overall passenger kilometres is not about cancelling trips, but rather it is about reducing the need for, and length of, certain trips. That said achieving this level of reduction in the timeframe envisaged presents a significant challenge given that technology advances can only achieve so much and the heavy reliance on the car among certain cohorts of the population and in certain parts of the country where more sustainable alternatives are limited. For this reason, the suite of potential demand management will need to be delivered in a way that achieves a just transition and supports economic wellbeing.

The pending Five Cities Demand Management Study will identify the main drivers of, and the suitable actions to reduce, transport demand in Ireland's five largest urban centres — Dublin, Cork, Waterford, Limerick, and Galway. The study findings and recommendations will be key to developing the policies and actions to deliver on the overall goal for a reduced level of ICE trips by 2030. Further analysis will follow to identify how measures identified in this study can be applied in different regions and locations across the country.

Government planning policy will also continue to work to address low density/suburban sprawl (which increases the distance people must travel, locking in car-dependent patterns of development and behaviour) by promoting compact urban growth as a key mechanism to enable sustainable development as well as action on climate change and congestion. This will involve not just the design of new developments, but also the addressing of issues within existing developments. Planning policy will work to:

- Reduce demand for travel by car, travel distances, and journey times
- Increase travel choices, reduce car dependency, and mitigate traffic congestion
- Reduce air pollution and promote cleaner and more active modes of transport
- Sustain economic and social activity at street level creating vibrant communities
- Increase access to shops, employment, transport services, and local amenities by sustainable modes

While more work is required to fully define the pathways to achieve the necessary ICE kilometres reduction, the benefits and challenges of several potential measures will be considered including:

- Reallocating road space from the private car to prioritise walking, cycling and public transport
- Enhancing permeability for active travel
- Delivering safer walking and cycling routes to encourage greater uptake of active transport
- Improving traffic management and the introduction of larger circulation routes
- Encouraging lower speeds, employing stronger speed limit enforcement or in time, reviewing default speed limits
- Reducing parking provision and/or increasing parking fees
- Implementing low emission zones
- Employing road pricing systems
- Promoting the most fuel-efficient ICE vehicles within the legacy vehicle fleet

The focus over the coming months will be on modelling and researching the various options available to reduce ICE trips in a just manner, in tandem with:

- Considering the findings of the Five Cities Demand Management Study
- Identifying methods by which our regulatory and planning systems can be utilised to promote active mobility and sustainable development
- Reviewing legislation with a view to ensuring that Local Authorities have the necessary powers to introduce low and zero emission traffic zones

### 15.3.3 Fleet Electrification

Electrification of the vehicle fleet offers a pathway to zero tailpipe emissions, with several co-benefits such as improved air quality, reduced noise pollution, and less fossil fuel dependence. There are currently over 45,000 EVs registered on Irish roads, so while the number has improved, the pace of uptake must increase over the coming years to achieve our fleet electrification targets.

Subject to technological advances, it is expected that by the mid-2020s EVs (cars and vans) will reach total cost of ownership (TCO) parity with ICE vehicles. This means that when the average consumer factors in both the up-front and running costs, an EV will be as economical to own as a petrol or diesel equivalent. However, until TCO parity is achieved, the higher cost of an EV will remain a significant barrier to uptake. Range anxiety is a further impediment, although technology is quickly advancing with new EV models entering the market capable of traveling more than 500 kilometres on a single charge. In parallel, the continued development of a reliable public charging network will be needed to support the EV transition. In this regard, it will also be essential that additional electrical grid capacity is available to cater for this growing EV fleet. As Ireland will be competing against strong EU-wide demand for EVs, we need to offer a robust package of regulatory, taxation, engagement and subsidy measures to maintain a secure supply of models to our market. The recently published EV Policy Pathway Report highlights some ways to achieve this.

A dedicated Office of Low Emitting Vehicles will be established to act as a one-stop-shop for members of the public interested in purchasing or using an EV. The office will provide independent, non-sales advice and information on EVs, and support test driving experiences as well as commissioning research and assisting in policy development. Additional measures that will be put in place to accelerate and support the major transition to EVs include:

- Continued support for the expansion of the EV charging network, along with public investment to drive consumer confidence in the availability and reliability of public charging infrastructure
- Setting the strategy for EV charging stations with a target to stay ahead of demand, coupled with clear planning rules that facilitate the installation, and increase the obligation, over time
- Ensuring electricity grid readiness, so that adequate electrical capacity is available to support the rapid pace of transition to EVs
- Reviewing and updating VRT and other fiscal and regulatory incentives in the EV sector, as well as considering fiscal and regulatory disincentives for ICE vehicles
- Reviewing and amending building regulations regarding the installation and required number of charging points in both residential and non-residential buildings
- Identifying measures to support the shift to electric vans
- Committing to transitioning the public transport fleet to low emission alternatives
- Making conversion of fleets to EVs a central element of the mandate for all public bodies

### 15.3.4 Transitional Measures: Renewable and Alternative Transport Fuels

Renewable transport fuels represent an important transitional measure on the pathway to a fully decarbonised fleet, and may support certain key subsectors of transport, such as heavy goods vehicles (HGVs), while improved technology options develop. The deployment of sustainable biofuels has been the primary mechanism used to date to increase the share of renewable energy in the transport sector. It has also made a significant contribution to reducing GHG emissions. In 2020, 239 million litres of biofuels replaced about 209 million litres[43] of fossil fuels, avoiding approximately 520 $KtCO_2eq.$ GHG emissions.

The Biofuels Obligation Scheme has been in place since 2010. Under the scheme, suppliers of certain fuels to the road transport market are required to include a certain proportion of biofuels, which must meet strict sustainability criteria, as part of their fuel mix. The biofuels currently in use in the transport sector in Ireland, and included in the scheme, are biodiesel (blended with diesel), bioethanol (blended with gasoline in in petrol), and bioLPG[44] and biomethane.

Reducing a reliance on fossil fuel is central to decarbonising the transport sector. It is expected that the trajectory of fuel costs, taking account of increasing carbon taxes and biofuel blend rates, will increasingly negate the practice of fuel tourism[45] in Ireland. Fuel tourism was responsible for over 2% of transport emissions in 2020.

#### *Freight*

The technology pathway for decarbonising HGVs is still developing. Policy supports for decarbonising the sector reflect this and are not technology-specific, with a purchase grant and reduced tolls available to hydrogen, electric, and gas-powered vehicles alike. Given that the sector is mainly fuelled by diesel, as a transitional measure, increasing the blend of biodiesel in the national fuel mix will provide a level of emissions savings from this fleet. Biomethane may also offer emissions savings. The European Commission has recently proposed amending the Alternative Fuel Infrastructure Directive to mandate for dedicated EV HGV recharging infrastructure. Ireland's plans for such infrastructure will align with the regulation when it is adopted.

The sustainability and decarbonisation challenge facing the freight sector is one of the issues to be addressed by the forthcoming 10 Year Strategy for the Road Haulage Sector. Sustainable practices, such as eco-driving, are also important in the context of decarbonisation, and will help to reduce emissions and fuel costs, as well as improving road safety and providing upskilling opportunities for HGV drivers. Furthermore, a Strategic Rail Review is underway which will examine all aspects of inter-urban and inter-regional rail connectivity on the island of Ireland, including an analysis of rail connections to the major sea-ports and airports for freight movements.

For HGVs, where electrification is not likely in the short term, emissions reductions will be achieved in the interim through:

- Increasing the blend rate for biodiesel to 20% and bioethanol to 10% by 2030
- Developing robust supply chains, including sustainable sourcing of biofuel blends

[43] Biofuels typically are less energy dense than fossil fuels

[44] bioLPG is a renewable form of Liquefied Petroleum Gas

[45] Fuel tourism is defined as fuel that is bought within the State by motorists and hauliers but consumed outside the State

- Supporting technological progress as viable vehicle/fuel alternatives come to market
- Examining the feasibility of developing logistics hubs near urban centres to consolidate and rationalise freight transport, taking account of safety and air quality benefits
- Supporting EU regulations that promote more stringent HGV vehicle emission standards
- Complying with the provision of EU mandatory alternative fuel infrastructure deployment targets

**Box 15.2** *Action on Non-Road Transport Activities*

As a small open economy on the periphery of Europe, the aviation and maritime sectors are critical for the movement of our goods and people. Action is being taken at EU and international levels to address emissions from these sectors, including through market-based measures such as the ETS and sustainable fuel mandating initiatives (through ReFuel EU Aviation, Fuel EU Maritime and the Alternative Fuel Infrastructure Regulation which will all include binding targets once adopted).

Continued international collaboration through the International Maritime Organization and the International Civil Aviation Organization, will be key to achieving greater sustainability and preserving a level playing field in these global sectors. Ireland will support appropriate actions taken at EU and global levels to reduce emissions from the aviation and maritime sectors.

The combined impact of the above suite of mitigation measures is estimated to deliver 5.2MT of a reduction in $CO_2$ emissions by 2030. This will leave a shortfall of 0.9MT in reaching our 51% reduction target. More analysis is now required to consider the relative impacts of the overall set of measures before determining how to bridge this gap. For this reason, it is proposed to undertake a programme of work over the next year to review progress and further refine measures in a fair and equitable manner.

### 15.3.5 Horizon Actions

Innovation and technology will influence the transport sector transition. A dynamic and iterative approach will be necessary to deliver the required changes. Future *Climate Action Plans* will adapt to new technologies and behaviours to ensure the transition is effective, efficient, and equitable for all. The following represent horizon developments for the future.

#### *Green Hydrogen*

Green Hydrogen[46] is a renewable fuel of non-biological origin, which has been identified as having potential to support decarbonisation energy production, across home heating, industry and transport. Hydrogen is a versatile energy carrier that may store excess renewable energy from the grid. From a post-2025 transport perspective, it is envisaged that green hydrogen may contribute to the decarbonisation of hard-to-abate sectors such as HGVs, shipping and potentially (as a synthetic fuel) aviation. Green hydrogen could also potentially be used in the manufacture of synthetic fuels for transport. It is being considered to extend the scope of the Biofuels Obligation Scheme to include green hydrogen and other renewable fuels of non-biological origin.

#### *Emerging Technologies*

Smart driving solutions for vehicles such as navigation aids, cruise control, parking aids and overtaking assist systems are now fitted to most vehicles as standard. Their prevalence in the fleet, alongside other innovations, can support travel efficiency through optimised route guidance and driver feedback for fuel efficiency. Over time autonomous vehicles of varying levels may also deliver substantial changes in terms of how we travel, vehicle ownership, and more.

[46] Green Hydrogen usually refers to hydrogen produced by the electrolysis of water using renewable electricity. The only by-product is oxygen. Therefore, this is considered a zero- emissions gas

## 15.4 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 231 | Continue the improvement and expansion of the Active Travel and Greenway Network |
| 232 | Development of a coherent and connected National Cycle Network Strategy |
| 233 | Construct an additional 1,000km of cycling and walking infrastructure |
| 234 | Encourage an increased level of modal shift towards Active Travel (walking and cycling) and away from private car use |
| 235 | Accelerate sustainable mobility plans for schools |
| 236 | Legislate to improve the Active Travel environment in urban centres |
| 237 | Enable use of e-scooters and e-bikes |
| 238 | Publish the new Sustainable Mobility Policy |
| 239 | Commence delivery of BusConnects Network Redesign Dublin |
| 240 | Commence delivery of BusConnects Network Redesign in Cork, Galway, Limerick & Waterford |
| 241 | Commence delivery of BusConnects Core Bus Corridor Infrastructure Works |
| 242 | Commence delivery of BusConnects in Cork (Core Bus Corridor Infrastructure Works) |
| 243 | Commence delivery of BusConnects in Limerick (Core Bus Corridor Infrastructure Works) |
| 244 | Commence delivery of BusConnects in Galway (Core Bus Corridor Infrastructure Works) |
| 245 | Implement an enhanced rural transport system through delivery of Connecting Ireland Rural Mobility Plan. |
| 246 | Commence delivery of DART+ Programme and continue heavy rail fleet investment |
| 247 | Commence delivery of MetroLink |
| 248 | Phased introduction of National Youth Travel Card |
| 249 | Expand Smarter Travel Workplaces Programme |
| 250 | Examine the role of demand management measures in Irish cities, including low emission zones and parking pricing policies. |
| 251 | Publish the impact of speed and speed limits on greenhouse gas emissions and pollutants |
| 252 | Continue rollout of variable speed limits/dynamic traffic management infrastructure on the M50 Motorway to increase safety and reduce congestion |

| Action Number | Action |
|---|---|
| 253 | Conduct review of Community Car Scheme |
| 254 | Require all cities with a population exceeding 75,000 to produce a sustainable transport plan for review by National Transport Authority and D/Transport |
| 255 | Balance better movement priorities within urban areas to transition the built environment and public domain from one that is "vehicle centred" to being "people centred" to align with the goal of net zero by 2050 |
| 256 | Ensure all metropolitan transport strategies reflect Climate Action Plan sectoral emission reduction targets |
| 257 | Review and, if necessary, develop a regulatory framework for low-emission zones |
| 258 | Advance Demand Management Measures |
| 259 | Explore potential of road-user charging measures through the Better Road User Charging Evaluation (BRUCE) study |
| 260 | Increase provision of park and ride/share at transport interchanges |
| 261 | Deliver public transport corridors providing prioritised bus lanes on relevant national radial routes to the M50 |
| 262 | Deliver sustainable bus priority measures on the National Road Network |
| 263 | Publish new investment framework for land transport in Ireland |
| 264 | Award a contract to support the replacement of 78,000 lights in the southwest region as part of the national public lighting energy efficiency project and progress remaining 202,000 |
| 265 | Develop roadmap for review and transition away from fossil fuel tax subsidies in transport sector |
| 266 | Examine options for the equalisation of diesel and petrol excise rates over an appropriate period |
| 267 | Ensure our regulatory regime for buildings requires the installation of EV charging infrastructure |
| 268 | Transition Dublin Metropolitan PSO bus services to low/zero emission bus fleet. |
| 269 | Transition Cork, Galway, Limerick and Waterford metropolitan area PSO bus services to low/zero emission bus fleet. |
| 270 | Transition PSO town bus services to low-emission bus fleet |
| 271 | Transition PSO Local Link bus services to low-/zero- emission bus fleets |
| 272 | Develop a policy pathway to drive a significant ramp-up in passenger EVs and electric van sales and/or disincentivise fossil-fuelled passenger vehicles and vans |
| 273 | Identify options to increase EV uptake to support the transition away from grant supports |
| 274 | Establish an Office for Low Emitting Vehicles to co-ordinate the implementation of existing and future EV measures and infrastructure |

| Action Number | Action |
|---|---|
| 275 | Develop and launch an extensive communication and engagement campaign, whole of Government in coverage, to drive the availability and understanding of key information regarding EVs, tailored to household, business and public sector consumers |
| 276 | Enable greater EV infrastructure roll-out for passenger cars and vans |
| 277 | Develop a national infrastructure strategy to address on-street, location and fast charging infrastructure needs to stay ahead of demand, having particular regard to non-urban needs |
| 278 | Launch a Destination Charger Scheme to install publicly accessible EV charging infrastructure |
| 279 | Amend the Home Charger Grant Scheme to include apartments |
| 280 | Support the transition to electric vehicles in Gaeltacht communities through investment in EV infrastructure |
| 281 | Identify measures to support the shift to 95,000 electric vans |
| 282 | Set a roadmap for more LEVs in Public Sector Fleets |
| 283 | Set out the planned level of biofuel use for the period to 2030 |
| 284 | Rollout planned refuelling infrastructure |
| 285 | Complete Strategic Rail Review to inter alia identify a pathway to appropriate decarbonisation of interurban rail service |
| 286 | Publish an updated policy statement on renewable fuels for transport |
| 287 | Support the development of renewable gas, such as biomethane, as a transport fuel in the transport sector |
| 288 | Publish the 10-year Haulage Strategy for Heavy Goods Vehicles |
| 289 | Support the transition to alternatively fuelled and zero-emission vehicles by removing the vehicle weight barrier |
| 290 | Promote greater eco-practices within the HGV sector |
| 291 | Implement the minimum standards and mandatory targets identified in the Alternative Fuels Infrastructure Regulation (AFIR) |
| 292 | Assess options to ensure commercial State ports are positioned to facilitate the development of offshore renewable energy |
| 293 | Assess the environmental impact of the internationally trading Irish fleet |
| 294 | Carry out a review of the supply of renewable transport fuels in Ireland, such as biofuels, advanced biofuels, e-fuels, synthetic fuels, green hydrogen and biogas |
| 295 | Through the Core Transport Adaptation Team, review the climate adaptation activities currently ongoing and identify opportunities for future implementation of relevant policy. |
| 296 | Identify opportunities for collaborative research in the area of climate adaptation for the transport sector |

| Action Number | Action |
|---|---|
| 297 | Launch a Destination Charger Scheme to install publicly accessible EV charging infrastructure |
| 298 | Collaborate and share best practice on adaptation in the transport sector with relevant stakeholders |
| 299 | Define a set of metrics to accurately quantify the cost of extreme weather events to the State in terms of both revenues lost and the cost of repairs |
| 300 | Commission research on adaptation in the transport sector to fill existing knowledge gaps |
| 301 | Devise pathway to deliver an additional 0.9MT $CO_2$ reduction in the transport sector by 2030 |
| 302 | Review further linkages between accessibility and climate action |

# Agriculture 16

# 16. Agriculture

## 16.1 State of Play

The agri-food sector is one of Ireland's largest industries. In 2020, it accounted for almost 7% of modified gross national income; 10% of exports in value terms; approximately 164,400 jobs representing 7.1% of total employment; and €14 billion of exports.

The historical and economic importance of agriculture relative to other industries means that the sector is the single largest contributor to overall emissions, at 35.2%, representing over one third of Ireland's total GHGs. In 2018, GHG emissions from agriculture were 14% above 1990 levels, mainly driven by an increase in methane emissions from enteric fermentation (the animal digestive process).

The high proportion of national emissions represented by agriculture means that for Ireland to meet its overall emissions reduction targets, along with all other sectors, the agriculture sector must make a positive contribution to combating climate change and supporting the transition to a climate resilient, biodiversity rich and climate neutral economy and society no later than 2050. Additionally, as other sectors decarbonise, the share of the agriculture contribution to the national emissions profile will increase.

**Table 16.1** – *Agriculture GHG Emissions, 2018*

| Agriculture Emissions $CO_2$eq. | Share of Total GHG Emissions | Agriculture Emissions $CO_2$eq. per person |
|---|---|---|
| 22.03 Mt[47] | 35.2% | 4.5 t |

In 2018, the sector produced 22.03 Mt$CO_2$eq. (8% more than in 2005) driven mainly by an increase in bovine numbers and milk output, following the ending of the EU milk quota system in 2015. However, agricultural emissions decreased by 4% in 2019 largely due to a decrease in fertiliser use (-10.1%) and liming (-25.4%). If recent trends continue, with dairy herds increasing, there is a risk that emissions will grow as abatement and efficiency efforts are outstripped by herd growth.

Irish agriculture is dominated by livestock grazing outdoors, a pasture-based food system, which compares favourably to systems where animals are housed on intensive grain-based production systems. The sector has a reputation for high quality and sustainably produced food, and it is important that we maintain that reputation, in a world with increasing consumer demands for credible evidence that food and ingredients are produced sustainably.

However, the sector's relationship with key environmental indicators has been trending in the wrong

[47] Based on AR4 accounting

direction. Agricultural practices have been identified by the Environmental Protection Agency as significantly contributing to the decline in water quality nationally, with other sectors also contributing to this trend. The agriculture sector is also responsible for over 99% of national ammonia emissions. Furthermore, impacts from agricultural activities are reported as having a negative effect on a wide range of species, including fish, molluscs, terrestrial mammals and vascular plants. The implementation of measures to mitigate agricultural emissions (such as use of stabilised urea fertilisers) has commenced. Continued support and uptake of such measures will be critical to ensure a reversal in environmental metrics to meet our climate ambitions and protect the sector's strong international reputation.

**Table 16.2** – *Trends in Agriculture GHG Emissions*

| Timeframe | Percentage Change | Absolute Change, $CO_2$ eq. |
|---|---|---|
| 2005-11 | -9.3% | -1.9 Mt |
| 2011-18 | 19.1% | 3.5 Mt |

Throughout Europe, reducing GHG emissions in agriculture has proven difficult, with only a 2.3% reduction across the EU, as a whole, since 2005. Our carbon intensity per head of population in the sector, at 4.5 $tCO_2eq.$, is substantially higher than the EU average reflecting the significant role that the agricultural sector plays in Ireland's economic make-up.

**Table 16.3** – *Agriculture GHG Emissions International Comparisons, 2018*

| | Ireland | Denmark | Austria | Finland | EU 27 |
|---|---|---|---|---|---|
| **Share of Total GHG** | 35.2% | 25.8% | 10.4% | 13.9% | 12.4% |
| **Agriculture Emissions, $CO_2$eq. per person** | 4.5 t | 2.1 t | 0.9 t | 1.4 t | 1.0 t |
| **Change Since 2005** | 8.0% | -8.4% | 0.4% | -4.4% | -2.23% |

The recently launched 'Food Vision 2030 - A World Leader in Sustainable Food Systems' strategy advocates a food systems approach to developing an agri-food sector that meets the highest standards of sustainability – economic, environmental, and social – while also providing the basis for the future competitive advantage of the sector, while also being developed to fully aligned with our climate ambition.

**Table 16.4** – *Required Level of Decarbonisation in Agriculture*[48]

| 2018 Emissions | 2030 Required Emissions based on Climate Action Plan 2021 |
|---|---|
| 22.03 Mt[49] | 16 to 18 Mt |

[48] https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-greenhouse-gas-emissions-projections-2020-2040.php

[49] Based on AR4 accounting

### *Climate Adaptation in Agriculture*

Finally, the sector also faces a challenge in adapting to the impacts of climate change and will need to build resilience to its effects. Having a robust agri-food sector is not only important to the sector itself, but also to the national economy and to Ireland's global trading partners. A climate resilient agriculture sector should be able to grow sustainably, resist climate shocks and pursue climate change related opportunities.

**Box 16.1** – *AR5 Accounting*

The Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report (AR5) is one of the most comprehensive assessments of climate change ever undertaken. It sets new standards of accounting for Global Warming Potential (GWP) of GHGs.

GWP values provide a common scale for measuring the climate effects of different gases. This measurement is used as a benchmark to compare non-carbon dioxide GHGs against carbon dioxide ($CO_2$), with the GWP of $CO_2$ being 1.

The IPCC has provided updates to these values several times over the last number of decades, each adjustment being the result of significant advances in scientific understanding.

AR5 has revised the GWP for methane, from 25 in AR4, to 28. It has also decreased the GWP for nitrous oxide from 298 to 265. These accounting changes will have a significant impact on how we account for emissions across all sectors, but particularly in the agriculture sector where both methane and nitrous oxide are heavily emitted. By switching from AR4 to AR5, agricultural emissions in 2018 increase from 22.03 $MtCO_2eq.$ to approximately 23 $MtCO_2eq.$[50]

**Table 16.5** – *Potential Metrics to Deliver Abatement in Agriculture*

| Key Metrics | KPI 2030 | Additional Abatement Impact, $MtCO_2eq.$ |
|---|---|---|
| **Core Measures** | | |
| Significant reduction in nitrous oxide emissions by changing farm management practices in relation to nutrient use | Chemical nitrogen use on Irish farms must be reduced to <350,000 tonnes by 2025 and <325,000 tonnes by 2030<br>65% of straight Calcium Ammonium Nitrate to be replaced by protected urea (or other protected nitrogen products)<br>90% uptake of Low Emission Slurry Spreading | 1.5-2 |
| Improved animal breeding | Number of dairy herds carrying out milk recording from 50% to 90%, and increase suckler beef herd weight recording from 30% to 70% | 0.3 |

[50] Based on AR4 accounting

| | | |
|---|---|---|
| Improved animal feeding | Reduce crude protein content of livestock feeding stuffs to minimise nitrous oxide and ammonia loss, while utilising feed additives during housing period | 0.7 |
| Early finishing age of cattle | Reduce the average age of slaughter of prime animals from 27 to 24 months by 2030 | 0.7 |
| Increasing organic farming | Increase the area farmed organically in Ireland from 74,000 hectares to 350,000 hectares by 2030 | 0.3 |
| Contribute agricultural feedstocks to the production of 1.6 TWh per annum of indigenous sustainably produced biomethane for injection into the gas grid by 2030 | 1.6 TWh biomethane injected into gas grid | 0.1-0.2 (agriculture sector)<br><br>0.4 (energy sector) |
| **Further Measures** | | |
| Diversification opportunities | Review of diversification opportunities for income and land use for farmers, including in areas such as biomethane and energy production, agroforestry and afforestation | TBD<br>Abatement potential to be determined following further research and development |
| Carbon farming | Explore the development of a carbon farming model | TBD<br>Abatement potential to be determined following further research and development |
| Methane reducing feed additives for pasture-based solutions | Explore the potential for methane reducing feed additives for pasture-based solutions | TBD<br>Abatement potential to be determined following further research and development |

## 16.2 Targets

### To meet the required level of agriculture emissions reduction, by 2030 we will:

- Commit to core and further measures to reduce emissions from 23 to 16-18 $MtCO_2eq.$ in 2030
- Work with the waste sector in the provision of feedstocks, to contribute to the production of 1.6 TWh per annum of indigenous sustainably produced biomethane for injection into the gas grid by 2030
- Undertake a programme of work to refine the potential and to set targets/pathways for measures to deliver further emissions reductions:
  - Carry out a diversification review based on Land Use Review findings
  - Enable a carbon farming framework by the end of 2023 in line with EU activity
  - Explore the potential for methane reducing feed additives for pasture-based solutions
  - Enhanced reductions from further and earlier implementation of actions already identified

## 16.3 Measures to Deliver Targets

More than 80% of agriculture-related GHG emissions are directly linked to livestock numbers and the management of the manures they produce, with 12% attributed to chemical fertilisers, and the remainder from fuel combustion and CO2 from lime usage.

Policies which seek to reduce emissions in the agriculture sector must recognise the direct correlation between the animal numbers, production and GHG emissions. Efficiencies and better technologies can effectively be cancelled out by growing emissions from herd size and/or make-up. The development of plans to manage the sustainable environmental footprint of the beef and dairy sectors will be central to the achievement of our climate targets.

Failure to implement significant changes now will mean that more radical corrective action will be necessary later to ensure delivery of our commitments. Scientific research and innovation, the acceleration of the adoption of best practices at farm level, and working in partnership, across the entire agri-food sector, will be critical to realising our vision of climate neutrality.

A Land Use Review is underway led by the Department of the Environment, Climate and Communications and the Department of Agriculture, Food and the Marine (see Land Use Review section in the Chapter 17). Diversification reviews for income and land use for farmers, including areas such biomethane and energy production, agro-forestry and woodland creation, will be carried out following the publication of this review.

### 16.3.1 Reducing the Emissions on Our Farms

We will reduce Ireland's agricultural emissions by 22-30%, from a base of 23 $MtCO_2eq.$, to reach 16-18 $MtCO_2eq.$ by 2030, by committing to a set of core and further measures:

- Increasing the pace and depth of change in an enhanced Ag Climatise roadmap. This will build on the 2020 Ag Climatise and will look at furthering the targets, and bringing forward the measures to be consistent with sectoral emissions ceilings
- Chemical nitrogen use is responsible for approximately 40% of nitrous oxide emissions on Irish farms. The amount of chemical nitrogen used on Irish farms will be reduced in line with Ag Climatise targets from its peak usage of 408,000 tonnes in 2018, reducing nitrous oxide and ammonia emissions and improving water quality. This measure will involve a significant shift in the type of fertiliser used, with a focus on the use of nitrogen fertilisers containing inhibitors that will mitigate the release of nitrous oxide and ammonia into the atmosphere. Additional reductions in fertiliser may be gained by the inclusion of legumes in swards and the sowing of multispecies swards, as well as achieving optimal soil PH. The establishment of a national fertiliser register will be necessary to facilitate this transition, together with a revised nitrates programme
- We will accelerate action in animal breeding. Cows with a higher Economic Breeding Index are more efficient producers, and will continue to improve the carbon footprint of our animal protein products. The funding of research and the assimilation of data will facilitate the breeding of beef animals that are lower emitters of methane
- The constituents of the animal's diet are an important part of the outputs from our food system, with the level of crude protein fed in dairy and pig rations having a direct impact on the related level of nitrous oxide and ammonia emissions. We will continue to test new feed additives under Irish conditions to establish the best available technologies that deliver on methane mitigation, animal welfare, and food safety, for use in Ireland during the winter housing period
- We will collaborate with all stakeholders in the beef sector, with a particular focus on practices at farm level, to ensure beef animals reach the required weights at an earlier age

- We will significantly increase the area farmed organically in Ireland to at least 350,000 hectares by 2030. This will be incentivised through the provision of capital grants and access to the Organic Farming Scheme
- Improvements in the health status of the national dairy and beef herd leads to increased productivity, and ultimately reduced emissions per unit of product. We will invest the resources necessary to improve the health of the national herd, which will deliver improved efficiency and reduced emissions. There is an onus on the entire sector to work to make targeted improvements over the coming decade
- We will increase the volume and quality of grazed grass consumed by our national herd and flock, through the roll out of the Teagasc Signpost Programme – Farmers for Climate Action, and agri-advisory programmes
- The Common Agricultural Policy Strategic Plan (CSP) will be an integral delivery mechanism to achieve our climate ambition. The environmental and climate ambition within the CSP will be aligned to the CAP's new 'green architecture'. This will operate across both pillars of CAP expenditure to achieve a coherent overall approach. Ireland will introduce Eco-Schemes open to all farmers with the objective of maximising farmer participation to achieve climate and environmental improvements across all farmed lands. Ambitious, environmentally focused Pillar II interventions will deliver significant long-term environmental improvement through participation by a significant number of farmers, with each making a strong climate improvement on their farm. However, a whole-of-government, whole-of-industry approach will be needed to achieve our overall climate objectives as the CSP alone will not be able to deliver on all the changes required

### 16.3.2 Further Measures to Reduce Emissions and Increase Removals

We will engage in a programme of work to identify opportunities to further reduce emissions and increase removals:

- We will examine all the measures in the Ag Climatise roadmap to ensure maximisation of GHG reductions can be achieved within sectoral emissions ceilings when published
- We will explore the development of a carbon farming model, with the potential for trading, and which rewards farmers for emissions reductions and removals, including through potential private sector investment. This is in line with the EU's policy direction. Such an approach will require the establishment of baseline data, auditing, the development of voluntary carbon codes, leveraging of private financing through public/private partnerships, and the putting in place of governance structures
- We will carry out a dedicated review of diversification opportunities to identify where further savings can be achieved through diversification
- Working with the waste sector through the provision of feedstocks, we will contribute to the production of 1.6 TWh per annum of indigenous sustainably produced biomethane for injection into the gas grid by 2030, representing about 3% of natural gas supply. The remaining agricultural feedstocks, primarily grass silage and animal slurries, required to produce 1.6 TWh, after the utilisation of waste resources, could be provided through improved productivity and grassland management practices while keeping within the sustainability criteria as laid out in the Renewable Energy Directive. This will abate 0.1-0.2 $MtCO_2eq$ per annum for the agriculture sector, and will displace 0.4 $MtCO_2eq$ per annum for the energy sector
- We will explore opportunities to produce further levels of biomethane above 1.6 TWh, building on the output of the forthcoming National Heat Study and Land Use Review
- We will double the indigenous biomass supply as a fossil fuel substitution to generate heat and

electricity. The felling of trees is regulated by the Forestry Act 2014 which ensures that harvested areas are managed sustainably, and environmental requirements apply. The doubling of biomass supply will mainly come from commercial forests planted since the 1980s

- Investment will be made in research to develop a feed additive solution for Ireland's pasture-based production system

### 16.3.3 Agriculture and Research

The establishment of the National Agricultural Soil Carbon Observatory is a very important step in quantifying carbon sequestration. We will back this up with comprehensive programmes of mapping and sampling of Irish soils.

As part of an enhanced research programme, there is an urgent need to develop and test new and existing abatement technologies to directly reduce agricultural GHG emissions, and/or increased carbon sequestration on farms, to meet the needs of climate neutrality no later than 2050.

Underpinning these strategies will be the need to incorporate measures into inventories. This will require research to specify new emission factors and/or new ways of collating activity data, as well as ensuring that measures contribute towards greater climate resilience in the Agriculture, Forestry and Other Land Use sector.

Establishment of a new Agricultural GHG Centre of Excellence is essential given the scale of the challenge.

## 16.4 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 303 | Complete a review of the Teagasc Marginal Abatement Cost Curve |
| 304 | Reduce chemical nitrogen use to an absolute maximum of 325,000 tonnes (annually) by 2030, with an interim target of 350,000 tonnes by 2025 |
| 305 | Conduct a review of the Nitrates Action Programme |
| 306 | Establish National Fertiliser User Register to allow a more resource efficient use of nutrients |
| 307 | Increase the use of protected urea fertiliser |
| 308 | Promote increased use of leguminous crops to fix nitrogen in production systems |
| 309 | Increase the number of dairy herds carrying out milk recording from the current level of 50% to 90% |
| 310 | Increase focus on selection for traits that lead to lower methane production in the beef breeding programme |
| 311 | Introduce measures to promote improved efficiency in livestock |
| 312 | Reduce the crude protein content of livestock feeding stuffs to minimise nitrous oxide and ammonia loss |
| 313 | Progress the development on feed additives on methane emissions for use during the housing period |

| Action Number | Action |
|---|---|
| 314 | Introduce measures to promote improved efficiency and reduced emissions in livestock via improved animal health and welfare |
| 315 | Reduce the average age of slaughter of prime animals from 27 to 24 months by 2030 |
| 316 | Increase the current area under organic production from 74,000 ha to 350,000 ha by 2030 |
| 317 | Build organic farming research capacity |
| 318 | Conduct further research into biomass and manure feedstocks for biogas production through Anaerobic Digestion |
| 319 | Introduce a Higher grant rate of 50% for Farmers for Capital Investments that contribute to the wider renewable energy policy |
| 320 | Double the biomass supply as a fossil fuel substitution to contribute to the decarbonisation of the energy system |
| 321 | Produce detailed plans to manage the sustainable environmental footprint of the dairy and the beef sectors |
| 322 | Develop an enabling framework to facilitate the roll out of a national carbon farming programme |
| 323 | Continue to invest in research to develop novel feed additives to reduce biogenic methane during the grazing season |
| 324 | Ensure optimisation of forage production to improve quality and quantity of forage in animal diet to improve enteric fermentation efficiency (reduces methane), through grassland management and inclusion of clover in reseeded swards |
| 325 | Develop and finalise appropriate interventions under Ireland's CAP Strategic Plan to support the maximum possible environmental, biodiversity and climate ambition in CAP 2023-2027 |
| 326 | Support and expand Research Calls and National funding in line with DAFM priority areas and climate action research goals |
| 327 | Expand international research funding opportunities in priority areas including climate related areas |
| 328 | Establish a centre for excellence for innovation in climate smart agriculture and land-use for the agri-food sector |
| 329 | Upskill farmers and advisors to ensure they have the knowledge and tools to implement climate mitigation and adaptation practices |
| 330 | Identify knowledge gaps in the horticulture sector around climate change mitigation actions and address areas for change |
| 331 | Implement the Food Vision 2030, in particular the mission for “A Climate Smart, Environmentally Sustainable Agri-Food Sector” |
| 332 | Promote ecosystem restoration and conservation through Payment for Ecosystem Services and investment in actions that increase carbon sinks while promoting biodiversity e.g., woodlands, bogs, soil management, hedgerows |

| Action Number | Action |
|---|---|
| 333 | Implement the new All-Ireland Pollinator Plan for 2021-2025 |
| 334 | Increasing Climate resilience in our Forest Estate |
| 335 | Strengthen adaptative capacity through improving knowledge and awareness building on climate action policy in the food and drinks Industry |
| 336 | Improve climate resilience in crop production |
| 337 | Engage DAFM Internal Adaptation Stakeholder Group (IASG) to review DAFM progress on mainstreaming adaptation in policy |
| 338 | Conduct an Interim Review of the Agriculture, Forest and Seafood Sectoral Adaptation Plan and recommend next steps for increasing climate ambition |
| 339 | Identify priority steps towards building resilience from the seafood section of the Agriculture, Forest, and Seafood Climate Change Sectoral Adaptation Plan |
| 340 | Update climate adaptation impact and vulnerability analysis |
| 341 | Carry out a diversification review, including assessment of further biomethane production |
| 342 | Adopt the new EU Fertiliser Product regulation to allow a more resource efficient use of nutrients, which has the beneficial effect of reducing the number of fertilisers used and hence their environmental impact |
| 343 | Increase the number of suckler beef herds in beef weight recording from the current level of 30% to 70% |
| 344 | Integrate the Cork Institute of Technology/SEAI/Teagasc National Artificial Intelligent Dairy Energy Application (NAIDEA) into Sustainability Dairy Assurance Scheme (SDAS) |
| 345 | Continue to support energy efficient measures by members of Producer Organisation scheme |
| 346 | Provide knowledge and expert advice on predicted grass growth |
| 347 | Continue support for European Innovation Partnership pilot project - Small Biogas Demonstration Programme and dissemination of learnings |
| 348 | Introduce enhanced knowledge transfer programme through Teagasc advisory service on farm diversification |
| 349 | Roll-out of advisory and education services to farmers |
| 350 | Produce Origin Green Farmer Feedback Reports |
| 351 | Improve knowledge and awareness building in climate resilience among farmers |
| 352 | Explore the feasibility of including flood maps on Nutrient Management Planning (NMP) online |
| 353 | Assess the economic and employment implications of the transition to a low-carbon economy |
| 354 | Develop Lamb Carbon Foot printing of Lamb scope members of SBLAS |

| Action Number | Action |
|---|---|
| 355 | Develop Egg Carbon Footprint for Sustainable Egg Assurance Scheme (SEAS) members |
| 356 | Develop a Farmer eLearning Platform |
| 357 | Develop Farm Sustainability Planner |
| 358 | Support the maximum possible environment and climate ambition in the post-2020 Common Agricultural Policy |
| 359 | Implement suite of measures to improve nitrogen use efficiency |
| 360 | Improve on-farm slurry management |
| 361 | Develop and Implement Bioeconomy work programme in support of the use of sustainable, renewable biological resources to displace fossil fuels for chemical, material and energy purposes |
| 362 | Train farm advisors to support farmers in the implementation of climate mitigation practices at farm level |
| 363 | Support Regional Assemblies to identify areas of potential growth in the bioeconomy |

# Land Use, Land Use Change, Forestry and Marine

# 17

# 17. Land Use, Land Use Change, Forestry and the Marine

## 17.1 State of Play

### 17.1.1 Land Use, Land Use Change, Forestry

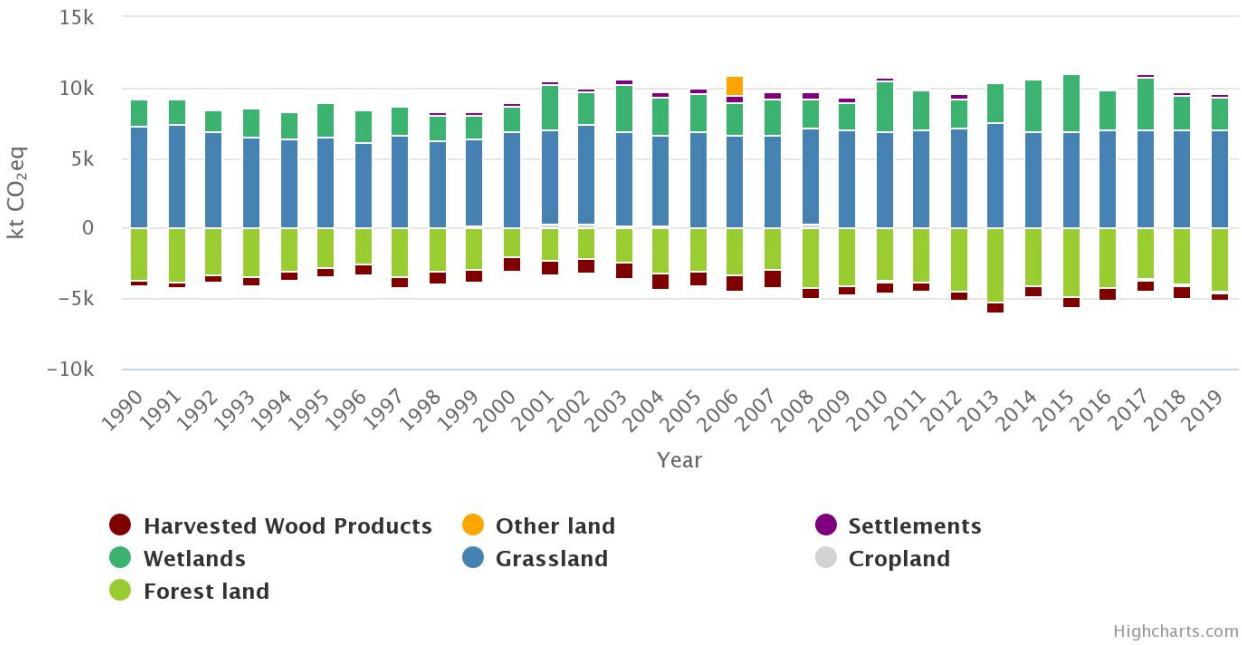
How we use and manage the land is fundamental to how we live in Ireland. Our land produces much of the food we eat, supports renewable power for our homes and industry, and provides the timber we use in building our homes. It is the basis for the ecosystems that we rely on for clean air and water, and supports the habitats, flora and fauna that make up Ireland's unique biodiversity. Land use affects how GHGs in the atmosphere are either emitted from, or removed by, our land.

**Table 17.1** *Land Use, Land Use Change and Forestry GHG Emissions, 2018*

| LULUCF Emissions $CO_2$ eq. | Share of Total GHG Emissions | LULUCF Emissions $CO_2$eq. per person |
|---|---|---|
| 4.8 M$^t$ | 7% | 0.97 t |

Across the EU-27 since 1990, the Land Use, Land Use Change and Forestry (LULUCF) sector has been a net sink of GHG emissions, primarily due to the extensive forest cover. In contrast, the Irish LULUCF sector has been a net source of GHG emissions in all years from 1990 to 2019. This is largely due to the carbon sink from the land-use categories of Forest Land, and Harvested Wood Products, being less than the carbon source from Grasslands and Wetlands. Grassland and Wetlands are considerable sources of emissions as a result of the drainage of organic soils. The land-use category Cropland fluctuates between being a net sink in some years, and a source in others. All these categories have the potential to be managed as net sinks for GHGs.

**Figure 17.1** *LULUCF Emissions and Removals, 1990-2019*[51]




[51] Source EPA

**Table 17.2** – *Trends in LULUCF GHG Emissions*

| Timeframe | Percentage Change | Absolute Change, $CO_2$eq. |
|---|---|---|
| **2005-11** | -8.3% | -0.5 Mt |
| **2011-18** | -12.7% | -0.7 Mt |

LULUCF net emissions have been falling over time. In 2018, they were 4.8 $MtCO_2$eq. A 51% reduction in these emissions means a 2030 target of approximately 2-3 $MtCO_2$eq. However, this net emissions target for LULUCF is more challenging than it appears. The 4.8 $MtCO_2$eq net emissions in 2018 represents non-forest land as a source of emissions with our forest sink netted off. This forest sink is reducing, and current EPA projections forecast that by 2030 Ireland's net emissions will reach 7.1 $MtCO_2$eq. Furthermore, with emerging science, this projected net total is expected to increase further to a range between 7-11 $MtCO_2$eq. in 2030, with the level of carbon removals from forests on organic soils being less than previously understood.

**Table 17.3** – *LULUCF GHG Emissions International Comparisons, 2018*

| | Ireland | Denmark | Austria | Finland | EU 27 |
|---|---|---|---|---|---|
| **LULUCF Emissions, CO2eq. per person** | 0.97 t | 1.13 t | -0.58 t | -1.86 t | -0.59 t |
| **Change Since 2005** | -19.9% | 10.9% | 51.5% | 58% | 16% |

While Ireland's LULUCF sector is currently a net source of emissions, it has already been noted that there has been a downward trend in these emissions, with a 20% reduction since 2005. However, as stated, this trend is projected to reverse, as the age profile of the forest stock matures and harvesting levels increase in line with projected forecasts. When considered alongside comparable EU Member States, we can see that there is a significant challenge over the medium- to longer-term in managing and reducing LULUCF emissions. Many national carbon sinks across the EU have experienced similar reductions over recent years, resulting in the EU carbon sink reducing by 16% between 2005 and 2018.

**Table 17.4** – *Required Level of Decarbonisation in LULUCF*

| 2018 Emissions | 2030 Required Emissions based on Climate Action Plan 2021 |
|---|---|
| 4.8 Mt | 2-3 Mt |

Based on current EPA projections, which are subject to further upward revision based on emerging science, Ireland's net LULUCF emissions will reach 7.1 $MtCO_2$eq. This implies savings of at least 4.6 $MtCO_2$eq. need to be achieved. The savings required could rise to 6.6 $MtCO_2$eq. or more, with revisions to the inventories.

### 17.1.2 Marine Environment

Climate change is causing fundamental and potentially irreversible changes to our marine environment, with consequences for all of society. We need to increase our understanding of the mitigation and adaptation potential of our seas, and the marine industries it supports to inform our future policies. Expanding ocean literacy, and public awareness of the value of Ireland's seas, will ensure support for a sustainable approach to managing our marine resources.

**Box 17.1** – *What is Blue Carbon*

Blue Carbon refers to carbon which is stored, or sequestered, in the ocean, its sediments, and vegetated habitats around our coast.

The Marine Institute commissioned a special report entitled 'Blue Carbon and Marine Carbon Sequestration in Irish Waters and Coastal Habitats' to review and synthesise existing knowledge in relation to blue carbon and marine carbon sequestration in Irish waters, and to identify critical knowledge gaps. Following this study, the Marine Institute, in June 2021, launched a research call that will build our national capacity and provide advice and evidence to inform policy decisions.

**Table 17.5** *Potential Metrics to Reduce Emissions in Land Use, Land Use Change and Forestry*

| Key Metrics | KPI 2030 | Direct Savings $MtCO_2eq.$ in 2030 |
|---|---|---|
| Forest Land | New afforestation to 2030 | 0.8 |
| | Accounting for afforestation with removals realised post 2030 | 2.1 |
| Cropland | Increase use of cover crops | 0.03 |
| | Incorporation of straw | 0.04 |
| Grassland | Improved management of grassland on mineral soils | 0.26 |
| | Reduced management intensity (water table management) of 80,000 hectares on drained organic soils by 2030 | 0.88 |
| Wetlands | Bord na Mona and LIFE Peatlands rehabilitation (45,000 hectares) | 0.30 |
| | A further 20,000 hectares of rehabilitation | 0.20 |
| **Total** | | **4.61** |

## 17.2 Targets

### To meet the required level of emissions reduction, by 2030 we will:

- Reduce Ireland's net LULUCF emissions by 4.6 $MtCO_2eq.$ in 2030 against current projected emissions and consistent with achieving carbon neutrality no later than 2050 by:
- Increasing our annual afforestation rate consistent with realising this ambition and achieving carbon neutrality no later than 2050, including promoting forest management initiatives to increase carbon sinks and stores
- 80,000 ha. of reduced management intensity (water table management) of grasslands on drained organic soils
- Improving our management for carbon sequestration of at least 450,000 hectares of grasslands on mineral soils
- Increasing the inclusion of cover crops in tillage to at least 50,000 hectares by 2030
- Increasing the incorporation of straw to at least 10% of the tillage (cereal) area
- Rehabilitating 65,000 hectares of peatlands across numerous landowners and projects
- Designating 30% of Ireland's marine area as a Marine Protected Area

We must establish a pathway for our LULUCF sector to become a long-term sustainable net sink, making a positive contribution to combating climate change, and supporting our transition to a carbon neutral economy and society no later than 2050. The objective is to bring this sector in line with the overall EU-27, minimising emissions and optimising GHG sequestration opportunities, while balancing environmental, social, and economic considerations across several sectors. Achieving this will yield significant ecosystem services and biodiversity benefits.

## 17.3 Measures to Deliver Targets

### 17.3.1 Forestry

Forests and forest products play an important role in mitigating climate change. Sustainably managed forests are a net absorber of carbon. Using wood and wood-based products for construction is a sustainable substitute for conventional carbon-heavy construction products, such as concrete, brick and steel. Afforestation is the single largest land-based climate change mitigation measure available to Ireland. Management of our existing forests also provides opportunities to increase carbon stores:

- Project Woodland will facilitate the preparation of a new forest strategy that recognises the multiple benefits that forests provide
- We will continue to promote afforestation in order to increase planting to a rate consistent with realising our 2030 ambition, and contribute to achieving carbon neutrality no later than 2050
- A new Forestry Programme will launch in 2023 focusing on the importance of climate smart forestry
- We will afforest in pursuit of commercial, climate, water and biodiversity objectives, both through planting and natural regeneration
- We will facilitate the creation of small native forests as part of our agri-environment schemes, avoiding poor citing of trees to ensure biodiversity as well as carbon goals are met.

- We will continue to support the mobilisation of round wood, through initiatives such as investing in harvesting infrastructure, and research in timber and processing industries
- We will increase the monitoring of the forest estate to reduce illegal deforestation
- Support will be provided to encourage the increased use of alternative management systems such as close to nature forestry and agro-forestry
- We will support the conservation and sustainable use of forest genetic resources, which are essential to protect the genetic diversity of our forests and improve resilience to climate change
- We will develop decision support tools to enable forest owners to make decisions on timing of harvesting (such as extended rotations) to optimise carbon storage

**Box 17.2** – *Accounting for Forestry*

Globally forests are a significant store of carbon after oceans. They can absorb and store carbon in their biomass, soils and products, equivalent to about one tenth of carbon emissions projected for the first half of this century. Therefore, we must substantially increase our current rates of afforestation and provide a range of forest management measures to increase carbon storage in our existing forests. However, forests take decades to grow. A hectare of forest planted today, will remove carbon dioxide from the atmosphere as the trees grow, but will deliver most of its sequestration in the period after 2030. Forests planted in the coming decades will be critical for achieving carbon neutrality no later than 2050, it is essential that substantial afforestation takes place in this decade.

The Climate Change Advisory Council (CCAC), in its advice to the Minister on approaches to carbon budgets (CCAC 3 September 2021), notes that in the setting and accounting for targets *'…in the period to 2030 should take account of the unavoidable delay between actions and outcomes in terms of actual reduction in emissions or enhanced removals, with the understanding that many of the actions taken will bear fruit in the post 2030 period. In order to incentivise activity, provision could be made in regulation to account for the committed emissions savings in a shorter time frame, while avoiding double counting.'*

Regulations approved by government will provide for the means to account for an earlier realisation of such removals, and how they can be utilised for sectoral ceiling compliance.

### 17.3.2 Agriculture Lands

We need to ensure that we use our land well, in a way that secures family farm incomes and vibrant rural communities into the future. As well as sustainably producing food, farmers can be rewarded by devoting part of their land to planting trees or otherwise creating sinks to abate carbon emissions. The government will partner with the farming organisations in this transition, which will be supported within the structure of the next Common Agricultural Policy. We will:

- Reduced management intensity (water table management) of at least 80,000 hectares of drained, agricultural, managed, carbon-rich soils. As well as reducing our carbon emissions, there will also be co-benefits in terms of improved water quality, increased biodiversity, and enhanced resilience to changing weather patterns[52]

[52] Reduced management intensity of agricultural managed drained carbon rich soils offers significant potential for reducing the $CO_2$ emissions from the land use sector. However, the willingness of farmers to rewet their land if incentives were offered is difficult to predict as the level of farming intensity that can be sustained post reduced management intensity is farm and site-specific. Furthermore, the scale of reduced management intensity in the landscape and complex hydrological systems therein will influence the capacity to reduce emissions from these ecosystems. Assessment of best practice management options for optimum environmental and production outcomes requires research.

- Improve our management of at least 450,000 hectares of grassland on mineral soils for carbon sequestration. Improved practices comprise increased time to reseeding; expanding legumes in the pasture sward (including clover and multi-species swards); avoiding compaction; and long-term pasture management plans
- Increase the inclusion of cover crops in tillage to at least 50,000 hectares by 2030
- Increase the incorporation of straw to at least 10% of the tillage (cereal) area. Chopping and incorporating the straw into the soil increases soil organic carbon, as organic matter is directly inputted back into the soil

### 17.3.3 Wetlands

Peatlands cover 21% of our land area, and 64% of our total soil organic carbon stock. They are the largest store of carbon in the Irish landscape. However, this carbon store is very vulnerable, for example, to varying weather conditions and extreme weather events. The rehabilitation of degraded peatlands to a condition in which they regain their ability to deliver specific ecosystem services has considerable potential for initial mitigation gains, and future carbon sequestration. Additional benefits of peatland restoration include positive socio-economic outcomes for the Midlands, increased natural capital, enriched biodiversity, improved water quality, and flood attenuation. We will:

- Restore/rewet raised bog Special Areas of Conservation and Natural Heritage Areas as set out in the National Raised Bog Special Areas of Conservation Management Plan 2017-2022. Such restoration measures, and hydrological management of our protected peatlands, will halt and reduce peat oxidation and carbon loss
- Undertake further research to assess the potential to sequester, store and reduce emissions of carbon through the management, restoration and rehabilitation of peatlands as outlined in the National Peatlands Strategy
- Upgrade land-use and habitat mapping systems to establish the baseline condition of wetlands, and inform the development of best-practice guidelines for wetland management, including the management of degraded sites and peatlands currently exploited for energy peat extraction
- Develop further measures to help rehabilitate exploited and degraded peatlands, including as part of national land-use planning and the new Common Agricultural Policy, and recognising that strategies may need to differ between regions

### 17.3.4 Land Use Review

Land use is a crucial climate mitigation measure available to Ireland, but there are significant challenges to be overcome to maximise the potential contribution from land use[53]. The Programme for Government commits to a land use review to ensure that optimal land use options inform all relevant Government decisions.

[53] The majority of grasslands in Ireland are used for agricultural purposes and cover a total land area of circa 4 million hectares. Ireland calculates emissions and removals from grasslands and reports these emissions and removals to the EU in the annual National Inventory Report compiled by the EPA. Grasslands on drained organic soils (~300 thousand hectares) are net emitters of $CO_2$ to the atmosphere due to the oxidisation of the soil organic matter and the carbon present in drainage waters. The $CO_2$ released due to the drainage of grasslands on organic soils is larger than the $CO_2$ sequestered by grasslands on mineral soils and, as a result, grasslands are a net emitter of $CO_2$ to the atmosphere.

**Box 17.3** – *National Land Use Review*

In considering Ireland's land use, the National Land Use Review will:

- Balance environmental, social, and economic considerations, and involve a process of evaluation of the ecological characteristics of the land
- Gather data and evidence to report on, and determine, the environmental, ecological, and socio-economic characteristics of land cover, land use and land-based activities across Ireland, including how they interact with each other
- Include consideration of emissions to air and water, carbon sequestration, and climate adaptation challenges
- Examine the land availability and suitability for forestry as a land use change taking into account biodiversity and environmental impacts and constraints

The review is being carried out in two distinct phases:

*Phase 1 – Evidential Review*

Phase 1 of the Land Use Review is already underway, and will provide an evidence base to determine the environmental, ecological, and economic characteristics of land types across Ireland.

*Phase 2 – Policies, Measures and Actions*

Building on the evidence base from Phase 1, Phase 2 will identify appropriate policies, measures and actions in the context of the government's wider economic, social and climate objectives.

We will:

- Complete the National Land Cover Map Project of Ordnance Survey Ireland and the EPA in 2022, including informing LULUCF accounting.
- Support EPA research programmes on land use, biodiversity, and soils.

### 17.3.5 The Marine Environment

Our coastal communities and maritime sectors will play a significant role in contributing to our climate goals and will be consulted and supported in being part of the transition.

The statutory National Marine Planning Framework[54], established in 2021, set out objectives and policies, including in relation to climate change adaptation and mitigation, which must be considered in relation to all programmes, plans or policies; and consenting, approvals or regulations, in the maritime area. In addition, management of Ireland's maritime area is being reformed through the Maritime Area Planning (MAP) Bill[55]. The emerging plan-led system is providing a foundation for climate measures, such as meeting renewable energy targets through offshore renewable energy installation, and identifying ways that all activities in the maritime area can contribute to carbon reduction and adaptation measures.

Actions to protect, conserve and restore our ocean, such as establishing Marine Protected Areas (MPAs), will increase the ability of our seas to mitigate the impacts of climate change through natural carbon sequestration and storage processes, and ensure that marine ecosystems are resilient to the impacts of climate change.

- The MAP Bill is currently being considered by the Oireachtas with the aim of being enacted by the end of 2021
- Legislation on the identification, designation and management of MPAs will commence at the end of 2021
- Nature-based carbon storage, and the potential resilience of ecosystems to climate change and ocean acidification, will be considered within criteria for the designation of MPAs. Ireland will expand its network of MPAs to cover at least 10% of its marine area as soon as possible, and 30% by 2030
- The seafood industry (fishing, seaweed harvesting and aquaculture) is one of the key stakeholders operating in the marine area and plays a vital role in the sustainability of our coastal communities around Ireland. Over 16,000 people are employed around our coast both directly and indirectly. The seafood industry will continue to support initiatives to improve our understanding of our marine area, ensuring sustainable resource use, including through bio and circular economy initiatives. Ireland's recently updated assessment under the Marine Strategy Framework Directive (Ireland's Marine Strategy Part 1, June 2020) indicated that at least some components of marine food webs are changing. The impacts of climate change on ecosystem functioning will be comprehensively assessed
- The Marine Institute will continue investment, under the Marine Research Programme, in research calls to address climate change issues such as rising sea level, ocean acidification, fish distribution and abundance changes, blue carbon storage and sequestration, coastal erosion and flooding, and extreme storm events

[54] https://www.gov.ie/en/publication/60e57-national-marine-planning-framework/

[55] https://www.gov.ie/en/publication/a1a65-maritime-area-planning-bill/

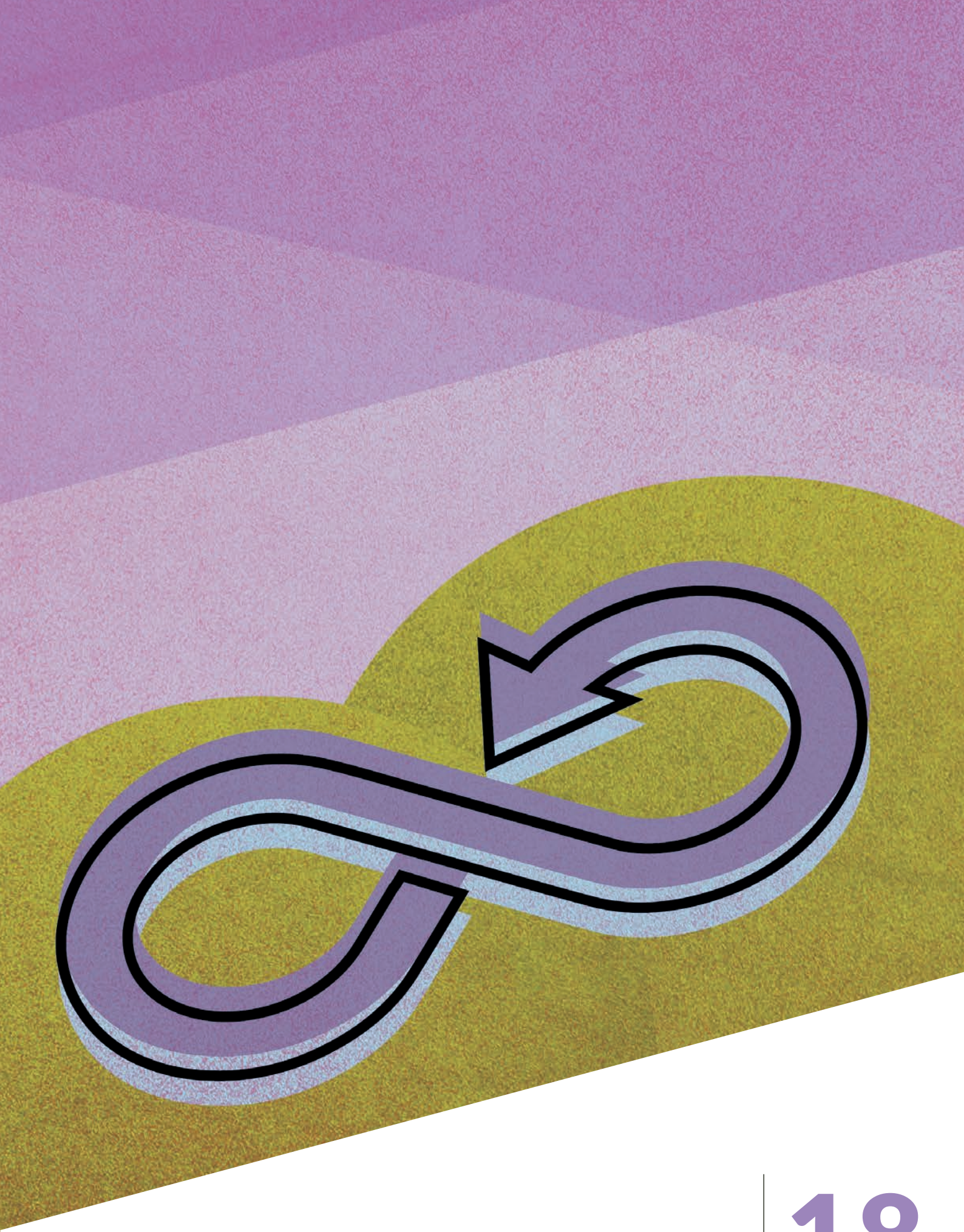
## 17.4 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 364 | Project Woodland to develop a shared national approach for trees, woods and forest |
| 365 | Prepare the next Forestry Programme post 2014-2020 for publication in 2023 |
| 366 | Implement Forestry Programme 2014-2022 (includes 2-year extension) |
| 367 | Increase the level of afforestation to meet targets |
| 368 | Increase output of forestry licences to meet demand |
| 369 | Promote the role of afforestation as a climate solution |
| 370 | Develop tools for communicating productivity and climate benefits of forests |
| 371 | Encourage the planting of small woodlands as part of DAFM agri-environment and afforestation schemes |
| 372 | Minimise the impact of deforestation on GHG emissions, while supporting wider government polices |
| 373 | Develop and support forests and forest owners in the sustainable management of woodland and the importance of climate mitigation and adaptation |
| 374 | Conduct research into species selection to increase resilience to climate change |
| 375 | Assess the impact of forest carbon stocks, sinks, and stores within the Land Use, Land-use Change and Forestry sector and model impacts of different forest management and afforestation scenarios |
| 376 | Encourage increased use of alternative forest management systems |
| 377 | Support the mobilisation of timber for use in the processing and biomass sector |
| 378 | Support the development and use of harvested wood products |
| 379 | Protect and monitor the forest estate for pest and disease in order to maintain carbon stocks and build resilience |
| 380 | Increase Climate resilience in our Forest Estate |
| 381 | Ensure the inclusion of cover crops in tillage to 50,000ha by 2030 |
| 382 | Support capital investments in the Tillage Sector |
| 383 | Support the straw incorporation measure to reach 10% of Tillage (cereal) area |
| 384 | Develop additional cropland measures to protect and enhance soil carbon |
| 385 | Promote 450,000 ha of grasslands on mineral soils for carbon sequestration |
| 386 | 80,000 hectares in 2030 of reduced management intensity of grasslands on drained organic soils |
| 387 | Continue investment in peatland mapping |
| 388 | Establish and Refine underlying soil data to measure the nutrient and soil carbon in our soils |
| 389 | Establish a national soil moisture monitoring network |

| Action Number | Action |
|---|---|
| 390 | Protect, enhance, and increase the number of hedgerows and trees on farms |
| 391 | Further refine hedgerow carbon sequestration |
| 392 | Identify opportunities for additional peatlands for enhanced rehabilitation, to bring significant benefits and contribute to Ireland's target of being carbon-neutral by 2050 |
| 393 | Complete Phase 1 Evidential Review of the Land Use Review in line with the Programme for Government 2020 |
| 394 | Promotion of forestry activity |
| 395 | Research and development in forestry |
| 396 | Deliver the full Land Use, Land-use Change and Forestry flexibility available to Ireland in the context of the 2030 greenhouse gas emissions targets |
| 397 | Assess the potential opportunities and demand for developing advanced bio-products development (biofuels and chemicals) from lignocellulose in Ireland |
| 398 | Explore and identify opportunities to increase afforestation |
| 399 | Support biodiversity data collection |
| 400 | Build on the commitments made under the National Biodiversity Action Plan 2017-2021 |
| 401 | Assess and implement mitigation options on post-production peat extraction sites |
| 402 | Coordinate the actions in the Programme for Government regarding peatlands to maximise the benefits for biodiversity |
| 403 | Continue to raise awareness of biodiversity protection |
| 404 | Research & development- Soil Tellus Soil Sampling Programme (National Geological, Geophysical & Geochemical Programme of GSI) |
| 405 | Conduct research and engage on how to support climate just transition in agriculture |
| 406 | Restore and enhance natural systems to increase resilience – starting with managing hydrological processes, carbon processes and pollination |
| 407 | Strengthen the Natura 2000 network by providing increased capacity for the enforcement of habitat regulations |
| 408 | Monitor phenological change including in phenological gardens |
| 409 | Educate school children through existing (Heritage Schools Programme, An Taisce Green Schools, Clean Coasts) and additional educational programmes to raise awareness of the links between biodiversity and climate change |
| 410 | Engage stakeholders in all sectors to protect biodiversity in order to increase resilience to climate change |
| 411 | Develop a financial strategy to implement the Biodiversity Climate Change adaptation plan which includes public and private funds innovative financial mechanisms and enables investment from national to local level |

| Action Number | Action |
|---|---|
| 412 | Increase Ireland's knowledge base in terms of marine climate change impacts and blue carbon potential to inform the development of national mitigation actions |
| 413 | Increase ocean knowledge and support research and innovation, investing in research and innovation |
| 414 | Establishment of a new Maritime Area Regulatory Authority to support a comprehensive, state-led marine consenting system better able to manage the step change in scale and complexity of offshore projects, and provisions for improved enforcement mechanisms |
| 415 | Develop a monitoring programme under the Marine Strategy Framework Directive that allows us to assess the effects of climate change |
| 416 | Develop comprehensive legislation for the identification, designation, and management of Marine Protected Areas in Irish marine waters |
| 417 | Increase broader public understanding of the effects of climate change on the sea |
| 418 | Build on the success of the UNESCO Dublin Bay Biosphere and achieve further UNESCO designations for Irish sites, including the Lough Ree region |
| 419 | Develop criteria for marine protected areas to include nature-based carbon storage and resilience to climate change and ocean acidification |
| 420 | Develop a Demonstration Natural Capital Accounts model for the seafood sector |
| 421 | Identify areas of climate action appropriate to the Seafood Development Programme 2021-27 |
| 422 | Complete the National Strategic Plan for Sustainable Aquaculture, including climate measures |
| 423 | Publish the Seafood Carbon Footprint Study, providing a detailed analysis of the carbon footprint of the catching and aquaculture sectors |
| 424 | Complete a pilot study on improving the carbon efficiency of fishing gear design |
| 425 | Maintain participation rate of 96% in the Clean Oceans Initiative and bring the fishery harbour centres in line with the Port Reception Facilities Directive |
| 426 | Develop a study to test different seaweeds cultivation techniques for eventual inclusion in cattle feed to reduce methane production |



# The Circular Economy

# 18

# 18. The Circular Economy

## 18.1 The Challenge of Sustainable Use of Resources

The circular economy offers an alternative to today's linear ('take-make-waste') model of production and consumption, in which we extract great quantities of natural resources to make things that we may use only once before throwing them away. In the circular economy, resources are kept in use for as long as possible, the maximum value is extracted from them while in use, before residual resources are then recovered and regenerated into new products and materials at the end of each lifecycle. The circular economy is, therefore, an inherently regenerative system, which minimises or avoids the emissions and other negative environmental impacts associated, by replacing a linear lifespan with a closed loop for materials. Achieving this circular transition will require significant levels of innovation in relation to the design of both production and business models.

The focus of the Waste Action Plan for a Circular Economy is on increasing recycling, minimising waste generation by prioritising the prevention of waste at every opportunity through eco-design, reuse and repair, and increasing segregation. The circular economy and climate action are also inherently interlinked. An OECD study of four countries' greenhouse gas (GHG) emissions found emissions arising from material management accounted for between 55% and 65% of national emissions. Ireland's material consumption is well above the EU average, indicating that there is scope for savings in GHG emissions through maximising the efficiency of our material usage.

Our current, linear production and consumption model (based on produce, use and dispose) is significantly carbon and resource-intensive. We need to move to a more sustainable production and consumption model by changing how we consume materials and resources, how we design the products that households and businesses use, and how we extend the productive life of all goods and products in our society and economy. An estimated 1 tonne of waste per home per year leads to GHG emissions through waste being composted, landfilled, or incinerated. Avoiding waste in the first instance is a climate action we can do every day.

These savings won't be directly credited to any sector but will be triggered across society through a radical change in the way we think about the circular economy and the avoidance of waste at every level, from the producer, the processor, and the retailer to the consumer.

## 18.2 State of Play

From a climate perspective, the shift to a circular economy is particularly important at both the resource extraction and disposal phases of the product or material lifecycle. For example, 50% of total GHG emissions come from resource extraction and processing, while if food waste were a country, it would be the third largest global GHG emitter, behind only China and the United States. Reducing the resource intensity of our economy is, therefore, an essential component of achieving net zero emissions.

With a circularity rate[56] of 1.6%, Ireland lags some way behind the EU average of 11.9%. Improving this rate will yield savings not only in tonnes of materials wasted, but also in carbon emitted. The forthcoming Whole-of-Government Circular Economy Strategy will provide an overall national policy framework for the circular transition, and will include measures to improve Ireland's circularity performance above the EU average by 2030. These measures will make provision for Circular Economy Sectoral Roadmaps which will in turn, include priority waste prevention targets in sectors where increasing circularity will have a significant impact: construction, transport, agri-food and consumer goods, and additional enterprise supports to develop innovative business models and sustainable product innovation.

[56] Circularity rate indicates the share of material which is recovered and fed back into an economy

### 18.2.1 The Bioeconomy

The bioeconomy, which is a facet within the circular economy, encompasses a range of activities across many sectors, including agriculture, the marine, forestry, water and waste management, energy, as well as biopharmaceuticals. It is the part of our economy which uses renewable resources such as crops, forestry, and fisheries to produce food and products, as well as energy, while also reducing waste. Increasing the scope of the bioeconomy will mean diminishing our reliance on fossil-based fuels and carbon intensive resources and will boost our use of renewable biological resources.

The Government's vision for the bioeconomy, as set out in the National Policy Statement on the Bioeconomy, is to grow Ireland's ambition to be a global leader for the bioeconomy through a co-ordinated approach that harnesses Ireland's natural resources and competitive advantage, and that fully exploits the opportunities available while monitoring and avoiding unintended consequences.

Since the publication of the national policy statement, a High-level Bioeconomy Implementation Group consisting of Government Departments and Agencies has been established by DECC and DAFM. The group has taken forward a number of major actions including the setting up of a National Bioeconomy Forum of industry representatives and experts, which was launched in July 2021. It is anticipated that both the National Bioeconomy Forum and the High-level Bioeconomy Implementation Group will inform policy direction and make policy recommendations, including for detailed actions to be reflected in later iterations of the Climate Action Plan, and other relevant policy documents.

An important objective of the bioeconomy is to aid Ireland's transition to a carbon neutral and circular economy. For this vision to be realised, it is essential that we have a coherent, horizontal approach to policy-making across sectors.

### 18.2.2 Minerals and the Circular Economy

Minerals have a critical role to play in realising the transition to a circular and resource efficient economy. The circular economy concept advocates a significantly reduced primary resource extraction (i.e. mining of primary metals and minerals) in favour of secondary material (recycled metals and minerals) flowing through internal loops. However, even such a circular system may still need raw materials to facilitate the green economy. For example, to achieve the national target of one million electric vehicles by 2030, a significant increase in the availability of base metals will be required to allow for the manufacture of batteries and other components. The International Energy Agency estimates that the amount of copper needed to supply electric vehicles will increase by almost two million tonnes by 2030, and there are also projected demand surges for nickel, cobalt, lithium, aluminium, manganese and other minerals. Similar demands are projected on other metals and minerals to meet the requirements of the growing green technology sector, and these demands cannot be met through recycling alone in a circular system.

### 18.2.3 Waste

When it comes to the formal inventory of GHGs, it is emissions from waste treatment that are reported under the waste sector (predominantly methane emissions as a result of disposal to landfill). The gains in reducing material use, and substituting virgin material with recycled material, will be credited back up the supply chain. Minimising waste generation, and improving segregation, reuse and recycling, will lead to less emissions associated with waste transport and treatment. In this way, material management which leads to waste treatment accounts for 1.5% of Ireland's total GHGs in 2018.

**Table 18.1** – *Waste GHG Emissions, 2018*[57]

| Waste Emissions $CO_2$ eq. | Share of Total GHG Emissions | Waste Emissions $CO_2$eq. per person |
|---|---|---|
| 0.91 Mt | 1.5% | 0.2 t |

Waste emissions per head are lower in Ireland compared to the EU average. Emissions have fallen since 2005, but not as much as in other Member States or compared to the EU average. Ireland has made significant progress in managing waste streams, particularly in improving recycling rates and diversion from landfill. Ambitious targets have been adopted for 2030.

**Table 18.2** – *Waste GHG Emissions International Comparisons, 2018*[58]

| | Ireland | Denmark | Austria | Finland | EU 27 |
|---|---|---|---|---|---|
| **Share of Total GHG** | 1.5% | 2.4% | 1.8% | 3.2% | 3.1% |
| **Emissions, $CO_2$eq. per person** | 0.2 t | 0.2 t | 0.2 t | 0.3 t | 0.3 t |
| **Change Since 2005** | -29.7% | -8.8% | -49.1% | -35.2% | -23.8 % |

The key policy tools which have been successful in Ireland are:

- Levy on landfill and diversion regulations
- Widespread segregation of waste, capturing recyclables and biodegradable waste
- Industry-supported recycling operations
- Regional waste planning

However, to achieve our targets all these areas need improvement, particularly to develop better prevention strategies, improve capture rates, and reduce both contamination and the amount of non-recyclable materials.

Waste policy measures outlined in the Waste Action Plan for a Circular Economy will have a significant effect on waste minimisation, reuse and recycling rates over the next five years. The latest release of data on biodegradable municipal waste (BMW) to landfill, reports that Ireland met the 2010, 2013 and 2020 targets under the Landfill Directive (1999/31/EC)[59]. Ireland's success in diverting waste from landfill is underpinned by two key levers: increases in the levy for disposal of waste to landfill, and requirements to divert BMW from disposal to landfill under the Landfill Directive targets.[60]

**Table 18.3** – *Required Level of Decarbonisation in Waste*

| 2018 Emissions[61] | 2030 Required Emissions Based on CAP 2021 |
|---|---|
| 0.91 Mt | 0.77 Mt |

[57] http://www.epa.ie/pubs/reports/air/airemissions/ghgemissions2017/

[58] EEA (2021), Annual European Union greenhouse gas inventory 1990–2019 and inventory report 2021

[59] EEA (2021), Annual European Union greenhouse gas inventory 1990–2019 and inventory report 2021

[60] The rate of the levy is kept under review, currently at €75 a tonne for liable waste disposed at landfill

[61] http://www.epa.ie/pubs/reports/air/airemissions/ghgemissions20197/

## 18.3 Targets

### Circular Economy

- A Whole-of-Government Circular Economy Strategy will be published by end-2021
- The Circular Economy Bill 2021 be legislated for, putting the Circular Economy Strategy on a statutory footing

### The Bioeconomy

- Report to Government with an update on the implementation of the National Bioeconomy Policy Statement, including a detailed action plan by 2022
- Opportunities to expand both skills and funding mechanisms for the bioeconomy will be explored

### Waste

**Landfill Reliance:**

- Limit diversion of biodegradable municipal waste to landfill to maximum limit of 427,000 tonnes by 2020, and for every year after
- Reduce the amount of municipal waste landfilled to 10% by 2035

**Recycling:**

- Recycle 65% of municipal waste by 2035
- Recycle 70% of packaging waste by 2030
- Recycle 55% of plastic packaging waste by 2030
- Separate collection obligations extended to include hazardous household waste (by end 2024), bio-waste (by end 2023), and textiles (by end 2024)

**Food:**

- Reduce food waste by 50% by 2030

**Plastic Single-Use Items:**

- Provide for 90% collection of plastic drinks containers by 2029
- Determine and introduce reduction targets and measures no later than 2022 to be achieved no later than 2026
- Ensure all plastic packaging is reusable or recyclable by 2030

## 18.4 Measures to Deliver Targets

### 18.4.1 Circular Economy

- We will finalise Ireland's first Whole-of-Government Circular Economy Strategy to ensure policy coherence across the public sector, and to outline Government's overall approach to the circular economy for stakeholders and the public. This whole-of-Government approach will outline the detailed measures Ireland will take to advance our circular economy
- We will bring the Circular Economy Bill 2021 through the Oireachtas, the general scheme of which was approved by Government earlier this year. This legislation will go further by translating this policy approach into a statutory requirement. It will also provide the necessary statutory underpinning to a range of actions that will strengthen waste enforcement in relation to illegal dumping and littering

### 18.4.2 Bioeconomy Measures

- The High-Level National Bioeconomy Implementation Group will report to Government on the implementation of the National Bioeconomy Policy Statement by early 2022
- The High-Level National Bioeconomy Implementation Group will set out a three-year action plan for the bioeconomy in 2022
- The National Bioeconomy Forum will provide recommendations and advice to aid the advancement of the bioeconomy. It is expected that this process will result in recommendations for future iterations of the Climate Action Plan, key policies and other key Government strategies which are relevant to the bioeconomy
- We will identify where education, training and skill gaps currently exist on the bioeconomy in Ireland
- We will identify and engage with potential funding mechanisms for demonstration actions within the bioeconomy

### 18.4.3 Mineral Exploration Measures

- A draft Policy Statement on Mineral Exploration and Mining will be finalised in 2021. This will promote the environmentally sustainable exploration and extraction of the essential minerals required to transition to a circular and climate neutral economy

### 18.4.4 Waste Measures

Irish and regional waste policy is based on the waste hierarchy: waste prevention; preparing for reuse; recycling; and energy recovery; with disposal being the least desirable option. It is implemented by the Government, Local Authorities and the EPA. We are transforming our approach to waste in line with modern, circular economy principles[62]. This involves a mind-set change to demand the highest level of protection for our natural and man-made resources and the environment. Ireland has scope for major progress in all of the key areas of the waste hierarchy.

[62] The significance of the Circular Economy in delivering sustainable growth and promoting climate change mitigation is reflected in international policy frameworks. Goal 12 of the UN SDGs (Sustainable Production and Consumption) sets out a series of targets that include resource efficiency, wasted food, waste management, reuse and recycling, public procurement, education, and removal of fossil fuel subsidies. The EU Circular Economy Action Plan, Closing the Loop, adopted in 2015, includes an ambitious new legislative framework for waste management, as well as Eco-design proposals to improve product durability; food waste reduction actions; and proposals for reuse of water and bio-nutrients, see https://eur-lex.europa.eu/resource.html?uri=cellar:8a8ef5e8- 99a0-11e5-b3b7-01aa75ed71a1.0012.02/DOC_1&format=PDF

### *Prevention*

Priority areas for prevention planning are in plastics, food, construction and commercial waste:

- The Waste Action Plan for a Circular Economy outlines the measures Ireland is taking to substantially reduce the amount of single-use plastic items we use, and to sustainably manage the waste arising from those that we do use. From 3 July 2021, the date of transposition of the Single-Use Plastics Directive, single-use plastic cutlery, plates, straws, balloons, and cotton bud sticks may not be placed on the Irish market. This ban will also apply to expanded polystyrene cups and food containers, and all products containing oxo-degradable plastic. The plan also details Ireland's ambition to lead EU efforts on dealing with disposable coffee cups, through the introduction of a latte levy and an eventual ban on disposable coffee and cold drinks cups
- Modulated fees will be extended to encourage the use of recyclable components in packaging products. We shall develop a food waste prevention roadmap to deliver our commitment to reduce food waste by 50% by 2030

### *Recycling and Reuse*

There is great scope for improved performance in recycling. Only 43% of Irish households had a brown bin in 2018. Over 30% of what goes into the black bin could have been recycled. Contamination rates have to be reduced as they can often destroy recycling for a whole load. A significant challenge shall be to reach the plastic recycling target of 55% by 2030, with a 90% collection target for beverage containers. However, a number of initiatives will be introduced to assist in attaining these goals, including:

- Expanding the Extended Producer Responsibility Scheme to new waste streams
- Using modulated fees to ensure that all packaging placed on the Irish market is reusable or recyclable in an economically viable way by 2030
- Introducing a deposit and return scheme for plastic and aluminium beverage containers by Q3 2022
- Promoting trials of better public recycling opportunities on street and at Bring Centres
- Working with industry to expand initiatives such as the Plastics Pledge
- Working with industry to improve labelling to avoid confusion or ambiguity
- Targeting the improvement of key capture rates by extending segregated collection where it is not now available, and promoting better practice
- Implementing the target of 30% replacement of virgin plastic to be recycled
- Introducing levies on disposables where sustainable alternatives are available
- Improving segregation and collection performance to increase recycling and reduce contamination
- Using our strengthened enforcement structures and measures to ensure we maximise segregated material collection. We will drive transparency and information-sharing in materials management. Householders, businesses and the public sector as consumers of resources need clear and reliable information about their behaviour, and its impact, before sustained behaviour change can take place. To achieve this we will examine ways to strengthen data reporting and appropriate information sharing to build stakeholder confidence
- Improving the take-up of collection services, with the Waste Action Plan for the Circular Economy committing to ensure every household on a collection service will have access to a three-bin (recyclables, food/organic, and general waste) system
- Using research and development funding to drive innovative developments
- Promoting the optimal use of data to explore and identify opportunities for efficiencies and synergies in our use and reuse of material resources

## 18.5 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 427 | Publish a Whole-of-Government Circular Economy Strategy and promote the Circular Economy, including focus on awareness raising, Green Public Procurement and international partnerships |
| 428 | Enact the Circular Economy Bill 2021 |
| 429 | Establish a Circular Economy Innovation Scheme, focusing on providing funding for a limited number of regional and/or national scale circular economy projects, with the capacity to significantly raise awareness of the circular economy and/or improve consumption patterns in relation to specific product categories or within specific sectors |
| 430 | Strengthen the regulatory and enforcement frameworks for the waste collection and management system, to maximise circular economy principles |
| 431 | Reduce demand for virgin raw materials and support re-use, by keeping material out of waste streams through streamlined End-of-Waste and By-Product decision-making processes and national End-of-Waste decisions for specific Construction and Demolition waste streams |
| 432 | Reconfigure the current National Waste Prevention Programme as a Circular Economy Programme for Ireland to drive the transition for business, citizens and the public sector |
| 433 | Continue to drive the rollout of CirculEire, the national circular economy platform |
| 434 | The High-Level National Bioeconomy Implementation Group will report to Government and develop a detailed Bioeconomy Action Plan in 2022 |
| 435 | The Bioeconomy Forum will contribute to the development of actions in future iterations of key policies and strategies |
| 436 | The Bioeconomy will be reflected across circular economy strategies and policies where relevant, and regulatory barriers will be examined |
| 437 | Funding mechanisms for bioeconomy innovation at demonstration level will be explored, aiming to achieve coherence across national funds |
| 438 | Opportunities to increase skills in the bioeconomy will be explored |
| 439 | Develop a policy statement on mineral exploration and mining that supports the sustainable supply of minerals required to transition to a climate neutral economy, particularly in terms of the materials required for renewable energy, energy storage (batteries), the move to a digital economy, and electrifying the transport system |
| 440 | Develop a Food Waste Prevention Roadmap that sets out a series of actions to deliver the reductions necessary to halve our food waste by 2030 and promote our transition to a circular economy |

| Action Number | Action |
|---|---|
| 441 | Enhance food waste segregation, collection and treatment (anaerobic digestion and composting) |
| 442 | Develop and implement a new Regional Waste Management Plans that will guide our transition to a circular economy |
| 443 | Develop new and expanded environmental levies to encourage reduced resource consumption and incentivise higher levels of re-use and recycling |
| 444 | Amend the Policy Statement on Petroleum. Exploration and Production and amend legislation to copper fasten the Programme for Government commitment on petroleum and gas exploration and extraction |

# Ireland's International Action on Climate Breakdown

# 19

# 19. Ireland's International Action on Climate Breakdown

## 19.1 Introduction

Climate change is a global challenge which requires a global response. To achieve the goal set by the Paris Agreement, to limit global warming to 1.5° to 2°C above pre-industrial levels, countries must reduce emissions to net zero as soon as possible. Ireland is committed to realising the goals of the Paris Agreement, championing progressive action, and ensuring the most vulnerable are at the heart of all our engagement.

Climate change continues to reshape twenty-first century international relations across developing and developed countries. As the impacts of climate change become more intense, extreme weather events, food insecurity, degradation of land and loss of natural resources increase. These effects multiply the occurrence of humanitarian crises, migration and displacement, and fuel insecurity and the possibility of conflict for the most climate-vulnerable. For these reasons, supporting and promoting a collective global effort to address climate change is a priority for Ireland.

Climate action supports broader Irish diplomatic priorities, including the realisation of human rights, the maintenance of international peace and security, and the development of sustainable food systems. In our bilateral and multilateral engagements, Ireland has a role to play in supporting and encouraging other countries to achieve their targets, including by sharing the experiences of our own climate action efforts.

Climate action also provides entry points for realising the aims of *A Better World*, our policy for international development. It has enabled Ireland to use its strong international presence to support people in Least Developed Countries (LDCs) and Small Island Developing States (SIDS). It has enabled us to amplify the voices of these countries in climate change decision-making. Ireland will continue to support LDCs and SIDS in preparing for a climate resilient future, standing in solidarity with countries that have done the least to contribute to the problem of climate change, and yet face the harshest impacts.

In making our contribution towards collective goals, such as the commitment by developed countries to achieve $100 billion per year in climate finance for developing countries, we continue to influence international climate action.

To support these efforts, the Government will develop a Climate Finance Roadmap and a Climate Diplomacy Strategy by the end of Q1 2022. This Strategy and Roadmap will be developed through an interdepartmental process and will elaborate and expand on the priorities set out in this chapter. Implementation of the roadmap and strategy will help inform annual updates of the Climate Action Plan.

## 19.2 State of Play

### 19.2.1 Policy Developments

Building on international development policies, including *A Better World* and *Ireland's Strategy for Partnership with Small Island Developing States*, new regional strategies for Africa and Asia have been developed and include strong international climate commitments. *Ireland's Strategy for Africa to 2025* commits to working closely with African partners to support implementation of the Paris Agreement, and to ensure that resources to tackle climate change are made available where they are most needed.

Ireland's strategy for Asia Pacific, *Delivering in the Asia Pacific Region to 2025* acknowledges that many of our partners in the Asia Pacific region are particularly vulnerable to climate change, with considerable numbers of people living in densely populated coastal areas. This strategy reiterates our commitment to increase our support for SIDs in the Pacific, including through the provision of €12 million to the 'Ireland Trust Fund', a specially designed fund at the Asian Development Bank to help SIDs develop their resilience to climate change and natural disasters.

As with other Government Departments, the Department of Foreign Affairs (DFA) has established a Climate Unit to underpin and coordinate the Department's efforts on climate change and to help support, shape and scale-up Ireland's climate diplomacy and climate financing at a global level. The Climate Unit acts as a hub for a network of climate focal points across the Department's Units and Missions abroad.

The Department of Finance has also enhanced the organisational capacity of the Climate and International Finance Division, and will further deepen engagement on sustainable and international climate finance through international forums including the European Union (EU) and Multilateral Development Banks (MDBs).

### 19.2.2 Climate Diplomacy

Ireland's climate diplomacy has a strong focus on adaptation and resilience, which are important issues for climate justice. It explicitly focuses on the needs of countries and communities, who are least responsible for causing climate change, have limited resources to respond and adapt, and who have most to lose. At the heart of our work is a commitment to development principles, gender, and a focus on those furthest behind. Priority continues to be given to locally-led adaptation, which channels funds to communities on the front lines of climate change, supporting a just transition to climate resilience.

In addition, Ireland has an increasing focus on sustainable oceans, and on the effects of climate change on international peace and security through our climate diplomacy as outlined below.

In our climate diplomacy, particularly through our bilateral mission network, Ireland can support efforts on climate action by sharing the experience of our own efforts to achieve climate neutrality no later than 2050.

#### *New Areas of Focus*

Recognising the significance of oceans in regulating the global climate and their importance in supporting adaptation in coastal communities, sustainable oceans and ocean-based climate action is a developing policy priority. This builds on national commitments with respect to Marine Protected Areas and participation in the High Ambition Coalition for Nature and People, which aims to protect at least 30% of the world's land and oceans by 2030.

The impacts of climate change on international peace and security is another area of focus. As a member of the United Nations (UN) Security Council and co-chair of the Informal Expert Group (IEG) of Members of the Security Council on Climate and Security for 2021, Ireland plays an important leadership role. The IEG offers a forum for Security Council members to build their understanding of how climate change contributes to insecurity and how climate action helps to promote sustainable peace.

### *Multilateral Fora*

Ireland engages strongly in multilateral fora on climate action. This includes our work through the EU, the UN, International Financial Institutions (IFIs), the OECD and others.

Ireland is a strong supporter of the Paris Agreement and the United Nations Framework Convention on Climate Change (UNFCCC) process as the multilateral mechanism to drive global climate action. Ireland engages in negotiations under the UNFCCC through its membership of the EU. Ireland's National Climate Delegation to the Conferences of the Parties (COP), organised by the UNFCCC each year, is led by the Minister for the Environment, Climate and Communications, and comprises representatives from a range of Government Departments and Agencies. The Department of the Environment, Climate and Communications (DECC) as Chair of the National Climate Delegation, manages and coordinates Ireland's preparations. As part of the Delegation, DECC also leads Ireland's engagement in the EU preparations, representing Ireland's international climate priorities in the development of EU positions for the COP. A number of Departments and Agencies are also active members in the EU Expert and Issue Groups, ranging across key priority issues, including adaptation, finance, science, and agriculture.

The EU continues to be a global leader in climate action with ambitious climate policy, as well as supporting other Parties through its climate finance initiatives, and will continue to champion environmental integrity and progress the objectives of UNFCCC and Paris Agreement in the negotiations. In 2020, the EU launched the EU Adaptation Strategy, which aligns well with Ireland's approach to climate change action.

Ireland is one of just three developed countries to hold a seat in the Least Developed Countries Expert Group (LEG), the only body mandated by Parties to the UNFCCC to provide dedicated support to LDCs. The LEG assists these countries in their efforts to design, plan and implement National Adaptation Plans and facilitates access to financial and technical support. To boost capacity for gender mainstreaming in UNFCCC climate negotiations, Ireland finances the Secretariat, and supports a non-governmental organisation partner to promote feminist climate justice. Ireland is also an active member of the Intergovernmental Panel on Climate Change which provides scientific assessments used to inform climate policy development.

Ireland participates in a number of climate diplomacy networks including: the EU Climate Ambassadors Group, an informal regular gathering of EU Climate Ambassadors; the EU Green Diplomacy Network; the OECD Development Assistance Committee network on climate and environment, Environet; as well as various fora on adaptation, climate finance, and other related issues. These networks, along with informal networks such as the Nordic+ climate envoys group, are important for knowledge gathering and sharing. Ireland works with IFIs and MDBs to support investments in high-quality environmentally sustainable programmes worldwide, and encourage these organisations' alignment with the Paris Agreement.

### 19.2.3 Climate Finance

Ireland's policy for international development, *A Better World*, recognises climate action as a major priority in light of the threat it presents to the achievement of the Sustainable Development Goals and in fuelling humanitarian need. Our international climate finance is targeted at helping the poorest to adapt to climate impacts, in the sectors that most affect the poor - and in the poorest countries.

In 2015, Ireland pledged to provide €175 million in public funding for climate finance measures in developing countries over the period 2016 to 2020. In 2018 Ireland achieved this goal, and in 2019 provided over €93 million in international climate finance. This support is nearly 100% grant-based and prioritises sectors that are of most relevance to the poorest, including agriculture and food security, energy and social protection.

In tune with development and humanitarian needs, Ireland's international climate finance is primarily focused on adaptation action. Based on the needs identified by national and sub-national actors, Ireland supports actions to address the 'locked-in' effects of climate change that cannot be reversed, so those on the front lines can cope with and build resilience to these effects. This ranges from insurance against flooding risks in the Caribbean, to drought resistant seeds, technology for water harvesting in arid areas, and humanitarian support for communities affected by climate-induced emergencies.

Under the *Programme for Government*, Ireland has committed to at least doubling the percentage of Official Development Assistance that is spent on international climate finance by 2030, increasing our contribution to the global floor of $100 billion per year. To enable this, we will develop a Climate Finance Roadmap. We recently committed to increasing our annual climate finance contribution to €225 million by 2025. Levels of support will continue to be measured in Ireland's annual Climate Finance Report, and a methodology to strengthen climate-proofing of all Official Development Assistance will also be developed in 2021.

### 19.2.4 Phasing Out of Fossil Fuel Extraction and Hydraulic Fracturing

Ireland has recognised the importance of the phasing out of fossil fuel extraction at a domestic level with the ending of issuing new licences for hydrocarbon extraction. In addition, the Government published a statement on the importation of fracked gas in May 2021. Ireland will work diplomatically to encourage a full phase out of fossil fuel extraction by means of hydraulic fracturing at an international level within the wider context of the phasing out of fossil fuel extraction globally.

## 19.3 Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 445 | Make efforts through our diplomacy to ensure that climate change is recognised as a driver of instability and climate action is an opportunity for peacebuilding in multilateral fora where appropriate |
| 446 | Place climate action, especially for Least Developed Countries and Small Island Developing States, at the heart of all development cooperation and policy partnerships, as well as our engagement in multilateral processes |
| 447 | Constructive participation in negotiations on a new UN Convention on the Law of the Sea Implementing Agreement |
| 448 | Double, at least, the percentage of ODA spending on climate finance by 2030, and report on our expenditure each year |
| 449 | Develop and implement approaches to climate-proof all ODA, and continue to include climate as a core theme in strategy development in the countries where Ireland has a significant development cooperation programme |
| 450 | Promote the development of the sustainable finance sector internationally, including preparing a Climate Finance Roadmap |
| 451 | Work with like-minded European States to promote and support changes to European energy laws – in particular the upcoming revision of the European Union's Gas Directive and Gas Regulation – in order to allow the importation of fracked gas to be restricted |
| 452 | Work with international partners to promote the phasing out of fracking at an international level within the wider context of the phasing out of fossil fuel extraction |

Sustainable Development Goals | 20

# 20. Sustainable Development Goals

## 20.1 Introduction

The actions set out in this Plan are also a reflection of Ireland's commitment to achieving the 2030 Agenda for Sustainable Development. The 17 Sustainable Development Goals (SDGs) are a set of global development targets, agreed by the United Nations in 2015, to achieve a more sustainable future for all by 2030. The goals are all interconnected and address environmental, economic, and social challenges.

SDG 13 is to take urgent action to combat climate change and its impacts. It is at the heart of this plan. However, many of the actions also contribute, both directly and indirectly, to the progress of other SDGs. From a high-level perspective, it is clear that the climate actions and initiatives set out in this plan primarily promote five other key SDGs and related goals (in addition to SDG 13):

## 20.2 SDG 7 – Affordable and Clean Energy


SDG 7 links to the objectives of Chapters 6 and 7 – Just Transition; Chapter 11 – Electricity; and Chapter 13 – Built Environment, in which the key climate change objectives of fairly reducing greenhouse gas (GHG) emissions are addressed by substantially increasing access to renewable energy and energy efficiency measures, with a focus on those at risk of energy poverty. Particular SDG targets being promoted through this plan are:

- SDG 7.2: increasing the share of sustainable energy in the global energy mix
- SDG 7.3: doubling the global rate of improvement in energy efficiency

Increased energy efficiency also helps to promote additional SDGs including: improving health (SDG 3) through reduced air pollution; creating new jobs (SDG 8); and tackling climate change (SDG 13).

### Related Goals

## 20.3 SDG 15 – Life on Land, and SDG 2 – Zero Hunger



SDG15 seek to protect, restore and promote the sustainable use of lands and forests, in addition to halting biodiversity loss. SDG 2 is to achieve 'zero hunger'. Key actions related to these goals can be found in Chapter 7 – Just Transition; Chapter 16 – Agriculture; and Chapter 17 – Land Use, Land Use Change, Forestry and the Marine. Particular SDG targets being promoted through this plan include:

- SDG 15.1: the conservation and sustainable use of terrestrial and inland freshwater ecosystems
- SDG 15.2: managing forests sustainably
- SDG 15.3: restoring degraded land
- SDG 2.4: ensuring sustainable food production systems and implementing resilient agricultural practices

Making agricultural production more sustainable helps promote additional SDGs including: improved water management (SDG 6); and economic growth (SDG 8).

### Related Goals




## 20.4 SDG 11 - Sustainable Cities and Communities


SDG 11 is focused on making cities and communities more sustainable. It is supported by measures in Chapter 10 – Carbon Pricing and Cross-cutting Policies; Chapter 13 – Built Environment; Chapter 15 – Transport; and Chapter 18 – The Circular Economy. Particular SDG targets being promoted through this plan include:

- SDG 11.2: providing affordable and sustainable transport systems
- SDG 11.3: ensuring inclusive and sustainable urbanisation
- SDG 11.6: reducing the environmental impact of cities

Making cities and communities more sustainable helps promote additional SDGs including: good health and well-being (SDG 3); building resilient infrastructure, promoting inclusive and sustainable industrialisation, and fostering innovation (SDG 9); and reducing marine pollution (SDG 14).

### Related Goals



## 20.5 SDG 12: Responsible Consumption and Production


SDG 12 aims to ensure sustainable consumption and production patterns. Actions to support this goal are in Chapter 12 – Enterprise; and Chapter 18 – The Circular Economy. Particular SDG targets being promoted through this plan include:

- SDG 12.4: managing waste responsibly
- SDG 12.5: sustainably reducing waste generation

Consuming and producing goods responsibly helps promote additional SDGs including: providing clean water and sanitation for all (SDG 6); generating affordable and clean energy (SDG 7); and building resilient infrastructure, promoting inclusive and sustainable industrialisation, and fostering innovation (SDG 9).

### Related Goals


## 20.6 Policy Coherence

Policy coherence is a key objective of the 2030 Agenda[63]. It is intended that future iterations of this Climate Action Plan will map the national climate actions against the SDG indicators, to clearly identify where the synergies lie and where there may be possible conflicts or gaps. This mapping will support enhanced reporting and monitoring of SDG implementation.

Implementation of the SDGs in Ireland is driven by Ireland's SDG Implementation Plan.

[63] SDG 17.14: enhance policy coherence for sustainable development

# Adaptation 21

# 21. Adaptation

## 21.1 What is Climate Adaptation?

Adaptation is the process of adjustment to actual or expected climate and its effects[64]. It is not a one-time emergency response, but a series of proactive measures that are taken over time to build the resilience of our economy and society to the impacts of climate change. This can ultimately help minimise the emergency response that is necessary when severe weather events occur.

Unlike climate mitigation, there is no single metric for measuring the success of adaptation to climate change. As a result, the policy targets for adaptation at global and European levels are more variable. Successful adaptation generally requires its consideration to be integrated into decision-making and policies (mainstreaming), across many sectoral policies which might be vulnerable to climate change impacts.

Work undertaken in the area of flood risk management to date provides a good illustration of this principle. Flood risk prevention strategies often make use of assessments of long-term changes in flood intensity and frequency based on climate projections. This can build long-term resilience into flood defences to cope with conditions that may arise in the future.

Adaptation measures take many shapes and forms, depending on the unique context of a country, region, community, business or organisation. Adaptation seeks to minimise the costs and maximise the opportunities arising from climate change. Adaptation actions range from building adaptive capacity (e.g. increasing awareness, sharing information and targeted training) through to policy and finance based actions. Adaptation actions should be risk-based, informed by an understanding of projected climate change, as well as the existing vulnerabilities of our society and systems.

Although the importance of adaptation is increasingly recognised globally, at European Union (EU) and national levels, multiple reports highlight the lack of preparedness[65]. Reports of extreme weather events and their impacts have an almost constant presence in the media, and the increased intensity and frequency of weather events due to climate change is a growing feature in global policy making.

## 21.2 Global and EU Position

The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report, published in 2021, notes that many changes in the climate system significantly increase in direct relation to rising global temperature. These include increases in the frequency and intensity of hot extremes; marine heatwaves; heavy precipitation; agricultural and ecological droughts in some regions; intense tropical cyclones; and reductions in Arctic sea ice, snow cover and permafrost. Continued global warming is projected to further intensify the climate change impacts on the global water cycle, including its variability, global monsoon precipitation, and the severity of wet and dry events.

[64] Intergovernmental Panel on Climate Change (IPCC), Fifth Assessment Report (AR5)

[65] Adaptation Gap Report 2020, Global Commission on Adaptation reports Adapt Now and State and trends in adaptation 2020

Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are also projected to increase with global warming of 1.5°C and will increase even further if we reach 2°C. In 2020 - one of the three warmest years on record - the global average temperature was 1.2 °C above the pre-industrial baseline. Physical climate risks, when they materialise, can erode physical assets, and cause business disruption and labour migration, with possible adverse implications both for asset valuations and broader economic outcomes. Between 1980 and 2017, for example, economic damages of €453 billion were recorded as a result of natural disasters in the European Economic Area[66].

The EU recently noted that the world has just concluded the hottest decade on record, during which the record for the hottest year was exceeded eight times[67]. Halting all greenhouse gas (GHG) emissions would still not prevent the climate impacts that are already occurring, and that will continue over the coming decades. Our efforts to reduce GHG emissions are necessary to prevent the worst impacts of climate change but we will still need to adapt to the impacts that are inevitable no matter how successful global mitigation efforts are.

The IPCC Working Group 1 Contribution to the Sixth Assessment Report makes a number of high-level projections for Europe as a whole, and of more specific relevance in the Irish context. A number of further projections are made for the Northern Europe region. The report projects that there will be:

- An observed increase in pluvial flooding attributed to human influence and projected to further increase at global warming of 1.5°C (*medium confidence*) and 2°C and above (*high confidence*)
- A projected decrease in river flooding at global warming of 2°C and above (*medium confidence*)
- A projected increase in severe wind storms at global warming of 2°C and above (*medium confidence*)

The European Green Deal, the EU's growth strategy for a sustainable future, is based on the concept that the green transformation is an opportunity and that failure to act on climate change has a huge cost.

The EU long-term vision is that in 2050 the EU will be a climate-resilient society, fully adapted to the unavoidable impacts of climate change. This means that by 2050, when the EU aims to have reached climate neutrality, it will also have reinforced its adaptive capacity and minimised its vulnerability to climate impacts, in line with the requirements of the Paris Agreement and the proposed European Climate Law[68].

The European Climate Law provides the foundation for increased ambition and policy coherence on adaptation. It sets both the framework for achieving climate neutrality, and the ambition on adaptation by 2050, by integrating the internationally-shared vision for action into EU law (i.e. the global goal on adaptation in Article 7 of the Paris Agreement and Sustainable Development Goal 13). It commits the EU and its Member States to make continuous progress to boost adaptive capacity, strengthen resilience and reduce vulnerability to climate change.

The European Green Deal also points to the need for additional adaptation action specfically through the development of a new EU Adaptation Strategy[69]. *Forging a climate-resilient Europe* – the EU Strategy on Adaptation to Climate Change, was published in February 2021 in recognition of adaptation as a

[66] Financial Stability Review 2021:I (centralbank.ie)

[67] EU https://ec.europa.eu/commission/presscorner/detail/en/IP_21_663

[68] European Climate Law COM/2020/80 final

[69] EU Strategy on adaptation to climate change COM(2013)216 final

crucial component of the long-term global response to climate change.

The strategy aims to increase and accelerate the EU's efforts to protect nature, people and livelihoods against the unavoidable impacts of climate change. Building on the work already carried out as a result of the 2013 EU Adaptation Strategy, the new Strategy outlines a long-term vision of creating a climate-resilient EU by 2050 by making adaptation smarter, more systemic and swifter, and by stepping up international action.

The strategy identifies that the frequency and severity of climate and weather extremes across the EU is increasing[70]. This has caused a surge in the frequency and severity of disasters over the last two decades[71]. These extremes range from unprecedented forest fires and heatwaves right above the Arctic Circle, to devastating droughts in the Mediterranean region; and from hurricanes ravaging the EU's outermost regions to forests decimated by unprecedented bark beetle outbreaks in central and eastern Europe. Slow onset events, such as desertification, loss of biodiversity, land and ecosystem degradation, ocean acidification, or sea level rise are equally destructive over the long-term.

Water shortages in the EU have affected economic activities as diverse as agriculture, aquaculture, tourism, power plant cooling, and cargo shipping on rivers. It affects not only the economy, but also the health and well-being of Europeans, who increasingly suffer from heatwaves (globally, the deadliest disaster of 2019 was the European heatwave with 2,500 deaths). It is also posing risks to food security, worsening existing social inequalities, and threatening cultural heritage.

Economic losses from more frequent climate-related extreme events are increasing. In the EU, these losses already average over €12 billion per year. Conservative, lower-bound estimates show that exposing today's EU economy to global warming of 3°C above pre-industrial levels would result in an annual loss of at least €170 billion (1.36% of EU GDP[72]).

## 21.3 Policy Measures for Ireland

Observations show that Ireland's climate is changing in terms of sea level rise, increases in average temperature, changes in precipitation patterns and weather extremes. Temperatures have increased by about 0.9°C over the period from 1900 to 2019 - an average of about 0.075°C per decade. The overall trend is upwards and consistent with global patterns of change.

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

Ireland's primary adaptation policy response to these challenges is set out in our first statutory five-year National Adaptation Framework (NAF)[73], which was published in January 2018. The NAF identifies 12 key sectors requiring sectoral adaptation plans. These plans were approved by Government and published in

[70] https://www.eea.europa.eu/highlights/soer2020-europes-environment-state-and-outlook-report

[71] https://www.undrr.org/news/drrday-un-report-charts-huge-rise-climate-disasters

[72] https://ec.europa.eu/jrc/en/peseta-iv/economic-impacts

[73] National Adaptation Framework

October 2019. The sectoral adaptation plans are grouped under four themes as set out in the following table.

**Table 21.1** – *Sectoral Adaptation Plans and Themes*

| Theme | Sector Level | Lead Department for Sectoral Adaptation Plans |
|---|---|---|
| **Natural and Cultural Capital** | Seafood | Department of Agriculture, Food and the Marine |
| | Agriculture | |
| | Forestry | |
| | Biodiversity | Department of Housing, Local Government and Heritage |
| | Built and Archaeological Heritage | |
| **Critical Infrastructure** | Transport Infrastructure | Department of Transport |
| | Electricity and Gas Networks | Department of the Environment, Climate and Communications |
| | Communications Networks | |
| **Water Resource and Flood Risk Management** | Flood Risk Management | Office of Public Works |
| | Water Quality | Department of Housing, Local Government and Heritage |
| | Water Services Infrastructure | |
| **Public Health** | Health | Department of Health |

The completed sectoral plans describe and assess the extent of the risks presented by climate change

to a sector, and present contingency plans to address these risks and ensure climate resilience. They include actions to mainstream adaptation into policy and administration at sectoral level, as well as to improve cooperation and coherence within and across other sectors.

**Box 21.1** - *Potential Impacts of Climate Change in Ireland*

Some of the impacts of climate change that could potentially impact priority sectors in Ireland include:

- Precipitation extremes and flooding, resulting in disruption of transport services, unsafe driving conditions and gradual deterioration of infrastructure
- Increased water demand as a result of the increased frequency of heatwaves, leading to further strain on water transmission and distribution networks, as well as on supply (abstraction and storage)
- Projected increases in the frequency of extreme precipitation events may result in more water-borne disease (e.g. E. coli) from contamination of drinking water as a result of overland flows of pollutants. Projected increases in annual average temperature, combined with wetter conditions, may result in enhanced environmental conditions for bacterial growth and viral survival with a potential increase in food-borne disease
- Projected increases in sea levels and storm surge will result in increased frequency of coastal flooding and erosion, with significant impacts for coastal and heritage sites situated in proximity to the coast and on estuaries
- Projected increases in the intensity of windstorms, and in the duration of the growing season, may result in increased wind-throw leading to damage to overhead power lines
- Projected increases in the frequency of heatwaves will result in degradation of communications infrastructure (e.g. street cabinets), potentially leading to an increased requirement for active cooling
- Projected changes in temperature and precipitation will result in the arrival of invasive species more suited to changed climate conditions, some of which may have negative impacts on the economy (e.g. via impacts on farming and fisheries)
- Projected increases in the frequency of extreme precipitation events will result in increased levels of run-off and potential water quality issues, with implications for slurry storage and land spreading
- Projected increases in the frequency of heatwaves and drought, resulting in the increased frequency of wildfires damaging forests stands

### 21.3.1 Whole-of-Government Response

The NAF recognises the importance of a whole-of-Government response to climate adaptation, which includes all government departments. While 'climate proofing' Ireland is a collective responsibility for both government and civil society, government can:

- Lead and coordinate the adaptation effort
- Ensure the necessary information and incentives are in place for independent adaptation actions by private actors
- Be proactive in addressing market failures

We will continue to work with all stakeholders to deliver the NAF, as well as the objectives of the sectoral adaptation plans and local adaptation strategies.

### 21.3.2 Local Adaptation Strategies

The NAF clearly identifies the critical role to be played by local authorities in building climate resilience. Four government-funded local authority Climate Action Regional Offices (CAROs) support the preparation of local adaptation strategies in all 31 local authorities, driving climate action at local authority level. Building on their success, the CAROs have been given an enhanced climate role covering mitigation, adaptation and citizen engagement under the Climate Action and Low Carbon Development (Amendment) Act 2021.

### 21.3.3 Climate Impact Information for Ireland

#### Met Éireann

Met Éireann is developing and initiating the coordination of Ireland's provision of integrated, tailored and user-orientated climate services. Climate modelling is a core activity of Met Éireann, and it has collaborated with University College Dublin and the Irish Centre for High-End Computing, to contribute to the development of a new global climate model (EC-Earth) which can provide analysis of the impacts of global climate change on Ireland to inform policy-making.

#### Global Climate Observing System

The Global Climate Observing System National Committee for Ireland (GCOS-Ireland), involving Met Éireann, the Environmental Protection Agency (EPA) and the Marine Institute, coordinates and promotes the GCOS observing principles relating to essential climate variables of relevance to Ireland. The GCOS-Ireland report 'Climate Status Report for Ireland 2020' provides high quality evidence to support the development of appropriate climate mitigation and adaptation solutions.

#### Climate Ireland

'Climate Ireland' is our national web-based resource of up-to-date and fit-for-purpose climate and adaptation information and tools. It provides this service for local, regional and sectoral decision-makers in line with the published adaptation strategy development guidelines. Climate Ireland also plays a key role in increasing awareness of and building capacity for adaptation planning through one-to-one support, and the provision of tailored adaptation planning workshops and seminars.

#### Office of Public Works

The Office of Public Works' national flood information portal: https://www.floodinfo.ie provides access to historical and projected maps of flood extents and plans for Ireland. This map and plan viewer website is an important resource, to support planning, emergency response planning, and to empower people and communities to respond to flood risk.

## 21.4. Actions

The detailed implementation maps for actions, including timelines and responsible organisations, are set out in the accompanying Annex.

| Action Number | Action |
|---|---|
| 453 | Deliver Climate Ireland as the national platform for data, information and decision supports on climate impacts and adaptation |
| 454 | Build local and regional resilience to the impacts of climate change through delivery of Local Authority Adaptation Strategies as required under the National Adaptation Framework |
| 455 | Review National Adaptation Framework |
| 456 | Commence pilot project to identify a suitable approach for the use of climate change adaptation indicators at national level |
| 457 | Further develop Ireland's national climate change risk assessment capacity to identify the priority physical risks of climate change to Ireland |
| 458 | Ensure that six-yearly review of the Flood Risk Management Plans will be informed by the most up-to-date research and projections of climate change on flooding and flood risk; and include other sector-led adaptation measures being implemented under the National Adaptation Framework |
| 459 | Assess appropriate adaptation measures for those existing flood relief schemes, where climate change may in time impact the current standard of protection |
| 460 | Undertake a Scheme Adaptation Plan during the detailed development of new flood relief schemes, setting out how climate change has been taken into account during the design and construction, and what adaptation measures might be needed into the future |
| 461 | Action Number not used in 2021 Climate Action Plan |
| 462 | Provide for the inclusion of potential increases in flood damages as part of the economic cost-benefit analysis for future flood relief schemes |
| 463 | Ensure that potential future flood information is obtained and/or generated through a Flood Risk Assessment that is then used to inform suitable adaptation requirements, within the planning and development management processes, in line with the Guidelines on the Planning System and Flood Risk Management |
| 464 | Continue to enhance knowledge and capacity with regards to Nature-based Catchment Management Solutions and assess their potential to be part of future flood relief schemes |
| 465 | Build on Groundwater Flood Mapping delivered by GSI |
| 466 | Maintain and further develop national landslide mapping related to climate change and land use |
| 467 | Develop and publish coastal vulnerability mapping and coastal erosion databases for the east and south coasts of Ireland |
| 468 | Continue to develop flood forecasting capability, including the development of coastal and marine monitoring and predictive capability |

| Action Number | Action |
|---|---|
| 469 | Continue to improve the understanding of, and the communication around, Ireland's changing climate and the co-creation and delivery of climate services |
| 470 | Continue to improve Ireland's national climate monitoring capabilities through the delivery of advanced, sustainable, and long-term, climate and environmental monitoring programmes |
| 471 | Continue to support National Emergency Management during extreme weather events |
| 472 | Publish a new and strengthened River Basin Management Plan for the period 2022-2027 |
| 473 | Explore options for the delivery of a National Implementation Strategy for Nature-Based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas |
| 474 | Develop interim guidance on best practice for Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas |
| 475 | Review of the Sectoral Adaptation Plan for the Water Quality and Water Services Infrastructure sectors |
| 476 | Adopt the four regional plans under Irish Water's National Water Resources Framework Plan |
| 477 | Develop clear leadership across the health sector |
| 478 | Develop a better understanding of the health impacts of climate change in Ireland |
| 479 | Ensure effective health service planning for climate resilience |
| 480 | Identify and build collaborative relationships with key stakeholders to guide implementation of health-related climate policies |
| 481 | Develop a new public health heat wave plan and seek to ensure more uniform system-wide planning for severe weather |
| 482 | Conduct a major survey of health infrastructure resilience to severe weather events: wind events, heat waves, flooding, and extreme cold snaps |
| 483 | Assess implementation of the National Skin Cancer Prevention Plan with focus on actions relevant to climate change |
| 484 | Assess the adequacy of UV-related cancer registration and epidemiology based on emerging climate change requirements |
| 485 | Review the current and emerging building infrastructure and its potential associations with climate-sensitive UV health impacts in the indoor and outdoor architectural environment |
| 486 | Build and refine Irish-specific climate change epidemiology relating to air pollution and identify risk groups |
| 487 | Undertake climate change adaptation research in the electricity and gas networks sector |

| Action Number | Action |
|---|---|
| 488 | Continue to build on adaptation measures in the electricity and gas networks sector already in place |
| 489 | Mainstream climate change adaptation into general energy policy, and strategic objectives to 2050 |
| 490 | Harmonise the collection of baseline data on the costs to business and the public arising from past extreme weather events in the electricity and gas networks sector |
| 491 | Identify areas vulnerable to impacts of climate change in the electricity and gas networks sector |
| 492 | Identify measures required to adapt to climate change impacts on vulnerable infrastructure in the electricity and gas networks sector |
| 493 | Continue to develop and improve timely communications to customers during weather events, including information provision to users on the status of electricity and gas network infrastructure, how they will be affected, and when normal services will be res restored; and increase public awareness of the benefits of the measures being taken to ensure resilience to build public support for climate adaptation measures |

Rialtas na hÉireann
Government of Ireland

Department of the Environment, Climate and Communications

V0.3