Derry City & Strabane District Council

Climate Change Adaptation Plan 2020-2025

Supplementary Information Document

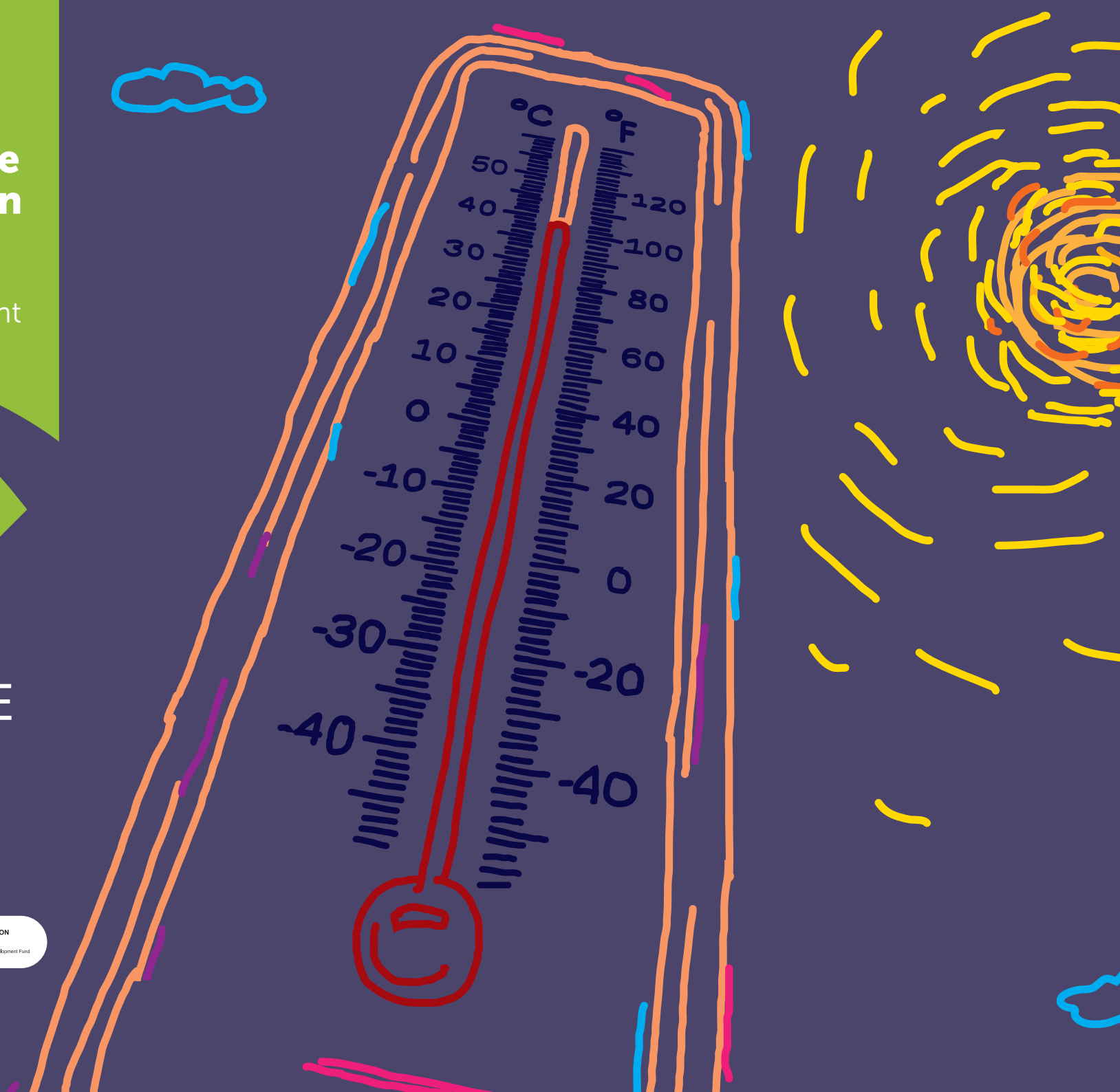
CLIMATE

Adapting to Change

Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Strâbane Destrick Council

Northern Periphery and Arctic Programme 2014–2020

EUROPEAN UNION
Investing in your future
European Regional Development Fund



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Introduction

This document provides additional information supporting the Derry City and Strabane District Council Climate Change Adaptation Plan. Detailed background information and analysis provides further context to the regional profile, the challenge of climate change and associated risks and the rationale for climate adaptation within Council.

The Climate Adaptation Plan provides a framework for cohesive adaptation action within Derry City and Strabane District Council.

Our Vision

"Derry City & Strabane District Council is prepared for and resilient to the effects of climate change creating a safe and sustainable region for all"

Our Aims

- Increase capacity to respond to climate change ensuring resilience of our services, people, operations, assets and estate to the impacts of climate change.
- Raise awareness of the impacts of climate change across the City & District to deliver effective adaptation.
- Lead by example and work collaboratively to ensure resilience and deliver climate adaptation.

Themes

The associated Climate Adaptation Action Plan outlines the short, medium and long-term actions to be delivered within the initial 5-year period by Council. Actions are allocated to each theme and categorised as those that are enabling by building adaptive capacity and those that deliver planning & adaptation action.

Cross Cutting

- Delivery & Collaboration
- Communication & Awareness
- Knowledge & Information

Functional Themes

- Policy & People
- Assets & Capital Development
- Operations & Services
- Green Infrastructure
- Heritage & Culture
- Planning & Building Control

Regional Profile

The landscape of the Council area includes mountain ranges, rivers, agricultural land, and coast offering vital habitats for species, destinations for tourism and recreation, a rich cultural heritage as well as settlements for local communities. Urban areas include the regional city of Derry connected to a number of vibrant towns including Strabane and a wide number of villages.

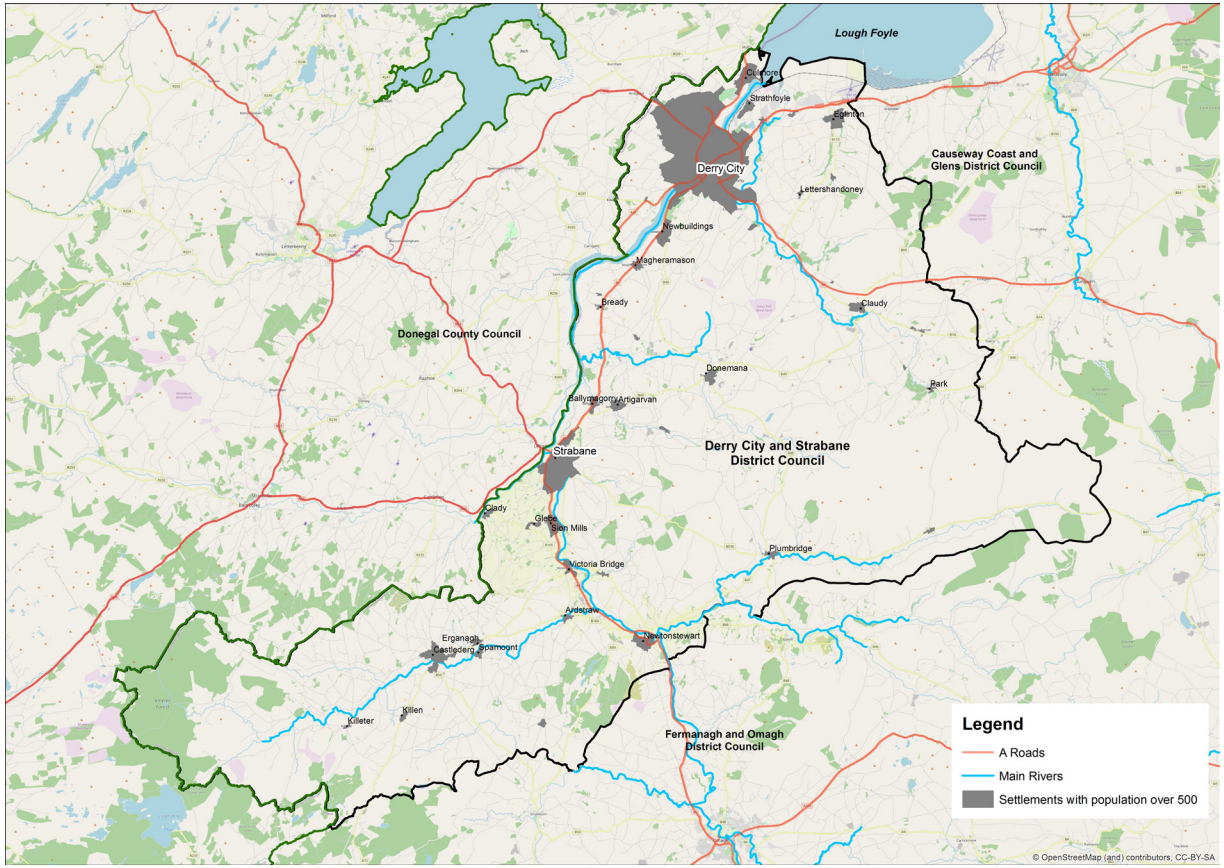
Area: 1,245 km^2

Population: 150,680 of which 71% live in urban areas

Settlements: 47

Border with Donegal County Council, Republic of Ireland: 140km

Neighbouring Councils: Causeway Coast & Glens Borough Council / Mid-Ulster and Fermanagh & Omagh District Council



Derry City & Strabane District Council Area

Landscape

The City & District contains many areas of significant environmental and landscape importance including the Sperrin Area of Outstanding Natural Beauty, Lough Foyle Special Protection Area, River Faughan and River Foyle Special Areas of Conservation and the special wetlands and wildlife found on the Ramsar sites of Lough Foyle and Fairy Water Bogs.

Significant rivers include the Rivers Foyle, Faughan, Skeoge, Mourne, Derg and Glenelly River as well as numerous tributaries and wider catchment areas.

Ireland's geographical situation explains our changeable weather. The dominant influence on Ireland's climate is the Atlantic Ocean which produces mild/wet weather and a moderate climate. Winters tend to be cool and windy, summers mild and less windy.

Socio-economic Profile

The area serves a population of 150,680 with the overall population projected to decrease slightly to 150,496 in 2022 before dropping back to 145,852 by 2041.

In 2019, there were 62,462 domestic properties served by Derry City and Strabane District Council.

In 2019, there were 5,260 VAT and/or PAYE registered businesses within the area, which, in turn, had helped provide 58,200 employee jobs in 2018.

In 2018, there were 1,771 farms within DCSDC supported by an agricultural labour force of 3,510.

The Northern Ireland Multiple Deprivation Measure 2017 results show that 20 of the 100 most deprived Super Output Areas (SOAs) in Northern Ireland are located in the Council area.

Deprivation is particularly prevalent in some parts of Derry City, parts of Strabane Town and certain parts of its surrounding countryside. In addition, the 2011 census recorded 33% of those economically inactive as a result of disability or long term illness.

Culture

The Council area also has a rich and diverse built and archaeological heritage including remains of remote ancient settlements and castles, ritual sites and tombs, and many buildings of architectural importance. The area contains 5 Conservation Areas, 4 Areas of Townscape Character, 675 listed buildings, 857 sites on the current NI Sites and Monuments Record, 18 Monuments in State Care and 10 Scheduled Monuments in State Care.

Notable sites include the iconic Derry Walls - the largest monument in State Care in Northern Ireland, 14th Century Harry Avery's Castle (Newtownstewart) and the 15th Century Derg Castle (Castlederg).

The Walled City is a special cultural and historic city quarter with museums, arts venues, retail and hospitality. The City and District have become internationally renowned for its world-class festivals and events including the annual Halloween Festival, Spring Carnival and Maritime Festival.

Infrastructure

The City and District's infrastructure includes Foyle port and harbour, city airport, rail links, multi-modal transport hub, roads and greenways.

Northern Ireland's second largest acute hospital is located in the city. Altnagelvin includes the only cross-border Cancer Centre on the island of Ireland.

The City and District contains over 90km of cycleways, greenways and 1,000 acres of parkland.

Ulster University, Magee Campus is located in the city as well as two campuses of North West Regional College in Derry and Strabane.

Future road infrastructure plans include the proposed dualling of the A5 carriageway, a new dual carriageway as part of the proposed A6 dualling between Derry and Dungiven, and the upgrade of the A2 at Buncrana Road in Derry.

Energy supply within the City & District is based on a mix of Coolkeeragh Combined / Open Cycle Gas Turbine Power Plant and wind energy with Northern Ireland Electricity Network responsible for network operation and distribution. Renewable energy infrastructure includes numerous wind farms and bio-energy production sites.

The Climate Challenge

The Earth is kept warm by what is known as the greenhouse effect, where certain gases in the atmosphere trap heat, preventing it escaping into space. These greenhouse gases (GHG) include water vapour, methane, nitrous oxide and carbon dioxide.

The build-up of greenhouse gases in the atmosphere from human activity is trapping the sun's heat, resulting in warming of the planet and changes in weather patterns around the world.

Climate change refers to slow onset, long term shifts in average temperatures and weather patterns typically over a 30-year period.

Weather refers to the conditions we experience over shorter periods of time from hours to days.

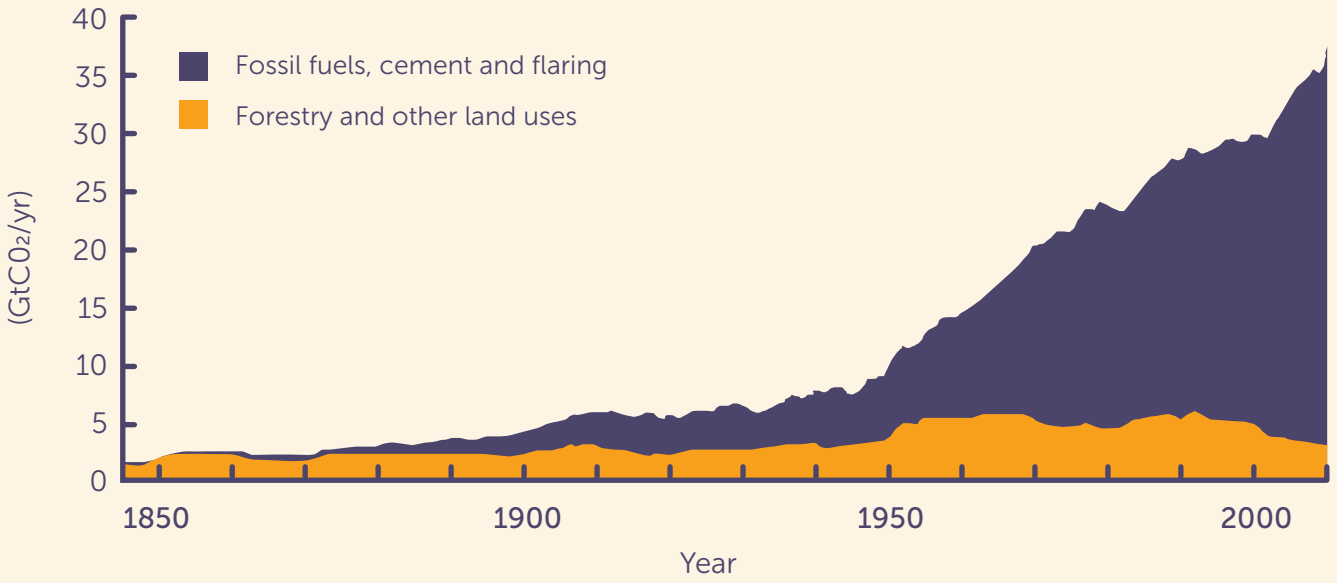
The climate of the Earth is not static, and has changed many times in the past. Natural processes such as variations in the earth's orbit, cyclical ocean patterns, volcanic eruptions and changes in the amount of solar energy the planet receives can also contribute to climate change.

Human activities, (anthropogenic) including the burning fossil fuels, changing land use, agriculture, decomposition of waste and deforestation have resulted in the release of large amounts of greenhouse gases into the atmosphere, enhancing the warming effect and so increasing global temperatures.

The build-up of greenhouse gases in the atmosphere since the start of the industrial revolution has resulted in GHG levels 30% higher than at any time during the last 800,000 years. (Climate Ireland, 2020)

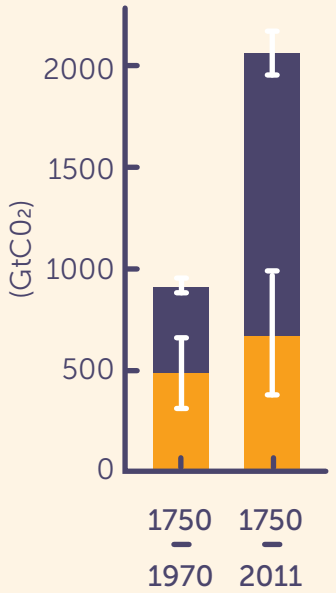
Global anthropogenic $C0_2$ emissions

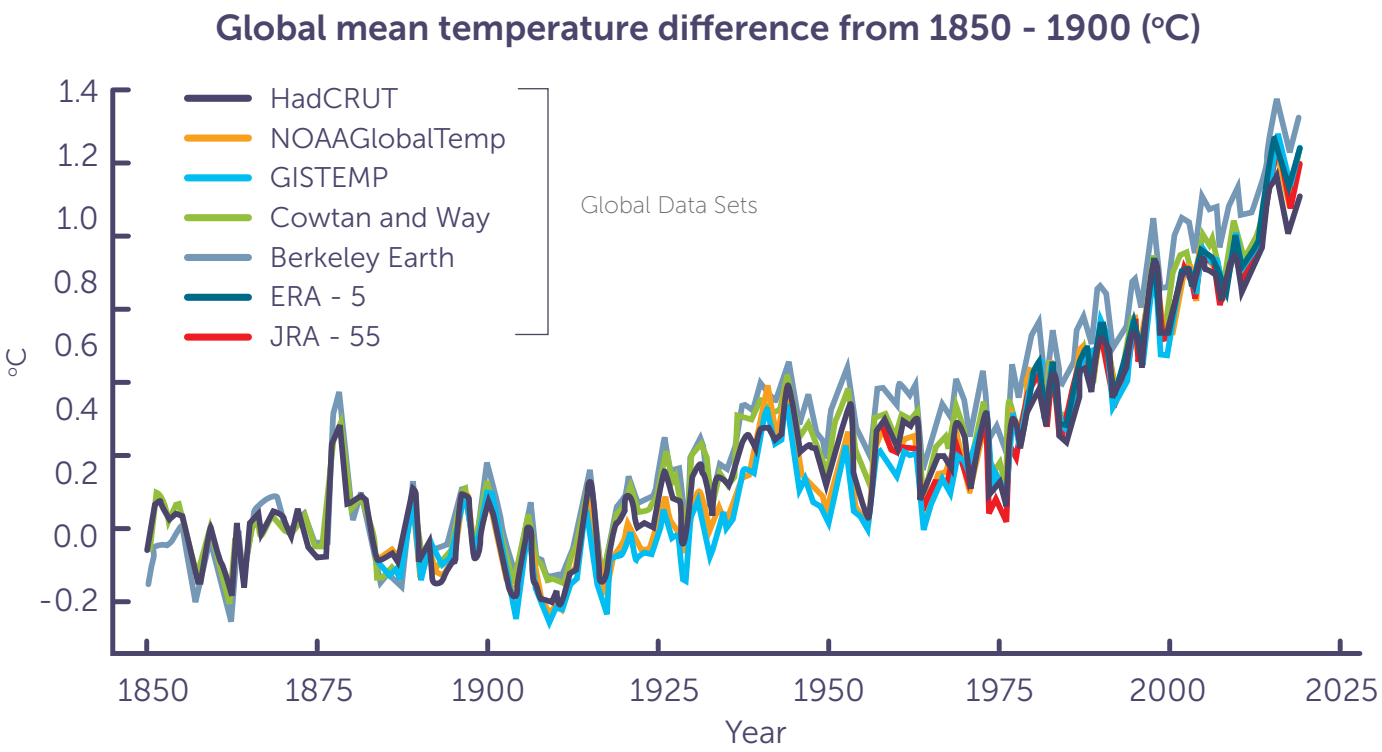
Quantitative information of CH_4 and N_20 emission time series from 1850 to 1970 is limited



(IPCC, 2014)

Cumulative $C0_2$ emissions





Since the late 19th century, average global temperatures have increased by approximately 1°C, with global warming likely to reach 1.5°C between 2030 and 2052.

(Met Office, 2020)

According to the World Meteorological Organisation, 2019 was the second warmest year on record after 2016 with average temperatures for 2010-2019 being the highest on record.

The Paris Agreement of 2015 saw a global commitment to keep global temperature rise this century 2°C below pre industrial levels and pursue efforts to keep the rise to no more than 1.5°C. However, global warming is likely to reach 1.5°C from as early as 2030 and reach 4°C by 2100 (Met Office, 2020).

Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C. Even if vigorous efforts to limit the emissions of greenhouse gases from human activities are undertaken, the world is locked into further climatic changes.

Limiting global warming to 1.5°C would require "rapid and far-reaching" transitions in land, energy, industry, buildings, transport, and cities and requires a cut in greenhouse gas emissions of 45% by 2030 compared to 2010, and zero by 2050. (IPCC, 2018)

GHG emissions have continued to rise at a rate of 1.5 per cent per year from 2010-2019, reaching a record high of 55.3 GtCO2e in 2018.

Carbon dioxide lasts in the atmosphere for centuries and the ocean for even longer, thus locking in climate change.

While Northern Ireland is likely to avoid some of the most severe direct impacts manifesting in some other regions, there will be impacts, both direct and indirect.

Observations & Projections

Observed Changes

Northern Ireland's climate is changing in line with global patterns with average temperatures rising across all seasons. Northern Ireland is also seeing a rise in sea levels as well as a change in the frequency and intensity of extreme weather events.

Projections

The UK Met Office 2018 Climate Change Projections state that for the UK there is;

"A greater chance of warmer, wetter winters and hotter, drier summers"

(Met Office, UK 2019)

Climate projections present a range of low to high future scenarios based on the degree to which society reduces greenhouse gas emissions and therefore projected global temperatures.

For the purpose of the Climate Change Adaptation Plan scenarios RCP2.6 (Low Emission) and RCP8.5 (High Emission) which relate most closely to 2°C and 4°C global warming by the end of the century respectively, relative to preindustrial era have been used. We used these two RCPs in order to represent both a most optimistic and most pessimistic level of action (other RCP scenarios represent "middle ground" between RCP2.6 and RCP8.5 in terms of the level of action on climate change and therefore associated impact).

Name	Radiative Forcing	CO2 Levels
RCP8.5	8.5 Wm^2 in 2100	High Levels Rising (~1370 ppm CO2 eq) by 2100
RCP6.0	6 Wm^2 post 2100	Medium Low Mitigation (~850 ppm CO2 eq) at stabilization after 2100
RCP4.5	4.5 Wm^2 post 2100	Medium High Mitigation (~650 ppm CO2 eq) at stabilization after 2100
RCP2.6	3 Wm^2 before 2100 declining to 2.6 Wm^2 by 2100	Very Low Levels Peak & Decline (~490 ppm CO2 eq) before 2100 and then decline

Parameter	Observed	Projected	Example of Impacts
Temperature 	For the period 2009-2018 average temperature was 0.9°C warmer than the 1961-1990 average All the top 10 warmest years for the UK from 1884 have occurred since 2002 Summer 2018 was among the warmest, driest and sunniest summers experienced by the UK for over 100 years (Kendon et al., 2019)	By 2070 (Compared to 1981-2000) Low Emission Scenario up to **2.8°C** hotter High Emission Scenario up to **4.9°C** hotter The chance of a summer heatwave like 2018 is around 50% more likely by 2050 (Met Office, 2019)	Increased heat-related mortality and illness Reduced air quality Transport and energy infrastructure affected Increased visitor numbers to parks and open spaces Increased risk of pest and disease and spread of invasive species
		Cold snaps like -18.7 °C at Castlederg in 2010 will still occur but are projected to be less frequent as winters become warmer on average	Health and wellbeing benefits of warmer winters as well as reduction in fuel / heating costs
Winter Precipitation 	Winters were on average 12% wetter during the period 2009-2018 when compared with 1961-1990 (Kendon et al., 2019)	By 2070 (Compared to 1981-2000) Low Emission Scenario up to **17%** increase High Emission Scenario up to **25%** increase (Met Office, 2019)	Property damage – residents, business & Council estate Damage to infrastructure – roads rail, power, & green infrastructure Business trading loss Risk to public safety, mental health and wellbeing Increased pollution and reduced water quality

Parameter	Observed	Projected	Example of Impacts
Summer Precipitation 	During 2009-2018 summers were on average 13% wetter than the 1961 -1990 average (Kendon et al., 2019) Northern Ireland Water experienced a 'High Demand Incident' leading to the first hosepipe ban in two decades during the heatwave of summer 2018	By 2070 (Compared to 1981-2000) Low Emission Scenario up to **28%** decrease High Emission Scenario up to **38%** decrease However future increases in the intensity of heavy summer rainfall events are projected (Met Office, 2019)	Reduced river flows affecting biodiversity and water quality Reduced water supply Increased risk of wildfire
Rising Sea Levels 	Mean sea level around the UK has risen by about 16 cm since the start of the 20th century (when corrected for land movement) (Kendon et al., 2019)	Northern Ireland is locked in to at least 11cm sea-level rise by 2100, but unless global emissions decline, that number could be as much as 94cm (Met Office, 2019) Increased risk of coastal storm surge and storm tide inundation	Significant impact on flood defences, coastal habitat, urban centres, agricultural land and infrastructure
Frost & Snow 	2009–2018 has had 15% fewer air and ground frost days compared to 1961–1990 (Kendon et al., 2019) Widespread and substantial snow events have occurred in 2018, 2013, 2010 and 2009, but their number and severity have generally declined since the 1960s (Kendon et al., 2019	A decrease in the frequency of frost and snow is projected	Decrease in transport disruption Property damage & transport disruption may occur with instances of severe frost and snow however projections indicate increase in average temperatures. Potential benefits to health and wellbeing and reduced costs for heating and treatment of roads & paths

Parameter	Observed	Projected	Example of Impacts
Growing Season 	Northern Ireland's Growing Degree Days (Conditions suitable for plant growth) 2008-2018 saw an increase of 11.8% days compared to the 1961-1990 period (Kendon et al., 2019)	An increase in the duration of the growing season is likely with spring occurring earlier	Impact on biodiversity as well as Council grounds maintenance regimes
Relative Humidity 		RH is likely to increase especially during winter months (Nolan, 2019)	Increased mould growth on buildings and museum collections

(Observed changes data: years 2009–2018 is a non-standard reference period, but it provides a 10-year "snapshot" of the most recent experience of the UK's climate compared to historical records.)

"Changing climate leads to changes in the frequency, intensity, spatial extent, duration, and timing of extreme weather and climate events."
(IPCC, 2012)

"Climate change will amplify existing risks and create new risks for natural and human systems in Europe, in particular through increased damages from river and coastal floods, increased water restrictions, and increased damages from heat events and wildfires".
(IPCC, 2014)

Climate Change Risk

The UK Climate Change Risk Assessment 2017 Evidence Report – Summary for Northern Ireland highlights the following areas of risk & opportunity:

- Natural Environment
- Infrastructure
- People & Built Environment
- Business & Industry
- International

Following the key themes of the UK Climate Change Risk Assessment the main risks for Northern Ireland are outlined below:

People and Built Environment

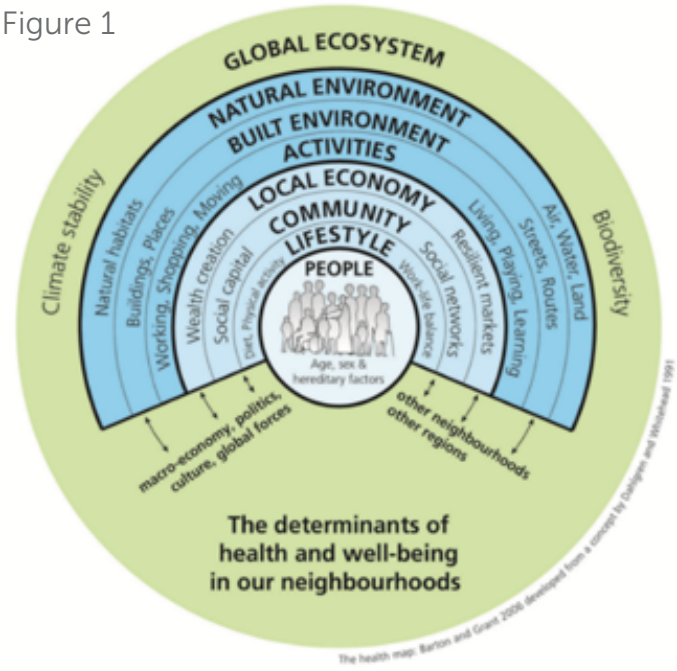
As figure 1 illustrates climate stability is a key determinant of health and well-being.

Climate change has the potential to impact the built environment, infrastructure, economy and the places we live.

The extent to which individuals are able to cope with the impacts of climate change is influenced by the interaction between personal factors (e.g. health, age), social factors (e.g. income, neighbourhood cohesion, isolation), and environmental factors (e.g. building quality, green space).

The groups most at risk from climate change are the very old and very young, those with chronic diseases, impaired mobility and on certain medications, pregnant women, homeless, those with limited finance capacity, and people engaged in outdoor activities.

Figure 1



(Barton and Grant, 2006)

Heat Impacts & People

According to the 2017 UK Climate Change Risk Assessment, there are 2,000 heat-related deaths per year in the UK and 17 in Northern Ireland.

The specific risks for human health includes:

- Increased incidence of heat-related illnesses including heat stroke, heat exhaustion, cramps and an increased risk of heat-related deaths.
- An increased health risk from water, vector and food borne diseases.
- An increased risk in the number of skin cancer cases and deaths.
- Potential for longer pollen and allergy season while thunderstorms have also been associated with increased hospital admittances for asthma.
- A warming climate also threatens to make air quality worse, with the prevalence of harmful smogs likely to increase throughout longer, hotter summers.
- Wildfires cause risk of injury and death.

People in areas of high social deprivation are most at risk from increasingly frequent warm spells due to less resources to purchase additional cooling solutions.

In addition, the NI Evidence Report 2017 highlighted potential opportunities and benefits of higher temperatures on health and wellbeing such as increased outdoor activities, and health benefits from warmer winters, reduced cold and fuel poverty.

Flooding / Storms Impacts & People

The impact on local people, health and wellbeing from severe weather events such as flooding and storms includes:

- Injury and death.
- Public health and safety risks for residents e.g. pollution, pests and disease.
- Long-term physical and mental health impacts.
- Damage to homes.
- Financial impacts - loss of assets and insurance costs.

> "It's caused me many sleepless nights because you're constantly thinking about flooding, and you think you're getting somewhere with it and then you hit a brick wall.
>
> Every single day now before we arrange to do anything or go out anywhere, we have to check the Met Office weather report on the internet"
>
> Accounts from residents affected by flooding.
>
> (British Red Cross, 2010)

Power cuts, transport disruption and flooding associated with frequent severe weather events will affect the most vulnerable members of the community, who may have fewer resources and support to clean up after a flood or to reduce future risk e.g. increasing insurance premiums.

North West Flood Risk

Recent research undertaken by the Newcastle University found that Derry City could experience an 80% increase in the current one in ten-year flood events.

"Derry City - is potentially more at risk from climate change than other parts of the UK" Dr Selma Guerreiro.

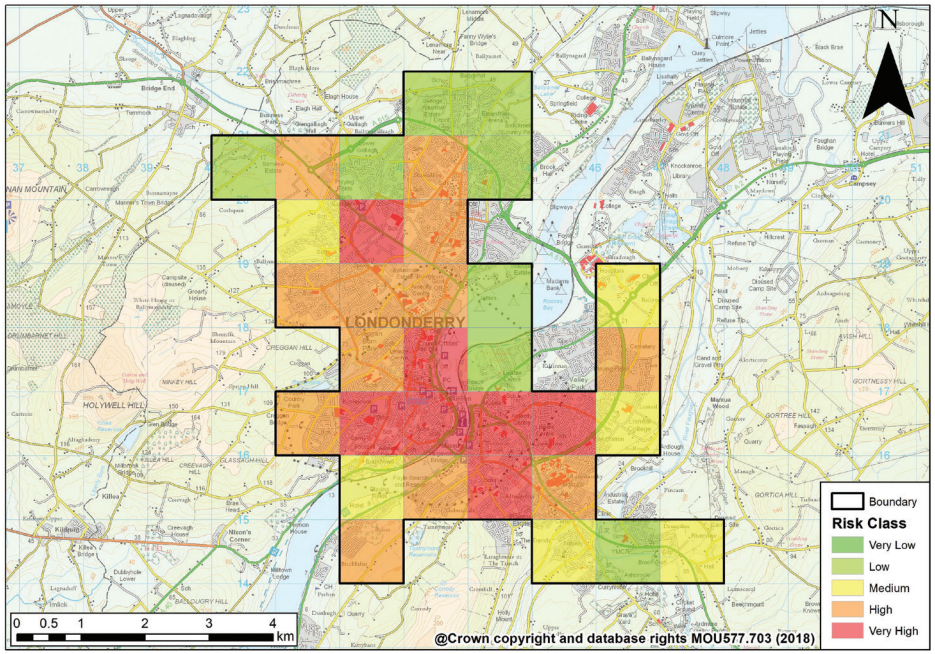
"The research highlights the urgent need to design and adapt our cities to cope with these future conditions."

Professor Richard Dawson. (Guerreiro et al., 2018)

Derry City has also been identified by the Department for Infrastructure as an Area of Potential Significant Flood Risk where significant flood risk exists now or is likely to occur in the future while Strabane is listed as a Transitional Area of Potential Significant Flood Risk. (DFI, 2018)

As an Area of Potential Significant Flood Risk, the City of Derry was subject to detailed flood risk analysis, which highlighted that the predominant flood risk arises from fluvial (River) flooding.

The low lying areas behind the quays on the west side of the Foyle – for example, Foyle Street, Water Street, Foyle Embankment, Queens Quay, Strand Road and Rossville Street. (DARD, 2015)



In addition, DFI coastal modelling predicts that at the 10% annual exceedance probability tidal event (1 in 10 years) flooding would take place due to overtopping of the quay at the Foyle Embankment and the banks at or near the Pennyburn Stream outlet to the Foyle. At the 2% (1 in 50 years) annual exceedance probability event overtopping of banks/quays would also take place near the Craigavon Bridge, at Queen's Quay and the McFarland Quay.

Coastal flooding is often characterised by flows that are more rapid and dynamic than for other sources of flooding and therefore the consequential risk to public safety and property is relatively high. Also, the long term economic and environmental damage is generally higher due the effects of saltwater inundation.

The Department for Infrastructure's NI Climate Change Flood Maps highlight the estimated tidal, river and surface water flooding for the year 2030 representing medium probability, this allows for an indication of flood risk for 2030 while the UKCP18 projections enable a longer term analysis of risk up for 2070.

At the time of writing this adaptation plan the NI Flood Maps were undergoing revision to include the CP18 data, the updated maps will be used when undertaking future assessments to inform adaptation measures in the City & District.

In deciding on Planning applications, the Council will continue to apply existing regional Planning policies so as to ensure that all public and private developers across the District are undertaking sustainable forms of development e.g. by ensuring that new buildings or land uses are not located in flood plains where they would flood or cause flooding elsewhere.

Infrastructure / Business & Industry

Local infrastructure is critical to the successful operation of society and business where several interdependencies often impact upon others (cascade failure) e.g. disrupted electricity supply impacts business operations, water management and health service provision.

Heat Impacts & Infrastructure

Impacts from increased temperatures include:

- Rail network disruption / speed restrictions to reduce the risk of track buckles.
- Pressure on local energy supply due to increased energy demand for cooling systems.
- Water shortages affecting business and domestic supplies.
- Reduced workforce productivity.

Flooding and Storms Impacts & Infrastructure

Infrastructure is at significant risk from severe weather events e.g. storms and flooding leading to:

- Closure and damage of roads, rail and bridges.
- Landslides.
- Coastal erosion.
- Speed restriction on roads and bridges for high sided vehicles.
- Reduced customer access.
- Distribution to networks, ICT, electivity supply, supply chains and service deliveries.
- Lost workdays.
- Increasing insurance and repair costs.

Flooding and Storms Impacts & Business & Industry

Small and Medium Enterprises (SMEs) can be particularly vulnerable to climate change and extreme weather impacts can be highly damaging. SMEs are likely to have a have a lower adaptive capacity and may have the most difficulty recovering due to not being 'as well-resourced' as much larger enterprises (DAERA, 2019).

The transition to a well-adapted region presents a number of opportunities for the business sector to both manage their own risk but also provide the services and infrastructure required for the North West to adapt and thrive to changes in the climate. Key to this will be understanding and exploiting the opportunities from the existing expertise in local science, research and product development, manufacturing and engineering.

Opportunities also include a possible extension of the tourist season. However this may result in increased pressure on heritage sites and outdoor spaces such as parks and outdoor play areas. Water shortages and severe weather events have potential to cause deterioration and damage to the natural environment affecting the aesthetics and visitor offer.

Heat Impacts & Built Environment

The built environment is also affected by climate change. Increased temperatures and heatwaves result in;

- Subsidence and heat-related damage or disruption to buildings.
- Increased energy consumption from cooling and refrigeration.
- Increased temperatures and fluctuations puts pressure on heritage assets through thermal stress affecting building fabric, stonework, archaeological remains and collections.
- Increased relative humidity affects museum collections.

Natural Environment

Increasing global temperatures are already affecting our natural environment and based on current trends this human impact will escalate for decades to come.

Many terrestrial, freshwater and marine species have shifted their geographic ranges, seasonal activities, migration patterns, abundances and species interactions in response to ongoing climate change (IPCC, 2014).

> Changes to the natural environment can be caused and exacerbated by climate change.
>
> Climate change has potential to lead to a net loss in natural capital and negatively impact our ecosystem services resulting in species loss and habitat degradation.
>
> (Department for Agriculture, Environment and Rural Affairs, 2019)

However, many species will not be able to adapt fast enough to respond to the current pace of climate change, in addition suitable habitat and networks for colonisation may not exist. The scale of local extinctions will depend on the availability of suitable habitat and conditions for species to move. In addition changing conditions and temperatures may also be more favourable for invasive species.

As well as increased temperatures, extreme weather events affect local ecosystems and habitats through:

- Reduced precipitation events leading to low flow conditions reducing dilution of pollutants.
- High flows during flooding causes runoff of sediment and pollution.
- Wildfires pose a risk to habitats and species.

Flooding can also cause:

- Soil erosion.
- Landslides.
- Coastal erosion.

Climate change may create better conditions for some flora and fauna, increase productivity on forests and woodland and agricultural production and crop diversity. In addition, the development of Green Infrastructure (GI) as a response to climate change offers opportunities for habitat enhancement, connectivity and protection for our natural environment.

The Biodiversity Theme of the Derry & Strabane Green Infrastructure Plan 2019 - 2032, represents Council's Local Biodiversity Action Plan and aims to 'support wildlife and habitats that provide ecosystem services' (Derry City & Strabane District Council, 2019a).

International

Local businesses are exposed to the indirect impacts of climate change due to their dependence upon the wider Irish, European and global economy, supply chains and markets.

There are likely to be opportunities and risks from climate change on our food system including production and trade including:

- Impacts on agricultural production.
- Changes in growing season.
- Damage to land and crops.
- Risk to fodder production.
- Increases in pests and diseases.
- Risk to supply chains and food imports.
- Opportunities for agricultural diversification e.g. different crops, plant species, production of renewable energy.

The Journal of Spatial Planning in Ireland (Murphy, 2016) highlights that adapting to climate change is most challenging in close proximity to boundaries. The report states that on the island of Ireland border regions are amongst the most vulnerable to the hydro –climatic hazards mainly due to a lack of joined up thinking and action around shared environmental issues and climate adaptation. Political issues such as BREXIT adds considerable uncertainty to the economic outlook and has the potential to significantly change the dynamic of cross border trade and partnership working.

Strategic Context

Council's Adaptation Plan is influenced by and contributes to a number of international, national and local policies and plans. The following table outlines the current relevant strategic context and headline statements pertaining to climate change;

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
International & EU	Paris Agreement 2015	United Nations (United Nations Framework on Climate Change) 195 Global Signatories	> Requires ambitious mitigation action to reduce GHG emissions to hold the global temperature rise 'well below 2°C above pre-industrial levels', and to pursue efforts to limit the rise to 1.5°C. > Adaptation goal; 'enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change'.
	European Union Climate Change Adaptation Strategy 2013	European Union	> Promoting action by EU Member States: the EU Commission encourages all Member States to adopt comprehensive adaptation strategies and provides funding to help build up adaptation capacities and take action. > Climate-proofing by further promoting climate change adaptation in key vulnerable sectors. > Better informed decision-making by addressing gaps in knowledge about adaptation and further developing the European climate adaptation platform (Climate-ADAPT) as the 'one-stop shop' for adaptation information in Europe.

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
International & EU	United Nations 2030 Sustainable Development Goals (SDG 13)	United Nations	> Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries; > Integrate climate change measures into national policies, strategies and planning; > Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning; > Mobilise and distribute 50% of the UN Framework Convention on Climate Change Green Climate Fund to adaptation projects in developing countries; and > Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small-island developing States, including focusing on women, youth and local and marginalised communities.
UK	Climate Change Act 2008	UK Parliament	> Set UK GHG target (Net zero by 2050) > Sets legally binding carbon budgets (cap over 5 yr period – set 12 yrs in advance) [1]First 3 carbon budgets met, not on track for the 2050 target. > Established Committee on Climate Change. > Requires 5 year assessment of risk and opportunities for the UK CCRA 2017 (NI Evidence Report & Summary) > National Adaptation Programme

1. 2018-22 budget currently 2,544 MtCO2e - 37% reduction below 1990 levels by 2020.
2023-2027 budget 1,950 MtCO2e – 51% reduction below 1990 levels by 2025.
2028-2032 budget 1,725 MtCO2e – 57% by 2030

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
UK	UK Climate Change Risk Assessment 2017 Evidence Report – Northern Ireland Summary	Committee on Climate Change	> Areas of Risk & Opportunity: • Natural Environment • Infrastructure • People & Built Environment • Business & Industry • International
Northern Ireland	New Decade New Approach Deal Jan 2020	NI Executive	> The Executive will tackle climate change head on with a strategy to address the immediate and longer term impacts of climate change > The Executive will introduce legislation and targets for reducing carbon emissions in line with the Paris Climate Change Accord. > The parties recognise the need for a coordinated and strategic approach to the challenge of climate change within the Programme for Government. Actions and interventions will be required across a wide range of areas in order to address both the immediate and longer term impacts of climate change in a fair and just way. > To this end: • The Executive's strategies to reduce carbon emissions will be reviewed in light of the Paris Climate Change Accord and the climate crisis. • A new Energy Strategy will set ambitious targets and actions for a fair and just transition to a zero carbon society.

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Northern Ireland			• The Executive should bring forward a Climate Change Act to give environmental targets a strong legal underpinning. • The Executive will establish an Independent Environmental Protection Agency to oversee this work and ensure targets are met. • The Economic Strategy will support clean and inclusive growth and create jobs as part of a Green New Deal. • The Executive will create a plan to eliminate plastic pollution. • RHI will be closed down and replaced by a scheme that effectively cuts carbon emissions
	Northern Ireland Climate Change Adaptation Programme 2019-2024	Department for Agriculture, Environment & Rural Affairs	Aim *'A resilient Northern Ireland which will take timely and well-informed decisions to address the socio-economic and environmental impacts of climate change'.* Key objectives > Fulfilment of statutory duties including production of an adaptation programme > Working in partnership to strengthen and develop policies, strategies and actions which will cope with the risks and exploit the opportunities identified by the NI Evidence Report; > Raise awareness of the likely effects of climate change, promoting climate change dialogue, networking and action;

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Northern Ireland			> Promote and support the enhancement of scientific evidence and sector specific data collection > Ensure the sharing of climate change adaptation best practice > Support Climate NI to provide a cross-sectoral network
	Northern Ireland Regional Development Strategy 2035	Department for Regional Development 2010	> Protect and enhance the environment for its own sake > Take actions to reduce our carbon footprint and facilitate adaptation to climate change
	Strategic Planning Policy Statement for Northern Ireland. Planning for Sustainable Development	Department for the Environment 2015	> Section 3.10 A central challenge in furthering sustainable development is mitigating and adapting to climate change, whilst improving air quality.
	Valuing Nature A Biodiversity Strategy for Northern Ireland to 2020	Department for the Environment 2015	> Reduce the impact of climate change in order to meet the challenge of halting biodiversity loss. > Value of key ecosystem services and the benefits they can provide to regulating and adapting to climate change

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Northern Ireland	Making Life Better – A Whole System Strategic Framework for Public Health 2013-2020	Department of Health	> Vision All people are enabled and supported in achieving their full health and wellbeing potential. The aims are to achieve better health and wellbeing for everyone and reduce inequalities in health.
	Sustainable Water, A Long Term Strategy for Northern Ireland 2015-2040	Department for Regional Development 2015	> FRMD Policy 1A To ensure land-use planning decisions are informed to help minimise flood risk > FRMD Policy 1B: Make space for surface water management in development plans > FRMD Policy 1C: Sustainable Drainage Systems > FRMD Policy 1D: Design for drainage exceedance to be incorporated into all new drainage infrastructure
	Managing Storm Water. A Strategy for Promoting the use of Sustainable Drainage Systems (SuDs) within NI	Northern Ireland Environment Agency 2011	> Promotes the use of SuDs as a response to climate change and increased flood risk

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Northern Ireland	North West River Basin Management Plan	Department for Agriculture, Environment & Rural Affairs 2015	> Designated Significant Flood Risk Areas > Invasive Species control > Use of SUDS in PPS 15 planning applications > Protection of freshwater, coastal and marine environments – capacity building for planning departments and teams.
	Draft Marine Plan for Northern Ireland	Department for Agriculture, Environment & Rural Affairs 2018	> Public authorities, where appropriate, must consider the potential impact of proposals on greenhouse gas emissions and the proposals ability to adapt to a changing climate.
	Northern Ireland Rural Development Programme 2014-2020	Department for Agriculture, Environment & Rural Affairs	> Contributes to the protection of soil from erosion and the maintenance of soil organic matter and soil structure.
	Invasive Alien Species Strategy for Northern Ireland	Department for Agriculture, Environment & Rural Affairs 2013	> Addresses invasive alien species that will reduce the resilience of natural habitats, to climate change;
	Multi-Agency Severe Weather Emergency Response Plan	Department for Infrastructure	> Provides for coordinated inter agency response to potential and actual severe weather events

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Derry City & Strabane District Council	Derry City & Strabane District's Inclusive Strategic Growth Plan 2017 -2032	DCSDC	Vision *'A Thriving, prosperous and sustainable City and District with equality of opportunity for all'* Relevant outcomes and actions for consideration include: > We prosper through a strong, sustainable and competitive economy. > We live sustainably – protecting and enhancing the environment > We connect people & opportunities through our infrastructure. Within the DCSDC the Strategic Growth Plan importance is given to climate change and supporting environment: "The Planet Matters: "We care deeply about our local environment and climate change. We understand that we are ultimately dependent on the natural world as a support system and we need to live sustainably: to produce and consume within our planetary boundaries. We believe we can have a circular economy and a low carbon society. We need to promote renewable energy. Develop an integrated, sustainable transport system and connect our rich waterways and greenways."

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Derry City & Strabane District Council	Delivering Inclusive Growth, City Deal for the Derry~ Londonderry City Region 2018	DCSDC	> Unlock the economic potential of the region by: • Connecting towns and cities. • Investing and growing economic innovation assets whilst tackling major barriers to productivity and growth. • Maximising resources through strong partnership > Priorities: • Innovation & Digital • Enabling Infrastructure & Regeneration • Private Sector
	Local Development Plan 2032 Draft Plan Strategy	DCSDC	> Vision To make Derry City and Strabane District a thriving, prosperous and sustainable area – Planning for balanced and appropriate high-quality development, whilst protecting our environment, and also promoting wellbeing with equality of opportunity for all. > The LDP will guide land use development and will outline policies and guidance for the development of the city and district. > The LDP general development principles and policies states that development should demonstrate how they "mitigate against the effects of climate change, adapt to its impacts, and to ensure resilience."

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Derry City & Strabane District Council	Green Infrastructure Plan 2019-2032	DCSDC	Vision "By 2032 the environmental, economic and social benefits of Green Infrastructure are valued and maximised by all" Climate Change Strategic Aim: GI will be maximised to mitigate against and adapt to the effects of climate change
	Air Quality Action Plan & 2015 Updating Screening and Progress Reports	DCSDC	> Establishes targets for air quality improvement
	North West Greenway Plan (2015)	DCSDC	Provides a plan for the development of a network of Greenways throughout the North West of Ireland.
	Derry City and Strabane District Tourism 2018-2025: A New Level of Ambition.	DCSDC	Core Themes: > History and heritage > Creativity > Culture > Activity & Adventure.

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Derry City & Strabane District Council			Strategic Framework to deliver > Product and experience > Visitor Servicing > Investment in destination marketing
	Derry City and Strabane District Local Food and Drink Strategy and Action Plan 2018-2021	DCSDC	Aim Establish the City & District as a food destination
	A Circular Economy / Zero Waste Strategy for Derry City and Strabane District Council 2017	DCSDC	Derry City and Strabane District Council (DCSDC) is pursuing a clear vision for a Zero Waste Circular Economy. This is defined in the community plan as an economy where: "resources are used for as long as possible, have maximum value extracted from them and are recovered and regenerated at the end of their service life to achieve a Zero Waste Circular Economy". Focus on development placed on a more sustainable and resilient footing by bringing economic activity within the earth's carrying capacity, notability the constraints of climate change.

Case for Local Government Climate Adaptation

Many Councils throughout the UK and Ireland are already responding with mitigation and adaptation planning and measures. In Northern Ireland it is not currently a statutory requirement for local authorities to undertake adaptation planning, however Derry City & Strabane District Council is leading the way with the CLIMATE Programme which enabled the development of this climate adaptation plan.

64% of UK respondents viewed climate change as a very serious problem.
(Commission, 2017)

A 2018 UK survey revealed that climate change was one of the two most frequently mentioned responses when asked about the UK's most important issue in the next 20 years (second only to Brexit). In addition respondents indicated that storms and flooding remain the highest perceived risks, and are seen to be likely to increase in the future alongside an increase in risks from heatwaves.

There is very strong support (67%) of respondents for a range of adaptation policies such as regulations on buildings, building new water reservoirs, and spending public money on flood defences with the wellbeing of the most vulnerable in society, people's health, and the emergency services identified as being the top 3 priorities for protection.(Steentjes, 2020)

Climate change affects all Council activities, from the buildings we manage, services we deliver, our open spaces and the roles we carryout in emergency planning and response. It also has a wide range of impacts on local businesses and residents, particularly the most vulnerable.

Climate adaptation benefits to Council include:

- Early action saves lives & money
- Planned adaptation is more effective and less expensive than responding to an emergency or retrofitting to cope with changed climate risks. EU wide cost of not adapting could reach at least €250 billion a year by 2050

  (European Commission, 2013)
- Planning to adapt to the impacts of climate change can help save money, make more sustainable long-term decisions, and foster climate mitigation and adaptation efforts.
- Councils are directly affected by severe weather events, and are often the frontline of immediate response, and will increasingly be affected by changes in our climate
- Ethical responsibility / Climate Justice – it is often the most vulnerable who are impacted the most
- Avoid damage to both new and existing assets

- Prevent damage to local heritage that has irreplaceable cultural heritage values
- Climate adaptation can also deliver wider environmental benefits, including protecting and enhancing landscapes and biodiversity and supporting the delivery of health and wellbeing objectives
- Avoiding costs and making savings. Developing greater resilience to climate impacts can help to avoid costs to Council and lead to savings in the costs of service provision
- Supporting economic growth. Climate-related risks to sites and infrastructure can hinder economic growth but a focus on climate resilience can generate economic opportunities
- Effective planning and 'climate proofing' prevent future losses e.g. avoiding development in flood risk areas, integrating cooling and green infrastructure in capital developments
- Safeguard Council finances and contribute to wider savings for partners, communities and businesses through 'climate proofed' policy and investment decisions.
- Long-term direct economic benefit by ensuring business continuity, decreasing the resources required to help communities and businesses recover and creating jobs and business opportunities
- Where the costs of action are significant, a range of funding opportunities can and are being accessed by councils across the UK and Ireland

The better we prepare and adapt, the lesser the potential impacts associated with any given degree of climate change. In addition, unlike emissions reduction, adaptation can provide immediate local benefits as any measures will help residents to cope better with current climate variability and extreme weather.

Ultimately, climate change adaptation planning can help protect people, property, environment and resources essential to the sustainable growth of our region.


Protecting & Enhancing the Natural Environment
Supporting Economic Growth
Safeguarding Vulnerable Residents
Avoiding Costs & Making Savings
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Stràbane Destrick Cooncil
Climate resilience delivers multiple benefits

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This information is available upon request in a number of formats including large print, Braille, PDF, audio formats (CD, MP3, DAISY) and minority languages.

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Derry City & Strabane
District Council

Comhairle
Chathair Dhoire &
Cheantar an tSratha Báin

Derry Cittie & Stràbane
Destrick Cooncil

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