

Climate Change Adaptation Strategy



Longford County Council

Environment Section

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Glossary

The following table contains definitions of some of the terms used throughout the document.

Adaptive capacity	Adaptive capacity is the range of social and technical skills and strategies of individuals and communities that can help in the response to environmental and socioeconomic changes.
Biodiversity	Biological diversity in an environment as indicated by numbers and range of different species of plants and animals.
Business continuity plan	Business continuity planning is the process of creating systems of prevention and recovery to deal with potential threats to an organisation.
Carbon capture/Carbon sequestration	Carbon capture is the process of capturing waste carbon, usually from large sources such as fossil fuel burning plants or industries or from the air itself (atmospheric carbon) – Sequestration is where this carbon stored in a natural or artificial way for example, by uptake from plants in restored peatlands.
Climate Action	For this strategy, climate action means the processes of climate adaptation and mitigation
Climate/Climate Change	<i>Climate</i> is described as the average weather patterns in an area over a period of time. <i>Climate Change</i> is a significant change in these weather patterns such as rainfall, temperature, and / or wind, which continue over an extended period (i.e. over decades or longer).
Climate Change Adaptation	The response to climate change to ensure that everyday operations can continue.
Climate Change Mitigation	Measures put in place to reduce the causes and effects of climate change.
Climate Change Impacts	Events that happen because of climate change – these can be mild, moderate or severe and occur over the short, medium or long term.
Climate Proof	The process of ensuring that projects, plans and strategies have been checked to maximise climate change adaptation and mitigation.
Climate Resilience	The ability of communities, organisations and individuals to respond to climate change.
Climate Smart Building	Building structures that are climate resilient and can adapt to changing knowledge and circumstances.
Corporate Plan	The central policy document of the Local Authority that guides all services, activities and functions.
Decarbonisation	The process of removing carbon as a form of energy from our society - utilising fewer fossil fuels and promoting the use of renewable energy.

Development management	The process of assessing planning permissions and other permits for development by the Local Authority.
Ecosystems	An ecosystem includes all of the living things (plants, animals, and organisms) in a given area that interact with each other, as well as the non-living environments (weather, earth, sun, soil, climate, atmosphere) that surround the living things.
EMRA	Eastern and Midlands Regional Assembly. Longford is located within the EMRA area which is one of three regional assemblies in the country. These produce regional social and economic strategies that outline regional objectives and inform county development plans.
Global Warming	Increasing temperature as result of climate change.
Green Infrastructure/Urban greening	Utilising trees and plants to adapt to or mitigate climate change, for example, green spaces within urban areas that reduce heat or reduce the effects of flooding on properties while providing amenity areas and other functions.
Greenhouse Gases	<p>These are gases present in the atmosphere that trap heat. Carbon dioxide enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and other biological materials, and because of certain chemical reactions (e.g., manufacture of cement).</p> <p>Methane is emitted during the production and transport of coal, natural gas, oil and emissions from livestock and other agricultural practices and by the decay of organic waste in landfills.</p> <p>Nitrous oxide is emitted during agricultural and industrial activities, combustion of fossil fuels and solid waste, as well as during treatment of wastewater.</p> <p>Fluorinated gases such as Hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, and nitrogen trifluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes.¹</p>
Habitats Directive Assessment	Also known as “appropriate assessment” this process is carried out to ensure that projects, plans or programmes do not negatively impact on protected sites of European importance ² .

¹ <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

² For further information:
https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

Local Economic and Community Plan	Brought in by the Local Government Reform Act 2014, the LECP is a six-year plan that sets out the objectives and actions needed to promote and support the economic, local and community development of each local authority area in partnership with other economic and community development stakeholders.
National Adaptation Framework	The National Adaptation Framework was adopted by the government in January 2018, outlining a whole of government and society approach to climate adaptation in Ireland. It requires government departments to prepare adaptation plans in relation to a priority area that they are responsible for. The NAF also sets the context for this adaptation strategy. The NAF will be reviewed at least once every five years.
National Transition Objective	The national transition objective provides for the introduction of climate action planning. Introduced by the Climate Action and Low Carbon Act of 2015, it states: <i>“For the purpose of enabling the State to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050 (in this Act referred to as the “national transition objective”) the Minister shall make and submit to the Government for approval— (a) a national mitigation plan, and (b) a national adaptation framework”.</i>
Native Trees	Native trees promote biodiversity as they have evolved in tandem with other species, forming relationships that allowed healthy ecosystems to develop and be sustained. ³
Public Participation Network	The PPNs are an independent network of community organisations, established in every local authority area, which supports meaningful democratic participation in their communities.
Strategic Environmental Assessment	Strategic Environmental Assessment is a process for evaluating the potential environmental consequences of implementing a plan or programme which are prepared by an authority for adoption through legislative means. The purpose is to ensure that the environmental consequences of plans and programmes are assessed both during their preparation and prior to adoption. The SEA process also gives interested parties an opportunity to comment on the environmental impacts of the proposed plan or

³ <https://treecouncil.ie/tree-advice/native-species/>

	programme and to be kept informed during the decision-making process.
Strategic Policy Committee	Strategic Policy Committees (SPCs) are local authority committees whose membership includes elected councillors, representatives of business, farming interests, environmental/conservation groups, trade unions and community and voluntary members. The SPCs advise and assist the council in the formulation, development and review of policy. ⁴
Sustainable Development	Sustainable development is the ability of society to meet the needs of today without compromising the needs of the future. The united nations have set out sustainable development goals in support of this ⁵ .
Water framework Directive	The main aims of the WFD is to protect/enhance all waters (surface, ground and coastal waters), achieve "good status" for all waters, manage water bodies based on river basins or catchments and involve the public in this process. ⁶

⁴ <https://www.housing.gov.ie/local-government/administration/policy/local-government-policy>

⁵ <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

⁶ <http://www.epa.ie/water/watmg/wfd/>

Executive Summary

Longford County Council has written this strategy to begin adapting to the effects of climate change. We are not certain exactly how climate change will affect us into the future, but patterns of changing weather are starting to become clearer. These give us an idea of how we need to prepare and make sure we are ready and can keep providing services to the people of Longford in all situations.

In **Section 1**, the strategy lists the different laws and guidelines that make up the response to climate change at all levels. The Irish Government passed a law in 2015 called the Climate Action and Low Carbon Act. This act set out a commitment to Ireland becoming a low carbon, climate resilient and sustainable society by 2050. This is called the National Transition Objective.

To do this, we need to look at how we can adapt so that changes in climate have less serious consequences for us day-to-day. This is the purpose of this strategy. We also need to look at how we can change how we behave so that we can reduce the causes of climate change. This is called mitigation.

Section 1 also commits to reviewing this strategy if, and when, new information becomes available. Other parts of government are preparing adaptation strategies like this one that deal with their own areas. Actions listed in Section 5 of this strategy make sure that these will be considered where they relate to the Council.

This strategy fits in with strategies that are being made in other councils and these are being coordinated by the Climate Action Regional Office (CARO).

Section 2 sets out what we know already about climate change and how it might affect us in County Longford. This section looks at how the different areas of the Council work together and with other councils and the CARO.

Section 3 looks at the changes most likely to happen to our climate. These include:

- Increased summer temperatures could lead to summer heat waves and the exceptionally hot years could become normal by the 2050s.
- Reduction in the number of Frost Days during the winter.

- Increases in the amount of rainfall in the winter is predicted to increase the severe flood risk in County Longford.
- Increases in the intensity of rainfall in short periods leading to flash flooding
- The frequency of storms is not predicted to increase but there is a risk of increased intensity of storms when they do occur.
- Changes in future weather patterns with higher temperatures, dryer summers, wetter winters and the risk of higher intensity of storms might disrupt the natural environment in County Longford.

Section 4 looks at how these changes might affect Council activities. Risks to Council activities are graded from low to extreme to help identify the actions needed to deal with them.

- Increased incidence of heat-related illnesses including heat stroke, exhaustion, and cramps, and an increased risk of heat-related deaths.
- An increased health risk from water and food borne diseases.
- Increased energy consumption from cooling and refrigeration.
- A loss of productivity for businesses due to overheating.
- Increased risk of skin cancer cases.
- Subsidence and heat-related damage or disruption to buildings, energy and transport networks.
- Increased risk of peat and forest wildfires leading to increased stress on emergency services and to potential property damage of forests, farmland and peatlands.
- Public health and safety risks for the population of County Longford.
- Damage to buildings and infrastructure.
- Disruption of the local economy through lost work days, disruption of transport and supplies and insurance and repair costs.
- Stress on emergency services.
- Isolation of local communities.
- Disruption to Council services.
- Drainage unable to cope during periods of intense rainfall.
- Water quality problems due to slurry storage and soil quality issues due to extreme wet/dry conditions.

- Disruption to Council services.
- Disruption to the local economy.
- Isolation of local communities.
- Disruption to health and other essential services due to fallen trees blocking roads, flooding and water quality.
- Disturbance to natural and protected areas, loss of important species and their habitats.
- The movement of some species of plants and animals and the invasion of non-native species, pests and diseases.
- Habitat changes and restoration costs.
- Threat of extinction to some species.
- Changes in agriculture with environmental and economic results for County Longford.

Section 5 identifies actions that can help the Council to continue to provide its services and functions if these changes happen.

Section 6 looks at how to implement the actions identified in Section 5 and how these will be monitored to make sure they are effective and carried out within a reasonable time. This progress will be reported to the CARO as part of an implementation plan. This plan will show who is responsible for each action and how they will be funded.

Box 1: What is Climate Change?

Climate is described as the average weather prevailing in an area over a period of time. Climate Change is a significant change in weather patterns such as rainfall, temperature, and / or wind, which continue over an extended period (i.e. over decades or longer). Climatic fluctuations are known to occur naturally, influenced by causes including the Earth's orbit and tilt, volcanic eruptions, variations in solar energy and other phenomena such as the El Nino effect⁷. However, in more recent times, there are growing concerns that natural fluctuations in climate are being overtaken by rapid human-related activities which are influencing climate variability and giving rise to serious implications including the rate of global warming. Emerging research and observational records from across the world show rates of change that are far greater than those experienced since records began. Global temperatures have risen and are projected to rise further bringing changes in weather patterns, rising sea levels and increased frequency and intensity of extreme weather. Ireland's climate is also changing, and these changes have the potential to bring significant and wide ranging economic, environmental and social impacts.

1. Introduction

This Climate Change Adaptation Strategy, prepared in support of the National Transition Objective⁷, is the start of the process of adaptation planning in Longford County Council and is the first step in increasing knowledge and understanding of our changing climate, growing resilience, and enabling effective responses to the threats posed by climate change.

Climate change is one of the most pressing global policy challenges facing governments. It requires immediate commitment to action; however, the nature and extent of impacts are constantly emerging and require ongoing monitoring and evaluation.

It is now recognised that policy responses are required in terms of both mitigating the causes of climate change and in adapting to the now inevitable consequences. Action at local level is vitally important to help reduce the economic, environmental and social impacts of climate change across communities.

This strategy is an initial attempt to assemble the existing body of knowledge on climate change effects at County Longford level and address hazards, risks, impacts and opportunities that may be associated with these through specific actions that will be implemented primarily through established mechanisms within Longford County Council. The strategy also aims to increase awareness of climate change at a local level and illustrate its relevance to the functions and operations of the organisation.

This document is also intended to be iterative, accommodating new data and insights as they become available, particularly at a local level and supporting sectoral actions where appropriate as they are adopted as part of an ongoing tandem process.

⁷ S.3(1) of the Climate Action and Low Carbon Act 2015 states "For the purpose of enabling the State to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050 (in this Act referred to as the "national transition objective") the Minister shall make and submit to the Government for approval— (a) a national mitigation plan, and (b) a national adaptation framework".

1.1 The challenge for Ireland

There is evidence that Ireland's climate is changing in line with global trends. Over the last few decades our climate has warmed, sea-levels have risen, rainfall patterns have changed, and we have been impacted by increasingly frequent, intense and extreme weather events. Temperatures have increased by 0.8°C since 1900 and sea level rises have been observed of about 3.5cm per decade since 1990. Climate change has the potential for diverse and wide-ranging impacts on Ireland's economic and natural resources including:

- More intense storms and rainfall events giving rise to disruption to society.
- Increased river and coastal flooding.
- Water shortages in summer.
- Increased risk of new pests and diseases.
- Adverse impacts on water quality.
- Changes in the distribution and phenology of plant and animal species on land and in the oceans.⁸

Nationally, climate projections for the next century indicate that the climate trends observed over the last century will continue and intensify over the coming decades i.e.:

- Increase in average temperatures across all seasons – more frequent heatwaves.
- Significant reductions are expected in average spring and summer rainfall with a substantial increase in the frequency of heavy precipitation events in Winter and Autumn.
- Decrease in average wind speeds and an increase in extreme wind speeds. Intensity of storms is projected to increase over the North Atlantic region.
- Sea levels will continue to rise for all coastal areas. The south of Ireland will likely feel the impacts of these rises first. Sea surface temperatures are projected to continue warming for the coming decade.

Box 2: The Global Challenge

Scientific evidence for warming of the climate system is unequivocal. According to the Intergovernmental Panel on Climate Change (IPCC)¹ warming of the climate system is attributable to human activities because of greenhouse gas emissions¹ from:

- Changes in land use such as urbanisation, deforestation, reforestation and desertification
- Burning of fossil fuels such as oil, gas, peat, and coal resulting in carbon dioxide emissions
- Agricultural activities that lead to methane and nitrous oxide emissions

Emissions from these activities are proven to impact the atmosphere by trapping the sun's radiation and reflecting it back to the earth giving rise to global warming. The term greenhouse effect has been coined to describe this occurrence. The effects of global warming are observed through reductions in snow and ice in polar regions, increase in global mean surface temperatures, rise in sea levels and changes in some climate extremes i.e. weather events. Scientists state these changes are occurring rapidly, are considerable, and will have consequences for this and future generations. Some impacts of global warming such as sea level rise and coastal flooding are already locked in and unavoidable. The full impacts of current warming have not yet been seen, since ice sheets and oceans take many decades to fully react to higher temperatures.

⁸ EPA Research, A summary of the state of knowledge on Climate Change Impacts for Ireland, Report No. 22 2014.

1.2 The Challenge for Longford

This local authority adaptation strategy is set against the background of increasing risks associated with climate change and seeks to reduce and manage these risks at local level through a combination of mitigation and adaptation responses.

Longford County Council provides a wide range of services, many of which are already, and will increasingly be, affected by climate change. Local Authorities will continue to play a critical role in responding to the impacts of extreme weather events and other impacts that are likely to emerge over the coming decades through various implementation mechanisms available⁹.

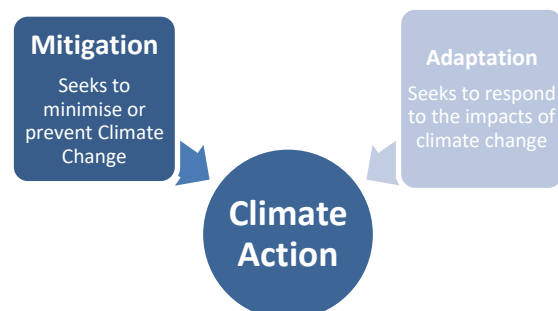
The science of climate change and adaptation at a local level are new concepts and, as such, this is considered an iterative document that will expand as the body of knowledge is enhanced in this area, particularly at a county level. In addition, the legislation requires sectoral responses to adaptation that are being prepared in tandem with local adaptation strategies. These responses will be monitored and retained under review.

1.3 Climate Action

Longford County Council Climate Change Adaptation Strategy forms part of Ireland's national strategy for climate adaptation as set out in the National Adaptation Framework (NAF) which was produced under the provisions of the Climate Action and Low Carbon Development Act 2015.

Adaptation refers to efforts to manage the risks and impacts associated with existing or anticipated impacts of climate change.

Mitigation refers to the efforts to reduce the emission of greenhouse gases and reduces the severity of future climate change impacts.




It is tasked with mainstreaming climate change adaptation over time into all functions, operations and services of the local authority. It seeks to inform or 'climate proof' existing plans and policies produced and implemented by the local authority. This ensures a considered, consistent and coherent approach, facing the challenges of a changing climate head on. Crucially, it also helps in building resilience within the local authority organisation itself and across communities.

While there is strong emphasis on local authorities through the NAF to develop and implement adaptation measures and actions, mitigation measures and actions that seek to reduce or eliminate the emissions of greenhouse gases work in tandem. Local authorities have a significant role to play in actively implementing mitigation actions (*Section 2.6*) through measures including the retrofitting of building stock, energy efficiency projects, promoting sustainable energy communities and encouraging sustainable transport and land use.

⁹ Including: Spatial Planning, development consent, asset management and natural resource protection.

There are positive interactions between adaptation and mitigation measures. Employing both adaptation and mitigation measures represents a robust climate action response in addressing the challenges associated with climate change at local level. The actions set out in *Section 5* of this strategy reflect both adaptation and mitigation measures as a considered, relevant and integrated approach to combating the effects of climate change in County Longford.

1.3.1 Climate Change Adaptation



“The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.”

The Intergovernmental Panel on Climate Change (IPCC) 2014

Climate Adaptation can be best described as planning proactively to act, adjust, minimise or avoid the existing and anticipated impacts from climate change.

Climate adaptation aims to build climate resilient communities, to protect people, ecosystems, businesses, infrastructure and buildings from the negative impacts of climate change. The Local Authority has a pivotal role in planning for and

responding to emergency situations given the close relationship with communities and extensive knowledge of the local natural and built environment. This has been demonstrated in the proven ability to promptly and effectively mobilise emergency responses to varying and more frequent extreme weather events at a local level.

This strategy takes the first steps in ensuring that climate change adaptation is mainstreamed into our decision-making processes and implemented proactively in the performance of our duties. In addition, the benefits and opportunities that may arise because of climate change must be considered in respect of cost savings and new ways to foster environmental sustainability.

1.3.2 Climate Change Mitigation

Mitigation measures are closely aligned with the principles of sustainable development and aim to reduce the severity of future climate change impacts by reducing the emission of greenhouse gases. A robust adaptation strategy will consider the interaction between adaptation and mitigation measures.

As previously detailed, The Climate Action and Low Carbon Development Act 2015 made provision for, and gives statutory authority to, both the National Mitigation Plan (NMP) which was published in 2017 and the National Adaptation Framework (NAF) published in 2018. The national policy context is to achieve a deep decarbonisation of the economy by the year 2050 and the NAF has been flagged as a work in progress reflecting the reality of where we are nationally in our decarbonisation transition to a more climate resilient economy. Specific local level mitigation provisions are outlined at Section 2.6.

Box 3: Policy Context

This adaptation strategy is set within a policy framework at International, European and National level.

The **United Nations Framework Convention on Climate Change** (UNFCCC) was adopted in May 1992 “to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.”

The framework outlined how specific international treaties may negotiate further action towards its key objective, such as the 2015 **Paris Agreement**, a protocol ratified by Ireland on 4th November 2016 that provided for Parties to formulate and implement National Adaptation Plans.

The 2013 **EU Strategy on Adaptation to Climate Change** encouraged all Member states to adopt comprehensive adaptation strategies. It sought better informed decision making through the identification and addressing of gaps in knowledge about adaptation. Climate-ADAPT, was developed as a resource mechanism to help users access and share information on adaptation.

The **2012 National Climate Change Adaptation Framework** (NCCAF) was the first step in developing a national policy on adaptation actions to combat the impacts of climate change. Greenhouse gas mitigation and adaption to the impacts of climate change were to be addressed in parallel national plans under an evolving climate policy to 2050. The **Climate Action and Low Carbon Development Act 2015** was a milestone in the evolution of national climate change policy and provides the statutory basis for the national transition objective¹ and gave statutory authority to both the **National Mitigation Plan (NMP)**, published in 2017 and **National Adaptation Framework (NAF) published in 2018**.

Longford County Council Adaptation Strategy forms part of the National Adaptation Framework.

In developing this adaptation strategy, Longford County Council has been consistent with the **Local Authority Adaptation Strategy Development Guidelines 2018**.

The ‘all of government’ **Climate Action Plan 2019 - To Tackle Climate Breakdown** was published on Monday 17th June 2019. The plan sets out 183 individual actions over 12 sectors and charts an ambitious course towards decarbonisation.

1.4 Strategy Context

This Adaptation Strategy has been prepared in accordance with the Local Authority Adaptation Strategy Development Guidelines, published by the Department of Communications, Climate Action and the Environment in December 2018. The adopted strategy forms part of the National Adaptation Framework (NAF) in response to the provisions of the Climate Action and Low Carbon Development Act 2015¹.

This strategy focuses on the roles and responsibilities of Longford County Council in the management of localised risks and the translation of national and sectoral policy into implementable local actions through established mechanisms. Longford County Council will also seek, through this strategy, to secure resources as they become available to address climate change impacts through application of national and international funding initiatives in capital investment, research and innovation, regeneration and behavioural change as the body of knowledge grows in this emerging area.

The local authority adaptation strategy takes on the role as the primary instrument at local level to:

- (i) ensure a proper comprehension of the key risks and vulnerabilities of climate change in the context of the existing body of knowledge.
- (ii) identify climate resilient actions at local level and implement in a planned and proactive manner.
- (iii) ensure that climate adaptation considerations are mainstreamed into all plans and policies and integrated into all operations and functions of the local authority.

This adaptation strategy serves Longford County Council in its two capacities namely:

- As an organisation with an obligation towards customer service, a focus on effectiveness in business, improving efficiencies and maintaining staff welfare and
- in the delivery of services and functions across the administrative and geographical area of County Longford.

In accordance with the provisions of the Climate Action and Low Carbon Development Act 2015 this adaptation strategy was adopted by the members of Longford County Council on the 11th September 2019.

National Climate Action Plan

The 'all of government' Climate Action Plan 2019 - *To Tackle Climate Breakdown* was published on Monday 17th June 2019. The plan sets out 183 individual actions over 12 sectors and charts an ambitious course towards decarbonisation. It acknowledges the failure to meet emissions targets to 2020, failure to address efforts to decarbonise, particularly during the period of the economic downturn, and failure in breaking the link between emissions and economic growth. The ambition is clearly set out to deliver a step-change in emission performance over the coming decade to meet 2030 targets and to set a trajectory to meet 2050 objectives. There is strong commitment under new governance arrangements to update the plan annually, to track performance of targets and revise or update the actions as necessary. To drive the successful and practical implementation of climate action towards achieving 2030 and 2050 targets, the Minister for Communications, Climate Action and Environment will bring forward a legislative framework through a new Climate Action Act.

Within the 12 Sectors described in the Plan the Public Sector is identified as having a significant role in '*Leading by Example*'¹⁰ to not only just reduce their own emissions but to inspire climate action across communities and society. Local Government is recognised for its pivotal role in stimulating at community level. The Plan speaks also to the role of the Climate Action Regional Offices (CARO) in assisting local authorities in building capacity to engage effectively with climate change. There are a range of actions that are specific to and/or relate to local authorities as well as the CAROs.

Local authorities will be required to undertake an annual programme with measurable impact containing actions that focus on inter alia;

- Reducing emissions by 30% and improve energy efficiency of local authority buildings by 50% under the guidance of a new Public Sector Decarbonisation Strategy.
- Setting a target to demonstrate leadership in the adoption of low emission transport options.
- Developing and implementing a Climate Action Charter.
- Public buildings (all) to reach BER 'B' Rating.
- Building capacity through upskilling and knowledge dissemination.
- Supporting and delivering projects that include strong ambition on climate action through funding resources from Project Ireland 2040.
- Developing robust community engagement on climate action by linking to existing and new networks and clustering initiatives using the National Dialogue on climate action and local authority structures.
- Working with communities to expand Sustainable Energy Communities.
- Continue to implement Adaptation Planning with emphasis on building Climate Resilience and delivering the objectives of the National Adaptation Framework.

On Climate Change Adaptation, the Plan is very strong on the need *to address the current and future risks posed by a changing climate...* Adaptation is *both urgent and essential to successfully transition*

¹⁰ Chapter 13

*to a climate resilient economy and society by 2050*¹¹. It cites examples of extreme weather events to explain that the cost of inaction to the effects of climate change are simply too significant to discount.

It is acknowledged that much of the focus for the local authority sector to date, has been on Adaptation Planning. Local authorities are now prescribed to widen their scope and act as a catalyst for much wider change. Since 2018 Climate Action Regional Offices (CAROs) have been coordinating the Local Authority response to Climate Change. The structures deployed have proved highly effective and can be utilised to direct local authority actions within the Climate Action Plan. The CAROs will lead a step-up in climate action within local authorities to pursue mitigation measures to reduce emissions, activate meaningful citizen engagement, encourage community leadership and capacity building using the national dialogue on climate action linking in with existing and new local authority structures.

The Climate Action Plan is notably focused on mitigation measures to achieve emission targets to 2030. However, there is full commitment to provide clear leadership in promoting adaptation. Recognising that climate change is a hugely complex issue that requires a range of responses from every sector in society all measures collectively represent a coherent approach to dealing with the challenges ahead.

Local Authorities, through the process of adaptation planning are gaining a clear understanding of the risks presented by climate change and the current levels of vulnerability to such risks. Actions identified in the adaptation strategies are aimed at building climate resilience and integrating adaptation into effective local level decision making. This is crucially important. Building on this work, local authorities will undoubtedly need to expand their role to take on actions and measures from the Climate Action Plan to respond to and meet obligations set out.

This Climate Change Adaptation Strategy recognises the purpose of the Climate Action Plan and the role intended for Local Authorities to meet targets and contribute to the national climate ambition.

¹¹ Chapter 16

1.5 Methodology



Strategy Context 1

This Climate Change Adaptation Strategy has been prepared in accordance with the “Local Authority Adaption Strategy Development Guidelines” as issued by the Department of Communications, Climate Action and Environment in December 2018.

Longford County Council, at the direction of the Environment Special Policy Committee formed a multi-disciplinary internal climate change adaptation team which, in consultation with the Eastern and Midlands CARO organised workshops and meetings with representatives drawn from all areas of Council activity. Risks arising from climate change were identified and adaptation strategies were proposed.

From a review of the inputs received at the workshops and using information from Met Éireann, Climate Ireland, the County Development Plan and CARO, a draft Climate Change Adaptation Strategy was prepared which was used in the initial stages of strategic environmental and appropriate assessment processes. These processes informed the next stages of the strategy preparation which was put forward to public consultation prior to consideration by the council for adoption.

1.5.1 Environmental Assessment:

Consultation with prescribed environmental authorities for the purposes of Strategic Environmental Assessment was undertaken in accordance with the provisions of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435 of 2004 as amended by S.I. 200 of 2011).

Screening Overview for SEA: Under the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435 of 2004 as amended by S.I. 200 of 2011), all plans which are likely to have a significant effect on the environment must undergo screening to determine whether a Strategic Environmental Assessment (SEA) is required. “Screening” is the process for deciding as to whether a particular plan would be likely to have significant environmental effects and would thus warrant SEA. This strategy has been screened for SEA and it is determined that full SEA is not required. The screening report accompanies this strategy.

Screening overview for AA: Screening of this strategy has been undertaken in accordance with the requirements of Article 6(3) of the EU Habitats Directive (directive 92/43/EEC) to determine if the Climate Change Adaptation Strategy is likely to significantly affect Natura 2000 sites (*i.e.* Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) within or surrounding the plan area. It is determined that stage 2 Natura Impact Report is not required.

1.5.2 Consultation

In addition to the statutory requirements outlined above for screening with the environmental and prescribed bodies the draft Climate Change Adaptation Strategy was placed on public display with submissions invited within the defined timeframe of 21/06/2019 to 14/07/2019. These submissions were considered in a report from the Chief Executive (CE) in advance of presentation to the Council for adoption at the 11th September 2019 Council meeting. The CE's report included recommended changes resulting from consideration of the received submissions and these have now been incorporated into this strategy.

2. Regional and Local Context

Determining specific climate change risks and impacts at a local level is an evolving area and this strategy will reflect new knowledge in this area as it emerges. This section describes some of the attributes of Longford County Council functional area in the context of its national and regional location, administration and the potential impacts arising because of climate change.

2.1 Location and Settlement

Longford is a low-lying county situated at the northern reaches of the Shannon Basin, bounded by Counties Roscommon, Leitrim, Cavan and Westmeath. These counties are also contained within the Eastern and Midlands CARO for the purposes of adaptation planning to ensure a coordinated approach across county boundaries.

The population of County Longford was 40,873 in the 2016 census, of which over one quarter reside in Longford Town. The remainder of the County has a dispersed settlement pattern, characterised by a relatively weak urban and village structure that successive development plans have sought to address. The settlement hierarchy is dominated by Granard in the northeast, Ballymahon in the south, Edgeworthstown in the east and Lanesborough in the west, all of which are under 1,500 population. Newtownforbes, Drumlish, Ballinalee are smaller settlements in the central corridor. This dispersed structure has potential implications for the provision of services in extreme weather events in terms of resources and capacity.

The Regional Spatial and Economic Strategy for the Eastern and Midland Region is currently in draft form and which, once finalised, will inform development plan settlement strategy and population forecasts into the future.

2.2 Landscape and Biodiversity

The landscape, shaped by geological structure and morphological processes including climate change, has dictated settlement, movement, agriculture and industry over time. These in turn have altered the landscape and the perspective from which we view it. The pattern of field boundaries, towns, villages and roads is the result of successive layers of adaptation to specific conditions over time and is constantly in transition. Economic change, agricultural diversification, population growth and decline are all forces of change reacting to internal or external pressures that are managed within a policy context. Climate change is a scientific fact that cannot now be avoided by choice and therefore must be incorporated into the decision-making processes that guide the other morphological processes. Ancient evidence of such adaptation is present in the Corlea trackway where specific conditions lead to the development and subsequent abandonment of major prehistoric infrastructure. Without human intervention and protection, the ancient roadway was reclaimed by the landscape and was thus preserved as a reminder of ancient adaptation mechanisms.

The Longford landscape, as it exists today, will influence how accelerated climate change impacts within the County. Second only to County Leitrim as the smallest County in population terms and as one of the smallest counties in spatial extent, County Longford is nonetheless diverse in terms of its landscape with wide variations from north to south and east to west.

Cairn Hill is the highest point of the county at 279m and is in a drumlin landscape to the northwest where the County boundary is shared with County Leitrim along a string of lakes and rivers. The north east of the county shares the boundary of Lough Gowna with County Cavan. The northern section of the county is more elevated and generally characterised by poorly drained soils that make service provision potentially more vulnerable in extreme weather events such as flooding and drought.

The Central and South County regions are characterised by significant commercial peatland areas. The drainage of a significant portion of these areas is artificially managed. A warmer climate may have implications in these locations for water quality (wind-blown peat dust/silt), potential fire hazard, and accelerated release of greenhouse gases to the atmosphere. Increased rainfall could enhance flood risk and severely impact on vulnerable and isolated communities, impairing road access and resulting in damage to infrastructure. Extensive areas of raised bog land have been intensively harvested and managed over many years by Bord na Móna and others with resultant impacts on drainage, attenuation, water quality and biodiversity in the wider surroundings. Changing policy with regard to this activity has implications for climate action policy (both adaptation and mitigation) into the future, with potential innovative opportunities for the County in terms of land use diversification and carbon management.

The River Shannon and Lough Ree form the western county boundary, the levels of which are managed to a degree by Waterways Ireland and ESB for navigational and electricity generation purposes. The Camlin flows east to west through the centre of the County passing through Longford town and entering the Shannon at Cloondara. The Eastern boundary is formed by the River Inny, a substantial tributary of the Shannon, that enters Lough Ree south of Ballymahon.

Most of the County is contained within the Shannon River Basin Management District (RBMD) for the implementation of the water framework directive¹² and a small portion in the north of the County is located within the Neagh/Bann international RBMD. These were established for the protection of water quality of rivers and lakes in respect of which plans have been prepared for 2018-2021¹³. In terms of flood management, the County is located in the Shannon Catchment Flood Risk Assessment and Management area for which specific measures have been proposed¹⁴. In accordance with the requirement of the EU Floods Directive, the preliminary flood risk assessment, flood maps and plans will be reviewed on a six-yearly cycle.

The Royal Canal enters the County at Abbeyshrule and travels north west towards Cloondara and the Shannon with a spur to Longford Town at Kilashee. Considered a major tourism asset, the Royal Canal reflects the County's transport past and has received significant resources for Blueway development at a national level. The potential for blueways and greenways to be utilised as wildlife corridors to

¹² <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060>

¹³ <https://www.housing.gov.ie/water/water-quality/river-basin-management-plans/river-basin-management-plan-2018-2021>

¹⁴ <http://www.floodinfo.ie/>

prevent fragmentation of habitats and allow migration of species under climate change pressure is a potential opportunity presented by climate change effects.

The Council has an important role in the protection of significant Natural Heritage Areas, Natura 2000 sites, Special Areas of Conservation and Special Protection Areas, listed below. Habitats may be vulnerable to non-native invasive plant species and pests with potentially longer growing seasons and a milder climate.

National Heritage Area/Proposed NHA	Special Area of Conservation /Proposed SAC	Special Protected Area
Royal Canal	Brown Bog	Ballykenny Fisherstown Bog
Derrymore Bog	Mount Jessop	Lough Ree
Carrickglass Demesne	Lough Forbes Complex	
Mount Jessop	Lough Ree	
Lough Forbes Complex		
Lough Ree		

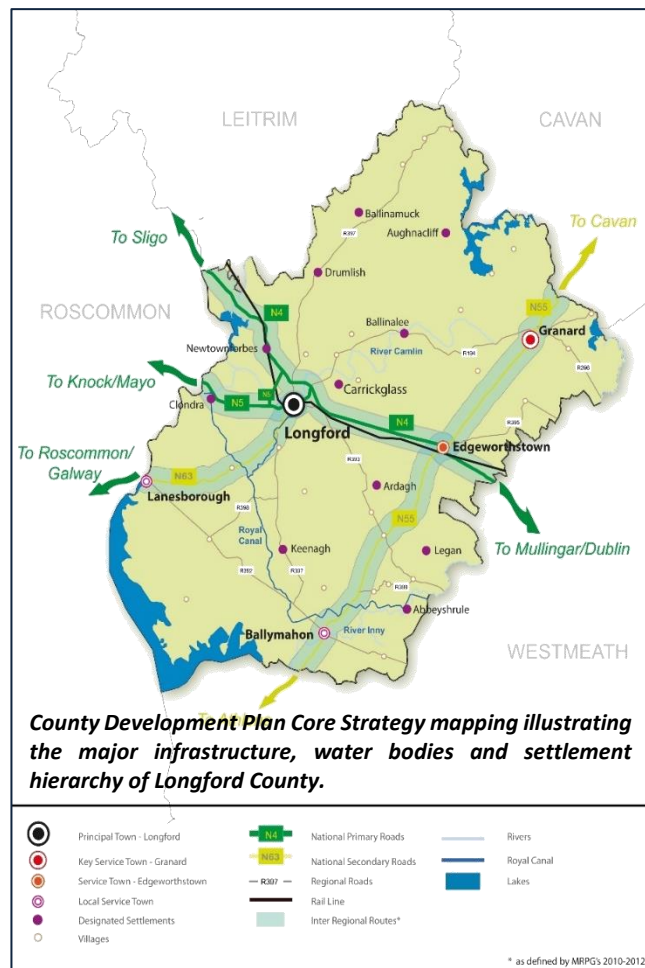
2.3 Infrastructure and Economy

The central position of the County in a national context means that it has a well-developed road and rail infrastructure. Two national primary routes traverse the County from east to west, the N4 from Dublin to Sligo and N5 from Longford to Westport.

Longford Town is strategically positioned where the two national roads divide. The national secondary route, N63 leaves Longford Town for Roscommon and the N55 from Cavan to Athlone takes a north-south route through the east of the County, passing through Granard, Edgeworthstown and Ballymahon.

Nine regional routes connect these and are serviced by a network of county roads. There is approximately 1500km of roads in the County which require significant resource allocations, and which will increase in a climate change context.

The Dublin-Sligo rail line traverses the County from east to west, generally following the line of the N4 and serves Longford and Edgeworthstown stations. There are existing flooding issues with the rail line immediately West of Longford town and are likely to be exacerbated by increased rainfall.



These strategic national infrastructural assets require a high level of protection and maintenance. Extreme weather events in the past have put pressure on Council resources to address the effects of flooding, snow, ice, heat and storm damage/debris. These events are likely to become more frequent in projected climate change forecasts which will have financial and operational impacts on Longford County Council.

The Longford economy is dominated by engineering, warehousing, pharma and agri-food sectors. Consistently high levels of inward investment maintain this economy which is closely linked to its location on high quality transport and communications infrastructure that reduces the distance for the labour force and to markets. Competitive advantage in a global market requires the maintenance and enhancement of these infrastructural assets to avoid disruption and inaccessibility during extreme weather events.

2.4 Culture and Tourism

The culture and identity of the county is intrinsically linked with its landscape and development. The County as a corridor from east to west has shaped its culture and history with the development of the canal, road and rail and the nature of agriculture, industry and trade through the years. Climate change may once again alter these patterns with resultant cultural changes, potential loss of old traditions and/or the establishment of new practices to adapt.

Settlement and communication patterns influenced where and how people lived worked and interacted such as markets fairs and festivals. This rich cultural thread running through County life impacts on tourism, recreation and amenity and the assets that Longford has to offer. Climate adaptation may require alteration of events to avoid severe weather, or to take advantage of hotter summers. The development of the all-season destination of Center Parcs near Ballymahon is an illustration of the tourism industry adapting to weather conditions and may provide a model for the development of flexible attractions and facilities in response to climate change effects.

2.5 Governance

Planning and Development Policy

A hierarchy of plans has been established that addresses spatial and economic development nationally and regionally for translation and implementation at local level. The Planning Acts have implicitly promoted climate action through the promotion of sustainable development. Amendments over recent years now ensure that these plans explicitly address climate action, strengthened with the introduction of the National Transition Objective (NTO), as part of the Climate Action and Low Carbon Development Act, 2015, thereby embedding the transition to a low-carbon society into planning and development frameworks at all levels.

The NTO is reflected in the national strategic outcomes of the national planning framework and the associated Strategic Investment Priorities, that in turn form the basis of the emerging Regional Spatial and Economic Strategies. Specific adaptation measures ensuring the resilience of critical infrastructure (RPO's 7.12-14) are included in the current RSES for the EMRA.

Section 10.(2.)(n)(iii) of the Planning and Development Act 2000¹⁵ specifically requires the inclusion of objectives for the promotion of measures to address the necessity of adaptation to climate change into County Development Plans. The current Longford County Development Plan contains climate change policy at section 5.3.3, recognising the responsibility of the Council regarding the promotion of climate change adaptation measures:

“CL11: The Council recognises European and national objectives for climate adaptation and will work with the EPA, Midland Regional Authority and neighbouring Planning Authorities in implementing future guidance for climate change proofing of land use plan provisions as is flagged in the National Climate Change Adaptation Framework (DECLG 2012). The Council will integrate as appropriate, the National Climate Change Adaptation Framework and any related guidelines which may arise during its implementation.”

The CDP covers the period from 2015-2021 and the two-year review period is due to commence following adoption of the RSES in 2019. This review will consolidate climate action obligations established in the interim at national and regional level into implementable local policies and objectives and will contribute towards compliance with relevant EU environmental directives and applicable national legislation, policies, plans and guidelines¹⁶.

Corporate Structure

The corporate structure of Longford County Council was reorganised in early 2019, with a consolidated Directorate of Strategic infrastructure and Climate Change being established. This indicates the level of priority being afforded to climate action within the organisation and its critical relationship with infrastructure, planning, development and emergency services. This Climate Adaptation Strategy is prepared under the auspices of this directorate.

¹⁵ inserted by the Planning and Development (amendment) Act 2010

¹⁶ including the following and any updated/superseding documents outlined hereunder:

- EU Directives, including the Habitats Directive (92/43/EEC, as amended)^[1], the Birds Directive (2009/147/EC)^[2], the Environmental Liability Directive (2004/35/EC)^[3], the Environmental Impact Assessment Directive (85/337/EEC, as amended), the Water Framework Directive (2000/60/EC) and the Strategic Environmental Assessment Directive (2001/42/EC).
- National legislation, including the Wildlife Act 1976^[4], the European Communities (Environmental Impact Assessment) Regulations 1989 (SI No. 349 of 1989) (as amended), the Wildlife (Amendment) Act 2000, the European Union (Water Policy) Regulations 2003 (as amended), the Planning and Development Act 2000 (as amended), the European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477 of 2011) and the European Communities (Environmental Liability) Regulations 2008^[5].
- National policy guidelines (including any clarifying Circulars or superseding versions of same), including the Landscape and Landscape Assessment Draft Guidelines 2000, the Environmental Impact Assessment Sub-Threshold Development Guidelines 2003, Strategic Environmental Assessment Guidelines 2004 and the Appropriate Assessment Guidance 2010.
- Catchment and water resource management Plans, including the relevant River Basin Management Plan.
- Biodiversity Plans and guidelines, including Actions for Biodiversity 2011-2016: Ireland's 2nd National Biodiversity Plan (including any superseding version of same).
- Ireland's Environment; An Assessment 2016 (EPA, 2016, including any superseding versions of same), and to make provision where appropriate to address the report's goals and challenges.

A dedicated, countywide regeneration unit, reporting into the management team, was established at this time and will investigate funding for climate action related initiatives and projects under the National Development Funds, EU initiatives and other sources as they arise. Specifically, funding will be investigated for large scale projects that propose sustainable development within

the County under the climate action and other funding streams, collaborating and engaging with adjacent authorities where possible as appropriate.

The UN Sustainable Development Goals underpin much of the policy context within which the Local Authority operates, translated through national legislation and guidance. These have been incorporated into the preparation of this strategy and have informed the Actions at Section 5.

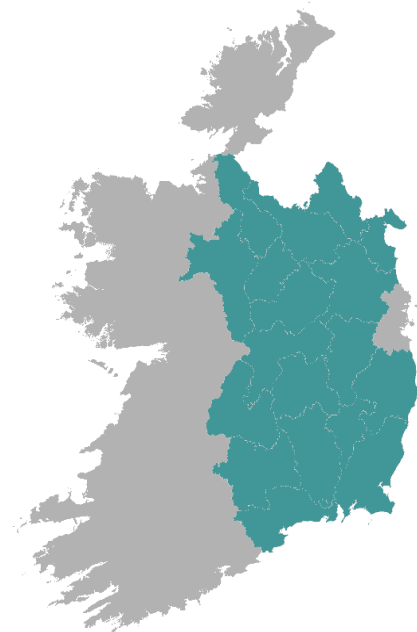
Climate Action Regional Offices (CARO)

Longford County Council is supported by the Eastern & Midland CARO, one of four regional Climate Action Regional Offices established in 2018 in response to Action 8 of the 2018 National Adaptation Framework (NAF) – *Planning for a Climate Resilient Ireland* to drive climate action at both regional and local levels. The CARO are mandated to coordinate engagement across all levels of government and help build on experience and expertise that exists around climate change and climate action.

The four CARO areas have been determined by common geographical and topographical characteristics, vulnerabilities and shared climate risks anticipated across local authority areas. The climatic risks associated with the Eastern and Midlands climate action region in a Longford context include fluvial and pluvial flooding, groundwater fluctuations, extremes of heat, cold and storm events and fluctuations in precipitation. The socio-spatial impacts of these risks are defined by the features outlined above such as the proliferation of transport and communications infrastructure, land use and landcover with extensive peatlands, waterbodies and watercourses of particular concern for the region and county.

Eastern and Midlands Regional Authority (EMRA)

Following on from the enactment of the Local Government Reform Act 2014 several changes were made to the regional structures in Ireland where the eight regional authorities were dissolved. Three



new Regional Assemblies came into effect on 1st January 2015, namely the Southern Regional Assembly, the Eastern and Midland Regional Assembly and the Northern & Western Regional Assembly.

The Eastern and Midland Regional Assembly comprises of 38 elected Members nominated by the 12 constituent local authorities within the region and is responsible for the preparation of the Regional Economic and Social Strategy which translates the provisions of the National Planning Framework to a regional level and, in turn, will inform development plan preparation over the relevant period. This strategy is currently in draft form and is due for adoption in Q3 of 2019. Climate action policies in this strategy will be incorporated into the Longford County Development Plan review.

2.6 Climate Change Mitigation

The Irish Government has committed to achieve a 33% energy efficiency improvement by all Irish public bodies by the year 2030. In 2018, Local Authorities accounted for 23% of the total energy consumption for public bodies, second only to Commercial State bodies. The 2017 SEAI Public Sector Annual Report on Energy Savings set out that 24% savings had been achieved over the 2009 baseline across the public sector. Longford County Council is acknowledged as being more efficient than the baseline and on track to meet 2020 targets, having achieved 33% savings by the 2017/18 period.

Existing policy in the area of climate action is outlined at Section 2.5. Longford County Council has also engaged in the following initiatives in support of the national transition objective.

Public Lighting LED replacement

Longford County Council have been pro-active in the installation of low energy lighting throughout the County, with some 30% of public lighting now LEDs. Through a combination of SEAI, NRA and Council own resources, opportunities to replace older forms of lighting have been taken as they arise through public realm improvements, retrofits, taking in charge of housing estates and one-off repairs and replacements.

Albert Reynolds Peace Park

Albert Reynolds Peace Park (formerly “The Mall”) is a well-used Green Flag park area that runs along the Camlin River in the centre of Longford Town and contains the Longford Swimming pool and leisure centre complex. The park is managed by a range of voluntary, regulatory and administrative bodies, agencies and individuals coordinated under the umbrella of Longford Suburbs Ltd. and with the support of Longford County Council.



Council policy focuses on the development of the amenity of the park and its attractiveness as a walking route, with connections continually being enhanced from the town core (e.g. Mill Bridge, 2018) to the outlying residential and industrial areas to promote sustainable movement in the town area. Additional GHG mitigation actions are outlined below

- The energy usage in the sports complex and swimming pool has been augmented with renewable sources such as a biomass wood pellet burner and 40-50kw solar photovoltaic panel installation. Further sustainable energy initiatives are under consideration for the sports complex as part of planned improvements.
- The management of the park includes measures to re-use waste materials to reduce the need for additional artificial fertilisers and pesticides through mulching of grass cuttings, use of compostable waste and natural weed suppression methods.
- A solar powered pump is planned for the pond area.
- A rainwater recovery system is in place in the Park Depot.

- The Green Flag Management Plan for the park specifically aims to ensure that the park contributes to national sustainability objectives.

Other initiatives

- Longford County Council are working with GNI and supporting the expansion of the Gas network across the Inny River to Ballymahon to facilitate less carbon intensive energy use and provide the opportunity to develop renewable biogas projects into the future and more sustainable energy options for households and businesses in the town.
- Longford County Council is a member of the SEAI sustainable energy Communities initiative through the Midlands Energy Agency. Support and incentives for energy efficient behavioural change, retrofits and transition to more sustainable energy sources are currently provided at a national level through the SEAI, however, the council continues to investigate opportunities through available funding sources for sustainable projects at different levels through the regeneration section. Solar panels have been installed at the Mall Complex and the potential for further renewable energy development on council buildings is being investigated.
- Project Ireland 2040 contains funding streams in support of national strategic outcomes, one of which is the transition to a low carbon economy. Longford has been successful in securing substantial funding for regeneration projects in Longford, Granard and Edgeworthstown under this programme and will continue to work with local communities and the private sector in support of sustainable urban and rural regeneration. Projects underway by Longford County Council, including the Longford Connected Urban regeneration project, funded under Project Ireland 2040, aim to reduce the need to travel and to promote accessibility to public transport options, including consultation with Irish rail on the provision of real-time travel information at digital access points.
- Longford County Council has worked with Bord na Móna and other agencies such as Fáilte Ireland and Waterways Ireland on the development of sustainable tourism projects including walkways, blue/greenways and the Shannon Wilderness Park. It is anticipated that these relationships will continue to progress mitigation measures as opportunities arise including sustainable energy projects such as the Renewable Energy Support Scheme. The regeneration unit also works closely with communities in the development of walkways cycleways and sustainable tourism development and has been successful in securing funding for numerous such projects under the outdoor recreational infrastructure scheme, Fáilte Ireland initiatives and collaborative projects with Waterways Ireland, Coillte and Bord na Móna.
- Regarding community food gardens, allotments have been proposed as part of Urban Frameworks/Regeneration Masterplans in the Camlin Quarter and Ballyminion areas.

3. County Longford Adaptation Baseline Assessment

3.1 National Climate Modelling

Met Éireann states that there is overwhelming evidence indicating that most of the warming over the last one hundred years is due to increased amounts of greenhouse gasses in the atmosphere because of human activity.

The Intergovernmental Panel on Climate Change (IPCC), a United Nations body, established in 1988, evaluates climate change science. The IPCC assesses peer reviewed research on climate change and publishes assessment reports every 5–7 years.

The fifth assessment report (AR5) was published during 2013 and 2014. Some of the main findings were:

- Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia.
- Atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years.
- Human influence on the climate system is clear. It is extremely likely (95-100% probability) that human influence was the dominant cause of global warming between 1951-2010.
- Continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system. Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions.
- Global surface temperature change for the end of the 21st century is projected to be likely to exceed 1.5 °C relative to the period 1850 to 1900 in all but the lowest scenario considered, and likely to exceed 2°C for the two high scenarios considered.

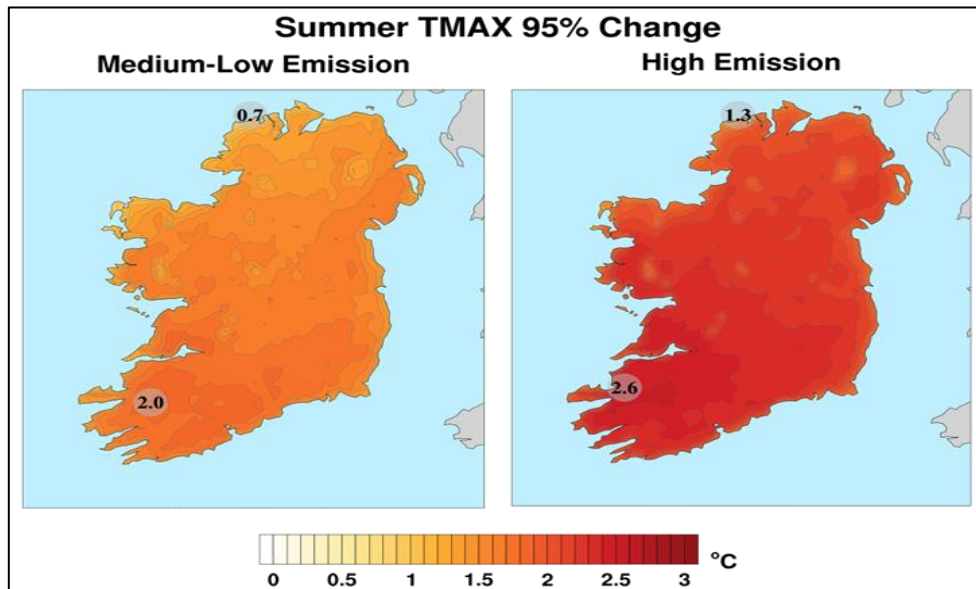
Met Éireann and the Irish Centre for High-End Computing (ICHEC) have engaged in global modelling by contributing to the scientific development of the EC-Earth global climate model.

The EC-Earth and other global models have been downscaled to provide information at a regional level for Ireland. The impacts of climate change for Ireland were assessed for the mid-century period 2041-2060 using an ensemble of down-scaled climate simulations, based on medium-to-low (RCP 4.5) and high emission scenarios (RCP 8.5).

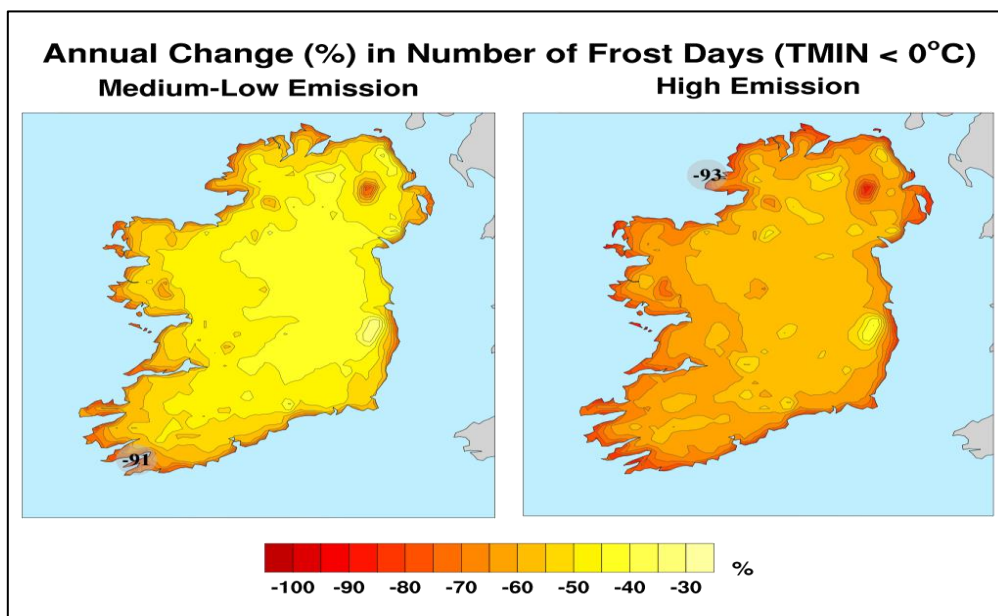
The model predictions for climate change as summarised by Met Éireann are outlined in terms of temperature, precipitation, wind energy and storm tracks and changes in nature below.

Temperature Projections for Ireland

Projections indicate an increase of 1–1.6°C in mean annual temperatures, with the largest increases seen in the east of the country. Warming is enhanced for the extremes (i.e. hot or cold days), with highest daytime temperatures projected to rise by 0.7–2.6°C in summer and lowest night-time temperatures to rise by 1.1–3°C in winter.



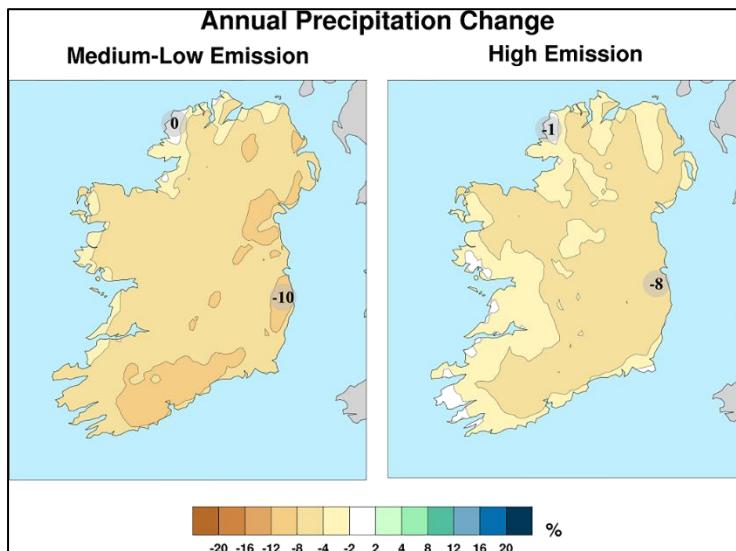
Averaged over the whole country, the number of frost days (days when the minimum temperature is less than 0°C) is projected to decrease by 50% for the medium-low emission scenario and 62% for the high-emission scenario. The projections indicate an average increase in the length of the growing season by mid-century of 35 and 40 days per year for the medium-low emission and high-emission scenarios, respectively.



Milder winters will, on average, reduce the cold related mortality rates but this may be offset by increases due to heat stress in the warmer summers.

Rainfall Projections for Ireland

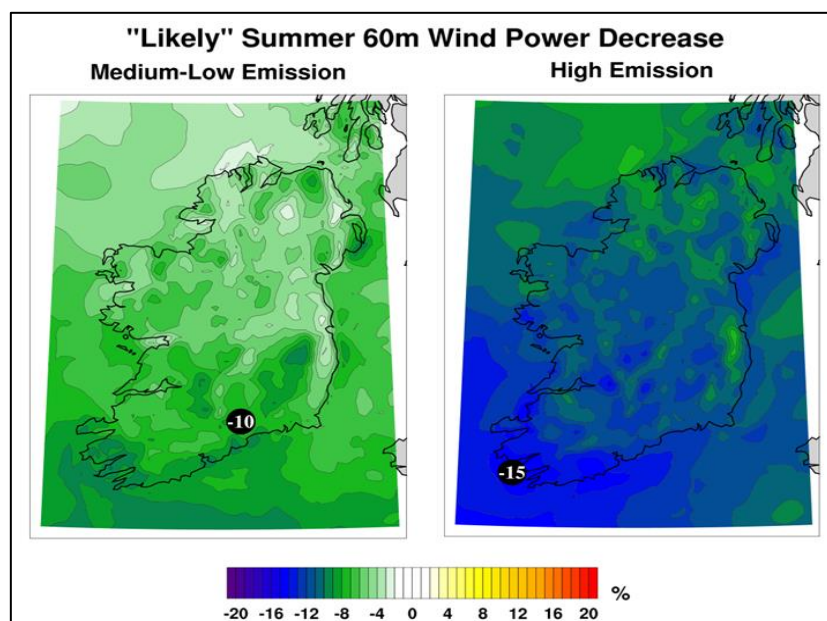
The down-scaled simulations show significant projected decreases in mean annual, spring and summer precipitation amounts by mid-century. The projected decreases are largest for summer, with reductions ranging from 0% to 13% and from 3% to 20% for the medium-to-low and high emission scenarios, respectively.



The frequency of heavy precipitation events shows notable increases of approximately 20% during the winter and autumn months. The number of extended dry periods is projected to increase substantially by mid-century during autumn and summer. The projected increases in dry periods are largest for summer, with values ranging from 12% to 40% for both emission scenarios.

Wind Energy and Storm Tracks:

Studies have shown significant projected decreases in the energy content of the wind for the spring, summer and autumn seasons, with the projected decreases largest for summer and no significant trend in winter. The overall number of North Atlantic cyclones is projected to decrease by approximately 10%. Results also indicate that the paths of extreme storms will extend further south, bringing an increase in extreme storm activity over Ireland, although the number of individual storms is projected to be quite small. As extreme storm events are rare, the storm-tracking research needs to be extended. Future work will focus on analysing a larger ensemble, thus allowing a robust statistical analysis of extreme storm track projections.



Changes in Nature

Changes in the climate will bring changes in the behaviour of species. A spring warming in recent years has seen an advance in the timing of key phenological phases of a wide range of organisms, including trees, birds and insects. For example, higher temperatures in late winter or early spring results in butterflies appearing earlier in the year and birds shifting their migration patterns. The pace of future change will cause stress to ecosystems which are unable to adapt quickly¹⁷.

¹⁷ EPA Research, A summary of the state of knowledge on Climate Change Impacts for Ireland, Report No. 223, (EPA 2017).

3.2 Regional Climate Data

Results from the ensemble of down-scaled climate simulations as presented by Climate Ireland show that the climate risks predicted by these climate models are applicable to County Longford.

The nearest Met Éireann weather station to County Longford with climate data from 1960 to the present is at Mullingar, approximately 43km from Longford town.

An assessment of the Climate data from the Mullingar station shows:

- The mean temperature between 1960 and 1990 is recorded at 8.8 degrees Celsius and between 1979 and 2008 at 9.3 degrees Celsius representing a 0.7 degree increase over the period 1960-2008.
- The average rainfall between 1960 and 1990 is recorded at 934.3 mm and between 1979 and 2008 at 941.3 mm representing a 7 mm increase over the period 1960-2008.
- The maximum mean 10-minute wind speed between 1960 and 1990 is recorded at 45 knots and between 1979 and 2008 at 32.8 knots representing a decrease of 12.2 knots over the period 1960-2008.
- The mean number of days with snow or sleet between 1960 and 1990 is recorded at 23.5 days and between 1979 and 2008 at 17.8 days representing a decrease of 5.7 days. over the period 1960-2008.

The numbers outlined above are in line with climate change predictions and indicate trends showing increases in average daily temperature and rainfall and decreases in mean wind speeds and the numbers of days of snow and sleet. Similar trends are observable for other measured criteria.

3.3 County Longford - Recent Significant Weather Events

County Longford suffered extreme flooding events in 2009, 2011 and 2015. These events caused serious flooding around Longford Town, Newtowncashel and Cloondara and threatened areas around Ballymahon, Lanesborough. They also caused a significant amount flooding of farmland along the Shannon, Camlin and Inny rivers. Local spot flooding in rural areas was also a significant problem.



Flooding in Newtowncashel in January 2016

There were significant snow events in 2018 (Storm Emma and “the beast from the east”) and severe winters in 2009/2010 and 2010/2011. These events stretched Council services to their limits through the need for the removal of fallen trees, clearing roads, gritting and salting of roads, water and sewer utility problems and emergency responses.



Snow at Carrickboy during Storm Emma in 2018



A prolonged dry and hot spell was experienced in summer 2018. This caused serious damage to roads through melting bitumen and subsidence of some roads in peaty areas. Similar dry spells were recorded in 2006 and 1995.

Road temperature on L-1045, Aghakine, Co. Longford in summer 2018

Prolonged dry and hot spells during late spring and summer are predicted as part of changes in weather patterns due to climate change. Such changes will lead to increased risks of woodland and peatland fires. Longford has experienced serious bog fires in recent years during extended dry spells.



Fire on peatland in County Longford



Recent severe storm events such as Storm Ophelia in 2017, Storm Darwin in 2014 and unnamed storm in 1997 caused major disruption in County Longford due to fallen trees and powerlines.

Storm damage in County Longford in 2018

Climate change threatens to disrupt the normal weather patterns with consequences for the natural environment and biodiversity in County Longford. In 2019 after an exceptionally mild winter wild and garden flowers matured much earlier than usual. Disruptions such as this has knock-on consequences for the entire natural ecosystem in County Longford.



False Oxlip on the Shannon Callows at Knappogue, Co. Longford in March 2019

4. Climate Risk Identification

4.1 Evaluation of climate risks.

The consequences of storm, flooding and snow/ice events in the past have had moderate to severe impacts on the operations of Longford Council. These events caused disruption to the local economy, traffic and utilities and damage to infrastructure with the consequential costs of clean up and repairs. The additional risks due to future projected climate change are evaluated below. As data is gathered in the coming years and if the effects of climate change induced changes become more pronounced ratings may be revised.

Longford County Council has evaluated the additional risks due to climate change using the following scale:

Catastrophic:	Widespread service failure with wide scale impacts
Major:	Services seen to be in danger of failing completely
Moderate:	Service provision under severe pressure
Minor:	Isolated but noticeable examples of service decline
Negligible:	Appearance of threat but no actual impact on service provision

The following table is a summary of the analysis of risks across the main climatic elements in each instance.

4.2 Climate Risks

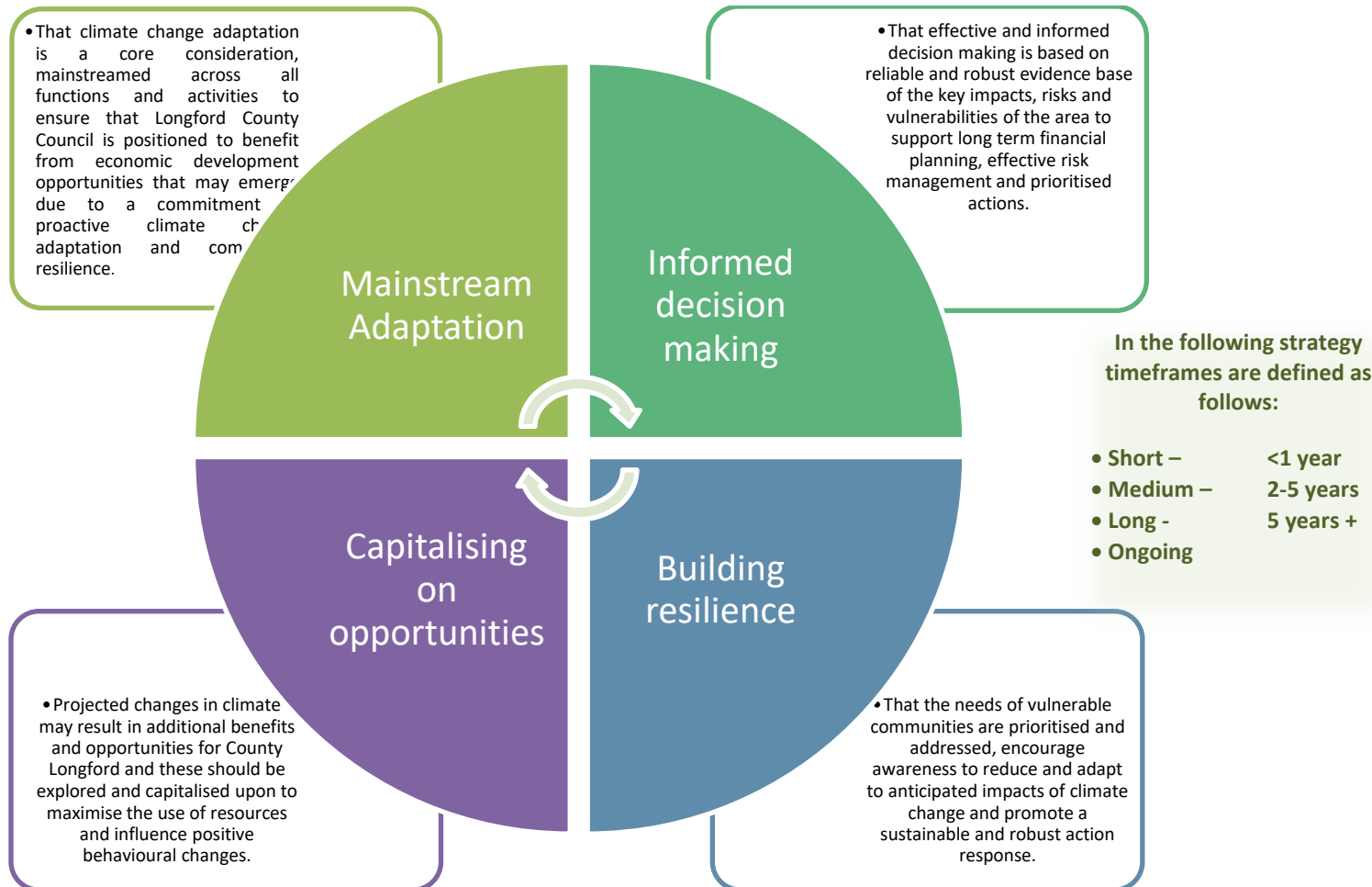
Longford County Council conducted a workshop involving personnel from all sections on the 6th of February 2019 to determine the risks posed by Climate Change to County Longford and to the services it provides. This has been augmented by submissions received as part of the public consultation process.

Risk	Potential Consequence	Rating
Temperature		
<i>Increased summer temperatures could lead to summer heat waves and the exceptionally hot years could become the norm by the 2050s. Reduction in the number of Frost Days during the winter.</i>	Increased incidence of heat-related illnesses including heat stroke, exhaustion, and cramps, and an increased risk of heat-related deaths.	
	An increased health risk from water, vector and food borne diseases.	
	Increased energy consumption from cooling and refrigeration.	
	A loss of productivity for businesses due to overheating.	
	Increased risk of skin cancer cases.	
	Subsidence and heat-related damage or disruption to buildings, energy and transport networks.	
Precipitation		
	<i>Increases in the amount of rainfall in the winter is predicted to increase the severe flood risk in County Longford.</i>	
	Public health and safety risks for the population of County Longford.	
	Damage to buildings and infrastructure.	
	Disruption of the local economy through lost work days, disruption of transport and supplies and insurance and repair costs.	
	Stress on emergency services.	
	Isolation of local communities.	
Disruption to Council services.		
<i>Increases in the intensity of rainfall in short periods leading to flash flooding.</i>	Drainage capacity unable to cope during periods of intense rainfall.	
Water quality vulnerability due to slurry storage and soil quality deterioration due to extreme wet/dry conditions.		
Storms		
<i>The frequency of storms is not predicted to increase but there is a risk of increased intensity of storms when they do occur.</i>	Disruption to Council services.	
	Disruption to the local economy.	
	Isolation of local communities.	
	Disruption to health and other essential services due to fallen trees blocking roads, flooding and water quality.	
Stress on the emergency services and the consequential costs of recovery.		
Natural Environment		
<i>Shifts in future weather patterns with higher temperatures, dryer summers, wetter winters and the risk of higher intensity of storms have the capacity to disrupt the natural environment in County Longford.</i>	Disturbance to biodiversity in Special Areas of Conservation and Special Protection Areas.	
	The migration of some species, including the invasion of non-native species, pests and diseases.	
	Habitat changes and restoration costs.	
	Threat of extinction to some species.	
Changes in agriculture with environmental and economic consequences for County Longford.		

5. Adaptation Goals, Objectives and Actions

5.1 Strategic Goals

Longford County Council Climate Change Adaptation Strategy is designed to guide a planned and coherent response to the effects of climate change. These goals are divided into six thematic areas to cover the functional diversity of Longford County Council. The core aims of these goals are represented in four main areas outlined below. Actions proposed in the achievement of these goals will be prioritised where they have the potential to yield multiple environmental and societal benefits.



5.2 Local Climate Change Adaptation for Governance and Business Operations

Goal: Climate change adaptation considerations are mainstreamed and integrated successfully into all functions and activities of Longford County Council ensuring operational protocols, procedures and policies implement an appropriate response in addressing the diversity of impacts associated with climate change.

OBJECTIVE 1: ENSURE THAT CLIMATE ACTION AWARENESS AND ADAPTATION RESPONSES ARE EMBEDDED WITHIN GOVERNANCE AND MANAGEMENT STRUCTURES IN LONGFORD COUNTY COUNCIL

Action	Responsibility	Timeframe
<p>1.1 Establish a climate action steering group representing all key functions of Longford County Council to ensure the implementation of the actions of this climate change adaptation plan and to report on climate action progress.</p>	<p>Management Team</p>	<p>Short</p>
<p>1.1.1 Explore the potential employment of a dedicated climate action officer reporting to the steering group.</p>		
<p>1.1.2 Ensure that climate action is listed as a standing item on the agenda at Management Team and relevant SPC meetings.</p>		
<p>1.1.3 Maintain liaison and collaboration with the Eastern and Midlands CARO and establish cross-sectoral relationships with relevant state agencies and departments at regional and national level as appropriate in the delivery of climate adaptation actions.</p>		
<p>1.1.4 Liaise, collaborate and work in partnership with the sectors identified in the National Adaptation Framework in the delivery of the Government approved sectoral adaptation actions where they relate and are relevant to the functions and activities of the council at local level/in local communities.</p>		
<p>1.1.5 Develop relevant indicators as part of an overall monitoring and review structure and apply this to track progress of climate action initiatives.</p>		
<p>1.1.6 Building on adaptation planning actions set out in this strategy, support and compliment the practical implementation of actions arising from the National Climate Action Plan – to tackle climate breakdown (as revised and updated annually), across the broad range of functions of the local authority to achieve the national climate ambition i.e. decarbonisation targets to 2030 and objectives to 2050.</p>		

OBJECTIVE 2: INCORPORATE CLIMATE ACTION AWARENESS AND RESPONSES THROUGHOUT COUNCIL POLICY

Action		Responsibility	Timeframe
2.1	Support the incorporation of climate action awareness and responses throughout Council policy and mainstream climate action policy as an integral consideration in Corporate Plan objectives providing for the delivery of functions and services across County Longford.	Management Team	Short/Ongoing
2.1.1	Align climate actions with projects and dedicated funding streams through housing, regeneration and other development initiatives across Longford County Council activities.		
2.1.2	Ensure that climate action policy is translated into all functional plans and strategies throughout Longford County Council including capital investment, operational, economic, regeneration, social/community and development plans, standards and strategies.		

OBJECTIVE 3: ENSURE THAT STRUCTURES ARE IN PLACE TO SECURE CONTINUITY OF SERVICE AND BUSINESS OPERATIONS AS PART OF ADAPTATION MECHANISMS

Action		Responsibility	Timeframe
3.1	Undertake and implement a Business Continuity Plan to identify and address the impacts associated with extreme weather events on all functions/services of the local authority including preparing for critical services disruptions, minimising the impact of service disruption and improving the capacity/ability to recover.	Management Team	Short/ongoing
3.1.1	Ensure that climate adaptation measures are incorporated into corporate risk registers and within major emergency plans.		
3.1.2	Investigate the potential for technology-based solutions in coordination of responses to climate events in the areas of ICT and GIS.		
3.1.3	Integrate climate action into the service delivery programme in the context of team and personal development plans and the development of dedicated service indicators to track and monitor progress in each functional area.		

5.3 Climate Change Adaptation for Local Infrastructure and Built Environment

Goal: Establish climate resilient infrastructure centred around the effective management of climate risk and informed investment decisions for positive contributions towards a low carbon society.

OBJECTIVE 4: TO ENSURE/INCREASE THE RESILIENCE OF INFRASTRUCTURAL ASSETS AND INFORM INVESTMENT DECISIONS.

Action	Responsibility	Timeframe
<p>4.1 Collaborate with state infrastructure providers such as Irish Water, Gas Networks Ireland, Eirgrid and Transport Infrastructure Ireland to ensure adequate planning and resourcing in preparation for potential climate change impacts on national strategic infrastructure in the County.</p>	<p>Directorate of Strategic Infrastructure and Climate Change</p>	<p>Short/ongoing</p>
<p>4.2 Support the preparation of an assessment of the vulnerabilities of key infrastructure, buildings and properties in the ownership and care of Longford County Council to the impacts of climate change and ensure that these are incorporated into a robust risk assessment and management framework for protection and maintenance of their function.</p>	<p>Directorate of Finance and Regeneration</p>	

OBJECTIVE 5: TO MAINTAIN THE INTEGRITY OF PUBLIC INFRASTRUCTURE AGAINST NEGATIVE CLIMATE CHANGE IMPACTS AND INCREASE THE DESIGN RESILIENCE OF PLANNED DEVELOPMENTS INTO THE FUTURE

<p>5.1</p>	<p>Integrate climate considerations into the design, planning and construction of all roads, footpaths, bridges, public realm and other construction projects.</p>		<p>Directorate of Strategic Infrastructure and Climate Change + Directorate of Finance and Regeneration</p>	<p>Short, Medium and Long</p>
<p>5.1.1</p>	<p>Make provision to incorporate green infrastructure in design and operation of works in the public realm to mitigate against flood risk and as a mechanism for carbon offset/sequestration. Support the incorporation of this provision into development management standards.</p>			
<p>5.1.2</p>	<p>Evaluate the broader applications of green infrastructure in achieving environmental and societal goals and prioritise application where cumulative benefits can be achieved.</p>			
<p>5.2</p>	<p>Undertake a risk assessment of road infrastructure in County Longford to identify the severity of climate change risks on their function and condition to provide an understanding and a quantification of risks posed.</p>			<p>Medium</p>
<p>5.2.1</p>	<p>Integrate risk assessment findings into policy provisions, decision making processes, road infrastructure programmes and investment strategies.</p>			

OBJECTIVE 6 PROMOTE A COMBINED CLIMATE ACTION RESPONSE TO INFRASTRUCTURE PROVISION

Action	Responsibility	Timeframe
6.1	Engage with transport, energy, communications and utility infrastructure providers on the potential for combined climate adaptation and mitigation responses in the maintenance, operation and expansion of their network, such as resilience enhancement of existing infrastructure and the potential for decarbonisation of key sectors in the County in any planned expansion.	Management Team
6.2	Work with funding agencies and government departments in collaboration with infrastructure providers to climate proof infrastructure operation, maintenance and expansion.	Medium

5.4 Climate Change Adaptation for Local Land Use and Development

Goal: Provide and implement sustainable policies and measures to influence positive behavioural changes supporting climate adaptation actions and endorsing approaches for successful transition to low carbon and climate resilient society.

OBJECTIVE 7: TO INTEGRATE CLIMATE ACTION CONSIDERATIONS INTO LAND USE PLANNING POLICY AND INFLUENCE POSITIVE BEHAVIOUR.

Action		Responsibility	Timeframe
7.1	Identify and integrate climate change as a key consideration and guiding principle informing the County Development Plan and ensure all policy areas within the County Development Plan are climate-action proofed.	Directorate of Strategic Infrastructure and Climate Change	Medium
7.1.1	Integrate and promote climate-smart building and urban design performance outcomes in development standards through the development management process.		Short, Medium and Long
7.1.2	Pursue climate action policy integration and funding opportunities in line with Project Ireland 2040 Strategic Outcomes and emerging provisions in the Regional Social and Economic Strategy for the Eastern and Midland Region.		
7.2	Promote the integrated planning, design and delivery of green infrastructure (including urban greening) through appropriate provisions in planning policies, development standards, infrastructural, public realm and community projects.	All Directorates	Short, Medium and Long

5.5 Climate Change Adaptation for Local Drainage and Flood Management.

Goal: Obtain greater understanding of the risks and consequences of flooding resulting from climate change and implement a co-ordinated approach to the successful management of drainage and flooding.

OBJECTIVE 8: TO MANAGE THE RISK OF FLOODING THROUGH A VARIETY OF RESPONSES AND TO MITIGATE THE RISK AND IMPACT OF FLOODING

Action		Responsibility	Timeframe
8.1	Investigate surface water management in the context of assessment and management of flood risks with the aim of reducing the adverse consequences of flooding, to prioritise projects to reduce surface water flood risk, including Longford town flood protection scheme, and provide detailed mapping of areas prone to surface water and groundwater flood risk.	Directorate of Strategic Infrastructure and Climate Change	Medium to Long
8.2	Stipulate the requirement for the design and specification of sustainable urban storm water drainage systems for new development to take account of the potential future impact of climate change.		Short, Medium and Long
8.3	Incorporate considerations of the impact of climate change into proposals submitted under the OPW Minor Works Programme to ensure that measures proposed are adaptable to future changes.		
8.4	Support flood risk mitigation measures and ensure that future flood information obtained by way of Flood Risk Assessments (FRA) is used to inform suitable adaptation requirements within the development management process in line with the Guidelines for Planning Authorities on Flood Risk Management (DoECLG & OPW, 2009).		

5.6 Climate Change Adaptation for Local Natural Resources and Cultural Infrastructure

Goal: Foster and implement meaningful approaches to protecting natural and key cultural assets through an appreciation of the adaptive capacity of the natural environment to absorb the impacts of climate change.

OBJECTIVE 9: TO PROVIDE FOR ENHANCEMENT OF NATURAL ENVIRONMENT TO WORK POSITIVELY TOWARDS CLIMATE ACTION, TO PROMOTE EFFECTIVE BIO-DIVERSITY MANAGEMENT AND ENHANCE PROTECTION OF NATURAL HABITATS AND LANDSCAPES AND TO PROTECT HERITAGE AND CULTURAL INFRASTRUCTURE

Action	Responsibility	Timeframe
<p>9.1 Promote active native tree planting and amenity management programme in the context of climate adaptation in conjunction with an awareness campaign that informs of the benefits to communities in improving air quality, offsetting carbon emissions, promoting biodiversity, limiting flood risk, reducing urban heat and aesthetic value.</p>	<p>Directorate of Community and Enterprise + Directorate of Finance and Regeneration</p>	<p>Short</p>
<p>9.2 Make provision for nature-based climate adaptation solutions such as natural borders and buffers (in consultation with NPWS) as integral components of the design of greenways and blue-ways, tracks, trails and amenity areas to promote natural resilience.</p>		<p>Short, Medium and Long</p>
<p>9.3 Collaborate with the National Parks and Wildlife Service in the review of bio-diversity and habitat conservation strategies, plans and projects to identify the risks, adverse impacts and potential benefits arising from climate change. Assess the potential future changes and employ measures to address these. Potential tandem mitigation measures such as Carbon capture within habitats should be considered as part of this process.</p>		<p>Short, Medium and Long</p>
<p>9.4 Develop a green infrastructure strategy including research and mapping of areas considered beneficial for use as local carbon offset through carbon sequestration in conjunction with the relevant agencies.</p>		<p>Ongoing, Medium and Long</p>
<p>9.5 Undertake a risk assessment of the heritage and cultural assets in County Longford to assess the vulnerability and the risk to the historical environment from the impacts of climate change and to help build resilience to these important assets.</p>		<p>Medium</p>
<p>9.6 Support climate action understanding and awareness into the design and development of cultural, tourism and educational facilities, highlighting historical responses to climate adaptation and its relationship to the economic, social and environmental development of County Longford.</p>		

5.7 Climate Change Adaptation for Local Community Health and Wellbeing

Goal: Empowered and cohesive communities with strong understanding of climate risks, increased resilience to impacts of climate change with capacity to champion climate action at local level.

OBJECTIVE 10: TO SUPPORT CLIMATE ACTION INITIATIVES IN LINE WITH LOCAL ECONOMIC AND COMMUNITY PLAN (LECP) ACTIONS.

Action		Responsibility	Timeframe
10.1	Ensure that actions contained within the LECP are integrated with climate action initiatives as part of their delivery, implementation and review.	Directorate of Community and Enterprise	Short
10.1.1	As part of engagement with relevant education bodies and agencies support the incorporation of climate action awareness where possible in design of upskilling and training courses, outreach programmes, apprenticeships and SME supports and mentoring to meet future employment demand.		Medium
10.1.2	Collaborate with third level and other research facilities to investigate the potential of climate action technologies and their application in a Longford context in conjunction with innovation and research funding at national and EU level.		
10.1.3	Utilise the concept “climate change ready” as part of the overall Brand Longford marketing theme for the County as a dynamic and forward-thinking location for inward investment.		
10.1.4	Investigate opportunities for Local Amenity and sports facilities provision, biodiversity enhancement and local businesses in the areas of climate action, such as flood event mitigation, renewable energy development, sustainable transport etc.		

OBJECTIVE 11: TO BUILD CAPACITY AND RESILIENCE WITHIN COMMUNITIES.

Action		Responsibility	Timeframe
11.1	Raise awareness of the impacts of climate change and ways for communities to increase response and resilience to these impacts utilising existing mechanisms such as the library service and Public Participation Network.	Directorate of Community and Enterprise	Short
11.2	Assess communities across County Longford in the context of their vulnerability to the impacts of climate change. Identify vulnerable communities and the risks to the community as part of major emergency planning.	Directorate of Strategic Infrastructure and Climate Change	Short, ongoing
11.2.1	Support vulnerable communities in the development and implementation of programmes to enhance their capacity to respond to and recover from extreme weather.		

6. Implementation and Monitoring

The central aims of the strategy are aligned with the provisions of the Corporate Plan and many of the actions outlined in Section 5 are already embedded within the work of the organisation. Much of the challenge in monitoring the progress of the strategy will centre on the development of indicators that specifically refer to the implementation of these actions in a climate adaptation context and will be addressed initially through the establishment of dedicated provisions within existing Longford County Council governance structures. The recruitment of a dedicated climate change officer to liaise with the CARO and senior management structures will allow this focus, ensuring that policies and operational programmes are climate proofed and in line with best practice, following a similar model used for the roll out of health and safety as a guiding principle across local authority functions and activities.

Goal one, *Local Adaptation Governance and business operations* endeavours through its first objective to establish a framework within the organisation to support the successful and practical implementation of adaptation actions. Given that this strategy represents all functions and of Longford County Council, it is important that the Climate Action Steering Group brings together representatives from all key functional areas with various technical, operational and management expertise who can successfully carry out the necessary tasks oversee implementation of the actions contained within strategy. The Management Team will nominate representation to the Climate Action Steering Group and assign its Chair. The Climate Action Steering Group will meet quarterly.

The tasks of the group are as follows:

- Prioritise actions within the short, medium- and long-term delivery timeframes.
- Develop an approach and initiate implementation of the actions.
- Liaise with other stakeholders and sectors, both locally and regionally, where required for the implementation of actions.
- Monitor and evaluate implementation of the actions.
- Report on Progress to the Climate Change and Environment SPC and subsequently to full Council.

The Eastern and Midland Climate Action Region Offices (E&M CARO) will continue to assist and provide guidance where possible in the practical implementation of the actions of this strategy. Longford County Council will continue the positive relationship, collaborate and engage with the E&M CARO as is necessary throughout the lifetime of this strategy. This will include submitting the annual progress report to the CARO if required.

6.1 Prioritise Actions

The purpose of this task is to prioritise adaptation actions for delivery within the short, medium- and long-term timelines as defined in the strategy document. Actions will be assigned timeframes for implementation and owners for delivery as part of an implementation plan to be prepared following adoption of this strategy. Progress reporting will focus on the delivery of the actions within defined timeframes.

6.2 Develop an approach and initiate implementation

The purpose of this task is to break down the adaptation framework into to actions to be taken a and to assign actions and timeframes by way of an Implementation Plan. The steering group will devise a methodology for implementation that includes:

- Responsibilities for implementing individual adaptation actions within defined timeframes,
- Identify funding required for the adaptation measures and pursue relevant streams as appropriate,
- Identify/establish key indicators or targets as mechanisms for measuring outcomes based on current body of knowledge
- Identification of and collaboration with key stakeholders,
- Incorporation of adaptation measures where possible into existing plans, policies and budgets,
- Identify risks to the implementation of actions.

Actions contained at section 5 will be further developed in the implementation plan.

6.3 Liaise with other Stakeholders/Sectors

Input will be required from key stakeholders at local, national and regional level and across different sectors to provide for the delivery of actions. Sectors identified in the National Adaptation Framework will engage and liaise with Local Authorities in the delivery of sectoral adaptation actions stemming from their respective adaptation plans.

6.4 Monitor and evaluate implementation

Monitoring and evaluating the implementation of actions is critical to ensure the long-term success of climate adaptation actions. It is essential to track the performance of activities within the lifetime of this strategy, to determine whether planned outcomes from adaptation actions have been achieved and to determine whether new adaptation actions should be undertaken.

The Climate Action Steering Group is encouraged to use results from the monitoring and evaluating program to:

- Revisit vulnerability and risk assessments conducted as part of adaptation actions,
- Make changes where appropriate based on monitoring results,
- Update observed changes,
- Include new climate science and recent extreme climatic hazards/events,
- Factor in changes to exposure and/or adaptive capacity, and
- Evaluate the success or outcome of completed actions.

This ensures an iterative process and allows actions to be informed by latest climate change data and projections. In this way monitoring, and evaluation can help improve the efficiency and effectiveness of adaptation efforts of the Council.

6.5 Report on progress

The Climate Action Steering Group should develop and agree appropriate and continuous timeframes and mechanisms to report on the progress of the practical implementation of actions of this strategy to the Management Team, the relevant SPCs and the Elected Members / full Council as considered appropriate.

Reporting on progress i.e. Climate Change Adaptation Progress Report should be prepared **annually**, (based on the initial date of the adoption of the strategy), for input by the Management Team and SPC and review by the Elected Members.

The progress report should provide for, inter alia:

- Progress achieved on actions to that point (including key indicators as established),

- Extent to which actions have achieved and built new relationships with key stakeholders, agencies, communities and identified new or emerging opportunities.
- Identification of funding streams used,
- Inspired or encouraged positive community engagement,
- Reports on the outcomes of efforts to change behaviour.

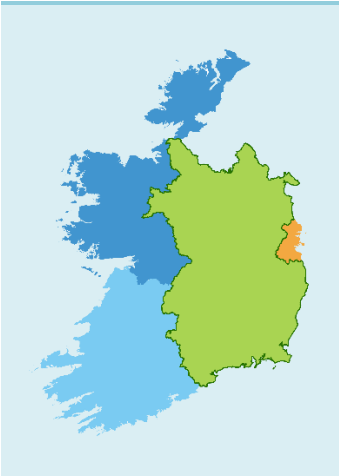
The requirement to report on progress on an **annual** basis is also informed by the following:

- *Under section 15 of the Climate Action and Low Carbon Development Act 2015, local authorities may be required to report on progress in meeting the terms of the National Adaptation Framework and Sectoral Adaptation Plans.*
- *Local Authorities have been identified by many national sectors under the National Adaptation Framework as a key stakeholder responsible for implementing adaptation actions in their local area and ensuring coordination and coherence with the sectors identified in the NAF. Cooperation and collaboration between Local Authorities and the sectors is encouraged strongly. Under Section 14 of the Climate Action and Low Carbon Development Act 2015, Sectors may be required report on progress made with adaptation actions and present annual sectoral adaptation statements to each House of the Oireachtas by the relevant Minister or by the Minister for DCCAE.*
- *The National Adaptation Steering Committee chaired by the DCCAE maintains a role to ensure a coordinated and coherent approach to implementing actions under the NAF. This steering committee with representation from Local Authorities and the CAROs has a role in promoting cross sectoral coordination.*
- *The High-Level Climate Action Steering Committee, chaired by the Minister for Communications, Climate Action and Environment has a role in monitoring progress by sectors and local authorities in delivering on climate change adaptation actions.*
- *Under Section 13 of the Climate Action and Low Carbon Development Act 2015, the Advisory Council has a role, at the request of the Minister, in conducting periodic reviews of the implementation of the National Adaptation Framework and sectoral adaptation plans and to report on its findings and recommendations.*

Appendix 1

Profile of Eastern and Midlands CARO

The four CARO regions and constituent local authorities are illustrated in the table below:

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

The Eastern and Midland CARO has assisted and supported Longford County Council in the development of this Climate Change Adaptation Strategy.

With 17 local authority areas, the Eastern and Midland region is the largest of the four Climate Action Regions in Ireland. The region, exclusive of the Dublin Metropolitan Area, occupies the eastern and central aspects of the country. The Region borders Northern Ireland to the north with counties Louth, Cavan, Monaghan and Leitrim. The River Shannon flanks the western aspect bounding along its course, counties Leitrim, Roscommon, Longford, Westmeath, Offaly and Tipperary. The Irish Sea bounds the region to the east. Counties Louth, Wicklow, Wexford and Waterford are located to the east and south east of the region all with extensive coastlines along the Irish Sea.

The region with its extensive pattern of settlement areas and rural areas and has a population of almost 1.8 million people accounting for 37.7% of the total population of the state¹⁸ and at 32,542 sq.km occupies 46.3% of the area of the state¹⁹. The region plays a significant role economically to the country hosting a range of sectors inclusive of multinationals, public service, private and small-medium enterprises. Agriculture remains the prevailing sectoral land use in the region.

There is a rich variety of landscapes and topographies across the region. A mostly flat low-lying landscape sweeps through the midland counties. Significant areas of raised bogs occupy this central location in the country as well as the Curragh Plains extending towards the Curragh Plains in County Kildare. The Drumlin

¹⁸ Total population of E&M Region is 1,796, 923 persons. The state population is 4,761,865 persons (CSO, 2016).

¹⁹ Total area of state is 70,282 sq.km

Belt across the northern aspect of the region, the Wicklow Mountains, Galtee Mountains and Slieve Bloom Mountains offer variation and punctuation in the landscape of the region.

21 prominent Rivers rise and flow (with tributaries) through the Region. The most prominent of these include the River Shannon, River Barrow, River Suir, River Nore, River Liffey and River Boyne. Counties Louth, Wicklow, Wexford and Waterford occupy coastal locations to the east and south east of this region while County Leitrim extends to occupy a distance of 4.6km along the western coast of the country.

The region offers an extensive and crucially important network of critical infrastructure. The road network in the region typically radiates from the metropolitan Dublin Region. The Rail Network is significant with the Dublin-Cork, Dublin-Limerick, Dublin-Waterford, Dublin-Belfast, Dublin-Sligo and Dublin-Galway/Mayo lines. Rosslare Europort in Wexford is a gateway to Wales and greater Europe through France. Electricity and communications infrastructures are widespread throughout the region.

The Ireland's Ancient East and Hidden Heartlands proposition best represents the vast array of tourism products on offer in the region as a cultural and tourist destination.