DRAFT

NORTHERN IRELAND CLIMATE ACTION PLAN

Department of
Agriculture, Environment and Rural Affairs
An Roinn
Talmhaíochta, Comhshaoil agus Gnóthaí Tuaithe
Depairtment o'
Fairmin, Environment an' Kintra Matthers
www.daera-ni.gov.uk

Draft Climate Action Plan

2023-2027

Contents

Section Two
Carbon Budget Pathway

Contents *(continued)*

Contents *(continued)*

List of Tables

Contents *(continued)*

List of Figures

Ministerial Foreword

DAERA Minister, on behalf of the Northern Ireland Executive

Our climate is changing. Globally, temperatures continue to rise, and extreme weather events are experienced with increased frequency and intensity. In Northern Ireland we are indirectly affected by global food shortages, water scarcity and energy insecurity through the prices we pay for our food and fuel. We are also experiencing the impacts of climate change locally, through flash flooding, regional extreme weather events or seasonal upsurges in algal blooms. The consequences of occurrences such as Storm Éowyn and blue-green algal blooms in Lough Neagh demonstrate the devastating and costly impacts of climate change to our economy, businesses, communities, industries, infrastructure, housing, environment and health. At the same time, we are facing a biodiversity crisis. Maintaining a rich variety of animal and plant species is vital to addressing climate change and ensuring the provision of natural resources, clean air, habitats for wildlife and sites for recreation.

As Minister of Agriculture, Environment and Rural Affairs, I am acutely aware of the scale and urgency of the challenge. But I also see the opportunity for Northern Ireland to be part of the solution. In 2020, the Northern Ireland Assembly declared a climate emergency, affirming our shared responsibility to act. We have committed to contributing to the Paris Agreement, the Glasgow Climate Pact, the Kunming-Montreal Global Biodiversity Framework (GBF) 30 x 30 targets and the United Nations Sustainable Development Goals. The draft Green Growth Strategy sets a vision and framework for a future where Northern Ireland transitions from being a high to a net zero emissions society and enjoys the longer term economic, social, health and environmental benefits that this brings.

Action is no longer optional. In 2022, the Northern Ireland Assembly passed its first climate change legislation, the Climate Change Act (Northern Ireland) 2022, committing Northern Ireland to an ambitious 2050 net zero emissions target. In December 2024, a key requirement of this Act was fulfilled when I was able to garner Executive approval for the first three carbon budgets (2023-2037) and 2030 and 2040 interim emissions reduction targets to set us on a path to net zero. Steady progress is being made in implementing other requirements of the Act including establishing a Just Transition Commission and a Northern Ireland Climate Commissioner and introducing public body reporting arrangements.

I am pleased, on behalf of the Northern Ireland Executive, to present this draft Climate Action Plan 2023-2027 which sets out policies and proposals put forward by Northern Ireland departments to achieve a 33% reduction in greenhouse gas emissions from the 1990 baseline, consistent with our first carbon budget. Reaching this point has been challenging but has provided a valuable opportunity to collectively build knowledge and

understanding, expertise and skills. It has required working together, across government, in a uniquely collaborative way, harnessing the benefits of a partnership approach.

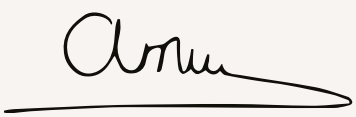
Bringing about the transformational change required will mean everyone doing things differently. I am committed to ensuring the Climate Action Plan can be implemented in a way that is fair to everyone through applying a 'just transition' approach, supporting those who are least able to deal with the consequences. We will all need to make positive and lasting behaviour changes to realise our vision for a more sustainable, efficient Northern Ireland that nurtures our environment. In doing so, we must embrace the exciting opportunities to build our economy and develop new skills, technology and innovation, bringing benefits to our wellbeing and securing the future for next generations.

The challenge may be significant, particularly considering our budgetary constraints. The cost of delivering ambitious climate targets will mean difficult decisions need to be made. However, what is clear is that the costs from delay will only grow – the cost of inaction will be far greater. Failure to change now means failure to protect people and the environment from the damaging impacts of climate change and we will risk missing out entirely on capturing the benefits for our economy arising from the transition. We must act now, decisively and with ambition.

I believe this approach brings incredible opportunities to learn new skills, create green jobs and to do things in a less harmful way for future generations. It is a positive step to help protect and safeguard our local environment.

I am more determined than ever to continue to reduce emissions. We might be a small participant in a wider global concern but that should not deter us from playing our part. It is my goal that the first Climate Action Plan is an important step on our journey to net zero. I will continue to work, together with my Executive colleagues, and show the leadership that is required to enable this change to happen. We have a long way to go but are prepared for the challenge. I urge you to join us on this journey.

Together, we can build a more sustainable, resilient, and thriving Northern Ireland for generations to come.



Andrew Muir MLA
Minister of Agriculture, Environment and Rural Affairs

Executive Summary

This is Northern Ireland's first draft Climate Action Plan 2023-2027. It is important because it is the first step on our journey to deliver our net zero ambition. Producing this plan is a statutory requirement under the Climate Change Act (Northern Ireland) 2022 (the Act) and a clear commitment in our Programme for Government 2024-2027. In December 2024, the Northern Ireland Assembly legislated that, for the period of this plan (2023-2027), greenhouse gas emissions need to be reduced by 33% on average from the 1990 baseline[1], to set us on the right path to net zero and contribute to global climate targets.

This first draft Climate Action Plan sets out 52 policies and proposals designed to reduce emissions across nine sectors: energy production and supply; transport; business and industrial processes; residential buildings; public buildings; waste management; agriculture; land use, land-use change and forestry; and fisheries. Some sectors are expected to contribute more than others; some policies and proposals have a greater impact than others; some contribute to emissions savings across more than one sector. Together, these policies and proposals set a roadmap of action needed to reduce emissions and keep us on track for future targets.

Our analysis of the impact of this plan shows that the combination of quantified policies and proposals contained within this draft Climate Action Plan is expected to be sufficient for Northern Ireland to meet its first carbon budget. This analysis is based on a number of stretching assumptions. Testing the sensitivity of these assumptions demonstrates that without adequate, secured funding and political and public backing, achieving the carbon budget will be challenging. It will involve prioritising these actions and securing the levels of investments needed to deliver them. It will require investing in science and innovation, education and skills development and enabling physical and digital infrastructure. It will also mean re-evaluating plans to progress projects that increase our emissions.

Importantly, the Act places a specific legal duty on all Northern Ireland departments to exercise their functions, as far as possible, in a way that supports achieving targets and carbon budgets. This ensures a shared responsibility both to reduce emissions through policies and proposals included in this plan and to monitor any likely impact on emissions of emerging policies and proposals during this first carbon budget period, 2023-2027.

[1] compared to the base year (1990 for most gases)

Government has a leading role to play in putting in place the policy and regulatory levers and allocating the resources necessary to meet our targets, but government action alone will not be sufficient. Achieving the reductions in emissions will require a concerted effort from everyone and a genuine willingness to make changes to the way we live our lives. For example, giving up the convenience of travelling by private car on short journeys; choosing to use our resources efficiently; and, where we can, paying more upfront for efficient technologies that will reduce emissions and save money in the longer term. However, it will also create an opportunity for a cleaner, greener, safer, fairer and prosperous society.

Significant collaboration across departments has taken place to understand the Act's requirements, including roles and responsibilities, to determine the strategic direction, identify methodologies and agree the content of this pivotal plan. Against a background of complex circumstances, departments have managed priorities, reallocated staff resources and built internal knowledge and capacity to support the development process.

By necessity, the plan is extremely detailed, complex and technical. It has been informed by engagement with stakeholders with a shared goal to ensure that Northern Ireland meets the challenge of reducing emissions. It is well informed and based on a robust foundation of careful and considered analysis. It has involved development of knowledge, skills and tools across departments and this has taken time. Identifying policies and proposals which are sufficiently ambitious whilst remaining achievable has been challenging.

In addition, it is acknowledged that there are areas where information and data are not currently available. In collaboration with others, work will continue to build and improve an evidence and knowledge base and to refine methodologies and approaches for subsequent Climate Action Plans. However, it is essential that the plan is not delayed further and that rather than pursuing perfection, efforts are focused on delivering the action that is required.

Implementing the Climate Action Plan provides a significant opportunity to work together, across government, across sectors and across society, to address one of the most important challenges of our time. Ultimately, this plan shows that, if we are to be certain about achieving our targets now and in the future, we will need to be bolder, more ambitious and more innovative.

1. Introduction

1.1 Overview

In 2022, Northern Ireland passed its first climate legislation. The Climate Change Act (Northern Ireland) 2022 (the Act)[2] sets an ambitious target to reduce Northern Ireland's greenhouse gas (GHG) emissions to net zero by 2050. This means that we must remove at least as many emissions from our atmosphere as we produce.

The Act requires us to prepare and publish a Climate Action Plan every five years.

This plan sets out policies and proposals to achieve reductions in emissions and the actions to enable this to happen. The focus of this Climate Action Plan is on meeting the first carbon budget. A carbon budget sets a limit on the maximum amount of GHG emissions that can be produced over a five-year period. Keeping emissions within the limit set for each carbon budget period is important as it will set us on the right pathway to meet 2030, 2040 and 2050 targets, in line with the requirements of the legislation.

What is a Carbon Budget?

A carbon budget provides a limit on the maximum total greenhouse gas emissions which should not be exceeded for a defined budgetary period, in order to help meet overall and longer-term emission reduction commitments.

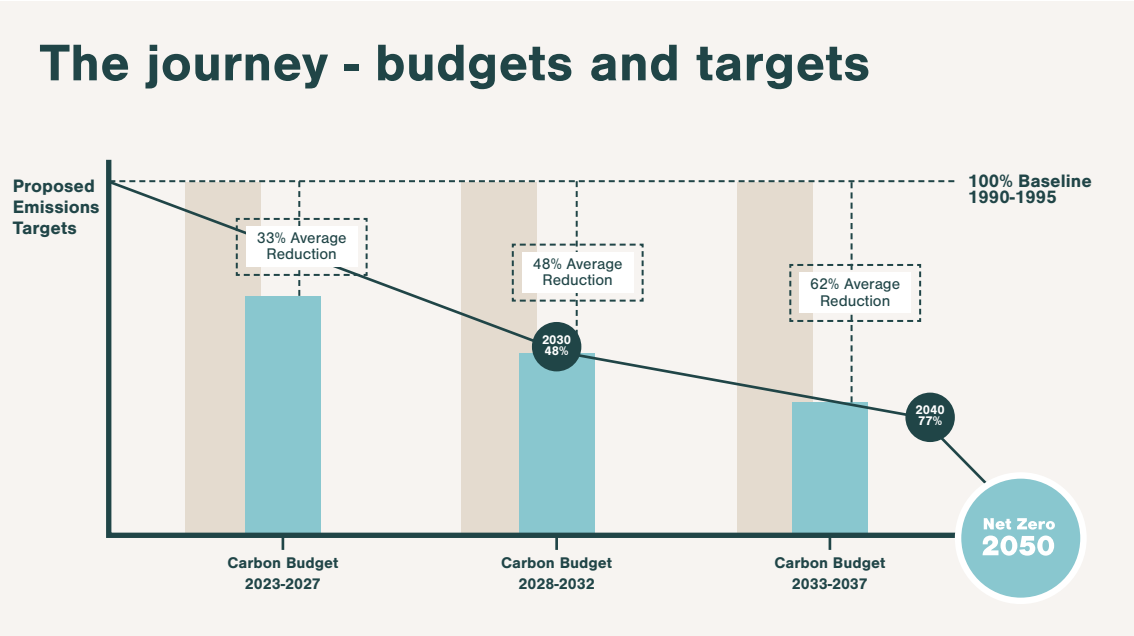
The Climate Change Committee (CCC), the UK's independent adviser on climate change, provided advice on Northern Ireland's first three carbon budget periods (2023-2027; 2028-2032; and 2033-2037). To achieve the emission reductions in line with CCC advice[3] for the 2023-2027 budget, that is, the first carbon budget period, GHG emissions would need to reduce by an annual average of 33% from the 1990 baseline[4] emission levels, across the five-year period.

[2] Climate Change Act (Northern Ireland) 2022 (legislation.gov.uk)

[3] Advice report: The path to a Net Zero Northern Ireland - Climate Change Committee (theccc.org.uk)

[4] 1990 baseline refers to 1990 for CO2, CH4 and N2O, or 1995 for fluorinated gases (F-gases) as specified in the Climate Change Act (Northern Ireland) 2022 and the CCC's advice. The Greenhouse Gas Inventory refers to the 1990 base year, this has the same meaning as the 1990 baseline

Figure 1: The journey – budgets and targets



While we have obtained advice about the level of carbon budgets and 2030 and 2040 emissions levels, the Act requires that Northern Ireland sets its own targets in legislation. To inform this, a 16-week public consultation was held from June to October 2023. The outcome of the consultation demonstrated there was significant support for adopting the CCC's recommendations.

With the return of the Executive in February 2024, it became possible to finalise these budgets and targets; legislation[5] to set and confirm these in law was passed by the Northern Ireland Assembly and came into operation on 12 December 2024.

A commitment to develop the first Climate Action Plan is included in the Executive's Programme for Government (PfG)[6] which was agreed on 27 February 2025. The PfG also recognises the need for greater collaboration to tackle climate change through the development of a Northern Ireland Climate Action Plan across all government departments.

[5] The Climate Change (Carbon Budgets 2023-2037) Regulations (Northern Ireland) 2024; and The Climate Change (2040 Emissions Target) Regulations (Northern Ireland) 2024

[6] Our Plan: Doing What Matters Most

Doing What Matters Most: Programme for Government 2024-2027

The Programme for Government outlines the Executive's agreed priorities for its three-year mandate. It focuses on doing what matters most – transforming public services, supporting businesses and improving the lives of employees, families and communities. It is structured around three Missions: People, Planet and Prosperity; with Peace as a cross-cutting commitment.

As an action to tackle climate change, the Executive commits to consulting on Northern Ireland's first Climate Action Plan to reduce carbon emissions, adapt to changing weather patterns and work towards net zero, supporting households and businesses to achieve this in a fair and balanced way.

The Department of Agriculture, Environment and Rural Affairs (DAERA) has co-ordinated the publication of this draft Climate Action Plan, with each Northern Ireland department identifying policies and proposals to reduce emissions and ensure that the carbon budget is achieved.

These policies and proposals are arranged into sectors[7]:

- energy production and supply;
- transport;
- business and industrial processes;
- residential and public buildings[8];
- waste management;
- agriculture;
- land use, land-use change and forestry (LULUCF);
- fisheries

Work to develop this draft plan commenced during a period of political uncertainty and a challenging budget environment which had implications for available resources and departments' ability to make decisions about new policies and proposals. Whilst significant progress was made, our ability to meet the timeframes set by the Act has

[7] As defined in Section 33 of the Climate Change Act (Northern Ireland) 2022

been impacted.[9] We are now into the third year of the carbon budget period this draft plan covers. Work to deliver policies and proposals which meet our climate ambitions has been progressing in parallel with the development of this draft plan.

Prioritising policies and proposals to meet emissions targets and allocating the necessary levels of investment will mean choices need to be made across the whole of society. These choices must be made in the context that we must live within our carbon budget, just as we must live within financial budgets. For government, it will involve difficult decisions about how to allocate limited resources to deliver our key public services including health, education and infrastructure. Significant investment in science and innovation, education and skills development and enabling of physical and digital infrastructure will be required.

This draft Climate Action Plan sets out the roadmap to deliver on Northern Ireland's climate ambition.

1.2 Structure of the Document

Section One describes the strategic context to this draft Climate Action Plan including the requirements of the Act, the first three carbon budgets and 2030 and 2040 targets. This section also outlines the process we have followed to develop policies and proposals to meet these targets and the status of current emissions in Northern Ireland.

Section Two describes the methodology we have used to quantify emissions and sets out the policies and proposals that we have identified across all sectors and departments. It details the estimated impacts of these measures in terms of quantified emissions reductions and wider financial, social, economic, rural and other impacts. This section identifies air, soil and biodiversity targets; and outlines examples of nature-based solutions which have been incorporated into policies and proposals for emissions reductions to ensure that we are simultaneously tackling our nature crisis.

Section Three outlines the approach we will take to deliver the first Climate Action Plan, including the governance arrangements and monitoring and reporting framework to chart progress. It also outlines actions the public sector is implementing to lead by example and identifies enablers and investment that will be required to successfully implement the plan. Finally, this section sets out the important programme of work that is being progressed alongside this draft Climate Action Plan, to support how we adapt to the impacts of a changing climate.

[8] In this draft Climate Action Plan buildings are split into two separate sectors – Residential Buildings (Chapter 6.5) and Public Buildings (Chapter 6.6).

[9] Within the Act, two different dates by which the first Climate Action Plan must be published are given: Section 29 requires publication by 31 December 2023 whereas Section 51(1) requires the plan to be published by 6 June 2024. As stated above, a number of factors have impacted the ability to meet these timeframes.

SECTION ONE

Climate Action Plan Development

1

2. Context to the Climate Action Plan

2.1 Introduction

Climate change is recognised as one of the most important challenges facing the world today. The United Nations (UN) defines climate change as the long-term shifts in temperature and average weather patterns across the world.[10] These shifts can be natural but, since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels (like coal, oil and gas) which produces heat-trapping gases called greenhouse gases (GHGs). The impacts, which include changing weather patterns, rising sea levels and more frequent and extreme weather events, are affecting every country across the world.

Unavoidable changes have already been locked in. This increases the vulnerability of our economy, businesses, industries, infrastructure, housing, natural environment and health and increases the uncertainty of the future impacts we face. What is certain is that the scale of the change we experience in the future will depend on the level of emissions reductions we can achieve globally by 2050.

Countries across the world are embracing the technologies and solutions (such as renewable energy) needed to create cleaner, more resilient economies. Climate change is a global challenge, so cooperation and action are required internationally. Globally, efforts are now focused on limiting the rise in temperature to 1.5°C to help prevent extreme weather (like heatwaves, drought and storms) happening more often and becoming more severe.[11]

Realising this target will set a clear course to achieving wider UN Sustainable Development Goals towards a better and more sustainable future for all and will provide a roadmap for climate action that will reduce emissions and build resilience to climate impacts.

United Nations Sustainable Development Goals

The 2030 Agenda for Sustainable Development, adopted by all UN Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals[12] (SDGs), which are an urgent call for action by all countries – developed and developing – in a global partnership. They recognise that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and promote economic growth – all while tackling climate change and working to preserve our oceans and forests.

[10] What Is Climate Change? | United Nations

[11] The Paris Agreement | UNFCCC 'The Paris Agreement' is a legally binding international treaty on climate change that was adopted by 196 countries in 2015. Its objective is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels". More recently, world leaders have emphasised the need to limit the temperature increase to 1.5°C above pre-industrial levels, by the end of this century.

[12] THE 17 GOALS | Sustainable Development (un.org)

The climate challenge must be considered in tandem with the ongoing efforts to halt and reverse biodiversity loss. Healthy biodiversity plays a key role in regulating climate, reducing GHG emissions, sequestering carbon, reducing flooding risk and building climate resilience. Climate change will in turn impact upon natural habitats and species composition. Nature-based Solutions (NbS) which contribute to net zero while addressing the drivers of biodiversity loss should be prioritised.

2.2 Climate Commitments in the UK

The UK was the first country in the world to introduce legislation to cut long-term emissions with the passing of the Climate Change Act 2008[13] in November 2008. It sets out statutory emissions reduction targets for the whole of the UK. It also provides the legal basis to establish the CCC as an independent statutory advisory body to the UK Government and Devolved Administrations on matters relating to climate change. The Act initially committed the UK to reducing its emissions by 80% by 2050, compared to 1990 levels. However, this target was superseded in 2019 when the UK became the first major economy to commit to a net zero target by 2050, in line with its commitment to the Paris Agreement. Devolved Administrations contribute to achieving the targets set in UK climate legislation.

To inform a path to net zero, in December 2020, the CCC published comprehensive advice[14] to the UK Government which contained its recommendations for the Sixth Carbon Budget and provided a blueprint for a fully decarbonised UK by 2050. It outlined necessary changes to policy and recommended a 78% reduction in UK emissions by 2035 relative to the 1990 baseline.

This path was updated in October 2021 with the publication of the UK Net Zero Strategy,[15] which sets out plans to meet the net zero target across all sectors of the UK economy. Following a review[16] into the UK Government's net zero approach, commissioned to reflect a change in the economic context with higher energy prices and inflationary pressures, the UK Government published a further report[17] in March 2023 to set out how it would enhance actions to deliver energy security, seize economic opportunities arising from the transition and deliver on net zero commitments.

The UK's 2035 Nationally Determined Contributions target under international law, announced by the Prime Minister at COP29 in November 2024, is to reduce all greenhouse gas emissions by at least 81% on 1990 levels, excluding international aviation and shipping emissions.[18]

[13] CCC-Insights-Briefing-1-The-UK-Climate-Change-Act.pdf (theccc.org.uk)

[14] The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf (theccc.org.uk)

[15] net-zero-strategy- Build back greener beis.pdf (publishing.service.gov.uk)

[16] Net Zero Review Final Report - GOV.UK (www.gov.uk)

[17] Powering Up Britain - Joint Overview (publishing.service.gov.uk)

[18] https://www.gov.uk/government/publications/uks-2035-nationally-determined-contribution-ndc-emissions-reduction-target-under-the-paris-agreement

[19] This commitment was included in New Decade, New Approach, the deal to restore devolved government 2020-01-08_a_new_decade__a_new_approach.pdf (publishing.service.gov.uk)

[20] 03 February 2020 (niassembly.gov.uk)

[21] The Climate Change Act (Northern Ireland) 2022 - Key elements | Department of Agriculture, Environment and Rural Affairs

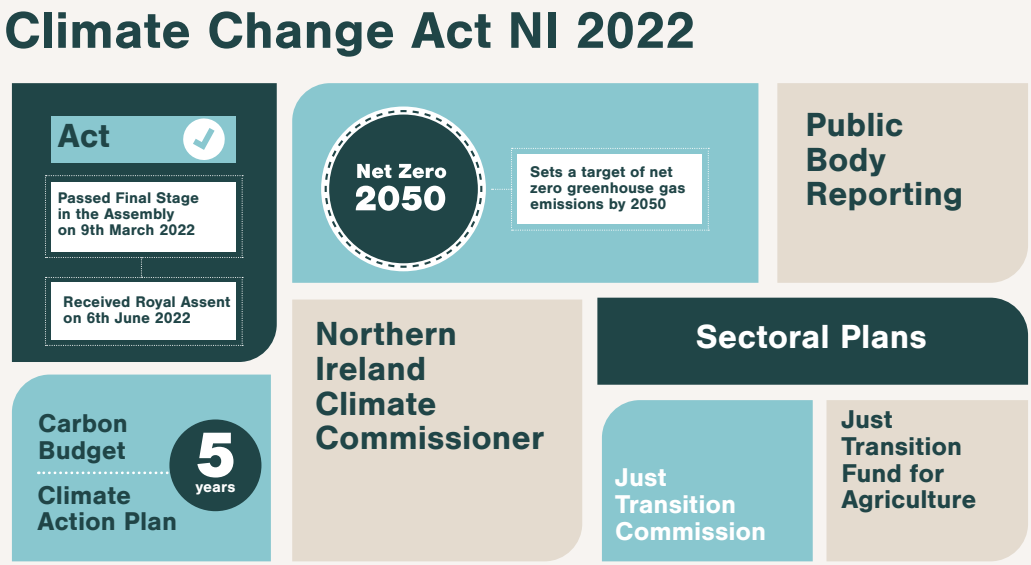
2.3 Climate Commitments in Northern Ireland

In January 2020, the need for a coordinated and strategic approach to the challenge of climate change was recognised in New Decade, New Approach, the deal to restore devolved government in Northern Ireland.[19] Following the UK, Scottish and Welsh governments, it committed to introducing legislation and targets for reducing carbon emissions in line with the Paris Agreement.

In February 2020, the Northern Ireland Assembly declared a climate emergency, recognising "the immediate impact of climate breakdown and a biodiversity crisis and their effect on all aspects of our lives in the coming years".[20] The Assembly called for the Executive's commitments to tackling climate change to be implemented urgently.

In March 2022, the Assembly passed the Climate Change Bill fulfilling the Executive's commitment to introduce its first climate legislation. Having received Royal Assent, the Climate Change Act (Northern Ireland) 2022 took effect in June 2022. The Act sets an ambitious emissions target of net zero by 2050, to achieve an overall balance in the emissions that we produce and those we remove from our atmosphere.

In addition to the net zero target, to set Northern Ireland on the right pathway, the Act also contains emissions reduction targets for 2030 and 2040 and includes requirements around the setting of carbon budgets. Like financial budgets which set financial limits, carbon budgets set limits on carbon emissions that cannot be exceeded. DAERA must publish five-yearly Climate Action Plans to outline policies and proposals to meet the carbon budget for that period and how interim emissions reduction targets and the net zero target will be achieved across specified sectors. A summary of the Act's key requirements can be found on the DAERA website.[21] Key elements include establishing: an independent Northern Ireland Climate Commissioner (being led by The Executive Office); a Just Transition Commission; a Just Transition Fund for Agriculture; and public body reporting arrangements (all led by DAERA).



Importantly, the Act places a specific legal duty[22] on all Northern Ireland departments to exercise their functions, as far as possible, in a way that supports achieving targets and carbon budgets. This ensures a shared responsibility both to reduce emissions through policies and proposals included in this plan and to monitor any likely impact on emissions of emerging policies and proposals during this carbon budget period and beyond.

2.4 Carbon Budget 2023-2027

After the Act was passed, DAERA sought advice from the CCC on what a path to net zero might be on appropriate emissions reduction targets for 2030 and 2040 and on appropriate levels for Northern Ireland's first three carbon budgets. This advice was provided by the CCC in its Advice Report[23] which was published in March 2023.

DAERA subsequently carried out a consultation exercise from June to October 2023 on the carbon budgets and emissions targets recommended by the CCC. Following completion of the consultation exercise and consideration of the responses provided (a summary of the responses is available on DAERA's website[24]), regulations reflecting the CCC's recommendations were approved by the DAERA Minister and ultimately passed by the Assembly in December 2024. As a result, Northern Ireland's first three carbon budgets have been set in law and a new target for 2040 has been set through an amendment made to the Act. The current emissions reduction targets in the Act and carbon budgets which have been set for Northern Ireland under the Act are outlined in Table 1.

Table 1: Northern Ireland's 2030, 2040 and 2050 targets and first three carbon budgets

Target/Budget Proposal	Emissions reductions required
2030 Target	A 48% emissions reduction by 2030 against the 1990 baseline [25]
2040 Target	A 77% emissions reduction by 2040 against the 1990 baseline
2050 Target	A 100% reduction by 2050 against the1990 baseline
Carbon Budget 1 (2023-2027)	33% average annual reduction compared to the 1990 baseline
Carbon Budget 2 (2028-2032)	48% average annual reduction compared to the 1990 baseline
Carbon Budget 3 (2033-2037)	62% average annual reduction compared to the 1990 baseline

To achieve the emission reductions in line with the first carbon budget (covering the period 2023-2027), emissions need to reduce by an average of 33% annually, from the 1990 base year emission levels, across the five-year period. Therefore, policies and proposals included in this first draft Climate Action Plan need to meet this first carbon budget over the five-year period from 2023 to 2027.

[22] Section 52 of the Climate Change Act (Northern Ireland) 2022

[23] Advice report: The path to a Net Zero Northern Ireland - Climate Change Committee (theccc.org.uk)

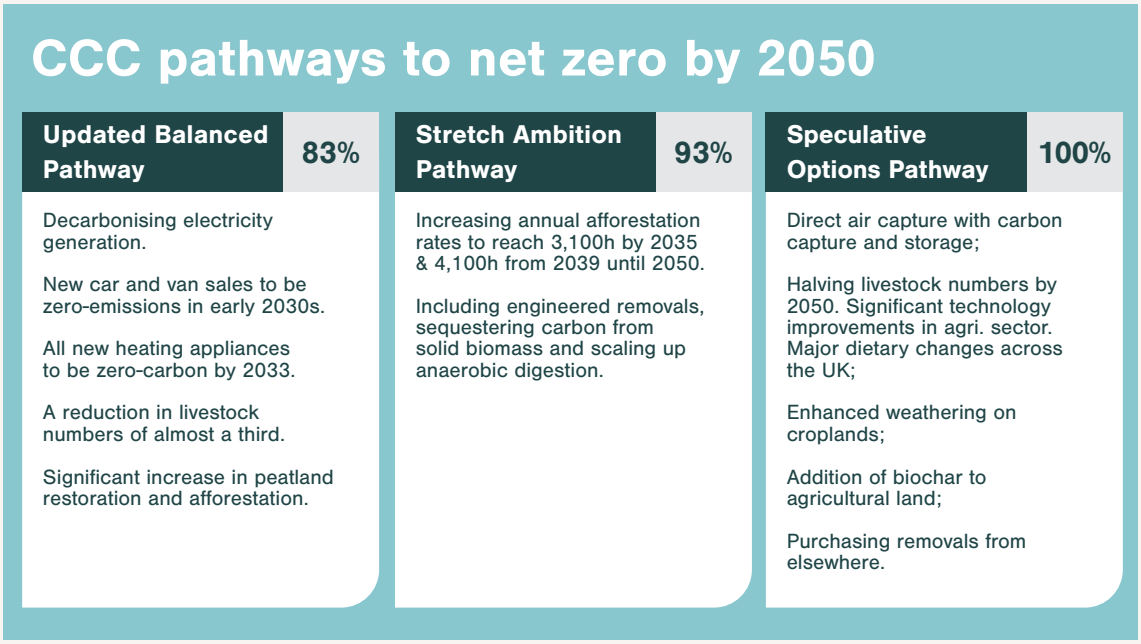
[24] Summary of Responses: Consultation on Northern Ireland's 2030 & 2040 Emissions Reduction Targets & First Three Carbon Budgets & Seeking views on Climate Change Committee (CCC) Advice Report: The path to a Net Zero Northern Ireland | Department of Agriculture, Environment and Rural Affairs

[25] The net Northern Ireland emissions account should be at least 48% lower than the 1990 baseline in 2030 and at least 77% lower than the 1990 baseline in 2040, while for carbon budgets, the recommended average annual reduction relates to reductions in the net Northern Ireland emissions account across the period compared to the 1990 baseline. The net Northern Ireland emissions account for a year means the aggregate amount of net emissions of each greenhouse gas in Northern Ireland (emissions and removals of a gas plus/minus any carbon units debited or credited to the account. The baseline is the aggregate amount of net Northern Ireland emissions of each greenhouse gas in the year specified in relation to that gas (1990 for Carbon dioxide, Methane and Nitrous oxide; 1995 for Hydrofluorocarbons, Perfluorocarbons, Sulphur hexafluoride and Nitrogen trifluoride)

2.5 CCC Advice Report – a Path to Net Zero Northern Ireland

In addition to providing advice on the first three carbon budgets and 2030 and 2040, i.e. interim, emissions reduction targets, the CCC's report[26] also set out recommendations on the best pathway for Northern Ireland to achieve its net zero emissions reduction targets. This report illustrates the types of actions required to achieve the outcomes that policies must drive to decarbonise at the pace required. Its advice on delivering net zero incorporated the combined impact of three different pathways: the Updated Balanced Pathway; the Stretch Ambition Pathway; and the Speculative Options Pathway. The Stretch Ambition Pathway comprises actions from the Updated Balanced Pathway plus additional actions; and the Speculative Options Pathway comprises actions from the Balanced and Stretch pathways plus additional actions to achieve further emissions reductions.

Figure 2: CCC pathways to net zero by 2050

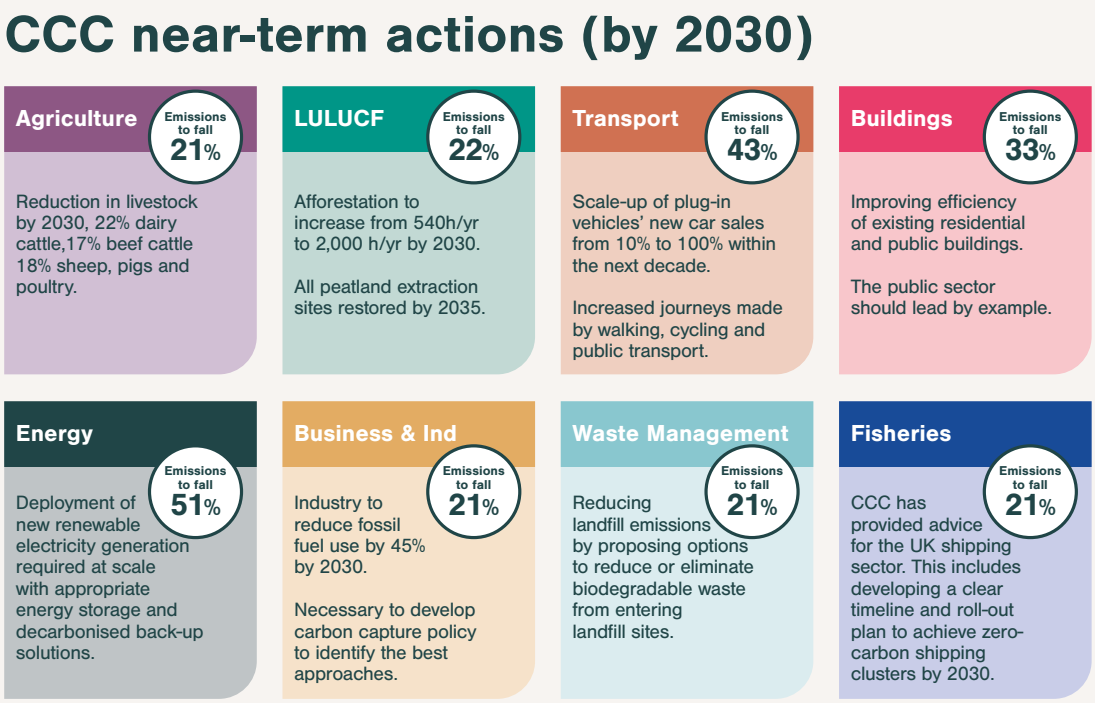


1. Updated Balanced Pathway – this updated CCC's previous advice for Northern Ireland and identified actions that would reach an 83% reduction in emissions compared to the 1990 baseline by 2050.
2. Stretch Ambition Pathway – this would mean further increases in the amount of carbon stored in land and removed from the atmosphere using engineering solutions to offset emissions from sectors where it is difficult to eliminate emissions completely. With these additional actions, Northern Ireland would achieve a 93% reduction in emissions compared to the 1990 baseline by 2050.
3. Speculative Options Pathway – to address the shortfall in emissions reductions, examples of measures are: directly capturing CO_2 from the atmosphere and storing it elsewhere[27]; enhanced weathering technologies; or making significant changes to the agriculture sector.

[26] Advice report: The path to a Net Zero Northern Ireland - Climate Change Committee (theccc.org.uk)

To achieve net zero based on the CCC's pathways, elements of the Speculative Options Pathway would need to be implemented. The report also indicated examples of near-term actions that could be required to reach the 2030 emissions target across each of the sectors as illustrated in Figure 3.

Figure 3: CCC near-term actions (by 2030)



The CCC also provided assumed annual pathways for each sector to achieve the first carbon budget. To account for updates to the Northern Ireland Greenhouse Gas (GHG) Inventory, the CCC's pathways were adjusted. The adjusted CCC pathway represents the annual emission levels assumed by the CCC for each sector with differing rates of assumed emission reduction across each sector.

The CCC's advice illustrates the scale and pace of action that will be required to meet net zero and the 2030 targets across all sectors. Delivering the changes necessary will be highly challenging but will also create significant environmental, societal and economic opportunities. It is our collective responsibility to set a pathway to maximise these opportunities so that we can contribute to addressing the global, national and local impacts of a changing climate.

Alongside the formal consultation on proposed carbon budgets and interim emission targets, we invited views from members of the public on the CCC's suggested pathway.

[27] Direct Air Carbon Capture and Storage, (DACCS)

Most respondents indicated strong support for the Executive to consider, follow or align with the CCC's sectoral recommendations, with the exception of the agriculture sector where 42% of respondents supported an alternative sectoral approach. The buildings sector pathway was supported by 84% of respondents, in favour of improving energy efficiency and promoting low carbon heating. Public sector leading by example through the government estate received 82% support, and the waste sector pathway similarly had 80% of respondents in favour of the recommended actions. A total of 79% of respondents were in favour of the Executive following the business and industrial processes sector advice; and across energy, transport, fisheries and LULUCF there was over 70% in favour of the advice provided by the CCC. Many consultees supplied information on measures they felt would improve and enable Northern Ireland to achieve the CCC's recommendations. A full analysis of responses is available on the DAERA website.[28]

The consultation provided departments with detailed views, concerns and suggestions to help inform current and future policies and proposals to reduce emissions.

2.6 Annual Greenhouse Gas Emissions

In addition to setting carbon budgets and interim emissions reduction targets, the Act requires that this Climate Action Plan must also include annual targets for GHG emissions.[29] Whilst these targets are non-binding, they should help ensure that we are on track to meet the carbon budget.

In addition to providing advice on carbon budgets, the CCC also provided DAERA with assumptions on what annual emissions levels in Northern Ireland would be if the CCC's Updated Balanced Pathway for Northern Ireland is followed. Meeting the carbon budget does not depend on meeting each of these annual emission levels. However, the CCC's assumptions represent the best available evidence on which to base annual GHG targets that are in line with the first carbon budget, the 2030 targets and ultimately the pathway to net zero. It is, therefore, proposed that the latest version of the CCC's assumed annual emission levels for the remaining full years of the carbon budget are adopted as the annual GHG targets for the purposes of the Act. The CCC's assumptions are consistent with delivery of the advised carbon budget of a 33% average annual reduction from the 1990 baseline over the course of the first carbon budget period, 2023 to 2027. The annual GHG targets are shown in Table 2.

[28] Summary of Responses: Consultation on Northern Ireland's 2030 & 2040 Emissions Reduction Targets & First Three Carbon Budgets & Seeking views on Climate Change Committee (CCC) Advice Report: The path to a Net Zero Northern Ireland | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

[29] Section 32(3)(a) of the Act

Table 2: CCC's assumed annual emission levels for the remaining full years of the carbon budget

Year	% Reduction from 1990 baseline
2025	33.0%
2026	35.5%
2027	38.4%

[30] Section 29 of the Act

3. Developing the Climate Action Plan

3.1 Introduction

Developing this draft Climate Action Plan has provided a significant opportunity to work together, across government, across sectors and across society, to address the most important challenge of our time. Significant collaboration has taken place across departments to understand the Act's requirements (including roles and responsibilities), determine the strategic direction, identify methodologies and agree the content of this pivotal plan. Against a background of complex circumstances, departments have managed priorities, reallocated staff resources and built internal knowledge and capacity to support the development process as far as possible. In wider engagement with stakeholders, the shared goal has been to ensure that Northern Ireland is well placed to meet the challenge of reducing emissions.

3.2 DAERA Responsibilities

DAERA is responsible for leading the preparation and publication of this draft Climate Action Plan. DAERA is required to carry out a 16-week public consultation on the draft plan, lay the results of the public consultation before the Assembly, and lay a final Climate Action Plan. In fulfilling these responsibilities, DAERA is required to collaborate with all departments and other stakeholders.[30]

3.3 Departments' Responsibilities

Whilst all departments have informed the development of this Climate Action Plan, Table 3 identifies the lead department assigned to eight sectors.

Table 3: Climate Action Plan sectors and associated lead departments

Climate Action Plan Sector	Lead Department(s)
Energy production and supply (including for residential, public and district heating and cooling purposes)	Department for the Economy (DfE)
Transport (including shipping and aviation)	Department for Infrastructure (DfI)
Business and industrial processes	Department for the Economy (DfE)
Residential and public buildings[31]	Residential buildings – Department for Communities (DfC) Public buildings - Department for the Economy (DfE)
Waste management	Department of Agriculture, Environment and Rural Affairs (DAERA)
Agriculture	Department of Agriculture, Environment and Rural Affairs (DAERA)
Land use, land-use change and forestry (LULUCF)	Department of Agriculture, Environment and Rural Affairs (DAERA)
Fisheries	Department of Agriculture, Environment and Rural Affairs (DAERA)

These sectors reflect eight of the ten sectors specified in Section 33 of the Act. For the remaining two sectors identified in the legislation, i.e. infrastructure and the provision of financial assistance, attributed emissions are not easily derived from the Northern Ireland GHG Inventory. Analysis conducted within DAERA confirmed that emissions associated with these sectors are covered by the other eight sectors in the inventory. Therefore, if policies and proposals were also identified and quantified for these sectors, it could lead to double counting of emissions.

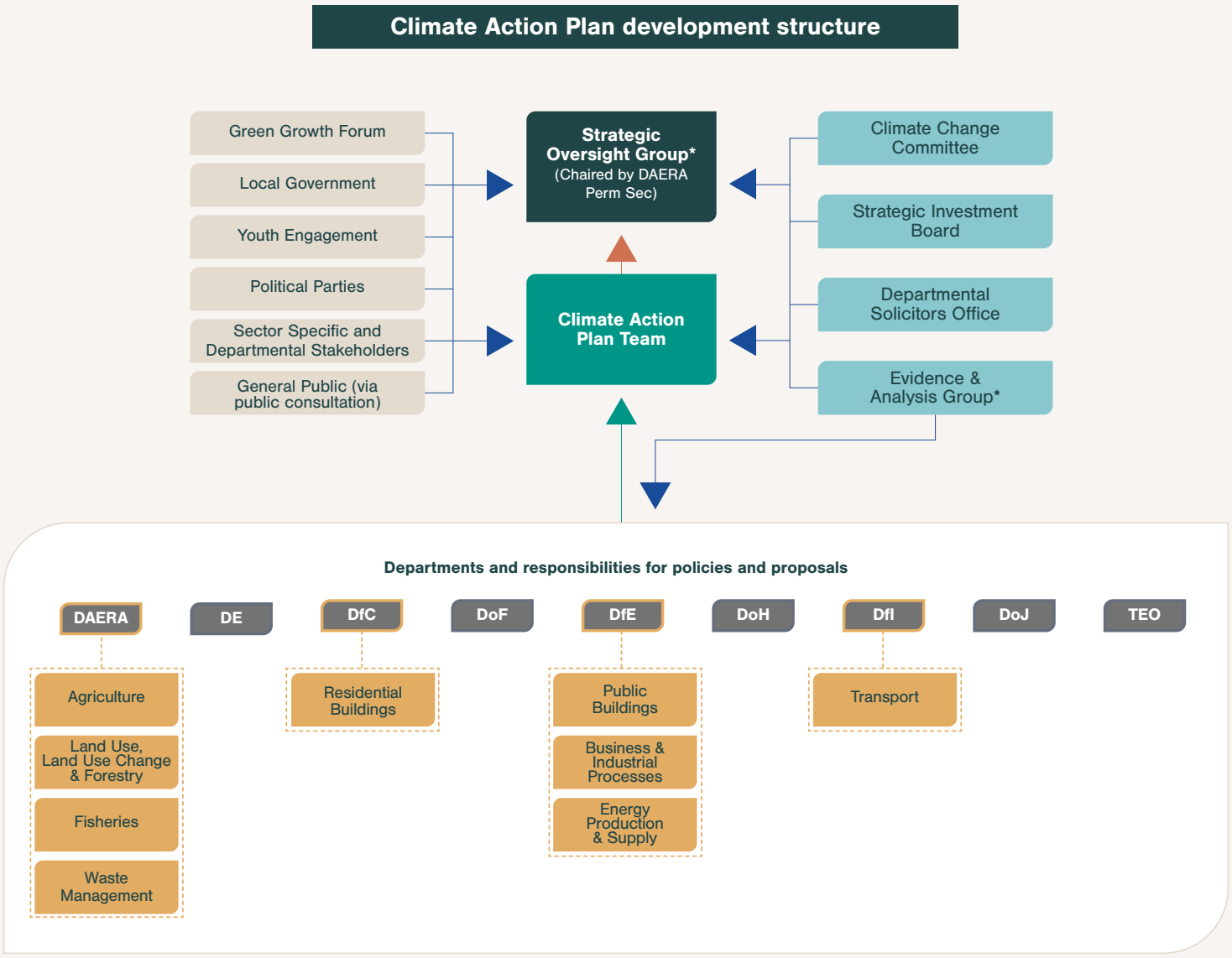
However, as these sectors have been identified in the Act, consideration has been given to the role they play in facilitating the transition to net zero. In respect of financial assistance, we will introduce a test to ensure that impacts on climate, the environment (including its natural capital assets) and green jobs are taken into account in the appraisal of all policies, programmes and projects for which there are public funding implications. Further information is provided in Chapter 11.4 (Government Spending and Procurement). In respect of infrastructure, departments identified how infrastructure will play a key enabling role in facilitating the delivery of policies and proposals. This information is set out in Chapter 12.4 (Infrastructure). Given the cross-cutting nature of these sectors, lead departments were not assigned.

[31] For the purposes of this plan, the two components of the buildings sector are considered separately

3.4 Governance Arrangements for Climate Action Plan Development

Figure 4 outlines the cross-departmental organisational arrangements in place to facilitate development of the draft Climate Action Plan. It identifies the range of departments, advisory bodies and other organisations that have been involved in supporting this work alongside some of the key stakeholder groups involved in discussions to inform the draft plan.

Figure 4: Climate Action Plan development structure



KEY

= Reporting
= Advisory
= Inputs
= Responsibility for leading sector input

Advisory group/body
Responsible for department input
Responsible for department & leading sector input

* comprised of representatives from all departments

TEO	The Executive Office
DAERA	Department of Agriculture, Environment and Rural Affairs
DE	Department of Education
DfC	Department for Communities
DoF	Department of Finance
DfE	Department for the Economy
DoH	Department of Health
DfI	Department for Infrastructure
DoJ	Department of Justice

Within DAERA, development of the Climate Action Plan was overseen at deputy secretary level. Reflecting the cross-cutting nature of the Climate Action Plan and need for collaboration, oversight was carried out by a Strategic Oversight Group, chaired by the DAERA Permanent Secretary and comprising senior representatives at deputy secretary level from all departments. This was supported by a working group comprising senior officials at director level, acting as sector and departmental leads across all departments, and was chaired by the DAERA Director of Climate Action. Within individual departments, new governance procedures were put in place to oversee departmental input or existing governance procedures were used. These structures provided essential oversight and facilitated the significant level of communication and collaboration that was required across all departments to capture policies and proposals and wider inputs to the Climate Action Plan.

3.5 Climate Action Plan Development Process

In developing this first draft Climate Action Plan for Northern Ireland, we have made significant progress in laying a firm base for its delivery and for developing successive Climate Action Plans. We have been building capacity and have furthered our understanding by undertaking an intensive programme of preparatory work to understand the complex requirements of the legislation and to agree a methodology to co-produce the Climate Action Plan with departments. We have defined sectors, aligning them with data sources and identified links and dependencies with other sectors; and have reviewed science, evidence and best practice in other countries and jurisdictions. We have consulted on carbon budgets and CCC advice and held extensive engagement with stakeholders. Collectively these tasks have shaped this draft plan, but they have also provided an essential building block from which we can proceed in the second and third carbon budget periods.

Having laid these foundations, each department prepared policies and proposals relating to their areas of responsibility. Once received, their impact on emissions reduction was quantified and allocated to the relevant sector, where possible. In addition, any policies and proposals not allocated to a sector nor quantified, but which demonstrated an important contribution to supporting the transition to net zero, have been captured in this document.

As work to identify policies and proposals was being progressed, a dedicated cross-departmental group (Evidence and Analysis Group) was established to agree the methodologies that would be used to quantify emissions reductions for each sector. This group subsequently supported a modelling exercise to assess the emissions reductions potential of each of the policies and proposals. The process is described in the Quantification Summary chapter and more detail is provided in the Quantification Report (Annex A).

The process of identifying suitable policies and proposals to meet the 2023-2027 carbon budget has been iterative. As lead department, DAERA has supported all departments through the provision of written guidance; providing support through regular bilateral and cross-departmental meetings and workshops; commissioning and sharing independent external advice; setting timeframes; and coordinating and compiling information provided by departments. DAERA has challenged departments to meet statutory requirements, to address evidence gaps as far as possible, to detail and justify assumptions and provide explanation where further work is necessary to ensure transparency.

The key draft Climate Action Plan development milestones and activities are summarised in Annex B.

A series of engagements with external stakeholders and inputs from a range of advisory groups and organisations to inform our work included:

- **The Green Growth Forum** – this is comprised of representatives from academia, environmental groups and the public, voluntary, community and private sectors.

- **Local government** – workshops with councils were jointly organised and hosted by DAERA and the Society of Local Authority Chief Executives (SOLACE) to provide councils with information on the requirements of the Act, particularly those which directly impact on councils, such as public body reporting regulations; updates on development of the plan; and details of the process of setting carbon budgets and interim targets.

- **Young people** – the Education Authority Youth Service (EAYS) facilitated discussions with young people to explore their understanding and interest in climate action, attitudes towards behaviour changes required for climate action and thoughts and ideas on short- and long-term climate goals and actions.[32]

The voices of young people:
"We need to look back to look forward. Northern Ireland used to have lots of water wheels on rivers powering local industry. It was a source of reliable, clean energy and could be used in agriculture."

"I would like to learn more about the climate at school and what we can do to help make a difference including what future career opportunities there might be for young people."

- **Citizens** – the public consultation on carbon budgets and the interim targets offered further opportunities to engage with the public.

[32] Education Authority Youth Services Consultation Report CYPS Delivery Plan 2021-2024 | Department of Education (education-ni.gov.uk)

3.6 Key Considerations in Developing the Climate Action Plan

The Act requires that the Climate Action Plan identifies policies and proposals to meet the carbon budget across sectors. However, it is not sufficient to think about reducing carbon emissions in isolation. The Act identifies a number of other key requirements that must be taken into consideration to ensure a balanced and just approach to achieving net zero. In addition, we need to be sure that the policies and proposals identified in this plan are consistent with wider environmental, social and economic principles contained in key strategies that support the Executive's commitment to reduce carbon emissions.

Other Requirements of the Act

When deciding on the proposals and policies to be included in the Climate Action Plan, departments must also take a number of other requirements into consideration.

A key requirement of the Act[33] is that Northern Ireland departments must have regard to the just transition principle when deciding their proposals and policies for inclusion within a Climate Action Plan. This principle covers a broad spectrum of 11 just transition objectives including: creating decent, fair and environmentally sustainable jobs; developing consensus through engagement; and supporting those most affected by, but least equipped to adapt to, climate change through the transition.

Individual actions of people will be central to the successful delivery of this Climate Action Plan. However, not everyone is in a position to make the changes necessary without support. The just transition principle seeks to ensure the transition to net zero is fair and just. With a just transition, it is important that the opportunities and benefits that positive climate action will bring are available to all communities and to all sections of society.

A description of how the just transition principle has been taken into consideration in respect of each sector's policies and proposals is included in the Sector Policies and Proposals chapter.

Other considerations required by the Act include:

- Departments must consult with relevant sector-specific advisory groups[34], consider the benefit of coordination with corresponding UK and Republic of Ireland policies and proposals[35] and consult other appropriate people/bodies, including climate advisory bodies in other jurisdictions.[36] Details of engagement undertaken in respect of sector policies and proposals is outlined in Annex C.
- Departments must commission a financial, social, economic and rural impact assessment.[37] A summary of findings and mitigating actions arising from the suite of impact assessments, including financial, social, economic and rural impacts, is provided in the Impact Assessments chapter.

[33] Section 30(2)(a)

- Departments must consider the special economic and social role of agriculture in Northern Ireland including the distinct characteristics of biogenic methane.[38] Details are provided in Annex D.
- Each Climate Action Plan must consider the effect on the workforce, employers and communities (including small businesses) and how they will be supported.[39] Details of how this has been taken into account are outlined in Annex E.
- Departments must consider the benefit of using and supporting nature-based projects that enhance biodiversity, protect and restore our environment or support climate resilience.[40] Details are outlined in Annex F.
- Departments must consider the risk of carbon leakage and the desirability of eliminating or minimising that risk.[41] Details are outlined in Annex G.

Other Strategic Considerations

Green Growth: Adopting a green growth approach is concerned with using the move from a high to a net zero emissions economy to improve people's quality of life through green jobs and clean environment. The Organisation for Economic Co-operation and Development (OECD[42]) and others have been leading the way on this approach for some time.

On behalf of the Executive, DAERA has developed a draft Green Growth Strategy[43] as an overarching multi-decade framework for balancing the three pillars of green growth: climate, the environment and our economy. By applying green growth principles to all that we do across central or local government, private enterprise or the voluntary and community sector, we can support a changed and improved society that both addresses our moral imperative and embraces the new economic opportunities that moving to a low carbon economy creates. The draft strategy contains cross-cutting commitments (such as supporting and promoting behaviour change to inform and encourage low carbon choices; using robust and timely evidence and science as the basis for decision making; maximising funding and investment opportunities; and working collaboratively across departments and with the wider public sector) which will help to underpin and drive the delivery of the policies and proposals within this plan.

Environmental Improvement Plan: Northern Ireland's first Environmental Improvement Plan (EIP) was published by DAERA on 27 September 2024. Publication of an EIP is a statutory requirement of the Environment Act 2021.[44] The EIP provides the basis for a coherent and effective set of interventions that can collectively deliver real improvements in the quality of the environment. It outlines six strategic objectives: excellent air, water and land quality; a healthy and accessible environment and landscapes everyone can connect with and enjoy; thriving, resilient and connected nature and wildlife; sustainable production and consumption on land and at sea; zero waste and a highly developed circular economy, and net zero greenhouse gas emissions; and improved climate resilience and adaptability. In developing policies and proposals for inclusion in this draft Climate Action Plan, consideration has also been given to the strategic objectives and actions and targets included in the EIP.

Circular Economy: Adopting a circular mindset throughout government, society and business will be integral to a successful net zero transition. Resource efficiency and transforming how we produce and consume things will contribute to emissions reductions across all sectors. Products are full of embodied carbon,[45] therefore, producing them differently with fewer raw materials and designing them to be consumed for longer will make significant reductions.

The circular economy offers an alternative to our current linear take-make-use-dispose approach to using resources. In a circular economy we:

- rethink and reduce our use of Earth's resources;
- switch to regenerative resources;
- minimise waste; and
- maintain the value of products and materials for as long as possible by reducing, reusing and recycling.

DfE has published a draft Circular Economy Strategy[46] which provides a vision to create an innovative, inclusive and competitive economy with responsible production and consumption at its core. In developing policies and proposals for inclusion in the Climate Action Plan, we have sought to take the circular economy approach into account where possible.

Climate Adaptation: Even if all emissions could be stopped today, unavoidable changes to our climate have already been locked in.[47] Climate change increases our exposure to existing risks, therefore, preparing for the impacts of climate change (climate change adaptation) at the same time as cutting emissions (climate change mitigation) is essential. It is also important that policies and proposals that seek to reduce emissions are future proofed through being designed to be climate resilient.

Climate adaptation means taking action to prepare for and adjust to the current and projected impacts of climate change. This can include measures to reduce risks such as increased vulnerability to flooding, frequency of severe weather events, over-heating of buildings resulting in health risks, periods of drought resulting in pressures on water demand and food production and an increased risk of more frequent and longer lasting wildfires.

[34] Section 29(5) of the Act

[35] Section 30(1)(a) of the Act

[36] Section 30(1)(b) of the Act

[37] Section 30(1)(c) of the Act

[38] Section 30(1)(d) of the Act

[39] Section 35 of the Act

[40] Section 30(2)(b) and Section 34 of the Act

[41] Section 36 of the Act

In developing the policies and proposals included in this draft Climate Action Plan, we have taken climate adaptation into account where appropriate. However, it is recognised that much greater focus needs to be placed on planning for climate impacts and on ensuring our sectors and policies are integrating both mitigation and adaptation measures. Working across departments, we will progress this important programme of work integrating it with delivery of this plan. Further information on adaptation work is detailed in the Climate Adaptation chapter and in the draft Northern Ireland Climate Change Adaptation Programme (NICCAP) 3.[48]

[42] Towards Green Growth | OECD

[43] A Green Growth Strategy for Northern Ireland - Balancing our climate, environment and economy | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

[44] Environment Act 2021 (legislation.gov.uk)

[45] Embodied carbon refers to the amount of GHGs associated with the extraction, production, transport and manufacturing of a product.

[46] Draft Circular Economy Strategy for Northern Ireland (economy-ni.gov.uk)

[47] Further detail is provided in the Climate Adaptation chapter

4. Carbon Emissions

4.1 Introduction

The Act requires that Northern Ireland emissions are net zero by 2050. But what levels of emissions do we currently produce? The Northern Ireland GHG Inventory contains official estimates of GHG emissions in Northern Ireland[49] and is used to fulfil our emissions reporting requirements under the Kyoto Protocol.[50] This chapter describes our current emissions levels and how they are distributed across sectors, showing the progress we have made since 1990 and how individual sectors have performed. It also explains the role of the GHG Inventory in measuring change over time so that we can understand the impact of our policies and proposals in reducing emissions.

4.2 Measuring Greenhouse Gases

Greenhouse Gas Inventories are compiled by following detailed guidance produced by the Intergovernmental Panel on Climate Change (IPCC) – the UN body for assessing the science related to climate change. Inventories report on seven direct GHGs:

- Carbon dioxide (CO_2);
- Methane (CH_4);
- Nitrous oxide (N_2O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs);
- Sulphur hexafluoride (SF_6); and
- Nitrogen trifluoride (NF_3).

} known as Fluorinated gases or F-gases

Each of these gases has been assigned a global warming potential (GWP) which defines how potent it is compared with CO_2 over a 100-year cycle (where CO_2 has a GWP of 1). Once the emissions of GHGs are converted into their GWP equivalents, the emissions are presented as CO_2 equivalent emissions, i.e. CO_2e.[51] This approach, known as GWP100, is the internationally accepted reporting standard required by the UN.

4.3 Current Total Emissions for Northern Ireland

In 2022, Northern Ireland's net annual GHG emissions were estimated to be 21.3 million tonnes of carbon dioxide equivalent ($MtCO_2e$). This was a decrease of 7.7 $MtCO_2e$, (26.4%) compared with the 1990 base year[52] as shown in Figure 5.

[48] Public consultation on draft NICCAP3 | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

[49] Northern Ireland greenhouse gas inventory | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

[50] Countries that have ratified the United Nations Framework Convention on Climate Change (UNFCCC) are committed to developing and regularly updating national emission inventories of GHGs.

Figure 5: Net GHG emissions 1990 base year to 2022

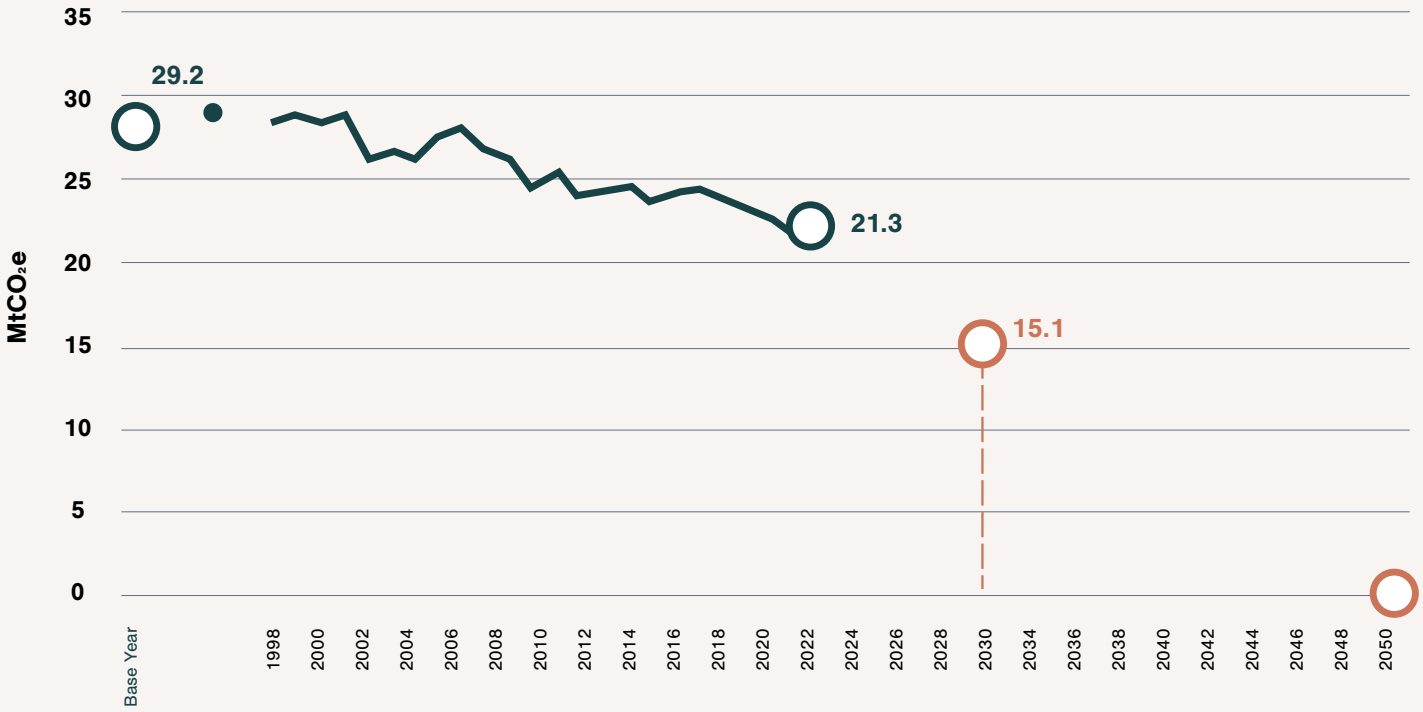


Figure 5 also shows the proposed 2030 target (15.1 $MtCO_2e$) and the net zero 2050 target. A further reduction of 6.2 $MtCO_2e$ from 2022 GHG levels is required by 2030 to meet the 48% reduction target set out in the Act.

[51] Emissions are based on 100-year GWPs (without climate feedback) that are set out in the IPCC's Fifth Assessment report (AR5). As such, data contained in this document is reported on an 'AR5' basis.

[52] The UK's reduction in emissions is set against a baseline of emissions in 1990 (for carbon dioxide, methane and nitrous oxide) and 1995 (for the F-gases). The sum of these emissions in 1990 and 1995 is called the '1990 Base Year' emissions.

4.4 Current Emissions by Sector

The Act requires that plans are made to reduce emissions by sectors. Therefore, a profile of GHGs emitted within each of the sectors is detailed in Figure 6.

Figure 6: Net GHG emissions by sector (%), 2022[51]

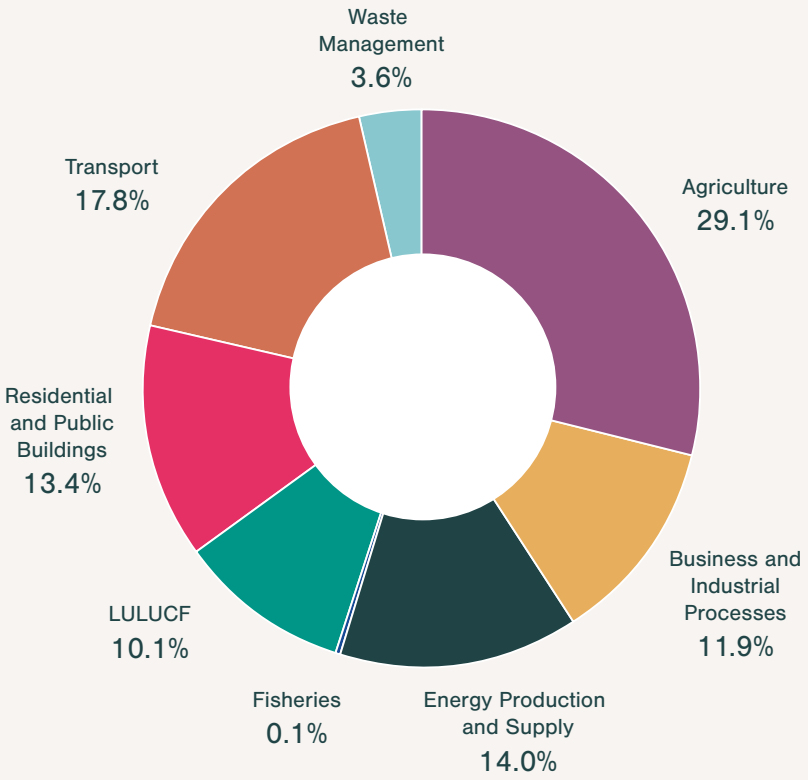


Table 4 shows that in terms of changes in GHG emissions, most sectors showed a decreasing trend between the 1990 base year and 2022. The largest decreases in emissions were experienced in the business and industrial processes sector and the energy production and supply sector. The fall in emissions of 2.3 $MtCO_2e$ in the energy production and supply sector is due to fuel switching away from coal and oil for power generation. The drop in emissions from the business and industrial processes sector (3.1 $MtCO_2e$) reflects reductions in emissions from the food and drink industries, as well as a reduction in emissions from fossil fuels combusted for heat and power production in industry.

Agriculture and transport sectors showed higher emissions in 2022 than in the base 1990 year. In agriculture, this reflects an increase in livestock numbers, which is partly offset by lower nitrogen fertiliser applications. Emissions from transport have increased due to the growth in vehicle demand despite improved vehicle efficiency.

Northern Ireland's GHG emissions profile is different to other parts of the UK given the relative importance of agriculture to our economy (29% of Northern Ireland emissions in 2022[53] versus 12% in the UK as a whole)[57]. This means that the emissions contributions by each sector in Northern Ireland are different to those in the UK as a whole. The share of Northern Ireland emissions across sectors in comparison to UK emissions is shown in Figures 7 and 8.

Table 4: Change in net GHG emissions by sector, 1990 base year to 2022

Sector	Base year ($MtCO_2e$)	2022 ($MtCO_2e$)	Change from base year to 2022	
			$MtCO_2e$	%[54]
Agriculture	5.4	6.2	+0.8	+15%
Business and industrial processes	5.6	2.5	-3.1	-55%
Energy production and supply	5.3	3.0	-2.3	-44%
Fisheries[55]	0.0	0.0	+0.0	0%
LULUCF	2.7	2.2	-0.5	-20%
Residential and public buildings	4.3	2.9	-1.4	-34%
Transport	3.6	3.8	+0.2	+6%
Waste Management	2.0	0.8	-1.2	-62%
Total	**29.0**	**21.3**	**-7.7**	**-26.4%**

[53] From 2022, there have been changes to emissions reporting in the UK GHG Inventory, with NC sectors being replaced by Territorial Emissions Statistics (TES) sectors to better meet users' needs. These changes have been reflected in the Northern Ireland GHG Inventory statistical bulletins. For the Northern Ireland draft Climate Action Plan and Quantification Report, Inventory lines within the TES sectors have been mapped back to the NC sectors to maintain alignment to the sectors detailed in the Act. The data used to inform this chart is available at: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

[54] Percentages are based on numbers before rounding

[55] Emissions for Fisheries amount to 0.021 and 0.021 $MtCO_2e$, in 1990 base year and 2022 respectively

[56] Northern Ireland Greenhouse Gas Emissions 2022

[57] 2022 UK Greenhouse Gas emissions: one page summary

Figure 7:
UK GHG emissions 2022

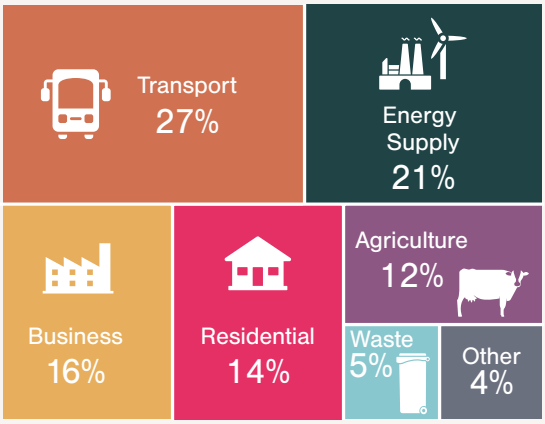
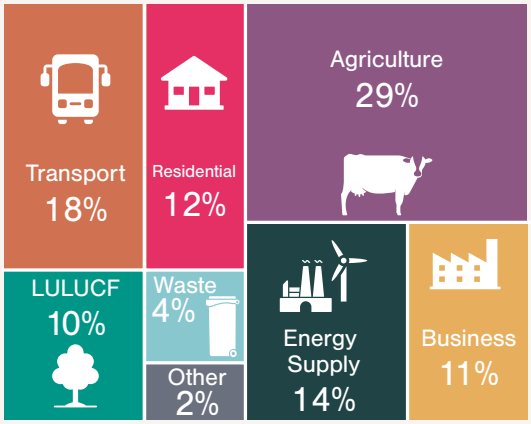


Figure 8:
Northern Ireland GHG emissions 2022



4.5 Current Emissions by Gas Type

As each GHG has a different capacity to contribute to global warming as reflected in its GWP value, it is useful to consider the contribution to Northern Ireland emissions by gas type. The three main gases which contribute to emissions in Northern Ireland are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Carbon dioxide accounted for 66.1% of all GHG emissions in Northern Ireland (14.1 $MtCO_2e$) in 2022. The proportion of GHGs from methane was 26.0% (5.6 $MtCO_2e$) and nitrous oxide (1.4 $MtCO_2e$) was 6.7%. A profile of GHG emissions broken down by each of these three gases is illustrated in Figure 9.

[58] There are zero amounts of PFCs and NF3 and a minimal amount of SF6 recorded in Northern Ireland and, as such, these gases are not included in the chart and table above

[59] A (–) denotes no emissions of that gas. A zero value (0) denotes a small level of emissions rounded, but to no decimal places.

Figure 9: Net emissions (CO_2, CH_4 and N_2O) 1990 base year to 2022[58]

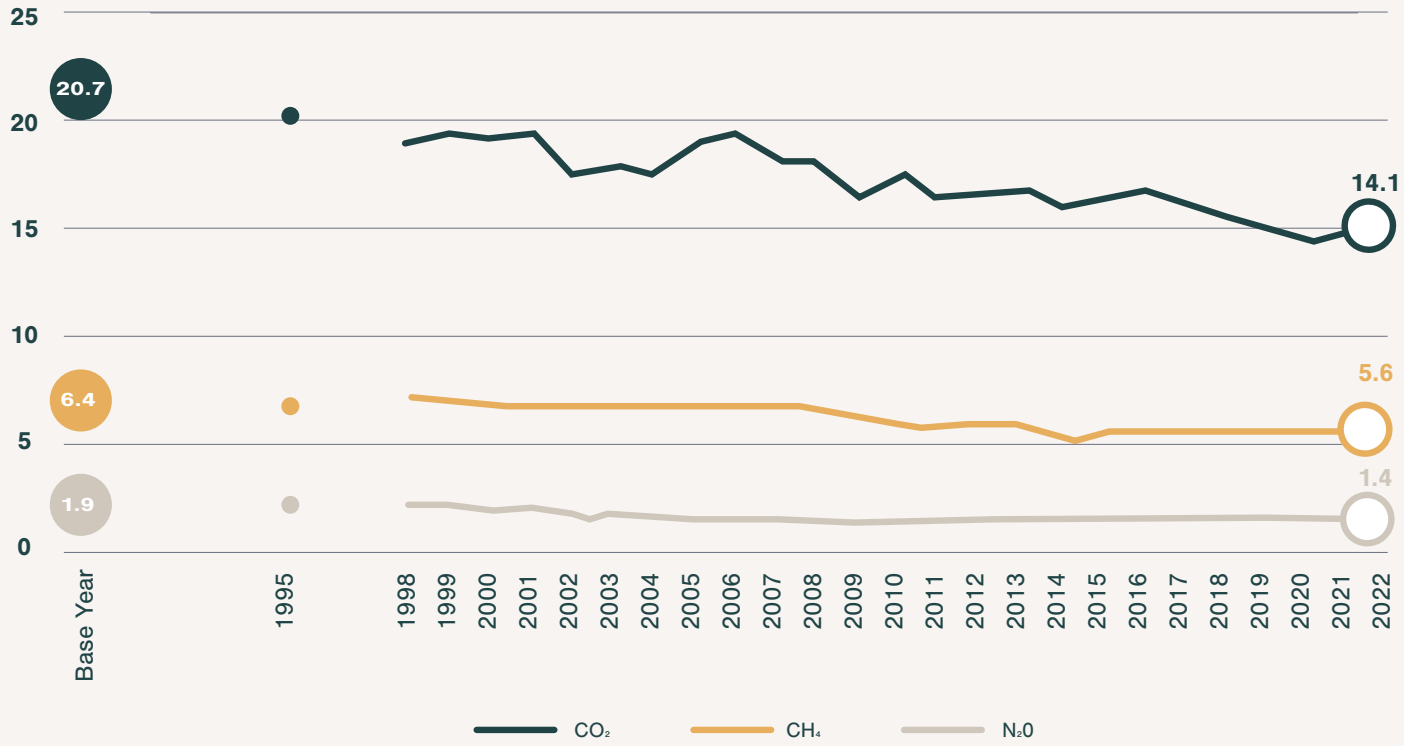


Table 5 provides further insight to the contribution by these main gas types across sectors. In 2022, carbon dioxide was the most abundant gas emitted across all sectors except for agriculture and waste management. For the agriculture sector, methane from livestock and nitrous oxide from soils were more significant GHGs than carbon dioxide. Methane from landfill was the main GHG from the waste management sector.

Table 5: GHGs by gas within sector, 2022 ($KtCO_2e$)[59]

Sector	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3
Agriculture	733	4316	1,159	-	-	-	-
Business and industrial processes	2,314	16	38	161	-	8	-
Energy production and supply	2,968	7	8	-	-	-	-
Fishing	20	0	0	-	-	-	-
LULUCF	1,552	472	136	-	-	-	-
Residential and public buildings	2,744	68	16	23	-	-	-
Transport	3,771	3	32	-	-	-	-
Waste management	2.0	718	43	-	-	-	-
Total	**14,104**	**5,599**	**1,433**	**184**	**-**	**8**	**-**

4.6 Publication of the Greenhouse Gas Inventory

The GHG Inventory for Northern Ireland is published on an annual basis, usually in June. The data is produced by a consortium led by Ricardo Energy and Environment, on behalf of the UK Government and Devolved Administrations. The inventory operates with an approximately 18-month lag, with the most recent inventory estimates of GHGs in 2022 published in June 2024. The inventory estimates are 'official statistics' and are subject to quality assurance reviews. The inventory uses the GWP100 metric in its estimates as this is the required metric for assessment of GHG emission levels under international and national legal obligations such as the United Nations Framework Convention on Climate Change (UNFCCC) and the UK's Climate Change Act 2008. As 'official statistics' the data, published by DAERA and sourced from the UK GHG Inventory, adhere to the Code of Practice for Statistics.[60] The code ensures that official statistics serve the public by being trustworthy, good quality, and are valuable.

The GHG Inventory reports emissions on a 'by source basis', in accordance with IPCC guidelines. The emission levels published within the inventory will be used to assess Northern Ireland's compliance with carbon budgets, interim targets and to track progress to net zero. Emission levels as published in the inventory for the years 2023-2027 will be used to judge compliance with the first carbon budget i.e. the inventory estimates for 2023-2027 must show an average annual reduction from the 1990 base year of 33% if Northern Ireland is to meet the first carbon budget.

4.7 Other Metrics for Greenhouse Gas Reporting

The scientific conversation around how best to compare and report the impacts of different GHGs continues to develop and expand. While GWP100 is the globally accepted measure under the UNFCCC, as well as UK and Northern Ireland legislation, other metrics have been developed. These metrics compare temperature impacts over different time-periods.

GWP* is a relatively new metric developed to link emission pathways to relative temperature change contribution. The approach entails handling longer- and shorter-lived gases separately, in contrast to the GWP100 (and other similar approaches) where each gas has a single weighting value comparing it to CO_2. The IPCC's 6th Assessment Report[61] highlights that GWP* and other similar approaches can usefully translate reported emissions to global surface air temperature and therefore better account for the distinct physical behaviours of different gases.

[60] Code of Practice for Statistics (statisticsauthority.gov.uk)

[61] IPCC AR6 WG1 Chapter 7: Forster, P., T. Storelvmo, K. Armour, W. Collins, J.-L. Dufresne, D. Frame, D.J. Lunt, T. Mauritsen, M.D. Palmer, M. Watanabe, M. Wild, and H. Zhang, 2021: The Earth's Energy Budget, Climate Feedbacks, and Climate Sensitivity. In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 923–1054, doi:10.1017/9781009157896.009.

Biogenic methane (i.e. methane from plants and animals rather than fossil sources) lasts an average of 12 years in the atmosphere. It is particularly important in Northern Ireland's GHG profile, given our relative economic dependence on the agriculture and food industries. The new 'warming-equivalent' approaches highlight that the gas's shorter lifespan means that if biogenic methane emissions are on a downward trend, there will be a net cooling – relative to the temperature increase already caused. This will be effective within a relatively short period of time, as the historical higher methane levels come to the end of their lifetime and the lower levels of biogenic methane which follow fail to raise temperature to the same degree. For long-lived GHGs, and especially CO_2, relative declines in temperature only occur if there is active removal of the gas from the atmosphere.

While use of the GWP* metric highlights the potential for a reducing trend of biogenic methane to create a relative cooling effect, it also emphasises the scale of near-term warming that could be avoided by not emitting these agricultural methane emissions (irrespective of past warming contribution). This will be much greater if assessed using GWP* than GWP100. The short-lived nature of biogenic methane means that particularly quick gains in mitigating global warming could be made by eliminating those emissions. GWP* therefore continues to support the clear scientific consensus that methane emission reductions should be supported through climate policy.

Recognising the importance of developments in climate science and the requirement in Section 30(d) of the Act to take account of the distinct characteristics of biogenic methane, DAERA commissioned an assessment of the agricultural and LULUCF policies and proposals using the GWP* metric[62]. While the IPCC illustrates the potential value of GWP* as a physical reporting tool[63], DAERA is specifically required under the UNFCCC, as well as UK and Northern Ireland legislation, to report GHG levels using the GWP100 emission metric. This position is highly unlikely to change, at least in the short to medium term.

[62] https://www.cabidigitallibrary.org/doi/10.31220/agriRxiv.2025.00321

[63] M. Pathak, R. Slade, P.R. Shukla, J. Skea, R. Pichs-Madruga, D. Ürge-Vorsatz,2022: Technical Summary. In: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926.002

SECTION TWO

Carbon Budget Pathway

2

5. Quantification Summary

5.1 Introduction

The policies and proposals set out across the nine sectors in the Sector Policies and Proposals chapter represent Northern Ireland's approach to delivering the emissions reductions required during the first carbon budget period (2023-2027). To assess the impact the suite of policies and proposals will have on emissions levels, an Evidence and Analysis Group, representing each department and led by the DAERA Chief Scientific Adviser, oversaw the estimation of emissions savings arising from the policies and proposals in each sector. Details of the exercise to quantify each policy and proposal, including the methodologies used and assumptions for each sector, are set out in the Quantification Report (Annex A). This chapter summarises the results of the Climate Action Plan quantification exercise for the first carbon budget period (2023-2027).

5.2 Quantification Methodology

The quantification modelling used allows a sector-specific approach to assessing emissions reductions. The methodologies used to estimate the impact of each policy or proposal on emissions levels for each sector were informed by the best available information on GHG savings. The defining principles of the sector-based quantification approach were:

- Maximum possible compatibility with the Northern Ireland GHG Inventory, given that its emissions estimates are the defining metric for achieving carbon budgets under the Act;
- Use of the best available modelling capacity, including external modelling where required;
- Compatibility with the DAERA GHG Emissions Projection Tool (EPT) as a means of combining sectoral analyses into an estimate of total emissions for Northern Ireland;
- Minimising the risk of double counting by apportioning savings from policies and proposals across sectors where possible and taking a conservative approach (i.e. excluding policies or proposals from quantification where there is an unacceptable risk of double counting);
- Alignment with the list of policies and proposals in this plan;
- UK policies which apply to Northern Ireland had sector-specific Northern Ireland/UK scaling ratios applied to quantify their contributions to Northern Ireland. These Northern Ireland/UK scaling ratios were determined using the proportion of total UK emissions in each sector which were emitted in Northern Ireland in the most recent inventory year. The scaling factor used for business and industrial processes was 5.1% as 5.1% of UK emissions in that sector came from Northern Ireland in 2022. The equivalent figure for residential buildings was 4.5% and public buildings had a 2.9% scaling factor. Further detail on Northern Ireland policy and proposal deployment assumptions and UK scaling factors for policies applying to Northern Ireland is set out in detail in the Quantification Report (Annex A).

5.3 Quantification of Policies and Proposals

Each policy and proposal within the plan was assessed for its projected impact on GHG levels and the findings were combined into sectoral and overall analyses. Emissions projections to 2027, based on the draft Climate Action Plan policies and proposals, are outlined in Table 6. These projections align with the Central Scenario for all policies and proposals and therefore represent the expected outcome of the draft Climate Action Plan. Deployment levels, i.e. the assumed pace and/or scale of policy implementation, assumed within these projections are set out in the Sector Policies and Proposals chapter and in greater detail in the Quantification Report (Annex A).

Table 6: Annual emissions levels for period 2020 to 2027 (actual and projected)[64]

Year	Historic Emissions	Central Projected Emissions ($MtCO_2e$)	Reduction in emissions from 1990 Base Year (Actual to 2022, Projected from 2023 to 2027)
1990 Base Year*	29.0**	-	-
2020	21.2**	-	27.0%
2021	22.0**	-	24.1%
2022	21.3**	-	26.4%
2023	-	20.5	29.1%
2024	-	19.6	32.3%
2025	-	19.4	33.1%
2026	-	19.0	34.3%
2027	-	18.4	36.6 %
Total (2023-2027)	-	**97.0**	**33.1% Average Annual Reduction**

**1990 base year refers to 1990 for CO_2, CH_4 and N_2O, or 1995 for fluorinated gases (F-gases[65]).*
***published GHG Inventory data.*

[64] Figures are rounded to one decimal place

[65] F-gases are fluorine containing compounds which are potent greenhouse gases, including: Sulphur Hexafluoride (SF6), Nitrogen Trifluoride (NF3), Perfluorocarbons (PFCs) and Hydrofluorocarbons (HFCs)

Achieving these emissions projections would represent an annual average reduction of 33.1% over the years 2023 to 2027 and therefore the combination of quantified policies and proposals contained within this draft Climate Action Plan is expected to be sufficient for Northern Ireland to meet its first carbon budget.

For Northern Ireland to meet future carbon budgets and the 2030 target of a 48% reduction from the 1990 baseline, additional measures will be required for the years following 2027. This is not surprising and highlights the importance of a sustained focus on climate action as the Climate Action Plan is developed for the second carbon budget period (2028-2032).

5.4 Risk Sensitivity Analysis

When carrying out policy modelling, it is important to take account of uncertainty associated with these projections. The GHG Inventory itself has an inherent uncertainty in its historical emissions estimates. Uncertainty in UK GHG emissions estimates is around 3%, based on uncertainty analysis of the 2022 emissions estimates which were published in February 2024.[66] Overall data quality and sector allocations are improving, but for some source sectors, significant uncertainties remain, even at UK level.

There is greater uncertainty associated with the measurement of emissions of the non-CO_2 GHGs (e.g. methane, nitrous oxide) which occur in greater proportions in Northern Ireland than in the rest of the UK. At Northern Ireland level, uncertainties are generally greater than at national level. For the latest GHG Inventory, uncertainty in the emissions estimate for the 1990 base year is assessed as ±8% and uncertainty in the emissions estimate for the 2022 year was assessed as ±6%.[67]

There are additional uncertainties associated with projecting future emissions, relating both to the nature of the methodologies used to assess the emissions savings assumed, as well as the risks associated with delivery of the policies and proposals outlined in the draft Climate Action Plan.

To account for this uncertainty in delivery across many policies and proposals, sensitivity analyses were carried out. Three scenarios were developed to reflect the fact that the outcome of some policies and proposals may be different to that anticipated during the quantification exercise. The three scenarios were as follows:

[66] 2022 UK greenhouse gas emissions, final figures with energy supply on an end user basis and uncertainty estimates

[67] Northern Ireland Greenhouse Gas Emissions 2022

1. **Central Scenario** (expected outcome): This is the most likely outcome of policy or proposal adoption, considering actual circumstances.
2. **Tailwinds Scenario** (optimistic outcome): This scenario accounts for the outcome if the policy or proposal is adopted quickly and works first time with full effect. The scenario requires new technologies and innovation to exceed expectations. It assumes that public uptake or support for the new policies or proposals is high and sustained.
3. **Headwinds Scenario** (least optimistic outcome): This scenario accounts for the outcome if delivery proceeds less well than expected, for example if new policies or proposals are delayed due to unanticipated lack of funding and/or approvals or if public uptake or support is less than expected.

More detail on each of these scenarios is included in the Quantification Report (Annex A).

Where policies and proposals were considered to have the potential to achieve a broad range of outcomes, an assessment was made of the likely emissions savings under each of the scenarios above. In some cases, it was only appropriate or possible to categorise policies and proposals in the Central Scenario. Other policies and proposals were only included in the Tailwinds Scenario as circumstances would need to evolve as per the optimistic outcome for that policy or proposal to achieve emissions savings in the first carbon budget. Where a policy or proposal was quantified in the Central Scenario only, those assumptions are considered to be as robust as possible and therefore the associated emission savings are included in all three scenarios.

The emissions projections associated with each of the three scenarios over the course of the carbon budget are outlined in Table 7.

Table 7: Emissions projections for each scenario over the 2023-2027 carbon budget

Scenario	Average Annual Reduction (AAR) achieved 2023-2027
Carbon Budget 1	33.0%
Central Scenario	33.1%
Tailwinds Scenario	34.0%
Headwinds Scenario	32.3%

This analysis highlights that, based on currently available information, the policies and proposals in the draft Climate Action Plan are projected to be sufficient to meet the carbon budget under the Central and Tailwinds Scenarios, but not the Headwinds Scenario. These figures illustrate the need for high ambition and early action on the full suite of policies and proposals set out in the draft Climate Action Plan.

The Central Scenario is considered the most appropriate scenario for use in judging whether the carbon budget will be met as it is the combination of the expected outcomes of each policy and proposal. The Central Scenario sits between the more optimistic and pessimistic approaches to emissions projections represented in the Tailwinds and Headwinds Scenarios. The deployment assumptions on which the Central Scenario relies are set out in the sector chapters and represent the expected and most likely set of practical real-life outcomes for each policy and proposal. It is therefore the scenario around which there is the greatest confidence.

Table 8 sets out the annual and total emissions projections under each of the three scenarios highlighted above. The projections are compared to the assumptions of annual emissions levels within the CCC pathway, as adjusted following the publication of the 2022 GHG Inventory. Further detail on the emissions breakdown by sector under each scenario is included in the Quantification Report (Annex A).

Table 8: Projected annual emissions for the first carbon budget period 2023-2027 and CCC adjusted pathway

Year	Total NI GHGs ($MtCO_2e$)	Projected emissions - Central Scenario ($MtCO_2e$)	Projected emissions - Tailwinds Scenario ($MtCO_2e$)	Projected emissions - Headwinds Scenario ($MtCO_2e$)	Adjusted CCC Pathway ($MtCO_2e$)
1990/95 (*Base Year)	29.0**	-	-	-	-
2020**	21.2**	-	-	-	-
2021**	22.0**	-	-	-	-
2022	21.3**	-	-	-	-
2023	-	20.6	20.6	20.5	21.0
2024	-	19.6	19.6	19.6	20.1
2025	-	19.4	19.3	19.5	19.4
2026	-	19.0	18.5	19.3	18.7
2027	-	18.4	17.6	19.2	17.8
2023-2027 First Carbon Budget Total ($MtCO_2e$)	-	97.0	95.6	98.1	97.1
Average Annual Reduction %	-	33.1%	34.0%	32.3%	33.0%

**Base year refers to 1990 for CO_2, CH_4 and N_2O, or 1995 for fluorinated gases (F-gases).*[68]
*** Published GHG Inventory data*

[68] F-gases are fluorine containing compounds which are potent greenhouse gases, including: Sulphur Hexafluoride (SF6), Nitrogen Trifluoride (NF3), Perfluorocarbons (PFCs) and Hydrofluorocarbons (HFCs).

As shown in Table 6, the projections for emissions levels under the Central Scenario in 2027 show a 36.6% reduction from 1990 base year (18.4 $MtCO_2e$) compared to the 38.4% reduction assumed by the adjusted CCC pathway for 2027 (17.8 $MtCO_2e$). Therefore, additional effort will be required in the second Climate Action Plan to make up this difference to meet the 2030 targets and the second carbon budget of a 48% average annual reduction from 2028 to 2032. A strong focus on the enablers for climate action, such as science and innovation, behaviour change, and skills and education, will be required to scale up delivery of emissions reductions.

6. Sector Policies and Proposals

6.1 Introduction

This chapter describes the policies and proposals required to achieve the first carbon budget for Northern Ireland.[69]

Policies and Proposals

A policy is a committed course of action to which a policy outcome can be attributed with a reasonable level of confidence.

A proposal is a suggested course of action or exploratory action, the details of which might change as this course of action is explored further. Proposals are generally at an earlier stage of development than policies and more work will be needed to determine what they entail, how they might be delivered and how they could be funded.

Collectively, the policies and proposals included in this plan describe the approach to meeting Northern Ireland's emissions reduction targets.

The policies and proposals outlined in this chapter of the draft Climate Action Plan represent those which departments consider are achievable and deliverable as part of a credible approach to meeting our proposed 2023-2027 carbon budget.

Each sector chapter outlines policies and proposals which have been quantified in terms of their contribution to deliver the emissions savings necessary to achieve the overall carbon budget. As part of this quantification process, the impact of the intervention on future GHG emission levels was assessed and incorporated within sector and Northern Ireland level annual emissions projections. Achievement of the carbon budget is assessed at the Northern Ireland level. Some sectors are expected to contribute more than others; some policies and proposals have a greater impact than others; some contribute to emissions savings across more than one sector.

Some of these policies and proposals are specific to Northern Ireland (as a function of our devolved powers) whereas others apply across the UK. Other policies apply to Northern Ireland by virtue of the Windsor Framework. In some sectors it has been difficult to apportion the Northern Ireland element of emissions savings from a UK-wide policy or proposal and we will continue to refine this work going forward, working

[69] The sectors in this chapter are ordered to align with section 33 of the Act

with UK departments. Where we have been able to identify specific Northern Ireland emissions savings associated with a UK-wide policy, they have been included in the overall quantification and reported in each sector chapter. Our analysis shows that UK-wide policies will play a significant part in our ability to meet our first carbon budget.

The approach to quantification differed across sectors; for some sectors, external modellers were commissioned to complete the assessment while for other sectors quantification was conducted internally by policy analysts. The underpinning assumptions and emissions projections for policies and proposals for each sector were categorised into Central (expected outcome), Tailwinds (optimistic outcome) and Headwinds (least optimistic outcome) Scenarios. In some cases, due to the policy area or prevailing circumstances, only a Central Scenario was possible or appropriate. The assumptions and projections detailed in the sector chapters reflect the Central Scenario which is a credible and robust basis for projecting the expected GHG emissions for the carbon budget period.

For some of the policies or proposals, the emissions savings cannot be quantified at this time (referred to as unquantified in subsequent sections in this plan). The reasons for some policies and proposals lacking quantification included (1) that they are at an early stage of development and/or (2) the ongoing assessment of the available evidence was limited or not available and/or (3) the risks of double counting emissions savings with related quantified policies and proposals. While they are not included in overall emissions projections, we recognise they are fundamentally important to achieving the carbon budget.

The CCC provided advice on the assumed annual emissions savings for each sector that would be needed to achieve a 33% Average Annual Reduction (AAR) from 1990 base year. This pathway has been adjusted to take account of the most recent GHG Inventory data for 2022 and represents the CCC's view of how the overall carbon budgets and targets can be met across each sector. For each sector, we have presented the CCC's assumed emissions alongside our projected emissions and a summary of the 'deployment assumptions' i.e. the assumed pace and/or scale of policy implementation on which this is based.

There are levels of uncertainty associated with the projected emissions for each policy and proposal which have been factored into the quantification and have been outlined in more detail in the Quantification Summary chapter and accompanying Quantification Report (Annex A).

6.2 Energy Production and Supply

Sector Summary

Energy Production and Supply Emissions Summary	• Energy production and supply emissions are almost exclusively from burning fossil fuels for electricity generation at power stations. • Energy production and supply emissions have made the biggest contribution to the overall decrease in Northern Ireland emissions from 1990 to 2022, with a 43.8% decrease in this sector. • Renewable sources produced 45.4% of Northern Ireland's electricity from April 2023 to March 2024.[70] • The Act sets a target of at least 80% of electricity consumption to come from renewable sources by 2030.
Policy Approach	Further emissions reductions will be achieved through increasing renewable energy production. This requires continued management of the Northern Ireland Renewables Obligation (NIRO) Support Scheme and a new Renewable Electricity Support Scheme which both protects consumers and provides incentives to invest in new renewable electricity projects.
Emissions Projections	Following the implementation of the policies and proposals set out in this chapter, the energy production and supply sector is projected to emit 12.33 $MtCO_2e$ over the course of the first carbon budget period. This compares to total assumed emissions of 12.85 $MtCO_2e$ in the sector during the first carbon budget period within the CCC adjusted pathway.

[70] Electricity Consumption and Renewable Generation in Northern Ireland (nisra.gov.uk)

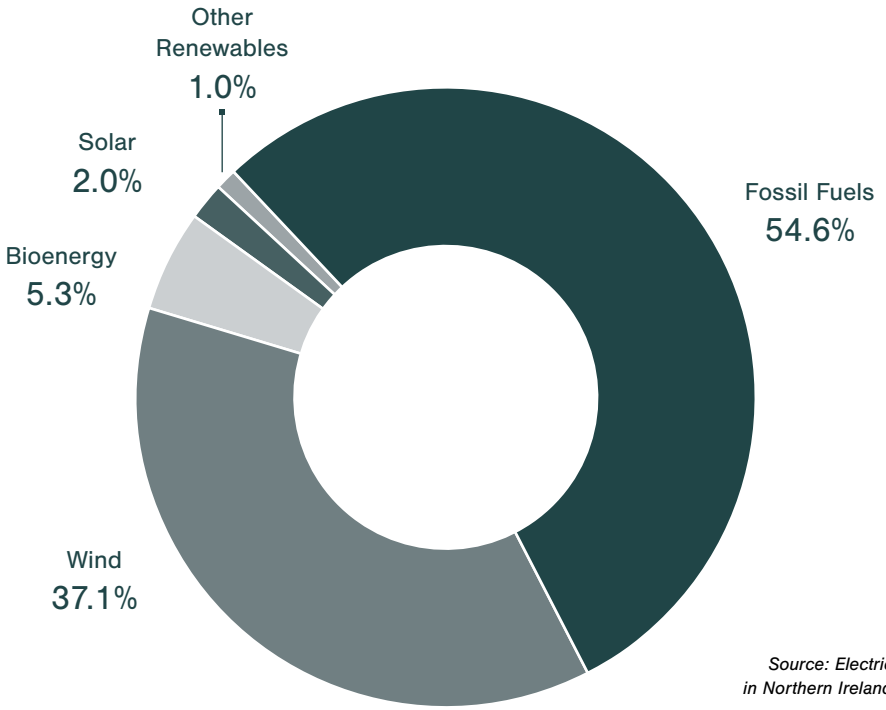
Sector Overview

Emissions in the energy production and supply sector are predominantly from power stations, but also from losses in the distribution of natural gas. Emissions are almost entirely carbon dioxide. The level of emissions produced is highly dependent on the type of fuel being used at power stations and is significantly affected by the abatement technology in use. Renewable sources have on average produced 46.8% of Northern Ireland's electricity between 2020 and 2023, with the latest report from April 2023 to March 2024 stating that 45.4% of Northern Ireland's electricity comes from renewable sources.[71] However, from January to December 2022 the proportion of electricity produced from renewable sources was as high as 51%.[72]

Since 2021, there have been significant increases in global energy prices, resulting in increased costs to heat homes, power businesses and deliver public services. Global geopolitical instability has caused global price shocks, reinforcing the importance of security of supply and the economic and social consequences of relying on external sources of energy.

The main driver in the decarbonisation of the energy production and supply sector to date has been the increase in the proportion of our energy produced from renewable sources (Figure 10).

Figure 10: Northern Ireland electricity generation sources April 2023 to March 2024



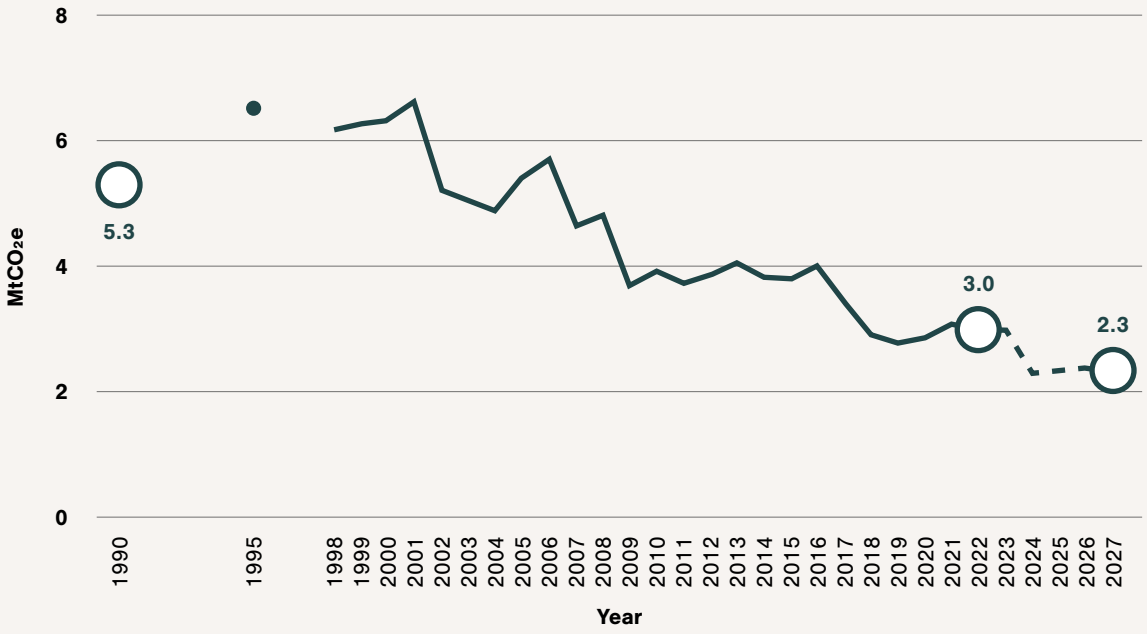
Source: Electricity Generation in Northern Ireland (nisra.gov.uk)

[71] Electricity Consumption and Renewable Generation in Northern Ireland (nisra.gov.uk)

[72] Electricity Consumption and Renewable Generation in Northern Ireland: Year Ending December 2022 | Department for the Economy (economy-ni.gov.uk)

The sector is the third largest emitter in Northern Ireland, responsible for 3.0 $MtCO_2e$ in 2022. This represents a decrease in emissions of 43.8% since the 1990 base year[73] (Figure 11). The decrease in emissions is mainly due to the conversion of Ballylumford and Coolkeeragh power stations from oil to gas, the construction of the Moyle electricity interconnector, and most notably, the significant growth in renewables. The recent end to coal-fired generation at Kilroot power station has also further reduced emissions.

Figure 11: Change in energy production and supply emissions 1990-2022



Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Note: Base year is 1990 for CO_2, CH_4 and N_2O, or 1995 for fluorinated gases

[73] Report: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 - NAEI, UK (beis.gov.uk)

During the 2023-2027 carbon budget period, we will reduce emissions and our reliance on fossil fuels by increasing electricity generation through renewables. We have already seen greater than 50% of annual total electricity consumption in Northern Ireland generated from renewable sources[74] and, in the month of February 2022,[75] a record 76.5% of all electricity consumption in Northern Ireland was generated from renewables, largely wind power. Our power system was the first in the world to accommodate this level of intermittent renewable generation on the system, and the System Operator for Northern Ireland (SONI) is now working towards achieving up to 95% renewable electricity penetration on the system by 2030.[76] To achieve current levels of renewables penetration by integrating wind farms, solar farms and interconnectors, it was necessary to overcome major technical and market challenges.

Despite the overall success of the sector, there have been very few new renewable connections and therefore emissions savings have plateaued in recent years. This is mainly due to the closure of Northern Ireland's main support scheme, the NIRO, in 2017. To encourage new connections, DfE is currently designing a replacement support scheme to help drive growth in renewable energy production.

In 2021, DfE published The Energy Strategy - Path to Net Zero Energy (the Energy Strategy), which was signed off by the Northern Ireland Executive. This strategy sets a path to net zero energy and ensuring energy is secure, affordable and clean.[77] Delivering this strategy will result in higher levels of renewable electricity and greater energy efficiency in our homes and businesses, thus reducing the amount of energy we need. The Energy Strategy proposed two targets to drive these changes:

- Greater use of renewables – Meet at least 70% of electricity consumption from a diverse mix of renewable sources by 2030. The Act increased this target to 80% by 2030;[78] and
- Energy Efficiency – Deliver energy savings of 25% from buildings and industry by 2030.

DfE, in collaboration with other departments and key stakeholders, has also developed an Offshore Renewable Energy Action Plan (OREAP) to enable offshore renewable energy development in Northern Ireland's marine area from 2030. The OREAP is a live document and the action plan will be updated as policy development progresses and new evidence becomes available. Although delivery will be outside the current carbon budget, it will be a key contributor to meeting long-term emissions reduction targets.

[74] Electricity Consumption and Renewable Generation in Northern Ireland: Year Ending December 2022 | Department for the Economy

[75] Electricity Consumption and Renewable Generation in Northern Ireland: Year Ending December 2022 | Department for the Economy (economy-ni.gov.uk)

[76] Shaping_Our_Electricity_Future_Roadmap.pdf

[77] The Northern Ireland Energy Strategy, A Path to Net Zero Energy, December 2021 (economy-ni.gov.uk)

[78] Section 15 of the Act

Policies to support new renewable generation that incorporates flexibility and the ability for consumers to manage their demand based on price signals will be necessary. These will be needed to manage our system efficiently, minimise cost to consumers and ensure security of supply. These policies will also provide clear direction for investment.

Policies and Proposals

This section lists policies and proposals required to reduce emissions in the energy production and supply sector during this carbon budget period, building on work already initiated by the Energy Strategy. These aim to increase the levels of renewable electricity generation to achieve the challenging target of 80% of electricity consumption from renewable sources by 2030. DfE has engaged with stakeholders and relevant sector-specific advisory groups in relation to existing policies and in the development of new proposals to reduce emissions in the energy production and supply sector, including taking the advice and recommendations of the Single Electricity Market (SEM) Committee.

POLICY
The Northern Ireland Renewables Obligation (NIRO) Support Scheme (jointly quantified in the 80% of electricity consumption from renewable energy by 2030 target)

Although a legacy policy, the NIRO support scheme has been the main support mechanism for encouraging renewable electricity generation in Northern Ireland since 2005. Managed in conjunction with the Utility Regulator and the Office of Gas and Electricity Markets (Ofgem), the scheme has been instrumental in increasing renewable electricity in Northern Ireland from 3% in 2005 to 46% in 2020,[79] exceeding the established 2020 target of 40%.[80] For the year to December 2022, this further increased to 51%. Although the NIRO support scheme has been closed to new projects since March 2017, it will continue to support accredited renewables projects, and associated emissions reductions, for 20 years from their accreditation date or until 31 March 2037, whichever is earlier.

In terms of scheme management, there is currently a NIRO Assurance and Risk Management Steering Group which meets bi-monthly and includes representatives from DfE, the Utility Regulator and Ofgem. Alongside this, DfE has regular engagement with colleagues in the UK Department for Energy Security and Net Zero (DESNZ), the Scottish Government and Ofgem in relation to the current and future management of the NIRO support scheme.

[79] 40% electricity consumption from renewable sources by 2020 achieved ahead of schedule | Department for the Economy (economy-ni.gov.uk)

[80] Strategic Energy Framework

PROPOSAL
A new Renewable Electricity Support Scheme (jointly quantified in the 80% of electricity consumption from renewable energy by 2030 target)

The development and delivery of a new support scheme will be an important driver to achieve the legislative target to increase renewable energy. In the rest of the UK, Contracts for Difference[81] has become the main mechanism for supporting low carbon electricity generation. The price support provided by Contracts for Difference in Great Britain has meant that many renewable generation projects have continued to be developed, whereas in Northern Ireland only 70 megawatts (MW) have connected since the NIRO support scheme[82] closed.

Following the recent consultation on design considerations, DfE officials have been working with consultants to define the optimal scheme structure. The high-level design for the scheme was published with the government response to the consultation in April 2024.[83]

The current phase of development involves technical modelling and a financial impact assessment, alongside the establishment of the legislative pathway, state aid approval and institutional roles and responsibilities necessary for delivery.

To support the development of this proposal the following actions will be progressed:

- Publish the Smart Systems Flexibility Plan (SSFP) – A consultation on the SSFP was published in January 2024.[84] DfE intends to publish the SSFP decision paper by December 2025. A smarter, more flexible grid will give consumers more control to save money through better data and more regularly updated prices for peak and off-peak demand. It will also enable smart devices that draw energy from the grid at cheaper rates when demand is low, supporting the roll-out of low carbon technologies like electric vehicles. The SSFP will maximise the use of renewable energy and reduce the need for traditional fossil fuel-based generation. It will also reduce the extent of new and upgraded electricity networks and therefore lower the cost of energy to Northern Ireland consumers.

[81] A Contract for Difference (CfD) is a private law contract between a low carbon electricity generator and the Low Carbon Contracts Company (LCCC), a government-owned company.- Contracts for Difference - GOV.UK (www.gov.uk)

[82] RNI-Report-Accelerating-renewables-in-Northern-Ireland-online-version.pdf (renewableni.com)

[83] Design considerations for a renewable electricity support scheme for Northern Ireland: response | Department for the Economy (economy-ni.gov.uk)

[84] Transitioning to a net zero energy system - Consultation on design considerations for a Northern Ireland Smart Systems and Flexibility Plan (economy-ni.gov.uk)

- DfE will develop legislative changes to facilitate greater connection of energy storage facilities to the network.
- DfE will work to facilitate the participation of aggregators[85] in the electricity market, with the aim to reduce peak demand, increase the utilisation of intermittent renewable energy, and lower the cost of energy to consumers. It is expected policy development will commence in the first quarter of 2026.
- DfE will work with the Utility Regulator, Northern Ireland Electricity Networks and SONI to promote the digitalisation of the electricity network to reduce the need for grid reinforcement, increase the effectiveness of network management, increase the use of renewable electricity, and lower the cost to energy consumers. This will be led by the Utility Regulator.
- DfE will lead on assessing the need for further interconnection, which will be critical as this will establish the optimal level for security of supply, how to create/access new routes to market for renewable energy and thus ensure cost-effective utilisation of any new interconnection assets. It can also lower the generation cost of electricity to consumers by accessing markets with cheaper electricity.
- DfI will ensure that strategic planning policy on renewable and low carbon energy development remains fit for purpose and up to date to inform decision making in relation to development plan making and development proposals for renewables projects. The publication of a call for evidence[86] on planning policy and climate change will help inform any future-focused review of the Strategic Planning Policy Statement.
- DfE and the Utility Regulator will continue to collaborate to review the legislative and regulatory framework for electricity connections charging. In July 2023 they published a joint call for evidence. The non-confidential responses to this call for evidence have been published, and the final decision paper is due to be published in the first quarter of 2025.
- DfE intends to build on the existing Northern Ireland Electricity Networks smart meters pilot and develop a plan for the deployment of electricity smart meters in Northern Ireland. DfE consulted on a Design Plan for smart electricity meters in autumn 2024.
- DfE aims to publish the final design of a Renewable Electricity Support Scheme for Northern Ireland in the second quarter of 2025. Support will be provided in two phases, with the first auction anticipated in early 2026.

[85] Aggregators bundle distributed energy resources to engage as a single entity in power or service markets. In effect aggregators operate as a virtual power plant

[86] Call for Evidence on A Future Focused Review of the Strategic Planning Policy Statement (SPPS) on the issue of Climate Change | Department for Infrastructure (infrastructure-ni.gov.uk)

POLICY
The Fluorinated Greenhouse Gases (F-Gases) Regulations (2015) (UK-wide policy, but with separate Regulations for Great Britain and Northern Ireland), and new EU Regulation on F-gases in 2024 (Unquantified)

Several cross-cutting UK-wide policies also indirectly apply to the energy production and supply sector. These policies aim to reduce emissions through a reduction in electricity demand and some, such as policy around Fluorinated Greenhouse Gases (F-gases) Regulations, require the sector to replace high GWP F-gases with lower GWP alternatives. Demand reduction and emissions reductions from these policies are incorporated into the data sources used in the sector's emissions modelling, with the proportion of emissions savings attributed to the energy production and supply sector subtracted from the savings for other sectors, to ensure these savings are not overestimated. Most of these cross-cutting policies indirectly reduce emissions via demand reduction, affecting energy production and supply along with other sectors. Future modelling will refine the proportion of emissions savings to reflect a more accurate impact on the energy production and supply sector. This is a cross-cutting policy that also affects the residential buildings and business and industrial processes sectors. Further information is provided in the Residential Buildings chapter.

Deployment Assumptions for Delivery of Energy Production and Supply Policies and Proposals

Table 9 presents the level of expected deployment associated with draft Climate Action Plan policies and proposals in the energy production and supply sector to align with the projected emissions over the first carbon budget period, based on the Accelerating Renewables in Northern Ireland Report.[87]

Table 9: Deployment assumptions by 2027 to achieve the Central Scenario with energy production and supply sector Northern Ireland policies

Policy target	Mitigation	By 2027	
		Wind (GWh)	Solar (GWh
80% of electricity consumption from renewable energy	Increased ability to provide renewable energy to provide for 80% of energy demand	1,280	320

To note: non-supported generators contribute an additional 600 gigawatt hours (GWhs) on top of the 1000 GWhs supported by the renewable energy support scheme by 2027.

[87] Accelerating Renewables in Northern Ireland - high level design of a support scheme (economy-ni.gov.uk)

Emissions Projections

Table 10 presents the projected emissions for the energy production and supply sector across the first carbon budget period. Energy production and supply sector emissions are projected to be 0.52 $MtCO_2e$ less than the emission levels assumed for this sector within the CCC adjusted pathway.

Table 10: Energy production and supply sector projected emissions in the Central Scenario compared with the adjusted CCC sectoral pathway

Sector	Projected Emissions ($MtCO_2e$)						Difference in CCC adjusted pathway and Northern Ireland Projections
	2023	2024	2025	2026	2027	Total	
Energy Production and Supply	2.98	2.29	2.35	2.39	2.33	12.33	-0.52 $MtCO_2e$
Energy Production and Supply CCC*	2.76	2.63	2.58	2.5	2.37	12.85	

**These figures are based on the CCC advisory pathway but have been adjusted to take account of the 2022 inventory publication.*

Further detail on the quantification of the energy production and supply sector policies is available in Chapter 3.1 of the Quantification Report (Annex A).[88]

[88] Chapter 3.1, p. 17-23

Just Transition Considerations

As the energy sector transitions to a net zero carbon system, we must consider the impact of the transition on consumers, especially the most vulnerable. Access to energy infrastructure is critical to our economy and sustains safe and healthy homes. It is essential that as we move to more renewable forms of energy that all our citizens, regardless of age or geography, get an equal opportunity to embrace this transition and we know this will require support. We also know this will be difficult as many of us rely on simple fuel sources to heat our homes and some may find the use of smart technology challenging. A shift in personal behaviours and investment will be needed to enable emissions reductions in the energy sector.

The Energy Strategy recognises this. A key principle is to place domestic consumers, businesses and communities at the heart of our energy future; and develop policies that enable and protect consumers through the energy transition, focusing on affordability and fairness.

The Energy Strategy 2022 Action Plan included an action for DfE to carry out an Energy Skills Audit for energy decarbonisation, undertaking economic research to better understand the skills required by new and existing workers to support a successful transition to an advanced zero emission, indigenous, secure, diverse energy system and circular economy in Northern Ireland. The findings of this research were published on the DfE website in June 2023.[89] The study found the need for an expansion: in numbers with green skills but also general business and IT skills; and the ability of the workforce to upskill as technologies evolve. It recommended that young people should be informed of available learning opportunities and career pathways and access to learning should be widened.

As the NIRO Support Scheme is a closed scheme, it is not anticipated that it will deliver new jobs. It will, however, support maintaining roles in operation and maintenance of the generating stations. A new Renewable Electricity Support Scheme in Northern Ireland is aimed at encouraging investment in local renewable electricity projects whilst also protecting consumers from global price shocks. Such a scheme would also support trade and investment in Northern Ireland, driving improvements in wealth, prosperity and living standards across the country. Establishing the main mechanism for encouraging investment in renewable electricity in Northern Ireland, a new support scheme would be the catalyst to lower carbon emissions and grow the green economy, including growth of jobs that are climate resilient.

[89] 'Transitioning to a greener economy – a skills perspective'

In addition, a programme of skills and workforce development policy will be initiated via the Offshore Renewable Energy Action Plan, led by the DfE Skills team and in partnership with the DfE Energy Group and Invest Northern Ireland. The action plan is expected to expand the local onshore and offshore renewables energy sector with the potential of increasing employment, economic growth and skills. DfE will continue to work on ensuring that people in Northern Ireland can avail of opportunities arising from energy transition.

The Utility Regulator has published its Corporate Strategy 2024-2029 Protecting Consumers on the Way to Net Zero[90] which focuses on the key strategic drivers for delivering on decarbonisation and ensuring a just transition by addressing affordability concerns for consumers.

[90] Utility Regulator (UR) Corporate Strategy 2024-2029

6.3 Transport

Sector Summary

Transport Sector Emissions Summary

- Tackling transport sector emissions will require a clear, strategic, focused approach. Interventions linked to switching fuels will be crucial in decarbonising the transport sector. Whilst other interventions, such as a focus on shifting modes of travel and reducing travel journeys, will not deliver the same level of reductions to overall emissions, they will have an important role to play in contributing to the decarbonisation agenda and the wider strategic goals of DfI.
- The transport sector includes emissions from surface road transport, domestic shipping and aviation, and aircraft support vehicles. It is the second largest contributor to emissions in Northern Ireland.
- Tailpipe emissions from road transport – cars, buses, light duty trucks, heavy duty trucks and motorcycles – are responsible for 88.7% of the sector's emissions in 2022, with the passenger car being the largest contributor to transportation emissions.
- The Northern Ireland GHG Inventory highlights that the transport sector emissions in 2022 (3.8 $MtCO_2e$) are greater than 1990 emissions (3.6 $MtCO_2e$).
- This increasing road transport emissions trend is a global issue. Although there have been improvements in vehicle and fuel efficiency, this benefit has been offset by increasing numbers of registered private vehicles, increased journeys and the increasing size and weight of vehicles.

Sector Summary

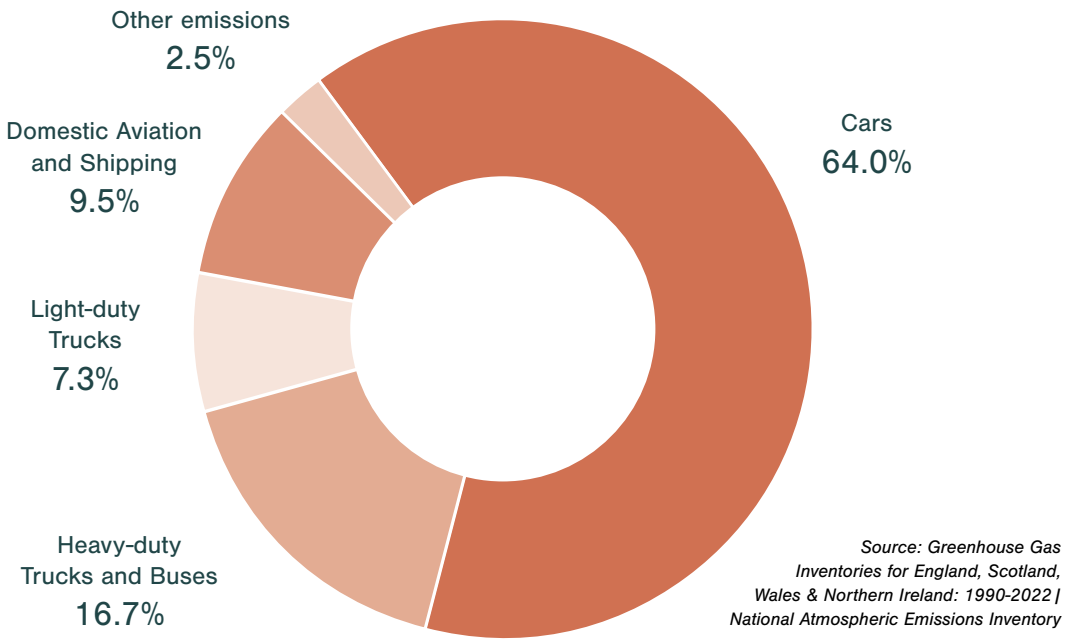
Policy Approach	Tackling transport sector emissions will require a clear, strategic, focused approach. DfI will prioritise and deliver against three policies over the first carbon budget period to reduce vehicle emissions: 1. Reducing vehicle emissions by switching fuels to zero and low emission alternatives 2. Shifting modes of transport away from private car journeys to sustainable travel alternatives. 3. Reducing the need and length of vehicle journeys. • Interventions linked to switching fuels will be crucial in decarbonising the transport sector. Shifting modes of transport or reducing journeys will not, of themselves, deliver the same level of reductions to overall emissions but are important elements of our overall approach and the wider strategic goals of DfI on transport emissions. We will use a precautionary approach to sustaining or developing other forms of transport and travel options. • DfI will develop a strategic approach to communications to support the three high-level policies. This will be informed by behavioural science to increase awareness and encourage behaviour change. • DfI's bespoke Transport Emissions Model (TEM) will assist in scenario testing to identify options for future policy development.
Emissions Projections	Following the implementation of the policies and proposals set out in this chapter, the transport sector is projected to emit 18.53 $MtCO_2e$ over the course of the first carbon budget period. This compares to total assumed emissions of 17.41 $MtCO_2e$ in the sector during the first carbon budget period within the CCC adjusted pathway.

Sector Overview

Transport is the second largest emitting sector in Northern Ireland, accounting for 17.8% (3.8 $MtCO_2e$) of all emissions in 2022. The transport sector includes emissions from surface road transport, railways, domestic shipping and aviation, and other mobile support vehicles. Overall, tailpipe emissions from cars, buses, light duty trucks, heavy duty trucks and motorcycles are responsible for 88.7% of the total transport emissions, with passenger cars accounting for 64.0% of the sector's emissions (2.4 $MtCO_2e$) as shown in Figure 12.

Given that passenger cars, light trucks and heavy-duty trucks are responsible for the majority of all transport emissions in Northern Ireland, addressing the emissions from these sources is critical to wider transport decarbonisation efforts.

Figure 12: Transport sector emissions 2022

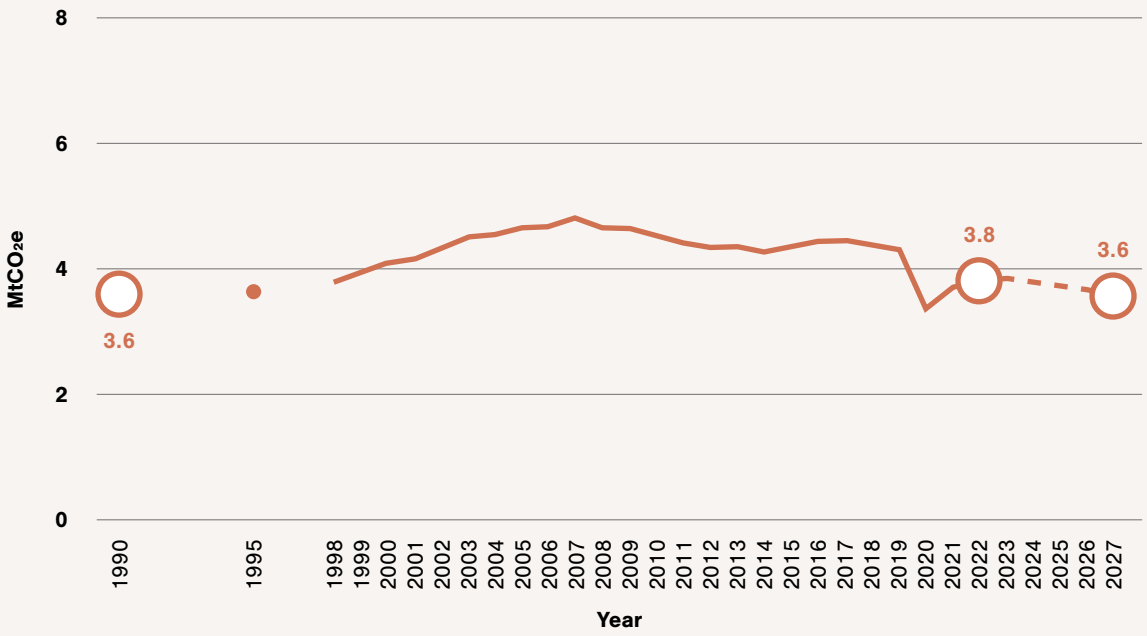


Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

The latest GHG Inventory highlights that transport sector emissions have been in decline since they peaked in 2017 at 4.4 $MtCO_2e$. However, they have increased by 6.0% from 3.6 $MtCO_2e$ in 1990 to 3.8 $MtCO_2e$ in 2022 as illustrated in Figure 13. It is important to note that the sector's emissions were artificially depressed in 2020 and 2021 as a result of COVID-19 public health restrictions. The latest transport sector inventory report shows that emissions then increased by 13.9% between 2020 and 2022 due to returning pre-COVID-19 travel habits.

This increasing emissions trend is predicted to continue into the next inventory reporting years as a result of changing travel habits and trip purposes. Key factors influencing this increase in emissions since 1990 include: an increasing vehicle stock, high volume of diesel and petrol vehicles being retained in this stock, increasing distances travelled by private vehicles, and increasing size of vehicles (SUVs etc). Commuting habits have changed post-COVID-19 with more individuals now working different patterns and a higher proportion of individuals working from home. However, these commuting habits have been offset by the increasing number and frequency of leisure trips.

Figure 13: Change in transport emissions 1990-2022



Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Note: Base year is 1990 for CO_2, CH_4 and N_2O, or 1995 for fluorinated gases

Transport Emissions Model – Development and Next Steps

In response to the Act and the legal obligation as transport sector lead, DfI developed its own bespoke Transport Emissions Model (TEM). The development of the TEM provides a means to better understand Northern Ireland's baseline transport emissions and how the transport fleet functions and differs depending on its locality and different travel habits. This bespoke model also provides a tool that will inform future outcomes in terms of emissions and transport decarbonisation pathways for Northern Ireland. More detail on the TEM and its modelled projections is provided in the Quantification Report (Annex A).

Transport emissions projections highlight that transport emissions in Northern Ireland (2022) are continuing to rise and in excess of the 1990 baseline (approximately 106%). The modelling forecasts in the TEM reflect the current trend position of the transport sector and the Northern Ireland fleet and therefore its detailed analysis has calculated that any transport emissions savings achieved over the first carbon budget period will be minimal. A core function of the development of the TEM is to inform future outcomes in terms of emissions. To achieve this, a series of scenarios were developed to represent the projected changes in the vehicle stock from different levels of policy ambition. UK policies are factored into the TEM including the rates of adoption of Battery Electric Vehicles (BEVs) and the intermediate technologies, such as hybridised-internal combustion engines (Internal Combustion Engines [ICE], including both Hybrid Electric Vehicle [HEV] and Plug-in Hybrid Electric Vehicle [PHEV]) that are all subject to legislated new sales bans in the future.

Whilst the development of the TEM has been crucial in understanding Northern Ireland transport emissions and fleet functions, the following ongoing improvements and updates will be required to ensure the tool remains robust and up to date:

- Through the development of a Northern Ireland stock model, on a local level DfI will determine the existing transport GHG emissions and their location.
- Using and continuously improving the local detailed baseline data in the bespoke TEM will allow DfI to better test and validate the CCC's advice and transport projections against local data and provide a more accurate picture for this region.
- The TEM provides the ability to model different scenarios (reflecting current conditions and constraints) to see how emissions savings reductions (scale and location) can be achieved for the transport sector and to assist with informing priorities and decision making for the Northern Ireland decarbonisation pathway(s).
- The scale of the model development and its build functionality provides the ability to test, model, validate and understand the management of carbon emissions for all transport policy and schemes. The TEM will provide a consistent and credible approach to carry out pathway analysis and carbon emissions calculations and projections.

Policies

This section lists the policies required to reduce emissions in the transport sector. The high-level policies adopted by DfI have previously been consulted on as part of the Northern Ireland Energy Strategy engagement and form an important element of the forthcoming Transport Strategy. DfI continues to engage with officials across the UK and Republic of Ireland in relation to the actions linked to these policies.

DfI's approach will focus on three key policies to reduce vehicle emissions:

1. Switching fuels to zero and low emission alternatives.
2. Shifting modes of transport away from private car journeys to sustainable travel alternatives.
3. Reducing the need and length of vehicle journeys.

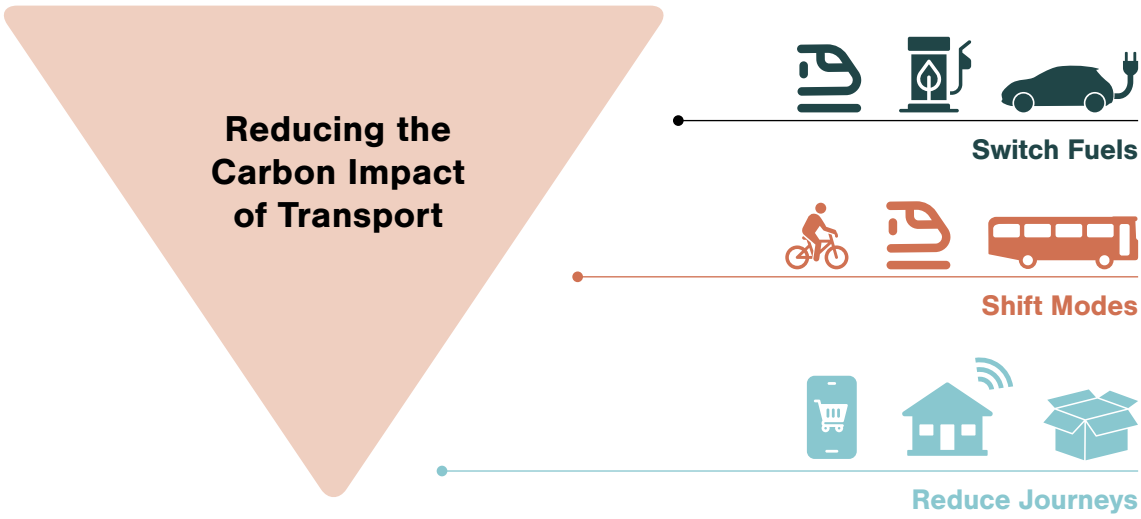
Tackling transport sector emissions will require a clear, strategic, focused approach. Interventions linked to switching fuels will be crucial in decarbonising the transport sector. Whilst other interventions, such as shifting modes of travel and reducing travel journeys, will deliver relatively lower transport emissions reductions, they will have an important role to play in contributing to the decarbonisation agenda and the wider strategic goals of the DfI.

To provide a focused approach over the next three carbon budget periods, DfI will develop and publish for public consultation a Transport Strategy that will form an overarching framework to inform the planning and delivery of transport infrastructure and services across Northern Ireland up to 2035. This strategy will outline a number of measures required to best meet the emerging climate change challenges. DfI will also develop a strategic communication approach to transport decarbonisation to encourage behaviour change, using communication tools to capture and highlight the power of individuals and communities to collectively make a difference to reducing emissions.

DfI will also establish a new Data Evidence Group to oversee the establishment of a new integrated project to support and standardise DfI's approach to data collection, presenting and reporting. Linked to the transport tools and other departments, this Data Evidence Group will be critical to support monitoring and reporting requirements.

DfI will also continue to develop and invest in a suite of strategic transport models and tools that will provide the supporting evidence to inform decisions and prioritisation relating to interventions and policies. A department modelling protocol outlining the management and control of these tools will also be developed to inform their use.

Figure 14: Emissions reduction policy levers



Switching Fuels

POLICY
'Switch'- Reducing vehicle emissions by switching fuels to zero and low emission alternatives (Quantified)

The Travel Survey for Northern Ireland reported that 69% of all journeys were made by private car, accounting for 84% of total distance travelled in 2021.[91] Emissions from passenger cars constituted 64.0% (2.4 $MtCO_2e$) of Northern Ireland's transport sector emissions in 2022.

The TEM and associated transport models have shown that removing car emissions through the transition to zero emission vehicles (ZEVs) will have the most significant impact on reducing carbon emissions from the transport sector.

[91] Travel Survey for Northern Ireland In-depth Report 2021 (infrastructure-ni.gov.uk)

In addition, further actions to switch other vehicles such as light trucks, heavy trucks, buses and coaches to zero emission fuels, together with electrifying the railways, will form the basis of a wide-ranging and impactful approach to the decarbonisation of surface transport. This approach will form DfI's foundational pathway to transport decarbonisation.

DfI will therefore focus on encouraging ownership of lower emission cars and vehicles, engaging closely with partners including the UK Government and Devolved Administration colleagues on UK-wide commitments such as: the ban on new internal combustion engines (ICE) cars; the ban on new ICE light goods vehicles; and the ban on new ICE heavy goods vehicles. Engagement at a local level will continue to ensure that the infrastructure needed in support of these changes is in place, building on the actions outlined within DfI's Electric Vehicle Infrastructure Action Plan.[92] DfI will continue to support the ongoing decarbonisation of Translink's bus fleet and the public sector fleet and will also undertake feasibility studies in support of the All-Island Strategic Rail Review and Union Connectivity Review.

At present, much of DfI's focus relates to increasing the number of electric vehicles on our roads through the introduction of the zero emission vehicles mandate[93] and Vehicle Emissions Trading Schemes (VETS) (Amendment) Order 2024[94], together with supporting the commercial development of appropriate electric vehicles charging infrastructure. The Vehicle Emissions Trading Schemes (VETS) (Amendment) Order 2024 was approved by the Assembly in October 2024. Following approval in England, Scotland and Wales the Order came into force in Northern Ireland in January 2025. The mandate sets annual minimum targets for the proportion of new zero emission cars and vans sold in the UK, starting at 22% for cars and 10% for vans in 2024 and rising steadily to reach 80% of cars and 70% of vans by 2030, on a pathway to 100% by 2035. In addition, and subject to funding, by 2027 DfI and public sector partners will increase the percentage of net zero public sector fleet such as cars and vans in line with the commitment made at COP26.

The transport foundational pathway focuses on the switch policy and it forms a credible and impactful approach to transport decarbonisation. DfI, through the TEM, has undertaken modelling to better understand the role that actions to encourage people to 'shift' to public transport and active travel and reduce journey length make to help Northern Ireland reach net zero by 2050.

[92] Action Plan for Electric Vehicle (EV) Infrastructure

[93] The ZEV mandate sets annual sales quotas of new cars and vans for manufacturers across the UK and came into force in GB from January 2024

[94] The Vehicle Emissions Trading Schemes (Amendment) Order 2024 (legislation.gov.uk)

Shifting Modes

POLICY
'Shift' – Reducing vehicle emissions by shifting modes of transport away from private car journeys to sustainable travel alternatives (Unquantified)

The TEM has shown that modal shift will have a relatively lower impact than the switch policy on transport decarbonisation. However, it will have an impact on reducing congestion within our urban areas, supporting clean, green vibrant city and town centres, improving social inclusion for all members of society and improving health benefits by encouraging more active travel.

Significant changes in how road space is allocated, especially within our cities, are required to improve the attractiveness of public transport options with a view to encouraging more people to shift modes of transport away from private car journeys to sustainable travel alternatives. This includes prioritising bus and active travel options especially within urban areas and to join up the different modes of transport across Northern Ireland. For example, a suite of Local Transport Plans will support councils' Local Development Plans by considering the location of priority bus corridors, park and ride sites, and active travel routes. Once Local Transport Plans are developed, DfI will seek to deliver schemes and measures identified that will contribute to a change in travel mode behaviours and patterns across our towns and cities. Continued support for behaviour change programmes will also need to be used to maximise return on investment and encourage change in mode of travel.

A range of actions focused on encouraging people to switch from private cars to more sustainable modes of transport such as walking, wheeling and cycling and, if needed, public transport will be undertaken during the period. These actions include the following:

- By 2027, DfI will seek to deliver the active travel infrastructure by increasing supply chain capacity and the implementation of the Active Travel Delivery Plan. Public consultation on the draft Active Travel Delivery Plan closed on 28 February 2025. Responses are now being reviewed with a view to presenting a final plan to the DfI Minister for consideration in autumn 2025. Within the first ten years of the implementation of this plan, over 200 kilometres of high-quality active travel infrastructure will be delivered. Alongside this, the Belfast Cycling Network Delivery Plan, the Strategic Plan for Greenways and a complementary behaviour change strategy will further encourage modal shift to active travel and maximise the infrastructure investment benefits.
- By 2027, DfI will work with Translink to seek to deliver improved facilities, services and initiatives aimed at encouraging increased usage of Public Transport. This includes account-based integrated ticketing, improvements to timetabling, the availability of real-time information for customers and upgrades to bus shelters, stations and halts.

- By 2027, DfI will continue to deliver Belfast Rapid Transit 2 subject to business case approval and availability of funding.[95]
- By 2027, DfI will seek to encourage the utilisation of existing Park and Ride/Share sites and increase the provision of Park and Ride/Share Sites and priority bus lanes serving key transport corridors in line with emerging transport plans and connectivity needs.
- DfI has also commenced a review of the current Transport Assessment Guidelines, which was last updated in 2006 and Parking Standards last updated in 2005. As emerging transport policies seek to prioritise sustainable transport options, it is considered timely to review these documents against current applicable policies to define new guidance and standards going forward.

Reducing Journeys

POLICY
'Reduce' - Reducing vehicle emissions by reducing the need and length of journeys (Unquantified)

The movement of people and goods is critical for the economy and for social needs across the region. However, some private car journeys could be reduced in length and frequency leading to a decrease in the amount we travel by car and an associated reduction in cars on the road and congestion.

The planning system can help to develop the policies and places that bring homes and key services closer together. The need for journeys could be reduced further by the digitisation of services as well as hybrid working. The planning system has a key supporting role to play in reducing the amount we travel by car through integrating transport and land use to improve connectivity and promote sustainable patterns of transport and travel. This will be reflected in the emerging Local Development Plans which will be supported by a suite of transport plans. Behaviour change will continue to be a key driver in this transition.

[95] Belfast Rapid Transit 2 (BRT2) will extend the existing Glider network to north and south Belfast to provide a modern, safe, accessible, efficient, and high-quality public transport service which encourages more people to travel by public transport

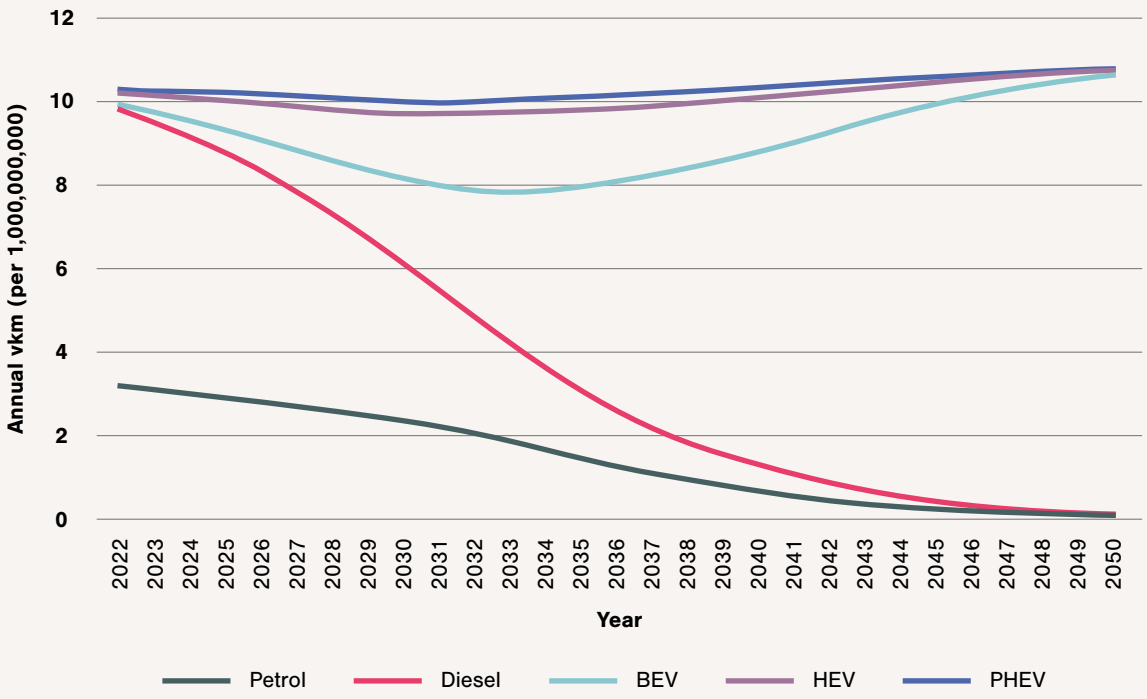
Deployment Assumptions for Delivery of Transport Policies

Figures 15 and 16 present the level of expected deployment associated with draft Climate Action Plan policies and proposals in the transport sector to align with the projected emissions over the first carbon budget period.

Car

The policies assumed for this carbon budget period predict that the car stock will shift towards BEVs in the future in all scenarios (Figure 15). Currently, none of the TEM projections achieve 100% ZEVs as there is a small residual number of ICE vehicles predicted to still be in the Northern Ireland fleet beyond 2050.

Figure 15: Expected impact of 'switch' policy for cars

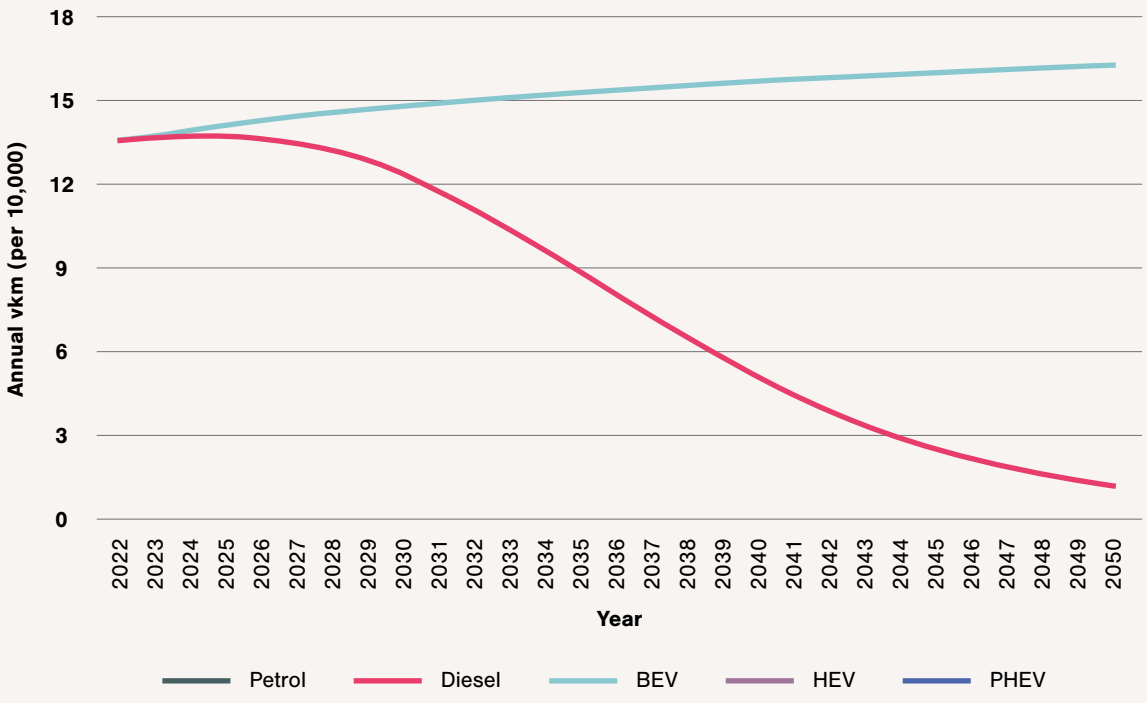


**BEV – Battery electric vehicle; HEV – Hybrid electric vehicle; PHEV – Plug-in hybrid electric vehicle*

Light Goods Vehicles

The policy levers assumed for this carbon budget period result in projections that the Light Goods Vehicle (LGV) stock will predominantly shift from diesel to BEVs in line with the rate of new registrations in the future in all scenarios (Figure 16). Currently, none of the TEM projections achieve 100% ZEV as there is a residual number of diesel vehicles still predicted to be in the fleet beyond 2050.

Figure 16: Expected impact of 'switch' policy for LGVs



**BEV – Battery electric vehicle; HEV – Hybrid electric vehicle; PHEV – Plug-in hybrid electric vehicle*

Emissions Projections

Table 11 presents the projected emissions for the transport sector across the first carbon budgetary period. Transport sector emissions are projected to be 1.12 $MtCO_2e$ more than the emissions levels assumed for this sector within the CCC adjusted pathway.

Table 11: Transport sector projected emissions in the Central Scenario compared with the adjusted CCC sectoral pathway

Sector	Projected Emissions ($MtCO_2e$)						Difference in CCC adjusted pathway and Northern Ireland Projections
	2023	2024	2025	2026	2027	Total	
Transport	3.83	3.78	3.72	3.65	3.55	18.53	1.12 $MtCO_2e$
Transport CCC*	3.87	3.69	3.47	3.29	3.1	17.41	

**These figures are based on the CCC advisory pathway but have been adjusted to take account of the 2022 inventory publication.*

Further detail on the quantification of the transport sector policies is available in Chapter 3.2 of the Quantification Report (Annex A).[96]

[96] Chapter 3.2, p.24-33

Just Transition Considerations

A just transition for the consumption and accessibility of transport in Northern Ireland must address rural isolation and regional imbalance, and embrace healthier, more efficient, and more equitable transport systems.

Research undertaken by the Northern Ireland Consumer Council highlights that while consumers recognise the need to decarbonise transport and aspire to being greener in their transport choices, they are not willing to pay for new ways of travelling or sacrifice the convenience and practicalities of the private car.[97] While this will have a significant impact on achieving emissions reductions it also highlights that affordability is a key concern for people. As we work towards achieving a net zero transport system, we need to recognise that cost is an issue for citizens – the cost of public transport, the cost of fuels, the cost of vehicles. Age, geography and socio-economic status will have a bearing on our ability to access net zero transport choices and as policy makers we need to ensure that all citizens are supported in making these choices. During the transport mobilisation phase, and building upon DfI's transport foundational pathway, measures to address the barriers listed above will be explored to inform future phases in support of transport decarbonisation.

We recognise that finding a way through this will require strong leadership, positive engagement and political acceptance. It will also require investment in our infrastructure and in developing interventions to influence behaviours. Engagement with stakeholders, including the public, will be integral to the development of the policies outlined within this chapter. Appropriate impact assessments will be conducted prior to any new policy or scheme being implemented to establish if mitigations exist for any potential detrimental impacts.

[97] Decarbonisation of Transport in Northern Ireland - Summary Report | Consumer Council

6.4 Business and Industrial Processes

Sector Summary

Business and Industrial Processes Sector Emissions Summary	• The business and industrial processes sector includes:
	  • Business emissions from stationary combustion in industrial and commercial sectors including industrial off-road machinery, refrigeration and air conditioning, and the use of fluorinated gases for other applications. These account for the majority of emissions in the sector at 91.9%.
	  • Industrial processes sector contains all emissions from industry, except for those associated with fuel combustion, accounting for the remaining 8.1% in the sector.
	• Emissions have decreased by 54.9% since 1990.
	• This is the fifth largest emitting sector, accounting for 11.9% of Northern Ireland greenhouse gas emissions.

Policy Approach	Unlike other sectors, business and industrial processes relies predominantly on UK-wide policies. The UK policies are complemented by Northern Ireland specific policies that are intended to address our small and medium sized economy. There are also some EU policies that have an influence on the sector in Northern Ireland as a result of the Windsor Framework. UK and EU-led regulation, compliance and reporting has an important role to play. Key policies include assessing **combined heat and power** schemes on the basis of their energy efficiency and environmental performance, thus ensuring that the associated tax benefits are in line with environmental performance and **ensuring that harmful fluorinated gases are ultimately eliminated**. Other policies relate to improving the **energy performance of buildings, emissions trading, product design and labelling, the reporting of emissions** and **funding** to support the transition.

Sector Summary

	Northern Ireland led regulation, compliance and reporting also has a role. This will be through two policies and two proposals. The policies are **Fuel Switching to Natural Gas**, (it is recognised that fuel switching to natural gas is not a long-term solution to emissions reduction, but gas has a role to play in the short to medium term as a transition fuel) and **Uplifts to Building Regulations in Northern Ireland**. This will potentially have a significant role in reducing emissions from new buildings and from existing buildings that are being upgraded. The two proposals under Northern Ireland led regulation relate to biomethane and further uplifts to building regulations. There are a number of other initiatives which are being delivered by **Investing in Northern Ireland's Businesses**, through Invest Northern Ireland, especially in relation to capital grants, resource matching and technical consultancy. Invest Northern Ireland also lead the Industrial Decarbonisation for Northern Ireland project. The aim of the project is to identify effective ways for organisations to make environmental and economic improvements by reducing energy consumption.
Emissions Projections	Following the implementation of the policies and proposals set out in this chapter, the business and industrial processes sector is projected to emit 10.10 $MtCO_2e$ over the course of the first carbon budget period. This compares to total assumed emissions of 10.99 $MtCO_2e$ in the sector during the first carbon budget period within the CCC adjusted pathway.

Sector Overview

The business and industrial processes sector is listed as a single sector in the Climate Change Act but is listed as two sectors in the Northern Ireland GHG Inventory.[98] It is the fifth largest emitting sector, accounting for 11.9% of Northern Ireland greenhouse gas emissions (2022).

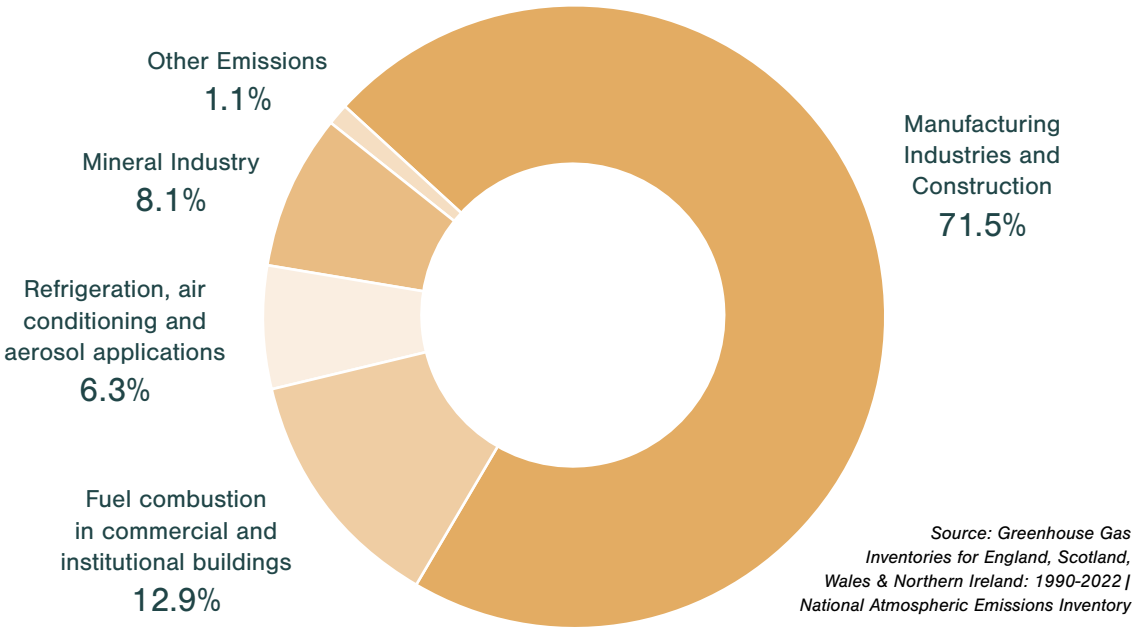
In terms of the activities that generate emissions, manufacturing industries and construction represent 71.5% of emissions from this sector. Manufacturing industries and construction consist of emissions from fuel combustion in industry, including for the generation of electricity and heat for own use in these industries. However, a significant proportion, 50.5% of business and industrial processes emissions, come from industrial use of fuel which cannot be allocated to a specific industry as data is not available. Where data is not available to allocate emissions to the specific industry where they occur, they are grouped as 'other manufacturing industries and construction' in the GHG Inventory and are included in manufacturing industries and construction within this Climate Action Plan.

Further understanding of the source activities contributing to these emissions is required. We believe these are related to combustion, and whilst this lack of clarity is a UK-wide issue, the development of this Climate Action Plan has highlighted potential issues over the proportionality and assumed fuel use in determining the emissions attributed to Northern Ireland relating to business and industrial processes.

Work is ongoing with the UK Government to strengthen our understanding of these source emissions and clarify how they are attributed to Northern Ireland. This will better inform and facilitate the determination on how policies and proposals can be both targeted at the resulting emissions and the impacts quantified (Figure 17).

[98] Northern Ireland Greenhouse Gas Emissions 2022 (daera-ni.gov.uk)

Figure 17: Business and industrial processes sector emission sources 2022

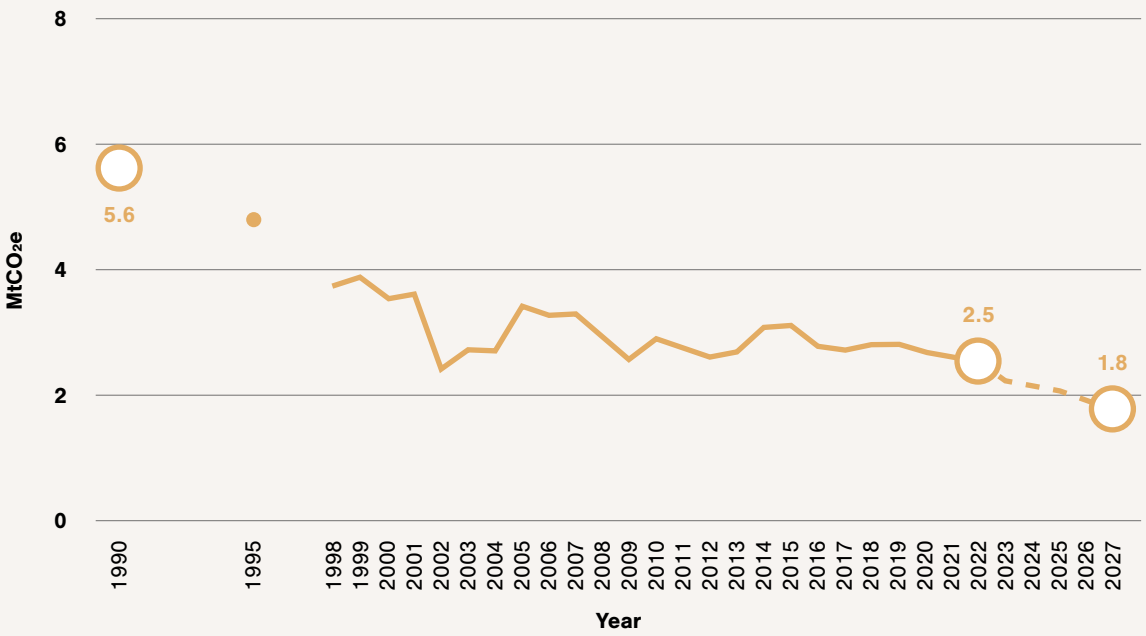


Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Emissions from the business and industrial processes sector have fallen from 5.6 $MtCO_2e$ in 1990 to 2.5 $MtCO_2e$ in 2022, representing a 54.9% reduction (Figure 18). This decrease in emissions has been driven by a reduction in emissions from the food and drink industries, as well as a reduction in emissions from fossil fuels combusted for heat and power production in industry.[99]

[99] Northern Ireland Greenhouse Gas Emissions 1990 - 2021 (daera-ni.gov.uk)

Figure 18: Change in business and industrial processes emissions 1990-2022



Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Note: Base year is 1990 for CO_2, CH_4 and N_2O, or 1995 for fluorinated gases

The sector in Northern Ireland is dominated by small and medium-sized enterprises with almost 80,000 registered businesses in operation, dispersed geographically.[100] This is significantly different from the rest of the UK, where large industrial clusters exist that in many cases have been the focus of direct policy interventions. Therefore, we need a different approach to the decarbonisation of the business and industrial process sector in Northern Ireland. This will be achieved by identifying commonalities within economic sectors and accelerating cross-sectoral collaboration.

We also need to support businesses and carbon intensive industries as we deliver economic development in a way that is consistent to achieving net zero. By implementing energy and resource efficiency measures at scale and promoting fuel switching away from carbon intensive fuels used for heating, Northern Ireland businesses can become active in the delivery of a flexible and integrated energy system of the future while at the same time contributing to economic sustainability and to climate action.

[100] Inter Departmental Business Register | Northern Ireland Statistics and Research Agency (nisra.gov.uk)

Policies and Proposals

This section lists policies and proposals required to reduce emissions in the business and industrial processes sector. These policy levers can be attributed to the following interventions:

- UK and EU-led regulation, compliance and reporting
- Northern Ireland-led regulation, compliance and reporting
- Investing in Northern Ireland's businesses

UK and EU-led Regulation, Compliance and Reporting

The UK Government's Industrial Decarbonisation Strategy[101] is a key driver for decarbonisation within the sector. It aims to address different market failures and barriers to entry that prevent industry from securing the investment needed for a low carbon transition. Key strategic policies outline support to switch away from fossil fuel combustion to low carbon alternatives, such as hydrogen and electrification, supporting innovation like carbon capture usage and storage, while supporting industrial sites to maximise their energy and resource efficiency.

In addition to frameworks across carbon pricing and carbon leakage, the Industrial Decarbonisation Strategy sets out a pathway with levers across competitiveness and market support, demonstration funding to accelerate innovation, and low-regret deployment of technologies and building infrastructure.[102] In areas such as carbon capture usage and storage, in Northern Ireland we will develop our own policies and proposals for the second and third carbon budget periods. In this sector, the scaling factors used to apportion the impact of the UK-wide policies is the NI/UK ratio of industrial emissions.

POLICY
The Fluorinated Greenhouse Gases (F-Gases) Regulations (2015) (UK-wide policy, but with separate Regulations for GB and NI), and new EU Regulation on F-gases in 2024 (Quantified)

Regulations were implemented to limit Northern Ireland's emissions through restriction and monitoring, and a new ban on fluorinated greenhouse gases (F-gases) with a high Global Warming Potential in foams came into operation in January 2023. Proposals for future policies relevant to limiting F-gas emissions contained within EU proposed regulations, came into operation on 11 March 2024. This is a cross-

[101] Industrial Decarbonisation Strategy (publishing.service.gov.uk)

[102] Since September 2021, NI government has collated funding opportunities through a regular publication for stakeholders Funding innovation for net zero e-zine | Department for the Economy (economy-ni.gov.uk)

cutting policy affecting the business and industrial processes sector along with the energy production and supply and residential buildings sectors. Further information is provided in the Residential Buildings chapter.

POLICY
The EU Ecodesign Directive and Energy Labelling Framework Regulation[103] (Quantified)

The EU Ecodesign Directive[104] and the Energy Labelling Framework Regulation[105] operate by setting minimum performance and information requirements (respectively) for energy-using products. They aim to take the least efficient products off the market and to give consumers clear energy-use information to guide their purchasing decisions. This policy applies to Northern Ireland, through The Ecodesign for Energy-Related Products and Energy Information (Amendment) (Northern Ireland) (EU Exit) Regulations 2021. This is a cross-cutting policy which also impacts the residential buildings and public buildings sectors.

POLICY
Industrial Non-Road Mobile Machinery Decarbonisation (Quantified)

Non-road mobile machinery covers a wide variety of machinery, for example excavators, bulldozers, loaders and mobile generators. To support the decarbonisation of high-impact sectors affected by these emissions the UK Government has made support available through schemes such as the Red Diesel Replacement competition, the Industrial Energy Transformation Fund and the Renewable Transport Fuel Obligation. UK Government aims to publish an Industrial Non-Road Mobile Machinery Strategy that will set out how the sector can decarbonise while maintaining competitiveness, attracting investment, and supporting growth. To inform this, UK Government published a call for evidence on Non-Road Mobile Machinery Decarbonisation in December 2023. DfE will liaise with UK Government as policy develops in this area to ensure the views of Northern Ireland industry are taken into consideration.

[103] Both the Eco-design Directive and Labelling Framework fall under the Windsor Framework with continued implementation through product-specific EU regulations, replicated in UK law

[104] Directive - 2009/125 - EN - EUR-Lex

[105] Regulation (EU) 2017/1369 of the European Parliament and of the Council

POLICY
Energy Performance of Buildings (Certificates and Inspections) Regulations (Northern Ireland) 2008 (as amended) (Quantified)

The Energy Performance of Buildings (Certificates and Inspections) Regulations (Northern Ireland) 2008 (as amended) set requirements for energy assessment certification of buildings and inspection of certain air conditioning installations.

Energy Performance Certificates are required when any building is sold, rented out or constructed. They give information on a building's energy efficiency on a sliding scale from 'A' (very efficient) to 'G' (least efficient), and, for the non-domestic sector, are based on emissions, to allow the buyer or tenant to make an informed choice.

POLICY
Industrial Energy Transformation Fund (Quantified)

Current UK Government support such as the Industrial Energy Transformation Fund (IETF),[106] is aimed at businesses in Northern Ireland, England and Wales with high energy use to invest in energy efficiency and low carbon technologies. Representatives for the Northern Ireland Executive and Welsh government have been members of the IETF Operations Board since 2019 and are involved in the Grant Award Panels at the stage in the process when prospective projects are assessed.

The IETF Operations Board continues to meet regularly to provide project oversight and governance on the delivery of the projects across all of the IETF phases. To date at least four Northern Ireland businesses have been successful in drawing down grant funding (>£4 million) from the IETF across previous phases allocated through a competitive process, with more grantees expected to be announced after the due diligence process has been completed.

POLICY
Streamlined Energy and Carbon Reporting (Quantified)

[106] Future of the Industrial Energy Transformation Fund (publishing.service.gov.uk)

Streamlined Energy and Carbon Reporting legislation requires all large UK companies and large Limited Liability Partnerships, as well as all quoted companies, to report on their annual energy use, greenhouse gas emissions and energy efficiency actions they have taken. The objectives of Streamlined Energy and Carbon Reporting legislation are to promote transparency for stakeholders and investors in applicable companies by tracking environmental key performance indicators year on year, whilst encouraging cost savings and emission reductions. This is a cross-cutting policy that also impacts the public buildings sector.

POLICY
Energy Savings Opportunity Scheme (Quantified)

Although small and medium-sized enterprises dominate the Northern Ireland business landscape, there are currently a range of emissions reporting requirements which only large organisations in Northern Ireland must meet, most notably through compliance with the UK Emissions Trading Scheme (discussed earlier) and the Streamlined Energy and Carbon Reporting. As of April 2022, Climate-Related Financial Disclosures reporting is mandatory for large businesses.[107] Further compliance which applies in Northern Ireland and is aimed at improving energy efficiency and reducing energy consumption, is driven by the Energy Savings Opportunity Scheme.

The Energy Savings Opportunity Scheme is in its third phase. The UK Government carried out an evaluation of previous phases of the Energy Savings Opportunity Scheme and consulted on plans to strengthen the scheme in 2021. Following consultation, the previous UK Government announced in July 2022 that it intended to strengthen the Energy Savings Opportunity Scheme by implementing new measures. Measures include standardising reporting requirements, including a net zero element to audits and requiring public disclosure of high-level recommendations by participants. The UK Government implemented a number of these measures through legislation in 2023 using powers under the Energy Act 2023. The Energy Savings Opportunity Scheme (Amendment) Regulations 2023 was introduced and applied to business UK-wide from November 2023.

DfE has worked with, and will continue to work with, UK counterparts and the Northern Ireland Environment Agency, who administer the Energy Saving Opportunity Scheme in Northern Ireland, on implementing the regulations and ensuring compliance amongst qualifying businesses.

[107] Mandatory climate-related financial disclosures by publicly quoted companies, large private companies and LLPs (publishing.service.gov.uk)

POLICY
Combined Heat and Power Quality Assurance Programme (Quantified)

The Combined Heat and Power Quality Assurance Programme[108] is a UK Government initiative to assess all types and sizes of Combined Heat and Power deployment across the UK. Combined Heat and Power, the simultaneous generation of heat and power in a single process, provides one of the most cost-effective approaches for making carbon savings due to the efficiency of the process.

Whilst participation is voluntary, successful Combined Heat and Power Quality Assurance certification provides eligibility to a range of benefits, including Renewable Obligation Certificates, Renewable Heat Incentive, Carbon Price Floor (heat) relief, Climate Change Levy exemption (in respect of electricity directly supplied) and Business Rate exemptions for over 80 sites in Northern Ireland, the majority of which are sports/leisure facilities.

Combined Heat and Power technology and the Combined Heat and Power Quality Assurance scheme have the potential to support the required transition to low carbon fuels. We will continue to engage with DESNZ over the carbon budget period to fully understand the methodology behind the quantification of this policy.

POLICY
UK Emissions Trading Scheme (Unquantified)[109]

Emissions Trading Schemes in the UK and EU are strong policy levers driving down greenhouse gas emissions in energy intensive industries, aviation, and the power sector. The savings achieved by the Emissions Trading Scheme are delivered by and attributed to other policies. The effect of the Emissions Trading Scheme can be seen as underlying the projections for the applicable sectors, and are considered under territorial trading, therefore no emissions savings are specifically attributable to the Emissions Trading Scheme itself. Northern Ireland participates in both the UK and EU Emissions Trading Scheme. The EU Emissions Trading Scheme applies solely to electricity generation, to preserve the operation of the Single Electricity Market.

[108] Combined Heat and Power Quality Assurance Programme - GOV.UK (www.gov.uk)

[109] The UK Emissions Trading Scheme (ETS) sets a cost of carbon to encourage the uptake of renewables, cleaner fuels and abatement technologies. The emission savings are linked to other policies and regulations, therefore, to avoid 'double counting' ETS is classed as 'unquantified'

For industrial businesses, out of scope of the UK Emissions Trading Scheme, there are further schemes such as Climate Change Agreements that are in place until March 2025.[110] Climate Change Agreements are voluntary agreements made between UK industry and the UK Environment Agency to reduce energy use and carbon dioxide emissions. In return, operators that meet their targets receive a discount on the Climate Change Levy, a tax added to electricity and fuel bills.[111] Further information on UK Emissions Trading Scheme and Carbon Leakage is provided in the Investing in Climate Action chapter.

Northern Ireland-led Regulation, Compliance and Reporting

Fuel switching to natural gas, although not a long-term solution will have a key role to play in emissions reductions as will Uplifts to Building Regulations in Northern Ireland. Policies and proposals relating to a phased uplift to Building Regulations and the introduction of biomethane to the Northern Ireland gas network are also expected to provide emissions savings for the sector.

POLICY
Gas Network Connections General Determinations 2023-2028 (Quantified)

There are three gas network areas in Northern Ireland with the most recent expansion known as Gas to the West. Just over one third of Northern Ireland households are currently connected to the gas network, however the majority of households are still using oil as their main fuel source for heating and hot water purposes. The Utility Regulator's Final Determination for the Gas Distribution Price Control 2023-2028 was published in October 2022 following extensive consultation with stakeholders. This included policy direction from DfE and consultation with Gas Network Operators, the Consumer Council and other consumer groups.

Whilst it is recognised that fuel switching to natural gas is not a long-term solution to emissions reduction, the current natural gas price control period 2023-2028 has allowances for fuel switching to continue.[112] DfE will work with the Utility Regulator on the next gas price control period and policy relating to the decarbonisation of the gas network. Policy work will address the supporting legislation and regulatory framework.

[110] Climate change agreements - GOV.UK (www.gov.uk)

[111] Business tax: Climate Change Levy - detailed information - GOV.UK (www.gov.uk)

[112] GD23 | Utility Regulator (uregni.gov.uk)

Over time, if the gas network is decarbonised through the removal of natural gas and replaced with biomethane and potentially hydrogen, homes connected to the gas network will avail of low carbon heating and hot water solutions. This policy will positively affect small and large businesses by enabling them to transition to a lower carbon fuel. By switching to gas businesses can also make a major reduction in their emissions and therefore become more competitive as they move to decarbonisation. Assumptions around this policy are based on the number of newly connected commercial sites and that gas will replace oil, however, the actual numbers may be lower or higher than the target (see Table 12). This is a cross-cutting policy which also affects the residential buildings sector.

POLICY

2012[113] and 2022[114] Uplifts to Part F (Conservation of Fuel and Power) of the Building Regulations in Northern Ireland (Quantified)

DoF has policy and legislation responsibility for Building Regulations in Northern Ireland. Part F (Conservation of fuel and power) of the Building Regulations sets minimum standards with respect to carbon emissions and energy efficiency when building work is being carried out or certain cases of a material change of use occur. A 2012 uplift to Part F improved the emissions requirements for new builds by 25%, alongside modest improvements to efficiency standards applicable when work is done to existing buildings. A subsequent uplift came into operation from June 2022 which tightened technical guidance on minimum fabric standards. This guidance was developed with an expectation that renewable technologies should be included on most new buildings. The measures are expected to reduce emissions from new dwellings by a further 15% (approximately), with most of this due to anticipated, additional renewables provision.[115] This represented Phase 1 of an ongoing programme of uplifts published in the Energy Strategy. The further phased uplifts to Part F are expected to implement a standard equivalent to England's Future Buildings Standards proposals. Engagement will continue with the UK Government on their work to improve the Energy Performance Certificate regime and any further development of administrations' Building Regulations. This is a cross-cutting policy that also affects the residential buildings and public buildings sectors.

[113] The Building Regulations (Northern Ireland) 2012 and amendments

[114] Technical Booklet F2 - Conservation of fuel and power in buildings other than dwellings – June 2022 | Department of Finance

[115] Emissions assessment is based on assumptions consistent with Final Stage Impact Assessment ref: The Building Regulations (Northern Ireland) 2012 Final Stage Regulatory Impact Assessment for amendment of Technical Booklet Guidance to Part F (Conservation of fuel and power) document C.8 (finance-ni.gov.uk)

PROPOSAL
Further Building Regulations Uplifts in Northern Ireland (Unquantified)

A phased programme for building regulations uplifts has been published in the Energy Strategy, with a Phase 2 discussion document consultation issued in July 2023. It offers a comprehensive outline of considerations for subsequent uplifts, ideally taking place 18-24 months after uplifts take place in England and other administrations. This should allow learning from implementation elsewhere prior to adoption here, although local conditions (e.g. high reliance on home heating oil, grid infrastructure and rural conditions), can make direct replication from other administrations challenging.

PROPOSAL
Biomethane[116] (Quantified)

In Northern Ireland the current nutrient surplus can be addressed by producing biomethane using agricultural feedstocks such as slurries and silage and diverting these products to anaerobic digestion. The use of anaerobic digestion with waste feedstocks can be utilised to lower emissions on a cross-sectoral basis.[117] This offers a potential short-term approach to optimise the use of biomethane to displace fossil fuel gas in the gas network. The development of a biomethane industry could seek to reduce greenhouse gas emissions and support climate resilience. There must, however, be careful consideration in decision making with regards to negative and unintended consequences.

The optimal use of biomethane may be outside of the gas network and focused on emission removals for the region. Future government policy on biomethane will consider all options for its usage, not only grid injection. In May 2024, DfE published a call for evidence on biomethane. A response report to this call for evidence was published in April 2025 and presents the findings, which will help inform the development of the biomethane policy for Northern Ireland.[118]

[116] DAERA chairs the Interdepartmental Biomethane Group which meets monthly with representatives from DfE's Energy Group, DfI's Transport Policy Division, College of Agriculture, Food and Rural Enterprise (CAFRE), DAERA's Natural Environment Policy Division, Utility Regulator (Gas), Agri-Food Biosciences Institute (AFBI), Northern Ireland Water and the Strategic Investment Board

[117] For example, to help address the issue of excess nutrients from livestock slurry, DAERA is delivering a Sustainable Utilisation of Livestock Slurry (SULS) Small Business Research Initiative (SBRI). Through using AD to produce biomethane, this project can contribute to the decarbonisation of hard to decarbonise sectors – energy, heavy transport and agriculture. Converting biogas to biomethane can provide further benefits by way of carbon capture. This aspect is of particular relevance as NICS seeks to plan and deliver against targets to reduce carbon emissions required under the CCA. 4. A second Phase, launched in October 2024, is making up to £12 million available over three years to fund these successful suppliers to develop demonstration facilities

[118] Developing Biomethane Production in Northern Ireland - Call for Evidence response report | Department for the Economy

DfE also has plans to develop its hydrogen strategy. In 2025, DfE will publish consultations on biomethane and hydrogen strategies to develop policy and legislative requirements on both these renewable gases for Northern Ireland.

Volumes of biomethane being injected into the grid and the number of sites injecting have been estimated using industry data and informed by DfE engagement with the wider gas industry and biomethane producers. However, it is currently unknown how many planned projects will be completed within the carbon budget period. This is a cross-cutting proposal that also impacts the residential buildings sector.

Investing in Northern Ireland's Businesses

Invest Northern Ireland is the regional economic development agency for Northern Ireland. The primary role of Invest Northern Ireland is to grow the local economy by strategically supporting new and existing businesses to compete internationally. The Agency also has legislative authority in areas such as carrying out research and providing information, advice, and financial assistance for energy efficiency. Invest Northern Ireland is viewed as the primary delivery agency for Northern Ireland government in delivering the solutions necessary to support businesses on the transition to net zero.

POLICY
Invest Northern Ireland Energy and Resource Efficiency Programme for Northern Ireland Businesses (Quantified)

This multi-year Energy and Resource Efficiency Programme, launched in May 2024, provides financial support to businesses to implement resource efficiency, energy efficiency and decarbonisation measures within their business operations post 2024. The program expands and enhances existing Invest Northern Ireland business support schemes such as Technical Consultancy, Resource Matching through Industrial Symbiosis and Resource Efficiency Capital Grant, as well as introducing new elements such as the Energy Efficiency Capital Grant. The policy aims to build upon the success of the previous Invest Northern Ireland schemes but to achieve further resource and energy efficiency gains for Northern Ireland businesses at a greater scale. Quantification assumes a range of technologies will be implemented to save emissions within the sector.

PROPOSAL
Invest Northern Ireland Industrial Decarbonisation for Northern Ireland Project (Quantified)

The Industrial Decarbonisation for Northern Ireland (IDNI) is a project led by Invest Northern Ireland to bring together key business and industry stakeholders from across Northern Ireland to develop and implement a plan for industrial decarbonisation. The aim of the project is to identify effective ways for organisations to make environmental and economic improvements by reducing energy consumption. The project is taking an innovative dual approach to explore how productivity improvements can also positively affect carbon reductions.

Invest Northern Ireland, together with a consortium of Northern Ireland and GB partners, have engaged with over 200 businesses through a series of workshops across all council areas to promote the IDNI project in 2024. The project team has identified nine industrial clusters and one sectoral cluster across six regional council areas in Northern Ireland. Businesses within the identified clusters will undergo an assessment by energy and productivity specialists to identify resource, production and energy efficiency measures that companies can then adopt that will subsequently lead to a reduction in energy costs and carbon emissions.

It is also worth noting that companies attending the IDNI workshops indicated that their primary reason for seeking energy efficiency and productivity improvements was to reduce energy costs. Reducing energy costs and ensuring that businesses could demonstrate green credentials when competing for contracts were cited as the primary drivers for companies wanting to reduce their carbon emissions. Businesses are seeking to decarbonise their supply chains to demonstrate to end consumers that their product or service is low carbon/net zero or is working towards that goal. From 2024, Invest Northern Ireland will identify industrial decarbonisation cluster sites and link knowledge on productivity improvements and carbon reduction.

This effect of market forces led by consumer demands has not been quantified, however, it is expected to be a strong driver of decarbonisation within the business and industrial processes sector over the coming years. The IDNI project will collect data on the type of technologies deployed by specific businesses and provide information on related carbon emission savings that will inform our knowledge on the decarbonisation of the sector.

Deployment Assumptions for Delivery of Business and Industrial Processes Policies and Proposals

Table 12 presents the level of expected deployment associated with draft Climate Action Plan policies and proposals in the business and industrial processes sector to align with the projected emissions over the first carbon budget period.

Table 12: Deployment assumptions by 2027 to achieve the Central Scenario with business and industrial processes sector Northern Ireland policies

Policy	Mitigation	By 2027
		Uptake
Gas Network Connections General Determinations 2023-2028 (GD23).	Emission savings assume businesses shift from oil to gas. Forecasted new commercial gas volumes (kWh) are taken from GD23 Final Determination published by the Utility Regulator Northern Ireland. Comparative energy from oil and gas consumption are then calculated using emission factors from DESNZ consumption calculated (kWh). The difference in emissions for oil versus gas are the calculated emission savings. The calculation also accounts for efficiency of the oil and gas boilers.	1,800 new commercial connections. Emission savings examples: • Large commercial site (200 GWh): 21.9 $ktCO_2e$ • Medium commercial site (40 GWh): 4.4 $ktCO_2e$ • Small commercial site (2 GWh): 0.2 $ktCO_2e$
Biomethane	Emission savings assume a switch from natural gas to biomethane through injection of biomethane into the gas grid to replace natural gas. Forecasted biomethane volumes have been provided by the Gas Network Operators. The comparative emissions from the same volume of natural gas and biomethane have been calculated in kWh using emission factors from DESNZ. The difference in emissions for natural gas versus biomethane are the calculated emission savings.	3% of gas demand. Emission savings examples: • Large commercial site (200 GWh): 32.4 $ktCO_2e$ • Medium commercial site (40 GWh): 6.5 $ktCO_2e$ • Small commercial site (2 GWh): 0.3 $ktCO_2e$

Policy	Mitigation	By 2027
		Uptake
Invest Northern Ireland Energy and Resource Efficiency Programme (EREp) for Northern Ireland businesses.	Emission savings are based on data from previous Invest Northern Ireland Programme (Energy Efficiency Finance/Energy Efficiency Capital Grant scheme) and scaled to the forecasted uptake of the EREp. Using data from the previous programmes allowed emission savings to be calculated by determining average energy savings per project multiplied by the forecasted number of projects. Examples of relevant technologies include more efficient heating systems, building management systems, variable speed compressors and building insulation. The assumed energy savings per project data was captured over a wide range of technologies but only technology types relating to heating or controls (20% of interventions) were attributed to the Business and Industry processes sector due to risk of double counting with other sectors.	20% of interventions attributed to heating or controls.
Invest Northern Ireland Industrial Decarbonisation for Northern Ireland Project (IDNI).	Emissions savings are based on data from a previous government scheme - Carbon Reduction Commitment Energy Efficiency Scheme and scaled to the predicted number of participants within the IDNI project. Additionally, the IDNI targets larger energy users in a clustered approach which may provide higher emissions savings. Carbon emission savings are assumed to commence in 2026 following funding approval.	Approx. 90 businesses to take part in project.

Policy	Mitigation	By 2027
		Uptake
Combined Heat and Power Quality Assurance (CHPQA).	Emission savings quantified from generating CHP through co-generation compared to the counterfactual, i.e. grid electricity and gas-powered heat. No emission savings attributed to coal or petroleum product fuelled CHP sites. No emission savings attributed to renewable fuels, i.e. biogas to avoid double counting with the Energy Supply and Production sector. Emission savings calculated by determining an NI percentage of the UK emission savings calculated by the Digest of United Kingdom Energy Statistics (DUKES), using the electrical capacity of NI CHPQA sites as a percentage of the overall UK electrical capacity of CHPQA sites.	Approx. 80 CHPQA sites used for analysis.
2012 Uplift to Part F (Conservation of fuel and power) of the Building Regulations in Northern Ireland.	Uplift to Part F standards for new builds and work to existing buildings. England's 'Implementation Stage Impact Assessment of Revisions to Parts F and L of the Building Regulations from 2010'[119] provides deployment assumptions.	Approximate comparative deployment figures could be estimated via pro rata calculations at of England's deployment assumptions on the basis of population, albeit the local fuel and build mix will be different. This is accounted for in the 5.1% scaling factor applied to emissions.

[119] Implementation Stage Impact Assessment of Revisions to Parts F and L of the Building Regulations from 2010 Appendix 3 and Table 3, in particular, provides more detail. It is presumed the assumptions within this document would be applied consistently across assessments for policy development and carbon reduction assessments

Policy	Mitigation	By 2027
		Uptake
2022 Uplift to Part F (Conservation of fuel and power) of the Building Regulations in Northern Ireland.	For Part F 2022 policy impact assessment, three years of EPC data were reviewed, filtering out what was estimated not to be new-build (the policy only impacts new-build standards) and attributing 62.6% of this space to Business and Industrial Processes sector. Reference RIA Part F Building Regulations 2022.[120]	102,492m²/yr of new-build attributable to the BIP sector.

Further detail on the quantification of the business and industrial processes sector policies is available in Chapter 3.3 of the Quantification Report (Annex A)[121]

Emissions Projections

Table 13 presents the projected emissions for the business and industrial processes sector across the first carbon budgetary period. Business and industrial processes sector emissions are projected to be 0.89 $MtCO_2e$ less than the emissions levels assumed for this sector within the CCC adjusted pathway.

[120] paragraphs 5.29-5.31 of the final stage Impact Assessment

[121] Chapter 3.3, p.34-51

Table 13: Business and industrial processes sector projected emissions in the Central Scenario compared with the adjusted CCC sectoral pathway

Sector	Projected Emissions ($MtCO_2e$)						Difference in CCC adjusted pathway and Northern Ireland Projections
	2023	2024	2025	2026	2027	Total	
Business	2.02	1.92	1.86	1.71	1.57	9.07	
Industrial Processes	0.21	0.21	0.21	0.21	0.21	1.03	
Business and Industrial Processes total	**2.23**	**2.12**	**2.06**	**1.91**	**1.77**	**10.10**	-0.89 $MtCO_2e$
Business and Industrial Processes CCC*	2.43	2.3	2.2	2.09	1.97	10.99	

**These figures are based on the CCC advisory pathway but have been adjusted to take account of the 2022 inventory publication.*

Just Transition Considerations

Decarbonisation is an opportunity to transform Northern Ireland's dispersed industry and centralised business regions, attracting inward investment and Foreign Direct Investment to future proof the sector and secure the long-term viability of high value jobs across the region. Latest statistics show, between 1990 and 2022, the UK has reduced emissions by 50%[122] while growing the economy by 80%.[123]

This trend can continue with a low carbon business and industrial processes sector driving the decoupling of emissions from economic development. In producing a diverse range of opportunities from new and emerging markets, the decarbonisation of the economy can meet the needs of the people of Northern Ireland for now and into future generations as the region transitions to a leading net zero small, advanced economy.

The business and industrial processes sector is seen as a major benefactor of a shift to a more sustainable economy. Transitioning to a low carbon sector will involve application of resource efficiency circular economy principles. It will create new research and development opportunities, more resilient and diversified supply chains, and create new business opportunities in retrofitting, disassembly, material handling, reprocessing, bioengineering, and digital systems for material tracking.

Through the measures listed previously, Northern Ireland businesses will benefit from the pathway to decarbonisation in a number of ways. Firstly, by becoming more efficient in their use of resources, businesses will reduce their carbon footprint and expenditure on raw materials. Resource efficiency measures will ensure businesses spend less on materials, thereby increasing profit margin while resource matching will decrease emissions and expenditure on waste management. Secondly, implementing energy efficiency measures will ensure businesses use less energy, thereby reducing their expenditure and giving them a competitive advantage as the demand for decarbonised products, services and supply chains grow.

Thirdly, by switching to low carbon fuel sources or electrifying processes that currently use fossil fuels, Northern Ireland businesses will lower carbon emissions and produce products and services that are part of a low carbon economy.

All these measures will enable Northern Ireland businesses to take full advantage and benefit from the opportunities that the pathway to decarbonisation offers. Fuel switching, resource efficiency and energy efficiency measures will give the sector a competitive edge as the demand for low carbon supply chains, goods and services grow.

The opportunities presented by the transition to a green economy will build on and support the expertise, skills and knowledge already in the sector. Employment opportunities will grow as businesses harness the competitive advantage that decarbonisation will

[122] UK Greenhouse Gas Emissions 2022: summary (publishing.service.gov.uk)

[123] Gross Domestic Product: chained volume measures: Seasonally adjusted £m - Office for National Statistics (ons.gov.uk)

offer. We will future proof our economy by ensuring that our businesses are not left behind as competitors in other jurisdictions drive towards net zero.

Decarbonisation of the sector will also contribute to DfE's key economic priorities, of Good Jobs, Regional Balance, Increasing Productivity and Reducing Carbon Emissions. As businesses decarbonise, they can take advantage of the improved competitiveness that green products and services offer to the all-Ireland economy, thereby increasing turnover, employment opportunities and productivity. Northern Ireland will benefit from the drive towards a green economy.

By developing the skills, expertise and technologies in this decade, we will be ready to lead future innovations and specialisms in the next, and support people into secure, well-paid jobs.

The low carbon and renewable energy sector already generates approximately £1.6 billion in turnover annually and provides 5,200 full-time equivalent jobs.[124] We aim to at least double the size of this sector by generating local market opportunities, in place of importing fossil fuels, and by ensuring our companies can compete for the substantial UK and global opportunities in low carbon energy and technologies that are already becoming available.

6.5 Residential Buildings

Sector Summary

Residential Buildings Sector Emissions Summary

- The buildings sector is covered in two sections within this draft Climate Action Plan: a residential buildings sector, and a public buildings sector.
- Together they account for 13.4% of Northern Ireland's greenhouse gas emissions.
- Residential buildings sector emissions have fallen by 31.4% between 1990 and 2022 and account for 89.6% of emissions from the overall buildings sector. This represents 12.0% of Northern Ireland's emissions in 2022.
- Residential building emissions are primarily affected by fuel combustion for heating and the production of hot water.[125]

[124] Low carbon and renewable energy economy, UK - Office for National Statistics (ons.gov.uk)

[125] 'Includes fuel combustion for heating, cooking, garden machinery, gases released from aerosols and inhalers, and emissions released from the breakdown of products such as detergents.' Emissions are affected by energy efficiency, heating and hot water demands, and the fuel type for domestic combustion

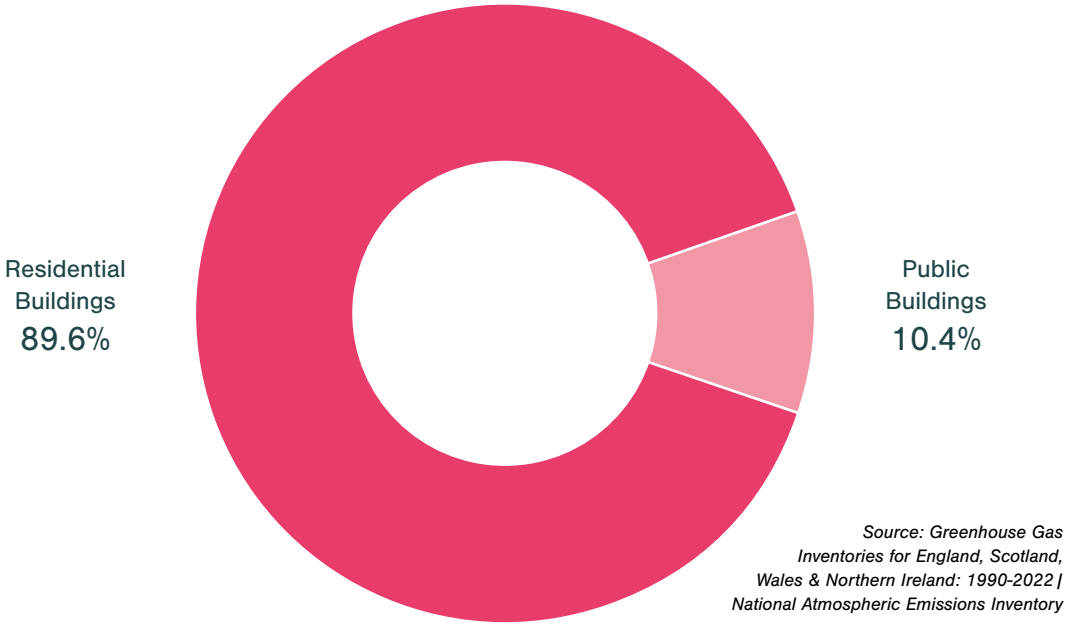
Sector Summary

Policy Approach	Policies and proposals for retrofitting existing dwellings to **reduce energy consumption** through energy efficiency are important to reducing emissions in residential buildings and in preparing homes for the adoption of decarbonised heating systems. These will be delivered through existing schemes and delivery partners, including the Utility Regulator and the Northern Ireland Housing Executive with the delivery model for proposals for a new **energy efficiency programme** and a future **Warm Healthy Homes Scheme** aimed at addressing fuel poverty, subject to necessary procurement and funding. Reducing emissions will also rely on the adoption and **use of low carbon options for heating**. This will be delivered through a policy of **fuel switching to natural gas** which includes exploring the potential **use of biomethane** to displace fossil fuel gas in the gas network, and a proposal to provide support to **low carbon heating technologies** delivered through electrification. The current estimates of impacts from policies which **raise standards** mean they play an important part in overall emissions reduction. Savings will be delivered through current and proposed **Uplifts to Building Regulations in Northern Ireland, more energy efficient product designs** and **improved labelling**.
Emissions Projections	Following the implementation of the policies and proposals set out in this chapter, the buildings sector is projected to emit 12.76 $MtCO_2e$ over the course of the first carbon budget period. This compares to total assumed emissions of 14.07 $MtCO_2e$ in the sector during the first carbon budget period within the CCC adjusted pathway.

Sector Overview

In this Climate Action Plan buildings are split into two separate sectors – residential buildings and public buildings. The buildings sector reports on emissions from fuel uses other than electricity, which are instead reported via the energy production and supply sector. In 2022, emissions from buildings accounted for 13.4% of Northern Ireland's greenhouse gas emissions. Residential building emissions account for 89.6%[126] of building emissions (Figure 19) and public buildings for 10.4%.[127]

Figure 19: Building sector emission sources 2022



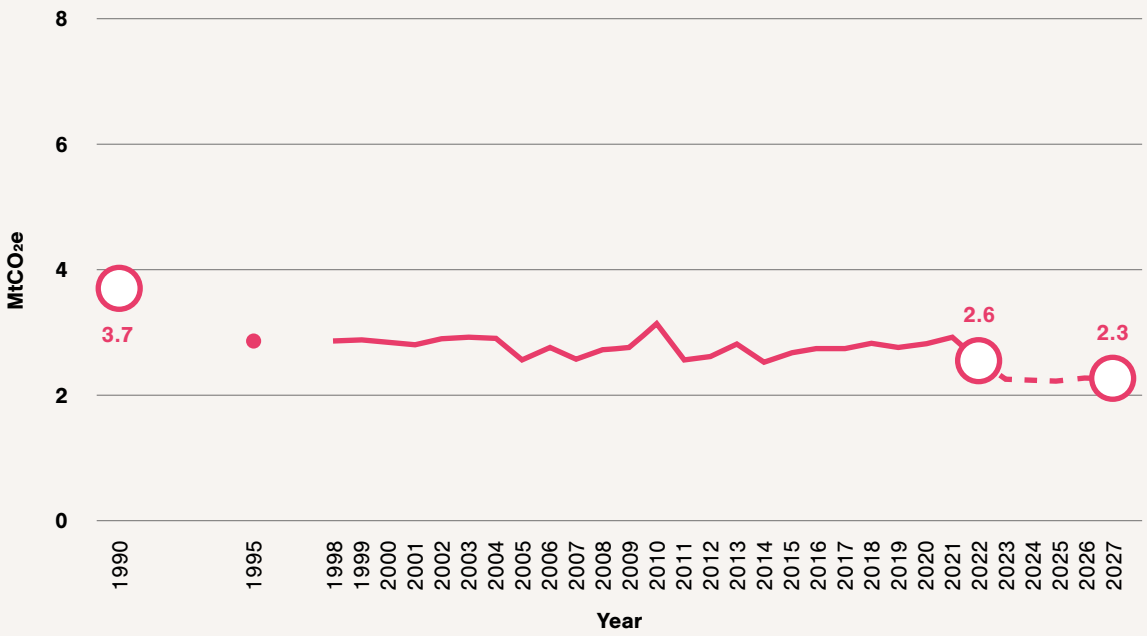
Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Despite an increase in the number of homes, residential buildings emissions have fallen by 31.4% from 3.7MtCO_2e in 1990 to 2.6MtCO_2e in 2022 (Figure 20).

[126] Approximately 1.2% of the emissions attributed to residential buildings include other emissions sources such as aerosols and metred dose inhalers

[127] Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Figure 20: Change in residential buildings emissions 1990-2022



Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Greenhouse gas inventory 1990–2022

Projections 2023–2027

Note: Base year is 1990 for CO_2, CH_4 and N_2O, or 1995 for fluorinated gases

There are several factors leading to a reduction in the residential buildings sector emissions, including fuel switching from solid fuels and oil to natural gas, thereby displacing more carbon intensive fuels. The uplifts to Building Regulations in Northern Ireland have also shown a significant impact on emission projections, due to the fact that they apply to both new builds and when work is done to existing buildings and because of a modelling assumption of continued savings from previous years' building work.

It is recognised that fuel switching to natural gas is not a sustainable long-term approach, however, it is currently delivering significant emissions reductions towards the first carbon budget.

A more progressive plan to increase energy efficiency and reduce reliance on fossil fuels to heat our homes is needed in order to meet medium and longer-term carbon reduction targets. This must also go hand in hand with a focus on reducing the health risks associated with living in a cold home and burning fossil fuels, such as circulatory, respiratory and mental health problems, and will ensure households have access to essential and affordable energy to enable a decent standard of living and health.

There are also many interdependencies and other factors which need to be addressed to decarbonise the residential buildings sector, such as, managing innovation, upskilling the workforce to deliver on retrofitting or installing renewable technologies, managing grid impacts, developing deep supply chains, consistent standards, rebalancing of fuel costs to support low carbon heating, consumer protection and behaviour change.

DfE's Energy Strategy[128] supports reducing emissions in the residential sector. A key principle of the strategy is to 'do more with less' to drive improvements in energy efficiency, provide support to invest in improvements to buildings and help consumers make changes that reduce their energy use.

The Housing Supply Strategy 2024-2039[129] recognises the key role that both the construction of new housing and the retrofitting of existing homes will play in helping to reduce emissions. One of its key objectives is 'a fair path to low carbon housing' ensuring that people can afford to heat their homes as well as meeting greenhouse gas emissions targets.

Policies and Proposals

This section highlights policies and proposals required to reduce emissions in the residential sector between 2023 and 2027 as included within the Central Scenario. The deployment assumptions and emissions projections below are the expected outcomes of these policies and proposals, taking into account the need for Executive agreement, significant investment and their dependence on budget availability (including multi-year budgets).

Emissions in this sector will be reduced through both UK and Northern Ireland policies and proposals. The scaling factors used to apportion the impact of the UK-wide policies to the Northern Ireland residential buildings sector is the NI/UK ratio of domestic emissions.

The policies and proposals are attributed to the following categories:

- Reduce energy consumption.
- Use of low carbon options for heating.
- Raise standards.

Reduce Energy Consumption

Given that most of the homes that will be in place in 2050 have already been built, the following policies and proposals, designed to reduce energy consumption and emissions through energy efficiency retrofit interventions, will have a key role in reducing emissions by 2050.

[128] The Path to Net Zero Energy. Safe. Affordable. Clean. (economy-ni.gov.uk) https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Energy-Strategy-for-Northern-Ireland-path-to-net-zero.pdf

[129] Housing Supply Strategy - A Home for Everyone

POLICY
Affordable Warmth Scheme (Quantified)

Schemes to reduce 'fuel poverty' have been in place in various forms since 2001. The Affordable Warmth Scheme[130] commenced in 2015 and is available to low-income owner-occupiers and households in the private rented sector with a total annual household income of less than £23,000 to target those most at risk of fuel poverty. From its introduction up until June 2024, the scheme has supported 29,086 low-income homes, with 55,552 measures being installed.

This policy enables homes to receive multiple energy efficiency measures such as cavity wall and roof insulation and replacement windows. It also includes the installation of lower carbon heating such as replacing older inefficient oil boilers with more efficient oil and gas boilers. This scheme aimed at alleviating fuel poverty is a government funded policy which will contribute to the reduction of greenhouse gas emissions in approximately 2,400 homes in the residential sector per annum based on an average annual budget of £12 million.

POLICY
Northern Ireland Sustainable Energy Programme (including uplifts) (Quantified)

The Northern Ireland Sustainable Energy Programme[131] is an £8 million annual fund administered by the Energy Savings Trust on behalf of the Utility Regulator. Unlike the government funded Affordable Warmth Scheme, funding for the Northern Ireland Sustainable Energy Programme is collected from both domestic and commercial electricity customers through a Public Service Obligation charge on their electricity bills. The programme of schemes, which between 2015 and 2023 has installed measures in approximately 40,000 properties, is decided through a competitive call for schemes which contractors can apply to deliver. Households across Northern Ireland can benefit from the programme through a range of energy schemes which have a broader focus on sustainable energy solutions than the Affordable Warmth Scheme. These include, cavity wall and loft insulation, heating systems, boiler upgrade, draught proofing, remote smart heating controls, heat pumps and energy efficient bulbs. Priority schemes, for both whole house and individual measures, are aimed at low-income households. Eligibility can vary depending on the specific initiative within the Northern Ireland Sustainable

[130] The Housing Executive - Affordable Warmth Scheme (nihe.gov.uk)

[131] Northern Ireland Sustainable Energy Programme - Energy Saving Trust

Energy Programme. In general, Northern Ireland Sustainable Energy Programme schemes are targeted at those households which cannot avail of the Affordable Warmth Scheme and each of the priority schemes has its own set of financial vulnerability criteria/income thresholds, which differ from the Affordable Warmth Scheme, to identify qualifying households.[132] DfE has provided additional financial support to the Northern Ireland Sustainable Energy Programme uplifts (Northern Ireland Sustainable Energy Programme + Departmental Expenditure Limit) through the 2023/24 and 2024/25 financial years and discussions are ongoing with the Utility Regulator regarding adding to and scaling funding during 2025 and beyond, while we develop a domestic Energy Efficiency Programme.

POLICY

Northern Ireland Housing Executive Stock Investment Programme – Including Thermal Improvements (Quantified)

The Northern Ireland Housing Executive's Investment Programme[133] for its housing stock delivers energy efficiency and decarbonisation benefits through its thermal improvement workstreams. The Northern Ireland Housing Executive (NIHE) has set a target of a 6% reduction in carbon emissions from its stock by the end of 2025/2026, based on the currently anticipated level of funding (£372 million) that can be directed to the work during this period. The works include heating system replacements, upgraded loft insulation, new double glazing, a minor cavity wall insulation programme and the completion of an external wall insulation programme (that has been part funded by the European Regional Development Fund).

Also, as part of the NIHE's sustainable development strategy, a 400 Unit Low Carbon Programme has been progressed. This programme includes collaboration with industry, academia, government, regulator and householders to deliver a £14 million thermal improvement programme. Work is expected to be completed in 2026. The 400 dwellings are located across all three NIHE regions and focus is on improved energy efficiency measures, low carbon heating, adopting renewable technologies, electric tariff changes and improved household education. Taking account of learning from this programme, the NIHE will carry out an internal review of the Northern Ireland Housing Executive Landlord's Heating Policy.

The Northern Ireland Housing Executive operates a residential energy efficiency advice service, which provides free and impartial energy advice and signposting to all Northern Ireland householders. Since its inception in 2020 this service has received over 40,000 queries. This service will continue and is helping drive behaviour changes to reduce energy use and take up of energy efficiency measures.

[132] The income threshold for this programme is set £5,000 higher than the affordable warmth scheme. Further information on the eligibility matrix is available at: 2023-2025-NISEP-Framework-Document.pdf

[133] Corporate Sustainable Development Strategy and Action Plan (2022-2027)

PROPOSAL
Warm Healthy Homes Scheme (Quantified)

To ensure those most at risk of fuel poverty continue to have access to energy efficiency measures and to deliver against carbon reduction targets, DfC is designing the scope and delivery of a new intervention which would take effect as soon as possible after the existing Affordable Warmth Scheme closes. This new Warm Healthy Homes Scheme will require the installation of energy efficiency measures and consequently will support local economies and communities by making the installation work available to approved local contractors. DfC is undertaking the appropriate policy development processes including evidence gathering, public consultation, and engagement with political representatives and amendment of the existing domestic energy efficiency regulations. The new Fuel Poverty Strategy wider public consultation was launched on 12 December 2024 and ran until 06 March 2025.[134] The consultation is being used to consult on key aspects of the new scheme including eligibility criterion, income thresholds and energy efficiency measures such as insulation, home heating systems, low carbon heat and other renewable technologies. DfC will undertake further consultation on the scheme and legislation as and when required. In order to meet our emissions targets in the longer term, investment in the new scheme will need to rise significantly by the next carbon budget.

PROPOSAL
Scale and Launch Energy Efficiency Programmes (Quantified)

As per the commitment in the Northern Ireland Executive's Energy Strategy, government will continue with the ongoing development of a multi-year energy efficiency programme, to be launched in pilot format from 2027. A cross-departmental policy development process is underway to gather evidence on the sustainable funding and delivery models adopted elsewhere with a series of stakeholder engagement meetings conducted since autumn 2023. DfE is now in the process of preparing a public consultation on evidence-based options for domestic energy efficiency support which will help to inform the design, rules, and guidance of future support. In the interim, DfE is committed to working with partners such as the Utility Regulator to scale existing support and has provided a funding to upscale Northern Ireland Sustainable Energy Programme in each of the last two fiscal cycles.

[134] Consultation on a new Fuel Poverty Strategy for Northern Ireland | Department for Communities

To support this proposal, the following actions will be progressed:

- Government will launch a policy options consultation relating to the future financing and delivery of Energy Efficiency in Northern Ireland.
- DfE has committed to establish a One Stop Shop. Collaboration across government and our partners will be necessary to ensure those likely to experience fuel poverty are supported to access specialist energy advice and grants.

Use of Low Carbon Options for Heating

With 88.5% of the building emissions coming from residential fuel combustion, there needs to be a strong focus on decarbonising home heating and the policies and proposals set out below are designed to achieve this.

POLICY
Clean Heat Market Mechanism (Quantified)

The Clean Heat Market Mechanism[135] will, from 2025, place an obligation on the manufacturers of heating appliances to meet targets for the proportion of low carbon heat pumps they sell each year, relative to fossil fuel boilers. Greater use of clean heat technologies may result in lower customer bills, increased energy security and a reduction in UK carbon emissions. These targets will steadily increase year-on-year, providing firms with the certainty to invest in building the heat pump market proposals for the introduction of a market-based mechanism to support the development of the UK market for low carbon electric heat pumps.

POLICY
Gas Network Connections General Determinations 2023-2028 (Quantified)

There are three gas network areas in Northern Ireland with the most recent expansion known as Gas to the West. Just over one third of Northern Ireland households are currently connected to the gas network, however the majority (62.5%)[136] of households are still using oil as their main fuel source for heating and hot water purposes. Whilst it is recognised that fuel switching to natural gas is not a long-term solution to emissions reduction, the current natural gas price control period 2023-2028 (referred to as the

[135] Clean Heat Market Mechanism (publishing.service.gov.uk)

[136] Census 2021 main statistics for Northern Ireland phase 2 - Briefing

Gas Network Connections General Determinations)[137] has allowances for fuel switching to continue setting a target of 70,048 new domestic gas connections across the three gas networks. Over time if the gas network is decarbonised through the removal of natural gas and replaced with biomethane (discussed in the Business and Industrial Processes chapter) and potentially hydrogen, homes connected to the gas network will avail of low carbon heating and hot water solutions. Government will work with the Utility Regulator on the next gas price control period and policy relating to the decarbonisation of the gas network. Policy work will address the supporting legislation and regulatory framework. This is a cross-cutting policy that also affects the business and industrial processes sector.

PROPOSAL
Low Carbon Heat Support Programme (Quantified)

While fuel switching from solid fuels and oil to natural gas for home heating has delivered significant reductions in emissions since gas was first introduced in Northern Ireland in 1996, a support programme to replace fossil fuel heat with low carbon heating technologies will be taken forward. Heat pumps will form an important part of this, but we will also explore heat networks and district heating in appropriate areas. The deployment of low carbon heat technologies is essential to delivery on our emission reduction targets however the sector is nascent and emerging. To drive growth in the sector and allow for more consumer access to heat pump technologies, government will deliver a support programme to help upskill industry, bring down capital costs of deployment of the technology and explore options for support through electricity tariffs.

When replacing and decarbonising heating systems, government will encourage the disposal of existing systems in a way that supports resource recycling or recovery. This will also be considered in relation to the repair and replacement of new low carbon heating systems.

The government consultation on a Future Low Carbon Heating Support Programme closed on 10 January 2025.[138] The outcome of this consultation will help to inform the funding mechanisms, rules and guidance of the support programme, with the aim of enabling households to reduce reliance on fossil fuels, including oil and gas.

[137] GD23 | Utility Regulator (uregni.gov.uk)

[138] Consultation on support for low carbon heating in residential buildings

PROPOSAL
Biomethane (Quantified)

In Northern Ireland, the use of anaerobic digestion with waste feedstocks can be utilised to lower emissions on a cross-sectoral basis. This offers a potential short-term approach to optimise the use of biomethane to displace fossil fuel gas in the gas network. There must, however, be careful consideration in decision making with regards to outcomes. The optimal use of biomethane may be outside of the gas network and focused on emissions removals for the region. Future government policy on biomethane will consider all options for its usage, not only grid injection. The DfE call for evidence on biomethane closed on August 2024. A response report to this call for evidence was published in April 2025 and presents the findings, which will help inform the development of the biomethane policy for Northern Ireland.[139] This is a cross-cutting proposal which also impacts the business and industrial processes sector.

To support the development of this proposal, the following actions will be progressed:

- In 2025, DfE will publish consultations on biomethane and hydrogen strategies to develop policy and legislative requirements on both these renewable gases for Northern Ireland.

Raise Standards

It is estimated that 70% of buildings in use in 2010 will still exist in 2050[140] and each year we are adding around 1% to the housing stock, therefore addressing energy consumption and efficiency in both new and existing homes is essential.

It is important to have a regulatory framework to improve how homes are built and retrofitted, to ensure Northern Ireland's housing stock meets the long-term goal of net zero. Social and affordable homes built using government funding will be encouraged to exceed minimum standards set in Building Regulations, leading the way, and driving market change. It will also be important to encourage, where possible, the reuse of existing buildings for these homes. These sites tend to be within walking distance of shops, schools, parks and other infrastructure and developing them will help to reduce waste, maximise existing connections to services and reduce construction carbon emissions. DfC will take forward a collaborative research project to investigate the barriers to reusing existing buildings for homes and other potential solutions.

When building work is being carried out, Building Regulations, together with product and other efficiency standards, help improve emissions performance, while ensuring that consequential impacts on the building are also considered. Uplifts in requirements take cost-effectiveness and affordability into account.

[139] Developing Biomethane Production in Northern Ireland - Call for Evidence response report | Department for the Economy

[140] The Path to Net Zero Energy. Safe. Affordable. Clean. (economy-ni.gov.uk)

POLICY
The EU Ecodesign Directive and the Energy Labelling Framework Regulation (Quantified)

The EU Ecodesign Directive[141] and the Energy Labelling Framework Regulation[142] operate by setting minimum performance and information requirements (respectively) for energy-using products. They aim to take the least efficient products off the market and to give consumers clear energy-use information to guide their purchasing decisions. This policy applies to Northern Ireland, through The Ecodesign for Energy-Related Products and Energy Information (Amendment) (Northern Ireland) (EU Exit) Regulations 2021. This is a cross-cutting policy which also impacts the business and industrial processes and public buildings sector.

POLICY
The Fluorinated Greenhouse Gases (F-Gases) Regulations (2015) (UK-wide policy, but with separate Regulations for GB and NI), and new EU Regulation on F-gases in 2024 (Quantified)

F-gases are amongst the most potent greenhouse gases with the highest Global Warming Potential (GWP). Regulations were originally brought into operation in 2015 to limit Northern Ireland's F-gas emissions through restriction and monitoring, as was required by EU Regulation No 517/2014. A new ban on F-gases with a high GWP in foams, used in building insulation and fire equipment, also came into operation in January 2023.

The aforementioned EU 2014 Regulation on F-gases was under review from April 2022 until March 2024. Following on from this, future policies to limit F-gas emissions are now contained within a new Regulation (EU) 2024/573, which came into operation on 11 March 2024.

The new EU 2024 Regulation intends to build on the success of its predecessor by attempting to reduce emissions of F-gases in the EU. For example, it does this by increasing the speed of the phasedown of hydrofluorocarbons (HFCs, i.e. a type of F-gas), establishing new F-gas certification requirements and expanding the HFC quota system to new sectors such as Metered Dose Inhalers (MDIs). New prohibitions on products containing F-gases will also come into operation in the coming years. This is a cross-cutting policy which also impacts the energy production and supply as well as the business and industrial processes sectors.

[141] Directive - 2009/125 - EN - EUR-Lex

[142] Regulation (EU) 2017/1369 of the European Parliament and of the Council

POLICY

2012 and 2022 Uplifts to Part F (Conservation of Fuel and Power) of the Building Regulations in Northern Ireland (Quantified)

DoF has policy and legislation responsibility for Building Regulations in Northern Ireland. Assessment of operational emissions is embedded in Part F (Conservation of fuel and power) of the Building Regulations[143] requirements for new dwellings and in Energy Performance Certificate assessments. This provides a basis for emissions assessment, and some means of measuring improved standards. The 2012 uplift to Part F improved the emissions requirements for new builds by 25%, alongside modest improvements to efficiency standards applicable when work is done to existing dwellings. Phase 1 of Department of Finance's programme of Part F uplifts applies to new build applications from June 2022.[144] It improved fabric standards and focused on an expectation that renewable technologies should be included on most new buildings. The measures are expected to reduce emissions from new dwellings by a further 15% (approximately), with most of this due to anticipated, additional renewables provision.[145] The further phased uplifts to Part F standards are expected to implement a standard equivalent to England's Future Homes and Future Buildings Standards[146] proposals. Engagement will continue with the UK Government on their work to improve the Energy Performance Certificate regime and any further development of administrations' Building Regulations. This is a cross-cutting policy affecting residential buildings, public buildings and business and industrial processes sectors. A proposal for further uplifts to Building Regulations is discussed below.

PROPOSAL

Further Building Regulations Uplifts in Northern Ireland (Unquantified)

A phased programme for building regulations uplifts has been published in the Energy Strategy, with a Phase 2 discussion document consultation issued in July 2023.[147] It offers a comprehensive outline of considerations for subsequent uplifts, intended some 18-24 months after uplifts take place in England and other administrations. This should allow learning from implementation elsewhere prior to adoption here, although local conditions (e.g. high reliance on home heating oil, grid infrastructure and more rural situations), can make direct replication from other administrations challenging.

[143] The Building Regulations (Northern Ireland) 2012 (legislation.gov.uk)

[144] Consultation Proposals for amendment of Technical Booklet Guidance to Part F (Conservation of fuel and power)

[145] Emissions assessment is based on assumptions consistent with Final Stage Impact Assessment ref: The Building Regulations (Northern Ireland) 2012 Final Stage Regulatory Impact Assessment for amendment of Technical Booklet Guidance to Part F (Conservation of fuel and power) document C.8 (finance-ni.gov.uk)

[146] The Future Homes and Building Standards: 2023 consultation - gov.uk

[147] Review of energy efficiency requirements and related areas of Building Regulations - NI Direct - Citizen Space

Deployment Assumptions for Delivery of Residential Policies and Proposals

Table 14 presents the level of expected deployment associated with draft Climate Action Plan policies and proposals in the residential buildings sector to align with the projected emissions over the first carbon budget period.

Table 14: Deployment assumptions by 2027 to achieve the Central Scenario with residential buildings sector Northern Ireland policies

Policy	Mitigation	By 2027
		Uptake
Affordable Warmth Scheme.	Implemented scheme to support households most at risk of fuel poverty. Assumes: • Availability of annual budget • Energy efficiency interventions include cavity and loft insulation, heating systems and glazing and will be based on individual dwelling requirements Average saving per house based on 2020-2021 and 2021-2022 Affordable Warmth Scheme: 2.17 tCO_2.[148] 2023-2024 – £14 million funding made available: 2,746 homes supported: 5,959 tCO_2 saved. 2024-2025 – £8 million funding made available: 1,400 homes supported: 3,038 tCO_2 saved. 2025-2026 – (estimate) £14 million funding made available: 2,602 homes supported: 5,646 tCO_2 saved. 2026-2027 – (estimate) £15 million funding made available: 2,788 homes supported: 6,050 tCO_2 saved. Estimated emissions savings 2023-2027 = 20,693 tCO_2.	By 2027 9,536 households supported.

[148] Affordable Warmth Scheme and Boiler Replacement Scheme Evaluation 2020-2022

Policy	Mitigation	By 2027
		Uptake
Northern Ireland Sustainable Energy Programme including uplifts.	Scheme based on funding through Public Service Obligation. Additional financial uplift assumes: • Availability of government funding estimated at £14.25 million 2024-2027. • Average intervention costs of £2,000 per dwelling. • Energy efficiency measures (cavity wall and loft insulation) equally split across funding. • CO_2 savings of 960kg (cavity) and 425kg (loft). 2023-2027 overall estimated emissions savings = 25,172 tCO_2.	NISEP 3,250 homes supported Uplift 7,125 homes supported.
NIHE Stock Investment Programme – Including Thermal Improvements (subject to funding).	Northern Ireland Housing Executive Sustainable Development Strategy assumes: • Annual budget availability. • Progress on NIHE revitalisation programme to assist borrowing. • Alignment with NIHE Sustainable Development Strategy and Action Plan (2022-2027). • Interventions aligned with needs of property to include gas conversions, fabric an air source heat pump measures, and solar PV. 2023-2027 overall estimated emissions savings = 38,820 tCO_2.	20,672 homes improved.
Warm Healthy Homes Scheme.	Proposed scheme aimed at households most at risk of fuel poverty, and commencing in 2027. Assumes: • Availability of £15 million capital. • Average intervention costs of £2,052 per dwelling. • Energy efficiency measures (cavity wall and loft insulation) equally split across funding. • CO_2 savings of 836 kg (cavity) and 610 kg (loft). • Supply chain and contractor availability and skills. 2027 overall estimated emissions savings = 10,560 tCO_2.	7,300 households supported.

Policy	Mitigation	By 2027
		Uptake
Scale and Launch Energy Efficiency Programmes.	Proposed scheme which assumes: • Launch in 2027. • Budget availability of £5 million in 2027. • Average intervention costs of £2,052 per dwelling. • Energy efficiency measures (cavity wall and loft insulation) equally split across funding. • CO_2 savings of 836 kg (cavity) and 610 kg (loft). • Assumed 50% grant. Estimated emissions savings = 7,040 tCO_2	4,869 homes supported.
Gas Network Connections General Determinations.	Emissions savings assume residential properties shift from oil to gas. Forecasted new residential gas volumes (kWh) are taken from GD23 Final Determination published by UREG. Comparative energy from oil consumption calculated (kWh). Using calculated kWh figures, the emissions from oil and gas consumption are then calculated using emissions factors from DESNZ. The difference in emissions for oil versus gas are the calculated emissions savings. The calculation also accounts for efficiency of the oil and gas boilers. 2023-2027 total emissions savings = 73,332 tCO_2.	41,206 new residential connections.
Low Carbon Heat Support Programme.	Proposed scheme which assumes: • Launch in 2027. • Budget availability of £1.875 million in 2027. • Average capital grant of £7,500. • Emissions savings of 3.3 tCO_2 per household. Estimated overall emissions savings 2027 = 825 tCO_2.	250 homes supported.

Policy	Mitigation	By 2027
		Uptake
Biomethane	Increase in energy demand provided by biomethane injected into grid. Emissions savings assume a switch from natural gas to biomethane. Forecasted biomethane volumes have been provided by the Gas Network Operators. The comparative emissions from the same volume of natural gas and biomethane have been calculated in kWh using emissions factors from DESNZ. The difference in emissions for natural gas versus biomethane are the calculated emissions savings. Estimated overall emissions savings 2023-2027 = 0.5 tCO_2.	Volume of gas injection into distribution and transmission networks is currently unknown.
2012 Uplift to Part F (Conservation of fuel and power) of the Building Regulations in Northern Ireland.	Uplift to Part F standards for new builds and work to existing buildings. England's 'Implementation Stage Impact Assessment of Revisions to Parts F and L of the Building Regulations from 2010'[149] provides deployment assumptions.	Approximate comparative deployment figures could be estimated via pro rata calculations at of England's deployment assumptions on the basis of population, albeit the local fuel and build mix will be different. This is accounted for in the 4.5% scaling factor applied to emissions.

[149] Implementation Stage Impact Assessment of Revisions to Parts F and L of the Building Regulations from 2010 Appendix 3 and Table 3, in particular, provides more detail. It is presumed the assumptions within this document would be applied consistently across assessments for policy development and carbon reduction assessments

Policy	Mitigation	By 2027
		Uptake
2022 Uplift to Part F (Conservation of fuel and power) of the Building Regulations in Northern Ireland.	Deployment assumptions of 7,985 new builds per year as outlined in Final Stage RIA for amendment of Technical Booklet Guidance to Part F.[150]	7,985 new builds per year.

Further detail on the quantification of the residential buildings sector policies is available in Chapter 3.4 of Quantification Report (Annex A).[151]

Emissions Projections

Table 15 presents the projected emissions for the residential buildings sector across the first carbon budgetary period. Buildings sector emissions are projected to be 1.31 $MtCO_2e$ less than the emissions levels assumed for this sector within the CCC adjusted pathway.

[150] C.2 Draft Regulatory Impact Assessment (RIA) – Part F 2021

[151] Chapter 3.4, p.52-68

Table 15: Buildings sector (including residential and public buildings) projected emissions in the Central Scenario compared with the adjusted CCC sectoral pathway

Sector	Projected Emissions ($MtCO_2e$)						Difference in CCC adjusted pathway and Northern Ireland Projections
	2023	2024	2025	2026	2027	Total	
Residential Buildings	**2.27**	**2.24**	**2.24**	**2.3**	**2.3**	**11.36**	-1.31 $MtCO_2e$
Public Buildings	0.28	0.28	0.28	0.28	0.28	1.40	
Buildings total	2.55	2.52	2.52	2.58	2.58	12.76	
Buildings CCC*	3.02	2.94	2.83	2.71	2.57	14.07	

**These figures are based on the CCC advisory pathway but have been adjusted to take account of the 2022 inventory publication.*

Just Transition Considerations

In the residential sector any current or proposed intervention will be underpinned by the just transition principle which is a key consideration for government in policy decisions. For example, current policy such as the Northern Ireland Sustainable Energy Programme (including uplifts) and the Affordable Warmth Scheme policies support the just transition principle by supporting low-income households to install energy efficiency measures in their homes, thereby helping to lower energy bills.

DfC is in the process of developing a Fuel Poverty Strategy. This will play an important role in delivering a just transition for the residential sector. The Fuel Poverty Strategy proposes a vision of 'A Warm, Healthy Home for Everyone' underpinned by guiding principles of long-term sustainable solutions, needs-based approach, collaborative and participative working. There are three key objectives to help achieve this vision:

- Make homes more energy efficient
- Collaborate and build capacity
- Protect consumers

The Strategy is an opportunity to ensure the health and social impacts of decarbonising homes can be accessed by all homes, particularly those most vulnerable to the effects of living in a cold, damp home. Proposed actions include raising housing standards, increased investment in energy efficiency schemes for vulnerable households, and working in partnership to identify and support people in fuel poverty. The strategy also proposes a new approach to measuring and reporting on fuel poverty and focusing interventions and mitigations on those who require additional or targeted support.

It is anticipated that the proposed Warm Healthy Homes Scheme will also support the just transition principle by supporting those most at risk. Improving the energy efficiency of homes or installing renewable generating technologies can mitigate against potentially higher costs where low carbon heating systems may be more expensive to run than fossil fuel systems. Making sure those in need have access to these improvements will be an important but equally challenging part of future policy design.

Reducing emissions in our homes will take investment in the building fabric, heating systems, heating appliances and control systems. Making sure everyone has access to this will be an important but equally challenging part of future policy design. This will include support to enable all of us to understand, use and maximise the benefits of the sometimes unfamiliar technologies, standards and products that will be introduced to our homes. The NIHE will continue to operate a residential energy efficiency advice service, which will provide information, advice and support to Northern Ireland households during the energy transition and development of an energy One Stop Shop.

Registered Housing Associations will continue a programme of maintenance and/or retrofitting which deliver a range of energy efficiency measures across it's housing stock. These include, fitting of new heating systems, the installation of more effective insulation and the utilisation of renewable technologies. DfC will work with the Northern Ireland Federation of Housing Associations to explore innovative funding models to support retrofitting and examine the role of additional energy efficiency measures such as heat pumps and solar panels to reduce emissions while also ensuring a just transition in social housing.

Behaviour change at a personal level is essential to deliver emissions reduction, but citizens need to be informed and supported so that they are in a position to consider the options and take the right decisions.

Having the right skills to deliver emissions reductions will also require investment in people, through training and apprenticeships to strengthen supply chains, and we will work cohesively with industry and across the education system to address skills imbalances, driving increased participation in the Science, Technology, Engineering and Maths (STEM) subjects that will underpin economic success in the residential buildings sector. The Green Skills Delivery Group is in the process of delivering an action plan which is due to be published in the first quarter of 2025. This action plan is accompanied with funding this financial year to support the development and delivery of a pilot domestic low carbon and energy efficiency course. Indeed, some initiatives to improve skills are already underway, for example, South Eastern Regional College and Southern Regional College offer a number of green skills courses which focus on low carbon heating technology.[152]

[152] Consultation on support for low carbon heating in residential buildings

6.6 Public Buildings

Sector Summary

Public Buildings Sector Emission Trends	• The buildings sector is covered in two sections within this draft Climate Action Plan: a residential buildings sector, and a public buildings sector. • Together they account for 13.4% of Northern Ireland's greenhouse gas emissions. • Public building emissions account for 10.4% of the overall buildings sector emissions with a 49.8% reduction in public building emissions from the 1990 base year. This represents 1.4% of Northern Ireland's emissions in 2022. • Sector emissions primarily result from fuel combustion in public buildings for heating, cooling and hot water.
Policy Approach	Reducing emissions in this sector will be through two key Northern Ireland policies and two UK-wide policies. Within Northern Ireland, the **Energy Management Strategy & Action Plan to 2030**[153] seeks to reduce sector emissions and manage financial exposures. It will be delivered by access to better data and analytics to inform investment decisions through an Energy Invest to Save Fund. Behaviour change, building performance standards and procurement also have key roles to play in delivery. Emissions will also be reduced through uplifts to Building Regulations in Northern Ireland which will provide a basis for emissions assessment and measuring improved standards. UK-wide policies include **reporting on annual energy use, greenhouse gas emissions** and **energy efficiency actions** thereby encouraging cost savings and emission reductions. Also included are policies to improve the **design and labelling of products** aiming to take the least efficient products off the market and to give consumers clear energy use information to guide their purchasing decisions.

[153] Energy-Management-Strategy-March-2019.pdf (sibni.org)

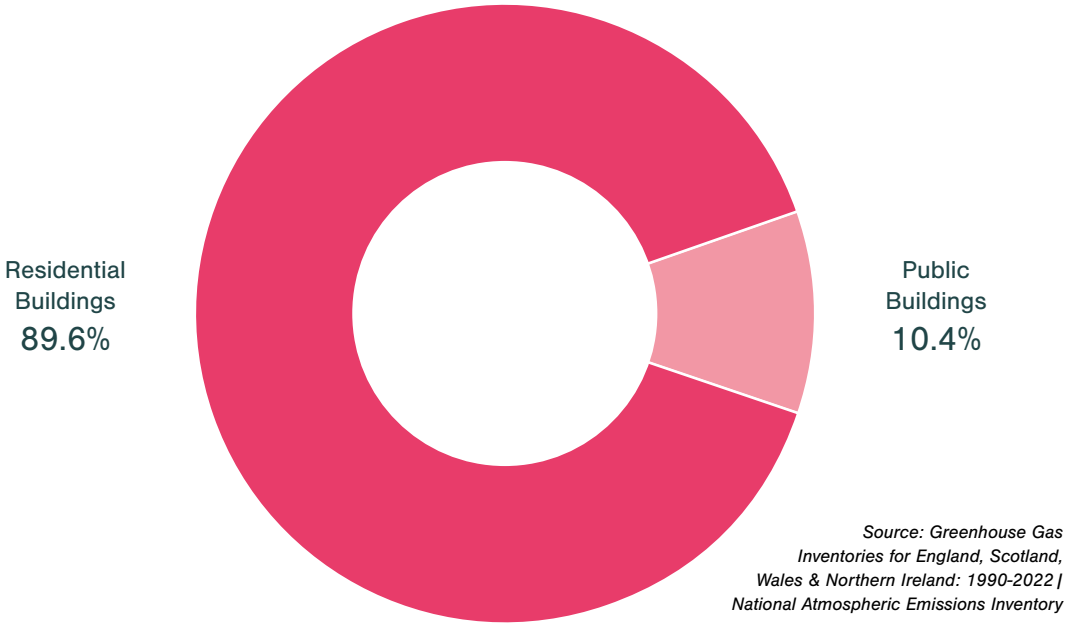
Sector Summary

Emissions Projections	Following the implementation of the policies and proposals set out in this chapter, the buildings sector is projected to emit 12.76 $MtCO_2e$ over the course of the first carbon budget period. This compares to total assumed emissions of 14.07 $MtCO_2e$ in the sector during the first carbon budget period within the CCC adjusted pathway.

Sector Overview

In 2022, emissions from the overall buildings sector accounted for 13.4% of Northern Ireland's greenhouse gas emissions. Public buildings sector accounted for 10.4% of buildings emissions, with residential building emissions accounting for 89.6%[154] of emissions (Figure 21).

Figure 21: Buildings sector emission sources 2022



Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

[154] Approximately 1.2% of the emissions attributed to residential buildings include other emissions sources such as aerosols and metred dose inhalers

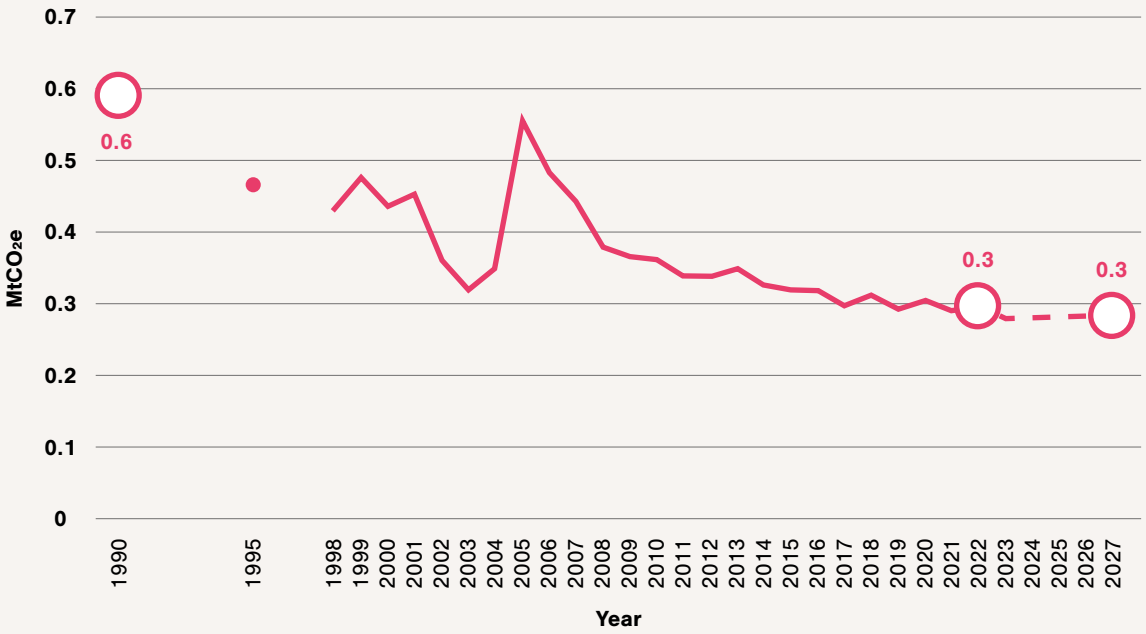
The public buildings sector in Northern Ireland consists of buildings owned and occupied by both central and local government. The majority of public buildings within Northern Ireland are schools and healthcare premises and the remainder comprises of leisure facilities, law and order establishments, community buildings, libraries, museums, historic monuments, civic buildings and other public services. It is estimated that there are between 4,000-5,000 public buildings in Northern Ireland with just over 3,800 central government assets currently being monitored and reported on in terms of energy use and associated emissions.[155]

Whilst the public buildings sector accounts for a small proportion of overall emissions in Northern Ireland, government can play a key role in demonstrating how public buildings can reduce their energy use whilst maintaining public services. Delivering quality public sector buildings is also a way to demonstrate a leadership role in developing new skills and supply chains thus demonstrating effective change.

Public buildings sector emissions result from fuel combustion in publicly owned institutional buildings. Emissions are predominantly affected by the quantity and type of fuel used in heating, ventilation, and air conditioning systems and hot water production. The 2022 position reflects a 49.8% reduction in emissions in the sector whilst compared against the 1990 baseline as shown in Figure 22. Assumed factors leading to this level of reduction include significant downsizing of the built estate, improved building standards, investment in energy efficiency and fuel switching through the introduction of natural gas to Northern Ireland in 1996.

[155] Energy-Management-Strategy-March-2019.pdf (sibni.org)

Figure 22: Change in public buildings emissions 1990-2022



Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Note: Base year is 1990 for CO_2, CH_4 and N_2O, or 1995 for fluorinated gases

Policies and Proposals

This section lists policies and proposals required to reduce emissions in the public buildings sector. To facilitate bringing forward new policies and to ensure existing policies are aligned with the requirements of the Act, a sector specific working group has been established. Work is ongoing with the UK Government and Republic of Ireland to ensure alignment of policy. Emissions in this sector will be reduced through both UK and Northern Ireland policies and proposals. The scaling factors used to apportion the impact of the UK-wide policies to the Northern Ireland public buildings sector is the NI/UK ratio of commercial/industrial emissions.

POLICY

The Energy Management Strategy and Action Plan to 2030 (Quantified)

In January 2019, the NICS Board approved the Energy Management Strategy and Action Plan to 2030 for Central Government which sets out key objectives in establishing effective energy management processes to unlock value. This aims to reduce net energy consumption by 30% by 2030 against a 2016/17 baseline.[156] The strategy covers all departments and their arm's length bodies (ALBs) and non-departmental public bodies (NDPBs); this is collectively referred to as 'the Northern Ireland Central Government estate'.

The Energy Management Strategy public sector[157] target, to reduce its net energy consumption by 30% by 2030, represents a public buildings emissions reduction target of 61% by 2030. Whilst the Energy Management Strategy approach and targets to energy management processes were about driving downward pressure on costs and mitigating against energy price fluctuations, these remain of significant value in particular at a time of energy price escalation.

Progress has been positive since the strategy was published in 2019, and the emphasis has shifted significantly towards decarbonisation. A reduction in net energy consumption of 12% has been achieved by 2022 against the strategy's own 2016 baseline, however, externalities exist in terms of assessing whether this rate of progress will continue. The emission savings to date are predominantly resulting from ensuring an estate of the correct size to suit our needs, investing in energy efficiency measures and from adopting lower carbon forms of heating.

To ascertain whether this rate of progress has continued, and as laid out in the strategy, DfE will take forward a midterm strategic review of the Energy Management Strategy and Action Plan for central government in 2025. This review will allow DfE to measure and publish progress against the 30% reduction in net energy consumption target. The output of this review will be a position statement and a new action plan for the period between 2025 to 2030 which will set out the direction of travel for delivering on the strategy's objectives and to align policy decisions with the statutory responsibilities under the Act.

[156] Energy Management Strategy and Action Plan to 2030 - Strategic Investment Board (sibni.org)

[157] The public sector definition contained within the Energy Management Strategy differs from that of the Public Buildings Sector in the Climate Action Plan. The strategy not only includes emissions resulting from electricity use but also excludes local authorities. We will work with local authorities to develop a local authority Climate Action Plan contribution plan by 2025 to fit with the strategic review of the Energy Management Strategy

A range of actions focused on encouraging a reduction in energy consumption in the public sector will be undertaken during the first carbon budget period. These actions include the following:

Building Evidence and Capacity
Energy and emission data is currently held for over 3,000 publicly occupied assets, however, data has been collected manually to date. The procurement of an updated, automated Energy and Carbon Data Repository has been completed. Through 2024, DfE has worked to complete the implementation phase of the software solution on behalf of government and has worked to expand land and property data coverage across the central government public building sector. In the medium term, government will explore expanding data collection to the local government estate to support better decision making and to enable consistent public body reporting in line with the Climate Change (Reporting Bodies) Regulations (Northern Ireland) 2024.[158]

DfE will work across government to strengthen the energy data within the Government Land and Property Register (GLPR) to support evidence-based decision making on public building investment. In 2025, DfE will provide cross-government access to research, including data relating to low carbon building studies, to help aid understanding and enhance strategic decision-making processes relating to public building decarbonisation.

Energy Invest to Save
One of the recommendations of the Energy Management Strategy and Action Plan to 2030 was to create an Energy Invest to Save Fund to ensure there is sufficient funding to deliver on consumption reduction targets. Since 2021, an Energy Invest to Save Fund has delivered £73 million worth of capital energy projects that otherwise would not have been taken forward. We will seek to build upon the success of the fund and to address delivery constraints in government particularly relating to the adoption of low carbon heating solutions which will be a priority going forward.

Procurement
It is recognised that green procurement will play a pivotal role in transforming the construction industry in Northern Ireland. Government contracts and frameworks can influence change by increasing the provision, quality, and accessibility of secondary and regenerative materials aimed at bringing a greater circularity to one of our most material intensive sectors. Through this approach, government can also use leverage through contractual provisions to reduce operational emissions in the construction process. To progress procurement, the following actions will be taken forward:

[158] The Climate Change (Reporting Bodies) Regulations (Northern Ireland) 2024

- New policy will be developed to mandate a higher standard in new buildings, and in the necessary retrofits to ensure energy efficiency and decarbonisation of the public buildings sector happens at the required pace.
- Government will utilise business cases, public procurement policy and provisions in contracts that ensure that suppliers mitigate and minimise climate change impacts resulting from the construction of and retrofit of public buildings.
- Government will explore green finance models, value demonstrator projects, and review Energy Performance Contract opportunities to efficiently procure and deliver interventions. Alternative funding mechanisms and delivery approaches will be required to deliver against our climate change targets given the fiscal challenges to value for money faced in the built environment.

POLICY
2012 and 2022 Uplifts to Part F (Conservation of Fuel and Power) of the Building Regulations in Northern Ireland (Quantified)

A 2012 uplift to Part F improved the emissions requirements for new builds by 25%, alongside modest improvements to efficiency standards applicable when work is done to existing buildings. Subsequently, Phase 1 of Department of Finance's programme of Part F uplifts was applied to new build applications from June 2022.[159] It improved fabric standards and was focused on an expectation that renewable technologies should be included on most new buildings. This is a cross-cutting policy affecting the public buildings sector that also impacts the residential buildings and business and industrial processes sectors.

POLICY
The EU Ecodesign Directive and the Energy Labelling Framework Regulation (Quantified)

The EU Ecodesign Directive[160] and the Energy Labelling Framework Regulation[161] operate by setting minimum performance and information requirements (respectively) for energy-using products. They aim to remove the least efficient products from the market and to give consumers clear energy-use information to guide their purchasing decisions. This policy applies to Northern Ireland, through The Ecodesign for Energy-Related Products and Energy Information (Amendment) (Northern Ireland) (EU Exit) Regulations 2021. This is a cross-cutting policy that also impacts the residential buildings and business and industrial processes sectors.

[159] Consultation Proposals for amendment of Technical Booklet Guidance to Part F (Conservation of fuel and power)

[160] Directive - 2009/125 - EN - EUR-Lex

[161] Regulation (Eu) 2017/1369 Of The European Parliament And Of The Council

POLICY
Streamlined Energy and Carbon Reporting (Quantified)

Streamlined Energy and Carbon Reporting legislation requires all large UK companies and large Limited Liability Partnerships, as well as all quoted companies, to report on their annual energy use, greenhouse gas emissions and energy efficiency actions they have taken. The objective of Streamlined Energy and Carbon Reporting legislation is to promote transparency for stakeholders and investors in applicable companies by tracking environmental Key Performance Indicators year on year, whilst encouraging cost savings and emission reductions. This is a cross-cutting policy affecting the public buildings sector that also impacts the business and industrial processes sector.

Deployment Assumptions for Delivery of Public Buildings Policies and Proposals

Deployment of policy relating to public buildings is determined by the Energy Management Strategy and Action Plan to 2030 for Central Government and activity taken forward to address its key recommendations. The strategy commits to making significant reductions in overall net energy consumption across the central government estate (most of the public building estate). With a 30% reduction target by 2030 set against a 2016 baseline year and a reduction of 12% having been achieved by 2022, progress has been significant. There are, however, external factors that will impact whether this rate of progress will continue.

To mitigate against unknown factors in energy data and how it correlates to emissions savings, a new data repository has been procured to ensure more accuracy in strategic decision underpinning further investment to achieve energy and emission savings. To complement this pathway an Energy Invest to Save fund has been consistently scaled up since 2021. The Northern Ireland Executive's Programme for Government commits a further £75 million of investment through this fund in the first carbon budget period. Assumptions for emissions reduction have been modelled, linearly based on a more stable investment plan following the initial period of scaling.

Table 16 presents the level of expected deployment associated with draft Climate Action Plan policies and proposals in the public buildings sector to align with the projected emissions over the first carbon budget period.

Table 16: Deployment assumptions by 2027 to achieve the Central Scenario with public buildings sector Northern Ireland policies

Policy	Mitigation	By 2027
		Uptake
The Energy Management Strategy and Action Plan to 2030.	This strategy for the central government estate seeks to deliver a significant reduction in energy demand by 2030. The strategy covers central government only which constitutes between 80-90% of public buildings emissions.	23% Reduction in Energy Demand on the strategy baseline. 17,000 tCO_2 reduction between 2023-2027.
2012 Uplift to Part F (Conservation of Fuel and Power) of the Building Regulations in Northern Ireland.	Uplift to Part F standards for new builds and work to existing buildings. England's 'Implementation Stage Impact Assessment of Revisions to Parts F and L of the Building Regulations from 2010'[162] provides deployment assumptions.	Approximate comparative deployment figures could be estimated via pro rata calculations of England's deployment assumptions on the basis of population, albeit the local fuel and build mix will be different. This is accounted for in the 2.9% scaling factor applied to emissions.
2022 Uplift to Part F (Conservation of Fuel and Power) of the Building Regulations in Northern Ireland.	For Part F 2022 policy impact assessment, three years of EPC data were reviewed, filtering out what was estimated not to be new-build (the policy only impacts new-build standards) and attributing 37.4% of this space to public buildings sector. Reference, RIA Part F Building Regulations 2022 RIA.[163]	61,283 m^2/yr of new-build attributable to the public buildings sector.

[162] Implementation Stage Impact Assessment of Revisions to Parts F and L of the Building Regulations from 2010 Appendix 3 and Table 3, in particular, provides more detail. It is presumed the assumptions within this document would be applied consistently across assessments for policy development and carbon reduction assessments

[163] Paragraphs 5.29-5.31 of the final stage Impact Assessment

Emissions Projections

Table 17 presents the projected emissions for the public buildings sector across the first carbon budgetary period. Buildings sector emissions are projected to be 1.31 $MtCO_2e$ less than the emissions levels assumed for this sector within the CCC adjusted pathway.

Table 17: Buildings sector (including residential and public buildings) projected emissions in the Central Scenario compared with the adjusted CCC sectoral pathway

Sector	Projected Emissions ($MtCO_2e$)						Difference in CCC adjusted pathway and Northern Ireland Projections
	2023	2024	2025	2026	2027	Total	
Residential Buildings	2.27	2.24	2.24	2.3	2.3	11.36	-1.31 $MtCO_2e$
Public Buildings	**0.28**	**0.28**	**0.28**	**0.28**	**0.28**	**1.40**	
Buildings total	2.55	2.52	2.52	2.58	2.58	12.76	
Buildings CCC*	3.02	2.94	2.83	2.71	2.57	14.07	

**These figures are based on the CCC advisory pathway but have been adjusted to take account of the 2022 inventory publication.*

Further detail on the quantification of the public buildings sector policies is available in Chapter 3.5 of the Quantification Report (Annex A).[164]

[164] Chapter 3.5, p.69-76

Just Transition Considerations

Delivering a just transition in the built environment will require investment in people and skills. Realising the value of this transformation will mean working cohesively across the education system to address skills imbalances, driving increased participation in the Science Technology Engineering and Maths subjects (STEM) that will underpin economic success. The Green Skills Delivery Group is in the process of delivering an action plan which is due to be published in early 2025. This action plan is to be accompanied with funding which is likely to focus on built environment skills such as insulation, energy efficiency and low carbon heat.

Through the design and delivery of exemplar public buildings and the widespread adoption of retrofit and energy management practices that unlock value, government can lead by example. This will add benefit for Northern Ireland by helping build a skilled and diverse workforce that is well placed to take advantage of new opportunities to deliver a net zero economy and be resilient to changes in employment trends. Support to upskill and reskill our citizens will also be required to drive innovation and the development of the solutions which will be required to deliver a resilient and sustainable decarbonised public buildings sector. Work is already underway at upscaling training provisions in low carbon heating, renewable technologies and in the installation of energy efficiency measures. For example, a number of Regional Colleges offer green skills courses which focus on low carbon heating technology.[165]

[165] Consultation on support for low carbon heating in residential buildings

6.7 Waste Management

Sector Summary

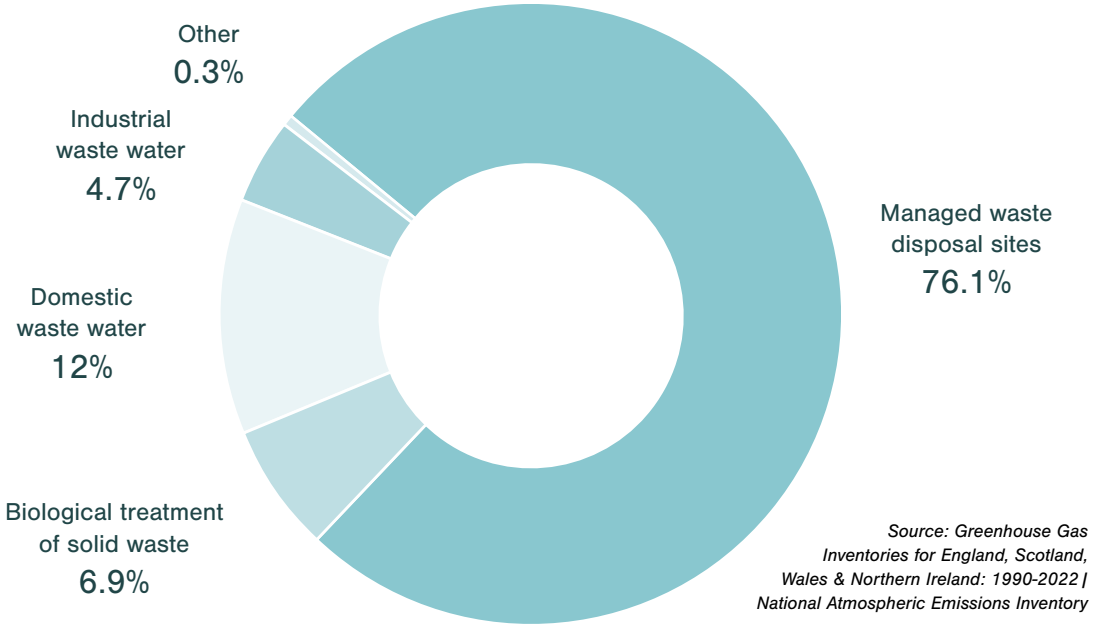
Waste Management Sector Emissions Summary	• Emissions in the waste management sector include those released from waste disposal at landfill sites, wastewater treatment and waste incineration. • The sector is responsible for 3.6% of total Northern Ireland greenhouse gas emissions. • Waste Management Sector emissions have fallen by 62.1% between 1990 and 2022. • Household recycling rates have increased from 10% in 2010 to just over 51% in 2023/2024. The Act includes a requirement to recycle at least 70% of waste by 2030.
Policy Approach	Reducing emissions in the waste management sector will be achieved through two key interventions. The first is to reduce landfill emissions, through improvements to the **separate collection of food waste from households** and a new proposal to **divert biodegradable waste from landfill**. The other is to increase recycling rates and improve quality of the material that is collected for recycling. To drive this, a target is in place to achieve a **65% local authority collected waste recycling rate whilst reducing waste to landfill to no more than 10% by 2035**. This is supported by two proposals to **increase household recycling** and the **introduction of mandatory recycling for the commercial and industrial sector**.
Emissions Projections	Following the implementation of the policies and proposals set out in this chapter, the waste management sector is projected to emit 3.39 $MtCO_2e$ over the course of the first carbon budget period. This compares to total assumed emissions of 3.54 $MtCO_2e$ in the sector during the first carbon budget period within the CCC adjusted pathway.

Sector Overview

Emissions in the waste management sector include those released from waste disposal at landfills, wastewater treatment and waste incineration. Significant progress has been made in this sector demonstrating that with the correct policies and behaviour change, it is possible to make rapid progress.

The largest proportion of emissions in the waste management sector comes from managed waste disposal (landfill) sites, responsible for 76.1% (0.58 $MtCO_2e$) of sector emissions. This is followed by domestic and industrial wastewater treatment, which combined equate to 16.7% (0.13 $MtCO_2e$) (Figure 23).

Figure 23: Waste management sector emission sources 2022

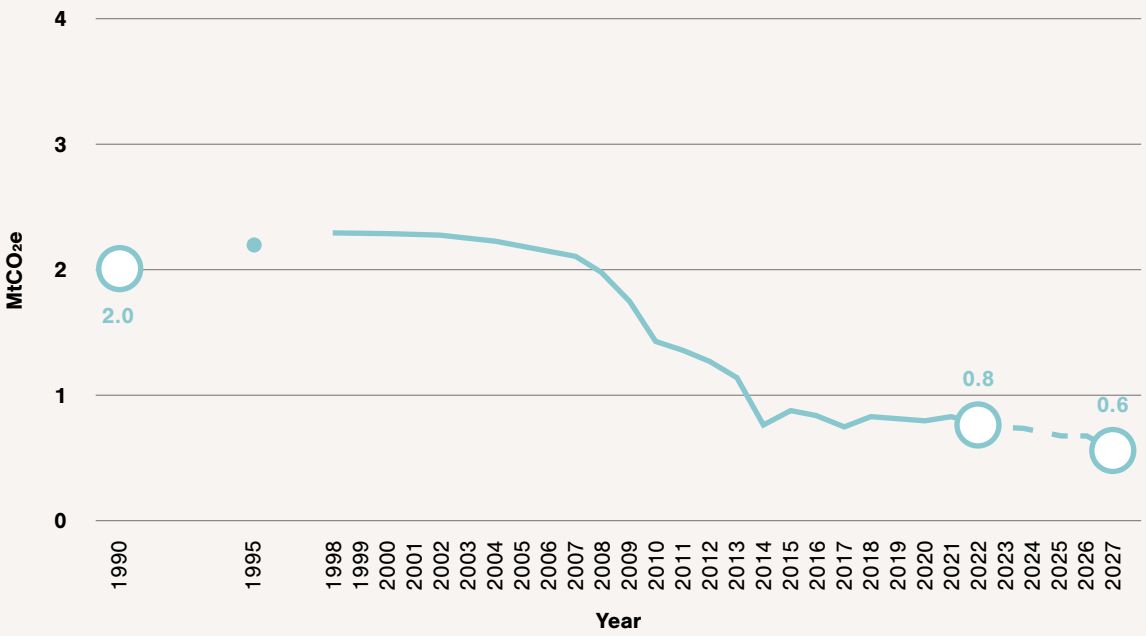


Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

The sector was responsible for 0.8 $MtCO_2e$, 3.6% of total Northern Ireland greenhouse gas emissions in 2022 (Figure 6). This represents a 62.1% decrease in emissions from the 1990 baseline year (Figure 24) brought about by legislative and policy changes to reduce waste and increase recycling, coupled with widespread behaviour change campaigns. Household recycling rates have increased from 10% in 2010 to just over 50% in 2022/2023.[166]

[166] Northern Ireland local authority collected municipal waste management statistics released | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

Figure 24: Change in waste management emissions 1990-2022



Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Note: Base year is 1990 for CO_2, CH_4 and N_2O, or 1995 for fluorinated gases

The focus over the 2023-2027 carbon budget period is on actions to reduce the amount of waste sent to landfill sites by appropriate legislation, regulation and increasing recycling. Northern Ireland has two statutory requirements for recycling:

1. To recycle at least 70% of waste by 2030.
2. To recycle 65% of municipal waste by 2035 (interim targets of 55% by 2025 and 60% by 2030).

The 70% recycling requirement is contained in the Act, however this does not include a definition of 'waste'.[167] For the purposes of modelling the impact of the policies and proposals in this sector the following waste types are included:

- municipal waste using the new definition from the EU revised Waste Framework Directive.[168]
- all commercial and industrial waste.

[167] Climate Change Act (Northern Ireland) 2022 (legislation.gov.uk)

[168] Waste Framework Directive - European Commission (europa.eu)

The 65% target is also derived from the EU revised Waste Framework Directive and focuses solely on waste generated from municipal sources.

The Food Waste (Northern Ireland) Regulations 2015[169] require councils to collect food and garden waste from households. Additionally, the regulations require food businesses that produce 5kg or more food waste per week to present this for separate collection. This helps to limit the amount of biodegradable food waste sent to landfill.

Policies and Proposals

This section lists policies and proposals required to reduce emissions in the waste management sector. The waste sector has engaged with stakeholders and relevant sector-specific advisory groups in relation to existing policies and in the development of new proposals to reduce emissions in the waste sector. Waste is a devolved responsibility, however, due consideration is given to other parts of the UK and Ireland when developing and implementing policy. These policy levers can be attributed to the following categories:

- Reducing Landfill Emissions
- Increase Recycling Rates and Improving Quality of Materials.

Northern Ireland is in a unique position by having in legislation a test for comparable quality of materials. To achieve high-quality recycling, recyclable waste streams should be collected separately from each other as far as possible, except where this is not technically feasible, would entail disproportionate economic costs or does not deliver the best environmental outcome (commonly referred to as Technically, Environmentally and Economically Practical [TEEP]).

Reducing Landfill Emissions

The diversion of biodegradable waste from entering landfill sites is key to reducing greenhouse gas emissions and provides maximum impact. Biodegradable waste entering landfill sites today will produce methane for several decades, therefore, near-term action is essential.

POLICY
Separate Collection of Food Waste from Households - The Food Waste Regulations (Northern Ireland) 2015 (Quantified)

[169] The Food Waste Regulations (Northern Ireland) 2015 (legislation.gov.uk)

The introduction of the Food Waste Regulations was the first step in reducing this methane source by introducing mandatory separate collection of food waste from households in 2015. This has been facilitated by councils, who play a central role in the provision of waste services in Northern Ireland. All councils in Northern Ireland provide food waste collection services, with the majority collecting a mixture of food and garden waste fortnightly in a brown bin which is recycled through composting or anaerobic digestion.

Behaviour change has been a key driver in increasing the amount of biodegradable waste diverted from landfill. Since the inception of these regulations, over 1.7 million tonnes of biodegradable waste have been diverted from landfill.[170] Through an ongoing programme of behaviour change, DAERA and councils will continue to encourage the separate collection of biodegradable waste from households to drive yields as high as possible.

PROPOSAL
Diverting Biodegradable Waste from Landfill (Quantified)

Significant reductions in emissions could be made by diverting biodegradable waste from household residual waste streams that is currently going to landfill.[171] Further emissions reductions could be achieved if all businesses were required to present biodegradable waste for separate collection. UK Government official figures for 2022 identify 204 kt of biowaste to landfill, however not all of this may be suitable for recycling.[172] Throughout autumn/winter 2023/2024, DAERA, in collaboration with key stakeholders and Waste & Resources Action Programme, conducted a feasibility study on the potential for diverting biodegradable waste from landfill. As part of this feasibility study DAERA explored ways to support councils to maximise reduction of biodegradable waste going to landfill.

To assist in the development of this proposal the following actions will be taken forward:

- DAERA will consult on options for diverting biodegradable waste from landfill by end of 2025.
- DAERA continues to engage with key stakeholders and is in the process of drafting a consultation to be launched in autumn 2025.

[170] Based on food and garden waste recycled between April 2015 and March 2023

[171] Residual waste is the general waste that is currently sent to landfill.

[172] UK statistics on waste - GOV.UK

Increase Recycling Rates and Improving Quality of Materials

Over the past two decades, household recycling rates have increased from 10% in 2010 to around 50% in 2021/2022[173] due in large part to the widespread behaviour change campaigns run by the Northern Ireland Executive, as well as the Northern Ireland Waste Management Strategy "Delivering Resource Efficiency" (2013).[174] This has resulted in increased household waste recycling targets.

POLICY

Achieve a 65% municipal waste recycling rate whilst reducing waste to landfill to no more than 10% by 2035 (Quantified)

Household recycling rates during this carbon budget must increase to 57% by 2027 to help meet the statutory targets. Steps to achieve this have been initiated through the challenging targets set out in the Waste and Contaminated Land (Northern Ireland) Order 1997.[175] A key target of 65% recycling of municipal waste by 2035 was stipulated with interim targets of 55% by 2025 and 60% by 2030. Behaviour change is key to addressing these targets and DAERA will continue to roll out behaviour change campaigns throughout the first carbon budget period to help householders to understand the benefits of recycling. Work will continue with councils to increase recycling from households through the Strategic Waste Partnership and the Government Waste Working Group. To support the achievement of these targets local councils will provide better recycling infrastructure in all council areas through availing of financial support for capital works under the Household Waste Recycling Collaborative Change Programme.

[173] Northern Ireland local authority collected municipal waste management statistics released | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

[174] Delivering Resource Efficiency - Northern Ireland Waste Management Strategy

[175] The Waste and Contaminated Land (Northern Ireland) Order 1997 (legislation.gov.uk)

PROPOSAL
Introduction of Mandatory Recycling for the Commercial and Industrial Sector (Quantified)

Previously there has been no obligation for recycling reporting from the commercial and industrial sector. However, whilst the Act's requirement of at least 70% waste recycled by 2030 has yet to be formally defined, it could include all recycling collected by councils and recycling produced by the commercial and industrial sector. Extending mandatory recycling into the commercial and industrial sector has the potential to more than double the current estimated recycling rate for the sector of 40%, according to industry experts.[176] It is proposed that businesses achieve a 70% recycling rate by 2030 (in line with the requirement in the Act) with action beginning in 2025. This would mean an increase of 5% per year. It is DAERA's intention to consult on the scope of the 70% recycling rate target in the upcoming waste management strategy consultation. This will help define which waste streams should be captured under the Act's target.

This could be further enhanced by an extension of the Food Waste Regulations (Northern Ireland) 2015[177] to bring all businesses into scope for the recycling of food waste, which would also advance the delivery of the 'Diverting Biodegradable Waste from Landfill' proposal outlined above.

Recent stakeholder feedback on the introduction of mandatory recycling for the commercial and industrial sector has been largely positive. This would require most businesses in Northern Ireland to present recyclable material and potentially biodegradable waste for separate collection. This would help achieve the '70% by 2030' recycling requirement and reduce the amount of recyclable material entering landfill sites and the associated greenhouse gas emissions. In autumn 2024, DAERA, in collaboration with Waste & Resources Action Programme, introduced an online business support toolkit to encourage businesses to increase recycling in advance of the legislation being implemented.[178]

To assist in the development of this proposal the following actions will be taken forward:

- By March 2026, DAERA will have undertaken a waste data review project to address data gaps and improve reporting, particularly for the business sector.
- DAERA will publish a report on the consultation on the introduction of mandatory business recycling by March 2025.

[176] Municipal recycling potential in Northern Ireland

[177] The Food Waste Regulations (Northern Ireland) 2015 (legislation.gov.uk)

[178] Business of Recycling

- By 2027, DAERA will develop new or amend existing legislation to require businesses to present recycling separately, including biodegradable waste.
- By 2026, DAERA will develop guidance to support waste collectors and businesses to increase recycling.
- By 2026, DAERA, in collaboration with Waste and Resources Action Programme, will improve data collection on business waste and recycling to maximise the amount of recyclable material collected and reduce or eliminate the amount sent to landfill.

PROPOSAL
Increasing Household Recycling (Quantified)

Further increases in household recycling rates are required to reduce emissions and meet the Act's (70%) and Waste and Contaminated Land (Northern Ireland) Order 1997 requirements (65%). The associated reduction of residual waste collected from households would lower the amount going to landfill sites, thereby reducing greenhouse gas emissions.

A key recycling proposal is to ensure all councils and collectors are compliant with amendments to legislation which promote enhancements in the quality and quantity of material to enable more local reprocessing. Modelling has shown that a greater volume of recyclate and better-quality materials can be collected through this approach. Material quality would be at standard that local reprocessors would accept more readily.[179]

To assist in the development of this proposal the following will be taken forward:

- By 2025, subject to the outcome of the consultation on proposals to introduce a minimum service standard for household collections to increase recycling rates, meet statutory targets and improve quality, DAERA will implement amendments to existing legislation.
- By 2025, DAERA will produce guidance for councils and householders which will outline best practice models.
- DAERA will ensure funding is available to support councils to transition to the new collection systems as soon as practicable.

Deployment Assumptions for Delivery of Waste Management Policies and Proposals

Table 18 presents the level of expected deployment associated with draft Climate Action Plan policies and proposals in the waste management sector to align with the projected emissions over the first carbon budget period.

[179] Municipal Recycling Potential in NI 2020 (WRAP Report).PDF (daera-ni.gov.uk)

Table 18: Deployment assumptions by 2027 to achieve the Central Scenario with waste management sector Northern Ireland policies

Policy	Mitigation	By 2027
		Uptake
Separate Collection of Food Waste from Households - The Food Waste Regulations (Northern Ireland) 2015	For this policy to effectively contribute to meeting Waste and Contaminated Land Order (NI) 1997, as amended (WCLO), recycling targets, the recycling rate is assumed to increase by 1.28% per year from 2022 until 2025 (the year this policy is modelled to be superseded by the proposal: Diverting Biodegradable Waste from Landfill). This is based on the rolling twelve-month household recycling rate for the whole of 2022. Robust and verified data from Local Authority Collected Municipal Waste Statistics (LACMW) was used to calculate the activity data. Using this method of calculation is expected to produce an extra 8,960 tonnes of recycling between the years of 2023 to 2026.	8,960 tonnes Emissions savings = activity data x emissions factor 5.9 $ktCO_2e$ = 8,960 (tonnes recycled) x 0.655987
Diverting Biodegradable Waste from Landfill	For this policy the emissions reductions rely on measures to divert biodegradable waste from landfill to be implemented by 2027. Reductions until then fall under the policy: Separate Collection of Food Waste from Household (Food Waste (Northern Ireland) Regulations 2015) before transferring to this proposal. The overall volume of biodegradable waste entering Northern Ireland landfill sites is determined by multiplying the tonnage of landfilled waste, from those wastes with a biodegradable component attributed to them, by the relevant current Northern Ireland biodegradability factors to give a total volume of biodegradable waste landfilled.	208,326 tonnes Emissions savings = activity data x emissions factor 137 $ktCO_2e$ = 208,326 (Biowaste tonnes avoided) x 0.655987

Policy	Mitigation	By 2027
		Uptake
Diverting Biodegradable Waste from Landfill (continued)	The tonnage and biodegradability factors are collated by Northern Ireland Environment Agency and the 2022 data (unpublished but verified) is used as the baseline in this instance. Using current Northern Ireland biodegradability factors, 208,326 tonnes is deemed biodegradable, however there are knowledge gaps around the composition and biodegradability of EWC 191212 which creates an element of risk in the quantifications. Data on biodegradable waste from households is verified and published on the DAERA website quarterly.	
Achieve a 65% municipal waste recycling rate whilst reducing waste to landfill to no more than 10% by 2035	For this policy to effectively contribute to meeting WCLO recycling targets, the recycling rate is assumed to increase by 1.28% per year from 2022 until 2027. This is based on the rolling 12-month household recycling rate for the whole of 2022. Robust and verified data from LACMW was used to calculate the activity data.	28,009 tonnes Emissions savings = activity data x emissions factor 13.9 $ktCO_2e$ = 28,009 (tonnes recycled) x 0.497045
Introduction of mandatory recycling for the Commercial and Industrial sector	For this policy, it is assumed that the current recycling rate for commercial and industrial is around 40%, therefore, this proposal assumes an increase of 5% per year. However, it is entirely possible that upon completion of the waste compositional analysis, the commercial and industrial sector's recycling rate could be higher, requiring less of an increase each year. The calculations in the current analysis for the commercial and industrial sector are based on 2009 data from data gathering exercise for this sector and some newer estimations provided by WRAP.	64,248 tonnes Emissions savings = activity data x emissions factor 34 $ktCO_2e$ = 64,248 (tonnes recycled) x 0.520335

Policy	Mitigation	By 2027
		Uptake
Increasing Household Recycling (to assist with achieving 70% by 2030)	The savings made here occur due to the reduction of residual waste capacity by diverting 25% of residual waste from landfill into recycling. Robust and verified data from LACMW was used to calculate the activity data. Using this method of calculation is expected to produce an extra 48,275 tonnes of recycling the year of implementation. The scenario modelled is the most likely because the 25% reduction in residual bin capacity has been subject to a consultation, and we are awaiting a Ministerial decision. However, stakeholder engagement to this point has suggested that this proposal is the expected outcome.	48,275 tonnes Emissions savings = activity data x emissions factor 24 $ktCO_2e$ = 48,275 (tonnes recycled) x 0.497045

Further detail on the quantification of the waste management sector policies is available in Chapter 3.6 of the Quantification Report (Annex A).[180]

Emissions Projections

Table 19 presents the projected emissions for the waste management sector across the first carbon budgetary period. Waste management sector emissions are projected to be 0.15 $MtCO_2e$ less than the emissions levels assumed for this sector within the CCC adjusted pathway.

[180] Chapter 3.6, p.77-88

Table 19: Waste management sector projected emissions in the Central Scenario compared with the adjusted CCC sectoral pathway

Sector	Projected Emissions ($MtCO_2e$)						Difference in CCC adjusted pathway and Northern Ireland Projections
	2023	2024	2025	2026	2027	Total	
Waste Management	0.74	0.73	0.68	0.68	0.56	3.39	-0.15 $MtCO_2e$
Waste Management CCC*	0.79	0.75	0.71	0.67	0.61	3.54	

**These figures are based on the CCC advisory pathway but have been adjusted to take account of the 2022 inventory publication.*

Just Transition Considerations

The policies and proposals outlined here will have a positive impact on both the environment and the economy in the medium to long term. The waste management sector in Northern Ireland had a turnover of £1.1 billion in 2019, a gross value added of £0.8 billion, and 7,000 employee jobs.[181] It not only adds significant value to the economy, but it is vital for protecting the environment and public health.

Undoubtedly, significant investment will be required to enable the transition to decarbonisation. Using a collaborative approach, DAERA has committed to making £23 million of financial assistance available to local councils here to assist them to transform kerbside recycling and household recycling centre infrastructure. This will increase both the quantity and quality of recycling and in doing so will realise the economic potential. However, further investment from both the public and private sectors will be needed to successfully implement these policies and ensure a just transition.

Larger yields of food waste sent for recycling within Northern Ireland will mean that local food reprocessing businesses can expand their operations. It will also increase the value of goods and services produced by expanding Anaerobic Digestion (AD) and In-Vessel Composting (IVC) treatment. AD has the added benefit of producing valuable products such as biomethane that can replace fossil fuels and a digestate that can be used as a fertiliser

[181] Green economy | Invest Northern Ireland (investni.com)

which can help support the agriculture sector. As a result, there will be a reduction in the amount of residual and biodegradable waste going to landfill, leading to a decreased cost to waste operators while reducing the associated greenhouse gas emissions.

There will be benefits to water management companies who bear the cost of food waste disposal into the public sewer network. There is a massively decreased risk of sewer blockages, flooding, pollution, odours and infestations occurring with a ban on disposing food waste this way.

Strengthening current requirements and targets around recycling, landfill, waste prevention, recovery etc., will lead to long-term benefits for Northern Ireland and assist a transition to a more resource efficient, sustainable and circular economy. This will lead to increased quality and quantity of material being processed within Northern Ireland, allowing more opportunity for local reprocessors to expand their workforce with better, high-quality, green jobs or to open opportunities to reskill/upskill staff. This direction of travel will lead to a better future with a greener more sustainable economy that becomes less reliant on sending Northern Ireland resources abroad.

Although displacement of jobs is not anticipated as a result of these proposals, it must be recognised that there may be some short-term impacts on the current workforce if there is a move away from a model of waste and recycling export and creation or fuels derived from waste for export. This will impact all demographics and areas equally. Adding value to the Northern Ireland economy and reducing greenhouse gas emissions for reasons identified in the financial, social and economic impact assessments, will ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs.

It is clear that significant effort is required to produce a multi-skilled and greener workforce that will be suitable for the future, as there are many knowledge and skills gaps that need to be filled. More must be done to incorporate topics related to sustainability, climate change, and green growth into the lives of our school children and young people, building the knowledge, understanding, skills, and values necessary to contribute actively to a greener future. Greater opportunities need to be developed to upskill the current workforce throughout Northern Ireland to ensure a successful and just transition to a more circular way of working and living.

Businesses and organisations operating within the resource and waste sector will need to forge more collaborative, interconnected working relationships with specialists in other industries in order to complement the expanded skills set. From material and chemical engineers, product designers, producers and manufacturers, to data and IT consultants, working cross-industry will help the resource and waste sector to maximise its potential and successfully deliver on the major resource capture and decarbonisation plans being implemented at a policy level.

6.8 Agriculture

Sector Summary

Agriculture Sector Emissions Trends	• In agriculture the two main greenhouse gases are methane and nitrous oxide rather than carbon dioxide. Livestock emissions dominate GHGs in the agriculture sector. Other key sources are from manure management, soils and emissions from off-road vehicles and machinery. • The agriculture sector is the largest emitter and accounts for 29.1% of Northern Ireland GHG emissions in 2022. • There has been a 14.9% increase in agriculture emissions from the baseline of 1990. • While the Act requires overall net emissions for 2050 to be 100% lower than the 1990 baseline, it does not require methane emissions to be more than 46% lower than the 1990 baseline.
Policy Approach	Reducing emissions in the agriculture sector will be achieved through the delivery of DAERA's new Sustainable Agriculture Programme. This Programme and associated **policies and proposals** will support the sector's decarbonisation, focusing on improving the productivity of the agriculture sector, delivering improvements in environmental sustainability and resilience and supply chain integration. The CCC's Path to Net Zero for Northern Ireland assumes a significant reduction in livestock numbers and an associated transition to bioenergy cropping and increased forestry on agricultural land. The reduction in livestock numbers is based on the assumption that the consumption of livestock products in the UK will fall and that this will lead to an equal reduction in Northern Ireland livestock numbers.

Sector Summary

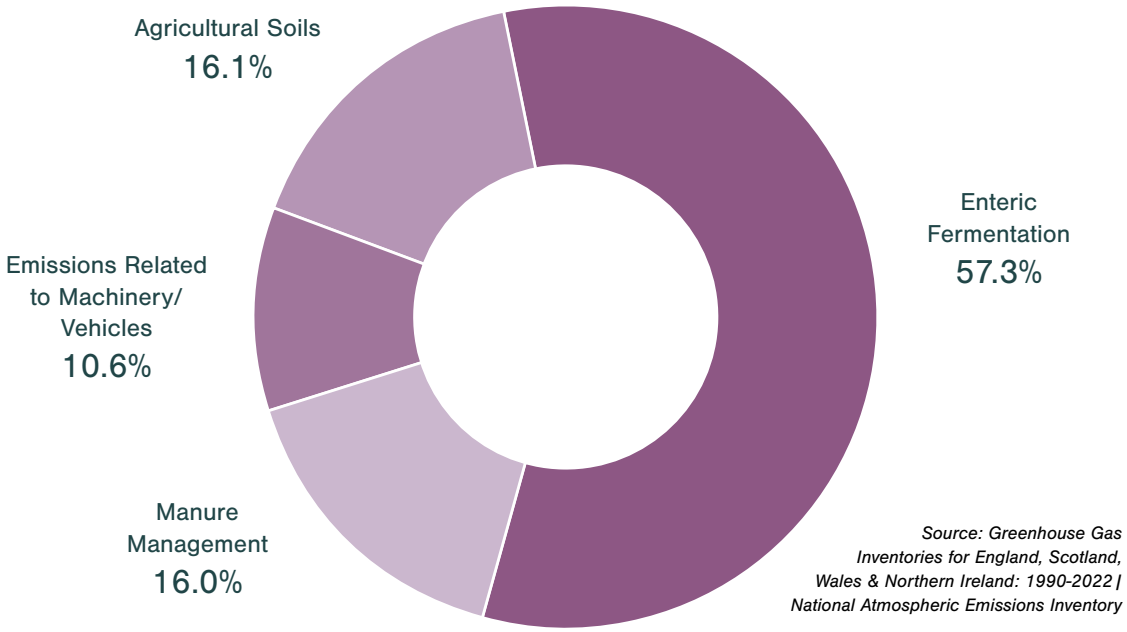
	The Sustainable Agriculture Programme encourages a rapid transition to low carbon farming practices, as advised by the CCC, but also provides an alternative approach for reducing emissions from the agriculture sector to that advised by the CCC through more targeted (but still significant) reductions in livestock numbers, delivered through improved livestock productivity while allowing the agriculture sector to maintain output, avoid carbon leakage, and contribute to the growing global demand for livestock food products projected by the Food and Agriculture Organisation (FAO).
Emissions Projections	Following the implementation of the policies and proposals set out in this chapter, the agriculture sector is projected to emit 28.99 $MtCO_2e$ over the course of the first carbon budget period. This compares to total assumed emissions of 28.06 $MtCO_2e$ in the sector during the first carbon budget period within the CCC adjusted pathway.

Sector Overview

Northern Ireland agriculture accounts for 29.1% of all GHG emissions, compared with 11.7% in the UK as a whole. This reflects the different composition of the Northern Ireland economy and emitting sectors and the fact that agriculture in Northern Ireland is much more focused towards livestock production.

Agricultural GHGs are very different from other sector emissions. For most sectors, the main gas emitted is carbon dioxide from fossil fuel combustion, whilst for agriculture the two main gases are methane and nitrous oxide. The emissions from agriculture are from a combination of fertiliser practices, and natural processes within livestock production, in particular, enteric fermentation in the digestive systems of ruminant animals (cattle and sheep). In 2022, 57.3% of agriculture sector emissions were associated with enteric emissions related to livestock, other key emissions were from manure management, soils and emissions from off-road vehicles and machinery as displayed in Figure 25.

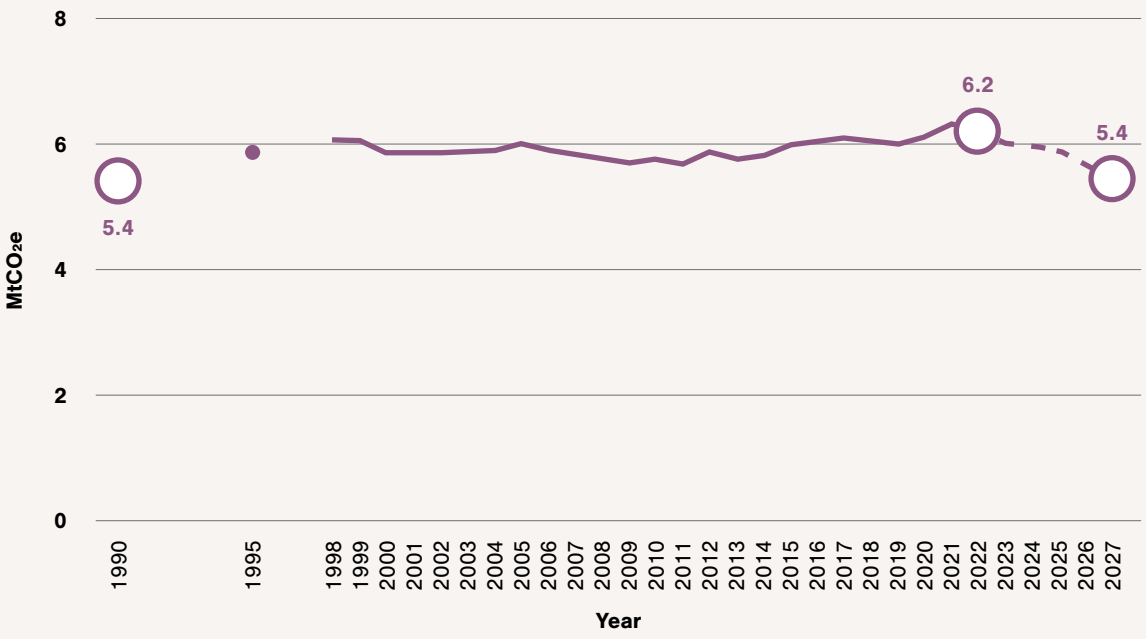
Figure 25: Agriculture sector emissions 2022



Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Agriculture emissions have increased by 14.9% from 5.4 $MtCO_2e$ in 1990 to 6.2 $MtCO_2e$ in 2022 (Figure 26). This reflects an increase in livestock numbers over this period, however, is partly offset by lower nitrogen fertiliser applications.

Figure 26: Change in agriculture emissions 1990-2022



Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Note: Base year is 1990 for CO_2, CH_4 and N_2O, or 1995 for fluorinated gases

The Act does not require the net Northern Ireland emissions for methane for the year 2050 to be more than 46% lower than the 1990 baseline for methane. Agriculture still needs to play its fair part in meeting the 2050 net zero obligation and significant reductions in emissions are required. Since most other sectors will need to be completely decarbonised by 2050, delivering net zero in Northern Ireland will require residual 2050 emissions from agriculture to be as low as possible.

DAERA's Sustainable Agriculture Programme

DAERA's Sustainable Agriculture Programme is the overarching programme through which emissions reduction in the agriculture sector will be delivered over this carbon budget period.

In August 2021, DAERA published the Future Agricultural Policy Framework Portfolio for Northern Ireland which set out a way forward for an agricultural policy that better meets the needs of Northern Ireland. A public consultation followed on the detailed

policy proposals and in March 2022, 54 decisions on future agricultural policy for Northern Ireland were announced. These decisions are being delivered through a number of policies and proposals within the Sustainable Agriculture Programme. Work has progressed at pace to develop these policies with some already introduced and others planned to be introduced from 2025.

An Agricultural Policy Stakeholder Group has been established, bringing together representatives across food, farming and the environment. This forum provides a valuable source of industry input and expertise as DAERA continues to develop the Sustainable Agriculture Programme to deliver carbon reduction in the agriculture sector.

The Sustainable Agriculture Programme[182] seeks to support the agriculture sector to reduce its carbon emissions and develop an industry with increased productivity, improved environmental sustainability, long-term resilience and better supply chain functionality. Achieving these outcomes will help to secure the sustainability of farm businesses, the majority of which are small and medium-sized enterprises. This in turn will support rural communities, providing opportunities in rural areas. The aim is to reduce emissions by improving efficiencies and changing practices on farms whilst ensuring the continued production of high-quality food and delivering for our economy. This will ensure we meet high environmental, animal welfare and food safety and integrity standards, with an increased focus on transparency, traceability and provenance along the food chain.

The Programme will provide farm businesses with the best possible tools and support, enabling adaptation to take advantage of present and future opportunities. It will embrace a greater transfer of knowledge; increased investment in science and technology; and it will encourage the uptake of research and development that can deliver sustainable benefits to the industry and the people of Northern Ireland.

Policies and Proposals

The Sustainable Agriculture Programme includes a number of policies and proposals, to deliver reductions in GHG emissions from the agriculture sector. These include:

POLICY
Beef Sustainability Package

This Package has two schemes and a maximum annual budget of £50 million:

[182] Future Agricultural Policy Decisions for Northern Ireland (Final) (002).pdf (daera-ni.gov.uk)

POLICY / SCHEME 1
Beef Sustainability Package
The Beef Carbon Reduction Scheme (Quantified)

This scheme commenced on 1 January 2024 and is aimed at reducing the number of older non-breeding cattle on farms by incentivising farmers to meet set targets for age at slaughter for finished beef animals over a four-year phased implementation period. The maximum age at slaughter for year one of the Scheme is 30 months reducing to 26 months in year four. Farm businesses slaughtering animals which have not been used for breeding and are entering the food chain will receive a payment for each animal that meets the maximum age at slaughter target. However, to discourage any increase in production, a quantitative limit of 352,000 animals per year has been set at a Northern Ireland level on the number of animals that can qualify for the payment.[183]

POLICY / SCHEME 2
Beef Sustainability Package
The Suckler Cow Scheme (Quantified)

This scheme aims to reduce, over a four-year phased implementation period, the number of 'non-productive' days in beef breeding herds by incentivising farmers. A payment on individual replacement breeding animals coming into the herd which meet set targets for reduced age at first calving and for the reduction of calving interval of breeding cows will be made. For the 'Age at First Calving' element, the targets set are a maximum age of 34 months in year one, reducing to 29 months in year four. Targets for the 'calving interval' element include a maximum calving interval in year one of 415 days, reducing to 385 days in year four. Replacement animals that first calve at an earlier age are more efficient over their lifetime and reduce the number of young cattle required on farms to maintain herd size. The Suckler Cow Scheme will include a quantitative limit of 222,000 per year at a Northern Ireland level to discourage any increase in production. Development of the Suckler Cow Scheme is ongoing and is planned for launch in 2025.

[183] The quantitative limit has been calculated using published data on the number of clean beef animals slaughtered in the years 2019-2021. The payment rate of £75 was set on the basis of the available annual budget for the Beef Carbon Reduction scheme of £26.4 million and the quantitative limit of 352,000

POLICY
Knowledge and Innovation (Elements Quantified as detailed below)

The Knowledge and Innovation policy will help and support farm businesses to make the necessary changes to reduce GHG emissions.

Training courses, group-based peer learning, innovation visits and innovation partnerships will seek to reach all farm businesses and land managers and will form a central pillar to help deliver the outcomes and the behaviour change required.

In addition, an Agri-food Influencers Programme for those professionals interacting with farm businesses will be established to help ensure consistency of messaging and deliver the scale of change required. This is a professional development programme for people who work on a professional basis with farmers, for example, those in the feed sector, agricultural banking and environmental and processing sectors. The programme will be designed to inform these professionals of emerging policy so that they can take account of these issues when they engage with farmers.

Knowledge and innovation will be the key policy used to support uptake by the sector in delivering the following:

POLICY
Knowledge and Innovation
Reducing the age at first calving of dairy herd replacements (Quantified)

Reducing the age at first calving of dairy heifer replacements from the average of 30.9 months to 24 months or less will reduce the numbers of older non-breeding cattle on dairy farms in Northern Ireland. Many well-managed dairy herds already significantly exceed this target, with evidence from Northern Ireland milk recording databases suggesting the average age at first calving on milk recorded herds in Northern Ireland is 24.6 months. DAERA has projected an average age at first calving for dairy herd replacements by 2027 of 25 months. This reduction will be encouraged through knowledge transfer and innovation programmes provided by the College of Agriculture, Food and Rural Enterprise (CAFRE).

POLICY
Knowledge and Innovation
Reducing the average calving interval in dairy herds by 15 days (Quantified)

The average calving interval of milk recorded dairy cows in Northern Ireland is approximately 403 days. Reducing the calving interval of dairy cows improves their productivity, increasing the annual average milk yield per cow and increasing the number of calves born per dairy cow per year. Reducing the calving interval leads to lower carbon emissions through reducing the number of dairy cows required to produce the same level of milk output. The action modelled is based on reducing the number of dairy cows in herds in Northern Ireland. DAERA will encourage the reduction in dairy cow calving interval through applied research and knowledge transfer initiatives.

POLICY
Knowledge and Innovation
Increasing the proportion of beef cattle finished as young bulls from 12% to 24% (Quantified)

This proposal, similar to the Beef Carbon Reduction Scheme, is aimed at reducing the number of older non-breeding cattle on farms. Most male cattle in Northern Ireland destined for slaughter for meat production are castrated from a health and safety and management perspective. However, young male cattle that are not castrated have faster growth rates leading to earlier slaughter ages (typical target of 16 months) compared with castrated male cattle. Approximately 12% of clean cattle[184] slaughtered in 2023 were classified as young bulls. The Central Scenario assumes the proportion of young bulls increases to 18%. DAERA will support farm businesses finishing cattle as young bulls through applied research and knowledge transfer initiatives.

[184] Clean cattle refer to animals which have not been used for breeding and are entering the food chain

The implementation of the livestock productivity actions through the Beef Sustainability Package and Knowledge and Innovation policy is projected to reduce cattle numbers in Northern Ireland by approximately 116,000 or 7% of the total cattle population by 2027, while maintaining the current level of livestock product output in terms of milk and beef and avoiding carbon leakage outside of Northern Ireland.

POLICY
Knowledge and Innovation
Reducing emissions by using alternative fertilisers (Quantified)

Urea[185] fertiliser treated with a urease inhibitor significantly reduces nitrous oxide emissions compared with calcium ammonium nitrate (the most commonly used fertiliser in Northern Ireland). Importantly, urease inhibitor treated urea significantly reduces ammonia emissions compared with untreated urea. As a minimum, DAERA will encourage the use of treated urea on Northern Ireland farms through applied research and knowledge transfer. A proposal to consult on the introduction of a prohibition on the use of urea fertiliser without a urea inhibitor is being progressed as part of the Nutrients Action Programme Review.

POLICY
Knowledge and Innovation
Reducing emissions by a reduction in the use of nitrogen fertilisers by including Legumes in grass swards (Quantified)

Legumes such as clovers can naturally fix nitrogen from the atmosphere, making it available as a plant nutrient. Therefore, including legumes in mixed species grass swards can lower nitrous oxide emissions through reductions in requirements for inorganic nitrogen fertiliser. This also brings a significant economic benefit.

[185] Urea is a highly concentrated chemical nitrogen fertiliser which has an NPK (nitrogen phosphorus-potassium) ratio of 46-0-0. Protected (or stabilised) urea is urea which is treated with an active ingredient called a urease inhibitor. Urease is the enzyme which catalyses the conversion of urea to ammonium. It is during this conversion that ammonia gas is lost from untreated urea. A urease inhibitor blocks the active site of the urease enzyme, and this slows the rate at which urea is converted to ammonium, thus stabilising it.

DAERA will encourage the establishment of grassland swards with legumes and herbs through applied research and knowledge transfer initiatives and has projected a 30% reduction (based on Central Scenario) in the use of inorganic nitrogen fertiliser by 2027, which will be monitored via DAERA statistics on nitrogen fertiliser use.

The 30% reduction assumption relates to total fertiliser use across Northern Ireland. This assumption has been applied at industry level and is independent of, and not additional to, any upper fertiliser limits applied at farm level in current or future iterations of the Nutrients Action Programme.

The ongoing pilot Protein Crops Scheme also incentivises farmers to grow crops such as peas and beans which also naturally fix nitrogen from the atmosphere, reducing nitrogen fertiliser use compared with alternative crops such as cereals.

POLICY

Reducing emissions by including methane suppressing feed products in Livestock Diets and reducing the Protein and Phosphorous content of Livestock Diets (Quantified)

DAERA is progressing the development of a Livestock Dietary Emissions Challenge Fund to test livestock diets in an on-farm situation, which reduces GHG and ammonia emissions and phosphorous losses. For the dairy sector in Northern Ireland, the Livestock Dietary Emissions Challenge Fund has been incorporated into a Defra-led Dairy Demonstrator Project. This project was launched for applications by Defra in November 2023 and incorporates a living labs approach involving stakeholders along with government policy makers. A key aspect of the living labs approach is the co-development of policy measures to assist the roll-out of the technology.

While the Dairy Demonstrator Project is focused on the dairy sector, DAERA plans to deliver the Livestock Dietary Emissions Challenge Fund for other livestock sectors from 2025 onwards. Funding of £4 million is required for this latter challenge fund over a four-year period to test these dietary formulations and/or feed products under Northern Ireland farm conditions. The findings from the Dairy Demonstrator Project and Livestock Dietary Emissions Challenge Fund will directly inform the development of future DAERA policy on farm animal dietary changes and the incorporation of enteric methane suppressing feed products into ruminant diets.

The operating expenses for the most effective methane suppressing feed products currently available for dairy cows could be as much as £25 million per annum. However, no decisions have been taken on the provision of funding for these feed products in the long term and this may require some incentivisation from government to ensure adoption in the short term.

Research and development into methane suppressing feed products is ongoing worldwide and it is anticipated that more products will become available in the next number of years. The manufacture of methane supressing feed products and the need for professional livestock diet formulation also have the potential to generate sustainable jobs within the agri-food sector.

POLICY
Ruminant Genetics Programme (Quantified)

Ongoing research by Teagasc in Ireland and by Wageningen University in the Netherlands suggests that animal breeding, specifically for reduced enteric methane production, has the potential to directly reduce cattle enteric methane emissions intensity by up to 24% by 2050.[186] Genetic improvement programmes can also be used to reduce susceptibility to animal disease, to improve feed conversion efficiency, to reduce the incidence of physiological disorders such as lameness and to increase rates of growth, all of which will reduce GHG emissions per unit of output.

Improving the genetic merit of the Northern Ireland cattle population can have a positive impact on reducing nitrogen and phosphorus excretion to the environment therefore having a positive impact on farm ecosystems. DAERA is progressing the development of a Ruminant Genetics Programme which will be delivered in partnership with the agri-food sector through Sustainable Ruminant Genetics Ltd. This not-for-profit organisation was established in 2023 and represents the entirety of the agri-food supply chain.

The initial stage of the programme is a Bovine Genetics Project which commenced in 2024 and has a Capital Cost of £55.6 million and a resource cost of £1.6 million over 10 years. Industry is also contributing £66 million to the project.

[186] Selective breeding as a mitigation tool for methane emissions from dairy cattle - PubMed (nih.gov)

POLICY
Capital Investment Scheme (Unquantified)

A new Capital Investment Scheme is being developed to help farm businesses improve both their environmental performance and business efficiency. It is proposed that support will focus on assisting the industry to meet net zero targets and to help improve air and water quality. This will be achieved by the adoption of precision technology and equipment to reduce ammonia emissions, carbon emissions, and nutrient loss. It will build on information provided to farm businesses through the Soil Nutrient Health Scheme and the Carbon Footprinting Project.

PROPOSAL
Increased slurry aeration and novel slurry treatment systems (includes pig, beef and dairy slurry aeration) (Quantified)

The majority of cattle and pig manure is stored as liquid slurry in Northern Ireland. Manure stored as liquid slurry results in anaerobic conditions within the storage vessel. The anaerobic conditions facilitate the growth of methanogenic microorganisms releasing methane gas from the slurry store. Aerating slurry by bubbling air from a compressor through the slurry via a system of pipes on the base of the slurry store maintains the slurry in a homogeneous 'mixed' state. This reduces the health and safety risk to animals and people from slurry gases released during intensive mechanical mixing prior to slurry spreading. The aerobic conditions created by the slurry aeration reduce methane emissions from the slurry store or tank by approximately 40%. However, depending on the aeration system design, aeration may increase ammonia emissions from the slurry store or tank by approximately 20%. It will be important to understand the 'trade-offs' that exist in such systems and ensure that by increasing the use of slurry aeration, DAERA does not increase ammonia levels to an unacceptable level. A significant number of farmers have already invested in slurry aeration systems from a health and safety perspective. This proposed action could increase the uptake of slurry aeration by 50% by 2027. DAERA will encourage the increase in slurry aeration through applied research and knowledge transfer initiatives.

Research trials by AFBI, Teagasc, University of Galway and industry stakeholders on novel slurry treatment systems are ongoing and indicate the potential to alter the slurry microbial environment to reduce emissions of ammonia, methane and nitrous oxide from stored slurry.

PROPOSAL
Anaerobic Digestion (Quantified)

There is growing interest in the potential to use anaerobic digestion to generate biomethane for injection into the Northern Ireland gas grid. This includes using a combination of manures from livestock farms, waste streams from food processing and crops grown on land that would otherwise be used for conventional agricultural uses. These developments have the potential to contribute to the decarbonisation of the agriculture, business and industrial processes, domestic heating and road transport sectors.

Adding additional technologies to anaerobic digestion plants to capture and recycle nutrients from the digestate that would otherwise be land spread would also help address nutrient loading and water quality problems.

Work is ongoing with industry stakeholders and research organisations to explore the potential development of these circular economy initiatives through the DfE call for evidence and response report on Biomethane and the DAERA Sustainable Utilisation of Livestock Slurry Small Business Research Initiative.

Support Policies for the Agriculture Sector

The Sustainable Agriculture Programme represents a major agenda of change for the agriculture industry in Northern Ireland over the next number of years.

Alongside the above policies and proposals, DAERA is developing a suite of Decision-Support Policies to provide new evidence and innovations to help inform, monitor, and deliver on the actions within this first Climate Action Plan and subsequent plans on the pathway to net zero and support the industry to deliver the change required. Policies providing financial support to deliver environmental improvements and to support the adoption of climate related innovations and technologies will also be available. These include the following policies:

POLICY
The Carbon Footprinting Project (Unquantified)

DAERA is investing £15 million in the first carbon budget period for the delivery of an industry-led Carbon Footprinting Project for Northern Ireland, which includes the use of a farm carbon calculator to measure a farm's carbon footprint. Every farm business in Northern Ireland will be offered a carbon footprint over a four-year period commencing in 2025/26 and participation will be a condition of receipt of the new Farm Sustainability Payment.

The receipt of a carbon footprint in conjunction with training provided by CAFRE, will indicate to farm businesses how they can reduce their carbon footprint against each of the DAERA carbon reduction actions. The Carbon Footprinting Project will also produce important data to increase the granularity and robustness of the GHG Inventory for agriculture.

Under the Act, this Project enables DAERA to meet its legislative requirement to develop sectoral plans for agriculture[187] which contain proposals for carrying out fully funded carbon audits of farms to assess where performance improvements and savings can be made. Also, as part of the carbon auditing process, carbon sequestration measures already being conducted by the sector should be calculated.

[187] Section 19 of the Act

POLICY
The Soil Nutrient Health Scheme (Unquantified)

DAERA's Soil Nutrient Health Scheme is a £37.6 million four-year initiative aimed at measuring and improving the nutrient health status of soil and estimating the soil carbon stocks across Northern Ireland, through the sampling of 24,500 farms by the end of 2026. Following receipt of their results, farm businesses are being offered training by CAFRE, which will assist them to interpret results and develop nutrient management plans to more accurately match nutrient applications to crop need. This should result in more effective, nutrient management on farms, nutrient applications to soils in line with crop requirements, reduced run-off to watercourses and improved economic and environmental sustainability.

Participation in the Soil Nutrient Health Scheme will be a conditionality for receipt of future farm support from DAERA including the Farm Sustainability Payment. This requirement has to date encouraged an excellent uptake of the scheme with almost 95% of farmers participating in those areas of Northern Ireland where the scheme is currently being offered. The Soil Nutrient Health Scheme will also produce important data to increase the granularity and robustness of the GHG Inventory for Land Use, Land-Use Change and Forestry (LULUCF) by estimating baseline data on carbon stored in agricultural soils and above ground biomass. Further information on this aspect can be found in the LULUCF chapter.

The appropriate application of the data from this scheme will contribute to emissions savings in future carbon budgetary periods in both the agriculture and LULUCF sectors.

POLICY
The Farming with Nature Package (Unquantified)

The Farming with Nature Package is aimed at supporting farmers and land managers to make substantial contributions to environmental improvements and sustainability. The Package will include schemes that focus on increasing the extent, quality and connectivity of habitats on the farmed land across Northern Ireland. It will also include Landscape Projects involving multiple farm businesses working in partnership to deliver better environmental outcomes at a landscape scale.

It is planned that scheme(s) will be introduced with the aim of increasing the extent, quality, and connectivity of habitats in the farmed land within and outside of designated sites and priority habitat areas. Landscape Projects will stimulate collaboration between multiple stakeholders like landowners, farmers, conservation organisations, and local communities, leading to more coordinated and impactful efforts. While these activities are delivered by farmers and land managers operating in the agriculture sector, all emissions savings associated with these are recorded in the LULUCF sector.

Deployment Assumptions for Delivery of Agriculture Policies and Proposals

Table 20 presents the level of expected deployment associated with draft Climate Action Plan policies and proposals in the agriculture sector to align with the projected emissions over the first carbon budget period.

Table 20: Deployment assumptions by 2027 to achieve the Central Scenario with agriculture sector Northern Ireland policies

Policy/Proposal	Assumption	By 2027	
		Reduction	Uptake (%)
Beef Sustainability Package Scheme 1 The Beef Carbon Reduction Scheme	Reducing the average age at slaughter of 'clean' beef cattle.	26.2 to 23.6 months.	90

Policy/Proposal	Assumption	By 2027	
		Reduction	Uptake (%)
**Beef Sustainability Package Scheme 2* The Suckler Cow Scheme	Reducing the average age at first calving of beef heifer replacements.	31.9 to 30.0 months (-4 months over 30 months).	–
**Beef Sustainability Package Scheme 2* The Suckler Cow Scheme	Reduction of days for beef cow calving interval.	Average reduction of 15 days.	–
Knowledge and Innovation Reducing the age at first calving of dairy herd replacements	Average age reduction at first calving of dairy herd replacements.	30.9 to 25 months.	50
Knowledge and Innovation Reducing the average calving interval in dairy herds by 15 days	Average of 15-day reduction in calving interval.	15 days.	50
Knowledge and Innovation Increasing the proportion of beef cattle finished as young bulls (from 12% to 24%)	Increased proportion of 'clean' male beef finished as young bulls.	12% to 18%.	18
Knowledge and Innovation Reducing emissions by using alternative fertilisers	Switch from Calcium Ammonium Nitrate (CAN) to Protected Urea Fertiliser.	18% (2024) to 75% (by 2027).	75
Knowledge and Innovation Reducing emissions by a reduction in the use of nitrogen fertilisers by including Legumes in grass swards	Reduction in nitrogen fertiliser use through legume incorporation in grass swards.	30%	–

Policy/Proposal	Assumption	By 2027	
		Reduction	Uptake (%)
Reducing emissions by including methane suppressing feed additives in dairy cattle	Dairy cow feed additives (% methane reduction).	20%	50
Reducing emissions by including methane suppressing feed additives in non-dairy cattle	Non-dairy cattle feed additives (% methane reduction).	20%	35
Reducing emissions by reducing the Protein and Phosphorous content of livestock diets	Dairy cow low crude protein diet (% diet per crude protein unit).	1%	50
Ruminant Genetics Programme	Cattle genetic selection for reduced methane output (% methane reduction).	0.15% per year	50
**Increased slurry aeration and novel slurry treatment systems (Dairy)	Percentage dairy slurry aeration.	50% increase (+20% NH_4 & -40% CH_4).	3.5
**Increased slurry aeration and novel slurry treatment systems (Beef)	Percentage beef slurry aeration.	50% increase (+20% NH_4 & -40% CH_4).	1.05
**Increased slurry aeration and novel slurry treatment systems (Pig)	Percentage pig slurry aeration.	50% increase (+20% NH_4 & -40% CH_4).	2.7
***Anaerobic Digestion	Additional slurry utilised in anaerobic digestion.	Additional 6.0% managed slurry.	50

**Beef Sustainability Package Scheme 2 - The Suckler Cow Scheme includes the quantification of both reducing the average age at first calving of beef heifer replacements and reducing the average age at first calving of beef heifer replacements.*

***Emissions savings for Dairy, Beef and Pig slurry aeration are calculated together*

****Only methane emissions savings during slurry storage included in the analysis for Agriculture*

Emissions Projections

Table 21 presents the projected emissions for the agriculture sector across the first carbon budgetary period. Agriculture sector emissions are projected to be 0.93 $MtCO_2e$ more than the emissions levels assumed for this sector within the CCC adjusted pathway.

Table 21: Agriculture sector projected emissions in the Central Scenario compared with the adjusted CCC sectoral pathway

Sector	Projected Emissions ($MtCO_2e$)						Difference in CCC adjusted pathway and Northern Ireland Projections
	2023	2024	2025	2026	2027	Total	
Agriculture	6.03	5.97	5.88	5.67	5.44	28.99	0.93 $MtCO_2e$
Agriculture CCC*	5.98	5.74	5.6	5.45	5.29	28.06	

**These figures are based on the CCC advisory pathway but have been adjusted to take account of the 2022 inventory publication.*

Further detail on the quantification of the agriculture sector policies is available in Chapter 3.7 of the Quantification Report (Annex A).[188]

[188] Chapter 3.7 p.89-109

Just Transition Considerations

The agri-food sector (comprising the agricultural industry and the food and drinks processing sector) plays a significant role in the economy of Northern Ireland. The value of gross output from the agricultural industry in 2023 was £2.87 billion, generating, a gross value added (GVA) of £699 million.[189] This output is produced from over 26,000 farm businesses, mainly small and medium-sized enterprises, from an area with an agricultural labour force of almost 32,000 people.[190]

The Northern Ireland Integrated Farm Survey[191] published in 2023 reported that 78% of farm managers were over 45 years old, with 32% aged 65 and above. The DAERA Equality Indicators report in 2018[192] outlined that very small farms (which account for three quarters of all farms in Northern Ireland) had a slightly higher age profile than those of larger farms. Almost two thirds of farmers stated that they had a long-term illness or disability which limited their daily activities with the incidence of disability inversely related to farm size. It is vitally important that the changes needed to reduce GHG emissions in this sector do not impact on the vulnerable within the sector or the productivity and food supply chain, which in itself could impact on other vulnerable communities through high food price impacts.

The overall objective of DAERA's Sustainable Agriculture Programme is to transition to a more sustainable farming sector by seeking to implement policies and strategies that benefit our climate and environment, while supporting our economically and socially significant agriculture sector. The schemes to be introduced through this programme will be essential levers in contributing to Northern Ireland's statutory obligations under the Act and in achieving a genuinely just transition.

During this carbon budget period, a new Farm Sustainability Payment will replace the Basic Payment Scheme, which has been the main form of direct payments to the agriculture sector in recent years. The Farm Sustainability Payment will provide a safety net for farm businesses to support farmers to improve the efficiency and productivity of their businesses while reducing their GHG emissions. Over time and in line with the capacity for delivery and uptake of new actions and schemes within the Sustainable Agriculture Programme, the Farm Sustainability Payment will reduce as funding is released to these other actions and schemes, for example, the Beef Sustainability Package and Farming with Nature Package.

[189] DAERA - Key statistics from 2007 onward

[190] Agricultural Census 2022 Publication_1.pdf (daera-ni.gov.uk)

[191] Northern Ireland Integrated Farm Survey 2023.pdf

[192] final-equality-indicators-report.xls

A key policy, to support farm businesses make the necessary changes to further develop more efficient and sustainable businesses, is knowledge. Through the Knowledge and Innovation actions outlined earlier in this chapter and delivered by CAFRE, training courses, peer learning opportunities and innovation demonstrations will be provided, with all farm families encouraged to participate.

To help farmers plan for succession within the family farm and to encourage the next generation of farmers into the industry, DAERA is developing a 'Farming for the Generations' programme which will provide advice on succession planning and support successors as they take on the responsibilities of farm business management and development. This programme will build on the specialist further and higher education courses provided by DAERA through CAFRE, for those wishing to pursue a career in the agriculture industry.

The Act[193] requires DAERA to establish a scheme for the administration of a fund to be known as the Just Transition Fund for Agriculture. The purpose of this Scheme is to provide advice and financial assistance to the agriculture sector to deliver its contribution to meeting carbon budgets and emissions reduction targets by implementing proposals and policies to be included in Climate Action Plans. Further detail on the establishment of the Just Transition Fund for Agriculture is included in the Investing in Climate Action chapter.

[193] Section 31 (1) and (2) in the Act

6.9 Land Use, Land-Use Change and Forestry (LULUCF)

Sector Summary

LULUCF Sector Emissions Summary	• The Land Use, Land-Use Change and Forestry (LULUCF) sector covers emissions and removals of GHGs resulting from direct human-induced LULUCF. • LULUCF is the only sector where removal of emissions (sequestration) is recorded with the majority of removals by forest land and grasslands. • Whilst peatland is a natural sink for carbon dioxide it is currently estimated that the majority of our peatlands are degraded and act as emitters instead. • LULUCF emissions have reduced by 20.5% since 1990 and represent 10.1% of total annual emissions in Northern Ireland in 2022.
Policy Approach	Reducing emissions and increasing sequestration in the LULUCF sector can be achieved through key interventions which include, increasing forest cover through a policy to deliver the **Forests for Our Future** programme to create 9,000 hectares of new woodland by 2030. Also, through restoring peatland habitats by delivering the Northern Ireland **Peatland Strategy**. Delivering carbon sequestration will reduce emissions through land management and will be supported through agri-environment schemes such as the delivery of the **Farming with Nature Package** and the **Soil Nutrient Health Scheme**. There are also additional land use proposals to develop a **future land use policy for Northern Ireland** and considering the feasibility of policy development for biomass.
Emissions Projections	Following the implementation of the policies and proposals set out in this chapter, the LULUCF sector is projected to emit 10.77 $MtCO_2e$ over the course of the first carbon budget period. This compares to total assumed emissions of 10.07 $MtCO_2e$ in the sector during the first carbon budget period within the CCC adjusted pathway.

Sector Overview

The LULUCF sector covers emissions from and removals of GHGs resulting from direct human-induced LULUCF activities. LULUCF is the only sector which has both emissions and sequestration. Wetlands, croplands and settlements were the main contributors to emissions within the sector. The highest sources of sequestration primarily consist of removals from forest land and removals by grasslands (Figure 27). Table 22 and Figure 27 provide an overview of the total emissions, taking into consideration sequestration from croplands, forest land and grassland.

Table 22: LULUCF sector emissions and sequestration

	Emissions ($MtCO_2e$)	Sequestration ($MtCO_2e$)	Net Total ($MtCO_2e$)
Wetlands	1.41	N/A	**1.41**
Croplands	0.91	-0.02	**0.89**
Settlements	0.68	N/A	**0.68**
Forest land	0.03	-0.56	**-0.53**
Grasslands	0.19	-0.48	**-0.29**

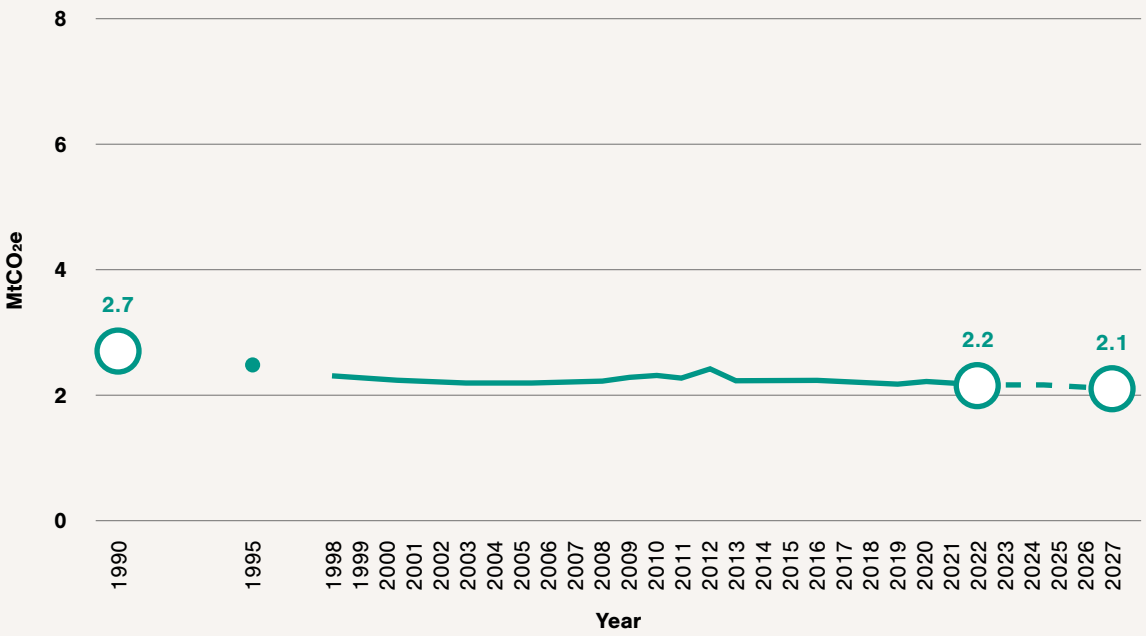
Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Figure 27: LULUCF sector emissions and sequestration 2022

Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

LULUCF emissions have reduced from 2.7 $MtCO_2e$ in 1990 to 2.2 $MtCO_2e$ in 2022 (Figure 28) and represent 10.1% of total annual emissions in Northern Ireland.

Figure 28: Change in LULUCF emissions 1990-2022



Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Note: Base year is 1990 for CO_2, CH_4 and N_2O, or 1995 for fluorinated gases

Peatlands and peat soils are generally natural carbon sinks, that have been created over thousands of years. Current mapping estimates there are 242,000 hectares of land in Northern Ireland classified as peat. Much of this (approximately 170,000ha) is recognisable as peatland habitat, with the rest being peat soils, or buried peat that is now subject to intensive agriculture or peatland. It is estimated that the majority of our peatlands are currently classified as degraded and, are therefore sources of carbon emissions instead of being carbon sinks. To date as a result of management interventions over 4,000ha of peatland have been put on the road to recovery and a further 29,000ha are under remedial management actions through agri-environment schemes.[194]

There has been limited progress made by the LULUCF sector within the past decade in reducing emissions, therefore radical action will be needed to reach net zero by 2050. There are almost 1.4 million hectares of land in Northern Ireland, providing the foundation for our environment, our economy, and our society. Over one million hectares

[194] Peatland restoration undertaken under Cooperation across Borders for Biodiversity (CABB), Collaborative Action for the Natura Network (CANN) and NI Water's Sustainable Catchment Area Management Practice Northern Ireland (SCAMP NI). Remedial action – DAERA Environmental farming scheme.

of this land is in agricultural use. Emissions from the LULUCF sector are determined in large part by how this land is used and managed therefore close collaboration with the agriculture sector will be vital to ensure the correct policies on agriculture, forestry and the environment are implemented including learning from existing policies.

Key to aiding this collaboration will be the continual updating and improvement of the data used for the LULUCF sector in the Northern Ireland GHG Inventory. In particular, as LULUCF policies and proposals are implemented and delivered, it is crucial that the impact of the actions is estimated in the most accurate way possible. This means that the inventory, used to account for LULUCF emissions, must be scientifically robust and agile, informed by the best data on how land is being used and the climate implications of that land management.

Whilst the GHG Inventory is the most robust tool available to assess levels of emissions in Northern Ireland and the UK, the scale and complexity of our interactions with the natural world, means there are high levels of uncertainty in estimating emissions from the land use sector and therefore, work is needed to increase the precision of estimates of LULUCF emissions within the inventory, subject to the availability of funding and resource.

Policies and Proposals

Delivering the first and subsequent carbon budgets will require transformative change in the way land is managed in Northern Ireland. We need to increase the levels of our valuable carbon stores underground and reduce emissions such that our use of land is no longer a source of GHG emissions. Policy on land use should deliver a thriving land sector which balances its use for food production with carbon emissions to deliver for our environment, our economy, and our society.

The LULUCF sector has engaged with stakeholders and relevant sector-specific advisory groups in relation to existing policies and in the development of new proposals to reduce emissions in this sector. The UK Government's approach to sustainable forestry is set out in the UK Forestry Standard (UKFS). As Northern Ireland has a common boundary with Ireland, sustainable forestry management includes the requirement to consult with the relevant authorities in Ireland.

In this first Climate Action Plan, LULUCF key interventions include:

1. Increasing forest cover.
2. Restoring peatland habitats.
3. Delivering carbon sequestration through land management and agri-environment schemes.
4. Additional land use proposals.

Increase Forest Cover

DAERA has a general duty to promote afforestation and sustainable forestry under the Forestry Act 2010.[195] Forest Service leads on the implementation of this general duty for DAERA and is responsible for setting policy direction and priorities for woodland creation and management. Fundamental and common to these priorities and forestry policies is the concept of sustainable forest management.

POLICY
Deliver the Forests for Our Future programme to create 9,000ha of new woodland by 2030 (Quantified)

The Forests for Our Future programme is an important part of the Northern Ireland Executive's multi-decade draft Green Growth Strategy and will be a key driver of the Northern Ireland target to achieve 12% woodland cover by 2050. Currently Northern Ireland has 8.6% woodland cover, compared to 13.4% across the UK.[196] This policy aims to support the creation of 9,000ha of new woodland by 2030. The creation of 9,000 hectares (equating to approximately 18 million trees) of new woodland under this programme will help to deliver a sustainable, healthy environment and economic growth and will enable more people to benefit from the increased wellbeing that woodlands can provide. DAERA intends to progress new ways to make afforestation more appealing to a broader range of public and private landowners by emphasising the delivery of a wide range of ecosystem services including sustainable wood production, protection of water quality and nature recovery. To date, over 1,760ha of new woodland has been planted under the Forests for Our Future programme, however, it is acknowledged that planting rates must be significantly increased in the coming years to meet projected targets.

DAERA intends to increase annual afforestation rates from the current average rate of 425 ha/year planted since 2020/21 to an annual rate of 600 ha/year for the remaining three years of the first Climate Action Plan period in 2027. This would create 3,560ha of new woodland under the Forests for Our Future programme by 2027, with the intention of increasing afforestation rates from 2027, ensuring Northern Ireland is on the pathway to delivering 9,000ha by 2030.

[195] Forestry Act (Northern Ireland) 2010

[196] Forestry Statistics 2023 Ch.1 (forestresearch.co.uk)

In delivering this policy, suitable land will need to be made available as some land is inappropriate for a woodland land use such as designated sites, peatland, land over 300 metres elevation and the urban environment. Although opportunities for afforestation on publicly owned land continue to be explored, the scale of woodland creation proposed will require most of the land-use change to take place from within the current agricultural land use sector, which accounts for just over 75% of the land area of Northern Ireland.[197]

Current woodland creation schemes are similar to those operating under the Northern Ireland Rural Development Programme. New schemes are needed to continue delivery of the Forests for Our Future programme and promote the further expansion of forestry to meet the levels of carbon sequestration required, in order to meet net zero targets.

To support development of this policy the following actions will be progressed:

- During 2025 DAERA will take forward the business case for funding forest expansion schemes from national funds.
- During 2025 DAERA will investigate the potential to develop new woodland creation schemes. Land suitable for afforestation is a finite resource with significant demand for its use from a number of competing sectors. It is important that afforestation is sufficiently attractive as a land use to encourage woodland creation at the required scale.
- During this carbon budget DAERA will contribute to the UK Government working group to address the skills shortage in the forest sector and continue engagement beyond this as required.

While the Forests for Our Future programme was mandated by the former DAERA Minister, any new scheme and/or increase in allocated funding will require the necessary approvals.

[197] The Agricultural Census in Northern Ireland June 2023 (daera-ni.gov.uk)

Restore Peatland Habitats

Peatlands and peat soils can be a natural carbon sink, which are created over thousands of years. However, in Northern Ireland, it is estimated that the majority of our peatlands are classified as degraded and now act as carbon emitters. The following proposals seek to address and reverse this.

PROPOSAL
Deliver the Northern Ireland Peatland Strategy (Quantified)

The draft Northern Ireland Peatland Strategy sets out the proposed actions to enable widespread peatland habitat restoration and conservation in Northern Ireland by 2040.[198] In the draft strategy, DAERA sets out priority actions which aim to deliver levels of peatland restoration in line with the CCC's recommended Pathway for Northern Ireland. Peatland restoration is a key driver in reducing carbon emissions and creating a nature-based solution to sequester carbon. It is also a major/key component in climate mitigation as healthy peatland habitat stores and sequesters carbon and provides ecosystem services such as flood alleviation, which will become more evident as climate change modelling predicts more and intense rainfall for Northern Ireland.

As temperature predictions are realised, more pressure will be put on water reservoirs - healthy peatlands will be able to store more water and release it gradually for use, with the added benefit that it will also require less treatment. The CCC recommends that 150,000ha of peatland must be restored in Northern Ireland by 2050. To achieve this, approximately 10,000ha of peatland habitat should be on the road to recovery by 2027. This means that Northern Ireland will have to dramatically increase its annual peatland restoration activity.

From restoring less than 100ha of peatlands per year in 2023 and 2024 to restoring approximately 2,750ha per year in 2025 and with the intention of increasing restoration rates year on year to 2027 and beyond. This will require significant financial investment and support to build capacity in peatland restoration, as a result DAERA has developed a strategic outline case to establish costings and an appropriate delivery model to deliver approximately 10,000ha of peatland restoration by 2027. The draft Peatland Strategy requires approval by the Northern Ireland Executive.

[198] Subject to Executive approval

To facilitate the draft Peatland Strategy and address the constraints listed above, the following actions will be progressed:

- During 2025, DAERA will establish a Peatlands stakeholder group to help inform delivery of peatlands restoration.
- By 2026, DAERA will have peatland mapping data available to support the identification of peatland sites for priority restoration and inform a peatland asset register.
- During 2025, DAERA will create an implementation plan and associated business plan that will achieve peatland landscape restoration at scale. This will focus on public land to act as demonstration sites to build capacity in the wider environmental Non-Governmental Organisation sector.
- During 2025, DAERA will secure funding to begin significantly upscaling peatland restoration.
- During 2025 DAERA will develop a communication plan to support engagement with farmer and landowners to secure buy-in for peatland restoration.

Deliver Carbon Sequestration Through Land Management and Agri-environment Schemes

Land management and agri-environment schemes are a key tool in delivering greater carbon sequestration on farm. The current Environmental Farming Scheme under the Northern Ireland Rural Development Programme has sought to increase carbon sequestration by supporting farmers to adopt a series of actions on farms.

The first six tranches of the Environmental Farming Scheme delivered 174 ha of native woodland, 37 ha of agroforestry, as well as 591 kilometres of new hedgerows. Going forward, as the Environmental Farming Scheme is replaced by the Farming with Nature Package, delivery of carbon sequestration on farmland will continue to be an important outcome for agri-environment schemes.

POLICY

Sustainable Agriculture Programme – The Farming with Nature Package and the Soil Nutrient Health Scheme (Unquantified)

The Farming with Nature Package and the Soil Nutrient Health Scheme form part of the programme of change being progressed through the agriculture sector's Sustainable Agriculture Programme.

The Farming with Nature Package will continue to support a range of carbon sequestration schemes such as hedge and tree planting, in addition to a range of other actions supporting biodiversity that, in turn will contribute to land-use change targets. From 2023 DAERA will develop the Farming with Nature Package through co-design with farming and environmental organisations, introducing an initial scheme in 2025.

The Soil Nutrient Health Scheme is one of the more comprehensive regional soil nutrient sampling schemes to be undertaken anywhere in the world. It will establish an estimation of the baseline carbon storage capabilities in agricultural soils and above ground biomass through a Northern Ireland wide programme of soil testing and light detection and ranging (LiDAR).[199] By 2027, DAERA will have at least 75% of Northern Ireland agricultural fields soil sampled and analysed to form a baseline of key soil nutrients from which further and more refined targets in respect of soil nutrient health can be considered. The cumulative impact on biodiversity of providing recommendations to farmers to change application of nutrient practices will be assessed to ensure protections remain adequate.

While these activities are delivered by farmers and land managers operating in the agriculture sector, the emissions savings associated with these will be recorded in the LULUCF Sector. More information on these two schemes can be found in the Agriculture Section.

[199] LiDaR is aerial imagery scanning which will be used to estimate the current levels of above ground biomass, i.e. trees and hedgerows

Land Use Proposals

This section outlines proposals that could help to support further emissions reductions and increase carbon sequestration in the LULUCF sector.

PROPOSAL
Develop a future land use policy for Northern Ireland (Unquantified)

LULUCF is an area identified by the CCC that needs to be addressed in Northern Ireland to reduce GHG emissions and improve sequestration rates to meet net zero targets. All other UK administrations have commenced work on a land strategy to tackle these issues.

In November 2021, Sir Peter Kendall published the Independent Strategic Review of the Northern Ireland Agri-Food Sector.[200] The report recommended that DAERA should lead on the development of a co-designed, cross-departmental land use strategy for Northern Ireland that complements and informs its Future Agricultural Policy Framework (now called the Sustainable Agriculture Programme), future environmental schemes and the Northern Ireland Peatland, Energy, Green Growth and Circular Economy strategies. The Future Agricultural Policy Decisions document, published in 2022, included a commitment to progress with developing a land use policy. Work is underway to scope the development of a future land use policy for Northern Ireland, which will be underpinned by science and evidence.

PROPOSAL
Consider the feasibility of policy development for bioenergy crops, engineered removals and carbon capture (Unquantified)

In its carbon advice the CCC recommends the development of bioenergy with carbon capture and storage (BECCS) to remove CO_2 from the atmosphere while also producing energy. For BECCS to contribute to emissions reduction targets, any BECCS plants would need to be located in Northern Ireland, although the CO_2 could be transported elsewhere for storage. This would require significant development of infrastructure; development of transport of CO_2; storage, possibly outside Northern Ireland, and ensuring a significant biomass supply, including availability of bioenergy crops[201] such as short rotation coppice, Willow, and Miscanthus.

[200] Independent Strategic Review of NI Agri-Food Reports

[201] The Climate Change Committee recommends that Northern Ireland would need to scale up bioenergy crop planting from zero to 1,700 hectares per year in 2027

However, this is a completely new area for Northern Ireland and currently the policies and infrastructure needed for engineered removals and carbon capture (BECCS) do not exist. In addition, capturing and storing CO_2 is expected to be more expensive for Northern Ireland compared to Great Britain.[202] As the implementation and delivery of Northern Ireland's Energy Strategy is currently underway, this presents an opportunity for DAERA and DfE to work together to consider the feasibility of developing policies in relation to bioenergy crops, engineered removals and carbon capture.

Deployment assumptions for delivery of LULUCF policies and proposals

Table 23 presents the level of expected deployment associated with the draft Climate Action Plan policies and proposals in the LULUCF sector to align with the projected emissions over the first carbon budget period.

Table 23: Deployment assumptions by 2027 to achieve the Central Scenario with LULUCF sector Northern Ireland policies

Policy	Mitigation	Between 2023-2027
		Hectares
Deliver the Forests for Our Future programme to create 9,000ha of new woodland by 2030	Ensure that afforestation is sufficiently attractive as a land use to encourage woodland creation at the required scale.	2,684
Deliver the Northern Ireland Peatland Strategy	Require the financial investment and support to build capacity in peatland restoration.	9,866

Further detail on the quantification of the LULUCF sector policies is available in Chapter 3.8 of the Quantification Report (Annex A).[203]

[202] This is because in Great Britain there will be more CO2 going into each CCS network, leading to lower unit costs due to economies of scale, and the CO2 transport distance from source to storage location will be shorter. Outlined in the CCC's March 2023 Advice report: the path to a Net Zero Northern Ireland

[203] Chapter 3.8 p.110-118

Emissions Projections

Table 24 presents the projected emissions for the LULUCF sector across the first carbon budgetary period. LULUCF sector emissions are projected to be 0.69 $MtCO_2e$ more than the emissions levels assumed for this sector within the CCC adjusted pathway.

Table 24: LULUCF sector projected emissions in the Central Scenario compared with the adjusted CCC sectoral pathway

Sector	Projected Emissions ($MtCO_2e$)						Difference in CCC adjusted pathway and Northern Ireland Projections
	2023	2024	2025	2026	2027	Total	
LULUCF	2.17	2.18	2.16	2.14	2.11	10.77	0.69 $MtCO_2e$
LULUCF CCC*	2.11	2.06	2.02	1.97	1.91	10.07	

**These figures are based on the CCC advisory pathway but have been adjusted to take account of the 2022 inventory publication.*

Just Transition Considerations

As the LULUCF sector works to reduce emissions and increase sequestration, it must do so in a way that factors in just transition considerations. Any LULUCF policy or proposal must consider the impact of any potential changes on landowners and related industries (e.g. forestry, peatlands, agriculture, bioenergy).

There are almost 1.4 million hectares of land in Northern Ireland and over one million hectares of this land is farmed. Northern Ireland has ambitious targets for afforestation (9,000 hectares of new woodland by 2030) and peatland restoration (150,000 hectares restored by 2050) and if they are to be delivered, consideration will need to be given to how any changes in land use are supported in a just way. Incentivising and encouraging forest expansion will also allow further investment in the social and community use of forests and woodlands for tourism, recreation and a wide range of initiatives to support rural businesses. These will assist sustainable economic development, making them more attractive places in which to live and work.

An independent survey of visits to DAERA forests[204] conducted in 2019 highlighted the increasing popularity of woodlands with visits almost doubling from 4.7 million to 9 million between 2014 and 2019. The same survey indicated that the benefits to the wider economy could be projected at £172 million per annum.

In addition to this, forestry's economic contribution from timber supply in 2022 was worth between £60-80 million. Businesses involved in this industry range in scale from family-owned small and medium-sized enterprises UK-wide woodland management companies to world sized sawmills operating internationally. Supplying timber from forests to the wood processing industry, offers the opportunity for increased carbon storage in wood products produced from sustainably managed forests. Harvested wood products provide significant climate change mitigation by storing carbon and through the potential for carbon substitution benefits associated with the use of wood in construction instead of more fossil energy-intensive materials. Manufacturing harvested wood products from locally grown forests for sale and use in an all-Ireland and Great Britain market displaces importation of timber goods from other countries. A sustained expansion in woodland cover consistent with the existing policy to reach 12% by 2050 woodland cover will provide an increasing quantity of timber and timber products for value added processing.

While the proposals presented in this draft Climate Action Plan will require a modest upscaling of current capacity, there is a widely publicised skills shortage in the forestry sector as it looks to gear up in response to challenging planting targets to meet Forest Policy and Climate Change targets. DAERA is participating in work to mitigate this issue, which is being taken forward at a UK level across the sector.

Public understanding of the benefits of peatlands is low and in order to achieve our goal of restoring peatlands to functioning ecosystems, we will need to increase awareness and ensure that we support a range of knowledge exchange activities. DAERA will actively engage in local, national and international networks to share research outcomes in order to maximise impact on peatland conservation.

[204] 181352_Northern Ireland Forest Survey Report 2019 FINAL v9 22.10.20.PDF

Restoring peatlands back to functioning ecosystems will make them resilient, while supporting future generations with the ecosystem services that healthy peatlands can provide. There is opportunity for the creation of employment in rural areas to carry out restoration and the potential future employment in peatland maintenance and tourism. There is the potential for families to retain land ownership if children do not wish to farm the land but could benefit from land subsidies to provide the ecosystem services that healthy peatland provide. It is also estimated that for every £1 spent on peatland restoration there is a net benefit of £4 to the economy.[205]

All potential impacts will require consideration to be given to how changes in land use may impact on rural jobs and also capitalise on opportunities for retraining or upskilling. Whilst farming practices may change, there is clear potential for job creation in rural communities to facilitate restoration and maintenance of peatland, increased afforestation and ecotourism of unspoilt landscapes. As the LULUCF policies and proposals are developed, further work will be required to fully understand the scale of these just transition considerations.

[205] The economic costs and benefits of nature-based solutions

6.10 Fisheries

Sector Summary

Fisheries Sector Emissions Summary	• Fisheries is the smallest emissions sector and includes emissions from activities associated with sea fisheries, inland fisheries and aquaculture. • Fisheries accounts for 0.1% of Northern Ireland GHG emissions (2022). • Fisheries emissions have decreased by 2.5% from 1990 to 2022.
Policy Approach	Reducing emissions in this sector will be through developing initiatives to decarbonise the fishing fleet. The **UK Joint Fisheries Statement** sets high level policies for how the fisheries policy authorities will work together to develop solutions that minimise the adverse effect of fishing and aquaculture activities on climate change whilst also adapting to climate change. In Northern Ireland the policy is to **invest in research and development** to create the innovative solutions needed to decarbonise the fishing fleet and minimise adverse effects of fishing on climate change. There is a proposal to **prepare for roll-out of electrification and low or zero emission fuels across the fishing fleet**.
Emissions Projections	Following the implementation of the policies and proposals set out in this chapter, the fisheries sector is projected to emit 108.41 $KtCO_2e$ over the course of the first carbon budget period. This compares to total assumed emissions of 92.41 $KtCO_2e$ in the sector during the first carbon budget period within the CCC adjusted pathway.

Sector Overview

The fisheries sector includes sea fisheries, inland fisheries and aquaculture. The range of activities undertaken by the fisheries sector is diverse and includes catching fish, operating vessels for catching, fish processing, transporting fish or fish products, loading and unloading fish or fish products and shore side processing of fish. Aquaculture activities include the production and sale of aquaculture organisms. Collectively, fishing and aquaculture activities contribute emissions to several Northern Ireland GHG Inventory sectors.

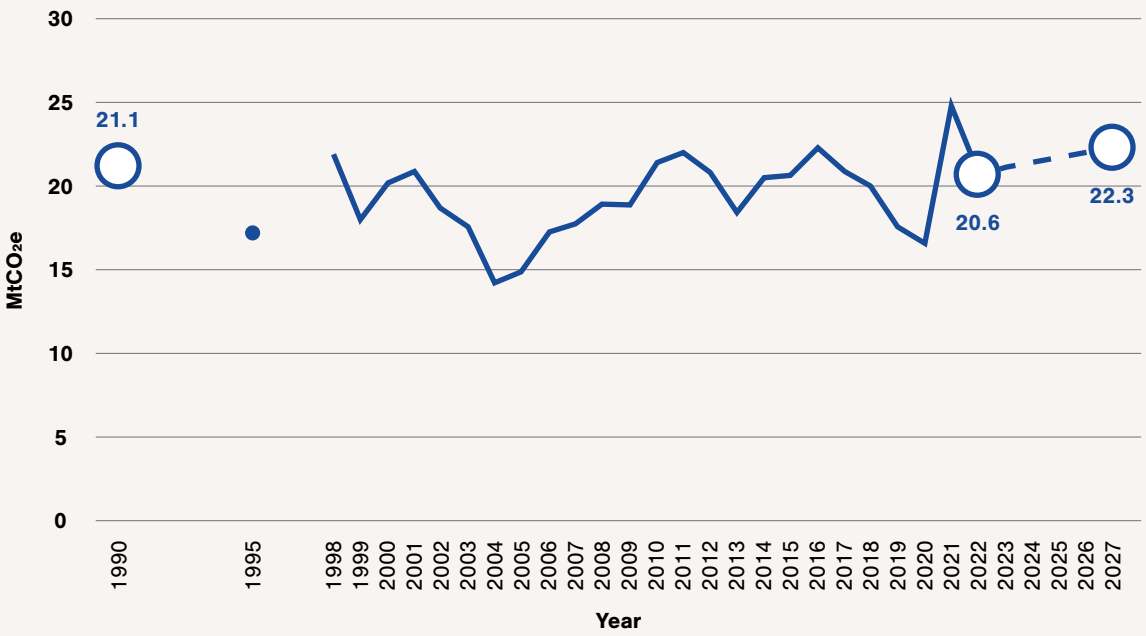
To avoid double counting, only emissions from sea fishing and aquaculture vessels are included in the fisheries sector within this draft Climate Action Plan.[206] It is recognised that the methodology for estimating emissions from fishing vessels needs further development to more accurately reflect actual emissions. Some of the policies and proposals for the fisheries sector will contribute towards reducing emissions in other sectors.

This sector accounts for 0.02 $MtCO_2e$ (0.1% of Northern Ireland GHG emissions in 2022), a 2.5% decrease from 1990 base year (Figure 29).

The fisheries sector is recognised as being a challenging sector for decarbonisation because of the technological developments that are needed and the whole system changes that must be made to use the technologies safely and reliably. Therefore, the focus of this carbon budgetary period is to build the capability for a sharp decrease in emissions post 2027.

[206] These emissions are recorded under IPCC code 1A4ciii

Figure 29: Change in fisheries emissions 1990-2022



Source: Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2022 | National Atmospheric Emissions Inventory

Note: Base year is 1990 for CO_2, CH_4 and N_2O, or 1995 for fluorinated gases

Fishing vessels are part of the wider domestic shipping sector, for which the Department for Transport (UK Government) is responsible. The policies and strategies developed by the Department for Transport extend across the UK and apply to Northern Ireland fishing vessels.

The Fisheries Act 2020[207] contains eight objectives that provide the basis against which the fisheries policy authorities (UK Government and devolved governments) will manage their fisheries. This includes a climate change objective which requires that the adverse effect of fish and aquaculture activities on climate change is minimised, and fish and aquaculture activities adapt to climate change.

[207] Fisheries Act 2020

DAERA, together with the other UK fisheries policy authorities, was required to produce a Joint Fisheries Statement setting out the policies for achieving or contributing to the achievement of the fisheries objectives described in the Fisheries Act 2020. The Joint Fisheries Statement (JFS) was developed in accordance with the process outlined in the Fisheries Act 2020, and following public consultation and scrutiny by the Northern Ireland Assembly and the other UK legislatures, was published in 2022.

Policies and Proposal

DAERA has engaged with stakeholders and relevant sector-specific advisory groups including The Northern Ireland Fishermen's Federation, Aquaculture Representative Group, Northern Ireland Fisheries Harbour Authority, Lough Neagh Fishermen's Co-operative Society and the Northern Ireland Marine Taskforce in relation to existing policies and in the development of new proposals to reduce emissions in the fisheries sector. DAERA and the Northern Ireland fisheries sector are actively engaging in forums and working groups at UK level that have been established to develop solutions to decarbonise the fishing sector, in particular design of future vessels.

This section lists policies and a proposal required to reduce emissions in the fisheries sector. These policy levers can be attributed to the following categories:

- UK level policies to decarbonise fisheries sector.
- Research and development to decarbonise the fishing fleet.
- Prepare for roll-out of electrification and use of low or zero emission fuels across the fishing fleet.

UK level climate change policies for the fisheries sector

POLICY
UK Joint Fisheries Statement (Unquantified)

The JFS sets out policies to secure successful and sustainable fisheries management within the UK. In balancing the application of the fisheries objectives, the JFS will aim to support a vibrant, profitable and sustainable fishing industry, underpinned by a healthy marine environment. It aims to protect and where necessary recover our fish stocks, reduce the effects of fishing on the environment and support a modern, resilient and environmentally responsible fishing industry that will seek to mitigate its contribution to climate change and adapt where possible.

The UK Joint Fisheries Statement[208] recognises that mitigation of climate change needs to be considered across the supply chain and that the national fisheries authorities will need to work towards understanding the different steps of the supply chain's carbon contribution. Identifying feasible technological, behaviour and managerial changes to mitigate and reduce emissions across the fisheries supply chain will be vital to support the transition towards a net zero carbon emissions future and help to achieve the climate change objective.

The fisheries policy authorities will work together to support innovative solutions to realise carbon savings from engine upgrades, fishing gear improvements and green technology, as well as identifying opportunities for vessel emissions reductions through alternative fuels. Support will also be provided to promote innovation to reduce seabed abrasion.

The JFS recognises that nature-based solutions are important for tackling climate change and averting its impacts. This includes recognising the importance of protecting and restoring blue carbon habitats to support resilience to climate change and the potential role of aquaculture sub-sectors such as seaweed and shellfish aquaculture in carbon capture.

Research and development to decarbonise the fishing fleet - Northern Ireland Policy

POLICY
Invest in research and development to decarbonise the fishing fleet and minimise adverse effects of fishing on climate change (Unquantified)

The fisheries sector will be a challenging sector to decarbonise and research and development is required to develop tailored solutions for the Northern Ireland fisheries sector which will enable implementation of the UK level policies such as the Maritime Decarbonisation Strategy.[209] DAERA and the Northern Ireland fishing industry have taken initial steps to consider how to prepare for the transition towards net zero. DAERA has provided financial assistance through the Maritime and Fisheries Fund 2022-2023 for a project to design a prototype net zero fishing vessel and is working with the Northern Ireland Fishermen's Federation to identify research priorities and develop proposals for demonstration projects.

[208] Joint_Fisheries_Statement_JFS_2022_Final.pdf (publishing.service.gov.uk)

[209] Maritime Decarbonisation Strategy

The fishing industry, in partnership with the Agri-Food and Biosciences Institute and Ulster University is undertaking research to assess the interaction of fishing gear with the seafloor and the ecosystem response to disturbance. This includes potential release of carbon from seabed sediments and the study will improve the evidence base for the design of fisheries management measures, and support development of novel gear designs or fishing practices that reduce seafloor contact. DAERA has also provided grant funding to a number of projects to support the development of nature-based solutions, including blue carbon projects such as native oyster restoration.

In 2023, DAERA consulted on an Outline Strategy for Future Marine and Fisheries Funding 2023-2028[210] which included investment proposals to support climate action. A one-year Marine Environment and Fisheries Fund was opened for 2024-25, and a further one-year scheme will be open for 2025-26. Subject to budget confirmation, a multi-year scheme will be open for 2026/27 and 2027/28. These schemes will provide £8 million funding to support the following actions:

- From 2024, DAERA will invest in research and development to assess the most suitable technology for each of the fishing sub-sectors which will include feasibility studies for each fishing sub-sector and initial small scale demonstration projects.
- From 2024, DAERA will invest in research and development to optimise fishing vessels to reduce power and energy requirements. This will include hull design and gear (nets, trawls etc.) design.
- DAERA will continue to invest in research to assess potential impacts of fishing activities on natural carbon stores (blue carbon habitats) and support the development of novel gear designs that reduce seafloor contact.
- DAERA will continue to invest in research and development to explore the potential for aquaculture (algae and shellfish) to fix carbon dioxide into biomass and improve water quality by removing nutrients (nature-based projects).

Prepare for roll-out of electrification and use of low or zero emission fuels across the fishing fleet

PROPOSAL
Prepare for roll-out of electrification and use of low or zero emission fuels across the fishing fleet and reduce emissions along the fisheries supply chain (Unquantified)

The roll out of electrification and low or zero emission fuels are subject to the successful completion of demonstration projects that can be scaled up. This will require whole system changes to ensure the new technologies can be used safely

[210] Consultation on the Outline Strategy for Future Marine and Fisheries Support 2023 - 2028 | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

and reliably, and sufficient notice must be given to allow time for investment and construction of vessels, and the necessary shore side infrastructure. The Marine Environment and Fisheries Fund will provide financial assistance to prepare for the transition to decarbonisation. This proposal will provide £3 million funding to support the following actions:

- From 2024, DAERA, in partnership with harbour authorities, will scope the future infrastructure requirements for electrification and alternative fuels.
- From 2024, DAERA will provide financial assistance for fishing harbours to invest in shore power and electric vessel charging infrastructure. This will include maximising opportunities through the UK Shipping Office for Reducing Emissions.
- From 2024, DAERA will identify and prioritise measures to incentivise decarbonisation of the fishing fleet. This will include maximising opportunities through the Maritime Decarbonisation Strategy and the UK's Shipping Office for Reducing Emissions (UK SHORE).
- By 2027, DAERA will develop a full roll-out plan for electrification, low or zero emission fuels and accompanying fleet retrofits or modifications.
- From 2024, DAERA will provide financial assistance to mitigate and reduce emissions along the fisheries supply chain.

Emissions Projections

The fisheries policies and proposals are not expected to result in the reduction of emissions until alternative fuels and vessel designs come into operation. Emissions are expected to hold relatively stable to 2030, before reducing to close to net zero by 2050.

Table 25 presents the projected emissions for the fisheries sector across the first carbon budgetary period. Fisheries sector emissions are projected to be 16.0 $KtCO_2e$** more than the emissions levels assumed for this sector within the CCC adjusted pathway.

Table 25: Fisheries sector projected emissions in the Central Scenario compared with the adjusted CCC sectoral pathway

Sector	Projected Emissions ($KtCO_2e$)						Difference in CCC adjusted pathway and Northern Ireland Projections
	2023	2024	2025	2026	2027	Total	
Fisheries	21.09	21.41	21.69	21.97	22.26	108.41	16.00 $KtCO_2e$
Fisheries CCC*	18.31	18.40	18.50	18.57	18.63	92.41	

**These figures are based on the CCC advisory pathway but have been adjusted to take account of the 2022 inventory publication.*
*** Please note, emissions for the fisheries sector are displayed in $KtCO_2e$.*

Further detail on the quantification of the fisheries sector policies is available in Chapter 3.9 of the Quantification Report (Annex A).[211]

Just Transition Considerations

The fishing sector is an important part of the economy of rural coastal communities and has a rich cultural heritage from which many of those communities draw a sense of place and identity. The sea fishing vessels supply the seafood processing sector and support 1,550 full-time equivalent jobs (905 in fishing and 645 in processing). Nearly 400 companies contribute to the fishing, seafood and fishing port sectors supporting 1,850 full-time equivalent jobs.[212]

The Northern Ireland sea fishing fleet is comparatively old and to date has lacked re-investment into more efficient vessels. The fleet has mostly consolidated into the three Northern Ireland Fishery Harbour Authority ports of Ardglass, Kilkeel and Portavogie. Within each port there are businesses that supply goods and services to the fishing fleet, with Kilkeel home to a cluster of engineering businesses providing vessel services and repair.

[211] Chapter 3.9, p.119-121

[212] Final report from the Fishing and Seafood Development Programme (FSDP) | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

The existing skippers, crew and associated ancillary businesses have experience and skills in the production, operation, and maintenance of diesel-powered vessels. There will need to be a programme to re-skill the workforce so they can enable and support the transition to electric and alternative fuel vessels. In addition to reducing emissions, investment in new vessels will provide improved working and living conditions for crew. This has the potential to make fishing a more attractive career and address some of the skill shortages that the industry is currently dealing with. Improved welfare conditions on board may attract more women into the fishing sector.

Significant investment will be needed to enable the transition to decarbonisation and DAERA will develop financial assistance and incentive schemes that will provide support to those who most need it.

The fishing industry has taken initial steps to prepare for the transition and it is essential that a collaborative approach is taken to develop and maintain consensus as the plans for roll-out develop. DAERA and the fishing industry will continue to explore options for the development of collaboration mechanism that enable the industry, researchers, government departments, Non-Governmental Organisations and the community to engage and develop innovative solutions.

7. Impact Assessments

7.1 Introduction

Impact assessments are a key component of best practice in policy making and essential tools to employ when considering the individual and cumulative effect of policies and proposals. They allow impacts to be predicted, monitored and, if necessary, avoided or mitigated. To be most effective, the process of impact assessment should commence at the outset of the policy development process.

The Act stipulates that DAERA must commission a financial, social, economic and rural impact assessment on the effects of each Climate Action Plan. In addition, there is a need to consider statutory and non-statutory impact assessments in Northern Ireland including:

- Equality Screening and Equality Impact Assessment;
- Rural Needs Impact Assessment;
- Strategic Environmental Assessment;
- Habitats Regulations Assessment;
- Regulatory Impact Assessment; and
- Child Rights Impact Assessment.

The impact assessments on the draft Climate Action Plan have considered the cumulative effect of individual impact assessments conducted on policies and proposals across all sectors. The level of detail is proportionate to the scale and likely impact of the policy or proposal. Where proposals are not well advanced, some impacts may not yet have been identified.

The policies and proposals included in the draft Climate Action Plan take various forms, including fully developed Northern Ireland and UK-wide policies and proposals. This means that the impacts arising from the draft Climate Action Plan will reflect the status at a particular time and assessing impacts will be an iterative process. The assessments conducted for the draft Climate Action Plan are outlined below and details are included in Annex H.

7.2 Financial, Social and Economic Impact Assessments

The Financial, Social and Economic Impact Assessment (FSEIA) is a specific requirement of the Act.[213] To fulfil this requirement a new financial, social and economic impact was developed, alongside associated guidance. This assessment was subsequently completed for each individual quantified policy and proposal included in the draft Climate Action Plan to capture financial, social and economic impacts and identify mitigating actions.

An overall neutral financial impact from policies and proposals outlined in the draft Climate Action Plan is anticipated. Key negative impacts with minor effects are reported for the transport sector given the level of investment required, whilst in other sectors, minor negative impacts from costs incurred are generally balanced by positive effects in terms of cost savings or wider health or economic benefits.

Overall positive social and economic impacts with minor effects are expected. Positive social impacts are anticipated in terms of household income as a result of reduced costs; health and wellbeing and the living environment from improvements to environmental quality e.g. air quality; in addition to employment and education and skills development from new opportunities. Most policies and proposals are anticipated to bring benefits in terms of economic growth or to the sustainable green economy; competitiveness and jobs/employment with significant benefits expected from certain policies and proposals identified within the waste and agriculture sectors. Any minor negative impacts from upfront investment costs incurred which could have a negative impact on economic growth can be mitigated to an extent e.g. where adverse impacts in one market are balanced by positive impacts in another.

An FSEIA was commissioned on the draft Climate Action Plan as a whole, considering the cumulative and interactive effects of policies and proposals. The Climate Action Plan-level financial, social and economic impact assessment finds that whilst various trade-offs and conflicts have been identified across the financial, social and economic impacts of individual policies and proposals, the expected benefits outweigh these potentially negative impacts, thus the draft Climate Action Plan is considered to have an **overall positive impact from an economic and social standpoint**. From a financial point of view, draft Climate Action Plan policies and proposals are anticipated to yield **long-term financial benefits** for Northern Ireland but pose short-term financial costs. Climate Action Plan-related policies and proposals are expected to create synergies for Northern Ireland's finances in the long term while addressing climate change mitigation and adaptation needs (for example, some Climate Action Plan-related policies and proposals reduce the need for expenditure elsewhere, thereby having positive financial impacts), to enhance ecosystem services, and to increase tax revenues generated via increased economic activity.

[213] Section 30(c) of the Act

7.3 Equality Impact Assessments

Section 75 of the Northern Ireland Act 1998[214] places a statutory requirement on public authorities to consider equality of opportunity and good relations when introducing a new or amended strategy, policy, procedure, or legislation. This is intended to avoid discrimination against Section 75 groups.[215] It also encourages the promotion of good relations between people of different religious belief, political opinion or racial group.

Individual policies and proposals included in the draft Climate Action Plan have been subject to a Section 75 Screening Analysis. Following review of the available relevant equality information for each of the policies and proposals included in the draft Climate Action Plan and analysis of the Section 75 categories, it was determined that the information was sufficiently comprehensive to be considered as a combined Equality Screening and Equality Impact Assessment (EQIA). An Equalities and Disability Duties Screening Template has been completed for the draft Climate Action Plan and is included in Annex H.

It is expected that the draft Climate Action Plan will provide an overall benefit to all the population in Northern Ireland including all Section 75 categories. While acknowledging the overarching positive impact it is important to highlight that key inequalities must be addressed in order to achieve an inclusive just transition. The potential opportunities and benefits associated with the sector policies and proposals differ across Section 75 categories for example, agriculture is a largely male dominated sector; therefore, a higher number of males are likely to benefit than females from agricultural transition opportunities such as reskilling. Through a move to cleaner sources of heat, carbon emissions will be reduced along with energy costs, helping to tackle fuel poverty as well as reducing associated health problems.

The Human Rights Act 1998 has been considered in the development of the draft Climate Action Plan and no adverse impact on human rights has been identified. The transition to carbon neutrality can be a socially inclusive one, undertaken in an inclusive way. The draft Climate Action Plan provides opportunities for stakeholders and government to assess what change means in terms of reducing inequalities and positively promoting human rights along with maximising opportunities for vulnerable people, workers and communities. Through inclusive engagement and collaboration, we will make sure we hear the voices of all, those recognised under Section 75 and particularly young people to ensure their voice shapes a sustainable future.

Where a major impact is identified then an EQIA must be conducted. Impacts identified in the Screening Template and comments or views arising from the public consultation will then be taken forward in an EQIA for the final Climate Action Plan.

[214] Northern Ireland Act 1998 (legislation.gov.uk)

[215] Section 75 groups: people of different religious belief, political opinion, racial group, age, marital status, sexual orientation, men and women generally, people with and without a disability and people with and without dependents

7.4 Rural Needs Impact Assessments

As outlined above, consideration of rural needs is a requirement of the Act. DAERA also has a duty to implement the statutory requirements of the Rural Needs Act (Northern Ireland) 2016,[216] which introduced a new duty on public authorities in Northern Ireland to have due regard to rural needs when developing, adopting, implementing or revising policies, strategies and plans, and when designing and delivering public services. A Rural Needs Impact Assessment (RNIA) is required to be completed on all policies and proposals included in the draft Climate Action Plan as stipulated in the Act.

An RNIA template was completed for the draft Climate Action Plan, drawing proportionately on information provided by departments responsible for each policy and proposal. An overall positive impact to the general population, including rural populations is expected, with no significant adverse effects anticipated from policies and proposals included in the draft Climate Action Plan.

In addition, an overarching RNIA has been carried out to reflects the effects of the draft Climate Action Plan and considers the interactive and cumulative impacts and potential mitigation measures. The RNIA considered a range of key rural statistics and identified a range of impacts on rural communities associated with the draft Climate Action Plan policies and proposals. Key areas of potential positive impact on rural communities include:

- Opportunities to create new green employment in rural areas, consistent with the just transition principle and PfG commitment to supporting good jobs and regional balance.
- Opportunities for improved provision of more sustainable and efficient travel methods with associated health and environmental benefits.
- Rural areas offer potential solutions to support energy transition through for example, community owned renewable energy projects.
- Opportunities to create improved and more sustainable agriculture and land use practices that helps to sustain a more resilient rural economy.

[216] Rural Needs Act (Northern Ireland) 2016 (legislation.gov.uk)

Key challenges for rural communities could include:

- Adaptation to new agricultural and environmental policies for older farmers may be more challenging without adequate engagement, training and support.
- Efficiencies in farming practices and land use policies within the draft Climate Action Plan could change employment patterns in rural areas.
- Rural areas may experience higher energy costs compared to urban counterparts with more limited access to services generally. Transition may also be slower as they are yet to reach the gas network.
- Access to bus, rail and motorway networks is more limited in rural areas. The policies outlined in draft Climate Action Plan provide an opportunity to improve access to public transport in rural areas.

The RNIA also identified interactive and cumulative impacts across policies and set out how these can either exacerbate or counteract each other, for examples energy transition and low carbon transport, transport electrification and public transport, agriculture emission reduction policies and afforestation. It provided examples of suggested mitigation measures to address impacts in rural areas such as agroforestry, bulk buying schemes and workforce development policies, local engagement, training and financial support schemes.

7.5 Strategic Environmental Assessments

A Strategic Environmental Assessment (SEA) is a system of including environmental considerations into certain plans and programmes at an early stage of the development of the plan or programme.

To ensure full and proper consideration of potential environmental effects associated with the draft Climate Action Plan, an external contractor with specific expertise in SEA was engaged to carry out this process. Overall, the policies and proposals across all sectors of the draft Climate Action Plan are largely considered to lead to minor to significant positive effects across the six SEA themes of Biodiversity, Water and Soil Resources, Historic Environment, Landscape, Air Quality and Noise, and Healthy and Safe Communities. For example, it is considered that the draft Climate Action Plan could:

- Support habitats which facilitate carbon sequestration, and the role of healthy ecosystems in helping communities adapt to the impacts of climate change, including more frequent flooding and extreme heat events.
- Reinforce the regulating and provisioning roles of ecosystems and encourage innovative land use approaches.
- Enhance the fabric and setting of the historic environment, mitigating potential adverse impacts through utilisation of Heritage Impact Assessments.
- Provide opportunities in terms of health, wellbeing, quality of life and prosperity benefits.

Given that Northern Ireland's population is increasing (which is likely to lead to a higher demand for new housing, employment opportunities and infrastructure) and ageing (which will result in an increased demand for accessible accommodation and transport options), it will be important that government policy relating to the landscape character, the protections afforded to designated landscapes and other provisions ensure that appropriate mitigation is put in place to prevent adverse impacts on key landscapes.

The SEA recommended that the delivery of the policies and proposals set out within the draft Climate Action Plan are closely monitored at each stage to ensure that negative or unforeseen effects can be effectively responded to and managed. A proposed SEA monitoring programme was provided in the document.

7.6 Habitats Regulations Assessments

A Habitats Regulations Assessment (HRA) is a formalised process of identifying and evaluating impacts of proposed plans or projects on sites designated for protection, conservation or restoration.

An external contractor with specific expertise was engaged to carry out an HRA on the draft Climate Action Plan for all relevant protected sites within Northern Ireland.

The HRA assessed the impact pathways associated with the draft Climate Action Plan and their potential effects on habitats sites within Northern Ireland (or sites outside the Northern Ireland borders that are reasonably linked to the draft Climate Action Plan). It concluded that given its high-level strategic nature, the draft Climate Action Plan would not result in a likely significant effect on any habitats site, either alone or in combination with other plans or projects.

7.7 Regulatory Impact Assessments

A Regulatory Impact Assessment (RIA) is a key tool in delivering better regulation and is an assessment of the policy options in terms of the costs, benefits and risks of a proposal. The Northern Ireland Better Regulation Strategy requires all departments, arm's length bodies and other public bodies to consider an RIA as part of their policy development process.

A Regulatory Impact Screening carried out for the draft Climate Action Plan determined that the draft plan itself will not make any new regulations and therefore will not impose any costs, savings, additional compliance or administrative burdens on the wider business community. If individual policies and proposals introduce regulatory burdens on the wider business community, then an RIA will be considered on a case-by-case basis and carried out by the NICS department responsible for that policy. For these reasons, a full RIA has been screened out.

7.8 Child Rights Impact Assessments

A Child Rights Impact Assessment (CRIA) is a tool for assessing the impact of a policy, law or decision on children and young people and their rights and, if necessary, considering ways to avoid or mitigate any negative impacts.

This is a relatively novel concept of impact assessment therefore most existing policies included in the draft Climate Action Plan will not have considered it during policy development.

The Northern Ireland Commissioner for Children and Young People (NICCY) has published a CRIA template which has been completed, based on research and engagement with key children's groups for the draft Climate Action Plan. The assessment found that all groups of children, youth and future generations will be affected but not necessarily in the same way. The effects of the draft Climate Action Plan on a child will be influenced by factors such as age, health status, socio-economic status however, all children and young people should benefit from a cleaner, healthier and more sustainable environment whilst providing opportunities for the economy and job creation. Recognising the need for investment to support delivery of policies and proposals, the importance of a just transition was highlighted to mitigate any potential adverse impacts e.g. on child poverty rates or access to youth services.

8. The Natural Environment and Climate Change

8.1 Introduction

It is internationally agreed that climate change and biodiversity loss are interdependent and need to be addressed together. There is a pressing need for Northern Ireland to reduce GHG emissions and meet carbon budgets, however, we also need to address other environmental challenges. Therefore, the Act requires us to set specific targets for soil quality, biodiversity and air quality in this draft Climate Action Plan.[217] The Act also requires that, where practicable, the policies and proposals should support and use nature-based projects, either individually or as part of wider action.

This chapter sets out targets and examples of nature-based solutions that aim to address the twin crises facing climate and biodiversity by reducing emissions and creating a climate-resilient landscape.

8.2 Soil Quality

Good soil quality means that soil will function as a balanced ecosystem which sustains plant and animal life, whilst supporting provision of our food, filtering water pollutants and providing some mitigation against flooding and drought. Soils also store carbon and play an important role in supporting biodiversity and the wider environment. Soil health is a measurement of how well our soils are performing these functions. Providing farmers with accurate baseline data on the nutrient health status of soils helps them to manage their soils sustainably, to support a range of environmental, economic and societal benefits.

A baseline is required to assess the current status of soil health across Northern Ireland. This is being achieved through the Soil Nutrient Health Scheme (agricultural soils) and the Northern Ireland Countryside Survey (Broad Habitat Types).

Northern Ireland is leading the way in terms of setting a baseline for soil health. The Soil Nutrient Health Scheme (SNHS)[218] is a unique Northern Ireland wide soil testing programme designed to establish a verifiable baseline database of key soil nutrients by 2027. This baseline allows credible future measurement against the baseline to bring about change. The scheme opened in 2022 and is being made available to all farm businesses on a zonal basis by 2026. It aims to sample and analyse soil from at least 75% of the (approximately) 750,000 farmed fields in Northern Ireland to establish baseline levels of key soil nutrients. These nutrients are phosphorus (P), potassium (K), magnesium (Mg), sulphur (S), calcium (Ca), as well as pH (acidity) and soil organic matter. In addition, the scheme will provide baseline estimates of carbon stocks in farmed soils and above ground biomass such as hedgerows, trees and woody scrub.

[217] Section 32 of the Act

[218] Soil Nutrient Health Scheme Overview | Agri-Food and Biosciences Institute (afbini.gov.uk)

The proposed **Soil Quality Target** is:

By 2027, to have at least 75% of Northern Ireland agricultural fields soil sampled and analysed to form a baseline of key soil nutrients from which further and more refined targets in respect of soil nutrient health can be considered.[219]

Individualised soil nutrient and carbon information will be provided to farmers at field scale. Farmers will also receive maps, created using Light Detection and Ranging (LiDAR) technology, which highlight areas where there is a high risk of nutrient run-off to watercourses. DAERA's College of Agriculture, Food and Rural Enterprise (CAFRE) will provide farmers with training that will help them interpret their data and prepare a nutrient management plan. This will empower farmers to make informed decisions about managing their land to improve future soil health, water quality, biodiversity and carbon sequestration.

To ensure the baseline is verifiable, soil samples are being collected and analysed uniformly and independently by contractors, working under the direction of the Agri-Food and Biosciences Institute (AFBI). These contractors were appointed to carry out this work following a public procurement process.

Measuring these baselines is the beginning of Northern Ireland's journey to understanding the nutrient status of our soils. This will allow us to plan the future steps we need to take to assist farmers and landowners to measure and improve other soil health parameters. Through the Soil Nutrient Health Scheme, we plan to establish if soil organic matter can be a successful target for soil quality and what other aspects of soil health need to be built into target setting in the future. Once we have this baseline, clear targets can be set against which soil health can be enhanced or maintained. We see target setting as an iterative process, built upon over time as our evidence base and understanding develop. We will continue to keep our targets framework under review. A continuous programme of monitoring will be required thereafter, to measure change and track progress towards achieving the targets set.

There are currently no UK-wide set indicators for soil health. We are therefore developing a soil health indicator project, funded by DAERA alongside a Land Use for Net Zero (LUNZ) Hub project across the devolved governments. The project recognises that a 'one size fits all approach' for a soil health indicator would not be suitable as different metrics are required for reporting at national and on-farm level. The project will consider the significant challenges to developing benchmarks for indicators that arise, due to inherent differences in both the baseline and capacity to improve soil indicators between soil types, land uses and climate.

[219] Soil Nutrient Health Scheme | Agri-Food and Biosciences Institute

8.3 Biodiversity

Biodiversity is the variety of life found on Earth. It includes all species of plants, animals and micro-organisms and the habitats in which they live. It underpins our lives and livelihoods and supports the functioning and resilience of ecosystems. These are the complex interdependent natural systems that support all forms of life within them in every part of our natural world, including woodlands, forests, mountains, agricultural landscapes, wetlands, rivers, lakes and oceans. Our economy, health and wellbeing depend on healthy, resilient ecosystems that provide us with our food, clean water and air. They also provide us with raw materials and energy for our industries and can deliver protection against hazards such as floods. Healthy biodiversity plays a key role in regulating climate, reducing GHG emissions, sequestering carbon, reducing flooding risk and building climate resilience.

Biodiversity loss is accelerated by climate change, and climate change is exacerbated by biodiversity loss. The UN's frameworks on biodiversity[220] and climate change[221] are closely aligned and recognise the importance of tackling biodiversity loss and climate change together. Nature can provide solutions to reduce risks such as flooding and increasing temperatures, which means that creating and restoring biodiverse habitats both on land and in our seas can lock up carbon, as well as help us to adapt to climate change. More detail is provided in the Nature-based Solutions chapter.

The Kunming-Montreal Global Biodiversity Framework under the Convention on Biological Diversity, which was agreed in December 2022, sets targets for nature and reversing biodiversity loss. At a Northern Ireland level, the Environmental Improvement Plan proposes that a "thriving, resilient and connected nature and wildlife" should be a strategic environmental outcome. In parallel, DAERA is developing (on behalf of the Executive) a Nature Recovery Strategy for Northern Ireland which will provide a local framework for halting and reversing the loss of biodiversity. It is imperative that there is clear alignment between the draft Climate Action Plan and the strategies for environmental improvement and nature recovery.

The desired outcome for biodiversity, in the context of climate action, can be described as a climate resilient landscape and seas. Resilience is the capacity of a socio-ecological system to cope with a hazardous event or disturbance, responding in ways that maintain its essential function, identity and structure, while also maintaining capacity for adaptation, learning and transformation.[222]

Landscapes and seas, therefore, could be said to be climate resilient if ecosystems can continue to maintain their ecological function, recover from losses and improve for the future, even with increased climate stress and more frequent climate events.

[220] Convention on Biological Diversity

[221] United Nations Framework Convention on Climate Change

[222] IPCC, 2014: Summary for policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change

Measuring this resilience and how it relates to achieving the carbon budget is not quantifiable for most ecosystem types. However, it is widely accepted that higher quality ecosystems are better carbon sinks than degraded ecosystems, and larger well-functioning natural ecosystems mean a larger carbon benefit.

To improve climate resilience, our spaces for nature need to be bigger, better, and more connected. The proposed biodiversity target in this draft Climate Action Plan reflects an interim target to set us on the path to achieving the apex Global Biodiversity Framework target for 2030 which calls for the effective protection and management of the world's terrestrial, inland water and coastal and marine areas by the year 2030. The proposed target is to improve the condition of existing protected sites and to increase the terrestrial, inland water, coastal and marine areas protected for biodiversity (working towards the protection of 30% of terrestrial, inland water, coastal and marine areas by 2030, the "30x30" target in the Global Biodiversity Framework).

The proposed **Biodiversity Target** is:

By 2027, to have 65% of designated features in protected sites to be in or approaching favourable conservation condition, and at least 12% of all land, freshwater and marine environments effectively conserved, managed and well connected for nature.

Favourable conservation condition describes the situation in which a habitat or species is thriving throughout its natural range and is expected to continue to thrive in the future. It includes all occurrences of a habitat or species, both those in the wider environment and those in protected sites.

Actions within the Sector Policies and Proposals Chapter: Land Use, Land-Use Change and Forestry also provide a significant opportunity to contribute to achieving this target, improving biodiversity across Northern Ireland. These actions relate to improving ecosystem function by restoring peatlands, expanding forests and woodlands, and improved land management and agri-environment schemes, helping to create a stable natural environment that will also benefit our health and wellbeing, whilst having a positive impact on our economy, including through the creation of green jobs.

8.4 Air Quality

Good air quality is vital for human health and the health of our environment. Air quality in Northern Ireland has improved substantially in recent decades. Concentrations of sulphur dioxide (SO_2), a pollutant associated with coal and oil combustion, have declined significantly since the 1990s. An overall decreasing trend in nitrogen dioxide (NO_2) concentrations is also observed at many monitoring sites in Northern Ireland over the past decade. However, new pollutants of concern continue to emerge, such as fine particulate matter. A continued effort to reduce air pollution is therefore important, together with monitoring to assess progress and to provide sound, science-based input into policy development.

Particulate matter (PM) has been identified as the most appropriate pollutant for incorporation into this draft Climate Action Plan. Particulate matter (PM) can be classified as either PM_{10} (particles less than 10 micrometres in diameter), or $PM_{2.5}$ (particles less than 2.5 micrometres in diameter). Both PM_{10} and $PM_{2.5}$ can act directly as a respiratory irritant in the airways. For $PM_{2.5}$, because of the small size of these particles, they may cross from the lungs into the bloodstream, where they can have more indirect systemic effects, such as increasing the risk of cardiovascular disease and stroke. The main sources of PM that we find in the air in our towns and cities comes from industrial combustion, domestic combustion and road transport.

The Air Quality Standards Regulations (Northern Ireland) 2010[223] set annual average limit values and targets for PM_{10} and $PM_{2.5}$. These Regulations[224] explain 'limit values' as a level of the particular pollutant that is not to be exceeded. The Regulations also require that NICS departments ensure that concentrations are maintained below the limit values set out in the Regulations.[225] There is also a reference to sustainable development, which recognises that as society continues to develop, there is a risk to the environment and human health as a result of those activities. The inclusion of limit values provides a 'ceiling' above which ambient concentrations must not exceed. The Air Quality Standards Regulations (Northern Ireland) 2010 also use 'target values' which require only, that measures which are not disproportionately costly are taken to ensure that concentrations of the pollutants listed in these Regulations[226] are not exceeded.

In recognition of the different approaches taken in developing limit and target values and objectives, and different degree of measures/mitigation required to meet these, we are considering the feasibility of implementing new regulations that would bring into operation tighter annual average limits/targets/objectives for $PM_{2.5}$ and PM_{10}.

[223] The Air Quality Standards Regulations (Northern Ireland) 2010 (legislation.gov.uk)

[224] Section 18(2)

[225] Schedule 2

[226] Schedule 3

The proposed **Air Quality target** is:

In 2025, DAERA will engage with other departments and key delivery organisations, with a view to considering the feasibility of implementing new regulations that would bring into operation tighter annual average limits/targets/objectives for $PM_{2.5}$ and PM_{10}, in line with interim target 4 of the World Health Organisation Air Quality Guidelines 2021 of 10 and 20 ug/m^3 respectively.

Collaborative work will be required, along with implementation of measures by departments to ensure that any change in legislation can be delivered. In addition to this, and to improve air quality across Northern Ireland, DAERA is developing Northern Ireland's first Clean Air Strategy. In autumn 2020, a Discussion Document[227] was issued for public consultation. A synopsis of the responses was published in June 2022 along with the Discussion Document. An inter-departmental working group has been established to further develop proposals and identify policies for cross-departmental consideration and inclusion within the final strategy.

If brought in, it is envisaged that these tighter annual average limits/targets/objectives for $PM_{2.5}$ and PM_{10} would be applied as a target in the next Climate Action Plan.

8.5 Nature-based Solutions

The importance of tackling biodiversity loss and climate change together has been described in the Biodiversity section – we must prioritise measures which can deliver for both nature and emissions reduction. These measures are known as Nature-based Solutions (NbS). The International Union for the Conservation of Nature defines NbS[228] as *"actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human wellbeing and biodiversity benefits."*

Nature-based Solutions will create thriving habitats and ecosystems which reduce emissions, whilst also providing a landscape and marine environment which is more resilient to the impacts of climate change. The important role of NbS was recognised in the Glasgow Climate Pact[229] which highlighted the interlinkages between climate change and biodiversity which provide both climate adaptation and mitigation benefits.

[227] A Clean Air Strategy for Northern Ireland – Public Discussion Document | Department of Agriculture, Environment and Rural Affairs

[228] Informing the global standard for Nature-based Solutions

[229] Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on its second session, held in Glasgow from 31 October to 12 November 2021. Addendum (unfccc.int)

It is a legal requirement of the Act[230] that, where practicable, the policies and proposals within the Climate Action Plan should support and use nature-based projects, whether alone or as part of other types of action. To support departments in enhancing their understanding of NbS to reduce emissions, DAERA co-hosted a workshop with the Royal Society for the Protection of Birds (RSPB) in September 2023. This workshop was attended by representatives from across departments and examined themes such as peatland and tree planting, blue carbon, urban green infrastructure, greenway development and the economics of NbS.

NICS departments have been working collaboratively with academics and stakeholders to identify how nature-based projects can be integrated into policy making to fulfil this legal obligation. Examples of how NbS have been incorporated into policies and proposals for emission reductions across a range of sectors are set out below. As departments continue to develop expertise on NbS to address climate change, policies and proposals will be refined and enhanced to maximise benefit to nature and biodiversity.

Examples of Nature-based Solutions

1. **Peatland Restoration in Co Antrim**
   Approximately 12% of Northern Ireland is covered by peat bogs,[231] however, much of this is in a degraded state. Therefore, it provides few of the ecosystem services that it should normally support, including carbon sequestration. Due to the state of degradation, peatlands in Northern Ireland are now emitting carbon and are one of the largest contributors to our GHG emissions profile. However, restoring peatlands exemplifies a Nature-based Solution that will have a substantial impact on combatting climate change. One such project can be seen on the Garron Plateau in Co Antrim, where Northern Ireland Water has undertaken peatland restoration. Since 2013, it has restored 1,188ha of rare blanket bog.[232] This has improved habitat for wildlife, reduced carbon emissions and provided better quality raw water for treatment, including regulating water levels in drought periods. Importantly, it is now actively sequestering c.1992 tonnes of carbon per year.

2. **Agri-environment Schemes**
   The Environmental Farming Scheme is the existing voluntary Agri-Environment Scheme for farmers and landowners offering support for a range of environmental actions that mainly aim to enhance biodiversity, improve water quality and mitigate climate change. A number of measures include tree planting which contributes to carbon sequestration.

[230] Section 34 of the Act

[231] Northern Ireland Peatland Strategy 2022-2040

[232] NI Water - Climate Change - Peatland Restoration

The scheme commenced in 2017 and during the lifetime of the scheme, 401 kilometres of tree boundaries have been enhanced, 591 kilometres of new hedgerows have been planted and 28 kilometres of riparian buffers have been created and planted with trees. In addition, 37.96 hectares of agroforestry, 174.1 hectares of native woodland under five hectares and 24.4 hectares of traditional orchards have been created. It is estimated that 466,303 trees have been planted across all wider level agreements and 89,456 trees planted across all higher-level agreements. Over 100 years these trees could sequester 127,174 tonnes and 24,397 tonnes of carbon respectively.

The Farming with Nature Package, being developed as part of the Sustainable Agriculture Programme, will focus on actions to reverse the trends in nature decline by creating and restoring habitats and improving biodiversity in line with the goals and targets of the Northern Ireland Nature Recovery (Biodiversity) and Peatland Strategies and the UN post 2020 Global Biodiversity Framework[233] agreed by the Convention on Biological Diversity. Eligible farmers or land managers will receive payments as part of this voluntary scheme, to manage land to achieve environmental outcomes. This includes carbon sequestration actions such as hedge and tree planting in addition to various other actions supporting biodiversity.

3. **Nature in the Prison Estate**
   At HMP Magilligan in Limavady, nature and carbon sequestration are being incorporated within the lands surrounding the prison. Approximately 40,000 trees are in various stages of growth from seedlings to two years. Varieties include oak, alder, Scots pine, chestnut and beech. In autumn 2022, 27,000 seedlings were collected from forests across Northern Ireland. All seeds planted are from indigenous species of trees and certified by DAERA. In 2022, 7,000 trees were placed in the Magilligan locality, including at a local river to support climate adaptation by preventing erosion from a riverbank. This initiative is scheduled to continue with prisoners collecting seeds from the local forests to replant and help Northern Ireland sequester more carbon.

4. **Northern Ireland Housing Executive (NIHE) Supporting Nature-based Solutions**
   The latest NIHE Sustainable Development Strategy[234] makes an explicit commitment to develop a bespoke Nature Positive Strategy to create more nature-positive communities. NIHE intends to promote rewilding on the NIHE estate to enhance habitat provision, subject to community education and consultation and will also deliver a programme of tree planting. The NIHE will maintain their amenity gardens, lawns and grounds in ways that promote biodiversity and minimise environmental impact, for example by maintaining black top hard surface areas by non-chemical means.

[233] First draft of the post-2020 global biodiversity framework (cbd.int)

[234] Corporate Sustainable Development Strategy and Action Plan (2022-2027) (nihe.gov.uk)

5. **Protecting Nature in Road maintenance**
   In 2022, DfI undertook a review of its policy on grass cutting and verge management, placing a greater emphasis on environmental protection and biodiversity enhancement. The revised policy was adopted and requires less grass cutting where safe to do so and delivers increased environmental value of road verges through promoting rewilding, therefore optimising the available biodiversity resource. In addition, the revised policy endeavours to further increase the number of 'Don't Mow Let it Grow' sites and biodiversity enhancement projects on the Northern Ireland road network. The policy will also promote pollinator friendly management of our soft estate. DfI also plans to identify further areas of land on the network for the creation of wildflower meadows or tree planting with the aim of improving biodiversity.

6. **Nature in the Health Estate**
   The Department of Health and its arm's length bodies (ALBs) are to consider opportunities for biodiversity enhancement within the health estate. Promoting biodiversity action for health estates should recognise the variety in both the landscapes and size of the properties that make up the estates. Guidance principles and examples to inform action and best practice through a suite of case studies will be explored to promote further action in this area.

7. **Protecting and restoring blue carbon habitats**
   Blue carbon is the term used to describe the carbon captured and stored by coastal and marine ecosystems. Blue carbon habitats include saltmarsh, seagrass beds, shellfish beds, kelp and marl beds and such habitats have the potential to be managed to increase their carbon sequestration. Not only do these habitats contribute to climate change mitigation; they offer wider high-value ecosystem services such as protection against coastal erosion and flooding, provide habitats to support wider biodiversity and nursery grounds for commercially important fish species. They also provide wider societal benefits, including opportunities for recreation, improved health and improved water quality. DAERA is working with stakeholders to co-design a blue carbon action plan for the protection and restoration of blue carbon habitats in Northern Ireland.

SECTION THREE

Climate Action Plan Delivery

3

9. Governance for Delivery

9.1 Introduction

The objective of this Climate Action Plan is to reduce our emissions in Northern Ireland by 2027 to set us on the pathway to net zero. Identifying policies and proposals is only part of the task. We will only meet our carbon budget if we can successfully deliver the policies and proposals we have identified. Achieving this will require ongoing commitment and prioritisation of this work, shared ownership and cross-departmental working, and appropriate levels of oversight and scrutiny to keep us on track. Managing this implementation process will mean establishing appropriate governance structures within government, creating new statutory oversight bodies and working in partnership with existing independent oversight bodies. We are committed to working collaboratively with, and learning from, others as we progress through this important journey.

9.2 Climate Action Governance in Government

Delivering the policies and developing the proposals identified at the pace and scale required to meet the 2023-2027 carbon budget will be challenging. It will require effective cross-government ownership and collaboration and a willingness to make decisions which ensure sufficient capacity to deliver commitments. Fit for purpose governance structures to support this work will be essential.

A Climate Action Plan Delivery Programme Board will be established to direct the delivery of policies and proposals included in the Climate Action Plan. The membership will comprise sector and departmental leads from relevant departments. The Senior Responsible Owner (SRO) will be the Department of Agriculture, Environment and Rural Affairs (DAERA) Director of Climate Action and will ensure that the Board fulfils its responsibilities, including cross-government collaboration, ownership and good governance; considering monitoring and reporting information; resolving issues; and recommending corrective action to keep progress on track. The cross-departmental Evidence and Analysis Group will continue to support the provision of robust evidence, analyses and advice to inform the implementation of Northern Ireland's first Climate Action Plan.

The Green Growth and Climate Change Strategic Oversight Group will coordinate, direct and oversee progress on implementation of the Climate Action Plan. The Group is comprised of Deputy Secretaries from all departments. Chaired by the DAERA Permanent Secretary, it will provide direction and leadership and ensure strategic alignment of work. Suitable governance arrangements are being established within departments to support the delivery of respective departmental responsibilities.

The Green Growth and Climate Change Strategic Oversight Group may escalate significant delivery challenges, risks and issues to the Permanent Secretaries[235] for consideration and resolution.

[235] Permanent Secretaries Stocktake | The Executive Office

Ownership of the Climate Action Plan will be at Northern Ireland Executive level given its cross-cutting nature, significance in terms of public service delivery, budget and far-reaching impact on society.

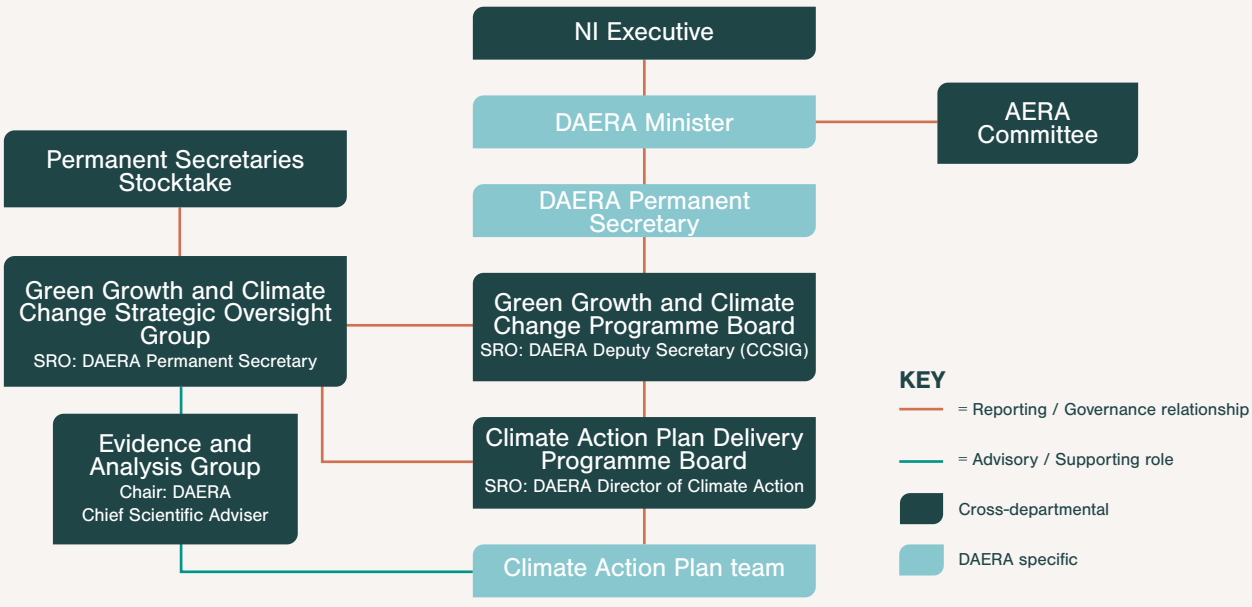
In addition, a series of sector-specific and thematic groups may be established, to focus on delivery of cross-cutting actions.

As DAERA is the lead department on climate change, the Committee for Agriculture, Environment and Rural Affairs (AERA Committee) will hold the DAERA Minister to account for delivery of DAERA's responsibilities in respect of the Climate Action Plan, in addition to the delivery of DAERA sector policies and proposals. Other relevant departmental committees will hold relevant Ministers to account in respect of the delivery of sector policies and proposals and departmental input.

The NICS Chief Scientific and Technology Adviser (CSTA) complements the DAERA and Department of Health (DoH) Chief Scientific Advisers in providing additional science and technology capability to the wider NICS. The CSTA enhances the support for Climate Action Plan delivery and assists in building further skills and capacity in areas such as behaviour change, analytics and science.

The Climate Action Plan team in DAERA will work closely with departments to facilitate collaborative working and knowledge sharing; to monitor implementation of policies and proposals; and to report on progress to the Green Growth and Climate Change Programme Board, in line with agreed reporting requirements and frequencies.

Figure 30: Climate Action Plan delivery governance



9.3 Northern Ireland Climate Commissioner

The Act[236] has placed a statutory duty on The Executive Office (TEO) to establish the office of a 'Northern Ireland Climate Commissioner' under new legislation. The primary purpose of the Commissioner is to oversee and report on the operations of the Act. No further detail is given on how these functions should be undertaken or what powers the Commissioner will require to discharge their functions effectively. Instead, the Act notes that detail on how oversight and reporting functions of the Commissioner should be carried out may be included within the legislation. Work on this new policy requirement is at an advanced stage.

The Act states that the first draft of the new legislation, or regulations, must be laid before the Northern Ireland Assembly within two years of the date when the legislation came into effect. In practice, this meant that the first draft of the regulations should have been laid in the Northern Ireland Assembly by 6 June 2024.

As has been noted elsewhere within this Climate Action Plan, work on the requirements regarding the Commissioner commenced during a period of political uncertainty which had implications on the ability to make decisions on this new policy responsibility. Whilst significant progress was made, our ability to meet the timeframes set by the Act has been impacted. As required by the legislation, the regulations to establish the office of the Northern Ireland Climate Commissioner required approval by the Assembly before they could be made. Those regulations were laid in the Northern Ireland Assembly in January 2025 and debated and approved by the Assembly on 8 April 2025.

Through development work, a number of key themes for the Commissioner emerged which an incoming Commissioner will need to be mindful of, as their Office is established and embedded over coming years.

To maximise effectiveness and efficiency, there is also a need to ensure collaboration and mutually beneficial relationships and to avoid duplication with other statutory bodies which exist to oversee the delivery of climate action, notably the Climate Change Committee (CCC) and the Office for Environmental Protection (OEP). Establishing formal links between bodies to clarify roles and responsibilities will help to reduce unintended consequences in terms of ensuring value for money, clarity of policy and public messaging.

9.4 Just Transition Commission

The Act[237] also requires that DAERA establishes a Just Transition Commission for Northern Ireland. This Commission will be responsible for overseeing the implementation of the just transition elements of the Act and for providing advice to NICS departments on how to ensure that proposals, policies, strategies and plans comply with the just transition principle.

[236] Section 50 of the Act

[237] Section 37 of the Act

The public and other stakeholders need to have confidence that the Commission and its work are independent of government and the Commission is free to scrutinise policies and hold departments to account. The oversight function performed by the Commission and the advice it provides will help departments to realise the objectives the just transition principle aims to achieve. These objectives include supporting persons who are most affected by climate change, supporting jobs and the growth of jobs that are climate resilient and environmentally and socially sustainable, and reducing (with a view to eliminating) poverty, inequality and social deprivation.

The Commission will be set up as an independent body with a chairperson and members who will be recruited in accordance with the Commissioner for Public Appointments for Northern Ireland (CPANI) Code of Practice.[238]A consultation on the draft regulations that will establish the Commission was held between 11 November 2024 and 20 January 2025. The consultation sought views on a number of aspects including the type of public body the Commission should be and if any sectors should be represented on the Commission in addition to those mandated by the Act,[239]for example, energy and transport sectors.

Work has already commenced to ensure there is secretariat support in place to help the Commission deliver on its agreed functions once established. When the regulations come into operation, work will continue to recruit members to the Commission who can provide expert advice and support to departments. Ensuring a just and fair transition, through maximising the social and economic benefits for wider society and expanding the opportunities of taking action on the climate and decarbonisation, is essential to ensure the transition is successful for all of our communities and future generations; the Just Transition Commission will play an integral role.

Once established, the Commission may choose to conduct an oversight review of the first Climate Action Plan and provide advice to departments on the delivery of policies and proposals within the plan. The Commission will be in a position to work with departments to inform the development of subsequent Climate Action Plans.

The Commission will have the autonomy to consider how it carries out its functions. However, it is envisaged it will not work in isolation and will interact with stakeholders, academics, businesses and the community and voluntary sector, as well as other public bodies and organisations, such as the Northern Ireland Climate Commissioner, the Office for Environmental Protection, the Climate Change Committee and Just Transition Commissions in other jurisdictions.

[238] Code of Practice for Ministerial Public Appointments in Northern Ireland | The Commissioner for Public Appointments for Northern Ireland (publicappointmentsni.org)

[239] Section 37(4) identifies representatives from agriculture and fisheries sectors; academia; trade unions; youth groups; civic society; and environmental groups

9.5 Climate Change Committee

The CCC[240] is the UK's independent adviser on climate change and is responsible for providing expertise and guidance to the UK and devolved governments on emissions targets. The CCC plays a key role in overseeing how Northern Ireland goes about reducing emissions in line with targets set in legislation.

DAERA is required to seek the advice of the CCC when setting carbon budgets (or setting or amending emissions reduction targets) and to take this advice into account. The CCC has a number of additional roles:

- Provide advice, analysis, information and other assistance, when requested, on targets or budgets adopted;
- Provide advice, analysis, information and other assistance, when requested, on climate change generally;
- Provide advice about any proposals put forward by DAERA to make regulations as provided for in the Act;[241]
- Report on progress on meeting the carbon budgets and interim emissions targets;
- Report on Northern Ireland's climate change adaptation programmes.

9.6 Office for Environmental Protection

The Environment Act 2021[242] established a new independent environmental oversight body, the OEP, to hold public authorities to account for their implementation of environmental law. It operates as an independent environmental oversight body across England and Northern Ireland, a role previously undertaken by the European Commission.

The OEP has four main functions in Northern Ireland:

- Scrutinising environmental improvement plans;
- Scrutinising Northern Ireland environmental law and its implementation;
- Advising on proposed changes to Northern Ireland environmental law and other matters relating to the natural environment; and
- Investigating and enforcing serious breaches of relevant environmental law by public authorities.

The OEP will exercise its functions, overseeing implementation of the Climate Action Plan insofar as it impacts the natural environment. The Northern Ireland Climate Commissioner will have primary oversight and reporting responsibilities for the Act and, as the powers of the Commissioner are developed, care will be taken to avoid an overlap with the OEP's remit. The OEP's strategy[243] sets out how it intends to avoid

[240] CCC was established under Section 32 of the Climate Change Act 2008

[241] Sections 56, 57 and 58 of the Act

[242] Environment Act 2021 (legislation.gov.uk)

any overlap between its functions and those of the CCC and, while it is under no statutory obligation to do so (as the Environment Act predates the Climate Change Act (Northern Ireland) 2022), the OEP strategy states, *"We will work to establish similar relationships with the Northern Ireland Climate Commissioner when appointed under the terms of the Climate Change Act (Northern Ireland) 2022".* The strategy also includes an enforcement policy that sets out how the OEP intends to exercise its enforcement functions in a way that respects the integrity of other statutory regimes that may be relevant.

There is a statutory Memorandum of Understanding (MOU) between the OEP and CCC, and voluntary MOUs between the OEP and other UK governance bodies. It will be for the OEP and the Commissioner, as independent bodies, to determine what formal arrangements, if any, are required in respect of the Climate Action Plan.

CHAPTER 9: SUMMARY OF GOVERNANCE FOR DELIVERY ACTIONS

Working with relevant bodies, we will continue to develop a fit for purpose governance arrangement to oversee the delivery of the Climate Action Plan. Key actions include:

1. During 2025, DAERA, working in partnership with other departments, will establish fit for purpose cross-departmental governance and support structures to facilitate delivery of our carbon budget and emissions targets;
2. During 2025, DAERA will make regulations to establish the Just Transition Commission, following consultation with the public;
3. During the carbon budget period, DAERA will continue to engage with the CCC to obtain their expert independent advice as we seek to progress the delivery of policies and proposals set out in this plan and work towards delivery of our targets;
4. During the carbon budget period, DAERA will work with the OEP to ensure clearly defined roles of the oversight bodies and a coherent approach to managing the climate and the environment.

[243] Office of Environmental Protection - Our Strategy

10. Monitoring and Reporting

10.1 Introduction

The Act sets ambitious targets to reduce emissions. Monitoring and reporting on the implementation of policies and proposals and the resulting impact on emissions reduction will be an essential element of tracking progress towards achieving the 2023-2027 carbon budget and meeting interim targets set for 2030 and 2040. We will ensure a robust monitoring framework is in place to keep us on our net zero pathway. This framework will adapt to an evolving policy context, new data and emerging solutions. We will ensure a transparent approach to reporting that provides meaningful information and encourages participation from partners and stakeholders seeking to support our journey towards decarbonisation.

10.2 Statutory Monitoring and Reporting Requirements

Table 26 sets out specific statutory monitoring and reporting activities[244] to chart progress and achievements in meeting the first carbon budget and interim emissions targets.

Table 26: Specific statutory monitoring and reporting activities

Report	Deadline	Requirements
Interim progress report on carbon budget period	End of 2025	• DAERA must publish a report to set out progress made in implementing policies and proposals during the carbon budget period. • Departments must provide information on progress to inform the report. • The report must be laid before the Assembly.

[244] Sections 38-41 of the Act

Report	Deadline	Requirements

Final statement for carbon budget period	End of 2029	• DAERA must report on:
		  • total GHG emissions;
		  • total amounts of removals;
		  • total amount of net emissions (emissions - removals);
		  • information on any carbon credits/ debits or carbon amounts carried back or forward;
		  • whether the carbon budget for the period has been achieved and explain why; and
		  • progress on the implementation and impact of each sector's policies and proposals on the carbon budget based on information provided by departments (by September 2029).
		• The statement must be laid before the Assembly.

	March 2030	• In the event that a carbon budget is not met, policies and proposals from departments to compensate for excess emissions must be set out. • These must be laid before the Assembly.
Statements on compliance with emission targets	End of 2032, 2042 and 2052	• DAERA must produce final statements on the 2030, 2040 and 2050 interim emission targets. This will be informed by the GHG Inventory for these periods. • The content is the same as that required for final carbon budget statements. • The statements must be laid before the Assembly.

Climate Change Committee Reports

The CCC will also provide DAERA with its views on progress towards meeting the emissions targets and carbon budgets and any further measures that should be taken.[245]These reports will also be laid before the Assembly and DAERA must respond to points made within six months, with assistance from all departments.[246]

[245] Sections 43 of the Act

[246] Sections 47 of the Act

10.3 Monitoring and Reporting Framework

To allow effective monitoring of the implementation of policies and proposals and their impact, a monitoring and reporting framework, informed by best practice, is being developed to:

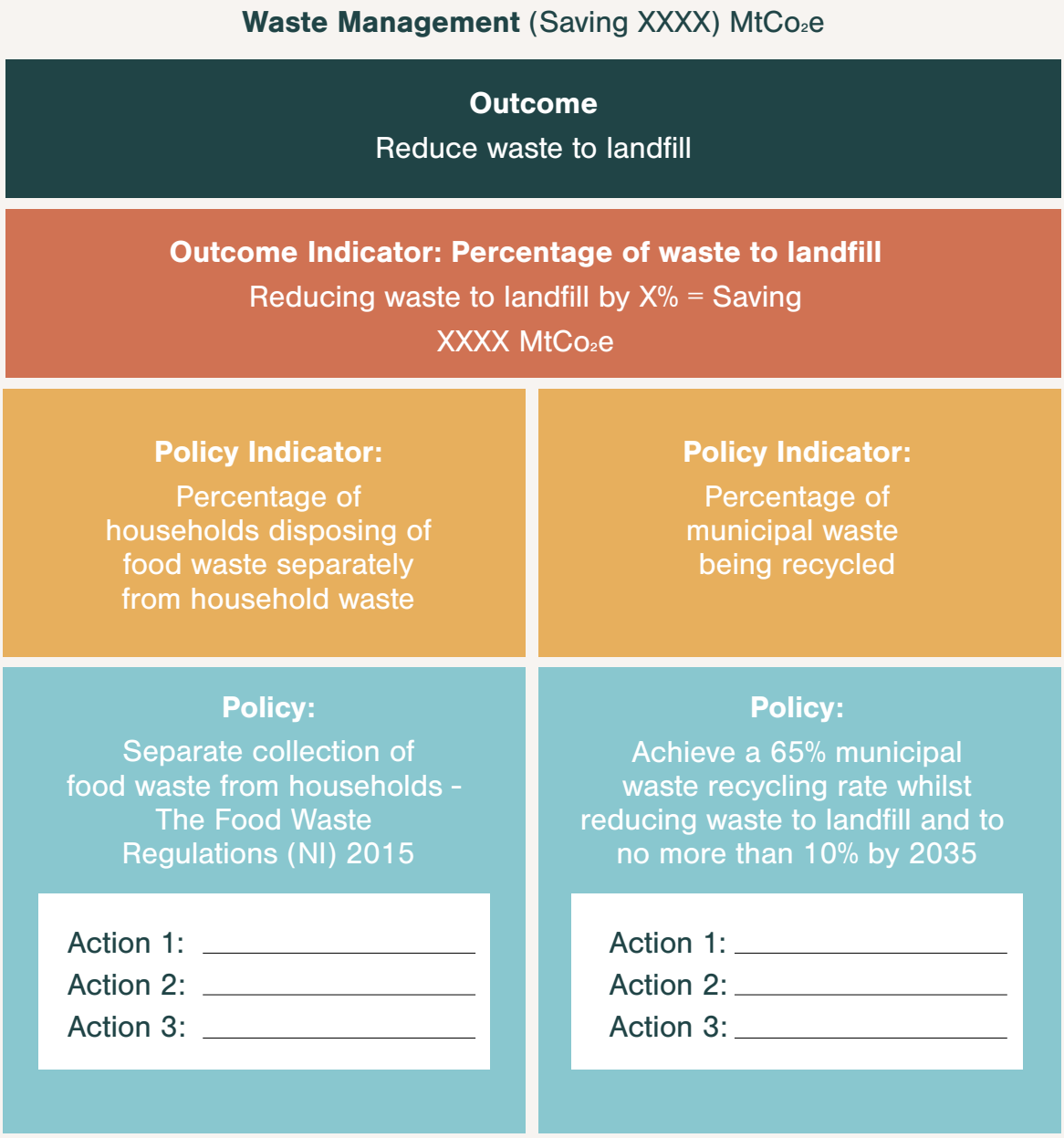
- satisfy the requirements of the Act;
- ensure rigor and effectiveness;
- facilitate accountability and transparency;
- promote improvements and corrective action where required; and
- be accessible and of value to stakeholders who use it.

The CCC has highlighted the need to ensure clear links between progress in implementing sector policies and emissions reductions achieved. Therefore, we propose to adopt four reporting levels for each sector, as outlined below.

- **Sector Emissions Savings:** at the highest level, total emissions savings will be reported for the sector;
- **Outcome Indicators:** will measure the progress which is being made towards achieving that outcome. Where possible, an estimated $MtCO_2e$ saving will be provided alongside each outcome indicator e.g. 'Reducing waste to landfill by x% will reduce emissions by x.xx $MtCO_2e$';
- **Policy Indicators:** outcomes would be achieved through delivery of associated policies and proposals. Policy indicators will measure the impact of these policies e.g. percentage of households where food waste is collected separately from household waste.
- **Actions:** to measure progress on implementing the activities that are required to achieve delivery of policies and proposals.

Figure 31 illustrates the proposed monitoring and reporting framework, showing the linkages between reporting levels. This approach links the impact of policies and proposals to emissions reduction targets for each sector. Progress on implementing actions – even those which do not have a direct, measurable impact on emissions reductions – will be monitored and reported on to provide increased transparency and accountability. This approach enables us to monitor 'early indicators of change' to ensure we are on track.

Figure 31: Proposed monitoring and reporting framework



N.B. Whilst the policies included in this illustrative example are taken from policies included within the waste management chapter, the 'Outcome', 'Outcome Indicator' and 'Policy Indicator' have been included for illustrative purposes in this example to demonstrate what monitoring and reporting processes could look like. Departments within the Northern Ireland Civil Service are currently working to develop bespoke 'Outcomes', 'Outcome Indicators' and 'Policy Indicators' for the sectors they are responsible for; these will be used and included in future Climate Action Plan monitoring reports.

10.4 Monitoring and Reporting Procedure

Through further development of the monitoring and reporting framework, departments will identify early indicators of progress that will help to signal whether the rate of change across policies is on track so that timely corrective action can be taken. This will be particularly important for policies where emissions savings will not be evident for many years. In addition, we will consider indicators to track progress made in essential enabling themes such as skills, planning, innovation, investment and governance.

Interim and final progress reports will be produced based on up-to-date information provided by all departments. Reports will be scrutinised by the Climate Action Plan Delivery Programme Board. This will ensure that cross-cutting issues are considered when determining additional or corrective action needed. Once agreed by the Board, reports will be sent to the DAERA Minister and, subsequently, presented to the Northern Ireland Executive before being laid before the Northern Ireland Assembly and shared with relevant bodies including the Northern Ireland Climate Commissioner and the Just Transition Commission.

CHAPTER 10: SUMMARY OF MONITORING AND REPORTING ACTIONS

DAERA will continue to develop a fit for purpose monitoring system to track progress in the implementation of policies as set out in this draft Climate Action Plan.
Key actions include:

1. By early 2025, finalise a climate action reporting cycle which details information and data required, including outcomes, indicators and actions for each sector;
2. During the carbon budget period, identify areas where data is missing or limited and seek to fill those gaps, taking account of emerging data sources;
3. By June 2025, develop a platform to track and collate data received and present progress on policies; and
4. During the carbon budget period, engage with stakeholders to ensure that Climate Action Plan progress reports and statements are communicated and presented in a clear and meaningful way.

11. Public Sector Leading by Example

11.1 Introduction

The public sector is critical to the successful delivery of this draft Climate Action Plan – influencing and enabling positive behaviours, driving change and acting as a leader on climate action and low carbon innovation. We are committed to forging a net zero pathway by delivering vital public services in a way that reduces emissions, reduces waste and uses scarce resources more sustainably. We will pursue a net zero approach across all sectors of our economy and society, leading by example by taking actions across our estate, fleets, procurement processes, energy use and our approach to service delivery. We recognise that transformation of public services will help us to maximise the opportunities these changes bring. During the carbon budget period, we will continue to build on the actions outlined in this chapter to ensure that we deliver on our climate duty.

Each Northern Ireland department is required to provide policies and proposals to comply with its statutory obligations.[247] The Sector Policies and Proposals chapter outlines policies and proposals to reduce emissions across sectors. In some cases, however, departments which do not lead sector input did not identify standalone policies or proposals to reduce GHG emissions for inclusion. Instead, these departments identified policies and/or actions that contribute to those wider sector policies and proposals that have been identified by sector lead departments.

11.2 Government Estate

Whilst the operation of the government estate contributes a relatively low proportion of overall emissions in Northern Ireland,[248] by adopting exemplar standards for buildings, we can lead by example to help establish and grow the skills and supply chains locally that will be required to minimise and mitigate the impacts of climate change in Northern Ireland.

The Department of Finance (DoF) is responsible for the management and strategic planning of the NICS Office Estate which includes ensuring that the estate meets the changing needs of the NICS and meets its energy efficiency targets. An ambitious estate review is ongoing to achieve a 40% reduction of the in-scope office estate, reduce its carbon footprint and support the journey towards decarbonisation. An NICS Office Estate strategy[249] was published which commits to a review of the carbon standards of all buildings and aims to deliver a greener estate.

DoF is continuing to develop the Government Land and Property Register (GLPR). This register consolidates data sources on land and property owned by departments and arm's length bodies (ALBs). Building on this work, government departments have funded the establishment, effective from April 2025, of a Strategic Assets Management Unit

[247] Section 29 of the Act

[248] The 'Buildings' sector covers residential and public buildings and accounts for 13% of Northern Ireland's GHG emissions (2022). Further detail is provided in the Public Buildings chapter including further information on the policies and proposals planned to reduce emissions.

[249] NICS Estate Strategy | Department of Finance

(SAMU) within Land and Property Services. Providing metrics and reports, the SAMU will assist them with strategic decision making on how best to utilise their land and property assets to reduce carbon emissions.

The Hybrid Working Policy, developed as a result of new ways of working in the NICS, was launched in December 2021 and implemented in June 2022. The policy promotes better work-life balance for employees, increased productivity and delivery of environmental benefits. The policy is currently being reviewed. Six Connect 2 hubs were opened in August 2022, allowing NICS staff to work remotely, whilst connecting people, technology and the office and offering an occasional alternative to working from home or in their designated workplace. The locations of the hubs were selected to coincide with key commuter routes.

Wider Public Estate

Elsewhere, the majority of departments and a number of their ALBs have already begun to implement climate and sustainability action plans. For example:

- DAERA's plan identifies over 40 actions to be delivered by 2027 across seven themes: people, carbon, energy, water, buildings, resources and biodiversity.
- The Department of Justice (DoJ) is working alongside its ALBs (including PSNI, the Northern Ireland Courts and Tribunals Service and Northern Ireland Prison Service) to implement a sustainability strategy and plans to transform its estate and contribute to emissions reductions through reducing energy consumption, transitioning to renewables, using smart technology and reducing travel, waste and water consumption.
- DoH has a Capital Development Policy to achieve BREEAM 'excellent' for all new schemes above a certain capital limit, subject to affordability, and to achieve BREEAM 'very good' for all refurbishment projects. DoH is developing an approach to enable the implementation of the NHS Net Zero Building Standard to align with other regions of the UK and drive further reductions in both the embodied and operational carbon of buildings.

Innovation is an important aspect of future climate action. Collaboration between the public sector and innovative businesses has been used to identify new solutions and technologies. For example, in March 2023, the Education Authority (EA) successfully completed a Small Business Research Initiative (SBRI)[250] Phase 1 proof of concept project which assessed the technical feasibility of deploying immersive, technology solutions to capture, baseline, track and report on carbon emissions across the EA's estate.[251] Phase 2 of the project concluded in March 2024, showing that the proof of concepts are scalable. Phase 2 was extended for a further seven months from September 2024 to March 2025 enabling a carbon reporting tool that can capture and record all carbon emissions across the education estate to be developed by the end of the project.

[250] SBRI - Capturing our Carbon Capital | Education Authority Northern Ireland

[251] EA's estate comprises more than 200 premises, 2,000 schools, nearly 600 school meals' kitchens and a fleet of more than 1000 vehicles.

11.3 Government Fleet

The Glasgow Declaration on Zero Emission Cars and Vans[252], to which the Northern Ireland Executive is a signatory, calls for "cities, states and regional governments to work towards converting owned or leased car and van fleets to zero emission vehicles by 2035 at the latest". The Department for Infrastructure (DfI) is coordinating implementation of this commitment in respect of the government fleet.

DfI and public sector partners are working towards increasing the number of net zero public sector cars and vans. Through the NICS Fleet Working Group chaired by DfI, a framework for vehicle decarbonisation is being developed and will be agreed with relevant stakeholders across NICS by June 2025. This will provide a roadmap for a targeted approach to decarbonisation based on individual departmental priorities for fleet replacement and the use of alternative fuels.

Departments and their ALBs have already begun to accelerate action on transitioning their fleets. Department of Education (DE), DoH ALBs and DoJ (including PSNI), for example, have sizeable fleets and have already started their transition to low and zero carbon vehicles. The Executive Office (TEO) is supporting modal shift and reduced emissions from transport as part of a travel plan for the Stormont estate.

Translink, our main public transport provider, is leading by example to decarbonise its bus fleet. Since 2019, 63% (880 vehicles) of its 1400 bus fleet have been replaced with low or zero emission alternatives. By the end of 2023, over 2.2 million miles of emissions-free bus travel were completed in Belfast City removing 4,174 tonnes of CO2 from the atmosphere.[253] In 2023, Translink's entire Foyle Metro fleet in Derry/ Londonderry was transitioned from diesel to zero emissions technology, making it one of the first cities in the UK to operate a fully zero emission urban bus service.

In 2025 the Translink fleet will consist of 247 zero emission vehicles which are in operation in Metro, Foyle Metro and Ulsterbus services. Translink's fleet strategy is to continue the introduction of zero emission vehicles as the current diesel vehicles reach the end of their operational life. This means that on average 110 zero emissions vehicles enter service each year. This strategy will enable Translink to deliver on its climate commitments and achieve a fully zero emission fleet by 2040.

Rathlin Island
DfI has been working with the Rathlin community to assist it in achieving its 2030 carbon neutral ambitions. Actions to date include assisting with the decarbonisation of transport provision through a community led electric car and electric bicycle scheme. DfI will continue to work with island residents to produce a climate action plan, and will support, where possible, subsequent actions arising from this plan.

[252] COP26 declaration on accelerating the transition to 100% zero emission cars and vans - GOV.UK (www.gov.uk)

[253] Translink confirms 1.5 million miles (2.4m KM) of emissions-free bus travel last year

11.4 Government Spending and Procurement

Departments are committed to sustainable public procurement and DoF continues to update business case and procurement policy advice, including future-proofing measures, to recognise sustainability and contribute to wider green growth and net zero ambition.

This includes plans to publish updated business case guidance to aid the appraisal of environmental and climate impacts to ensure they are considered throughout the decision-making process. In addition, business cases to replace existing assets should include future-proofing measures that recognise sustainability and contribute to wider green growth and net zero targets.

The Act requires[254] that the provision of financial assistance, relating to the promotion of economic development and the provision of infrastructure, goods or services in Northern Ireland, is considered. To satisfy this requirement, subject to Executive agreement, we plan to introduce a Green Growth Test to ensure that climate action, the environment and green jobs are considered in the development of business cases for all programmes and projects for which there are public funding implications. This is currently a commitment in the draft Green Growth Strategy. This test will be applied to activities seeking to utilise central government funding, thus ensuring that the climate responsibilities are taken account of by local government, the private sector and voluntary and third sectors when doing so.

The Green Growth Test will require information relating to the impacts of a programme or project on climate, the environment and green jobs to be recorded and considered. Whilst the test is in the early stages of development, it is our intention that it will assist decision makers to make informed decisions that assess the balance of potential net positive and net negative effects and how they might be mitigated (if negative) or maximised (if positive) and will provide greater transparency and accountability regarding those impacts and how they will be managed. Subject to Executive agreement of the draft Green Growth Strategy, we will develop proposals for consideration by Ministers by the end of 2025.

In September 2022,[255] DoF published a construction toolkit to provide advice on the latest best practice techniques for public sector projects.[256] It collates practical resources on decarbonisation for those procuring construction and infrastructure projects and programmes and links to an extensive range of guidance on measures to reduce energy usage and improve the environment. In April 2024, DoF reviewed this toolkit and added adaptation questions for commissioners/procurement staff to address. DoF will continue to review and update this toolkit where necessary to support climate change and wider environmental ambitions. In June 2021, DoF published an Executive Procurement Policy on Scoring Social Value[257] which mandates the scoring of social value in departments' tenders. This included incorporating environmental considerations to deliver climate commitments and encourage contracts that support the delivery of net zero and environmental targets. A revised PPN 01/21

Social Value in Procurement[258] was agreed by the Executive on 5 December 2024 and has been effective since 24 February 2025. The social value themes have been revised to reflect the role public procurement has in delivering climate action. The commitment to embed social value has been strengthened and the revised policy requires departments to develop a social value strategy to align social value objectives to their procurement pipeline and to look for other opportunities to improve economic, social and environmental outcomes. DoF has developed a Social Value Strategy[259] to underpin its commitment to reducing carbon emissions through its procurement spend. This strategy sets out the social value goals and ambitions for DoF over the next two years focusing on the department's key responsibilities as owner of the NICS Office Estate and policy lead for finances, procurement and human resources.

Sustainable Medicines Prescribing

DoH is undertaking policy development on 'Valuing Medicines – A Strategy for the Sustainable Use of Medicines in Northern Ireland'. The Valuing Medicines Strategy (VMS) aims to inform improvements in the use of medicines within health and social care (HSC) to ensure they add value to health, are cost effective and sustainable.

A departmental steering group has been established, comprising stakeholders from various sectors involved in the use of medicines, including sustainable healthcare representatives.

One of the group's primary goals is to assess the environmental sustainability of current prescribing practices and medicine use in Northern Ireland and identify areas for improvement. The group is considering several recommendations that could be taken forward to reduce the environmental impacts of pharmaceuticals, including evaluation of anaesthetic gases, promoting the use of low carbon inhalers and other environmentally friendly medications, encouraging medicine waste recycling schemes, and reducing the packaging and waste associated with medicines.

[254] Section 33(j) of the Act

[255] Sourcing and Construction Toolkits | Department of Finance

[256] This is linked to guidance published by Government Commercial Function on Zero Carbon and Sustainability in construction.

[257] PPN 0121 Scoring Social Value [pdf version 06 Oct 2022].PDF (finance-ni.gov.uk)

[258] PPN 01 21 - Social Value in Procurement Word master.pdf

[259] Social Value Strategy 2025-2027

11.5 Energy Use

As the largest aggregated energy consumer in Northern Ireland, the public sector is well placed to demonstrate leadership on transitioning to renewable sources of energy and improving energy efficiency. The Energy Management Strategy for Central Government[260] (EMS), which was published in 2019, aims to accelerate actions to maximise energy efficiency in public assets and improve governance, accountability, strategic management and reporting arrangements. It sets out two key strategic objectives to establish effective energy management processes that unlock value and reduce net energy consumption by 30% by 2030 against a 2016/17 baseline helping to improve energy efficiency, drive downward pressure on costs and improve decarbonisation efforts.

In addition to this work to improve energy efficiency, a number of renewable energy generation projects are being progressed by departments to ensure that public sector land is utilised, where appropriate. For example, DoH, in conjunction with its ALBs, plans to map potential sites and complete feasibility studies for renewable generation on the HSC estate and; the Northern Ireland Fishery Harbour Authority plans to install solar panels on all its fish markets, commencing with Ardglass and Portavogie. DAERA Forest Service will consider the potential to utilise the public forest estate for onshore wind generation. This will progress previous work which identified significant scope to integrate wind turbines within forest areas, particularly in geographic locations where the grid network has potential to accommodate power generation and where power generation is most likely.

GeoEnergy NI Project
In June 2023, the Department for the Economy (DfE) and the Geological Survey of Northern Ireland (GSNI), supported by their specialist contractor, launched the GeoEnergy NI Project, which includes development of two geothermal demonstrator projects on the Stormont estate and CAFRE's Greenmount campus. These projects will assess the potential to use geothermal energy to provide low carbon heating (and cooling) solutions for buildings on the Stormont Estate, the Greenmount campus and wider public and private sector facilities in Antrim.

[260] Energy-Management-Strategy-March-2019.pdf (sibni.org)

Power of Water Project
The processes involved in treating our water and wastewater are energy and carbon intensive. Northern Ireland Water's Power of Water Project report proposes the development of a 75 MW wind farm to generate equivalent to Northern Ireland Water's annual energy use, driving substantial savings and eliminating 60% of Northern Ireland Water's carbon operating emissions. This would also deliver around 10% of the additional renewable generation capacity in the Energy Strategy targets for 2030. Northern Ireland Water is currently developing the outline business case for investment in a large-scale wind farm development to contribute towards decarbonisation and increased cost resilience for the business. The Power of Water project also proposes exploring the potential to utilise a redundant reservoir to create a hydro pump storage scheme to retain energy to generate 300 MW for up to 10 hours on demand and deploy 10 MW of electrolysers to produce affordable green hydrogen for use in public transport whilst using the lower cost oxygen to help process wastewater.

11.6 Digital Infrastructure

Information and Communication Technology (ICT) and digital services are increasingly recognised as an integral part of the solution to meeting emissions reduction targets through, for example, reducing the need to travel and helping to minimise waste. DoF has several long-term initiatives in place to reduce carbon emissions and waste including the provision of two resilient data centres to host services; this has released expensive office space and moved physical equipment to a more efficient, virtual, shared platform. This has also reduced departmental use of electricity. In addition, a rollout of productivity software, collaboration and cloud-based services has reduced the amount of equipment used in data centres as services are moved to the public cloud. Tools such as Microsoft Teams, combined with increased levels of remote working, are reducing the need for work-related travel and have enabled more collaborative working. This digital transformation agenda enables people to access more services online, minimise the need for face-to-face contact and reduce paper-based transactions.

Several NICS departments have highlighted digital innovation as the way in which they intend to realise both efficiency gains and carbon emission reductions. For example, DoH is supporting its ALBs in using digital infrastructure for alternative health care provision, where appropriate, improving efficiency and wellbeing. The HSC sector is adopting digital tools and virtual appointments where appropriate, helping to enhance care for patients/clients including using Artificial Intelligence (AI). This has the added benefit of enabling more flexible ways of working for NHS staff and building on wider digital transformation projects being implemented across NICS.

Project Stratum
Project Stratum has committed £200 million funding to help deliver substantial enhancements to internet connectivity across Northern Ireland, with a key focus on rural connectivity. Deployment is expected to reach 81,000 properties with the project scheduled to conclude in June 2025. Public sector organisations and their employees have benefited from the expansions of full fibre internet access which supports the ability of individuals to work remotely, and the ambition of the NICS Hybrid Working Policy, reducing journeys to the workplace which in turn supports the proposal to right size the government estate.

11.7 Climate Change Skills and Capacity

Ensuring that NICS staff have the necessary skills and capabilities is essential to satisfy the statutory duty that is placed on all departments i.e. to execute functions in a way that will deliver the targets set out in the Act. Reflecting a commitment to tackling climate change, climate units or climate coordinators have been established within departments to support embedding climate considerations across business areas, strengthen cross-departmental and wider engagement on climate issues and build internal expertise.

Alongside the development of the draft Climate Action Plan, DAERA and DoF are working collaboratively with all departments to review our capacity and capability to deliver our obligations under the Act and the commitments in the draft Green Growth Strategy. This includes using a strategic workforce planning approach to identify expertise required, including within our science and finance teams, economists, behavioural scientists and statisticians to ensure that decisions are underpinned by advice and evidence that reflects up-to-date knowledge of climate and environment methodologies combined with up-to-date knowledge of behaviour change intervention delivery.

In April 2024, DAERA in conjunction with DoF, launched new climate change training courses on the NICS staff training system (LInKS) which are available to all NICS staff. The courses, known as ‘Climate Smart for Civil Service’, include two levels of training – one an initial ‘introductory’ training course to climate change and then a second ‘additional learning’ training course. The courses provide a high-level overview of key climate change themes in both a global and local context and build upon an earlier pilot exercise delivered by DAERA in 2023. By February 2025, over 1,100 civil servants had attended the training courses.

11.8 Local Government

Local government is already leading by example on climate action. Alongside central government, it will have a vital role in driving and facilitating the realisation of Northern Ireland's climate targets. During the carbon budget reporting period, departments have been working with the Society of Local Authority Chief Executives (SOLACE) to establish structures which will facilitate a joined-up approach between central and local government. This will help to ensure strong leadership at all levels across our communities as we implement ambitious climate action.

Significant action is already being taken forward within local government; approximately half of our 11 local councils have put in place a climate action plan with target dates for reaching net zero ranging between 2040 and 2050.

Belfast City Council, for example, has a Resilient Belfast Strategy[261] and a Net Zero Carbon Roadmap.[262] It is committed to becoming a carbon-neutral organisation and to working with partners to reduce Belfast's net carbon emissions by 80% compared to 2005 levels as quickly as possible and to transition to a low carbon economy in a generation. In 2022, it adopted the following city targets: 66% reduction on the 2000 level of emissions by 2025; 80% by 2030 and 100% by 2050. Fermanagh and Omagh District Council,[263] Derry City and Strabane District Council,[264] Mid and East Antrim Borough Council[265] and Ards and North Down Borough Council[266] also have action plans in place,[267] including both mitigation and adaptation actions and net zero target dates ranging from 2040 to 2045.

Both Belfast City Council and Derry City and Strabane District Council have established Sustainability and Climate Commissions,[268] comprising members from the public, private and third sectors working collaboratively to translate climate policy into 'on the ground' action and bring about transformative change.

11.9 Public Body Reporting

Public bodies have a significant role to play in helping to achieve the reduction in emissions. Reporting on climate change can be an effective way for public bodies to recognise and understand the size of the challenge, prioritise their actions and develop targeted intervention plans. It also helps to embed climate change within strategic business and risk planning processes and assist in the management of climate risks which is key to achieving long-term sustainability.

[261] Resilient Belfast | Belfast City Council

[262] A Net-Zero Carbon Roadmap For Belfast (pcancities.org.uk)

[263] Fermanagh and Omagh District Council Restore-Revive-Thrive-5-1.pdf

[264] Derry City and Strabane District Council Climate Change adaptation plan

[265] Climate and Sustainability Action Plan 2023 - 2027 | Mid and East Antrim Borough Council

[266] Roadmap to Sustainability - Ards and North Down Borough Council

[267] Such as those set out in Natural Environment and Climate Change chapter

[268] Established in 2019, Belfast Climate Commission is co-chaired by Belfast City Council and Queen's University. Derry and Strabane Sustainability and Climate Commission was established in early 2024 and is chaired by Ulster University.

Climate change can impact public bodies in multiple ways such as:

- Physical risks: including operational and service delivery impacts of more frequent and more extreme weather events, or supply shortages; and
- Transition risks: which arise from society's response to climate change (and the transition to net zero) such as changes in technologies, markets and regulation.

Reporting can improve transparency for stakeholders and can help government identify and take account of actions public bodies are taking to address climate change and potentially where central government intervention and support is needed.

DAERA delivered its requirements[269] by making the Climate Change (Reporting Bodies) Regulations (Northern Ireland) 2024 (the Regulations).[270] These first set of principal Regulations came into operation on 3 May 2024 and place climate change reporting duties on 40 large-sized, specified public bodies. The Regulations were informed by DAERA's pre-consultation with public bodies in the later quarter of 2022 and by an extended 10-week public consultation in 2023.[271]

Climate change reporting is an iterative process and DAERA will explore expanding the scope of the Regulations at a future point, including who is required to report, through amending Regulations. In the interim, voluntary reporting will be encouraged by those public bodies not specified to report.

The Regulations require reporting on both mitigation and adaptation as follows:

- Mitigation reporting is required on a three-yearly cycle and the first reports are due to be submitted to DAERA by 31 October 2025. The reports must include the public bodies' emissions levels and sources for specified years, action plans to reduce those emissions and an assessment of any progress made between reporting periods.
- Adaptation reporting is required on a five-yearly cycle, with the exception of the first report which must be submitted to DAERA by 31 March 2026. Adaptation reports must include an assessment of the current and predicted impact of climate change in relation to the body's functions, action plans to manage those risks and impacts and an assessment of any progress made between reporting periods.

The Regulations require the specified public bodies to consider the latest UK-wide Climate Change Risk Assessment (CCRA); the Northern Ireland Climate Change Adaptation Programme (NICCAP); and the benefit of coordinating proposals and policies with corresponding bodies in other parts of the UK, Republic of Ireland or elsewhere. The reports will be published on the DAERA website along with findings from any particular reporting period.

[269] Section 42 of the Act

[270] The Climate Change (Reporting Bodies) Regulations (Northern Ireland) 2024

[271] Summary of Responses and Next Steps: Consultation on Climate Change Reporting by Specified Public Bodies - Developing New Regulations

DAERA is currently developing and providing the following practical support to help public bodies meet their reporting duties, through:

- development and provision of an online portal for public bodies to record climate change data;
- mitigation-specific, co-designed technical reporting guidance and a template of questions;
- adaptation-specific, co-designed technical reporting guidance and a template of questions; and
- development and provision of separate and specific mitigation and adaptation training.

Collaborative work and the co-design process is ongoing with public bodies on the delivery and implementation of the reporting system including the development of tools and further practical support for reporting bodies, such as guidance, an online reporting portal and a training programme.

CHAPTER 11: SUMMARY OF PUBLIC SECTOR LEADING BY EXAMPLE ACTIONS

We will continue to deliver our duty on climate, driving change through actions which demonstrates leadership across the public sector. Key actions include:

1. By 2028, DoF will complete Phase 1 of the review of the NICS Office Estate which is planned to achieve a 40% reduction of the in-scope office estate, reduce its carbon footprint and support the journey towards decarbonisation.
2. During the carbon budget period, DfI will work with Northern Ireland government departments to develop a pathway for a Zero Emission Vehicle Action Plan to support the transition of the government's fleet.
3. During the carbon budget period, DoF will publish updated business case guidance as soon as possible after the Green Growth Strategy has been finalised, to take account of developments in green growth and ensure that climate and environmental considerations are further embedded in the decision-making process for projects and programmes.
4. By 2030, DfE will deliver Energy Management Strategy objectives to reduce net energy consumption by 30% (from 2016/17 baseline).
5. During the carbon budget period, DfI will support Northern Ireland Water's bids for funding to progress renewable energy initiatives under its Power of Water Project.
6. During the carbon budget period, departments will progress the NICS digital transformation agenda to facilitate digital and virtual service alternatives for staff and the public, including the delivery of Project Stratum by June 2025.
7. During the carbon budget period, we will establish structures which facilitate coordinated central and local government action that supports the transformative changes needed to tackle climate change and deliver net zero.

12. Enabling the Transition to Net Zero

12.1 Introduction

The importance of science and innovation, education and skills, infrastructure, planning, behaviour change and communication as enablers to delivering our pathway to net zero cannot be underestimated. Through collaboration and co-design with delivery partners, we will utilise innovation, science and technology to deliver effective solutions. Through proactive education and skills development, we will inspire and equip our children, young people, businesses, communities and employees to embrace the climate challenge, acting as catalysts for change. Through targeted investment in key infrastructure projects that are consistent with our net zero ambitions and an effective planning system that positively facilitates sustainable development, we will contribute to shaping a more socially, economically and environmentally sustainable society. Finally, by making use of behavioural science we will both raise awareness of the need for societal behaviour change and increase lasting climate conscious behaviours.

12.2 Science and Innovation

Science is central to our understanding of climate change, its consequences and how we can adapt to its impacts. Science will also provide us with the high-quality evidence base needed to shape our action to combat climate change by reducing emissions on a pathway to net zero.

We will continue to use the best available science to inform decision making and action to reduce emissions, including the policies, proposals and actions which make up this draft Climate Action Plan and its successors. We know that we do not yet have all the answers for the many challenges which delivering on net zero will pose. We will need innovation across our economy and society to deliver the solutions required, including new technologies and different and new ways of using and conserving our resources.

Scientific expertise will be critical in assessing the contribution which Climate Action Plan policies and proposals can make to the broad range of environmental goals and identifying how any impacts can be mitigated or optimised. Nature-based solutions provide an excellent example of how climate action can, and should, deliver across multiple environmental metrics.

Within Northern Ireland, we have a highly developed science system well placed to deliver on the climate change challenge. But to date, that science system, although highly effective in its disparate parts, has not been strategically aligned and coordinated as well as it might be. The 2024 appointment of the NICS CSTA is helping to address that, recognising that strategic scientific and technological advice needs to be available to the Northern Ireland Executive and senior decision makers in a more structured and sustained way. Science and technology will be at the heart of Northern Ireland Executive

decision making, including in regard to climate change and the wider green agenda, ensuring that Northern Ireland is more fully connected to developments across the UK, Republic of Ireland and internationally. The NICS CSTA brings an extra dimension of expertise and capacity to participate in and shape national and international programmes related to the use of AI and data to help inform decision making that can be applied to addressing climate change.

The CSTA proactively and independently promotes the value and benefits of science and technology, developing the first phase of a regional strategy designed to promote research and innovation. One of the first core work areas to be addressed by the CSTA will be climate change. The CSTA leads a cross-departmental and cross-agency advisory group which aims to ensure an integrated approach to the access and use of data for multiple applications, including climate change.

Through DfE's Matrix Panel, the Northern Ireland Science Industry Panel, there is also business-led and academic-supported focus on all matters pertaining to the high tech and science-based economy. Key to this is the green economy. Matrix is playing a key role in driving forward strategic approaches to renewable energy, the circular economy and advanced manufacturing. In 2022, Matrix brought forward a highly commended report[272] into the accelerated development of a hydrogen energy sector and market in Northern Ireland. The report outlines the capabilities Northern Ireland has to meet the commercial demand for hydrogen and sets recommendations for policy development and future interventions into the demand for hydrogen. Matrix recognises the potential of hydrogen as supportive to green economy initiatives given the ideal natural conditions for generating clean, renewable electricity coupled with adaptable infrastructure and a highly skilled workforce. It suggests Northern Ireland can be at the forefront of developing a hydrogen economy to heat our homes, fuel our transport and power our industry.

The Agri-Food Bio-Sciences Institute (AFBI) is playing an important role in meeting the climate challenge by supporting GHG reduction techniques in agriculture such as improved feed conversion efficiency, sophisticated dairy and beef carbon footprint calculators, feed additives and other dietary changes, as well as managing the Soil Nutrient Health Scheme (SNHS) to deliver a baseline for soil carbon.

Innovation: There are many opportunities for innovation, particularly around rapid advances in technology. The DAERA Innovation Strategy 2021-2025[273], acknowledges that the exploitation of Big Data, AI and Transformative Bioeconomy initiatives can play a key role in our quest for green growth, with the aim of transforming our society to achieve net zero GHG emissions by 2050, protect and enhance our environment and sustainably grow our economy.

[272] Northern Ireland's Future Hydrogen Demand and Capability - Matrix

[273] DAERA Innovation Strategy launched

As part of the implementation of the DAERA Innovation Strategy, pilot projects are being taken forward to encourage the development of innovative solutions to the challenges faced. DAERA has partnered with Digital Catapult on their Tenfold Net Zero Accelerator programme which aims to encourage the development of new and innovative proposals which will contribute to delivering sustainable climate action solutions and which will benefit local businesses in their drive to achieve net zero. In addition, DAERA has worked in collaboration with the Department of Food, Agriculture and the Marine (DAFM) in Ireland to co-design a €9m Bioeconomy Demonstration Initiative which seeks to foster innovative cross-border collaborations which will be crucial in delivering climate action and supporting a greener economy through biobased solutions.

The Innovation Strategy for Northern Ireland 2014-2025[274] also highlighted the need for increased innovation within the public sector. However, in addition to it becoming more innovative in how it operates, whether as an intelligent customer or as a partner to drive change, the public sector can play a powerful role in encouraging innovation within the sectors it serves. Governments need to be innovative and also create the right conditions for innovation to occur, both within and across systems; this can include stimulating innovation through providing incentives for research and development and innovation, assisting in knowledge exchange and innovation adoption, supporting facilitation activity to encourage and support innovation and enabling collaboration.

Innovation is critical to delivering solutions to these challenges as well as promoting a thriving business sector to increase economic productivity and sustainability in line with green growth commitments.

Priorities for Climate Science: Evidence needs will vary across each sector. However, some key principles will apply as the science system supporting climate change is developed and optimised. These include:

- Development of a smarter and more sophisticated GHG Inventory which captures current practices with precision and can account for emerging emissions reduction technologies as they are implemented;
- Provision of high quality and timely evidence which identifies and balances the actions required to set a pathway to net zero;
- Communication of scientific outputs to policymakers, industry and citizens in a clear and appropriate way to ensure that the right information is delivered to the right people at the right time; and
- Identifying the new approaches required in each sector to deliver the pathway to net zero in Northern Ireland.

[274] Northern Ireland Innovation Strategy

Optimising the Inventory: The Northern Ireland GHG Inventory provides the basis for the assessment of GHG emissions on a territorial basis for Northern Ireland across nine individual sectors, in line with international reporting guidelines. It uses information on activity levels in each sector and scientific evidence on emissions levels associated with these activities to provide the emissions estimates per sector. A key priority for climate science in Northern Ireland must be to ensure that the data informing the inventory is as accurate as possible, is regularly updated and uses as much Northern Ireland specific information as possible. As new technologies and innovative solutions for climate action are developed and implemented, scientific knowledge must keep pace with accurate assessment of their impact on emissions levels for incorporation within the inventory.

Optimising Climate Action: Science expertise is needed to ensure that the actions proposed in this draft Climate Action Plan and its successors are capable of implementation, and are sufficient, fair and appropriate. There will inevitably be challenging policy choices associated with identifying the best pathway to net zero for Northern Ireland. Good science will provide those responsible for these policy choices with evidence on the risks, benefits and implications associated with each potential pathway. We must ensure that we provide a landscape of high-quality science which guides the path to net zero.

Informing Citizens and Businesses: For Northern Ireland to deliver on net zero, transformation is required across our society. The science system must deliver the strong scientific evidence base for the changes in behaviour so that the public understand how best they can reduce emissions and why it is important. Climate science should be communicated in a way that cuts through the complexity and delivers clear, concise and transparent messages to people and businesses.

Preparing for the Future: Although theoretical pathways to net zero by 2050 have already been developed, it is inevitable that these will be refined as new technologies come online and new data and evidence becomes available on the optimal route to net zero. High quality scientific research will be of integral importance as these pathways are optimised. We should not assume that the answers which appear best today will remain so. Our policy and our science framework must support production of a world-class evidence base and be adaptive to its findings, while not allowing the inevitable uncertainties to hinder the urgent action required to meet net zero. As the Northern Ireland science system works to deliver these, an early priority should be a robust assessment of the speculative options outlined by the CCC in their Northern Ireland Advice Report which are:

- Direct Air Capture with Carbon Capture and Storage (DACCS);
- Reducing livestock numbers by almost half by 2050;
- Enhanced weathering on croplands (applying fine crushed rock such as basalt to fields to achieve carbon dioxide removal);
- Addition of biochar to agricultural land; and
- Purchasing removals from elsewhere.

Urgent assessment of these approaches is required, in respect of their emissions reduction potential, practicality, economic impact and cost, and whether alternative options exist which can deliver net zero for Northern Ireland. In doing so, the science system will facilitate an informed decision about how Northern Ireland should reach its net zero requirement and adapt to a changing climate.

12.3 Education and Skills

Education has an essential role to play through developing awareness, knowledge, attitudes and behaviours that will drive effective change. Initiatives that seek to provide an opportunity for children, young people and workforces to learn about climate change issues and about practical steps that can be taken to measure and improve carbon footprints, are a fundamental step on the net zero journey.

Since 2020, DAERA has been supporting the delivery of climate change education programmes to schools and community groups, building on successful programmes such as 'Eco-Schools'[275] and 'Live Here Love Here'[276] and working with delivery partners such as Keep Northern Ireland Beautiful (KNIB). This has included the provision of free 'Climate Smart' and accredited 'Carbon Literacy' training to teachers, students and community groups.

The Northern Ireland Curriculum will continue to play a vital role in supporting the green economy and nurturing environmentally conscious citizens. Through the integration of topics related to sustainability, climate change, and green growth, schools can equip children and young people with the knowledge, understanding, skills, and values necessary to contribute actively to a greener future. A curriculum that emphasizes the green economy can also prepare our children for future careers in sectors such as renewable energy, sustainable agriculture, and green technology. To support this, the Department for Education (DE) is considering how best green growth and climate change can be embedded and enhanced in the curriculum.

Since 2021, DAERA and DfE has supported the Business in the Community (BITC) led 'Business Action on Climate' campaign. Through the campaign, businesses make public commitments to reduce their emissions by either 30% or 50% by 2030 and to work towards measuring and reporting emissions. To support businesses in this campaign, BITC has developed a Climate Action Resource Hub and provides support to businesses and their staff through accredited carbon literacy training; introductory 'carbon conscious' training, the provision of advisory workshops on how to measure their carbon footprint; and the development of bespoke climate action plans for their business. By August 2023, 87 companies had signed up to the climate action campaign with 383 employees being certified as being 'carbon literate'.

[275] Eco-Schools Northern Ireland (eco-schoolsni.org)

[276] Live Here Love Here - Environmental & Community Improvement Projects Northern Ireland

It is equally important that we plan for the impact of changes on our labour market. We will need to ensure our workforce is equipped to facilitate the transition to a low carbon economy through vital skills development.

In June 2023, DfE published a report[277] which considered the skills required for 'a transition to an advanced zero emission, indigenous energy secure and circular economy in Northern Ireland'. It provides information to encourage relevant organisations in Northern Ireland to develop the required skilled workforce – maximising benefits to all sections of the Northern Ireland population. The report covers eight industries that align to a significant degree with the sectors identified in this plan: large-scale energy production; infrastructure; domestic low carbon technologies and energy efficiency; industrial processes; circular economy; transport; agriculture; and fisheries.

The report identifies skills that will be required by new and existing workers to support the transition to a net zero economy in Northern Ireland. In addition to the need for generalist skills (such as management and digital skills), the report highlights sector-specific skills (including in environmental and agri-food science and technology, and supporting: the developing offshore wind industry; the planning, construction and operation of heat networks; the production, storage and transport of hydrogen and biofuels; the installation of smart technology; the maximisation of value from waste; and the operation and maintenance of electric/fuel cell/hydrogen vehicles and vessels); and specialist skills (such as in geoscience, chemistry and physics). There will also be a greater need for workers to be multi-skilled.

It was recognised that diverse training pathways which offer ongoing opportunities to develop and build skills at various levels will also be required. For example, at occupational entry level, apprenticeships and through further and higher education. More will need to be done to address skills gaps and to retain and develop those with relevant skills through, for example, establishing stronger links with educational establishments and training providers, employers, policymakers and other stakeholders. To ensure a just transition approach is supported, targeted and/or incentivised promotion of learning and career pathways for specific groups (such as unemployed young people; those with physical or learning disabilities; those from specific disadvantaged and deprived communities) should ensure that all sections of the community have access to training and employment opportunities in green industries.

A series of recommendations outlined in the report to address these challenges, working in collaboration with government and industry stakeholders including through engagement with the Office for Clean Energy Jobs,[278] will be taken forward.

[277] Investigating the skills required for a transition to an advanced zero emission, indigenous diverse energy secure and circular economy in Northern Ireland (economy-ni.gov.uk)

[278] Assessment of the clean energy skills challenge - GOV.UK

12.4 Infrastructure

Infrastructure plays a critical role in our everyday lives. For instance, our roads, railways, ports and airports connect people and facilitate the transport of goods and services. Our water system brings fresh drinking water to homes and businesses and our sewer system removes and treats our waste, ensuring high standards of public health. Our gas and electric networks distribute the energy to power and heat our buildings. While the telecommunication systems allow people to connect and communicate, facilitating access and storage of electronic data.

The draft Investment Strategy for Northern Ireland (ISNI)[279] sets out how the Executive will deliver on three strategic objectives up to 2050. One of these relates to the achievement of a clean, secure and sustainable environment through delivery of key infrastructure priorities:

- Adapt to a changing climate;
- Decarbonise energy networks and surface transport;
- Transition to sustainable homes and waste management and a more circular economy; and
- Enrich biodiversity and natural environment.

In bringing forward future investment projects and programmes, reducing carbon emissions must be key in policy development and implementation.

Infrastructure is one of the sectors specified in the Act[280] through which the carbon budget must be achieved. However, unlike most of the other sectors, emissions specifically from infrastructure are not easily derived from the Northern Ireland GHG Inventory as they are connected to sectors such as transport, energy and buildings. For the purposes of this Climate Action Plan, infrastructure is the physical and organisational structures and facilities needed for the operation of a society. As associated emissions are incorporated in the policies and proposals of other sectors, there are no specific policies and proposals relating to an 'infrastructure sector'.

Central to the objective of a clean, secure and sustainable environment is the need to consider how we use, and reuse, our existing infrastructure, and how we plan for new infrastructure to ensure that it meets our future needs while reducing our dependency on carbon intensive materials, our extraction of virgin materials and our fossil fuel reliance. Adopting recognised international standards will help to mitigate emissions from the infrastructure sector. As policies are developed to support the transition to a low carbon future, all sectors have an important role to play in reducing GHG emissions, meeting Northern Ireland's first carbon budget and achieving net zero by 2050. All sectors must move to more efficient manufacturing processes, increase energy efficiency and commit to reducing waste and increasing recycling. To achieve this, new innovations and technologies will need to be developed and implemented, supported by enabling policies that help change individual and societal behaviours and attitudes, legislation and long-term investment in skills.

PAS 2080[281] is a global standard for managing carbon in buildings and infrastructure. It considers the whole value chain while aiming to reduce carbon through design, construction, and use of infrastructure. The UK Government's Construction Playbook[282] and the Northern Ireland Construction Toolkit[283] provide guidance for government and industry in delivering public works programmes, both reference PAS 2080.

At the outset, the need for any new infrastructure must be compliant with addressing climate action and utilise low carbon alternatives where possible. Work on developing and adopting low carbon construction materials must continue at pace. Infrastructure uses significant quantities of material such as concrete, metal, bitumen, aggregate, chemicals, plastics, glass, etc. which needs to be extracted, processed, manufactured and transported.

The continued need for this should be considered along with seeking more sustainable and possibly more versatile alternatives. Infrastructure needs to be designed and constructed to be more resilient to the changing climate so that it can last longer and reduce the need for future maintenance. It needs to be able to withstand the growing challenges presented by flooding, extreme weather events and rising global temperatures. Without adaptation, our infrastructure will face pressures that, in some cases, it was not designed to withstand. This could result in costly and time-consuming repairs. For example, NICCAP cites the impact of Storm Eleanor which left 25,000 premises without power as well as transport disruption.[284] Similarly, in August 2017 heavy rainfall in the north and west of Northern Ireland led to the flooding of hundreds of homes, five bridges being washed away and the temporary closure of the City of Derry Airport.[285] Infrastructure adaptation measures can help improve resilience, limit severity and reduce costs from future climate events.

It is also important to recognise that there are emissions originating from various stages of the infrastructure lifecycle – from construction and maintenance to its operation and use, and finally to repurposing, retrofitting or decommissioning. Action must be taken in the short term to reduce infrastructure emissions in support of efforts to reach net zero by 2050, and where possible, promote a circular economy approach to minimise environmental and carbon impacts.

[279] Infrastructure-2050-draft-Investment-Strategy-for-Northern-Ireland-FINAL.pdf

[280] Section 33(c) specifies infrastructure as a sector through which the carbon budget is achieved and specifies that it should include infrastructure for electric vehicular transport. However, to avoid potential duplication and double counting of emissions savings, consideration of policies and proposals relating to infrastructure for electric vehicles is considered as part of the transport sector in Chapter 6.3.

[281] Guidance Document for PAS 2080

[282] The Construction Playbook – September 2022 (publishing.service.gov.uk)

[283] Construction Toolkit.pdf (finance-ni.gov.uk)

[284] Northern Ireland Climate Change Adaptation Programme 2019-2024 Final-Laid.PDF (daera-ni.gov.uk)

[285] Planning Act (Northern Ireland) 2011 (legislation.gov.uk)

12.5 Planning

Planning policy and planning decisions both have significant roles to play in enabling the delivery of climate action. The planning system should positively and proactively facilitate development that contributes to a more socially, economically and environmentally sustainable Northern Ireland.

The Planning Act (Northern Ireland) 2011[286] established the two-tier system for the delivery of planning functions in Northern Ireland. Under the Planning Act, responsibility for delivering the main planning functions passed from a central government department to local councils in April 2015. DfI has responsibility for preparing regional strategic planning policy and legislation, monitoring and reporting on the performance of councils' delivery of planning functions and making planning decisions in respect of a small number of 'regionally significant' and 'called in' applications, including many renewable electricity applications. Together, both central and local government have important roles to play in ensuring that the control of development is appropriate but also that enabling investment in the technologies and infrastructure required to respond to the climate emergency is not delayed.

The Strategic Planning Policy Statement (SPPS) for Northern Ireland – Planning for Sustainable Development[287] was published in September 2015 following Executive agreement. The SPPS sets out DfI's regional planning policies for securing the orderly and consistent development of land in Northern Ireland. A review of regional strategic planning policy on renewable and low carbon energy was announced on 21 April 2021. The review is at an advanced stage of completion, and it is expected that the revised policy will be published as soon as possible following Executive agreement.

The aim of the review is to ensure that SPPS policy on this topic remains fit for purpose and up to date to inform plan making and decision making, recognising the important facilitating role the planning system can play in supporting climate action. Last year, DfI undertook a call for evidence on a potential focused review of the SPPS in relation to climate change, including the decarbonisation of transport.

Northern Ireland's two-tier planning system plays a positive enabling role in supporting opportunities to mitigate and adapt to climate change in the planning for and management of development across many of the Climate Action Plan sectors. For example, the planning system can:

- Encourage compact mixed-use developments;
- Encourage layouts and designs that reduce carbon emissions;
- Integrate land use and transportation;
- Enable appropriate renewable energy infrastructure;
- Preserve existing green space and carbon sinks and require the provision of new green space when new development is permitted; and
- Protect flood plains and encourage sustainable drainage systems.

[286] Planning Act (Northern Ireland) 2011 (legislation.gov.uk)

[287] The Strategic Planning Policy Statement | Department for Infrastructure (infrastructure-ni.gov.uk)

It is important going forward that the legislative, policy and guidance frameworks for plan making and decision making is appropriate and suitably future proofed. This will ensure that planning authorities continue to contribute to the wider efforts of government in addressing the climate emergency through their Local Development Plans and their consideration of planning applications. Those involved in the planning system (developers, communities, councils and others) have a collective responsibility to work positively and proactively to establish and maintain resilient sustainable solutions which can adapt to the ever-changing impacts of climate change.

In addition, DfI is seeking to increase its contribution to supporting the transition to net zero in several areas, including:

- **Legislation:** The Energy Strategy Action Plan 2022[288] contained a commitment for DfI to review permitted development legislation for low carbon heat installations. DfI issued a consultation in October 2022 seeking views on proposals to revise permitted development rights for the installation of domestic microgeneration equipment such as heat pumps. Following the consideration of responses, DfI brought forward amendments to the Planning (General Permitted Development) Order (Northern Ireland) 2015[289] to expand permitted development rights for the installation of microgeneration equipment. These came into effect in July 2023. The amendments will help to encourage the use of low carbon heat technologies and ensure the permitted development rights are up to date and fit for purpose; and align Northern Ireland with other UK jurisdictions.
- **Casework:** DfI will continue to review casework to facilitate climate mitigation and adaptation by considering how relevant policies have been applied, review the effectiveness of mitigating actions and promote shared learning from previously approved schemes; and
- **Plan Oversight:** DfI will continue to oversee production of Local Development Plans to ensure that the impacts of climate change have been considered in each plan's policies.

Marine Planning

DAERA is the marine plan authority for Northern Ireland's inshore and offshore marine plan areas. DAERA consulted on a draft Marine Plan for Northern Ireland in 2018 and is progressing towards adoption and publication of the Marine Plan. Decision makers should have regard to the draft Marine Plan and all authorisation decisions must be in accordance with the UK Marine Policy Statement until the Marine Plan for Northern Ireland is adopted. Following publication of the adopted Marine Plan for Northern Ireland, all authorisation decisions must be in accordance with the Marine Plan policies.

[288] https://www.economy-ni.gov.uk/sites/default/files/publications/economy/energy-strategy-path-to-net-zero-action-plan.pdf

[289] The Planning (General Permitted Development) Order (Northern Ireland) 2015 (legislation.gov.uk)

The Marine Plan for Northern Ireland will provide a holistic and transparent framework to be used by both marine and terrestrial decision makers to enable them to facilitate sustainable marine development and ensure a healthy marine area. The Marine Plan has been developed to support and complement other Northern Ireland and UK legislation, policies, plans and strategies (including the Act). Public authorities must consider the potential impact of proposals on GHG emissions and the proposals' ability to adapt to a changing climate. The Marine Plan for Northern Ireland and marine licensing decisions will have significant roles to play in enabling the delivery of climate action.

12.6 Behaviour Change and Communication

According to analysis by the CCC, approximately 60% of the changes needed to achieve net zero will require some element of societal or behaviour change.[290] The pathway to net zero will require responses from everyone: as consumers, workers, homeowners, tenants and landlords, motorists, farmers, communities, individuals and families. Without informing, engaging, empowering and enabling people to take collective action, we will struggle to achieve our net zero targets.

The concept of behaviour change is not new; it is about altering our habits and behaviours. The UK Government Communication Service explains that *"a behaviour is an action that is observable – who does what, when and how?"*[291] A behaviour is not a change in attitude, being more aware of something, being engaged in something, a culture shift or a social norm. However, each of these is often an important step in getting sectors, communities and individuals to the stage where they adopt the behaviour.

Behaviour change can take many forms. In government, it is the framework of interventions or tools used to encourage people to adopt new positive behaviours, such as regular exercise, or to stop negative behaviours, such as drink driving. In taking action to reduce emissions, this might include implementing policies and actions that reduce certain behaviours, such as encouraging people to take fewer short car journeys, or guidance or support that enables and encourages people to adopt positive behaviours such as insulating their homes to reduce emissions and save money.

A report by the UK Behavioural Insights Team[292] sets out *"ways in which changes in behaviour can be harnessed positively for the net zero transition."* It indicates that nine out of ten people in the UK want to make sustainable choices but that many of the behaviours required are currently too expensive, too inconvenient, too unappealing or too different from what we are used to. Research undertaken by DAERA in March 2024 showed that 70% of respondents from Northern Ireland were fairly, very or extremely worried about climate change, and that 55% felt Northern Ireland is already starting to feel the effects of climate change.[293] It is important that government harnesses the public's desire to play their part in tackling climate change; effective communication, education, advice and support are key to enabling this.

[290] CCC, May 2019; Net Zero - The UK's contribution to stopping global warming - Climate Change Committee (theccc.org.uk) or CCC, June 2021; Progress Report to Parliament - Climate Change Committee (theccc.org.uk)

[291] Strategic Communications: a behavioural approach - GCS

A report published in October 2022 by the House of Lords Environment and Climate Change Committee[294] on the UK Government's approach to behaviour change for climate and environment goals, highlighted a number of insights:

- The public want clear government leadership, with a coordinated approach;
- A 'behavioural lens' should be applied consistently across government climate and environment policies;
- Where government has shaped the choice environment they have had more success in changing behaviours;
- Awareness campaigns and information are not enough to bring about major change; other levers, including regulations, fiscal incentives and disincentives, and development of infrastructure, are needed.

Recognising these challenges, the Northern Ireland Executive commitment 5 in the draft Green Growth Strategy states: *"We will promote and support behaviour change by providing low carbon options, infrastructure, timely information, advice and support to citizens and businesses to enable them to make informed choices on the transition to a net zero emissions economy."* Building on the full spectrum of policy levers that the House of Lords report recommends, this recognises the importance of removing barriers to and enabling change as an effective means of delivering action on climate. This approach reflects the developing use of behavioural science, which is about understanding behaviour and then developing effective interventions to influence it.[295]

In Northern Ireland, we will use behavioural science to understand and identify which behaviours influence the desired outcome and aim to develop effective interventions to support and enable those positive changes which reduce emissions in a fair and acceptable way. This will entail undertaking user research (for example on attitudes, concerns, actual behaviours and willingness to change behaviour) to understand, identify and reduce barriers to behaviour change and promote effective policies, programmes and interventions. As such, choices and behaviours that will support the transition to net zero will be made easier and eventually new social norms will be created. Other behavioural science principles will be used to help tailor messages for different audiences, ensure engagement on specific behaviours is targeted and appropriate, and provide feedback and positive reinforcement to sustain positive changes in behaviours that are beneficial.

[292] How to build a Net Zero society | BIT

[293] Full analysis of this research is not available as yet.

[294] House of Lords Environment and Climate Change Committee

[295] Public Health England, February 2020; Achieving behaviour change: a guide for local government and partners (publishing.service.gov.uk)

We will make use of behavioural insights to engage and involve key sectors and members of the public through, for example: highlighting positive examples; promoting learning and awareness through active participation; fostering a sense of community; enhancing the perceived impact of individual actions; encouraging a sense of ownership and responsibility; and emphasising the need for collective action, incentivising, recognising and rewarding.

We will continue to work closely with counterparts in the UK Government, Devolved Administrations and Republic of Ireland, as well as local and international academics, scientists and practitioners, learning from their experiences and successes in identifying interventions that are fair and can work for all our communities. We have much to learn from other countries, but we also need to ensure that interventions suit the circumstances and needs of people in Northern Ireland. Our commitment to education, communication, genuine participative engagement and behavioural science are key enablers to ensuring the journey and transition to net zero works for all our people.

To do this we will ensure that we gather and use data and evidence to understand the issues unique to Northern Ireland and Northern Ireland's people so that we make the right and most effective interventions to support the move to a fair, sustainable and decarbonised society and economy.

Addressing climate change in Northern Ireland requires a planned, strategic, behaviourally-informed approach to communication and engagement. Public engagement and effective communications are essential for listening to and responding to the public, their concerns and ideas. Engagement and communications will be used to ensure that net zero policies and interventions will be developed collaboratively, will be understood and supported, and will help us to develop and build collective responsibility for delivering Climate Action Plans. All aspects of the Act (including the just transition principles) will be integrated into this process. The Northern Ireland behaviour change approach will be monitored and adapted in response to feedback to ensure ongoing effectiveness and use of emerging best practice. Adjustments will be made based on data-driven insights to enhance impact and address any emerging challenges.

CHAPTER 12: SUMMARY OF ENABLING THE TRANSITION TO NET ZERO ACTIONS

1. DE has commissioned the Council for the Curriculum, Examinations and Assessment (CCEA) to greater embed sustainability and climate change education into the curriculum. During 2025, a progression framework and resource hub will be published, drawing together up-to-date resources and sources of support for teachers, pupils and young people in green growth and climate change knowledge, skills and understanding.
2. In 2024, DfI carried out a call for evidence on a potential focused review of the SPPS to ensure that it supports the climate change agenda, including the decarbonisation of transport. The responses to this call for evidence are being analysed with a view to presenting options to the DfI Minister in 2025.
3. During the carbon budget period, DAERA will ensure that behavioural science is used to support the delivery of Climate Action Plans, through coordinating with other departments and engaging with sectors and the public.
4. In 2024, DAERA completed a landscape review of the use of social science, including behavioural science, across NICS. The findings of this review will be considered in 2025 and, where appropriate, will support green growth and climate change policy development; and
5. During the first carbon budget period, DAERA will provide credible, evidence-based support, enabling citizens and businesses to make informed choices by actively communication and engaging with stakeholders and ensuring transparency in methods to capture, analyse and interpret data.

13. Investing in Climate Action

13.1 Introduction

Implementing the policies and proposals set out in this draft Climate Action Plan will require investment. This investment is necessary if we are to realise the wide-ranging benefits and transformative opportunities that come with the transition to a low carbon economy and an improved society for future generations. We also need to avoid the additional costs incurred from delayed action and the damage that occurs because of our changing climate. Additional investment by government will be crucial to finance the major infrastructure projects required to enable the transition to a low carbon economy. It will also be necessary to incentivise further investment in early-stage technologies and demonstrator projects.

Delivering a cost-effective path to decarbonisation in Northern Ireland requires action across all sectors of the economy and a joined-up approach.[296] Funding our net zero transition will be a collaboration between the public and private sectors.

This chapter provides an estimate of the public sector investment required to deliver this Climate Action Plan across financial years 2023/24 to 2026/27 and the benefits that may be achieved. It summarises how the public sector will seek to encourage and unlock private sector investment to support the net zero transition. Private sector investment will be attracted where markets provide opportunity for a return on investment. In some areas, this could mean additional cost for consumers, however, in other areas, private sector investment in green technologies can accelerate innovation, bring greater choice to consumers, and drive prices down.

13.2 Investment Required and Anticipated Benefits

Public Sector Investment to Deliver the Draft Climate Action Plan

Delivering the emissions savings projected in this plan will require a commitment to investing in net zero. In developing this draft Climate Action Plan, departments have sought to estimate the capital investment required to deliver the policies and proposals outlined in the Sector Policies and Proposals chapter[297].

The information presented in this section focuses on the anticipated level of Climate Action Plan investment required from the Northern Ireland Executive budget to support our transition to net zero. All values provided are in line with the Central Scenario criteria, which assumes that credible funding arrangements are in place or there is high confidence of funding availability[298] .

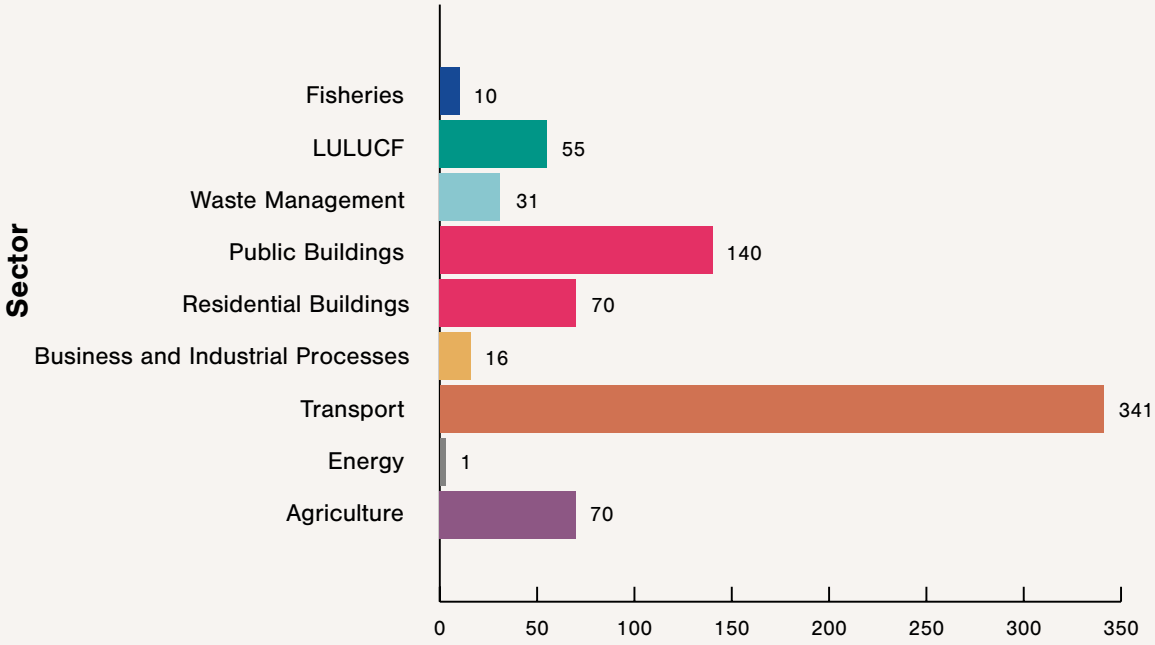
While this document highlights overall investment levels, not all expenditure will be new or additional. According to the Northern Ireland GHG Inventory[299], between 1990 and 2022, our GHG emissions fell by 26%. The Northern Ireland Executive already has a long track record of directing investment toward policies which aim to improve our environment and support climate targets.

[296] Reducing emissions in Northern Ireland - Climate Change Committee (theccc.org.uk)

Not all policies and proposals listed within the draft Climate Action Plan impact Northern Ireland Executive budgets; some policies are UK-wide and driven at a UK Government level. The estimates do not include investment through UK-led policies and proposals or private investments (from businesses and households). The fiscal impact from wider economic impacts associated with the transition to net zero (including significant economic benefits) are not reported, nor are the implications of technological progress, changes in the wider political landscape and scientific advances which are sources of uncertainty beyond the scope of this plan.

Across the four full financial years of the Climate Action Plan (2023/24-2026/27), it is estimated that a total of £718 million[300] of capital investment will be directed to deliver the policies and proposals within the draft Climate Action Plan. **This equates to an average total capital investment of £93 per person, per year.** Figure 32 illustrates the level of capital investment required by each sector.

Figure 32: Sector capital investment [301]



Rising from £56 million in 2022/23, total capital investment through Climate Action Plan policies and proposals will increase to approximately £274 million in 2026/27. This level of annual investment increases throughout the Climate Action Plan period, as proposals become policies and begin to be implemented, as illustrated in Figure 33.

[297] It should be noted that investment values listed are estimates and forecasts and, therefore, will be subject to a number of uncertainties, including a high level of sensitivity to budgetary, economic and political assumptions.

[298] See Chapter 5 for full definitions

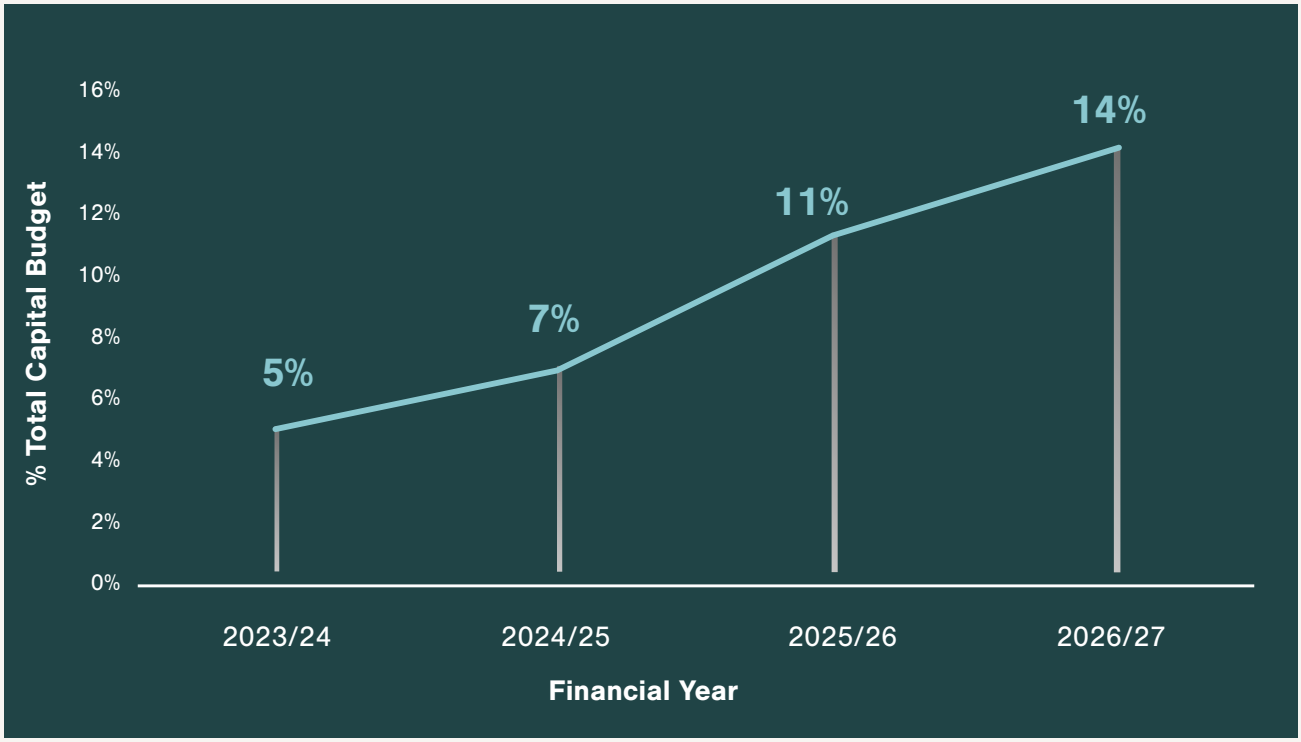
[299] Northern Ireland Greenhouse Gas Emissions 2022

[300] All costs listed within this chapter are in £2022/23 prices

[301] Note that values will not tally to total due to duplication of costs between sectors.

By 2026/27, capital investment through the implementation of policies and proposals within the Climate Action Plan will represent less than 2% of the total Northern Ireland Executive budget, or 14% of total capital allocation.

Figure 33: Annual Climate Action Plan capital investment as a % of total Northern Ireland Executive capital budget



It is not possible to accurately estimate what portion of total Northern Ireland Executive capital budgets would have been spent on policies to promote decarbonisation without the draft Climate Action Plan. It is likely that at least some of this capital would have been invested through the same (or a similar) set of policies and proposals to support other legislative requirements and strategic commitments. Not all of this increase in expenditure will result in an equivalent increase in departmental budgetary pressures.

The level of capital investment varies between sectors. The annual investment estimates across each sector can be found in Table 27.

Table 27: Annualised sector capital investment

Sector Capital Investment (£ million) (2022/23 prices)	2022/2023 (base year)	2023/24	2024/25	2025/26	2026/27	Total
Agriculture	2.4	4.8	7.3	19.4	38.7	70.2
Energy production and supply	-	-	-	0.5	0.6	1.0
Transport	-	31.8	64.8	111.8	132.3	340.6
Business and industrial processes	-	1.7	2.8	5.9	5.9	16.3
Residential Buildings	16.0	14.0	9.5	15.2	31.4	70.2
Public Buildings	35.0	35.0	35.0	35.0	35.0	140.0
Waste Management	-	-	-	15.5	15.5	31.1
LULUCF	5.1	66	14.1	14.2	20.6	55.5
Fisheries	0.1	1.9	1.9	3.8	2.8	10.4
Total	**56.2**	**93.5**	**132.6**	**218.5**	**273.7**	**718.3**

**Costs will not sum due to rounding and duplication of policies/proposals across sectors*

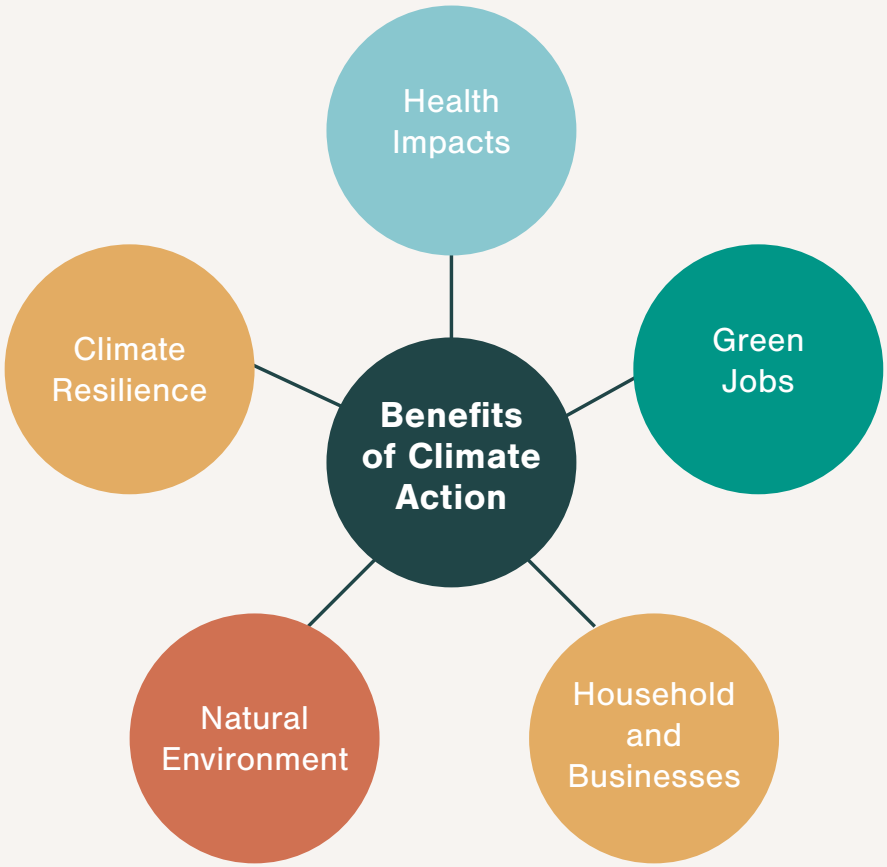
The costs outlined in this section demonstrate that significant investment will be required to deliver the action set out in this plan. As there is currently no mechanism whereby HM Treasury will provide additional required public funding for Northern Ireland to deliver this plan, prioritisation of budgets will be essential. The Executive will need to consider how climate change can be prioritised within its budget, as part of the priorities set out in the Programme for Government. The Executive published its Budget Sustainability Plan in October 2024, a strategic framework designed to support the long-term financial health and viability of the Executive's budget. It is envisaged that the forward work programme associated with the Budget Sustainability Plan led by DoF will examine improvements in the budget process, including how best to connect the budget process with strategic directions which will include Programme for Government and its associated climate targets. It is also important that the costs and opportunities of addressing climate change are embedded within the economic appraisal processes and through the application of a Green Growth Test (as discussed in the Government Spending and Procurement section in the Public Sector Leading by Example chapter).

While significant investment will be required across the public and private sectors to meet our net zero target, the transition to a low carbon economy will present many opportunities as we deliver green jobs, reduce pollution, promote more efficient use of resources within a circular economy, improve infrastructure and support sustainable economic growth. The up-front costs represent investments in an improved society for future generations and the cost of delaying action will ultimately be much greater.

Benefits

The transition to a low carbon society will have wider implications on how we live our lives. Although rarely measured, quantified, or monetised, co-benefits[302] increasingly form a key consideration in decisions relating to climate change.[303] The policies and proposals which are identified in this plan, and which contribute to decarbonisation, are expected to bring substantial co-benefits, particularly for public health, green jobs, households and businesses, the natural environment and climate resilience.

Figure 34: Selected benefits of climate action



[302] Intergovernmental Panel on Climate Change, "Fifth Assessment Report, Annex II Glossary". IPCC, 2014

[303] Measuring the Co-Benefits of Climate Change Mitigation | Annual Reviews

[304] Walking, Cycling, and Obesity Rates in Europe, North America, and Australia in: Journal of Physical Activity and Health Volume 5 Issue 6 (2008); What are the benefits of reducing global CO2 emissions to net-zero by 2050? - Hartley - 2022 - Weather - Wiley Online Library

The CCC Advisory Group on Health (2020) review of **health impacts** from acting on climate change suggested that sound policy can deliver significant near-term benefits to public health. Successful implementation of transport policies will lead to improved air quality avoiding premature deaths, reductions in respiratory and obesity related illnesses, improved physical and mental health, fewer traffic deaths, and reduced noise pollution.[304] In addition, policies which promote more comfortable and efficient homes and workplaces support physical and mental health improvements and reduced work/ school absenteeism.

The transition to a low carbon society will have major positive benefits in terms of **green jobs.** The draft Green Growth Strategy, alongside DfE's economic vision, promotes growing a greener and sustainable economy. Green jobs are defined by the Office of National Statistics as *"employment in an activity that contributes to protecting or restoring the environment, including those that mitigate or adapt to climate change."*[305] Research by the UK Energy Research Centre[306] and CCC suggests[307,308] that net zero transition is likely to result in net job creation, high skilled jobs, economic growth and productivity in the low carbon transition. This could be particularly important given median annual earnings for full-time employees in Northern Ireland in 2024 were £3,000 lower than the UK median of £37,400.[309] Transitioning to a net zero economy will provide an opportunity for substantial investments in clean automotive, renewable energy, energy efficiency and new technologies to create higher wage jobs.[310] Policies which support the retrofitting of homes, the switch to low emissions vehicles, the move to a circular economy, and afforestation, for example, will support the creation of green job opportunities locally.

Benefits to **households and businesses** also arise from investment in energy, energy efficiency and the circular economy in the form of: cost savings arising from reduced impacts on vulnerable households from increases in energy costs; the creation of a market for local firms supplying energy efficiency products and services; lower rent arrears; and less investment needed to generate, store and transmit decarbonised energy. Policies which target reducing waste and resource wastage and moving toward a circular economy will help to increase competitiveness, stimulate innovation, boost economic growth and create jobs.[311] Investment through the implementation of the draft Climate Action Plan policies and proposals in the business and industrial processes sector is aimed at improving the global competitiveness of local industry by, for example, providing fuel switching options, reducing energy and resource use, and increasing productivity in the sector.

[305] "Green jobs" update, current and upcoming work - Office for National Statistics (ons.gov.uk)

[306] Low carbon jobs: The evidence for net job creation from policy support for energy efficiency and renewable energy | UKERC | The UK Energy Research Centre

[307] UNEP (2011) Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication

[308] Net Zero and the Labour Market: Evidence from the UK | LSE Public Policy Review

[309] https://www.nisra.gov.uk/news/employee-earnings-northern-ireland-2024#:~:text=Annual%20earnings%20in%20NI%20are,earned%20at%20least%20%C2%A360%2C000

[310] Jobs_for_a_strong_and_sustainable_recovery_from_Covid19.pdf; https://www.ukonward.com/wp-content/uploads/2021/07/Qualifying-for-the-race-to-net-zero-FINAL.pdf; https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2021/10/Are-Green-Jobs-Good-Jobs_Full-report-4.pdf

[311] https://www.europarl.europa.eu/topics/en/article/20151201STO05603/circular-economy-definition-importance-and-benefits

This investment will also contribute to enhanced conservation of the **natural environment** resulting in clear air and water, more sustainable land use, improved habitats and greater biodiversity. As outlined in the Natural Environment and Climate Change chapter, our economy and wellbeing depend on healthy, resilient ecosystems that provide us with our food, clean water and air, raw materials and energy for our industries and sequestration of carbon. It is estimated that more than half of global production depends on nature[312] so protecting nature and biodiversity will benefit the climate, environment and the economy.

While investments through the Climate Action Plan are aimed at reducing our GHG emissions, many investments also **improve our resilience.** The Institution of Civil Engineers (ICE) recognises that achieving net zero carbon emissions is the necessary pathway to limit the worst impacts of climate change yet to come. As the impacts of a changing climate are already being felt, prioritised investment is required to ensure infrastructure is equipped to handle a range of shocks and stresses in the short, medium and long term.[313] Investment through the implementation of the draft Climate Action Plan policies and proposals – particularly through investments in the LULUCF, agriculture, transport and energy sectors – can help to maximise long-term benefits from maintaining, planning and delivering resilient infrastructure.

Additional benefits are expected from the commitment to a just transition, which will seek to increase collaboration between communities and organisations across Northern Ireland and work to ensure that the costs and benefits of transitioning to a low carbon economy are shared more equally.

While it has not been possible to accurately measure, quantify or monetise the benefits of the transition toward net zero for this draft Climate Action Plan, we will continue to invest in research and modelling to understand the investment implications, public and private, and macro-economic consequences, and wider benefits of net zero transition.

Cost of Delay

While the investment required to move toward net zero is significant, failure to invest appropriately will lead to higher public expenditure in the future. In 2021, the Office for Budget Responsibility reported that delayed action, which requires the abrupt introduction of actions to deliver the required emission reductions within a shorter space of time requires higher levels of investment, increases national debt and causes significant economic disruption.[314] The CCC has also[315] stated that the **greatest risks are associated with failing to act quickly enough to tackle climate change,** increasing uncertainty for businesses and households, leading to unnecessary costs in future, and Northern Ireland missing out on the potential benefits of climate investment that takes place elsewhere in the UK.

[312] https://www3.weforum.org/docs/WEF_Accelerating_Decarbonization_through_Trade_2022.pdf

[313] Resilient Infrastructure for Northern Ireland | 2024 | Institution of Civil Engineers (ICE)

[314] Office for Budget Responsibility Fiscal risks report. (2021). Available at: https://obr.uk/docs/dlm_uploads/Fiscal_risks_report_July_2021.pdf

[315] https://www.theccc.org.uk/publication/letter-economic-costs-of-setting-and-delivering-a-2050-emissions-target-for-northern-ireland/

Delays in investing can stifle economic growth – while the costs to recover from the damaging impacts of climate change continue to increase. The costly impacts of flooded homes, damage to infrastructure and disruption to businesses and homes from severe flooding and storms will increase without mitigation investment and adaptation investment.[316] The Grantham Institute[317] estimated that the total cost of climate change damages in Northern Ireland will increase from 0.83% of GDP at present to 2.38% by 2060 and 7.6% by the end of the century. Failure to deliver timely investment in climate action will result in missed opportunities with significant economic consequences.

Estimating the investment needed to deliver these policies and proposals is a critical first stage in understanding the cost of this draft Climate Action Plan. Using this information, during the remainder of the carbon budget period, we will continue to invest in research and modelling to understand the public and private investment implications, the macroeconomic consequences and the wider benefits associated with a transition to net zero.

13.3 Funding the Transition

Funding our net zero transition requires public and private funding. We need to better understand the barriers to unlock private sector investment so that, as government, we can both encourage, incentivise and regulate private sector investments. This will require consideration of how we can scale up private finance to deliver our net zero requirement.

A range of relevant funding streams to assist in achieving the carbon budget in relevant emitting sectors are in place, planned or in development. To increase awareness of available funds with the objective of increasing uptake, DfE, DAERA and DoF will undertake a joint landscape review of all the funding streams available for climate action and how these can be accessed.

In addition, the EU Peace Plus Programme, delivered by the Special EU Programmes Body (SEUPB), is worth €1.145 billion and includes a budget allocation of approximately €303 million to support collaborative initiatives 'Supporting a Sustainable and Better Connected Future' within the programme area (Northern Ireland and the Border Counties of Ireland). This, and other areas of programme intervention, may positively impact on reducing emissions.[318]

Achieving our net zero targets requires a more innovative approach to funding and how we can work collaboratively to leverage and attract private investment. Market conditions must be attractive, and investments must be enabled by creating routes to market, facilitating partnerships and addressing disincentives to invest while at the same time ensuring that there is fair access to opportunity for all.

[316] https://www.theccc.org.uk/publication/adapting-to-climate-change-progress-in-northern-ireland/

[317] What will climate change cost the UK? Risks, impacts and mitigation for the net-zero transition - Grantham Research Institute on climate change and the environment

[318] https://www.economy-ni.gov.uk/news/minister-sets-out-his-vision-economy

One such funding mechanism, identified by DoF, which has been in place since 2017, is the Northern Ireland Investment Fund (£150 million), which aims to help address market failures and accelerate and increase investment in private sector-led development, including infrastructure and low carbon projects.

Another example is the development of a Net Zero Accelerator Fund which is currently being explored. Building on the success of the Northern Ireland Investment Fund, the Net Zero Accelerator Fund would create a new equity fund. This fund would be part funded through Financial Transactions Capital and private finance to accelerate the delivery of net zero projects needed to help Northern Ireland meet its obligations under the Act. Specifically, the fund would be available to address market inertia in areas where investments are needed but where the market signals are not yet clear. It would support private and community sector investments that deliver on the policy objectives of the draft Green Growth Strategy[319], the draft Investment Strategy for Northern Ireland[320], the DfE Economic Mission and the Energy Strategy.[321] This would help to build skills and funding to support achieving emissions targets, to reduce delivery time that helps to achieve the pace needed and to maximise benefits for the public sector.

Invest Northern Ireland will work in partnership to embed net zero and green economy principles into its internal structures to ensure that it is well placed to support businesses locally and to attract the right investment. In addition, it will deliver a green economy proposition for Northern Ireland by ensuring appropriate solutions and targeted investment are in place to advance business opportunities in the green economy and to enable business transition to net zero.

Private sector investment that supports nature and nature-based solutions will also be crucial and we recognise that we need to do much more to understand how best to achieve this and to encourage investment that will deliver for climate and our environment. Part of this will involve our continued engagement in the work being undertaken to develop a UK Green Taxonomy. This taxonomy will act “as a common framework, for investments that can be defined as environmentally sustainable, helping to tackle ‘greenwashing’, improve understanding of environmental impact to help companies and investors make informed green choices, support investment in sustainable projects and boost efforts to tackle climate change”[322].

[319] Consultation on the draft Green Growth Strategy for Northern Ireland | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

[320] Infrastructure-2050-draft-Investment-Strategy-for-Northern-Ireland-FINAL.pdf

[321] The Path to Net Zero Energy. Safe. Affordable. Clean. (economy-ni.gov.uk)

[322] New independent group to help tackle ‘greenwashing’ - GOV.UK

Integrating Climate Action in Infrastructure Plans and Budgets

A refocusing of investment by government will be crucial to fund the major infrastructure projects required to enable the transition to a low carbon economy; to fund the research and development necessary to develop technologies and solutions required to meet short-, medium- and long-term targets; and to incentivise further investment in early-stage technologies and demonstrator projects. This means aligning our climate action with infrastructure plans and budgeting.

Investment Strategy and 10-year Investment Plan

The Investment Strategy for Northern Ireland (ISNI) reflects the Executive's objectives for infrastructure investment. A 10-year investment plan will be set out within the ISNI. This will include strategically significant infrastructure projects and programmes that are underway or otherwise committed to, and other infrastructure investments which should be advanced to progress the Executive's objectives. In advancing the latter, project sponsors will be required to give consideration to obligations under the Act – this is unlikely to mean that all projects are net zero but, as a whole, will put Northern Ireland on an improved trajectory to meet its obligations by (i) considering climate impact at the earliest stage of project design in order to reduce emissions, and (ii) supporting projects/ innovations that bring the potential to offset emissions. Inevitably, this means a change of focus on future investment plans, with some projects not progressing and others accelerating, depending on their contribution to addressing climate change.

The availability of capital for (and the revenue consequences of) publicly funded infrastructure investment is a key constraint to progress; meaning it cannot be renewed at the pace we would wish and there must be a focus on prioritisation. As such the ISNI brings attention to the need for better asset management to improve the performance of our existing assets, to prevent asset failure and adapt to climate change. Separate to the investment plan, the ISNI identifies a set of infrastructure challenges that require Executive action, for example, decarbonisation of the grid, where legislation is required to improve the regulatory environment and drive the appropriate private sector investment.

Investment Strategy for Northern Ireland – Qualitative Prioritisation Framework

The development of the ISNI was aided by a qualitative assessment framework developed with cross-departmental input. The framework assesses the relative contribution of departmental proposals to the achievement of People, Planet and Prosperity-focused outcomes that align with the UN Sustainable Development Goals. To do this, departments self-assessed their capital investment proposals against the framework shown below scoring each proposal on a scale of 1-10 against a set of criteria.

1	**People** 	Social Inclusion	Health & Wellbeing	Quality Homes	Places & Spaces	Public Safety
2	**Planet** 	Climate Mitigation	Climate Adaptation	Air & Water Quality	Waste & Circular Economy	Nature & Biodiversity
3	**Prosperity** 	Innovation and R&D	Productivity	Economic Activity	Regional Balance	Education, Skills & Learning

Budget Position

The public sector finance position in Northern Ireland has been challenging, and this is likely to remain the case for the duration of the carbon budget period. This will influence the pace and scale that the policies outlined in this plan can be implemented. However, departments should continue to work to reprioritise investments to deliver climate action that has greatest impact; where possible, actively identify external funding opportunities and models; exploit opportunities afforded by UK initiatives such as those outlined in the UK Green Finance Strategy[323]; identify if there are any relevant financial instruments under UK Green Investment policy; take a new approach to compete for UK-wide funding, including collaborating, where possible, with the National Wealth Fund to build a local pipeline of investible projects[324]; and embed net zero in our decision-making processes.

[323] Mobilising green investment: 2023 green finance strategy - GOV.UK)

[324] The UKIB aims to partner with the private sector and local government to increase infrastructure investment focusing on two strategic objectives: tackling climate change and enabling regional and local economic growth. The bank has £22 billion financial capacity to invest across these two functions, providing corporate and project finance and investing across the capital structure to private sector whilst offering impartial, expert advisory services, currently at no charge, and has £4 billion of the lowest cost finance to support local authority infrastructure projects above £5 million. The UK Government has also announced a new 'National Wealth Fund' with a commitment to provide an additional £7.3 billion of funding to the UK Infrastructure Bank to invest in priority areas, including renewable energy.

Just Transition Fund for Agriculture

A specific section in the Act[325] requires DAERA to establish a scheme for the administration of a fund to be known as the Just Transition Fund for Agriculture. The purpose of this scheme is to provide advice and financial assistance to the agriculture sector to deliver its contribution to meeting carbon budgets and emissions reduction targets by implementing proposals and policies to be included in Climate Action Plans.

The nature and scale of a future bespoke Just Transition Fund for Agriculture will be determined by emerging needs and the advice from the Just Transition Commission and will need to be considered in the context of budgetary pressures and priorities across the Northern Ireland Executive. However, as a starting point, the Executive has agreed to set aside dedicated funds in 2025/26 for a Just Transition Fund for Agriculture in the budget.

For the first carbon budget period, the majority of actions to support the agriculture sector to reduce emissions, outlined in the Agriculture chapter of this Climate Action Plan, are those being developed through DAERA's new Sustainable Agriculture Programme. This programme aims to transition to a more sustainable farming sector by seeking to implement policies and strategies that benefit climate and the environment, while very importantly supporting our economically and socially significant agriculture sector. The schemes to be introduced through this programme will be essential levers in contributing to Northern Ireland's statutory obligations under the Act and achieving a genuinely just transition.

[325] Section 31 (1) and (2) in the Act

13.4 Carbon Pricing, the Emissions Trading Scheme and Carbon Leakage

Carbon pricing captures the external costs of emissions.[326] These external costs are the costs of climate change that society pays for, for example, crop damage, health care costs from heat waves, and loss of property from flooding and sea level rise. Carbon pricing links these costs to their sources by putting a price on the carbon dioxide (CO_2) emitted. This shifts the costs from the public to those responsible. It incentivises polluters to change their activities to reduce emissions or to continue emitting but pay for the damage caused.

The World Bank points to the growing consensus among governments and businesses on the fundamental role of carbon pricing in the transition to a decarbonised economy. It can help to incentivise clean development; whilst providing a source of revenue and mobilising financial investment, which is particularly important where budgets are constrained.

Emission Trading Schemes (ETS) are an important carbon pricing instrument. In the UK and EU, they act as strong policy levers for driving down GHG emissions in energy intensive industries and the aviation and power sectors. They work on a 'cap and trade' principle, where a limit is set on the total amount of certain GHG that can be emitted by sectors covered by the schemes. This restricts the total amount of carbon that can be emitted and, as the cap is decreased over time, can make a significant contribution to achieving the net zero target. Within this cap, participants receive free allowances and/or buy emission allowances at auction or on the secondary market to cover their reportable emissions. If a company reduces its emissions, it can either keep spare allowances to cover future needs or sell them. This trading process creates a carbon market, putting a price on carbon to incentivise decarbonisation.

As the quantity of available allowances reduces, the price of carbon may be expected to rise. This makes it more cost effective to invest in abatement technology and switch to cleaner fuels, than to purchase carbon allowances. In this way, the schemes promote carbon emissions reduction and investment in clean, low carbon technologies.

The impact of ETS policy is intrinsic to emission projections for the applicable sectors, such as energy, and therefore ETS is not recorded specifically as a savings in our quantification exercise.

Following the UK's departure from the EU, Northern Ireland participates in both the UK Emission Trading Scheme (UK ETS) and, under the terms of the Windsor Framework (formerly the Northern Ireland Protocol), the EU Emissions Trading Scheme (EU ETS), solely for its electricity generators, to preserve the operation of the Single Electricity Market (SEM) on the island of Ireland.

The EU Commission adopted several laws in April 2023 to align with net zero objectives as part of their wider Fit for 55 Climate Package[327], which provides their roadmap for

[326] What is Carbon Pricing? | Carbon Pricing Dashboard (worldbank.org)

[327] Fit for 55 - The EU's plan for a green transition - Consilium (europa.eu)

reducing the EU's GHG emissions by 55% by 2030 compared to 1990 levels and reach climate neutrality by 2050 as now enshrined in EU Law. This includes increasing the overall ambition of the EU ETS, including the reduction of the number of carbon allowances to align the cap with a net zero trajectory.

The UK ETS is a UK-wide scheme and is administered jointly by the UK, Welsh and Scottish governments, and DAERA in Northern Ireland, which collectively constitute the UK ETS Authority. DAERA also administers the EU ETS on behalf of Northern Ireland. In Northern Ireland, sectors that participate in either the EU or UK ETS accounted for 16.39% of Northern Ireland's total GHG emissions for 2020. This percentage is likely to increase as the UK ETS develops over the coming years.

The participation of the UK in emissions trading schemes since the inception of the EU ETS in 2005 has seen a 52% decrease in traded sector emissions in Northern Ireland alone. That is equivalent to just over 3 mega tonnes reduced in Northern Ireland from just those sectors. It is expected to build on this progress with the ongoing development of the UK ETS. The UK ETS primary auctions have generated £15 billion in revenue for HM Treasury in the first three years of its existence.

Last year, the UK ETS Authority consulted on proposals to develop the UK Scheme to align with the UK Government and Devolved Administrations' net zero targets. Key outcomes outlined in the government response to this consultation included the intention to implement a reduced emissions cap, aligned with net zero emissions, from 1 January 2024 and expand the scope of the scheme into other sectors (domestic maritime and waste incineration/energy from waste). The government response also committed to consult further on future opportunities for scheme development, including the incorporation of Greenhouse Gas Removal (GGR) technology into the UK ETS carbon market and on consideration as to how carbon dioxide from UK ETS installations being transported to permanent geological storage, by means other than via pipelines, can be accounted for within the scheme.

Carbon leakage is the transfer of the production of goods (including agricultural goods) and the provision of services to countries with less stringent climate change policies. It has the potential to undermine action to reduce global emissions, resulting in missed investment opportunities and offshoring[328] of production and jobs.

To date, ETS-related policy development has been identified as posing a potential risk of carbon leakage. High carbon prices and reduced allocation of free allowances under ETS (free allowances being the main carbon leakage mitigation policy tool within the scheme) could increase the risk of carbon leakage and reduce availability of capital to invest in decarbonisation. This will need to be taken into consideration in the development of the UK Carbon Border Adjustment Mechanism (CBAM). In December 2023, the UK Government announced its intention to implement a CBAM from 2027.

[328] Offshoring is the relocation of a business process from one country to another.

A CBAM applies a levy on imported goods within scope, based on the equivalent UK ETS price, ensuring that imported goods are subject to an equivalent carbon price to that faced by UK producers. We will continue to work closely with the UK Government as they seek to address this issue and engage internationally to establish methodologies that allow fair comparison of measuring emissions and mitigations. Consideration will also need to be given to how the proposed UK CBAM will interact with the EU CBAM, which was introduced, on a reporting only basis from 1 October 2023 (i.e. importers of goods within scope are required to report on the emissions associated with production of those goods but are not yet subject to a financial liability).

CHAPTER 13: SUMMARY OF INVESTMENT, COST AND BENEFITS ACTIONS

1. By December 2025, subject to funding availability, DAERA will commission further research to understand the macroeconomic impact of climate action and understanding of the cost/benefits of different measures.
2. During the carbon budget period, departments will review potential funding sources and communicate with relevant stakeholders to maximise uptake.
3. During the carbon budget period, DAERA will establish a scheme for the administration of a Just Transition Fund for Agriculture informed by need and potential benefit.
4. During the carbon budget period, departments will need to invest in research and development to inform decision making and future policy development.
5. During the carbon budget period, DAERA will work closely with the EU and UK to ensure that the Northern Ireland position is reflected in the design and implementation of the ETS.

14. Climate Adaptation

14.1 Introduction

The world is already experiencing changes in average temperatures and an increasing frequency of severe weather events as a result of climate change.[329] During 2023 and 2024 we have seen global heat and sea temperature records repeatedly broken, and the extreme impacts that this is having on our weather systems, on food production and yields, and increased health risks from extreme heat stress.[330] It is critical that we ensure that our society, economy and environment are well adapted and resilient to both the current and future projected impacts of climate change.

14.2 Adaptation and Mitigation

Whilst in recent years much focus has been placed on climate mitigation measures concerned with reducing our emissions, we must not lose sight of the fact that reduction of emissions is only part of the climate change challenge. Even when emissions are reduced to net zero, we will still have locked in climate change impacts as a result of historic emissions. To properly address the impacts of climate change, we must ensure that there continues to be adequate investment and attention given to climate adaptation measures, whilst we simultaneously continue to progress work to reduce our emissions.

Some measures, such as peatland restoration and afforestation provide dual mitigation and adaptation benefits through the carbon they store and their contribution to flood prevention through increased water storage capacity and lag time following periods of heavy rainfall. However, it is also critical that we continue to invest in and take forward specific climate adaptation measures, focused on protecting our economy, communities and environment from the impacts of climate change that cannot be avoided through emissions reduction alone.

In developing the policies and proposals which seek to reduce our GHG emissions, within this plan we have taken account of both the current and projected impacts of climate change as required by the Act.

14.3 Impacts of Climate Change in Northern Ireland

The UK Climate Risk Summary Report for Northern Ireland[33]which was published by the CCC in June 2021, highlighted that Northern Ireland is already observing climate-related changes. We can also observe how climate change can exacerbate existing challenges especially in our natural environment. We have seen this locally with the proliferation of blue-green algae in Lough Neagh.

Table 28[332] highlights that these changes include an average annual temperature increase of 0.7°C and an annual mean rainfall increase of 6.4% from the mid-1970s to mid-2010s in Northern Ireland; and a UK-wide increase in extreme heat events and sea level rise of ~1.4mm per year since 1901 (i.e. 16cm to date).

[329] Introduction | UNFCCC

[330] From widespread floods to severe heatwaves, ESOTC 2023 puts Europe's climate in focus | Copernicus

[331] CCRA-Evidence-Report-Northern-Ireland-Summary-Final.pdf (ukclimaterisk.org)

[332] UK Climate Projections (UKCP) - Met Office

Table 28: Observed impacts of climate change in Northern Ireland from UK Climate Projections 2018

Variable	Change in Northern Ireland
Average annual temperature	Increase of 0.7°C from mid-1970s to mid-2010s
Annual mean rainfall	Increase of 6.4% from mid-1970s to mid-2010s
Weather extremes	UK-wide increase in extreme heat events Little evidence yet on changes in extreme rainfall
Sea level rise	UK-wide increase of ~1.4mm per year since 1901 (16cm to date)

The 2018 UK Climate Projections[333] for Northern Ireland predict (as compared to a 1981-2000 baseline):

- A rise in annual temperatures of approximately 1.2°C by the 2050s;
- Hotter, drier summers with warmer, wetter winters;
- An increase in winter rainfall of approximately 3% by the 2050s;
- A rise in sea level of approximately 14-16cm by the 2050s; and
- Greater weather extremes and increased frequency of severe weather events.

The CCC's independent assessment of climate risk, which was used to help inform the third UK Climate Change Risk Assessment (CCRA3), identified 61 risks and opportunities from climate change to Northern Ireland – including to business, infrastructure, housing, the natural environment and our health – and from the impacts of climate change internationally. Each of these risks were given an urgency score where risks categorised as 'more action needed' and 'further investigation' are more urgent than those categorised as 'watching brief' and 'sustain current action'. Of the 61 risks and opportunities considered in the assessment, more action is needed now to address 31 of them, further investigation is needed for 19, sustaining current adaptation action is only deemed appropriate for five of the risks or opportunities, and six have been classified as remaining on a 'watching brief'. This represented a significant increase in risk ratings from the previous advice which informed the CCRA2[334] in 2017.

Specific risks considered included risks of new pests, pathogens and climate sensitive diseases; increased risk of wildfires during prolonged periods of heat; risks to water supply (quality and abundance) and risks to energy generation; over-heating of buildings which may impact upon more vulnerable members of society such as those with

[333] UK Climate Projections (UKCP) - Met Office

[334] UK Climate Change Risk Assessment 2017 Evidence Report - Climate Change Committee

underlying health conditions; associated damage to property and infrastructure from an increased frequency of severe weather events and associated disruption to businesses and emergency services access; reduced employee productivity; coastal erosion; and food production and distribution impacts.

In recent years, we have experienced the impacts of climate change locally in Northern Ireland.[335] From widespread flooding in the North-West in 2017[336] to more recent flooding events in Downpatrick and Newry in 2023.[337] We have also seen back-to-back and significant storm events, including Storm Éowyn in January 2025 and Storms Isha and Jocelyn in 2024, resulting in power outages[338] and damage to IT infrastructure[339] whilst also seeing record temperatures broken[340] and significant wildfire events.[341]

14.4 The Northern Ireland Climate Change Adaptation Programme

The Climate Change Act 2008 requires that the UK makes an assessment of climate risk and takes subsequent action to address these risks on a five-yearly cycle. Northern Ireland, along with the other devolved governments, contributes towards the development of a UK-wide CCRA[342] which is informed by the CCC's independent assessment of climate risk to the UK (CCRA-IA).

In response to the latest CCRA, Defra[343] leads on coordinating the development of a UK-level National Adaptation Programme (NAP), whilst DAERA coordinates the development of a Northern Ireland Climate Change Adaptation Programme (NICCAP)[344] on behalf of the Northern Ireland Executive. These adaptation programmes, as required by the 2008 Act, set out details of policies and proposals to be implemented by departments in response to the latest CCRA over the lifespan of the five-year programme.

We recognise the important role our councils, environmental non-government organisations, businesses, industry and academia play in creating climate resilience and so, while not required by the 2008 Act, we also include actions from key stakeholders outside of departments in our adaptation programmes. Northern Ireland is, at present, the only UK region to have incorporated local government and civil society into its adaptation programme.

[335] Extreme Weather Events in Northern Ireland | Climate NI

[336] Review of North West Flooding August 2017 | Department for Infrastructure (infrastructure-ni.gov.uk)

[337] Flooding causes havoc across Northern Ireland - in pictures - BBC News

[338] Storm Éowyn: Thousands without power as storm batters NI - BBC News

[339] Fibrus: Storm-damaged broadband repairs may take a week - BBC News

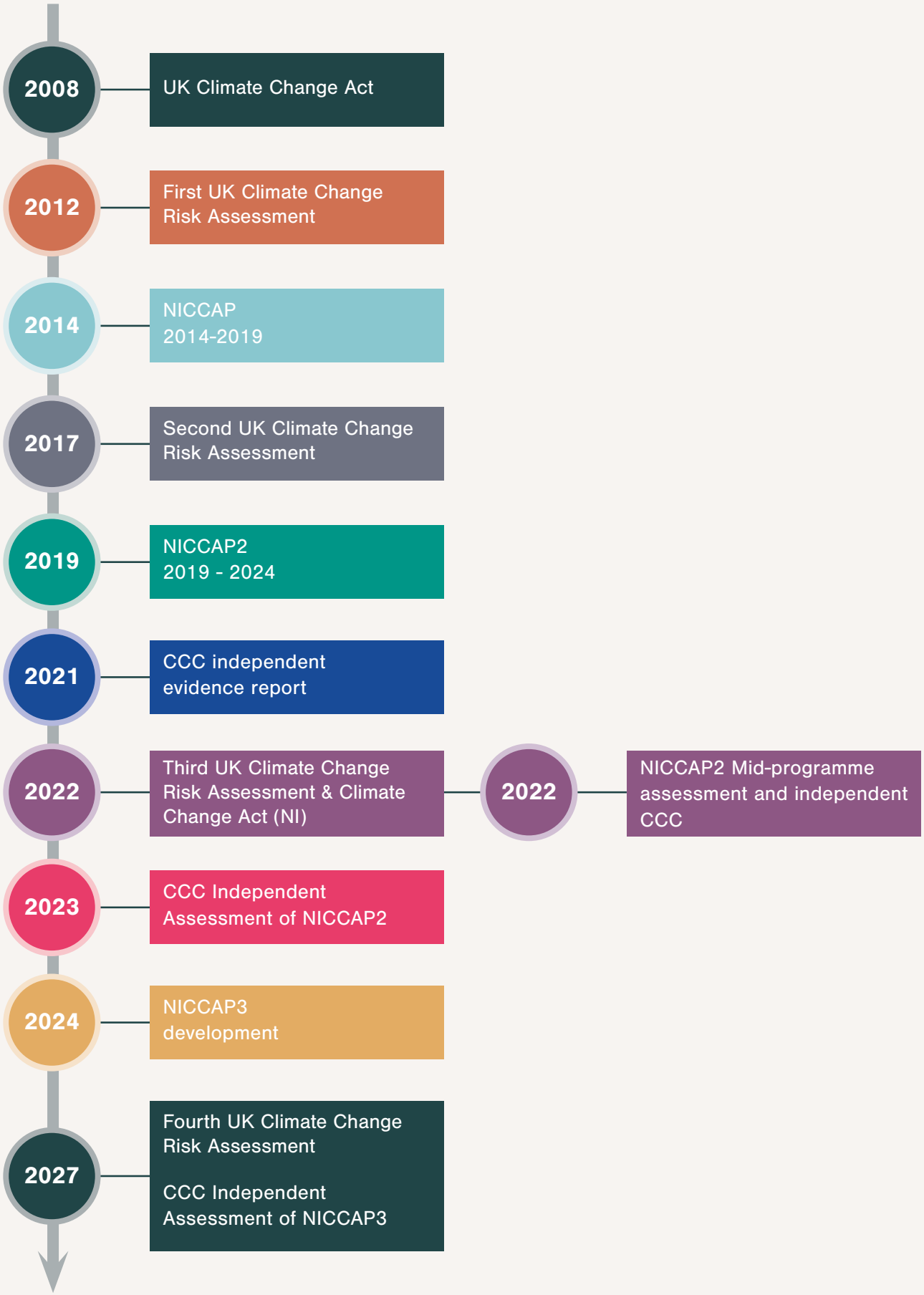
[340] Castlederg confirmed as holding NI's hottest day record - BBC News

[341] Slieve Donard: Over 100 firefighters continue to tackle Mournes 'major incident' - BBC News

[342] Section 56 of the UK Climate Change Act 2008

[343] The UK Department for Environment, Food and Rural Affairs.

[344] The current NICCAP was published in September 2019. Northern Ireland Climate Change Adaptation Programme 2019-2024 Final-Laid.PDF (daera-ni.gov.uk)


2008
UK Climate Change Act
2012
First UK Climate Change Risk Assessment
2014
NICCAP 2014-2019
2017
Second UK Climate Change Risk Assessment
2019
NICCAP2 2019 - 2024
2021
CCC independent evidence report
2022
Third UK Climate Change Risk Assessment & Climate Change Act (NI)
2022
NICCAP2 Mid-programme assessment and independent CCC
2023
CCC Independent Assessment of NICCAP2
2024
NICCAP3 development
2027
Fourth UK Climate Change Risk Assessment
CCC Independent Assessment of NICCAP3

In January 2022, the CCRA3[345] was laid in Parliament by Defra following the publication of the CCC's independent assessment of climate risk to the UK in June 2021. The CCRA3 laid in Parliament agreed with the CCC's independent assessment across the 61 risk and opportunity areas.

In response to the CCRA3, DAERA has commenced the development of the third Northern Ireland Climate Change Adaptation Programme (NICCAP3) in 2024 which, subject to Executive agreement, following a period of public consultation in early 2025 is due to be published during 2025.

To help inform the development of NICCAP3, and with the agreement of other departments, DAERA took the proactive step of commissioning the CCC to undertake an independent assessment of NICCAP2 ahead of a new legal requirement under the Act[346] . Key messages highlighted in the CCC's assessment,[347] which was published in April 2023, included that planning for the impacts of climate change in Northern Ireland remained at an early stage with limited evidence of delivery (Figure 35). The CCC also recommended that the next NICCAP will need to increase its scope to include the full range of sectors and policy areas which require adaptation, address data gaps and build upon the progress made to date. In the development of NICCAP3, in response to the CCRA3, departments are taking account of the CCC's advice and recommendations as appropriate.

Figure 35: Key messages from CCC assessment

NICCAP2 has some of the elements required for a vision of a well-adapted Northern Ireland. The current NICCAP objectives envisage a Northern Ireland that is adapted to climate change across seven areas. Most of the seven areas have one or more key actions within the programme.

Planning for climate change in Northern Ireland remains at an early stage. Across key areas of adaptation most of the critical policy and planning milestones that we identify as important for delivering adaptation are not in place. Preparation for climate change in areas falling outside the scope of NICCAP2 is noticeably poorer than for areas within the programme.

Despite the critical importance of adapting to climate change, there is only limited evidence of delivery, and data gaps in key areas are unacceptably large. The absence of relevant data is a key barrier to assessing all aspects relevant to delivery and implementation of adaptation policy. For two-thirds of the adaptation outcomes we look at in this report, the lack of relevant indicator data prevents us making a judgement on progress in delivery and implementation. This needs to be addressed with urgency.

The next NICCAP must go much further than its predecessor. It must increase its scope to include the full range of sectors and policy areas which require adaptation, and critical data gaps need to be closed.

[345] UK Climate Risk Assessment (CCRA3)

[346] Sections 48 and 49 in the Act.

[347] Adapting to climate change – Progress in Northern Ireland - Climate Change Committee (theccc.org.uk)

To ensure that future adaptation progress is independently monitored, the Act places a requirement[348] on the CCC to undertake an assessment of the progress made, to make recommendations for the next adaptation programme which DAERA must coordinate and to lay a response in the Assembly with input provided by other departments as appropriate. This new legal requirement will commence for NICCAP3.

CHAPTER 14: SUMMARY OF CLIMATE ADAPTATION ACTIONS

1. During 2025, DAERA will consult on and finalise the third Northern Ireland Climate Change Adaptation Programme (NICCAP3).
2. Throughout the carbon budget period, departments will work with a range of key stakeholders and through networks such as Climate Northern Ireland to raise awareness of the need for climate adaptation measures.

[348] Sections 48 and 49 in the Act

List of Annexes

List of Acronyms

Acronym	Meaning
AA	Appropriate Assessment
AD	Anaerobic Digestion
AERA Committee	Committee for Agriculture, Environment and Rural Affairs
AFBI	Agri-Food and Biosciences Institute
AI	Artificial Intelligence
ALBs	Arm's Length Bodies
BECCS	Bioenergy with carbon capture and storage
BEVs	Battery Electric Vehicles
BITC	Business in the Community
BREEAM	Building Research Establishment Environmental Assessment Method
BRT2	Belfast Rapid Transport 2
Ca	Calcium
CABB	Cooperation across Borders for Biodiversity
CAFRE	College of Agriculture Food and Rural Enterprise
CAN	Calcium Ammonium Nitrate
CANN	Collaborative Action for the Natura Network
CBAM	Carbon Border Adjustment Mechanism
CCC	Climate Change Committee
CCEA	Council for the Curriculum, Examinations & Assessment
CCRA	Climate Change Risk Assessment

Acronym	Meaning
CCRA-IA	Independent assessment of climate risk to the UK
CCS	Carbon Capture and Storage
CH_4	Methane
CHPQA	Combined Heat and Power Quality Assurance
CO_2	Carbon Dioxide
COP26	26th United Nations Climate Change Conference
COP29	29th United Nations Climate Change Conference
COVID-19	Coronavirus Disease 19
CPANI	Commissioner for Public Appointments for Northern Ireland
CRIA	Child Rights Impact Assessment
CSTA	Chief Scientific and Technology Adviser
DACCS	Direct Air Capture with Carbon Capture and Storage
DAERA	Department of Agriculture, Environment and Rural Affairs (NI)
DE	Department of Education (NI)
DEFRA	Department of Environment Food and Rural Affairs (UK)
DESNZ	Department of Energy Security and Net Zero (UK)
DfC	Department for Communities (NI)
DfE	Department for the Economy (NI)
DfI	Department for Infrastructure (NI)
DoF	Department of Finance (NI)

Acronym	Meaning
DoH	Department of Health (NI)
DoJ	Department of Justice (NI)
DUKES	Digest of United Kingdom Energy Statistics
EA	Education Authority
EAYS	Education Authority Youth Service
EIP	Environmental Improvement Plan
EMS	Energy Management Strategy for Central Government
EPT	Emissions Projection Tool
EQIA	Equality Impact Assessments
ETS	Emission Trading Scheme
EU	European Union
EU ETS	EU Emission Trading Scheme
FAO	Food and Agriculture Organisation
F-gases	Fluorinated Gases
FSEIA	Financial, Social and Economic Impact Assessment
GB	Great Britain
GDP	Gross Domestic Product
GGR	Greenhouse Gas Removal
GHG	Greenhouse Gas
GLPR	Government Land and Property Register

Acronym	Meaning
GSNI	Geological Survey of Northern Ireland
GWh	Gigawatt hours
GWP	Global Warming Potential
HEVs	Hybrid Electric Vehicles
HFCs	Hydrofluorocarbons
HRA	Habitats Regulations Assessments
HSC	Health and Social Care
ICE	Internal Combustion Engines
ICE	Institution of Civil Engineers
ICT	Information and Communication Technology
IDNI	Industrial Decarbonisation for Northern Ireland
IETF	Industrial Energy Transformation Fund
IPCC	Intergovernmental Panel on Climate Change
ISNI	Investment Strategy for Northern Ireland
JFS	Joint Fisheries Statement
K	Potassium
KNIB	Keep Northern Ireland Beautiful
$KtCO_2e$	Kilotonne of Carbon Dioxide equivalent
kWh	Kilowatt hour
LACMW	Local Authority Collected Municipal Waste Statistics

Acronym	Meaning
LGV	Light Goods Vehicle
LiDAR	Light detection and ranging
LSE	Likely significant effects
LULUCF	Land Use, Land-Use Change and Forestry
LUNZ	Land Use for Net Zero
Mg	Magnesium
MOU	Memorandum of understanding
$MtCO_2e$	Million tonnes of carbon dioxide equivalent
MW	Megawatt
N_2O	Nitrous oxide
NAP	National Adaptation Programme
NbS	Nature-based Solutions
NF_3	Nitrogen trifluoride
NI	Northern Ireland
NICCAP	Northern Ireland Climate Change Adaptation Programme
NICCY	Northern Ireland Commissioner for Children and Young People
NICS	Northern Ireland Civil Service
NIEA	Northern Ireland Environment Agency
NIEN	Northern Ireland Electricity Network
NIHE	Northern Ireland Housing Executive

Acronym	Meaning
NIRO	Northern Ireland Renewables Obligation
NO	Nitrogen monoxide
NO_2	Nitrogen dioxide
OECD	Organisation for Economic Co-operation and Development
OEP	Office for Environmental Protection
OREAP	Offshore Renewable Energy Action Plan
P	Phosphorus
PFCs	Perfluorocarbons
PfG	Programme for Government
PHEVs	Plug-in Hybrid Electric Vehicles
PM	Particulate matter
PSNI	Police Service of Northern Ireland
RIA	Regulatory Impact Assessment
RNIA	Rural Needs Impact Assessment
RoI	Republic of Ireland
RSPB	Royal Society for the Protection of Birds
S	Sulphur
SAMU	Strategic Asset Management Unit
SCAMP NI	Sustainable Catchment Area Management Practice Northern Ireland
SDGs	Sustainable Development Goals

Acronym	Meaning
SEA	Strategic Environmental Assessment
SEM	Single Electricity Market
SEUPB	Special EU Programmes Body
SF_6	Sulphur hexafluoride
SNHS	Soil Nutrient Health Scheme
SO_2	Sulphur dioxide
SOLACE	Society of Local Authority Chief Executives
SONI	System Operator for Northern Ireland
SPPS	Strategic Planning Policy Statement
SRO	Senior Responsible Owner
SSFP	Smart Systems Flexibility Plan
STEM	Science, Technology, Engineering and Maths
SUVs	Sport Utility Vehicles
TEAGASC	Agriculture and Food Development Authority (RoI)
TEEP	Technically, Environmentally and Economically Practical
TEM	Transport Emissions Model
TEO	The Executive Office (NI)
UK	United Kingdom
UK ETS	UK Emission Trading Scheme
UKCP	UK Climate Projections

Acronym	Meaning
UKFS	UK Forestry Standard
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
UR	Utility Regulator
VETS	Vehicle Emissions Trading Schemes
VMS	Valuing Medicines Strategy
WCLO	Waste and Contaminated Land Order (NI) 1997
ZEVs	Zero Emissions Vehicles

Department of
Agriculture, Environment and Rural Affairs

An Roinn
Talmhaíochta, Comhshaoil agus Gnóthaí Tuaithe

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Fairmin, Environment an' Kintra Matthers

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