

# FOCUS ON **ADAPTATION**

## REPORT 2024



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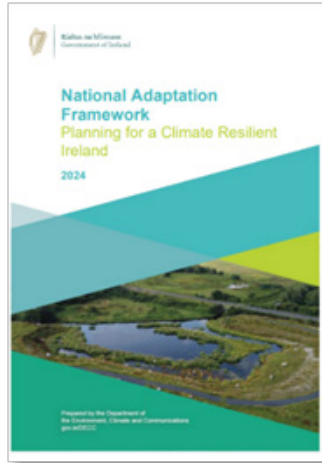
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## Executive summary

This report highlights recent progress in Ireland’s climate change adaptation, covering areas including policy, governance, planning, climate services, risk assessment, and research. As climate change continues to impact Ireland, adapting to this new reality is essential for the country’s future resilience. Building this resilience requires a coordinated approach that includes strong institutions and governance, adequate resources, legal and regulatory support, regular vulnerability assessments, and climate action planning across national, sectoral, and local levels. Access to information and enhanced capacity for adaptation are also critical.



Ireland is making strides in adaptation, particularly in policy, governance, climate services, risk assessment, planning, regulation, research, and public engagement. This report details and summarises key developments that support these efforts.

## Policy & Governance

- The new **National Adaptation Framework (NAF)** published in 2024, outlines the principles guiding adaptation and resilience planning in Ireland. It emphasises social justice, equity, and integrated planning, offering enhanced guidance for sectoral adaptation. The framework also introduces potential new adaptation sectors and reinforces adaptation monitoring and reporting in Ireland.

## Data & Evidence

- The establishment of the **National Framework for Climate Services (NFCS)** in 2022 and the publication of the **TRANSLATE** standardised set of national climate projections in 2023 support the development of high-quality standardised climate data sets to underpin adaptation planning in Ireland.



- The incorporation of **Climate Ireland**, the national adaptation platform, into the EPA in 2021, and the establishment of the **Climate Ireland Adaptation Network** provide important resources to build adaptation capacity and foster a community of practice in Ireland.
- The **National Climate Change Risk Assessment (NCCRA)**, led by the EPA and due to be completed by early 2025, will provide, for the first time, an integrated, cross sectoral and cross cutting assessment and prioritisation of climate risk facing Ireland in the form of a National Climate Risk Register. The Risk Register will be prioritised on the basis of urgency for action required for each risk. The NCCRA and associated Technical Guidance for Sectoral Risk Assessments (EPA, 2024c) will support the alignment of climate risk assessment across sectors and policy areas and enable the incorporation of transboundary and cascading risk identification and assessment.
- The **Climate Change Advisory Council’s Adaptation Committee**, established in 2016, continues to provide independent policy advice to Government. It has established an Adaptation Scorecard as a recognised annual assessment of activity regarding Sectoral Adaptation and local authority Plan implementation.



## Adaptation Planning

- Adaptation planning is being carried out on sectoral and local authority levels in Ireland. In early 2024 all local authorities in Ireland adopted five-year **Local Authority Climate Action Plans** which incorporate mitigation, adaptation, and citizen engagement actions.
- The existing and additional sectors under the NAF are due to produce updated Sectoral Adaptation Plans by 2025.
- In 2024, the EPA introduced, for the first time, a requirement for licensed facilities to develop an adaptation plan, alongside sectoral and local government planning.

## Finance

- The Department of Public Expenditure, NDP Delivery and Reform has tracked **climate-related expenditure** since 2019. From 2024 the assessment makes specific reference to activities considered to be favourable to climate change adaptation efforts.
- The Government of Ireland also announced two **climate-related funds** in 2024, the *Future Ireland Fund*, and *The Infrastructure, Climate and Nature Fund*. The Future of Ireland Fund is an unlimited fund intended to support strategic expenditure including climate action. The Infrastructure, Climate & Nature Fund is intended to manage cyclical capital spending to a figure of €14 billion by 2030.
- Since 2022, the Central Bank of Ireland Climate has chaired a **Climate Risk Sustainable Finance Forum** (Climate Forum). This is a consultative forum which aims to build a shared approach between the financial sector and Central Bank of Ireland in understanding and managing the financial risks and opportunities posed by climate change.



## Research

- Research on adaptation and related themes continues to be extensively funded in Ireland. The EPA chairs the National Environmental Research Coordination Group and publishes an annual report on publicly funded **Climate Research in Ireland**. Between 2020 and 2023 a total of 596 climate-related projects were funded, representing an investment of almost €317M. Updated numbers come from <https://www.epa.ie/publications/research/climate-change/2023-climate-research-highlights.php>
- The EPA published its updated *Thematic Research Priorities* in 2024 (EPA, 2024e), which reflect key evidence and research needs. The thirty-seven priorities identified will set the strategic direction for the EPA Research Programme out to 2026. They include priorities relating to adaption, understanding vulnerabilities, and identifying risks, and bringing mitigation and adaption together.
- The *Irish Climate Change Assessment Report (ICCA)* provides a comprehensive evaluation of Ireland's current and projected climate impacts, vulnerabilities, and adaptation needs. Drawing on the latest scientific research, ICCA offers insights into climate trends and risks specific to Ireland, supporting evidence-based policymaking for climate resilience. The report guides national adaptation strategies and helps align Ireland's climate actions with international frameworks, ensuring a proactive approach to addressing climate change.
- *Ireland's State of the Environment Report* is a comprehensive assessment published by the EPA that evaluates Ireland's environmental health across areas such as air and water quality, biodiversity, climate, and waste management. Released every four years (most recently in 2024), the report identifies key environmental trends, challenges, and areas for improvement, serving as a critical resource for policymakers, stakeholders, and the public to guide sustainable actions and policies in Ireland.



# 1 INTRODUCTION

The effects of climate change are being felt in Ireland, with evidence of rising sea levels, changing ecosystems, higher temperatures, and changing precipitation patterns, among others. Although the Earth's climate has changed throughout history, the last century has seen unprecedented changes, which have been attributed to increased atmospheric concentrations of greenhouse gases (GHGs). The impacts of these changes are already being felt across the world's oceans, continents, and atmosphere. These changes are also being observed in Ireland, where temperatures are increasing, spatial and temporal precipitation patterns are changing, and sea levels are rising.

Internationally, the Intergovernmental Panel on Climate Change (IPCC) provides the authoritative current state of knowledge on global and regional climate change and its potential environmental and socio-economic impacts. In the latest report, *Climate Change 2022: Impacts, Adaptation and Vulnerability* (Assessment Report 6, Working Group II) (IPCC, 2022), the IPCC highlighted that climate change is an unequivocal threat to human well-being and the planet's health, and delays in global action will jeopardise the chance to secure a liveable future. The main findings of the report were:

- Anthropogenic climate change has caused widespread loss and damage to our natural systems and communities worldwide.
- Vulnerability to the effects of climate change varies significantly within and amongst regions and is driven by socioeconomic factors, inequality patterns born from colonisation and governance, and unsustainable land and ocean use.
- The magnitude and rate of climate change depend on the level of global action. Losses and damages can be reduced the quicker we act.
- Climate impacts are becoming increasingly more complex and challenging to solve.
- Adaptation efforts are occurring, but they are unevenly distributed.
- Feasible and effective adaptation options are available to reduce climate change risk.
- Maladaptation can be avoided by implementing flexible, long-term, and inclusive adaptation actions.
- Political commitment and follow-through are critical to implementing and accelerating climate action.
- Cooperation with marginalised and vulnerable groups is key to climate resilience development.

Nationally, Ireland's Climate Change Assessment (ICCA, 2024b) report was published by the EPA in January 2024. It provides a comprehensive assessment of the state of knowledge around all key aspects of climate change, with a central focus on Ireland, and taking into account the observations from the national monitoring networks. The report is based on data available up to 31st December 2022. It concluded that:

- In Ireland, annual average temperatures are now approximately 1.0°C higher than they were in the early 20th century. Sixteen of the top twenty warmest years since 1900 have occurred since 1990, with 2022 being the warmest year to date.
- Over Ireland median annual precipitation was 7% higher in the period 1991–2020, compared to the 30-year period 1961–1990. Overall, when aggregated, there has been an increase in heavy precipitation extremes across a range of indicators.
- Global sea level increased by approximately 0.20m between 1901 and 2018, and the rate of global sea level rise is accelerating. Consistent with global open ocean changes, Irish marine waters have experienced long-term acidification due to uptake of anthropogenic atmospheric carbon dioxide. Rates of sea level rise since the late 20th century in Cork and Dublin are higher than the global average.
- Recent extreme events in Ireland highlight the vulnerability of individuals, communities, sectors, and ecosystems to climate change and indicate an adaptation deficit.

An attribution study of the October 2023 flood event in Midleton, Co. Cork undertaken by the ICARUS research centre in Maynooth in collaboration with the World Weather Attribution team in Imperial College London and Met Éireann found that such flooding events are likely to continue with further warming (Clarke, et al, 2024).

In addition to the ICCA report, the EPA also published the State of the Environment report every 4 years, the most recent report having been released in 2024 (EPA, 2024d). The report presents the most recent evaluation of Ireland's environment (including air, water, soil, biodiversity) and how society impacts on it. It also provides an update on the environmental challenges that are faced nationally and globally. The key messages relating to adaptation include:

- Ireland needs to be resilient to ongoing and future climate change impacts. The implementation of climate adaptation measures is currently too slow and fragmented. More cross-sectoral and integrated adaptation actions can deliver multiple benefits. Doing better requires more financing, working with people and nature, monitoring and evaluating outcomes and increasing public and private sector involvement.
- Ireland is not currently projected to achieve its 2030 emissions reduction targets or to meet national or EU reduction targets. Despite Irish climate action ambitions, significantly faster progress is needed to decarbonise all sectors of Ireland's economy and implement adaptation actions to deliver a resilient and sustainable future for the benefit of all society.
- It is essential to build climate resilience into water quality management and into water services. Plans – such as the Water Action Plan, the Water Quality and Water Services Climate Adaptation Plan, and Uisce Éireann's National Water Resources Plan – are key to identifying risks and adaptation measures.

In order to deal with these global and local changes and climate risks, Ireland needs to adapt to the actual or expected climate and its effects in order to moderate harm and take advantage of beneficial opportunities. This report provides a high-level overview of the progress being made in Ireland in the area of adaptation, particularly in relation to policy, governance, climate services, risk assessment, planning, regulation, research and engagement.



## 2

# ADAPTATION POLICY AND GOVERNANCE

Adapting to climate change is a complicated area that requires integrated policy, governance, risk assessment, and planning within and across sectors. Over the past 20 years, there have been international and European policy developments to progress adaptation. Since 2012, Ireland has also accelerated its progress towards delivering a comprehensive climate change governance structure and policy in order to support adaptation. An overview of these policies is provided below.

## 2.1 International context

The Paris Agreement was adopted by 196 Parties at Conferences of the Parties 21 (COP) in Paris on 12th December 2015 and entered into force on 4th November 2016 (UNFCCC, 2018). It established the global goal of adaptation of enhancing adaptive capacity, strengthening resilience, and reducing vulnerability to climate change in the context of the Agreement's temperature goal of limiting warming to 1.5°C or 2°C. In 2021, COP26 established and launched The Glasgow – Sharm el-Sheikh programme to help enhance understanding of the global goal of adaptation and how to understand progress towards it. This, in turn, will help equip communities and countries, including Ireland, with the knowledge and tools to ensure that their adaptation actions are indeed moving the world towards a more climate-resilient future. It will also help better inform the provision of support for adaptation (UNFCCC, 2018).

On November 20, the 27th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP27) concluded in Sharm el-Sheikh, Egypt, with a landmark decision to establish and activate a loss and damage fund, outlined in the Sharm el-Sheikh Implementation Plan. This plan, a new global climate pact, marks a historic commitment by wealthier nations to provide financial assistance to developing nations for recovery from ongoing climate change impacts, extending beyond previous support limited to mitigation and adaptation efforts. Unlike COP26, which focused on target setting, COP27 prioritised implementation, translating earlier ambitious targets and pledges into tangible actions. The UNFCCC Executive Secretary emphasized three crucial lines of action for the conference: demonstrating a transformative shift to implementation, advancing critical workstreams such as mitigation, adaptation, and finance, and reinforcing the principles of transparency and accountability throughout the process.

COP28, held in Dubai in 2023, was the first occasion that progress since the Paris Agreement, was reviewed under the Global Stocktake. The COP28 decision on the global stocktake states that all Parties should have a system in place for monitoring, evaluating, and learning for national adaptation efforts. Achievements at COP28 included the compilation of the '2030 Climate Solutions: Implementation Roadmap' (UNFCCC, 2023) and the formal establishment of the loss and damage fund, and the United Arab Emirates (UAE) Framework for Global Climate Resilience, providing opportunities for developing improved methods and monitoring of adaptation actions. COP28 also agreed on the framework for the Global Goal on Adaptation - it contained language on long-term transformational adaptation, set targets for a finalised list of thematic areas and set targets for the iterative adaptation cycle.

## 2.2 European Context

### 2.2.1 European Green Deal

The European Climate Law and European Green Deal, comprises a comprehensive set of policy initiatives and legal targets for the European Commission, aiming to lead the European Union (EU) to climate neutrality by 2050. This sustainable growth strategy spans various policy areas, including climate, environment, energy, transport, industry, agriculture, and sustainable finance. Its objectives encompass decoupling economic growth from resource use, achieving net zero emissions by 2050, and ensuring a just and socially fair transition. The 'Fit for 55' legislation, proposed in July 2021 and now fully adopted, outlines a path for the EU to meet its 2030 climate targets, prioritising fairness, cost-effectiveness, and competitiveness. The EU's commitment extends to addressing environmental and climate challenges, halting biodiversity loss, achieving net-zero emissions, fostering a toxic-free environment, promoting resource efficiency, and mainstreaming sustainability across policies. This aligns with global initiatives like the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.

### 2.2.2 EU Adaptation Strategy

The European Commission unveiled an enhanced EU Adaptation Strategy (European Commission, 2021) as part



of the European Green Deal in December 2019. Officially adopted on February 24, 2021, this strategy outlines the EU's approach to adapting to the unavoidable impacts of climate change, aiming for climate resilience by 2050. With four key objectives—smarter, swifter, more systemic adaptation, and increased international action—the vision is for the EU to be a climate-resilient society by 2050, aligning with the Paris Agreement and the proposed European Climate Law.

### 2.2.3 Corporate Sustainability Reporting Directive (CSRD)

The CSRD requires companies to disclose the environmental and social impacts, including their strategic and financial implications according to a double materiality assessment. In relation to resilience, the CSRD requires companies to report how the company may be impacted by physical climate risks and provides investors with information on how vulnerable a company is to climate change or how it could benefit from adaptation action. The CSRD and related reporting and investment standards provide important levers to encourage private sector progress on adaptation.

## 2.3 Irish Context

### 2.3.1 Legislation and policy

#### Climate Action and Low Carbon Development Act 2015

Ireland's National Climate Action and Low Carbon Development Act 2015 (Irish Statute Book, 2015) provides the required policy context for a strategic national adaptation response to climate change which aims, as a fundamental national objective, to achieve a transition to a competitive, low carbon, climate resilient and environmentally sustainable economy by 2050; As part of the Climate Action and Low Carbon Development Act 2015, reductions in greenhouse gas emissions and adaptation to the impacts of climate change are being addressed through two parallel national plans, the National Low-Carbon Roadmap and the National Climate Change Adaptation Framework.

#### Climate Action and Low Carbon Development (Amendment) Act 2021

The Climate Action and Low Carbon Development (Amendment) Bill 2021 (Government of Ireland, 2021) aims to facilitate Ireland's transition to Net Zero and achieve a climate-neutral economy by 2050. The bill establishes a legally binding framework with clear targets, embedding processes like carbon budgeting into law. It mandates the government to adopt economy-wide five-year carbon budgets, sectoral targets, and annual updates through the Climate Action Plan. Ministers will be accountable for achieving targets in their sectors, reporting annually to an Oireachtas Committee. The Climate Change Advisory Council's role is strengthened, proposing carbon budgets and expanding its membership for broader expertise. Of relevance to adaptation, local authorities must prepare Climate Action Plans aligning with Development Plans, and public bodies are obliged to support national climate objectives.

#### National Adaptation Framework (NAF)

The updated NAF was published by the Department of Environment, Climate, and Communications (DECC) in 2024 and outlines the national strategy for climate adaptation. The updated NAF takes account of legislative changes in the 2021 Climate Act, international and EU developments, such as IPCC reports and the 2021 EU Adaptation Strategy, and stakeholder feedback. The NAF places a statutory requirement on government departments to develop adaptation strategies for the key sectors of the Irish economy (14 priority sectors under seven lead departments) and on local authorities to develop local-level adaptation strategies. The first iteration of sectoral and local adaptation strategies was published in September 2019 and second iterations developed under the new NAF are due for completion in 2025.

The NAF sets out Ireland's adaptation vision, guiding principles, cultural and enabling environment, stakeholders and roles, requirements for sectoral and local policymakers, adaptation approach to emergency planning, management and evaluation, research priorities; and a framework for implementation, governance, and reporting arrangements.

### 2.3.2 Governance

#### National Adaptation Steering Committee (NASC)

The National Adaptation Steering Committee (NASC) meets four times each year, is chaired by DECC and includes representatives from relevant Government Departments, the CAROs and state agencies. The NSCA provides a forum at senior level for information sharing on policy, implementation and research progress and is the primary coordination group on adaptation across Government in Ireland. Figure 1 details National adaptation governance structures.

#### Climate Change Advisory Council (CCAC)

The CCAC was established in 2016 under the 2015 Climate Act. The Council provides advice and recommendations on how Ireland is making the transition to a low carbon, climate resilient and environmentally sustainable economy by 2050.

The Council includes a chapter on adaptation in its annual review, which focuses on different aspects of adaptation and resilience each year. In addition, the Council carries out an annual adaptation scorecard each year to assess activity on the Sectoral Adaptation Plans and adaptation aspects of the Local Authority Climate Action Plans.

#### Climate Action Regional Offices (CAROS)

The CAROs were established in 2018 to support the preparation and delivery of Local Authority Adaptation Strategies and to enable engagement across local authorities and adaptation sectors. There are four CAROs, each with a specific spatial remit: Atlantic Seaboard North, Eastern & Midlands, Dublin Metropolitan, and Atlantic Seaboard South. The CAROs annual work programme covers six key areas including: adaptation, mitigation, communication and citizen engagement, training and education, knowledge development, and office management & partnership.

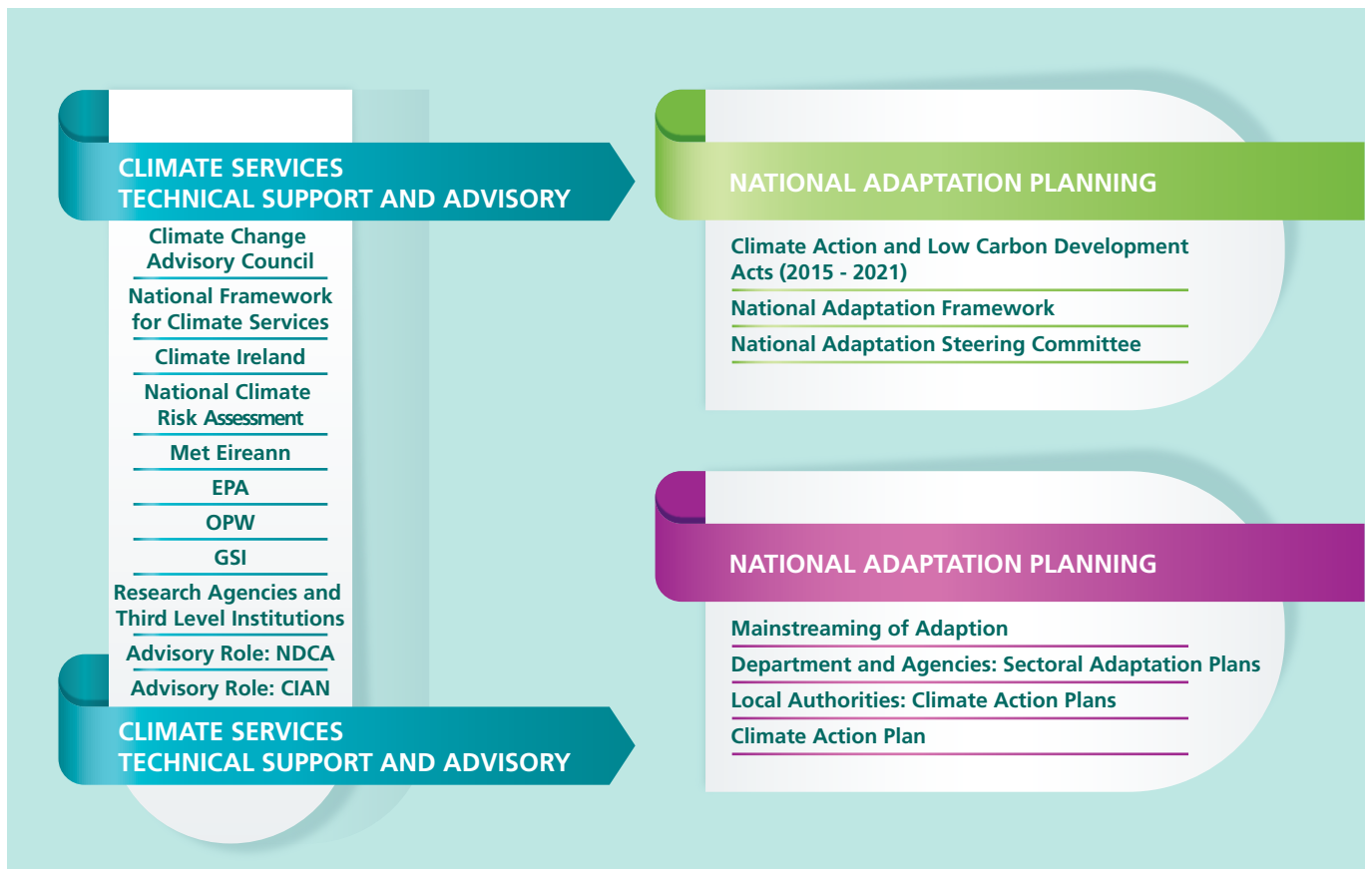


Figure 1: National adaptation governance structure

### 2.3.3 Plans

#### Climate Action Plan

The Climate Action Plan (CAP), updated annually, sets out the strategy that will be pursued to achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy. The plan integrates climate solutions into Ireland's social and economic development, incorporating carbon budgets and sectoral emissions ceilings. The CAP contextualises the NAF, and ensure adaptation and mitigation are considered in tandem when planning and coordination climate action at a national level.

#### Sectoral Adaptation Plans

Sectoral adaptation plans have been developed in response to the requirements of NAF 2018 for the following sectors: Agriculture, Forestry and Seafood; Biodiversity; Built and Archaeological Heritage; Communications Networks; Electricity and Gas Networks; Flood Risk Management; Health, Transport Infrastructure; and Water Quality and Water Services Infrastructure. Each plan identifies the key risks faced across the sector and the approach being taken to address these risks and build climate resilience for the future. They were developed applying a six-step adaptation planning process described in the Sectoral Planning Guidelines for Climate Change Adaptation, published by DECC (2024).

Under the 2024 NAF, the existing sectors, plus Tourism and Planning as a scoping exercise, must produce updated Sectoral Adaptation Plans. The plans will be underpinned by updated guidance published by DECC and technical risk assessment guidance published by the EPA which aligns to the NCCRA.

#### Local Authority Adaptation Strategies 2019

Local Authorities were required to prepare local adaptation strategies under the NAF 2018. These strategies identified risks, challenges, and opportunities to be considered for adaptation. The Strategies were based on five main themes: Governance, Critical Buildings, and Infrastructure, Natural and Cultural Capital, Water Resource and Flood Risk Management and Community Services, and provided for actions that were developed and implemented up to 2024. The strategies have now been superseded by the Local Authority Climate Action Plans.

#### Local Authority Climate Action Plans

Under the Climate Action and Low Carbon Development (Amendment) Act 2021 all local authorities are required to prepare Climate Action Plans for their respective areas. The plans combine climate mitigation and adaptation strategies, working to address them cohesively. Statutory guidelines to aid local authorities in crafting Climate Action Plans published by DECC in 2023. The 31 Local Authority Climate Action Plans were adopted in early 2024 and will remain valid for five years.

#### Local Authority Climate Action Charter

Local authorities are well placed to provide leadership in advancing a net zero carbon energy system and creating a climate-resilient and sustainable country. The Charter was identified as a CAP Action to ensure every local authority embeds decarbonisation, sustainable development, and climate resilience into every aspect of their work. Support and resources will be provided through the National Development Plan allocations and their resources, which will aid them in developing and implementing relevant activities under this Charter.

#### Delivering Effective Climate Action 2030

Delivering Effective Climate Action 2030 is the Local Government Management Agency (LGMA) strategy that aims to support the local government sector's ambition to lead on climate action. It applies a common vision for the sector and sets out objectives for local authorities to work towards to maximise their impact on Ireland's national climate targets. The strategy will be implemented by the local authority sector up to 2030.

#### Public Sector Climate Action Mandate

The Public Sector Climate Action Mandate was reviewed and updated as part of the preparation for Climate Action Plan 2024. It requires public bodies covered by the Mandate to create Climate Action Roadmaps outlining how they will achieve decarbonisation targets, subject to annual reviews in line with the updated Mandate.

## 3

# CLIMATE SERVICES, IMPACT, AND RISK ASSESSMENT

## 3.1 Climate observations

To ensure that climate action in Ireland is informed by appropriate information, several organisations and initiatives in Ireland are focused on monitoring of climate or related parameters as part of international or national monitoring networks and programmes.

Met Éireann (MÉ) is Ireland's leading provider of weather and climate information and related services and maintains the national network for atmospheric and terrestrial observations. In collaboration with the Marine Institute (MI), it also maintains the operational Irish Marine Buoy Network, to observe sea state/temperature and surface weather.

Ireland's Universities also play a role in climate observations through nationally and internationally funded research projects. Several other organisations carry out measurements of land-based and hydrological variables, such as Táilte Éireann, which oversees land-cover mapping supported by the EPA, and the EPA, which coordinates the National Hydrological Register. The EPA maintains an extensive network of river flow, lake level, groundwater level and spring flow measurement stations, the Office of Public Works (OPW) has an extensive river flow monitoring network and the Geological Survey of Ireland operate a network of groundwater and turlough level measurement stations.

The Global Climate Observing System National Committee (GCOS-Ireland) works to ensure the sustained provision of reliable physical, chemical, and biological observations and data records for the total climate system – across the atmospheric, oceanic, and terrestrial domains, including hydrological and carbon cycles, for Ireland. The committee is chaired by GCOS National Coordinator (Met Éireann) and has representatives from the Marine Institute and the Environmental Protection Agency, complimented by Teagasc, as well as remote sensing and other experts.

## 3.2 Climate projections, climate services and capacity building and networks

### 3.2.1 European

#### Climate-ADAPT

The European Climate Adaptation Platform Climate-ADAPT is a partnership between the European Commission and the European Environment Agency (EEA). Climate-ADAPT is maintained by the EEA with the support of the EIONET Topic Centre on Climate Change Impacts, Vulnerability and Adaptation (ETC/CCA).

Climate-ADAPT aims to support Europe in adapting to climate change helping users to access and share data and information on: expected climate change in Europe, current and future vulnerability of regions and sectors, EU, national and transnational adaptation strategies and actions, adaptation case studies and potential adaptation options, tools that support adaptation planning. The Climate Adapt platform hosts European Copernicus climate services including data from the Copernicus Climate Change Service (C3S).

#### EIONET

The European Environment Information and Observation Network (Eionet) serves as a collaborative network between the European Environment Agency (EEA) and its thirty-eight member and cooperating countries. Its primary function is to gather and develop data, knowledge, and advice on Europe's environment for policymakers. Comprising the EEA, around 400 national institutions, and European Topic Centres (ETCs), Eionet plays a crucial role in supporting EU policy formulation and providing valuable information to the public. The EPA leads the Irish National Group Lead on the Climate change impacts, vulnerability and adaptation EIONET Group.

#### The European Climate Risk Assessment

The European Climate Risk Assessment (EUCRA) is a collaborative initiative between the Directorate-General for Climate Action of the European Commission (DG CLIMA) and the EEA. Published in 2024, the EUCRA aims to evaluate present and future climate change impacts and risks on the environment, economy, and broader society in Europe to identify policy priority areas for adaptation action at a European level. It identifies thirty-six climate risks that threaten energy and food security, ecosystems, infrastructure, water resources, financial systems, and

people's health of people in Europe. The assessment concluded that many of these risks have already reached critical levels and may become catastrophic without urgent action.

### 3.2.2 Ireland

#### The National Framework for Climate Services (NFCS)

In June 2022, the Irish Government endorsed the establishment of a National Framework for Climate Services (NFCS), coordinated by Met Éireann and designed to enhance collaboration among climate information providers and users. Experts from various Irish sectors contribute to the NFCS, ensuring the availability of accurate and relevant data. The NFCS is facilitating the provision of a standard to which climate data, products and services should be produced to support standardised and coherent adaptation planning within and across sectors nationally. The recently released TRANSLATE projections represent the first output element of the NFCS. Additional datasets, including future river flow projections to be developed by the EPA, and indexing of OPW CFRAMS flood risk outputs to TRANSLATE projections, are currently underway.

#### TRANSLATE

The TRANSLATE project (Met Éireann, 2024) is a Met Éireann-led project to produce to standardised climate projections for Ireland and to develop climate services that meet the needs of decision makers. The project was a collaboration led by researchers from University of Galway – Irish Centre for High End Computing (ICHEC), and University College Cork – SFI Research Centre for Energy, Climate and Marine (MaREI), supported by Met Éireann climatologists. TRANSLATE produced a national set of standardised climate projections from which climate services can then be developed to aid climate risk decision making across multiple sectors (for example, transport, energy, water). The final TRANSLATE project report was published in 2024 and the TRANSLATE data sets relevant for climate adaptation are available on [www.climateireland.ie](http://www.climateireland.ie).

TRANSLATE-2 is currently underway, and this project which will build upon the existing TRANSLATE results to provide an expanded range of products, including additional variables,

such as wind, humidity, and radiation. It will also present case studies illustrating climate risks to aid in making more resilient adaptation decisions.

Met Éireann continue to lead the development of climate services in support of adaptation to climate change at the national scale, continued climate modelling through the EC-Earth consortium, and collaborative research project such as those in the European Research Area for Climate Services (ERA4CS).

#### Climate Ireland

Climate Ireland is Ireland's national adaptation platform and is provided by the Environmental Protection Agency as part of the EPA's climate adaptation work. Climate Ireland was originally designed and developed over the period 2010-2020 by the MaREI Centre at University College Cork (UCC) through three EPA research funded projects (EPA Research Report 135, EPA Research Report 222, EPA Research Report 258). As the adaptation platform for Ireland, it sets out to:

- Analyse, consolidate and present existing scientific/technical information of relevance to climate resilience;
- Assess and display up to date climate projections for Ireland;
- Act as a home for consolidated output of climate impact and climate adaptation research in Ireland;
- Act as a portal to information available from other reliable sources;
- Actively engage and develop long term relationships with core user group;
- Build the capacity of users to engage with climate adaptation and to mainstream climate resilience within their own areas of work;
- Create awareness of the need for climate adaptation;
- Expand on international linkages to share and develop best practice in climate information platforms and related services.

### Climate Ireland Adaptation Network (CIAN)

The Climate Ireland Adaptation Network is a professional network coordinated by EPA with the goal of exchanging expertise and fostering learning opportunities related to adaptation in Ireland. It seeks to enhance the standard of adaptation practices, offering a platform for practitioners engaged in climate risk and adaptation planning in Ireland. The CIAN held its first annual seminar in Dublin in October 2023 and followed up with a second annual seminar in October 2024. These events provided a forum for practitioners to discuss, share insights, and stay updated on the latest developments in climate adaptation. Since the start of 2024, the CIAN has issued quarterly update newsletters to network members containing relevant updates on international, European, national, and local adaptation-related topics.

## 3.3 Potential impacts and risk assessment

### 3.3.1 Potential impacts

As a result of climate change, Ireland will experience more frequent and/or severe extreme weather events and hazards, for example: increased precipitation, heatwaves, rising sea levels, flooding, droughts, and coastal erosion. Consequently, climate change has potential to have a significant impact on Ireland's people and assets.

### 3.3.2 Risk assessment

Climate change risk is made up of three key constituents: hazard, exposure, and vulnerability (IPCC, 2014; 2022). Risk assessment to underpin adaptation planning must incorporate these elements appropriately. Therefore, relevant, and adequate data relating to each element of risk must be available to practitioners in timely and accessible fashion to enable risk assessment to be completed to a high standard.

Hazard refers to the future climatological component including precipitation, flooding, wind, sea level rise, heatwaves, droughts, changing patterns of disease spread etc.

Exposure refers to infrastructure, populations or other receptors that could be adversely impacted through exposure to climate hazards. Exposure data sets are complex and often scale dependent. While some data exists in relation to exposure, it is often fragmented and incomplete. None the less, the existing data can be used to identify gaps where further work is required and is suitable for supporting initial risk assessment development.

Based on the IPCC (2014), vulnerability is the propensity or predisposition to be adversely affected by climate change. Climate change will impact the population within Ireland differently as individuals have a range of socioeconomic attributes which influence the social vulnerability (propensity or predisposition to be adversely affected) of an individual. Consequently, it is vital to understand social vulnerability and how it varies spatially in Ireland to fully identify and assess the risk posed by environmental hazards to people in Ireland.

### National Climate Change Risk Assessment (NCCRA)

The EPA is taking the lead in conducting a National Climate Change Risk Assessment (NCCRA) as mandated by Action AD/25/2 of the Climate Action Plan 2023. This assessment, aims to assist in climate change adaptation and mitigation planning by producing a national climate change risk register, prioritised by the required urgency for action. The assessment process aligns with semi-quantitative approaches akin to the UK CCRA and following the New Zealand model. This approach facilitates the identification and prioritisation of national climate change risks in the short term. The assessment is expected to be finalized by the end of Q1 2025, with the call for tenders initiated in October 2023.

### Sectoral Adaptation Plans

Sectoral Adaptation Plans due in 2025 will include risk assessments informed by the updated Sectoral Planning Guidelines for Climate Change Adaptation (Government of Ireland, 2024b) produced under the NAF and in particular, by Technical Guidance for Sectoral Risk Assessments (EPA, 2024c) published as part of the NCCRA process. The sectoral risk assessments methodology aligns technically with the NCCRA criteria and data sets and will support a more thorough identification of cascading and cross sectoral risk at sectoral and sub-sectoral levels.

### Local Authority Climate Action Plans

In 2021, Climate Ireland in collaboration with CARO-Atlantic Seaboard North (ASBN) developed a Semi-Quantitative Climate Risk Assessment (SQCRA) for the LACAPs.

The development of a common methodology for Local Authorities to carry out climate risk assessments provides them with a key adaptation planning tool to estimate the magnitude and frequency of natural hazards, the exposed assets, and the vulnerability of those assets given certain hazard conditions. The SQCRA methodology is aligned with the IPCC climate risk framework (IPCC, 2014; 2022).

### Ireland's Climate Change Assessment

Ireland's Climate Change Assessment, published by the EPA in January 2024, along with presenting current observations and projections for Ireland, also delivers on the impacts of different climate futures as well as adaptation needs and routes to resilience. It concludes that future changes in climate will have impacts greater than those already experienced for all aspects of Irish society, the environment and economy and that significant potential sectoral impacts and challenges arising from further climate change include:

- Significant impacts on biodiversity on land and in the ocean are projected with additional warming. Changes in temperature and precipitation are likely to increase the occurrence and spread of invasive species and the competitive pressures faced by Ireland's native species.
- Climate change will impact all aspects of Irish agriculture. While increases in productivity can be expected for some crops, decreases can be expected for others.
- With all major cities and many regional towns located close to the coast, Ireland is highly exposed to sea level rise, storm surges and coastal erosion, especially in softer sediment coastal zones.
- Projected changes in future river flows show a wide range; however, increases in extremes of both floods and droughts are expected, based on findings from the majority of available studies. Impacts on water resources, water quality and floods are likely to cascade across other sectors.

- Ireland's built environment is exposed to flood risks from rivers, the sea and rainfall extremes. Increases in extremes present challenges for the integrity of built environments and heritage sites.
- Ireland depends on critical infrastructure for delivering public services, economic development, and a sustainable environment. These are exposed to a range of climate extremes. Failures in critical infrastructure can cascade across other sectors and present a multi-sector risk.
- Climate change impacts will directly and indirectly affect health and wellbeing, while vulnerability is likely to increase as Ireland's population ages over the coming decades. Critical health infrastructure, including hospitals and care homes, faces increased risks from heat and flood extremes.
- Tourism is highly exposed and vulnerable to climate change. Warmer summers are often perceived as an opportunity for Irish tourism through increasing visitor numbers. However, without careful management, this could create damaging and unsustainable pressures on sensitive heritage sites and environments.

ICCA concludes that transformative changes are required to ensure Ireland's resilience to these risks.

# 4 FINANCE

Achieving National climate action objectives requires the alignment of the financial system with these goals in order to drive the transition while continuing to support economic activity and support development of our society. Achieving net zero by 2050 is now recognised as being the lowest cost option for society, the economy, and the financial system to mitigate the effects of climate change (Presentation by Gabriel Makhoul at EPA Climate Change Conference, 2024). However, even if or when net zero is achieved, there will still be a significant cost associated with adapting and becoming resilient to the impacts from a changed climate.

## 4.1 Public finance

The National Development Plan (NDP) 2021-2030 (Department of Finance, 2021) continues the trend towards a greater focus on the transition needed to address climate change. The NDP is underpinned by the principle of green recovery in line with the EU Green Deal and includes a climate and environmental assessment for the first time. The total investment under the NDP of €165 billion, much of which is related to climate favourable expenditure, will be complimented by the Climate and Nature fund which is expected to grow to €14 billion by 2030 (Department of Finance, 2024).

## 4.2 Private finance

Private finance will provide an important element of funding to achieve the transition, and a Europe-wide target of €79 billion by 2030 has been identified under the EU Green Deal to put Europe on the path to achieving the economy-wide transformation envisaged to 2050.

## 4.3 Physical risk management

Businesses and households impacted by flooding, for example, experience damage to buildings, possessions, machinery, stock, and disruptions to production and output. Such events may impact business costs, insurance coverage, and revenues for example. Such impacts affect the financial system in two ways, firstly by increasing the risk of default on existing loans, and secondly, by reducing the value of collateral and the debtor's future access to finance.

The European Central Bank estimates that the Irish financial system's exposure to flood risk in the commercial sector is among the highest in the euro area (European Central Bank, 2024). Development of flood protection schemes is advancing in Ireland, and it is critical that this continues, together with management of the insurance market, to protect people, property, and the stability of the financial system in the face of increase flood risk. It is also likely that diversifying local climate risks through reinsurance will become more costly and restrictive as climate impacts increase globally. Therefore, managing risk through adaptation has been recognised as important in enabling the insurance market in Ireland to function effectively into the future.

However, it will also be important for the financial sector to adapt its own practices by embedding the unique nature of climate risk considerations into its own operational models. The consideration of climate risk will require financial institutions to look beyond business cycles in future toward multi-decadal time horizons to appropriately stress test their decisions for resilience.

The Department of Public Expenditure NDP Delivery and Reform has tracked and reported on climate-related expenditure in the Revised Estimates for the Public Service (Government of Ireland, 2024a) since 2019, and the 2024 assessment makes specific reference to activities considered to be favourable to climate change adaptation efforts. These include adaptation actions that either substantially reduce the risk of the adverse impact of the current climate on that economic activity or substantially reduce that adverse impact.

The Government of Ireland also announced two climate-related funds in 2024, *Future Ireland Fund*, and *The Infrastructure, Climate and Nature Fund*. The Future of Ireland Fund is an unlimited fund intended to support strategic expenditure including climate action. The Infrastructure, Climate & Nature Fund is intended to manage cyclicity of capital spending by building to a figure of €14 billion by 2030.

Since 2022, the Central Bank of Ireland Climate has chaired a Risk Sustainable Finance Forum (Climate Forum). This is a consultative forum which aims to build a shared approach between the financial sector and Central Bank of Ireland in understanding and managing the financial risks and opportunities posed by climate change.







## 5

# CLIMATE ADAPTATION MONITORING

In addition to the science of climate change, it is important to monitor the implementation of climate action measures. The main bodies responsible for monitoring, assessing and/or reporting on adaptation progress are outlined below.

## 5.1 International

At UN level, the review and reporting arrangements include:

- Meetings of UNFCCC Conference of the Parties (COP).
- Ireland's National Communications to the UNFCCC under the Paris Agreement.
- Loss and damage reports under the Warsaw International Mechanism for Loss and Damage (e.g., by Irish Aid and DFA).

## 5.2 European

At European level, the review and reporting arrangements include:

- Reporting on national adaptation progress in accordance with Article 19 of the Climate and Energy Governance Regulation (biennial).
- Biennial reporting on implementation of Ireland's National Energy and Climate Plan (NECP) under Article 17 of the Climate and Energy Governance.
- Reporting related to national implementation associate with the EU Adaptation Strategy and reporting.
- Information sharing with the EEA via EIONET

## 5.3 National

At National level, the review and reporting arrangements include:

- Annual Climate Action Plan updates.
- Adaptation actions for national CAP quarterly reporting.
- Climate Change Advisory Council (CCAC) Adaptation Scorecard published in the CCAC Annual Report.
- The second iteration of Sectoral Adaptation Plans will incorporate more comprehensive indicators.

# 6 RESEARCH AND ENGAGEMENT

Ireland has a strong climate change research tradition and climate change adaptation research is carried out across many different research areas. Research outcomes are a key input to adaptation policy.

Over the past 30 years, EPA has been funding research at different scales and sectors in Ireland that can contribute to theoretical and empirical advances in climate adaptation. Project outputs are available on the EPA website. An overview of publicly-funded climate and adaptation-related research in Ireland are contained in the Climate Research in Ireland reports on the EPA website.

## 6.1 EPA Research 2030

The EPA Research 2030 framework, spanning from 2021 to 2030 (EPA, 2024a), is designed to provide vital scientific support for environmental policy development and decision-making. Notably, the EPA has allocated €22.95 million in research funding to date to address climate and climate-related challenges, signalling a substantial commitment to research in these areas. The funding initiative encourages innovative projects contributing to environmental policy development, with a focus on nature-based solutions, climate science, and effective strategies for climate change adaptation. Cross-cutting areas include leveraging data and digitalisation for environmental protection and facilitating a societal transition to sustainability.

## 6.2 Ireland’s Climate Change Assessment

Ireland’s Climate Change Assessment (ICCA, 2024b), published by the EPA in January 2024, represents a detailed report on current understanding of climate change, response options, and opportunities arising from transitioning to a climate-neutral and resilient economy. The assessment is based on scientific research, systematic observations, and global analyses. It addresses research gaps, contributes to national assessment capacity, enhances international engagement, and establishes a structure for future reports. The ICCA report comprises four volumes, each accompanied by a Summary for Policymakers:

- **Volume 1 - Science: Ireland in a Changing World:** Focuses on the physical science basis of climate change globally and nationally, updating analyses from previous reports.
- **Volume 2 - Achieving Climate Neutrality by 2050:** Investigates mitigation pathways, societal dimensions, and policy implications to achieve climate neutrality by 2050.
- **Volume 3 - Being Prepared for Ireland’s Future Climate:** Covers likely impacts, preparations, and community resilience based on Ireland-specific climate modelling and social research.
- **Volume 4 - Realising the Benefits of Transition and Transformation:** Assesses closing the implementation gap between climate ambition and action, providing a synthesis of key messages.





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