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Climate Change/Net Zero Targets and Related “Public Purse” Costs: preliminary considerations

RaISe - Public Finance Scrutiny Unit

This Briefing Paper provides initial consideration of key estimated costs for the “public purse”, when implementing and meeting legislative and non-legislative targets relating to climate change and net zero in Northern Ireland. The Paper draws on available estimates compiled centrally and regionally within the United Kingdom and those compiled centrally in the Republic of Ireland.

This information is provided to Members of the Legislative Assembly (MLAs) in support of their duties, and is not intended to address the specific circumstances of any particular individual. It should not be relied upon as professional legal advice, or as a substitute for it.

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Introduction

Climate change is one of the key challenges facing the world today. Taking action to address that issue inevitably has associated costs for citizens, businesses and governments. This Briefing Paper considers such associated costs, specifically those relating to the attainment of a global carbon emissions *net zero* target to “...limit the temperature increase to 1.5°C above pre-industrial levels” by 2050,¹ as formally agreed in the 2015 legally binding [Paris Agreement](#); signed by 196 parties, including the United Kingdom (UK) and the Republic of Ireland (RoI).

The Paper – commissioned by the Northern Ireland Assembly’s Committee for Agriculture, Environment and Rural Affairs (CAERA) – has been compiled by the [Public Finance Scrutiny Unit](#), located within the Finance and Economics Research Team of the Assembly’s Research and Information Service (RaISe). First, it outlines key terminology underpinning the stated targets. “Thereafter, it identifies international best practice in this area, as identified by the United Nations, the World Bank and the Organisation for Economic Cooperation and Development (OECD).

Following on, the Paper outlines the current legislative position across the United Kingdom – central and devolved - and the Republic of Ireland. It also draws on available evidence to consider related implementation costs for the “public purse” – meaning “money from or controlled by the government”² – as estimated in the UK (at central and devolved levels) and in RoI (at central level). This Paper considers those costs – in particular, those for the “public purse”, which will be incurred by governments across the UK, to help meet the global carbon emissions net zero target. Later the Paper outlines policy and actions individually taken by the United Kingdom Government, DAs (Northern Ireland, Scotland and Wales) and the Government of the Republic of Ireland. Each discussion reflects costs that could be incurred for actions taken as of 25

¹ <https://unfccc.int/process-and-meetings/the-paris-agreement>

² <https://www.collinsdictionary.com/dictionary/english/the-public-purse>

November 2024, and those future estimated costs. Moreover, where possible, each explains how those figures have been calculated, highlighting key limitations of long-term forecasting.

Generally speaking, across the countries examined in this Paper, the public purse impact has been identified as “significant”.³ However, it is important to understand that the majority of costs associated with net zero transitioning in those countries is expected to be borne by the private sector. In addition, the net zero associated costs are not only for each Devolved Administrations (DAs) own finances to address, but as an issue covers areas reserved to the United Kingdom Government thereby the burden of total public sector investment will be shared.

Finally, this Paper provides concluding remarks, drawing on earlier sections to identify potential issues for consideration that could inform Northern Ireland’s efforts when developing policy and deciding on public finance allocations and spending on programmes and projects aimed to help Northern Ireland achieve its net zero target.

Further information relating to climate change and net zero transition policy can be found in RalSe Briefing Papers: [NIAR 47-21](#), dated 1 March 2021; and, [NIAR 171-24](#), dated 13 September 2024.

This Paper is presented as follows:

- [Section 1 – Key Terminology](#)
- [Section 2 – International Best Practice](#)
- [Section 3 – United Kingdom Government](#)
- [Section 4 – Northern Ireland Executive](#)
- [Section 5 – Scottish Government](#)
- [Section 6 – Welsh Government](#)
- [Section 7 – Republic of Ireland](#)
- [Section 8 – Concluding Remarks](#)

³ [Draft Green Growth Strategy - 21 October 2021](#)

The contents of the Paper should not be relied upon as professional legal advice or opinion, nor as a substitute for either.

1 Key Terminology

To facilitate CAERA's consideration in this area, Table 1 below sets out key terminology used by international organisations and across the UK and the RoI. While such terminology is generally agreed, different jurisdictions have amended or expanded the terms' definitions, in order to meet the requirements specified in their individual legislation or policy objectives. That is important to recognise, to reduce any potential for confusion and to thereby support more informed comparison:

Table 1: Key terminology related to climate change, as specified across United Kingdom jurisdictions

Concept	Jurisdiction	Definition	Comment
Net zero	UN	<i>Net zero means cutting carbon emissions to a small amount of residual emissions that can be absorbed and durably stored by nature and other carbon dioxide removal measures, leaving zero in the atmosphere.⁴</i>	Net zero means seeking a balance between the amount of Greenhouse Gas (GHG) emissions produced and the amount removed from the atmosphere. The definitions used by each administration
	World Bank	<i>Global net zero will be achieved when human-caused greenhouse gas (GHG) emissions have been reduced to the absolute minimum levels feasible, and any remaining “residual emissions” are balanced by an equivalent quantity of permanent anthropogenic removals so that they cannot be released into the atmosphere. Anthropogenic removals refer to the withdrawal of GHGs from the atmosphere as a result of deliberate human activities, for instance by technological solutions (direct air capture and storage) or through natural solutions (land restoration and improved forest management).⁵</i>	

⁴ <https://www.un.org/en/climatechange/net-zero-coalition>

⁵ <https://www.worldbank.org/en/news/feature/2022/05/23/what-you-need-to-know-about-net-zero>

	United Kingdom Government	<i>...by the middle of this century the world has to reduce emissions to as close to zero as possible, with the small amount of remaining emissions absorbed through natural carbon sinks like forests, and new technologies like carbon capture. If we can achieve this, global emissions of greenhouse gases will be 'net zero'</i> ⁶	generally state this concept in slightly different ways but with minimal impact on the overall meaning of the concept.
	Northern Ireland	<i>Net zero carbon energy means that overall greenhouse gas emissions from energy are zero. It means reducing emissions from the energy we use for transport, electricity generation, industry and our built environment, as well as removing any remaining emissions with schemes that offset an equivalent amount from the atmosphere.</i> ⁷	
	Scotland	<i>Net zero means the amount of greenhouse gas emissions we put into the atmosphere and the amount we're able to take out will add up to zero. Our first step is to reduce emissions by changing our actions and processes, but not all emissions can be avoided. To get to net zero any emissions we create would be balanced by schemes that offset the same amount of greenhouse gases entering the atmosphere, for example by planting trees, restoring peatland or using technology like carbon capture and storage. Reaching net zero is key to tackling the</i>	

⁶ <https://www.gov.uk/government/publications/net-zero-strategy/executive-summary>

⁷ <https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Energy-Strategy-for-Northern-Ireland-path-to-net-zero.pdf>

		<i>global climate emergency, as well as the changes we need to make now because of the ongoing effects of climate change.⁸</i>	
	Wales	<i>The balancing of carbon emissions against carbon removals and/or carbon offsetting with the net result being zero⁹</i>	
Just Transition	UN	<i>A just transition ensures that environmentally sustainable economies are promoted in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind. It aims to ensure that the transition to net-zero emissions and climate resilience is orderly, inclusive and just.¹⁰</i>	Research from the Wales Centre for Public Policy (WCPP) in December 2022 states that there is no universally accepted definition of a just transition.
	World Bank	<i>A "Just Transition for All" initiative puts people and communities at the centre of the transition. The initiative works with stakeholders to create the plans, policies, and reforms needed to mitigate environmental impacts, support impacted people, and build a new clean energy future.¹¹</i>	

⁸ <https://netzeronation.scot/about>

⁹ <https://www.gov.wales/sites/default/files/publications/2024-06/welsh-public-sector-net-zero-carbon-reporting-guide.pdf>

¹⁰ <https://unglobalcompact.org/take-action/think-labs/just-transition>

¹¹ <https://www.worldbank.org/en/topic/extractiveindustries/justtransition>

	United Kingdom Government	The United Kingdom Government has not set out a specific ‘Just Transition’ strategy or policy. Rather the United Kingdom Government refers to a ‘fair’ or ‘fairness’ in its approach to reaching net-zero and addressing climate change. Both the Net Zero Strategy: Build Back Greener and The UK Low Carbon Transition Plan highlight this concept.	As such, the definitions given by each administration are broad, reflecting the priorities in each region. However, in common these definitions highlight the need to address the impact of the transition to net zero, in which some sectors will be more impacted than others. Also, the terms fair or fairness are highlighted in each definition, as
	Northern Ireland	<i>A Just Transition is about moving to an environmentally sustainable economy without leaving workers in polluting industries behind. It aims to support good quality jobs and decent livelihoods when polluting industries decline and others expand, creating a fairer and more equal society¹²</i>	
	Scotland	<i>A Just Transition is both the outcome – a fairer, greener future for all – and the process that must be undertaken in partnership with those impacted by the transition to net zero. It supports a net zero and climate resilient economy in a way that delivers fairness and tackles inequality and injustice.¹³</i>	
	Wales	<i>Just Transition means thinking about decarbonisation as a way to deliver our commitment to social and economic justice, consistent with our commitment to fair work and Social Partnership. It recognises the technological, social and economic challenges of</i>	

¹² https://www.daera-ni.gov.uk/sites/default/files/consultations/daera/Green%20Growth_Brochure%20V8.pdf

¹³ <https://www.justtransition.scot/the-commission/>

		<i>decarbonisation, and works to identify ways in which we can redress existing inequalities across communities and the Welsh workforce and prevent new ones from forming.¹⁴</i>	well as the need to address inequalities, these concepts are a priority as the process of transitioning to net zero occurs.
Carbon Budgets	UN	<i>This term refers to...an assessment of carbon cycle sources and sinks on a global level, through the synthesis of evidence for fossil fuel and cement emissions, land-use change emissions, ocean and land CO2 sinks, and the resulting atmospheric CO2 growth rate. This is referred to as the global carbon budget; the estimated cumulative amount of global carbon dioxide emissions that that is estimated to limit global surface temperature to a given level above a reference period, taking into account global surface temperature contributions of other GHGs and climate forcers.¹⁵</i>	The definitions of carbon budgets presented by each administration is, in summary, the cumulative amount of carbon dioxide

¹⁴ <https://www.gov.wales/sites/default/files/consultations/2023-12/consultation-just-transition-framework.pdf>

¹⁵ https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_AnnexI.pdf

	World Bank	<i>A carbon budget sets the total quantity of greenhouse gases that can be emitted over a specified time frame. The carbon budget is progressively reduced in each period to ultimately reach the 2050 emissions reduction and net zero targets.¹⁶</i>	(CO ₂) emissions permitted over a period of time – across each United Kingdom administrations this has been set at five-year intervals.
	United Kingdom Government	<i>A carbon budget places a restriction on the total amount of greenhouse gases the UK can emit over a 5-year period. The UK is the first country to set legally binding carbon budgets.¹⁷</i>	
	Northern Ireland	<i>A carbon budget is the maximum total amount of emissions permitted for a budgetary period (5 years). The first three carbon budgets are 2023-27, 2028-32 and 2033-37. Each carbon budget must be set at a level that is consistent with meeting emissions targets, such as the 48% reduction in net emissions by 2030.¹⁸</i>	
	Scotland	<i>A carbon budget would set a limit on the amount of greenhouse gases emitted in Scotland over a five-year period, measured in the actual number of tonnes of carbon dioxide equivalent prescribed for a given period, or in terms of a percentage reduction compared to the baseline.</i>	

¹⁶ [World Bank Reference Guide to Climate Change Framework Legislation.pdf](#)

¹⁷ <https://www.gov.uk/guidance/carbon-budgets>

¹⁸ <https://climatenorthernireland.org.uk/the-climate-challenge/policy/climate-change-act-northern-ireland-2022/>

		<i>At the end of each budget period, an assessment would be made regarding whether or not the budget had been met.¹⁹</i>	
	Wales	<i>Carbon budgets represent legally binding limits on the total amount of greenhouse gases that can be emitted in Wales for a given five-year period. The Welsh Ministers must also set a legally binding limit on the amount of international offsets they can use towards each carbon budget.²⁰</i>	

¹⁹ <https://www.gov.scot/publications/climate-change-emissions-reduction-targets-scotland-bill-position-paper/>

²⁰ <https://www.gov.wales/sites/default/files/publications/2022-12/final-statement-of-progress-cb1.pdf>

2 International Best Practice

Examples of best practice when addressing climate change and reaching the net zero target agreed by international organisations, notably the UN's (see [sub-section 2.1](#) of this Paper), the World Bank ([sub-section 2.2](#)) and the OECD ([sub-section 2.3](#)). These international organisations provide governments with guidance and support on how they could address climate change through appropriate legislation, policy and budgetary frameworks.

2.1 UN guidance

The UN, through the [UN Framework Convention on Climate Change](#) (UNFCCC), plays a role in helping to inform Member Countries' individual climate change legislation and budgetary frameworks.

Through agreements such as the [Paris Agreement \(2015\)](#) and frameworks like the [Sustainable Development Goals](#) (SDGs), the UN emphasises the need for robust legal structures and well-coordinated financing, in order to address climate change in an efficient and effective manner.

This sub-section highlights key themes arising from multiple UN instruments, to provide an overview of UN climate change-related recommendations, at both national and international levels. Those UN recommendations concern:

- 2.1.1. [Legally Binding Targets](#)
- 2.1.2. [Adaptation and Resilience Provisions](#)
- 2.1.3. [Transparency and Accountability](#)
- 2.1.4. [Best Practices for Climate-Related Budgetary Frameworks](#)
- 2.1.5. [Independent Climate Institutions](#)
- 2.1.6. [Policy Coherence and Integration](#)
- 2.1.7. [Capacity Building](#)

2.1.1 Legally Binding Targets

The UN recommends the inclusion of mandatory emission reduction targets in any legislation in this area, to ensure accountability and support long-term planning. Those targets should align with the objectives of the [Paris Agreement](#),

which aims to limit global warming to well below 2°C, preferably to 1.5°C, compared to pre-industrial levels. In particular, countries should:

- Set short-, medium-, and long-term targets for net-zero emissions (e.g., by 2050).
- Incorporate sector-specific targets for high-emission sectors (e.g., energy, transportation, agriculture).

2.1.2 Adaptation and Resilience Provisions

In terms of adaptation and resilience provisions, the UN states legislative provisions should go beyond mitigation measures such as reducing the sources of GHGs or by enhancing the storage of these gases. To do so, legislation must include provisions for adaptation to the impacts of climate change, in line with the [UN Framework Convention on Climate Change](#) (UNFCCC). Key features of such measures should include:

- [National Adaptation Plans](#) (NAPs): These plans should aim to help countries strengthen resilience by identifying vulnerabilities and prioritizing actions in sectors like agriculture, water, and health.
- [Climate risk assessments](#): Legislation should require regular assessments of climate risks; integrating them into national and regional planning.

2.1.3 Transparency and Accountability

The UN advises countries implementing [mechanisms for monitoring, reporting and verification](#) (MRV), to ensure transparency and accountability in tracking their achievement of specified climate goals. The UN's [Enhanced Transparency Framework](#) (ETF) under the Paris Agreement requires:

- Annual reporting on greenhouse gas (GHG) inventories.
- Regular updates on nationally determined contributions (NDCs).
- Public engagement in climate governance, ensuring that stakeholders, including indigenous communities and civil society, are involved in the legislative process.
- Human Rights and equity.

Climate legislation should emphasise equity and fairness; recognising the disproportionate impact of climate change on vulnerable populations. According to the [UN Declaration on Human Rights and Climate Change](#), legislation therefore should:

- Incorporate climate justice principles, ensuring that actions do not exacerbate inequalities.
- Guarantee protection for the most vulnerable groups, including women, children, and indigenous communities.

2.1.4 Best Practices for Climate-Related Budgetary Frameworks

The UN recommends several best practices to guide countries when allocating resources for purposes related to climate change mitigation and adaptation, as highlighted in Table 2 below:

Table 2. UN recommendations for climate budgeting and finance

Key UN Policy	Description
Climate-Responsive Budgeting	<p>Governments should integrate climate change into the national budgeting process. This involves:</p> <ul style="list-style-type: none">• Mainstreaming climate expenditures across all sectors, ensuring that ministries incorporate climate considerations into their budgets (for example, energy efficiency in transportation, water management in agriculture).• Developing a climate budget tagging system that identifies climate-related expenditures, allowing for transparent tracking of funds.• Setting up contingency funds to address climate-related disasters, ensuring rapid mobilization of resources during extreme events (for example, floods, droughts).
Alignment with International	<p>Countries should align national climate budgets with international climate finance mechanisms such as the Green Climate Fund and the Global Environment Facility (GEF). Best practices include:</p>

<u>Climate Finance</u>	<ul style="list-style-type: none"> • Developing project pipelines to access international funds, with a focus on projects that align with national priorities and NDCs. • Ensuring robust financial management systems to enhance accountability and transparency in the use of international funds. • Facilitating access to finance for local governments and communities, enabling them to implement locally relevant climate action.
<u>Just Transition Financing</u>	<p>A critical component of climate-related budgeting is ensuring a just transition for workers and communities that may be affected by the shift away from fossil fuels. Key features include:</p> <ul style="list-style-type: none"> • Allocating funds for retraining and reskilling programs for workers in industries affected by decarbonization (e.g., coal, oil, and gas sectors). • Establishing social protection measures, such as unemployment benefits, to support affected communities during the transition. • Engaging with labour unions, businesses, and local communities in the design of financial packages to ensure equitable outcomes.
<u>Public-Private Partnerships (PPPs)</u>	<p>To meet climate financing needs, many countries use public-private partnerships (PPPs) and innovative financing tools like green bonds. Best practices include:</p> <ul style="list-style-type: none"> • Encouraging private sector investment by creating favourable conditions, such as tax incentives and risk mitigation tools for climate-friendly investments. • Issuing sovereign green bonds to fund large-scale renewable energy and infrastructure projects. • Setting up green investment funds to attract both domestic and international private capital to climate-related projects.
<u>Carbon Pricing Mechanisms</u>	<p>The UN advocates for the use of carbon pricing mechanisms to create incentives for reducing emissions, including:</p> <ul style="list-style-type: none"> • Implementing carbon taxes or cap-and-trade systems that put a price on carbon emissions, generating revenue that can be reinvested in climate mitigation and adaptation projects.

	<ul style="list-style-type: none">• Using carbon revenues to fund renewable energy projects, energy efficiency programs, and climate adaptation measures.
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Source: Source: RalSe-PFSU (2024), relying on hyperlinked sources

2.1.5 Independent Climate Institutions

The UN recommends countries should establish independent bodies, such as climate councils or commissions, to oversee the implementation of climate legislation. These bodies should:²¹

- Provide scientific advice to the government on emissions reduction strategies.
- Monitor progress toward national and international climate goals.
- Ensure cross-sectoral coordination, bringing together different government ministries and sectors to implement climate action.

2.1.6 Policy Coherence and Integration

UN best practices emphasise the importance of integrating climate policy with other national priorities, such as economic development, health, and biodiversity conservation. It recommends that countries should:

- Develop integrated policy frameworks that link climate action to broader development goals, ensuring that climate policies contribute to poverty reduction, job creation, and social equity.
- Align climate legislation with national development strategies, including the SDGs and other international commitments.

2.1.7 Capacity Building

²¹https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf

To implement effective climate policies, the UN advises that governments need to invest in capacity building for civil servants, local authorities, and communities. This can involve:²²

- Training programs on climate budgeting, project management, and MRV systems.
- Facilitating knowledge sharing between countries through UN platforms like the UNFCCC's Climate Change Capacity Building Program.
- Encouraging south-south cooperation, allowing developing countries to share experiences and best practices in implementing climate action.

2.2 World Bank guidance

The [World Bank](#) (WB) has been a key partner for countries addressing climate change through individual member countries' legislative and budgetary frameworks. Its approach emphasises aligning development goals with climate resilience and sustainability. By promoting climate-smart policies and financing, the WB helps countries integrate climate change mitigation and adaptation into national planning and budgeting processes. The list below provides detail on a number of climate initiatives the WB is undertaking:

- [World Bank Climate Change Action Plan \(2021-2025\)](#) – Comprehensive strategy outlining how the World Bank will support countries in achieving low-carbon, climate-resilient development.
- [Carbon Pricing Leadership Coalition \(CPLC\)](#) – An initiative led by the World Bank to promote carbon pricing policies globally.
- [World Bank Group's Climate Investment Funds \(CIF\)](#) – The CIF helps countries finance climate mitigation and adaptation projects. Available at:
- [World Bank Green Bond Program](#) – The WB's initiative to raise funds for climate-related projects through green bonds.
- [Climate-Smart Agriculture \(CSA\)](#) – The WB's approach to integrating food security and climate resilience.

²² https://unfccc.int/sites/default/files/resource/techpaper_adaptation.pdf

RaISe's PFSU relied on multiple WB sources, in order to identify key WB recommendations for member governments seeking to address climate change at both national and international levels. Those WB recommendations concern:

- 2.2.1. [Climate-Resistant and Low-Carbon Development](#)
- 2.2.2. [Mainstreaming Climate Change into Sectoral Legislation](#)
- 2.2.3. [Inclusivity and Stakeholder Engagement](#)
- 2.2.4. [Policy Coherence and Alignment](#)
- 2.2.5. [Best Practices for Climate-Related Budgetary Frameworks](#)
- 2.2.6. [Institutional and Governance Frameworks](#)
- 2.2.7. [Monitoring and Evaluation \(M&E\) Systems](#)

2.2.1 Climate-Resilient and Low-Carbon Development

The WB recommends legislation should focus on transitioning to a low-carbon economy, while enhancing climate resilience. This recommendation aligns with the WB's twin goals of reducing poverty and promoting sustainable development. Key elements include:²³

- Long-term emission reduction targets consistent with international agreements, such as the Paris Agreement.
- Integration of climate resilience into national development strategies, ensuring infrastructure and social services can withstand climate-related shocks.

2.2.2 Mainstreaming Climate Change into Sectoral Legislation

The WB promotes mainstreaming climate action across all sectors. Climate legislation should cover key sectors, including:²⁴

- Energy: Fostering the use of renewable energy and energy efficiency technologies.

²³ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/401711468185370301/accelerating-climate-resilient-and-low-carbon-development>

²⁴ <https://documents1.worldbank.org/curated/en/458651637160512344/pdf/Guidance-Note-on-Climate-Change-in-Governance-Operations.pdf>

- Agriculture: Implementing climate-smart agriculture to enhance productivity and reduce emissions.
- Transport and Infrastructure: Encouraging the development of sustainable and climate-resilient infrastructure.

2.2.3 Inclusivity and Stakeholder Engagement

Effective climate legislation must be inclusive, involving all key stakeholders, including vulnerable communities, the private sector, and civil society. The WB emphasises participatory processes that include:²⁵

- Public consultations to ensure diverse perspectives are included in the legislative process.
- Engagement with the private sector to promote green investments and innovation.

2.2.4 Policy Coherence and Alignment

The WB highlights the importance of aligning climate change legislation, with broader national development strategies and international commitments. Climate policies should complement:²⁶

- Economic development plans, ensuring climate action does not compromise growth.
- International climate commitments, such as Nationally Determined Contributions (NDCs) under the Paris Agreement:

2.2.5 Best Practices for Climate-Related Budgetary Frameworks²⁷

Table 3 presents a number of policies related to best practice, as presented by the WB in relation to climate related budgeting:

Table 3. WB recommendations for climate budgeting and finance

²⁵ [World Bank Reference Guide to Climate Change Framework Legislation.pdf](#)

²⁶ See footnote 26 immediately above

²⁷ [Reference Guide for Climate-Smart Public Investment](#)

Policy	Description
Climate-Informed Budgeting and Fiscal Planning	<p>Countries must integrate climate considerations into national budgeting processes. The WB recommends using climate-informed fiscal policies to address both mitigation and adaptation needs:</p> <ul style="list-style-type: none"> • Climate-responsive public financial management (PFM): Ministries of finance should lead efforts to integrate climate risks into fiscal policies and budget allocations. • Green public investment: Allocate resources to projects that enhance climate resilience and promote low-carbon development (For example; renewable energy, sustainable agriculture).
Budget Tagging for Climate Expenditure	<p>A best practice advocated by the WB is the use of climate budget tagging, which allows countries to track climate-related expenditures across sectors. This enables:</p> <ul style="list-style-type: none"> • Transparency in climate finance: Governments can monitor the effectiveness of climate investments and adjust policies as needed. • Increased accountability: Budget tagging provides data to assess whether public spending aligns with national climate goals.
Mobilising Climate Finance	<p>The WB encourages countries to leverage a mix of public and private finance to meet their climate goals. Best practices include:</p> <ul style="list-style-type: none"> • Blended finance: Combining public and private sector investments to finance climate projects addressing; for example, renewable energy and energy efficiency upgrades. • Climate bonds: Issuing green bonds or climate bonds to finance large-scale infrastructure projects, such as public transport systems or clean energy facilities. <p>The WB's Climate Investment Funds (CIF) and its involvement with the Green Climate Fund provide countries with financing options to implement climate adaptation and mitigation programs.</p>

Carbon Pricing and Fiscal Tools	<p>Carbon pricing mechanisms, such as carbon taxes and emissions trading systems (ETS), are important tools for climate-related fiscal frameworks. The WB's Carbon Pricing Leadership Coalition (CPLC) promotes best practices, including:</p> <ul style="list-style-type: none"> • Establishing carbon pricing mechanisms that reflect the social cost of carbon, incentivising businesses to reduce emissions. • Using carbon revenues to fund climate adaptation and low-carbon transition projects, ensuring that vulnerable populations are supported.
Just Transition and Climate Equity	<p>The WB stresses the importance of ensuring a just transition for workers and communities affected by the transition to a low-carbon economy. This includes:</p> <ul style="list-style-type: none"> • Social protection and job retraining programs for workers in high-emission sectors like coal mining or fossil fuel industries. • Ensuring that climate-related investments prioritise inclusive growth, with particular attention to marginalized communities disproportionately affected by climate change.

Source: World Bank: [Reference Guide for Climate-Smart Public Investment \(2022\)](#)

2.2.6 Institutional and Governance Frameworks²⁸

Table 4 presents a number of policies related to institutional and governance frameworks, to improve capacity and policy coherence across government. In addition, recommending independent oversight and accountability:

Table 4. WB recommendations for Institutional and Governance Frameworks

Policy	Description
Strengthening Institutional Capacity	<p>Effective climate governance requires strengthening institutional capacity at both national and local levels. The WB recommends:</p>

²⁸ See footnote 24

	<ul style="list-style-type: none"> • Capacity building for ministries and local authorities, ensuring they have the knowledge and resources to integrate climate considerations into policy and budget processes. • Establishing dedicated climate finance units within ministries of finance to coordinate funding and resource allocation for climate projects
Independent Oversight and Accountability Mechanisms	<p>Countries should establish independent climate oversight bodies to monitor and evaluate progress toward climate goals. These bodies should:</p> <ul style="list-style-type: none"> • Ensure transparency and accountability by reporting regularly on the implementation of climate-related policies • Provide scientific advice and policy recommendations based on data and evidence, ensuring that governments remain on track to meet their climate targets
Policy Coherence Across Government Agencies	<p>The WB emphasises the importance of inter-agency coordination for effective climate action. This includes:</p> <ul style="list-style-type: none"> • Establishing cross-ministerial committees that ensure collaboration across different sectors, such as agriculture, transport, and energy. • Ensuring that climate policies are integrated into national development strategies, poverty reduction programs, and infrastructure investment plans.

Source: World Bank: [Guidance Note on Climate Change in Governance Operations](#) (2021)

2.2.7 Monitoring and Evaluation Systems

Effective climate policies require robust Monitoring and Evaluation (MandE) Systems. The WB recommends:²⁹

²⁹ See footnote 24

- Establishing performance indicators to track progress on emissions reductions, climate resilience, and financial allocations for climate projects.
- Conducting regular impact assessments to evaluate the effectiveness of climate legislation and spending, adjusting policies and budgets as necessary.
- Data-driven decision-making is crucial, and the WB encourages countries to invest in systems that gather and analyse climate-related data, ensuring that policies are responsive to evolving climate risks.

2.3 OECD guidance

2.3.1 Carbon Pricing

The OECD advocates for the use of carbon pricing as a core mechanism to reduce carbon emissions. Carbon pricing, through carbon taxes or cap-and-trade systems, internalises the environmental costs of emissions and incentivises cleaner technologies:³⁰

- Carbon Taxes: Governments are encouraged to introduce or strengthen carbon taxes to send clear price signals across sectors.
- Emissions Trading Systems (ETS): ETS programs, such as the European Union (EU), are highlighted as effective in promoting emissions reductions while allowing for economic flexibility.

2.3.2 Green Growth and Sustainable Development

The OECD advocates for green growth strategies that align environmental sustainability with economic development. By integrating climate policies into broader economic and development frameworks, governments can ensure that growth remains both environmentally sustainable and socially inclusive. These include:³¹

³⁰ <https://doi.org/10.1787/9789264196964-en>

³¹ [Towards Green Growth: A Summary for Policy Makers](#) (2011)

- **Policy Coherence:** There should be coherence across energy, transport, agriculture, and industrial policies, to avoid contradictory incentives.
- **Economic Diversification:** Climate policy should support sectors that are vulnerable to low-carbon transitions, helping them diversify and create new growth opportunities.

2.3.3 Regulatory Frameworks and Standards

The OECD emphasises the importance of strong regulatory frameworks for addressing market failures that impede the reduction of emissions. These include:³²

- **Energy Efficiency Standards:** Enact stringent energy efficiency regulations across sectors such as buildings, transport, and manufacturing.
- **Renewable Energy Targets:** Set ambitious targets for renewable energy can accelerate the transition to cleaner sources of energy while boosting innovation.
- **Monitoring, Evaluation and Learning (MEL) Frameworks:** Use frameworks to support governments in improving their decision making by:
 - The various uncertainties arising from climate change, including its unpredictable nature and related impacts, along with, for example, reliance on ever-advancing technology to predict and address those impacts; and,
 - Facilitating proactive continuous learning about climate change risk management, to routinely be aware of good practice that harnesses relevant technological and other advances in that area, to promote use of those advances.

2.3.4 Financing Climate Action

³² [Energy and Climate Policy: Bending the Technological Trajectory](#) (2012)

Governments are advised to mobilise both public and private finance for climate action. The OECD's role in coordinating international financing mechanisms, such as the Green Climate Fund, and facilitating climate-related development aid is recommended. Such funding includes:³³

- Carbon Finance: Encouraging the development of carbon markets and carbon finance mechanisms to attract investments into low-carbon technologies.
- Blended Finance: Combining public and private finance to reduce the risks associated with investing in climate solutions in developing countries.
- Fiscal and Budgetary Alignment: Aligning governmental fiscal and budgetary incentives with climate objectives to discourage emissions-intensive behaviours or investments by economic actors.
- Green Budgeting: Using Green Budgeting to help government better consider climate and environmental implications when making planning, preparing, executing and reporting on budgets. Such a budgeting approach should be done in collaboration across the government ministries of finance, environment and climate change, independent fiscal institutions, independent climate institutions, tax authorities, and other expert bodies.

2.3.5 Innovation and Technology Development

The OECD supports innovation as a critical element of climate policy. Encouraging research and development (R&D) and the diffusion of low-carbon technologies can significantly reduce future emissions. Specifically:³⁴

- R&D Incentives: Governments should prioritise funding for clean energy research and innovation.

³³ [Financing Climate Futures: Rethinking Infrastructure](#) (2018)

³⁴ [The Innovation Imperative: Contributing to Productivity, Growth and Well-Being](#) (2015)

- Technology Transfer: OECD supports international cooperation for technology transfer, especially to developing countries, to meet global climate goals.

2.3.6 Policy Integration and Cross-Sectoral Collaboration

Achieving climate goals requires integrating climate change policy across various sectors and fostering collaboration between different government departments and industries. The OECD advocates for a whole-of-government approach.³⁵

- Transport and Climate: Policies need to decarbonise the transport sector, which is a major contributor to emissions.
- Agriculture and Land Use: Sustainable agricultural practices and reforestation efforts should be supported to reduce emissions from land-use change.

2.3.7 Just Transition

The OECD expect companies to address social harm both in their transition away from fossil fuels as well as their adoption of greener models. The OECD guidelines recommend:³⁶

- Identifying and addressing harms – including past harms – to workers and communities while transitioning away from fossil fuels or other environmentally harmful practices. This involves practising responsible disengagement by looking after workers who may lose jobs and communities harmed by pollution or environmental damage.
- Identifying and avoiding potential human rights and environmental harms to workers and communities when transiting toward greener models. This means developing renewable energy and other products in a way that respects human rights and the environment.

³⁵ [Climate Policy Leadership in an Interconnected World: What Role for Border Carbon Adjustments?](#) (2020)

³⁶ <https://www.oecdwatch.org/oecd-ncps/the-oecd-guidelines-for-mnes/what-is-in-the-oecd-guidelines/the-oecd-guidelines-and-just-transition/>

- Engaging meaningfully with workers, communities, and other stakeholders throughout the transition process.
- Ensuring worker training and upskilling to adapt to future environmental and technological changes.
- Avoiding activities that undermine climate adaptation and resilience of communities, workers, and ecosystems.

2.3.8 International Coordination and the Paris Agreement

The OECD works closely with international frameworks like the Paris Agreement to ensure that national policies are aligned with global efforts to limit global warming to 1.5°C. OECD guidance focuses on the importance of Nationally Determined Contributions (NDCs) and mechanisms to strengthen international collaboration.³⁷

2.4 Comparison of international best practice

Table 5 below summaries the best practice examined in Section 2.1 to Section 2.3 of this Paper. The Table presents noted concepts and actions which the UN, WB and OECD have recommended to successfully address climate change and reach net zero:

³⁷ [Understanding countries' net-zero emissions targets](#) (2021)

Table 5. Common best practice recommendations as presented by the UN, WB and OECD

Policy	UN	World Bank	OECD
Integration of climate change into budgeting	Refers to climate responsive budgeting, whereby governments should integrate climate into the national budgeting process. See 2.1.4	Recommends integration of climate considerations into budgeting process. Notably, governments should consider climate responsive public financial management. See 2.2.5	Considers the alignment of fiscal and budgetary incentives, with climate objectives. See 3.3.4
Public-Private Partnership (PPPs)	Encourages use of public private partnerships (PPPs). Best practice includes creating favourable conditions for investment, issuing green bonds and establishing green investment funds. See 2.1.4	Arises under the concept of mobilising climate finance. Best practice includes blended finance – combining public and private sector investments. See 2.2.5	Strategic use of PPPs or blended finance, to develop finance to mobilise additional finance for sustainable development, notably recommended to support developing countries. See 2.3.4
Carbon pricing	Advocates carbon pricing mechanisms to incentivise emission reduction. Specifically, carbon taxes, generating revenue to reinvest in climate mitigation. See 2.1.4	Establishment of carbon pricing mechanisms, such as, carbon taxes and emission trading systems (ETS). Using carbon revenues arising, to fund climate	Is a mechanism to reduce carbon emissions carbon pricing, through carbon taxes or cap-and-trade systems, internalises the environmental costs of

		adaption and transition projects. See 2.2.5	emissions and incentivises cleaner technologies. See 2.3.1
Integration of climate policy in to broader policy development	Integrates climate policy with national priorities by developing integrated policy frameworks and alignment with national development strategies. See 2.1.6	Promotes mainstreaming climate action across all sectors aligning climate change legislation with national strategies. See 2.2.2 and 2.2.4	Advocates for a whole-of-government approach. The OECD stresses the need for coherence across policy areas to avoid contradictory incentives. See 3.3.2 and 3.3.6
Independent Climate Institutions	Recommends the creation of independent bodies such as councils and commissions to oversee implementation of climate legislation. See 2.1.5	Recommends the establishment of climate oversight bodies to evaluate progress towards climate goals. Their role will give transparency and provide advice and recommendations. See 2.2.6	References collaboration between relevant bodies when green budgeting, including Independent Climate Institutions. See 3.3.4
Institutional capacity building	Encourages government investment in building capacity for civil servants, local authorities and communities this includes training programs and facilitating knowledge sharing. See 2.1.7	Advocates governments strengthening of institutional capacity both at a national and local level. Governments should ensure staff have the knowledge and resources to integrate climate in to policy and budget processes. See 2.2.6	Considers workers have training and can upskilling to adapt to future environmental and technological changes. This is across all areas including government. See 3.3.7

Monitoring and reporting	Highlighted under the concept of transparency and accountability. Recommends implementation mechanisms for monitoring, reporting and verification. Also recommends annual reporting and regular updates. See 2.1.3	Sets a requirement for monitoring and evaluation. Including performance indicators, regular impact assessment and data driven decision making. See 2.2.7	Advocate for Monitoring, Evaluation and Learning (MEL) frameworks to assist governments and facilitate continuous learning and adjustments. See 3.3.3
Providing for a Just Transition	Is considered a critical component of climate-related budgeting transition for workers and communities that may be affected by the shift away from fossil fuels. See 3.1.4	Includes consideration of the importance of ensuring a just transition for workers and communities affected by the transition to a low-carbon economy. See 3.2.5	Recommends identifying and addressing harms; providing opportunities to upskill and retrain, while not taking actions that undermine climate adaption. See 3.3.7

Source: RalSe PFSU 2024 – Summary of multiple sources found at relevant section referenced in table

The following Sections (3-7 of this Paper) consider actions taken to date for the above-stated policy recommendations in Table 5, in terms of legislation, policy and budgetary frameworks that central and devolved governmental levels across the UK, and those in the RoI when addressing climate change and reaching the Paris Agreement's net-zero target by 2050 (internationally agreed in 2016, including the UK).

3 United Kingdom Government

The global cost of meeting the challenge of climate change and the internationally agreed target of reaching net zero is estimated at \$275 trillion (United States), which is to be incurred between 2021 and 2050, by governments across the world.

It is important to understand that the target is to be met across the UK, in line with its governance arrangements. That means the UK Government is responsible for climate change adaptation in England, and for such adaptation across the UK in policy areas that are “reserved” or “excepted” under prevailing UK devolution statutes (such as in the areas of taxation and energy security) meaning areas not “transferred” (not devolved) to the DAs in Northern Ireland, Scotland and Wales. The UK Government therefore relies on the DAs – through their relevant individual departments - to in all these policy areas to meet the net-zero target.

Moreover, the DAs – again through their relevant individual departments - are responsible for helping the UK Government to meet that target in the policy areas that have been transferred (devolved) to them (such as in the area of agriculture).

Hence, the [Climate Change Act 2008](#) (CCA 2008) provides a UK-wide legally binding framework, to cut greenhouse gas emissions and build the UK’s ability to adapt to a changing climate. The Climate Change Act 2008:

- set a target for the year 2050 for the reduction of targeted greenhouse gas emissions
- provided for a system of carbon budgeting
- established a Committee on Climate Change

In June 2019, with the [Climate Change Act 2008 \(2050 Target Amendment\) Order 2019](#), the UK Government subsequently committed to a 100% reduction of greenhouse gas emissions by 2050, when compared with 1990 levels.

As noted earlier, the CCA 2008 applies across the UK, with a small number of specific provisions.³⁸

In addition to the CCA 2008, the UK Parliament enacted additional legislation that includes measures aimed to address climate change and assist in net zero transition. Notably, the [Energy Act 2023](#), which extends to Northern Ireland (with exceptions), includes specific aims of restructuring the energy sector in the United Kingdom, including both development of low carbon energy systems and reduction of emissions from industry, transport and heat.

In addition to the legislation noted above, Table 6 below identifies key United Kingdom Government policy and strategy documents arising from such legislation:

Table 6. UK Government’s polices/strategies to address climate change and achieve net zero emissions

Policy/Strategy	Year	Description
Powering Up Britain: Net Zero Growth Plan	2023	<p>The Powering Up Britain: Net Zero Growth Plan (the Plan) is the UK Government’s comprehensive strategy to meet its net-zero emissions target by 2050, while fostering economic growth. The Plan builds on previous climate commitments and outlines policies to decarbonise key sectors such as energy, transport, and housing. It:</p> <ul style="list-style-type: none">• Features key measures to scale up renewable energy generation, particularly offshore wind, advancing hydrogen and carbon capture technologies, and improving energy efficiency in buildings.

³⁸ <https://www.legislation.gov.uk/ukpga/2008/27/contents/enacted> Extent: (2) The following provisions of this Act extend to England and Wales only— (a) sections 71 to 75 and Schedule 5 (waste reduction schemes); (b) section 76 (collection of household waste); (c) section 81 (climate change measures reports in Wales); (d) section 88 (fines for offences relating to pollution). Section 77 and Schedule 6 (charges for single use carrier bags) extend to England and Wales and Northern Ireland only. Section 79 and Schedule 8 (carbon emissions reduction targets) extend to England and Wales and Scotland only.

		<ul style="list-style-type: none"> • Emphasises green job creation, with a focus on skills development for the low-carbon economy. • Promotes investment in clean technology innovation and infrastructure, ensuring that businesses can lead in the global green transition. • Highlights the importance of energy security by reducing reliance on fossil fuel imports and stresses the need for a just transition, providing support for regions and industries most affected by the shift to a low-carbon economy.
Green Finance Strategy	2023	<p>The Green Finance Strategy 2023 aims to align the financial sector with the UK's net-zero goals, enhancing climate resilience and environmental sustainability. It:</p> <ul style="list-style-type: none"> • Sets out plans to mobilise private capital to support green projects, improve transparency through mandatory climate-related financial disclosures, and integrate sustainability into financial decision-making. • Specifies key objectives to scale up the UK's green finance market, fostering international cooperation on green finance standards, and promoting innovation in sustainable investment. • Emphasises the role of the UK as a global hub for green finance, leveraging public and private sector collaboration to drive the net-zero transition.
British energy security strategy,	2021	<p>The British Energy Security Strategy 2022 outlines the UK's approach to ensuring a secure and affordable energy supply, while achieving its climate targets. It:</p> <ul style="list-style-type: none"> • Specifies key elements are to increase domestic energy production, expanding offshore wind capacity to 50GW by 2030, accelerating the

		<p>development of new nuclear power plants, and supporting hydrogen and solar energy growth. The Strategy also addresses the need to reduce reliance on imported fossil fuels, particularly in light of geopolitical tensions, while maintaining the UK's commitment to net-zero emissions by 2050.</p> <p>Investments in energy infrastructure, innovation, and the creation of green jobs are emphasised as central to the Strategy.</p>
Transport decarbonization plan	2021	<p>The Transport Decarbonisation Plan sets out the UK's roadmap to achieve net-zero emissions in the transport sector by 2050. It:</p> <ul style="list-style-type: none"> • Includes policies aimed at reducing emissions from road, rail, aviation, and maritime transport. • Emphasises phasing out new petrol and diesel car sales by 2030, promoting the uptake of electric vehicles (EVs), expanding public transport, and encouraging active travel, such as cycling and walking. • Includes key targets for achieving a fully zero-emission bus fleet by 2035 and supporting innovation in hydrogen and electric aviation. • Focuses on infrastructure development, such as EV charging networks, and improving the sustainability of supply chains.
Industrial decarbonisation strategy,	2021	<p>The Industrial Decarbonisation Strategy aims to reduce carbon emissions from the UK's heavy industries, such as steel, cement, and chemicals, by at least 63% by 2035 and to achieve net-zero by 2050. it:</p> <ul style="list-style-type: none"> • Promotes carbon capture, usage, and storage (CCUS), hydrogen fuel development, and energy

		<p>efficiency improvements across industrial processes.</p> <ul style="list-style-type: none"> • Highlights the need for government and private sector collaboration in driving industrial innovation and transitioning to low-carbon technologies. • Provides a framework for reducing emissions, while maintaining industrial competitiveness and creating new opportunities in green jobs and technologies.
Hydrogen strategy	2021	<p>The Hydrogen Strategy outlines the UK's plans to become a global leader in hydrogen production and utilization, positioning hydrogen as a key pillar in achieving net-zero emissions by 2050. It:</p> <ul style="list-style-type: none"> • Includes goals to develop 5GW of low-carbon hydrogen production capacity by 2030, supporting its use in decarbonising industries such as steel, transport, and heating. • Promotes both green hydrogen (from renewable energy) and blue hydrogen (from natural gas with carbon capture). • Emphasises the importance of hydrogen infrastructure development, including storage and transport, and sets out a pathway for supporting innovation and creating green jobs in the hydrogen economy.
Heat and Buildings Strategy	2021	<p>The Heat and Buildings Strategy provides a roadmap for reducing carbon emissions from homes and commercial buildings, which account for around 20% of the UK's emissions. It:</p> <ul style="list-style-type: none"> • Focuses on phasing out fossil fuel heating systems, promoting the installation of low-carbon

		<p>alternatives like heat pumps, and improving energy efficiency through insulation upgrades.</p> <ul style="list-style-type: none">• Sets a goal to install 600,000 heat pumps annually by 2028 and provides funding to support households and businesses in retrofitting their buildings.• Includes key elements relating to financial incentives, regulatory changes, and public awareness campaigns to encourage the adoption of greener heating solutions.
Energy net zero white paper,	2020	<p>The Energy White Paper 2020 outlines the UK Government’s strategy for achieving net-zero emissions by 2050, while ensuring affordable, reliable energy. It:</p> <ul style="list-style-type: none">• Highlights the expansion of renewable energy, particularly offshore wind, and the role of nuclear and hydrogen in diversifying the UK’s energy mix.• Focuses on reducing emissions from power generation, transport, and heating, with plans to phase out coal by 2024 and promote electric vehicles (EVs).• Addresses the need for investment in energy infrastructure, innovation, and the creation of green jobs, setting the stage for long-term energy security and sustainability.

Source: RaISe-PFSU (2024), relying on hyperlinked sources

Potential issue for consideration:

1. How does the Department of Agriculture, Enviroment and Rural Affairs (DAERA) and other relevant Northern Ireland Executive departments engage and coordinate with the United Kingdom Government, including their

Whitehall counterpart departments, to facilitate the United Kingdom Government in meeting the Paris Agreement net-zero target by 2050? Please detail.

3.1 Climate Change Committee (CCC)

As noted previously, the CCA 2008 provided for the establishment of [Climate Change Committee](#) (CCC) as an independent, statutory body. The role of the CCC is to:

*advise the UK and devolved governments on emissions targets and to report to Parliament on progress made in reducing greenhouse gas emissions and preparing for and adapting to the impacts of climate change.*³⁹

The CCC produces a number of documents to assist the UK Government and the DAs assess their progress in meeting their legal targets on reducing emissions. The CCC's latest annual [Progress Report to Parliament](#) was published in July 2024. A number of reports to be published in 2025 have been announced by the CCC, including:⁴⁰

- Seventh Carbon Budget - 26 February 2025
- Progress in adapting to climate change: 2025 Report to Parliament - 30 April 2025
- Progress in reducing emissions: 2025 Report to Parliament - 25 June 2025

3.1.1 Carbon Budgets

As noted previously, the CCC produce Carbon Budgets on behalf of the United Kingdom Government. The CCC explain that in the United Kingdom, a Carbon Budget is:

³⁹ <https://www.theccc.org.uk/about/>

⁴⁰ <https://www.theccc.org.uk/news/coming-up/>

... a cap on the amount of greenhouse gases emitted in the UK over a five-year period. Budgets must be set at least 12 years in advance to allow policy-makers, businesses and individuals enough time to prepare.⁴¹

Each carbon budget is described as a “stepping stone”⁴² to achieving the 2050 net zero target. The CCC advise on the appropriate level of each carbon budget. Once accepted by the UK Government, Carbon Budgets are then legislated by the UK Houses of Parliament. To date, six Carbon Budgets have been produced and put into law, the most recent is the [Sixth Carbon Budget](#), published December 2020. As such, it will cover the UK for the period 2033 to 2037. At the time of writing, the UK is currently in its Fourth Carbon Budget period - 2023 to 2027. An overview of the Carbon Budgets produced by CCC can be found in [Appendix 1](#).

Each CCC Carbon Budget also provides detail on investment, costs and benefits. The Sixth Carbon Budget highlights that in terms of investment, “United Kingdom low-carbon investment each year will have to increase from around £10bn in 2020 to around £50bn by 2030”.⁴³ This is based on the balanced pathway developed by the CCC. The CCC explains this as:

The Balanced Pathway makes moderate assumptions on behavioural change and innovation and takes actions in the coming decade to develop multiple options for later roll-out (e.g. use of hydrogen and/or electrification for heavy goods vehicles and buildings). While it is not a prescriptive path that must be followed exactly, it provides a good indication of what should be done over the coming years.⁴⁴

Figure 1 (below) presents the areas underpinning cost assumptions of the CCC analysis. It provides an estimate of annual capital investment cost broken down

⁴¹ <https://www.theccc.org.uk/about/our-expertise/advice-on-reducing-the-uks-emissions/>

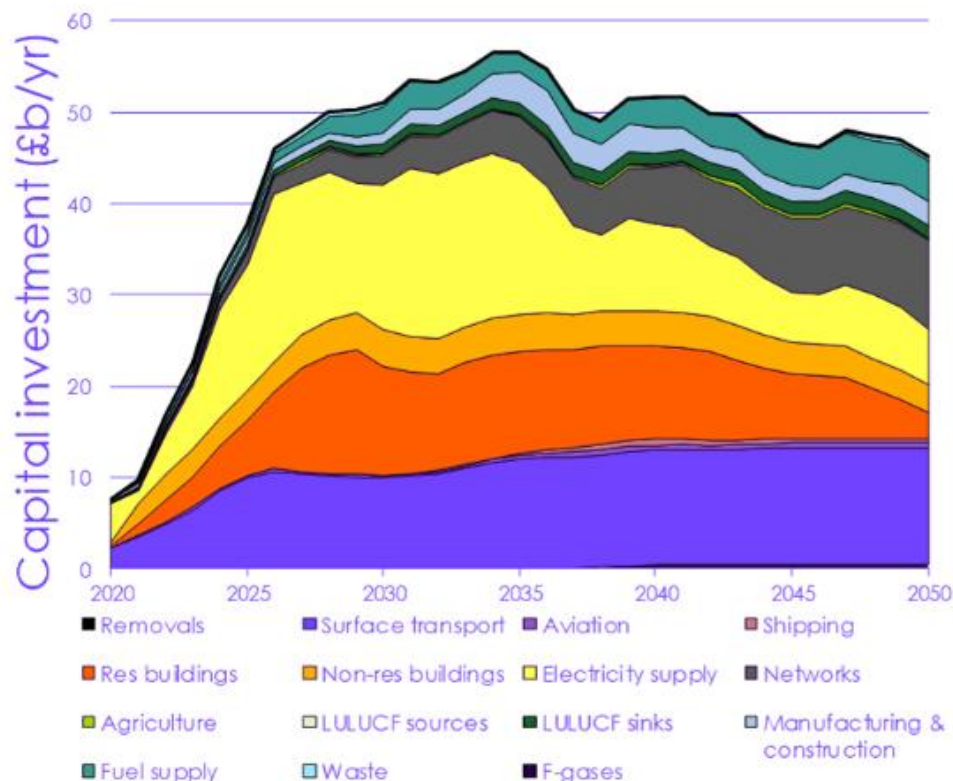
⁴² See footnote 41 immediately above

⁴³ [Climate Change Committee - Sixth Carbon Budget](#)

⁴⁴ See footnote 43 immediately above

by sectors that should be addressed in the UK's transition to net-zero. In addition, the CCC Sixth Carbon Budget provides individual cost analysis for each DA. Therein is an overview of each DA; found at [Appendix 4](#), [Appendix 5](#) and [Appendix 6](#):

Figure 1. CCC analysis of the UK Balanced Net-zero Pathway Investment programme 2020-2050⁴⁵



Source: [Climate Change Committee - Sixth Carbon Budget](#) (2020)

However, the CCC assumes much of the investment spend can be recouped through lower operating cost, such as: cheaper technologies, reduced reliance on imported fossil fuels and energy efficiency of homes and heating systems. Note that the CCC optimistically believes such assumptions could turn out differently, and consequently investment required could be reduced. The CCC explains:

⁴⁵ [Climate Change Committee - Sixth Carbon Budget](#) - This figure shows a partial picture of the required investments, without offsetting savings as operational costs. This figure is therefore not indicative of the net costs of decarbonisation.

*Some of the key technologies required to achieve Net Zero have proven to be far cheaper than even the most optimistic forecasts. There is also potential for as-yet-unknown technologies to emerge in the next 30 years that further reduce costs. This could enable faster, cheaper progress to be made reducing the UK's emissions to zero.*⁴⁶

Hence, over time the CCC has amended its assumptions, specifically those underpinned by the price on new technologies. As such, it is reasonable to assume that such trends could continue and further amendments would be required when estimating costs associated with the transition to net-zero. This factor reflects the many uncertainties of estimating costs associated with net-zero transition and long-term impacts of those on the public purse. As noted previously, the Seventh Carbon Budget will be published 26 February 2025.

Potential Issue for Consideration:

2. What engagement has the DAERA had with the CCC about the methodologies the CCC applied when developing Carbon Budgets and estimating the associated costs in sixth Carbon Budget published in 2020? Please detail.
3. To what extent has the DAERA explained to the CCC the unique characteristics of the Northern Ireland economy and its land demography, to help inform the CCC in its compilation of those 2025 costings in the Seventh Carbon Budget? Please detail.
4. What is the DAERA's understanding of the extent to which the CCC has factored the unique characteristics of the Northern Ireland economy and its land demography when compiling its 2020 costings? Please detail.

⁴⁶ See footnote 45 immediately above

5. Will or has the CCC or the DAERA undertaken any new analysis of the 2020 CCC costings (Sixth Carbon Budget) in the light of the imminent publication of the seventh Carbon Budget, which is expected in late February 2025?

3.2 National Wealth Fund

On 14 October 2024, the UK Chancellor of the Exchequer (the Chancellor) announced the creation of the National Wealth Fund (NWF), which came out of the reorganisation of the former United Kingdom Infrastructure Bank (UKIB). The NWF will have a total of £27.8 billion (bn) funding available; of which £22 bn has carried over from UKIB's budget. The additional £5.8 bn of capital will be to address five sectors outlined in the Labour Party manifesto – those were, green hydrogen, green steel, carbon capture, giga-factories and ports.

3.3 UK Budget - October 2024

On 30 October 2024, the Chancellor published the [Autumn Budget 2024: Fixing the foundations to deliver change](#). Therein, a number of financial commitments related to climate change were included:

- £5bn over two years to support the transition towards a more productive and environmentally sustainable agricultural sector in England
- £400m of support for tree planting and peatland restoration
- £2.4bn over two years in flood resilience to support the building of new flood defences
- £1bn per annum in revenue to improve recycling outcomes
- £2bn to support the climate mission internationally
- £58m across 2024-25 and 2025-26 for research and innovation in support of our climate resilience and net zero goals
- £3.9bn of funding in 2025-26 for Carbon Capture, Usage and Storage
- £3.4bn towards heat decarbonisation and household energy efficiency over the next three years.

- £163m to continue the Industrial Energy Transformation Fund over 2025-26 to 2027-28
- £200m in 2025-26 to accelerate the rollout of electric vehicle charging infrastructure
- £120m in 2025-26 to support the purchase of new electric vans through the plug-in vehicle grant
- Plans for a Carbon Border Adjustment Mechanism (CBAM) from 1 January 2027, covering aluminium, cement, fertiliser, hydrogen, iron and steel.
- More detailed Clean Power 2030 Action Plan to be published
- Updated Carbon Budget Delivery Plan to be published

A number of the funding commitments noted above are England only, and therefore the Northern Ireland Executive receives Barnett Consequentials (BCs) for each, in line with the prevailing financial arrangements under current devolution. (See sub-section 5.3 below for additional detail relating to these BCs).

3.4 2008 CCA and DAs

As explained at the introduction in Section 3 of this Paper, under current devolution settlements (specifying institutional and financial arrangements), the DAs are empowered to act in relation to transferred matters – those policy areas that have been devolved from central to devolved government - introducing their own policies and measures in those areas, which in turn help to tackle climate change.⁴⁷ Moreover, the DAs' individual departments help the UK Government's Whitehall departments to tackle climate change in those areas that have not been devolved – reserved and excepted areas.

Hence, the 2008 CCA places a duty on the DAs to contribute to the UK meeting its national emissions target. Notably, the [Net Zero Government Initiative](#) -

⁴⁷ For fuller explanation, refer to House of Commons Environmental Audit Committee, "[Climate change and local, regional and devolved Government](#)". Eighth Report of Session 2007-08. 8 July 2008, pages 32-35

published in December 2023 by the Whitehall Department for Energy Security and Net Zero - references this point, stating:

... most aspects of climate change and decarbonisation policy are devolved matters. There are complexities within this, as some related areas (including energy security, and some aspects of energy efficiency) are reserved matters with policy made on a 'whole of UK' basis. However, for the most part decarbonisation of the 'government' sector in the UK is a collective effort, with differences in approach between the administrations at Westminster, Holyrood, Stormont and the Senedd.⁴⁸

When the DAs have sought to implement the UK national target within their jurisdictions to date, and as they continue to seek to do so, it is important to note that each devolved nation has its own unique economic devolved competences and circumstances. For example, currently:

- In Scotland, government has the ability to set all income tax bands, land and buildings transactions tax and Scottish landfill tax.
 - In Wales, Income Tax rates (reducing the three UK tax bands by up to 10p) are a devolved area of competence of the Welsh Government. Also devolved are Land transaction tax and Landfill disposals tax.
 - In Northern Ireland, none of these financial levers have been devolved.
- Note, a fiscal devolution watching brief is ongoing in the RaISe-PFSU.

In this context, it also should be noted that each DA has its own unique concentration of economic activity in “hard-to-treat” sectors for emissions purposes.⁴⁹ Their competences and circumstances inevitably shape their approaches in this policy area when developing policy and strategy, as well as decision-making relating to the budget/public finance.

⁴⁸ <https://assets.publishing.service.gov.uk/media/6569cb331104cf000dfa7352/net-zero-government-emissions-roadmap.pdf>

⁴⁹ These sectors are: agriculture, aviation, and industry. Agriculture has a higher share of total economic activity in NI than in England, but a lower share in terms of aviation and industry. UK Climate Change Committee. [Net Zero – The UK's contribution to stopping global warming](#), Figure 5.8

As a result, each DA has legislated specified climate targets for each administration. In Scotland, the [Climate Change \(Scotland\) Act 2009](#) first set such legislative targets (first for any DA), a year after the 2008 UK Act.⁵⁰ In Wales, the [Environment \(Wales\) Act 2016](#) set Wales' first legislative emission reduction targets.⁵¹ Since then, both DAs have amended those Acts, requiring governments and individual ministers to take action that will contribute to reaching the specified net zero target by a specified date. Further information regarding Scottish and Welsh implementation of their climate change legislation can be found later in this Paper, at [Section 5](#) and [Section 6](#) respectively.

Whereas in Northern Ireland, due in part to periods of interrupted devolution, standalone legislation was not enacted until 2022, in the form of the [Climate Change Act \(Northern Ireland\) 2022](#) (the 2022 Act).

The next section of this Paper - [Section 4](#) – follows with an overview of climate change legislation concerning Northern Ireland (at central and devolved levels) and relevant political agreement commitments.

4 Northern Ireland

The UK Climate Change Act 2008 (2008 Act) applies to Northern Ireland. The Westminster enacted 2008 Act devolves specified areas of responsibility to Northern Ireland as follows:

The Climate Change Act places a duty on the relevant Northern Ireland department to lay before the Assembly a Northern Ireland Climate Change Adaptation Programme (NICCAP) setting out the objectives, the proposals and policies for meeting those objectives including time scales for their introduction, so to address the relevant

⁵⁰ Climate Change (Scotland) Act 2009: <https://www.legislation.gov.uk/asp/2009/12/contents>

⁵¹ Environment (Wales) Act 2016: <https://www.legislation.gov.uk/anaw/2016/3/contents/enacted>

risks specific to Northern Ireland identified in the most recent UK-wide Climate Change Risk Assessment⁵² (CCRA)...⁵³

Pursuant to that 2008 Act, the Northern Ireland Executive subsequently published the first [NICCAP 2014-2019](#) in January 2014 and the second [NICCAP 2019-2024](#) in September 2019. And under the 2008 Act, a new NICCAP will be required before the end of 2024.

The [New Decade New Approach](#) (NDNA) political agreement (which restored the Northern Ireland Executive in January 2020) committed that:

the Executive will introduce legislation and targets for reducing carbon emissions in line with the Paris Climate Change Accord.⁵⁴

On 3 February 2020, the Northern Ireland Assembly [declared](#) a Climate Emergency and called on the Executive:

To fulfil the climate action and environmental commitments agreed; in the New Decade, New Approach agreement by commencing, as a matter of urgency, a review of the Executive's strategies to reduce carbon emissions in respect of the Paris Accord and the need to limit global warming to 1.5 degrees above pre-industrial temperatures by 2100 and to ensure that targets are met⁵⁵

Thereafter, in October 2021, the DAERA - on behalf of the Northern Ireland Executive - published a consultation on the [draft Green Growth Strategy](#). However, the Executive has yet to agree a final Green Growth Strategy for Northern Ireland. The DAERA states on its website:

⁵² The UK government is required under the Climate Change Act to publish a CCRA every five years. The Act stipulates that the government must assess 'the risks for the United Kingdom from the current and predicted impacts of climate change'. CCRAs are prepared and laid before Parliament by the UK government on behalf of the Devolved Administrations of NI, Scotland and Wales (DAs).

⁵³ [Northern Ireland Climate Change Adaptation Programme 2019-2024](#)

⁵⁴ https://assets.publishing.service.gov.uk/media/5e178b56ed915d3b06f2b795/2020-01-08_a_new_decade_a_new_approach.pdf

⁵⁵ <https://niassembly.tv/climate-emergency-debate-3-february-2020/>

*The finalised Strategy cannot be published until it has been approved by the Northern Ireland Executive. Hopeful of consideration by the Executive in early autumn 2024.*⁵⁶

Subsequently, in 6 June 2022, the Northern Ireland Assembly enacted its first climate change legislation, namely the [Climate Change Act \(Northern Ireland\) 2022](#) (CCA(NI) 2022). This 2022 Act sets legally binding targets for net zero carbon emissions by 2050, aligning Northern Ireland, with UK-wide and international climate commitments. RalSe have engaged with DAERA to seek clarification on the costs associated with a number of these provisions. In response the set out the key provisions of the Act:

*The Climate Change Act sets a Net Zero by 2050 emissions target for Northern Ireland. Key requirements include: setting interim emissions targets for 2030 and 2040 and five yearly carbon budgets (that set a maximum total amount of permitted emissions for a budgetary period); preparing and publishing a Climate Action Plan (CAP) to detail policies and proposals (covering the areas of responsibility of each NI Executive department) for meeting the carbon budget; establishing a Just Transition Commission and a Northern Ireland Climate Commissioner.*⁵⁷

The Department continues:

*...In conjunction with other departments, DAERA has been progressing work to implement the requirements of the Act to ensure Northern Ireland is on the right trajectory to Net Zero and can maximise the investment benefits and opportunities that come from addressing the climate crisis.*⁵⁸

⁵⁶ <https://www.daera-ni.gov.uk/articles/green-growth-strategy>

⁵⁷ Correspondence between DAERA and RalSe – received (25 November 2024)

⁵⁸ See footnote 57 immediately above

The following details a number of those key provisions in detail, the DAERA's response is included where applicable. In reference to a number of these provisions, the Department noted:

Additional investment will be required to deliver our specific climate change responsibilities, and the department is also working with other departments to consider these costs. A brief update is provided in subsequent paragraphs. It is important to be clear that these cannot be fully determined at this stage; work is still in progress, subject to review and approval by the Executive and the Minister, where required.⁵⁹

Key provisions of the 2022 Act include:

- Net Zero Target by 2050: A legal requirement for Northern Ireland to achieve net zero greenhouse gas emissions by 2050. The DAERA noted in correspondence with RalSe-PFSU (dated 25 November 2024) that:

*...**Funding to achieve Net Zero:** Policies, projects and actions to meet Net Zero are owned by individual business areas across the NI Executive departments and the usual financial approval guidelines and processes apply (business cases, Managing Public Money NI, Value for Money, etc.). Under the Act, departments have a duty to exercise their functions, so far as is possible to do so, in a manner that is consistent with achieving the targets in the Act and the carbon budgets set under it. Departments therefore need to take this into account when taking decisions around allocation of existing and future budgets.⁶⁰*

- Interim Targets: The 2022 Act includes a 48% reduction in emissions by 2030 compared to 1990 levels. No specific interim target for 2040 has yet been set rather "for emissions to be in line with the target for the year 2050".⁶¹

⁵⁹ See footnote 57

⁶⁰ See footnote 57

⁶¹ <https://www.legislation.gov.uk/nia/2022/31/enacted>

- Carbon Budgets: Northern Ireland will introduce carbon budgets, similar to those in the UK Climate Change Act 2008, which will limit the total amount of greenhouse gases emitted in a five-year period. The 2022 Act required the DAERA to set the Carbon Budgets for the first three budgetary periods before the end of 2023. Hence, in June 2023, the DAERA launched a consultation on [Northern Ireland's 2030 & 2040 Emissions Reduction Targets & First Three Carbon Budgets](#). However, to date no such Carbon Budgets have been set. In March 2024, the Minister of Agriculture, Environment and Rural Affairs [advised](#) the Northern Ireland Assembly that the Department would bring proposals to the Executive and Assembly “very soon”.⁶² In relation the Carbon Budget, the DAERA confirmed on 25 November 2024:

*...**Carbon budgets:** A Regulatory Impact Assessment (RIA) for the proposed first three carbon budgets (2023-2027, 2028-2032, 2033-2037) has been prepared for consideration alongside relevant forthcoming regulations. Detail of this will be provided to the AERA Committee when its consideration of the SL1 for the relevant regulations (which will set Northern Ireland's first three carbon budgets in law) is being sought.*⁶³

- Sectoral Targets: The 2022 Act requires the establishment of sector-specific emissions reduction targets, focusing on key industries such as energy, agriculture, transport, and waste management.
- Just Transition: The 2022 Act emphasises the need for a just transition to ensure that workers and communities reliant on carbon-intensive industries are supported as the economy shifts towards decarbonisation. [Section 37](#) of the 2022 Act places a duty on the DAERA to establish a Just Transition Commission for Northern Ireland. [Section 31](#) of that Act also required DAERA to establish a Just Transition Fund for Agriculture. (See sub-section [5.2.2](#) of this Paper.)

⁶² [Northern Ireland Assembly Official Report - 11/03/2024](#)

⁶³ See footnote 57

- Northern Ireland Climate Commissioner: [Section 50](#) of the 2022 Act requires The Executive Office (TEO) to establish an independent office to be known as the “Northern Ireland Climate Commissioner”. The functions of the Commissioner are to oversee and report on the operations of that Act. The DAERA reiterated this point in engagement with stating:

*...Responsibility for establishing the Northern Ireland Climate Change Commissioner lies with the Executive Office and colleagues from TEO will be able to provide an update in respect of any work to estimate costs associated with this role.*⁶⁴

Subsequently, in September 2024 RalSe-PFSU contacted the TEO for more information in relation to cost associated with the Northern Ireland Climate Commissioner. TEO’s response can be found at sub-section [5.2.3](#) of this Paper.

- Climate Action Plans: The 2022 Act requires DAERA to produce five-year climate action plans (CAP) to set out the Northern Ireland departmental policies and proposals that would enable them to implement and meet the corresponding carbon budget and emission reduction targets. In addition, a financial, social, economic and rural impact assessment on the effects of each CAP must be commissioned and a 16-week public consultation on the draft CAP carried out, as required under the 2022 Act. The first climate action plan was to be laid before the Assembly two years after the 2022 Act received Royal Assent – that is, 6 June 2024. This did not occur; and to date, that has not occurred. On 11 March 2024, the Minister of DAERA has noted the delay in publication in responses to Assembly Questions, stating, for example:

The first climate action plan on which we will consult is dated 2023-27. The fact that we are in 2024 but consulting on a

⁶⁴ See footnote 57

*climate action plan that started in 2023 perhaps gives Members a sense of the impact of the collapse of the institutions.*⁶⁵

RaISe-PFSU asked the DAERA for an assessment of costs associated with the actions and policies that will to be included in future CAPs. The Department informed RaISe-PFSU in November 2024 that:

*...**Climate Action Plan:** Analysis is ongoing within DAERA and across departments to determine an updated estimate of the cost of policies and proposals within the draft CAP which covers the first carbon budget period (2023-2027). The Minister intends to bring the draft Climate Action Plan to the Executive for consideration. Given the cross-cutting nature of the Climate Action Plan, the draft will need to be approved by the Executive, prior to its publication for consultation.*⁶⁶

Potential Issue for Consideration:

6. Have the DAERA engaged with the CCC in relation to the Seventh Carbon Budget; or is there a plan to engage in future?
7. What have been the outcomes of any such discussion?
Please detail.

4.1 Draft Programme for Government 2024-2027

On 5 September 2024 the Executive agreed a [draft Programme for Government \(dPfG\) 2024-2027: Our Plan: Doing What Matters Most](#); publishing it for public consultation; now [closed, since 4 November 2024](#). Issues relating to climate

⁶⁵ [Northern Ireland Assembly Official Report - 11/03/2024](#)

⁶⁶ See footnote 57

change and net-zero are encompassed in the dPfG's three missions, including one specifically entitled "Planet", which is described as:

*Harnessing the potential of a green growth economy while ensuring we provide an equitable transition to a sustainable and affordable society as we take responsibility for decarbonising our economy and society.*⁶⁷

All three specified missions are intended to be supported by cross-cutting priorities, of which the areas of climate change and net zero are addressed. These are identified below:

Grow a Globally Competitive and Sustainable Economy

This priority identifies four key challenges: productivity, good jobs, decarbonisation, and regional balance. Within the challenge of decarbonisation, the proposed actions include:

- £15m in the Energy and Resource Efficiency Support Scheme
- £75m via the Invest to Save Fund into the public sector's transition to net zero

Protecting Lough Neagh and the Environment

- A new environment strategy:

*...adopted as Northern Ireland's first Environmental Improvement Plan (EIP). This plan will include a range of commitments to improve our natural environment. The EIP, in conjunction with other strategies, will provide a determined and coherent response by the Executive to the global challenges of biodiversity loss and climate change.*⁶⁸

- Climate Action:

⁶⁷ [draft programme for government our plan doing what matters most.pdf](#)

⁶⁸ <https://www.northernireland.gov.uk/sites/default/files/consultations/newnigov/draft-programme-for-government-our-plan-doing-what-matters-most.pdf>

*...develop our first Climate Action Plan, detailing cross-cutting steps to reduce carbon emissions, adapt to changing weather patterns, and work towards net zero. This plan will recognise the need to ensure that reaching net zero has to be affordable for households and businesses, providing a commitment to supporting the cost of this transition in a fair and balanced way.*⁶⁹

- Inter-agency Protocol:

*...DAERA-led work with other government agencies to develop an Interagency Monitoring Protocol to clarify what monitoring will be carried out, and by whom, in response to future blooms of blue-green algae at any site.*⁷⁰

- Lough Neagh Action Plan:

*...the action plan has already been agreed and published by the Executive, and is set out against four key pillars: 1) Education, 2) Investment, Incentivisation, Innovation 3) Regulation and 4) Enforcement*⁷¹

- Small Business Research Initiative (SBRI):

*...explore potential solutions to treat/reduce blue-green algae blooms without impacting the natural environment of Lough Neagh and associated Northern Ireland waterways. The competition process is being managed on behalf of DAERA by the SIB.*⁷²

4.2 Estimated Public Purse Costs to Address Climate Change in Northern Ireland

⁶⁹ See footnote 68 immediately above

⁷⁰ See footnote 68

⁷¹ See footnote 68

⁷² See footnote 68

The [draft Green Growth Strategy](#) - published in October 2021 by DAERA on the Executive's behalf - provided an assessment of the investment that would be required to implement the draft Strategy. That assessment relied on both: the CCC's assessment in its [Sixth Carbon Budget](#) published in December 2020; and, the Office of Budget Responsibility (OBR) in its July 2021 [Fiscal Risks Report](#). The draft Strategy stated:

*In its Sixth Carbon Budget, the CCC estimates extra investment rising to around £1.3 billion annually from 2030 will be needed in Northern Ireland to meet our 2050 emissions targets in their 'Balanced Pathway' scenario. The majority is expected to come from the private sector, but the public sector contribution will be significant.*⁷³

It continued that much investment will need to be "front loaded",⁷⁴ with savings leading to an offset of investment costs in later years. Despite that statement, the draft Strategy considered:

*A cost will however remain and the CCC estimates this additional cost each year (annualised resource cost) to be in the region of £300 million by the early 2030s. This represents a net additional cost for climate action of less than 1% of Northern Ireland's Gross Domestic Product (GDP), which is around £49 billion.*⁷⁵

However:

*Further work will be carried out to determine the proportion of public and private sector expenditure needed and the likely timing of such spend.*⁷⁶

⁷³ [Draft Green Growth Strategy - 21 October 2021](#)

⁷⁴ See footnote 73 immediately above

⁷⁵ See footnote 73

⁷⁶ See footnote 73

Further to this, RaiSe-PFSU contacted the DAERA seeking further clarification on the cost associated with reaching net zero by 2050. In November 2024, the Department noted the upfront costs stating:

In determining costs associated with delivering Net Zero, it is important to recognise that upfront costs represent investments in an improved society for future generations. A wide body of research indicates that the cost of delaying or not taking action will ultimately be much greater. It is also clear that strong climate and environment credentials are essential if we are to attract inward investment, maximise the economic opportunities and ensure that we can compete on an international scale by showcasing the best of NI.⁷⁷

In addition, several areas of investment opportunities have also been considered under the strategy - namely:

- Funding opportunities:

To secure this investment, we need to get much better at accessing emerging and new funding opportunities. This will mean taking a new approach to competing in UK wide funding. Northern Ireland is also in a unique position in the UK where it can continue to benefit from EU structural funding. We have seen how other nations and countries have used these funding opportunities to drive economic growth, remove barriers and help redress regional imbalance, and will strive to maximise all available funding opportunities.⁷⁸

- Emissions Trading Scheme (ETS):

Emissions trading schemes are designed to reduce greenhouse gas emissions from energy intensive industries and the power sector into the atmosphere. It does this by limiting the amount of permissible greenhouse gas emissions⁷² from these installations by setting an annual maximum cap for emissions for the whole scheme which

⁷⁷ See footnote 57

⁷⁸ See footnote 73

*decreases each year. Northern Ireland has a dual system of emissions trading since EU exit, having participants in the UK ETS (16 installations) and EU ETS (5 electricity generators).*⁷⁹

The consultation to the Draft Green Growth Strategy closed on 21 December 2021. Subsequently the [Green Growth Strategy Consultation Report](#) was published 3 January 2023. However, to date, a final Green Growth Strategy has yet to be published. In response to a plenary question in October 2024 the agriculture Minister informed the Assembly that “we hope to bring the final document to the Executive very soon”.⁸⁰

When the [CCA\(NI\) 2022](#) was introduced the Act was accompanied by a [Regulatory Impact Assessment](#) (RIA). The RIA presented a number of cost options in relation to reaching either an 82% reduction (as recommended by the CCC in the Sixth Carbon Budget) and a net zero emissions target (which became the target in the CCA(NI) 2022). Table 6 presents the indicative annual cost of the options presented by the RIA:

Table 6. Average annual cost/benefit analysis comparing cost of 82% emissions reduction compared to net zero

Emission Target	Average Annual Cost (recurring) (£m) (Note 1,2,3)	Average Annual Benefits (recurring) (£m) (Note 4)	Average Net Cost (Equivalent Annual) (£m)
82% emission reduction target by 2050	1,172	1,032	140
Net Zero emission target by 2050	1,498 (Note 6)	1,032 (Note 5)	466

Note 1. Indicative costs part-informed by CCC’s estimates

⁷⁹ See footnote 73

⁸⁰ [Northern Ireland Assembly Official Report - 1 October 2024](#)

Note 2. Figures do not include costs of establishment of a Climate Commissioner, Just Transition Commission, nor a Just Transition Fund for agriculture

Note 3. Costs relate to all economy sectors, should not be interpreted as capital expenditure for the NI Budget, the CCC stated they can be delivered largely by the private sector and some costs will be paid at UK level/socialised across UK.

Note 4. Indicative benefits are based on the CCC's estimates of operating costs savings due to improved technology or lower energy costs for NI

Note 5. The CCC were unable to calculate and advise on any projected benefits for this option as it could not model on a sound basis a scenario where NI reaches net zero by 2050, and they could not advise a credible net zero pathway for NI by 2050. However, for the purposes of this assessment, benefits are set equal to those in 82% reduction option

Note 6. Indicative figures, based on annualised resource costs of 82% reduction option, with up to £900 m additional capital and operating cost/year by 2050 in a linear upscaling cost pathway to bridge to net zero from 82% emissions reduction, added on the basis that engineered GHG removal technologies are used

Source: [Climate Change Act \(Northern Ireland\) 2022 - Regulatory Impact Assessment](#)

The RIA accompanying the CCA(NI) 2022 contained a total cost/benefit analysis to 2050. That analysis was based on the net-zero option, which was the target legislated for in the CCA(NI) 2022. In relation to the benefits associated with decarbonisation, DAERA engagement with RalSe-PFSU in November 2024 noted:

Research at a national and international level clearly shows that decarbonisation can bring substantial social and economic co-benefits, particularly for the natural environment and public health. It results in improvements to people's well-being as a result of improved water quality, cleaner air and better-quality diets and the benefits obtained from increased physical activity through the use of active travel which can positively impact on health and wellbeing outcomes. In taking forward the requirements of the Act, the Department is working with partners to identify co-benefits in a Northern Ireland context.⁸¹

Table 7 presents those estimates as presented in the 2022 RIA. These estimates are based on figures produced by the CCC in the Sixth Carbon Budget (December 2020) and supplemented by further correspondences between DAERA and the CCC in 2021:

Table 7. Total cost/benefit analysis of the CCCA(NI) 2022

⁸¹ See footnote 57

Economic Assessment (Present Value)	Total Cost (£m)	Total Benefit (£m)	Total Net Cost (£m)
Net Zero emission target by 2050	43,445	29,938	13,517

Source: [Climate Change Act \(Northern Ireland\) 2022 - Regulatory Impact Assessment \(2022\)](#)

In correspondence with DAERA, RalSe-PFSU requested more detail as to the methodology used to calculate the figures used in the RIA. The Department responded in November 2024:

*...In your correspondence, you also referred to the RIA that was carried out on the Act in 2022 based on the best available information and advice provided to DAERA at that time, by the UK Climate Change Committee (CCC) in their role as independent advisors to the UK and devolved Governments... The figure of £466million per annum represented an **indicative** annual net cost of achieving the 2050 Net Zero target across the private, public and other economic sectors over a 28-year period 2022-2050 (taking the RIA's Policy Option 3 as the agreed way forward). To put in context, the most robust analyses of the costs and benefits of reducing emissions have been conducted at a global and UK level. The CCC have stated that the broad order of magnitude of the aggregate UK annual costs (1-2% of 2050 gross domestic product (GDP)) of meeting UK net zero is likely to be robust. This reflected a particular pathway to achieve the Net Zero by 2050 target including the option of capital costs of engineered removal. There is however no current commitment to using engineered removal. Technologies are also rapidly evolving and different pathways potentially emerging over decades ahead towards 2050. Full, detailed and robust costing are*

best achieved via the process involved in the development of Climate Action Plans.⁸²

The Department continued;

The costs should not be interpreted as capital or resource expenditure that would be delivered solely through the Northern Ireland Budget, nor as costs to only Northern Ireland businesses and consumers. It is important to note that some of the actions to reduce emissions will likely be paid for at a UK level and/or socialised across the whole of the UK.⁸³

And:

Both the estimated costs and benefits detailed in the RIA include uncertainties around cost and availability of new and emerging technologies, changes in the economy, behavioural changes, global/unilateral climate action, etc. Benefits such as avoided climate damages, wider co-benefits and potential economic benefits from shifting resources towards domestic investment or industries of the future are not included.⁸⁴

Subsequently, in November 2024, the Department confirmed for RaISe-PFSU that:

The CCC has provided subsequent advice to the Northern Ireland Executive in which they identified potential other pathways to Net Zero. It is for the Northern Ireland Executive, in consultation with stakeholders, to consider the options carefully and determine the pathway it wishes to take to reach Net Zero. The true costs and benefits of reaching Net Zero cannot be fully ascertained until there is greater clarity on the agreed pathway to be implemented.⁸⁵

⁸² See footnote 57

⁸³ See footnote 57

⁸⁴ See footnote 57

⁸⁵ See footnote 57

In 6 February 2024, in Northern Ireland Assembly plenary session, a Member of the Legislative Assembly (MLA) raised a question to the First Minister in which MLA stated:

...in recent correspondence that it is indicated that it will cost Departments £2.3 billion up to 2027 just to implement the climate change actions.

On 7 March 2024, the Chair of CAERA in questions to the Minister of DAERA raised what the Chair described at the time as “the massive bill, the financial outlay, that there will be on climate change”⁸⁶. In response to this question, the Minister responded that:

*It is an important issue. It relates back to the climate action plan, which I am working through. The costs that have been circulated, and that you are aware of, are indicative costs. We still need to finalise what the potential costs will be.*⁸⁷

The Minister continued:

*I do not see those costs in the same light as some people have seen them. Investing in addressing climate change is an opportunity for Northern Ireland. There is a cost, but there is a cost associated with not doing anything. There is a great opportunity to go with the green growth agenda and, essentially, deliver a real opportunity for a green new deal here in Northern Ireland, but we need to be able to do that with people rather than against them. That is where the funding is crucial.*⁸⁸

4.2.1 Just Transition Commission

⁸⁶ <https://aims.niassembly.gov.uk/officialreport/minutesofevidencereport.aspx?AgendaId=31983&evidID=16463>

⁸⁷ See footnote 86 immediately above

⁸⁸ See footnote 86

In an Assembly plenary session on 10 September 2024, the Minister of DAERA updated on the progress of establishing the Commission, stating the following:

*We will start consultation soon on the regulations that will establish the just transition commission. We will then make the regulations and establish the commission next year.*⁸⁹

On 11 November 2024, the DAERA launched a [consultation on the establishment of a Just Transition Commission](#). Included in the consultation was the estimated annual cost, stating:

*...the estimated annual running costs of the Commission at £150,000 for running costs plus an additional £160,000 for the secretariat support so costs would be approximately £340,000 annually. This includes costs for Commission member's expenses/fees, dedicated secretariat support and for premises, IT support, conducting research to enable the Commission to conduct its functions effectively.*⁹⁰

The consultation further stated that these costs could change after the final regulations for the Just Transition Commission are agreed. Further to this, the DAERA informed RaISe-PFSU in November 2024 that:

*...**Just Transition Commission:** No costs associated with the Just Transition Commission (the Commission) have been incurred to date. Significant preparatory work has been undertaken to establish the Commission, including preparation of a business case. A consultation launched on 11th November, is seeking the views of stakeholders and the public and the outcomes of the consultation will help inform the final policy decisions on the constitution of the Commission and the regulations that establish it.*⁹¹

4.2.2 Just Transition Fund for Agriculture

⁸⁹ [Northern Ireland Assembly Official Report - 10/09/2024](#)

⁹⁰ [Consultation on the establishment of a Just Transition Commission \(November 2024\)](#)

⁹¹ See footnote 57

In April 2024, the Minister further stated in the Assembly that:

A just transition fund is meant to come alongside the commission. It will comprise a number of pots of funding that will be brought together under one umbrella. It is key that we have just transition funding for Northern Ireland⁹²

And later in September 2024, he addressed the Assembly, stating:

I have made the case to the Secretary of State for Environment, Food and Rural Affairs that there should be a separate and additional capital fund for Northern Ireland that would be the just transition fund for agriculture.⁹³

Within the [Consultation on the establishment of a Just Transition Commission](#) which was launched on 11 November 2024, there was a reference to the Just Transition Fund, which detailed that:

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 NI Executive.⁹⁴

4.2.3 Northern Ireland Climate Commissioner

[Section 50](#) of the CCA(NI) 2022 requires TEO to establish “by regulations...an independent office to be known as the “Northern Ireland Climate Commissioner”⁹⁵ within two years of that Act receiving Royal Assent. In September 2024, RaISe contacted TEO enquiring the estimated costs associated with the creating and running such an independent office. In reply, TEO stated:

⁹² [Northern Ireland Assembly Official Report - 22/04/2024](#)

⁹³ [Northern Ireland Assembly Official Report - 10/09/2024](#)

⁹⁴ See footnote 90

⁹⁵ <https://www.legislation.gov.uk/nia/2022/31/section/50/enacted>

...there will be both a yearly resource and capital cost for the NI Climate Commissioner once established and that those figures are not available to be shared now. It is expected that the EO Committee will be informed of same within the coming weeks and the DAERA Committee can be advised after then.⁹⁶

Potential Issue for Consideration:

8. To date, what progress has there been in discussions between the DAERA and His Majesty's Treasury to secure any additional funding to address climate change, notably, for example, Just Transition Fund for agriculture?

4.3 Systematic and Regular Statutory Committee Engagement with Departments throughout Executive Budget Cycle

As noted earlier, a number of the funding commitments made in the UK Budget announced by the Chancellor on 30 October 2024 were England only. The Northern Ireland Executive therefore will receive Barnett Consequentials (BCs) for each, in line with the prevailing financial arrangements under current devolution.

Those BCs will be unhypothecated and it will be a matter for the Executive and individual Departmental Ministers to decide how those BCs will be allocated and spent in Northern Ireland. It remains to be seen as to whether the Executive/Departmental Ministers will use such funding for purposes related to climate change and net zero targets. Those decisions will be taken when the Executive sets its Budget for the financial years in which the BCs will be applicable. For example, those BCs arising under the 2025-26 Chancellor's Budget, will concern the 2025-26 Executive Budget.

⁹⁶ Correspondence between TEO and RalSe – received 19 September 2024

Moreover, on 3 October 2024, the Minister of Finance announced the Executive's agreed Budget Sustainability Plan. That Plan:

...sets out key components of sustainability including the checks and balances in place to monitor the Budget for 2024-25, the key components required to develop and implement a balanced Budget going forward, a review of the in-year monitoring process and a discussion on the sustainability of funding Executive policies.⁹⁷

In addition, the Plan also:

...sets out how the Executive will generate the £113 million of additional revenue along with a synopsis of the Budget management tools that currently exist and that could be implemented to assist the Executive in providing sustainable finances.⁹⁸

Specifically, in reference to climate change the plan notes:

Addressing climate change and promoting sustainable development are increasingly critical priorities. Funding for environmental policies, renewable energy projects, and conservation efforts can be substantial, posing further challenges to budget allocation.⁹⁹

Following on, in the context of Northern Ireland devolved government meeting climate change and net zero targets by 2050, all Assembly Statutory Committees will be mindful of those targets, alongside the Executive agreed Budget Sustainability Plan, and the anticipated Executive Budget Improvement Plan and the Executive Programme for Government - including related Departmental development, implementation and delivery of policies, programmes and legislation relating to climate change and net zero.

Potential Issue for Consideration:

⁹⁷ [Department of Finance – Budget Sustainability Plan](#) (October 2024)

⁹⁸ See footnote 97 immediately above

⁹⁹ See footnote 97

9. Would Statutory Committees – including the Committee for Agriculture, Environment and Rural Affairs -seek to proactively develop and adopt a coordinated, systematic and routine approach, including relevant templates and accompanying guidance that the Statutory Committees to systematically track the following:

- Allocations made by the Executive to DAERA and other Departments.
- Subsequent allocations made at Departmental level by individual Ministers.

Statutory Committees could send the noted templates and accompanying guidance to their respective Departments, asking them to timely and fully complete and return the template. The above approach could facilitate those Committees in discharging their advisory and scrutiny functions throughout the entire Northern Ireland Executive Budget Cycle (See Appendix 7) – with support from RalSe-PFSU.

The returned Departmental templates then could be analysed by RalSe-PFSU, with findings reported back to Committees as appropriate. Such a systematic and coordinated approach could allow for greater openness and transparency, which could help to increase availability of cross-Departmental information and data, to the appropriate level of granularity, and in more timely, accessible and consistent formats. That in turn could serve to increase Committees' understanding and ability to more authoritatively engage with the Executive and individual Departments about their deliberations and decisions on policy, legislation and budget/public finance, which aim to address climate change and net-zero in Northern Ireland; and ultimately strengthen Committees' ability to hold the Executive and Departments to account for their decision-making in these areas.

In 2022, a similar approach was adopted in the past in relation to “Resource funding 2022-25: Departmental Bids and Draft Budget Consultation Document Departmental in-year monitoring” - see [RalSe Briefing Paper NIAR 43-22](#), dated 16 March 2022. That Paper provides an example of how a more systematic and coordinated Statutory Committee approach in future could:

...serve to reduce the potential need to go back and forth between committees and Departments – both directly and indirectly – with clarification requests. If so, in practice, that could: save time for all – efficiency and effectiveness; increase the quality and the consistency of replies received across departments; improve the evidence base; manage expectations for all; increase openness and transparency; allow for more considered analysis; enable more informed deliberations and related decision-making; support improved scrutiny; and, lead to better, evidence-informed outcomes for Northern Ireland society.

5 Scotland

For a comparative perspective, this Section and Sections 7-8 of the Paper outline key information and any available data, to facilitate preliminary consideration of potential public purse costs when seeking to address climate change and implement net-zero targets in Northern Ireland by 2050.

5.1 Scottish Policy and Legislation

In 2009, a year after the UK Parliament enacted the 2008 CCA2008, the Scottish Parliament enacted the [Climate Change \(Scotland\) Act 2009](#). That 2009 Act set legally binding targets to reduce greenhouse gas emissions by 42% by 2020 and 80% by 2050 (compared to 1990 levels). Those specified targets were more ambitious than the UK’s national targets at the time. The 2009 Act also introduced annual carbon budgets to ensure incremental progress and created a framework for the Scottish Government to develop climate adaptation and mitigation strategies.

In line with the 2009 Act, the Scottish Government published Low Carbon Scotland: Reports on Proposals and Policies ([RPP1](#) in 2011 and [RPP2](#) in

2013). These reports detailed the policies and proposals needed to meet emissions reduction targets in key sectors like transport, energy, housing, and agriculture. They emphasised energy efficiency, renewable energy development, sustainable transport, and land use as critical pathways to achieving Scotland's climate goals.

On 28 February 2018, the Scottish Government published [Scotland's Climate Change Plan 2018-2032](#), outlining how the country will achieve its emissions reduction targets. Subsequently, the Scottish Government Published an [Update to Scotland's 2018-2032 Climate Change Plan - Securing a Green Recovery](#) in 2020, to reflect the more ambitious targets specified in subsequent legislation - the [Climate Change \(Emissions Reduction Targets\) \(Scotland\) Act 2019](#). The Plan's three identified parts address:

- [Green recovery](#)
- [A coordinated response](#)
- [Individual sector plans and policies](#)

The [Climate Change \(Scotland\) Act 2009](#) - amended by the [Climate Change \(Emissions Reduction Targets\) \(Scotland\) Act 2019](#) - significantly increased Scotland's targets to reduce emissions, transposing and implementing the Paris Agreement. The 2009 Act set a legally binding target for Scotland to achieve net-zero emissions by 2045, five years ahead of the UK-wide target of 2050. It also set interim targets to cut emissions by 56% by 2020, 75% by 2030, and 90% by 2040 (all compared to 1990 levels). In addition, to the change in targets, the 2019 Act provided for the creation of [Scotland's Climate Assembly](#), which is to be:

... operated independently of the Scottish Government, bringing together a group of over 100 people who were broadly representative of the Scottish population. As Scotland's Climate Assembly members were aged 16+, members of Children's Parliament were also invited to support the participation and engagement of younger children

across Scotland, to ensure their views, experiences and ideas informed the discussions and recommendations going forward.¹⁰⁰

Scotland's Climate Assembly [published its recommendations](#) in June 2021, and the Scottish Government [published its response](#) in December 2021.

Following the conclusion of the above-noted Scotland Climate Assembly process, [an independent research report was published in March 2022](#), addressing the process, impact and Assembly members' experience.¹⁰¹ Its key findings were:¹⁰²

- *involvement of Children's Parliament in a parallel process that at times interlinked with the Assembly, and the inclusion of their Calls to Action in the Assembly Report.*
- *presenting Assembly members with scenarios of possible futures that depicted different worldviews and routes that could be taken to address climate change, and that showed how change can happen at different levels and paces.*
- *more measures were used to integrate the work of different topic streams than in previous climate assemblies.*
- *creation and promotion of a Civic Charter expressing support for the Assembly and its recommendations, which has been signed by organisations and individuals.*
- *continuation of the Secretariat after the main Assembly period, to organise public engagement activities and engagement with government officials and ministers and members of Parliament.*
- *organising a further Assembly meeting to discuss the Scottish Government response to the Assembly recommendations, including a Ministerial Q&A*

However, on 20 March 2024, the CCC advised that it:

¹⁰⁰ <https://www.gov.scot/policies/climate-change/>

¹⁰¹ See footnote 100 immediately above

¹⁰² [Scotland's Climate Assembly Research Report: process, impact and Assembly member experience - March 2022](#)

...no longer believes that the Scottish Government will meet its statutory 2030 goal to reduce emissions by 75%. There is no comprehensive strategy for Scotland to decarbonise towards Net Zero.

Thereafter, on 18 April 2024, the Scottish Government announced that it was no longer expecting to meet the interim 2030 target as set out in the [Climate Change \(Emissions Reduction Targets\) \(Scotland\) Act 2019](#). The Scottish Cabinet Secretary for Net Zero and Energy stated in the Scottish Parliament:

*In the challenging context of cuts and UK backtracking, we accept the CCC's recent re-articulation that this Parliament's interim 2030 target is out of reach. We must now act to chart a course to 2045 at a pace and on a scale that are feasible, fair and just.*¹⁰³

The Minister announced the intention to introduce “expedited legislation”, to reflect a revised timetable for achieving net zero by 2045. On 22 November 2024, the Scottish Parliament passed the [Climate Change \(Emission Reductions Targets\) \(Scotland\) Act 2024](#). That Act amends the Climate Change (Scotland) Act 2009:

*...replacing the existing annual and interim targets with a system of five-year carbon budgets. It also seeks to remove the requirement for a new Climate Change Plan to be laid by March 2025, replacing it with requirement for a Plan 'as soon as practicable' after the first regulations setting a Scottish carbon budget come into force.*¹⁰⁴

A list of legislation and strategies published by the Scottish Government in relation climate change and net-zero can be found at: [Appendix 3](#) of this Paper.

5.2 Estimated Public Purse Costs to Address Climate Change in Scotland

¹⁰³ <https://www.parliament.scot/chamber-and-committees/official-report/search-what-was-said-in-parliament/meeting-of-parliament-18-04-2024?meeting=15804&iob=134937>

¹⁰⁴ <https://digitalpublications.parliament.scot/ResearchBriefings/Report/2024/9/6/2dda4bfa-f424-4e1b-8076-25d30682b68e>

This sub-section does not address new developments arising since the Chancellor's Autumn Budget announcements on 30 October 2024. At the time of writing, the devolved Scottish institutions are working through the implications of those announcements. It, however, does address those up to the end of October 2024.

The [Climate Change \(Emissions Reduction Targets\) \(Scotland\) Bill 2019](#), as introduced, was accompanied by a [Financial Memorandum](#), which was based on the Bill's 90% reduction target by 2050. The Memorandum explained that:

*The average additional cost of the new target level over the period 2030 to 2040 is estimated to be £300m per annum, increasing to an average additional cost of £1 billion per annum in the period 2041-2050. The average annual cost increases in the period after 2040 as the cost of abating the remaining greenhouse gases in the system becomes more challenging.*¹⁰⁵

The estimated whole system costs for the public purse – under the introduced Bill - were premised on the “Scottish TIMES model”,¹⁰⁶ described by the Scottish Government as follows:

*The Scottish TIMES model, at its simplest, is a diagnostic tool to help understand the key inter-relationships across the energy system. The approach relies on a specified set of data inputs being collected which capture the characteristics of the system being studied, a series of constraints being applied to reflect practical or policy constraints and a set of results being generated that are informed by those inputs and constraints.*¹⁰⁷

¹⁰⁵ [Financial Memorandum Climate Change Emissions Reduction Targets Scotland Bill.pdf](#)

¹⁰⁶ Developed by an International Energy Agency (IEA) technology collaboration programme and used in 63 countries. TIMES (an acronym for The Integrated MARKAL-EFOM1 System) is an economic model generator for local, national, multi-regional, or global energy systems, which provides a technology-rich basis for representing energy dynamics over a multi-period time horizon.

¹⁰⁷ <https://www.gov.scot/publications/climate-change-plan-third-report-proposals-policies-2018-2032-technical-9781788516761/pages/2/>

The model assessed the cost implications of increasing the emission reduction targets in Scotland. It estimated that the cost of moving from an 80% to 90% emission reduction target would result in an estimated additional system cost of approximately £13 bn over the period 2030-2050.

However, at second reading, the Bill was amended to reduce the net zero emission target by five years, to 2045. Consequently, a [Supplementary Financial Memorandum](#) factored in the amended target. It explained that despite the amended target, the impact on the overall estimated cost for the public purse that had been presented in the Financial Memorandum accompanying the Bill as introduced, would be unaffected by the amended target. The Supplemental Memorandum explained that:

The CCC advised, as part of its May 2019 report, that its recommended targets to 2050 could be met at an annual resource cost to the UK of 1-2% of Gross Domestic Product (GDP) in 2050, with a central estimate of 1.3% of GDP. The CCC note that this was the same cost estimate it had previously given for achieving 80% emissions reduction by 2050.¹⁰⁸

It further elaborated:

The CCC report explains that falls in the cost of key technologies permit net-zero to now be achieved within the same cost envelope as it previously estimated were necessary to achieve 80% emissions reduction at the UK level.

However, while the Supplemental Memorandum details the noted potential financial costs arising from the amended target, neither it, nor the amended Bill, which later was enacted, specify how those potential costs for the public purse will be met. Nonetheless, subsequent Scottish Governments will be responsible for delivering net zero by 2045, and determining the level of government intervention needed to achieve it.

¹⁰⁸ [Supplementary Financial Memorandum Climate Change Emissions Reduction Targets Scotland Bill.pdf](#)

As noted previously, in April 2024, the Scottish Government announced its intention to revise its specified interim targets for net-zero. That, in turn, may have an effect on the potential public purse costs associated with achieving the amended emission reduction targets. It appears that the Supplemental Memorandum acknowledged that possibility when it stated:

Theoretically, depending on choices made by future governments about whether the action taken should be prompted by government spend, subsidy, or regulation (and if regulation, how that regulation is designed and the nature of the market in question), the potential indirect costs on the Scottish Administration could be all or none of the overall estimated system cost of £13 billion, covering the period 2030 to 2050.¹⁰⁹

The Supplemental Memorandum continued:

.... plans for delivery of the targets must be set out in Climate Change Plans will remain the case, and as such the Bill does not specify how the targets must be achieved. Future Governments will decide what actions to take to deliver the targets, the costs of which will be affected by future scientific understanding and the availability of technology.¹¹⁰

As noted above, a factor in estimating the public purse costs of reaching net zero will be determined by future Scottish Government policy. Futures policies may also be impacted by the political and financial environment at the time, which may restrain or expand the government's ability to invest in measures addressing carbon reduction. As also noted, **the future costs and advancements in technology cannot be known, as such, the scale of investment may be impacted by how quickly technology costs fall over the coming years and how quickly new technologies become available.**

5.2.1 The Climate Change Plan 2018-32

¹⁰⁹ See footnote 108 immediately above

¹¹⁰ See footnote 108

As noted previously, the updated [Climate Change Plan 2018-32](#) (CCP 2018-32) sets out the Scottish Government's targets and how it intends to achieve those targets over the specified time period. Included in the CCP 2018-32 are a number of projects and policies, with a funding attached to each, such as:

- £1.6bn for heat decarbonisation
- a £100 m Green Jobs Fund, to provide investment to support low-carbon businesses, including the creation of a Green Workforce Academy
- a £180 m Emerging Energy Technologies Fund to support the development of hydrogen and CCS and add impetus to the development of Negative Emissions Technologies
- a £120 m investment in Zero Emissions Buses, driving forward a fully decarbonised future for Scotland's bus fleet and supporting the Scottish supply chain
- an investment of £50 m to create Active Freeways, providing a sustainable link between our towns, cities and some of our most beloved national landmarks

5.2.2 Scottish Fiscal Commission

On 14 March 2024, the Scottish Fiscal Commission (SFC) published [Fiscal Sustainability Perspectives: Climate Change](#). In summary, that report "estimates that the Scottish Government would need to spend an average of £1.1bn a year to meet net zero, around 18 per cent of its capital budget."¹¹¹ However, the quoted figure does not include "the spending required on adaptation and damage from climate change",¹¹² therefore further cost would be expected on top of the £1.1bn figure. In calculating this figure, the SFC has relied on the balanced pathway scenario in the Sixth Carbon Budget published by the CCC (See [Section 3.1](#)).

Thereafter, the SFC has applied the public share estimates for these climate change sectors, as used by the OBR in its [2021 Fiscal risks report](#).

¹¹¹ <https://fiscalcommission.scot/fiscal-risk-from-lack-of-clarity-on-climate-change-spending/>

¹¹² See footnote 111 immediately above

Important to note that the SFC has applied its own assumptions regarding the areas which are devolved and those that are not, meaning where the CCC have defined their sectors as mostly or partially devolved the SFC has assumed 100 per cent of the public additional capital costs fall on the Scottish Government. Conversely, sector mostly reserved the SFC has assumed 0 per cent of costs fall on the Scottish Government. Figure 2 below summarises the SFC's methodology for calculating the estimated cost of meeting net zero:

Figure 2. SFC calculation of cost of reaching net-zero in Scotland¹¹³



Source: [Scottish Fiscal Council \(March 2024\)](#)

As a result of the additional analysis carried applying these assumptions in regard to matters that have been devolved and those reserved (Scotland does not have excepted matters), the SFC has concluded:

Under the CCC's assumptions there is expected to be an additional £145 billion invested in Scotland between 2020 and 2050. This equates to £41 billion invested by the public sector¹¹⁴

In considering the impact of damages associated with climate change, the SFC has noted that the impact of events on different parts of the UK will have an impact on each DAs' finances. The SFC has provided the example of:

If the UK Government incurs costs for instance due to flooding from a storm in England, this would result in additional funding for the Scottish Government through the Block Grant. However, when

¹¹³ Infographic showing how the devolved additional capital investment for mitigation is calculated. The whole-economy mitigation costs from the Climate Change Committee data are multiplied by the OBR assumed public investment shares and then multiplied again by the assumed our devolution shares

¹¹⁴ [Scottish Fiscal Commission - Fiscal Sustainability Perspectives: Climate Change](#)

*climate damage is greater in Scotland, the Scottish Government will need to manage the costs from within its existing budget.*¹¹⁵

Importantly, the SFC analysis should be considered for all DAs, including Northern Ireland:

Potential issue for consideration:

10. What consideration has the Northern Ireland Executive, including individual Departments, given to the SFC's analysis of Fiscal Sustainability Perspectives: Climate Change and associated modelling? Please detail.

In concluding its report, the SFC has noted a number of challenges existing for all DAs and some specific to Scotland, concluding:

*The challenge of achieving net zero is shared between the Scottish and UK Governments. The Scottish Government's funding largely depends on UK Government policy decisions, including how the costs of the transition are split between the private and public sectors. However, the fiscal burden of reaching the UK's net zero target may fall disproportionately on the Scottish Government because a greater share of the UK reduction in emissions relating to forestry and land use needs to take place in Scotland.*¹¹⁶

Potential issues for consideration:

11. Has any Northern Ireland Executive Department, Independent Institution or any academics carried out a similar analysis as that of the SFC?

¹¹⁵ See footnote 114 immediately above

¹¹⁶ See footnote 114

12. If any similar analysis has been undertaken, what methodology was used to calculate the cost of reaching net-zero in Northern Ireland?
13. If no such analysis has been undertaken to date, do any Northern Ireland Departments intend to commission such an analysis? Please detail, including terms of reference and who would undertake – public officials or other?
14. What DAERA analysis has been carried out to date, to identify any specific challenges in Northern Ireland, for example, challenges similar to land use and forestry in Scotland? Please detail.
15. Has the DAERA identified any additional measures that would need to be taken to address any such challenges, including, for example, calculating any additional cost that could arise from them? Please detail.

6 Wales

Note: unavoidably this Section does not address new developments arising since the Chancellor's Autumn Budget announcements on 30 October 2024. At the time of writing, the devolved Welsh institutions are working through the implications of those announcements. This Section, however, does address those developments arising up to the end of October 2024.

Since the introduction of the Westminster enacted 2008 CCA, a number of pieces of legislation, strategies and policy papers have been proposed, enacted and implemented at a devolved level, to address climate change and emission reduction in Wales.

In October 2010, the Welsh Government published the [Climate Change Strategy for Wales](#), it aimed for a 40% reduction in greenhouse gas emissions by 2020 (from 1990 levels). In 2015, the Welsh Assembly passed the [Well-being of Future Generations \(Wales\) Act 2015](#). While the 2015 Act is not a

specific climate change and emission reduction piece of legislation, it nonetheless embedded sustainable development in law. It included environmental sustainability, and therefore the Act includes references to climate change and carbon reduction, notably in the well-being goals. Specifically, those goals relate to:

- A prosperous Wales - *An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing fair work*¹¹⁷
- A resilient Wales - *A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change).*¹¹⁸

In 2016, the Environment (Wales) Act 2016 was passed by the Welsh Assembly. The 2016 Act “sets out the approach for the sustainable management of natural resources in Wales”.¹¹⁹ That includes how Wales is to attempt to “mitigate for and adapt to the impacts of climate change.”¹²⁰ Specifically on climate change, the Act introduced mandatory carbon budgeting (that is, the setting of five-yearly Carbon Budgets) and set a long-term target for Wales to reduce its greenhouse gas emissions by at least 80% by 2050.

In addition, the Act required the setting of interim emission targets to be set for 2020, 2030 and 2040. Subsequently, in 2018, the Welsh Assembly enacted a number of regulations setting future targets. These were:

¹¹⁷ [Well-being of Future Generations \(Wales\) Act \(2015\)](#)

¹¹⁸ See footnote 117 immediately above

¹¹⁹ <https://www.gov.wales/sites/default/files/publications/2019-06/environment-wales-act-2016-climate-change.pdf>

¹²⁰ See footnote 119 immediately above

- [The Climate Change \(Carbon Budgets\) \(Wales\) Regulations 2018](#) – set the carbon budget for the 2016 to 2020 budgetary period is limited to an average of 23% lower than the baseline and the 2021 to 2025 budgetary period is limited to an average of 33% lower than the baseline.
- [The Climate Change \(Interim Emissions Targets\) \(Wales\) Regulations 2018](#) - set interim targets for emissions reductions of 27% by 2020, 45% by 2030, and 67% by 2040, with the long-term target of 80% by 2050.

In April 2019, the Welsh Government [declared a climate emergency](#).

In December 2020, the UK's Climate Change Committee (CCC) recommended that [Wales move to target Net Zero emissions by 2050](#). The Welsh Government accepted those recommendations. As a result, in March 2021 the Welsh Senedd set a legally binding net-zero target. The Welsh Parliament enacted the following:

- [The Environment \(Wales\) Act 2016 \(Amendment of 2050 Emissions Target\) Regulations 2021](#) – which increased the former 2050 target of 80% lower than the baseline to at least 100% (net-zero).
- [The Climate Change \(Interim Emissions Targets\) \(Wales\) \(Amendment\) Regulations 2021](#) – updated the previous interim targets, setting new targets which include a 63% reduction in emissions by 2030 and 89% by 2040.
- [The Climate Change \(Carbon Budgets\) \(Wales\) \(Amendment\) Regulations 2021](#) – updated the target reduction of emissions over the period of the Carbon Budget 2021-2025 to 37% reduction from the baseline and carbon budget for the 2026-2030 budgetary period is limited to an average of 58% lower than the baseline.

Later in 2021, the Welsh Government published [Net Zero Wales: Carbon Budget 2 \(2021 -2025\)](#), which included the commitment to achieving net-zero emissions by 2050. That Plan outlined key steps to transition to a low-carbon economy, with a focus on energy efficiency, renewable energy development (particularly wind and marine energy), sustainable transport, and reducing waste. It built on Wales' earlier climate actions but increased the ambition,

focusing heavily on just transition principles to ensure that the transition is equitable and inclusive.

A list of legislation and strategies published by the Welsh Government in relation climate change and net zero can be found at [Appendix 2](#) of this Paper.

6.1 Estimated Public Purse Costs to Address Climate Change in Wales

The 2020 CCC advice suggested the following investment costs would be required by Wales in order to reach net-zero by 2020:

*Total low-carbon investment in Wales will need to increase to around £3 billion by 2030, continuing at around that level through to 2050. That compares to total low-carbon investment in the UK of around £50 billion. The increase is deliverable, primarily by private companies and individuals, alongside other investment, provided effective policy is put in place.*¹²¹

However, the CCC is of the opinion that most of this can be recouped and paid for at the UK level:

*Much of the investment spending can be recouped through lower operating costs. These savings, many of which relate to reduced reliance on imported fossil fuels, will rise to around £800 million by 2030 and £2.5 billion by 2050. Our estimate of annualised resource costs is less than £2 billion per year in Wales for the entirety of the period 2020 to 2050. That is lower than our 2019 estimate for the cost of reaching Net Zero emissions (we previously estimated costs to be around £3-5 billion by 2050). Many of the costs of reducing emissions in Wales will likely be paid for at UK level and/or socialised across the whole of the UK.*¹²²

¹²¹ <https://www.theccc.org.uk/publication/the-path-to-net-zero-and-progress-reducing-emissions-in-wales/>

¹²² See footnote 121 immediately above

Although the monetary costs associated with Wales transitioning to net zero by 2050 are not fully known yet, an indicative cost estimate has been provided in the [RIA](#) for net zero; produced by the Welsh Government's, Economy, Skills and Natural Resources Group to accompany the Climate Change (Wales) Regulations 2021. In the RIA, its estimates that the additional cost of meeting net zero, compared to a scenario with no further climate action, will lead to additional present value resource costs of between £10 bn and £16 bn in total over the period to 2050 (these figures are based on Welsh Government analysis of the 5 CCC net zero pathways).¹²³ Table 8 sets out the present value of resource costs associated with reaching the net-zero target in Wales and compares the associated cost with the initial 80% emission target by 2050:

Table 8. Present Value of resource costs of 80% and 100% (net-zero) emissions reduction over the period to 2050

	Best estimate	Lower bound	Upper bound
80% reduction	£4.7bn	£3.3bn	£5.5bn
100% reduction (net zero)	£14.1bn	£10.1bn	£15.9bn
Additional cost of net zero	£9.4bn	£5.9bn	£10.4bn

Source: [Explanatory Memorandum to the Climate Change \(Wales\) Regulations 2021](#)

However, the RIA caveats these costs and notes that:

*The resource costs of the net zero transition are not attributed as part of this analysis. Costs are likely to be shared between the Welsh and UK Governments, the private sector, investors and citizens.*¹²⁴

In 2022, the Welsh Government included in its annual budget climate change as one of their Main Expenditure groups (MEG). Table 9 presents the allocation to climate change in the Welsh Government budgets 2022-23 to 2024-25:

¹²³ <https://www.gov.wales/sites/default/files/publications/2021-10/net-zero-wales-carbon-budget-2-2021-25.pdf>

¹²⁴ <https://senedd.wales/media/fpvlq1yq/sub-ld14108-em-e.pdf>

Table 9. Climate Change allocation in Welsh Government budget - 2022-23 to 2024-25

Climate Change allocation in Welsh Government budget (£m)			
Budget Year	Resource DEL (Departmental Expenditure Limits)	Capital DEL	Total
2024-25 ¹²⁵	1,206	1,666	2,872
2023-24 ¹²⁶	1,156	1,741	2,898
2022-23 ¹²⁷	1,166	1,644	2,811

Source: Welsh Government Budget documents ([2022-23](#), [2023-24](#), [2024-25](#))

Potential issues for consideration:

16. Has the Northern Ireland Executive and or its Department of Finance considered changes to Budget and Annual Accounts documents, which would present or highlight elements of public finances that are spent in whole or in part to address climate change and the attainment of net-zero targets? Please detail.

17. If so, is there an implementation time frame for any such changes to that documentation? Please detail.

¹²⁵ <https://www.gov.wales/final-budget-2024-2025>

¹²⁶ <https://www.gov.wales/final-budget-2023-2024>

¹²⁷ <https://www.gov.wales/final-budget-2022-2023>

7 Republic of Ireland

The RoI's first dedicated legislation to address climate change and the aim of reducing carbon emissions was the [Climate Action and Low Carbon Development Act 2015](#). The 2015 Act set out to achieve a long-term goal of achieving a low-carbon, climate-resilient economy. It established a statutory framework for reducing carbon emissions and introduced a National Mitigation Plan and a National Adaptation Framework. It also established the Climate Change Advisory Council, an independent body tasked with advising the Government on climate and net zero-related issues.

The 2015 Act was subsequently was amended by the [Climate Action and Low Carbon Development \(Amendment\) Act 2021](#). The amendment included a requirement for the RoI to reach net-zero emissions no later than 2050, and to a 51% reduction in emissions by the end of 2030. In addition, the 2021 Act required the Irish Government to prepare carbon budgets, a Climate Action Plan (CAP) and National Long-Term Climate Action Strategy (NLTCAS) every five-years. These plans and strategies also required the Minister to give “due regard” for “just transition to a climate neutral economy.”¹²⁸

The RoI, as a member of the EU, has committed to climate targets in line with the Paris Agreement and EU-wide climate directives.

In the RoI, a number of measures have been introduced to address the issue of climate change and net zero under the prevailing legislation.

7.1.1 Climate Action Plan (2024)

[Climate Action Plan \(CAP\) 2024](#) is the third update to the first CAP produced by the Irish Government since 2019. When considering the funding to address climate change and the Irish Government's ambition to reach net-zero by 2050, the CAP 2024 states:

It is a legal requirement that the Climate Action Plan represents the best possible value for money consistent with the sustainable

¹²⁸ <https://www.irishstatutebook.ie/eli/2021/act/32/enacted/en/print#sec6>

*management of the public finances. Estimation of the costs and effects of measures under consideration should, therefore, form a core element of each Department's work on annual updates to the Climate Action Plan. Furthermore, this work should be integrated with the annual budget cycle, so knowledge of the costs and value for money of proposed actions can feed into Department's financial planning and prioritisation for the year ahead, in line with agreed allocations.*¹²⁹

The Rol's primary adaptation policy response to these challenges is set out in its first statutory five-year National Adaptation Framework (NAF), as explained below.

7.1.2 National Adaptation Framework (NAF)

The second [National Adaptation Framework: Planning for a Climate Resilient Ireland](#) was published in January 2024. The role of the NAF is described as:

*...the National Adaptation Framework (NAF) specifies the national strategy for the application of adaptation measures in different sectors and by local authorities to reduce the vulnerability of the State to the negative effects of climate change and to avail of any positive effects that may occur*¹³⁰

When considering the financial impact of climate change on the Republic of Ireland, the NAF looks from two different positions. First, the projected costs of climate change impacts - that is, losses occurred through climate events. For example, flooding and the associated costs to homes and businesses, along with financial support provided by government schemes after the event. Research conducted by the EU Co-Designing the Assessment of Climate Change Costs (COACCH) project¹³¹ suggests the projected climate impacts

¹²⁹ [Government of Ireland - Climate Action Plan 2024](#)

¹³⁰ [National Adaptation Framework: Planning for a Climate Resilient Ireland \(Jan 2024\)](#)

¹³¹ COACCH (CO-designing the Assessment of Climate Change costs) is a project funded by the European Union's Horizon 2020 research and innovation programme and carried out by a consortium of 13 European organisations.

over this century on “Ireland is projected to experience impacts ranging from €31 bn to €130 bn under different modelled scenarios.”¹³²

The second financial impact is that of “Adaptation Financing” - that is, “the costs associated with the implementation of adaptation measures”,¹³³ which would address and/or reduction the impact of climate change on the RoI. However, notably the NAF states:

*... there are numerous data and information gaps associated with obtaining these costs and benefits at national scales, therefore, the overall cost of adaptation in Ireland is not currently measurable.*¹³⁴

Despite the limitations noted above, adaptation financing initiatives have been implemented to date. That includes the implementation of the Climate Action Fund and Infrastructure, Climate and Nature Fund.

7.1.3 Climate Action Fund

The [Climate Action Fund](#) was established on a statutory basis, with effect from 1 August 2020. The Climate Action Fund is resourced from proceeds of the levy paid to the [National Oil Reserves Agency](#) (NORA). The Department of the Environment, Climate and Communications [Annual Report 2023](#) states:

*Since 2020, over €504m from the Climate Action Fund has been allocated to projects which will help Ireland achieve its climate and energy targets.*¹³⁵

7.1.4 Infrastructure, Climate and Nature Fund

On 18 June 2024, the Irish Government passed the [Future Ireland Fund and Infrastructure, Climate and Nature Fund Act 2024](#), which established the [Infrastructure, Climate and Nature Fund](#). The Fund is to establish €14 bn

¹³² See footnote 130

¹³³ See footnote 130

¹³⁴ See footnote 130

¹³⁵ [Department of the Environment, Climate and Communications - Annual Report 2023](#)

reserve over the period 2024 to 2030. The element of the Fund that is to address climate change is intended to:

.... invest in the transition to a low carbon economy, with €3.15 billion being set aside specifically to invest in environmental projects that address climate change issues and nature and water quality degradation over the period 2026 to 2030¹³⁶

7.1.5 “Just Transition” in Rol

As noted previously, the [Climate Action and Low Carbon Development \(Amendment\) Act 2021](#), this amending legislation included a requirement for the Minister to have “due regard” for “just transition to a climate neutral economy. This had been preceded by the Irish Government’s Programme for Government; published October 2020. The Programme committed the Irish Government to:¹³⁷

- *Publish a Just Transition Plan, to frame the work of a permanent Commission for Just Transition. The plan will identify and prepare for challenges that will arise in a number of sectors and regions, recognising that there will be a variety of different transitions, and that it is clear that there will be no simple one-size fits all approach*
- *Establish the Just Transition Commissioner as statutory office, with appropriate staffing and resources. The experience of the Just Transition Commissioner’s work in the Midlands and the work of the National Economic and Social Council will inform the approach.*
- *Ensure that financing is available and continue to grow the size of the Just Transition Fund*

The EU established a [Just Transition Fund](#) (JTF), as part of its [Cohesion Policy 2021-2027](#). As such, the Republic of Ireland was able to avail of funding through the JTF. Subsequently, in April 2023, the [Programme](#) for the EU JTF in

¹³⁶ <https://www.gov.ie/en/press-release/f897c-minister-mcgrath-and-minister-donohoe-publish-the-future-ireland-fund-and-infrastructure-climate-and-nature-fund-bill-2024/>

¹³⁷ [Irish Government - Programme for Government: Our Shared Future](#)

the Republic of Ireland was officially launched. It committed €169 m, co-funded between the EU and Irish Government in the Midland region until 2027.

In December 2022, the CAP 2023 was published repeated the commitment in the Irish Government’s Programme for Government, to establish a Just Transition Commission. As such, in September 2023 a [Taskforce on Just Transition](#) was established with the purpose:

*...to build consensus on an agreed approach in relation to how the Commission should be established and to provide advice regarding its mandate, membership, and structure.*¹³⁸

Following on from the Taskforce’s final report in February 2024, the Irish Government formally established the Just Transition Commission on 30 April 2024.

7.1.6 Shared Island Fund

The Shared Island Fund was announced in the [Irish Government Budget 2021](#), with €500m in capital funding available between 2021-25, ring-fenced for investment in collaborative North/South projects.¹³⁹ The Fund is divided into shared initiatives, with projects associated with each. Table 10 provides an overview of these projects and initiatives contributing to climate change, net zero and just transition. These figures are based on the [Shared Island Initiative Report 2023](#):

Table 10. Shared Ireland Fund - climate change related projects

Shared Island Fund initiatives	Project	Description	Amount (£m)
“a more sustainable island”	Bio-economy Demonstrator Initiative	<i>This is to enable development of two biorefinery demonstrator facilities focused on agri-bio economy and marine bio-economy.</i>	€7m

¹³⁸ <https://www.gov.ie/en/press-release/0f1d7-minister-ryan-secures-government-agreement-to-establish-a-new-just-transition-commission/>

¹³⁹ <https://www.gov.ie/en/campaigns/c3417-shared-island/>

		<i>The purpose is to integrate sustainable economic development into the economic model during the transition to a low carbon and circular economy</i>	
	Community Climate Action Programme	<i>This will support local authorities to step up climate action in partnership with communities across the island, including on nature recovery networks; farming for nature; just transition; improving land use and water quality; peatland restoration; renewable energy solutions; and flood forecasting.</i>	€3m
	Electric Vehicle Charging Infrastructure Scheme	<i>For the installation of up to 200 publicly accessible rapid Electric Vehicle charging points delivered in clubs and facilities across the island.</i>	€15m
"a more prosperous island"	Co-Centres for Research and Innovation	<i>...to create two new research centres. The funding will bring together academics, industry and policymakers across Ireland, Northern Ireland and Great Britain to collaborate on the common challenges of food sustainability and climate change</i>	€70m (Joint funding €40 mn contribution from Irish government ¹⁴⁰)
"A more connected island"	Local Authority Development Funding Scheme	<i>Funding awarded to 15 Local Authorities in the South to work with 9 Councils in Northern Ireland on 25 feasibility projects. developing cross-border capital investment proposals in</i>	€4.3m

¹⁴⁰ <https://www.gov.uk/government/news/60-million-joint-irish-government-uk-government-and-northern-ireland-executive-funding-announced-for-two-new-research-centres-on-climate-and-sustain>

		<i>areas such as biodiversity, tourism, and climate action.</i>	
	Shared Island dimension to the Government's Creative Ireland Programme 2023-2027	<i>Funding for three new projects which develop awareness, through creativity, of climate change, on a cross-border basis.</i>	€600,000
Spotlight on Civic Society	Shared Island Civic Society Fund	<i>The fund enables organisations to work on an all-island, regional, or sectoral cross-border basis on issues including: climate and environment; community development; heritage and conservation; social enterprise; charity and voluntary sector; and sport.</i>	€3m

Source: [Shared Island Initiative Report, 2023](#)

7.2 Irish Fiscal Advisory Council

In October 2023, the Irish Fiscal Advisory Council (IFAC) published [What climate change means for Ireland's public finances](#). The report provides analysis of the budgetary impacts of climate change on the Irish public finances. As with Scotland, the IFAC have used projections from a TIMES model, in which the IFAC consider the impact on public expenditure. The report states compared to the impact on government revenue over the period to 2050 the impact on public expenditure:

...will more than likely necessitate various policy changes to meet Ireland's climate targets while ensuring a "just transition" — an approach that is both sustainable and inclusive.¹⁴¹

The IFAC have considered both a "low cost" scenario which could be considered "a lower bound on potential State involvement"¹⁴² and a "high cost" scenario, which could be considered "seen as a reasonable upper estimate, recognising that costs could still end up higher."¹⁴³ Figure 3 below presents the estimated public spending as a percentage of Gross National Income (GNI) required to support climate transition in the RoI:

Figure 3. Public spending to support climate transition as a % of GNI – High-cost and Low-cost scenarios



Source: [Irish Fiscal Advisory Council \(2023\)](#)

Based on these projections, the IFAC conclude:

¹⁴¹ [Irish Fiscal Advisory Council - What climate change means for Ireland's public finances \(October 2023\)](#)

¹⁴² See footnote 141 immediately above

¹⁴³ See footnote 141

Depending on the extent of private sector involvement, we estimate that the Government may face costs of between 0.6 and 1.1% of GNI (€1.6 to 3 billion in today's terms) per annum over the years 2026 to 2030. These costs would then average between 0.4 and 0.7% of GNI over the longer term (2031 to 2050)¹⁴⁴.

Potential issues for consideration:

18. Has the Northern Ireland Executive, the Department of Finance and or the Northern Ireland Fiscal Council carried out, or are they considering carrying out, a similar budgetary impact assessment of climate change using the TIMES model as those carried out by both the Scottish Government and the IFAC?

8 Concluding Remarks

As highlighted in this Paper, estimating the cost of addressing climate change and reaching the Paris Agreement net-zero target by 2050 is challenging. A number of organisations have highlighted this point. For example, the United Kingdom National Audit Office (NAO) state in its 2020 [Achieving net zero report](#):

The cost of net zero is subject to significant uncertainty because of questions around how net zero will be achieved; uncertainty in how net zero will be financed; and the timing of expenditure.¹⁴⁵

Moreover, the OECD in its 2024, report, detail a number of challenges of investing in technology and infrastructure to reach net zero, noting:

Investments in nascent clean energy technologies tend to be perceived as higher risk than well-established technologies such as solar PV and onshore wind. This stems from factors including

¹⁴⁴ See footnote 141

¹⁴⁵ <https://www.nao.org.uk/wp-content/uploads/2020/12/Achieving-net-zero.pdf>

*uncertain market demand; a shortage of credible off takers; price uncertainty; lack of trading markets; political risk; insufficient infrastructure; lack of transactional experience; and an absence of historical evidence of technological performance at the commercial level.*¹⁴⁶

In the UK, central and devolved government all rely on the work of CCC in estimating costs to reach net-zero, to estimate for purposes of their jurisdictions. However, as highlighted by the CCC in its Sixth Carbon Budget, the latest UK-wide cost estimates K are based on a number of assumptions that are ever-changing. The CCC acknowledges that when considering the possible scenarios regarding the UK's journey to reach net-zero, when it stated:

*All the scenarios are ambitious while bounded by realistic assumptions over the speed at which low-carbon technologies can be developed and rolled out, allowing time for supply chains, markets and infrastructure to scale up. They are self-consistent and recognise other priorities – for example, our energy analysis maintains security of supply, our housing analysis considers the need for flood protection and to avoid over-heating, our land analysis supports the natural environment.*¹⁴⁷

The CCC premise its initial UK-wide calculations for reaching net-zero on the assumption that it was not required that all DAs reach net-zero because different regions' capabilities would make reaching this target more difficult. Moreover, the scale of operations in other parts of the UK could make up any shortfalls elsewhere.

Despite that assessment, recent amendments to legislation in Scotland and Wales, and the introduction of a Climate Change Act in 2022 for Northern Ireland, have seen each devolved jurisdiction set a target of reaching net-zero by 2050 (or 2045 in the case of Scotland). Since 2019, UK-wide and DA-specific legislation to achieve net-zero by 2050 has increased the number of

¹⁴⁶ [https://one.oecd.org/document/ENV/WKP\(2024\)15/REV1/en/pdf](https://one.oecd.org/document/ENV/WKP(2024)15/REV1/en/pdf)

¹⁴⁷ [The Sixth Carbon Budget the UKs path to Net-Zero \(2020\)](#)

required actions and interventions that are to be completed in the period leading up to 2050. By consequence, they require more funding and investment than the CCC had calculated in its earlier assessments (dated [2010](#) and [2015](#)).

Notably, the CCC's underlying assumptions are based on investment in technology (such as renewables and Carbon Capture and Storage (CCS)), which are expected to reduce in cost over time. In addition, technology does not currently exist, and therefore cost cannot be calculated.

However, as the CCC also states, compared to the CCC's earlier Carbon Budgets, the cost of existing technology has fallen quicker than the CCC initially had calculated. Therefore, the methodology used by the CCC is always adapted to take account of an ever-changing landscape in terms of long-term Gross Domestic Product (GDP) growth, fossil fuel prices, technology costs and costs of capital and discounting.

As noted in the CCC Sixth Carbon Budget published in December 2020, there have been international conflicts, the cost of living crisis and higher interest rates, which have increased the cost of borrowing for both government and private sector business. For example, the CCC is to report on Seventh Carbon Budget in early 2025, in the [Proposed methodology for the Seventh Carbon Budget advice](#), which states that the CCC will include a focus on “geopolitical aspects of energy security”.¹⁴⁸

As has been seen in Scotland, the Scottish Government was ambitious with its interim targets on the road to net-zero. As a result, the Scottish Government has had to remove its interim targets and rather take a Carbon Budget approach, in which five-year Carbon Budgets which the Government considers “...provide a more reliable framework for emissions reduction.”¹⁴⁹ That example shows that former “legally-binding” targets could be changed or removed by subsequent legislation, and other jurisdictions could follow if they are not on track to meet their targets.

¹⁴⁸ <https://www.theccc.org.uk/wp-content/uploads/2023/11/CCC-Proposed-methodology-for-the-Seventh-Carbon-Budget-advice.pdf>

¹⁴⁹ <https://www.gov.scot/news/climate-change-bill-published/>

Also highlighted in this Paper, an assumption of both public and private investment is required to reach the goal of net-zero. However, private sector investment is not guaranteed and dependent on a number of factors. This raises some issues - for example, the assumed investment, is it out of the control of government? That begs the question as to what extent will government policy and legislation play a role in increasing the private sector's confidence and incentivising their actions?

As noted in this Paper, both in Scotland and the RoI, their Independent Financial institutions have carried out their own analysis of the cost to their governments of reaching their net zero targets. Both have relied on the TIMES model¹⁵⁰ to calculate costs associated with net-zero transition. Reliance on this model could be considered to calculate the associate climate transition costs in Northern Ireland.

The general assessment across all DAs in the UK is that the transition to net-zero will be several billion pounds. However, the degree to which that figure will affect the budgets of governments, will depend on the policies taken and the level of intervention governments chose to make. While the general assessment is that much of the overall cost burden of transition will fall on the private sector, that will be individual business making choices which cannot be guaranteed. However, there will be a role for government to play in private sector decision making, as government policy and legislation can directly influence the decisions taken – for example, the UK Government banning the sale of petrol and diesel. This point is reiterated by the DAERA when responding to RalSe-PFSU in November 2024. It stated:

It is for the Northern Ireland Executive, in consultation with stakeholders, to consider the options carefully and determine the pathway it wishes to take to reach Net Zero. The true costs and benefits of reaching Net Zero cannot be fully ascertained until there is greater clarity on the agreed pathway to be implemented.¹⁵¹

¹⁵⁰ See footnote 106

¹⁵¹ Correspondence between DAERA and RalSe – received (25 November 2024)

As such, in Northern Ireland, the future costs associated with addressing climate change and reaching the net-zero target by 2050 will be impacted by a multiple-factors. As discussed previously in this Paper, the role of technology is considered an important part of the net-zero transition, notably the CCC had reviewed its projections in light of associated technologies costs decreasing more quickly than anticipated. However, future costs are also reliant on future technological developments which currently do not exist. While experience and theory suggest those will arise, issues of timing, mass deployment and users' behavioural change will all play critical roles in how impactful those will be, as well as the costs associated with each of them.

Appendix 1. Overview of CCC Carbon Budgets

Budget	Carbon budget level	Reduction below 1990 levels	Met?
1st Carbon Budget (2008 to 2012)	3,018 MtCO ₂ e	26%	Yes
2nd Carbon Budget (2013 to 2017)	2,782 MtCO ₂ e	32%	Yes
3rd Carbon Budget (2018 to 2022)	2,544 MtCO ₂ e	38%	To be assessed in our 2024 Progress Report
4th Carbon Budget (2023 to 2027)	1,950 MtCO ₂ e	52%	To be assessed in our 2029 Progress Report
Nationally Determined Contribution (2030)	–	68%	To be assessed in our 2032 Progress Report
5th Carbon Budget (2028 to 2032)	1,725 MtCO ₂ e	58%	To be assessed in our 2034 Progress Report
6th Carbon Budget (2033 to 2037)*	965 MtCO ₂ e	78%	To be assessed in our 2039 Progress Report
7th Carbon Budget (2038 to 2042)*	To be set in 2025	–	–
Net Zero Target		At least 100% by 2050	

Source: [Climate Change Committee \(2021\)](#)

Appendix 2. Legislative and policy initiatives to address climate change in Wales

	Legislation or Policy	Description
Environment (Wales) Act 2016	Legislation	<p>The Environment (Wales) Act 2016 is a landmark piece of legislation that forms the backbone of Wales' climate change policy. It aims to tackle environmental challenges through:</p> <ul style="list-style-type: none"> • Setting long-term GHG reduction targets: A commitment to an 80% reduction by 2050, compared to 1990 levels, with interim targets for 2020, 2030, and 2040 • Establishing carbon budgets to ensure that Wales stays on track to meet its climate goals. These budgets cap the total amount of GHG emissions allowed over a five-year period
Well-being of Future Generations (Wales) Act 2015	Legislation	<p>This pioneering piece of legislation, known as the Well-being of Future Generations (Wales) Act 2015, integrates sustainability into Welsh law, aiming to improve social, economic, environmental, and cultural well-being. Climate change is a core consideration under the act's goals, which include:</p> <ul style="list-style-type: none"> • A low-carbon society: The law mandates public bodies in Wales to take action that contributes to a more sustainable future, including reducing emissions and improving resilience to climate change. • Sustainable resource management: Encouraging the use of natural resources in a way that enhances long-term sustainability, reducing carbon footprints, and fostering a circular economy

Prosperity for All: A Low Carbon Wales (2019)	Policy	<p>The Welsh Government's plan, Prosperity for All: A Low Carbon Wales, outlines more than 100 actions for reducing emissions across key sectors, including energy, transport, agriculture, and housing. Key commitments include:</p> <ul style="list-style-type: none"> • Achieving a carbon-neutral public sector by 2030 • Encouraging low-carbon energy generation and reducing reliance on fossil fuels • Supporting sustainable land use and increasing carbon sequestration through afforestation
All Wales Plan 2021-25: Working Together to Reach Net Zero	Policy	<p>Building on previous frameworks, the Net-Zero Wales Plan sets specific actions for the five years (2021-2025) to drive emissions reductions across multiple sectors. It prioritizes:</p> <ul style="list-style-type: none"> • Accelerating the decarbonization of transport, with a commitment to phase out the sale of petrol and diesel vehicles by 2030. • Expanding renewable energy capacity, particularly in offshore wind and tidal energy. • Promoting green building practices, including retrofitting existing homes and improving energy efficiency in public buildings.
Net Zero Wales Carbon Budget 2 (2021-25)	Policy	<p>This Plan sets out 123 policies and proposals, covering areas from peatland restoration to active travel, and from green skills to renewable energy.</p>

Source: RaISe-PFSU (2024), relying on hyperlinked sources

Appendix 3. Legislative and policy initiatives to address climate change in Scotland

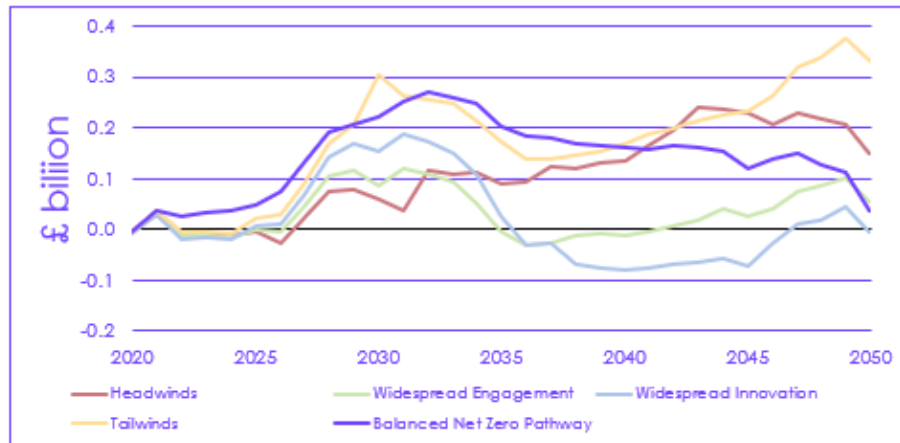
Legislation/Policy	Description
Climate Change (Scotland) Act 2009	<p>The Climate Change (Scotland) Act 2009 is a cornerstone of Scotland's climate legislation, setting legally binding greenhouse gas (GHG) emissions reduction targets. Key features of the Act include:</p> <ul style="list-style-type: none"> • A 42% reduction in GHG emissions by 2020 (compared to 1990 levels). • A long-term goal to reduce emissions by 80% by 2050. • The establishment of statutory requirements for reporting and accountability, including annual progress reports to the Scottish Parliament.
Climate Change (Emissions Reduction Targets) (Scotland) Act 2019	<p>The 2009 Act was updated in 2019 by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 to reflect Scotland's commitment to more ambitious climate targets following the Paris Agreement. The 2019 Act sets out:</p> <ul style="list-style-type: none"> • A legally binding target to achieve net-zero emissions by 2045, five years ahead of the UK's 2050 target. • Interim targets of a reduction in emissions of 56% by 2020, 75% by 2030, and 90% by 2040 (compared to 1990 levels). • A commitment to include international aviation and shipping emissions in Scotland's overall carbon accounting, highlighting its commitment to global climate leadership.
Scotland's Climate Change Plan 2018-2032 (Updated 2020)	<p>Scotland's Climate Change Plan 2018-2032 outlines how the country will achieve its emissions reduction targets. The Plan was updated in 2020 to reflect the more ambitious targets in the 2019 Act. The key sectors addressed in the plan include:</p> <ul style="list-style-type: none"> • Energy: A shift towards renewable energy generation, particularly wind and hydroelectric power.

	<ul style="list-style-type: none">• Transport: Plans for the decarbonization of transport, including a commitment to phase out the sale of new petrol and diesel cars by 2032.• Agriculture: Promoting climate-smart agriculture and reducing emissions from land use.• Buildings: Improving energy efficiency in buildings and reducing emissions from heating.
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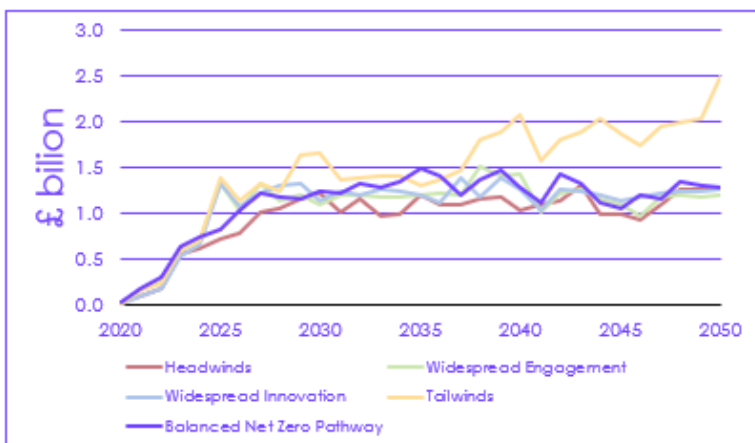
Source: RalSe-PFSU (2024), relying on hyperlinked sources

Appendix 4. CCC Northern Ireland Analysis – Investment figures

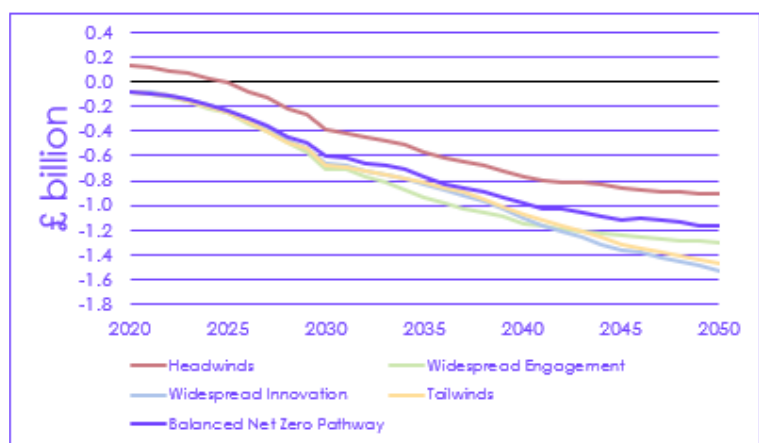
Northern Ireland – Annualised resource costs



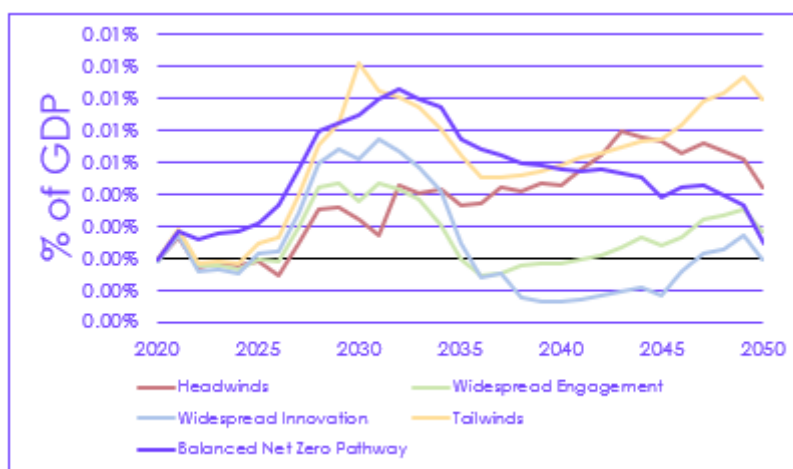
Northern Ireland – Change in CAPEX



Northern Ireland – Change in OPEX



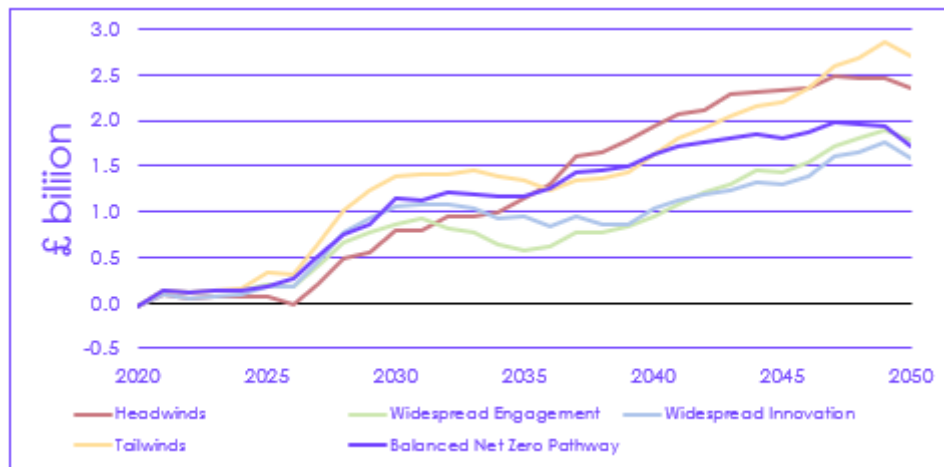
Northern Ireland – Annualised resource costs (% of GDP)



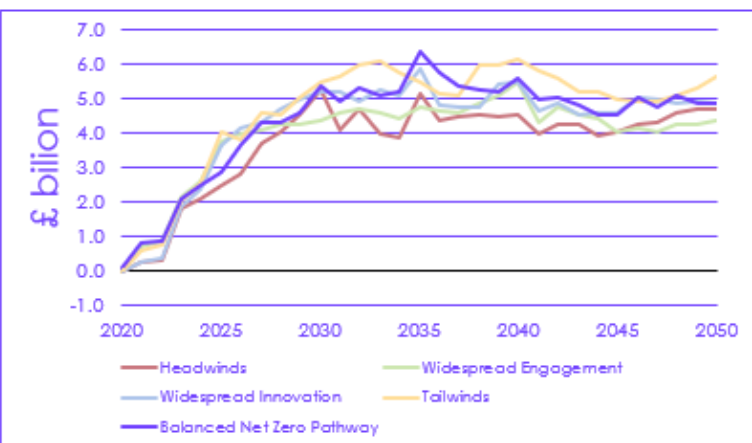
Source: [Sixth Carbon Budget - Dataset \(Version 2 - December 2021\)](#)

Appendix 5. CCC Scotland Analysis – Investment figures

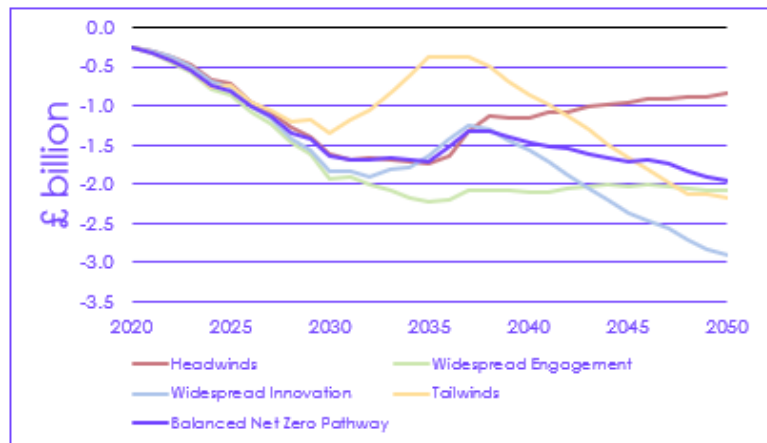
Scotland – Annualised resource costs



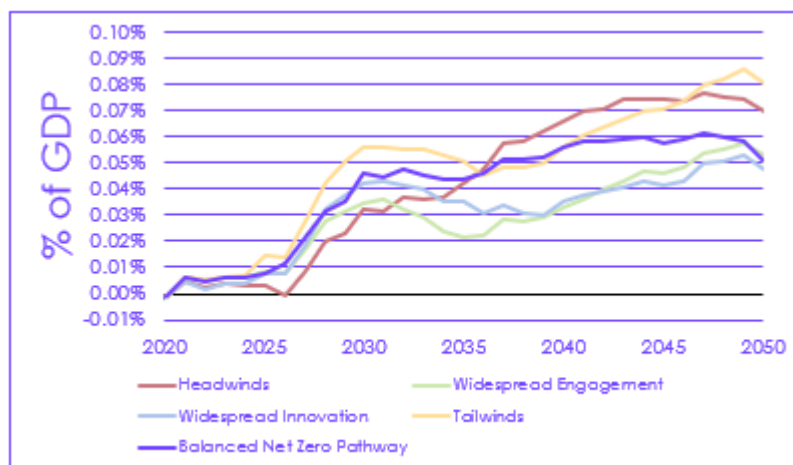
Scotland – Change in CAPEX



Scotland – Change in OPEX



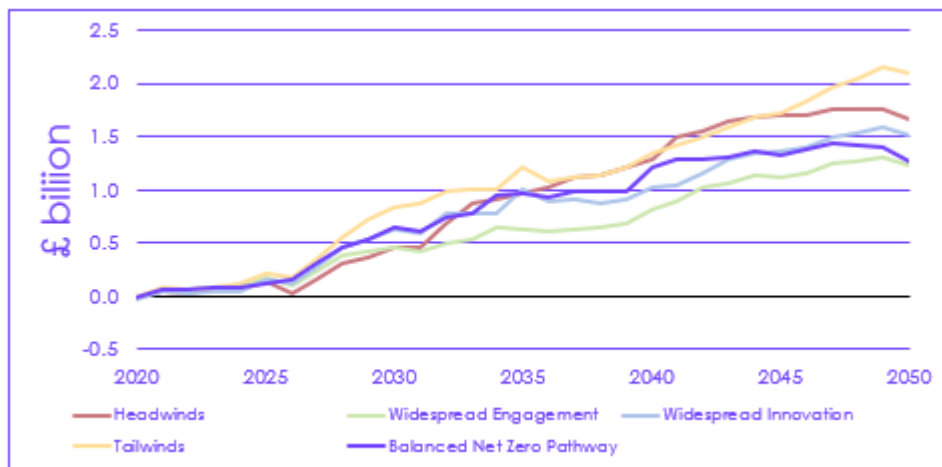
Scotland – Annualised resource costs (% of GDP)



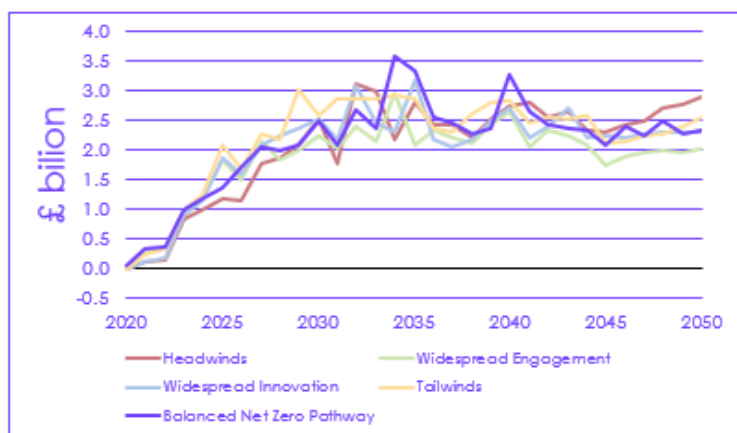
Source: [Sixth Carbon Budget - Dataset \(Version 2 - December 2021\)](#)

Appendix 6. CCC Wales Analysis – Investment figures

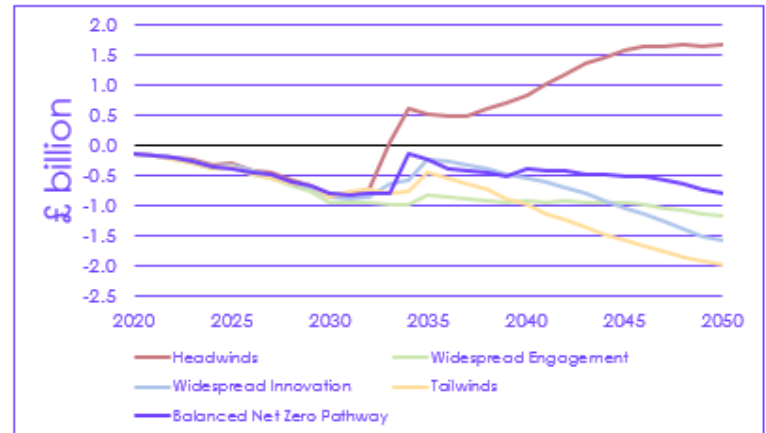
Wales – Annualised resource costs



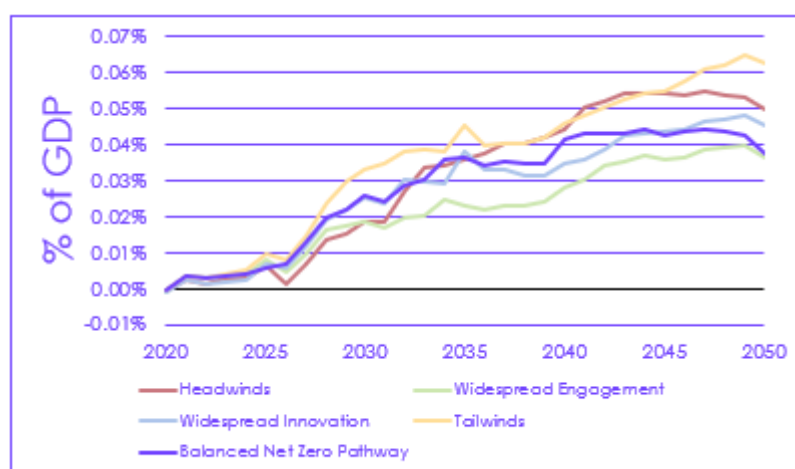
Wales – Change in CAPEX



Wales – Change in OPEX



Wales – Annualised resource costs (% of GDP)



Source: [Sixth Carbon Budget - Dataset \(Version 2 - December 2021\)](#)

Appendix 7. Executive Budget Cycle, all Five Stages.

As explained in the RalSe-PFSU [Public Finance Scrutiny Workshop Series](#), the [Executive Budget Cycle](#) encompasses five Stages, as highlighted below:



Source: [OECD](#) (Publicly available 2024)