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Title	Mainstreaming climate change adaptation into planning and development: A case study in Northern Ireland
Authors	Burns, Cathy;Flood, Stephen;O'Dwyer, Barry
Publication date	2022
Original Citation	Burns, C., Flood, S. and O'Dwyer, B. (2022) 'Mainstreaming climate change adaptation into planning and development: A case study in Northern Ireland', in in Flood, S., Jerez Columbié, Y., Le Tissier, M. and O'Dwyer, B. (eds.) Creating Resilient Futures - Integrating Disaster Risk Reduction, Sustainable Development Goals and Climate Change Adaptation Agendas. Cham: Palgrave Macmillan, pp. 129-147. doi: 10.1007/978-3-030-80791-7_7
Type of publication	Book chapter
Link to publisher's version	https://link.springer.com/chapter/10.1007%2F978-3-030-80791-7_7 - 10.1007/978-3-030-80791-7_7
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Download date	2026-11-08 11:22:46
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Mainstreaming Climate Change Adaptation into Planning and Development: A Case Study in Northern Ireland

Cathy Burns, Stephen Flood, and Barry O'Dwyer

Introduction

Climate change has significant effects on local authorities, from the management of property and assets and delivery of services, to an increased need for community support alongside spatial development and regeneration. The impacts of climate change are so wide-ranging that

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S. Flood et al. (eds.), *Creating Resilient Futures*,
https://doi.org/10.1007/978-3-030-80791-7_7

adaptation should be incorporated in decision-making, policy development and service planning by local authorities (Maiden & Monaghan, 2017). This chapter outlines the adaptation planning journey undertaken by Derry City and Strabane District Council (DCSDC) in Northern Ireland, reflecting on the how the prevailing policy context and level of organisational adaptive capacity can create the conditions for mainstreaming climate adaptation into planning and development. Climate change adaptation (CCA) planning provides opportunities to integrate local authority policy drivers such as disaster risk reduction (DRR), which in councils takes the form of emergency planning, into community resilience. It is important to note that the level of complexity of climate change risk assessment and adaptation planning and actions is dependent on the available adaptive capacity. Adaptive capacity refers to the ability of systems, institutions, communities and the natural environment to adjust to potential damages, take advantage of opportunities, or to respond to the consequences of climate change (IPCC, 2014). Adaptive capacity is dependent on factors such as financial resources, availability of supporting information and data, institutional support, and institutional knowledge and training.

Mainstreaming climate change adaptation, disaster risk reduction and sustainable development into policy and planning involves the incorporation of these cross-cutting considerations into government activities and decision-making (Flood et al., 2020). The World Resources Institute (Mogelgaard et al., 2018) identifies five key factors that can facilitate the implementation of mainstreaming ambitions: (1) strong policy frameworks; (2) sustained and persistent leadership; (3) coordination mechanisms across sectors and between government departments; (4) information and tools; and (5) supportive financial processes. This chapter demonstrates the mainstreaming process in action as captured by these five key factors.

It is not currently a statutory requirement for local authorities in Northern Ireland to undertake adaptation planning. The need for adaptation planning within DCSDC was championed by a small team working in the Environment and Regeneration Department on whose recommendation Council approved the application and supporting

funding necessary to lead the CLIMATE[1] project. This began the three-year adaptation planning journey in DCSDC which evolved from a small team of enthusiastic proponents to a dedicated task force encompassing all Council service areas.

Climate Change and the Case for Local Authority Adaptation Planning

Within the area of DCSDC, significant flood events have served to increase awareness of the risks and impacts that climate change and associated severe weather events can have. This was particularly highlighted during a significant flood event in August 2017 during which 60–70 mm of rain (63% of August rainfall) fell in a period of 8–9 hours. Derry City has been identified by the Northern Ireland Government Department for Infrastructure as an area of potential significant flood risk (i.e. an area 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). The most recent Northern Ireland public perception survey (2019/2020) revealed that climate change was considered the biggest environmental concern for households in Northern Ireland (DAERA, 2020).

Local authorities are well positioned to take on the role of adaptation planning. Managing climate change impacts requires place-specific planning and actions (Archie et al., 2018). Due to the localised effects of climate change, local government decision-makers are now on the front lines when it comes to climate change adaptation planning and action. Box 1 provides an overview of the Derry City and Strabane District.

[1] Delivered during 2017–2020 the CLIMATE (Collaborative learning for Managing and Adapting to the Environment) project involved partners from Northern Ireland, Sweden, the Republic of Ireland and the Faroe Islands. The project sought to tackle climate change responses on a local and regional level through establishing a best practice local authority adaptation planning model and toolkit. In addition and to demonstrate the model and toolkit, three local authority climate adaptation plans were developed as case studies; one in DCSDC and two others in the Swedish municipalities of Sundsvall and Härnösand.

Box 1 Derry City and Strabane District Overview

Situated in the northwest of Northern Ireland, the area of Derry City and Strabane District Council serves a population of 150,680. The council area is diverse geographically, including mountain ranges, rivers, agricultural land and coasts. Urban areas consist of the regional city of Derry connected to a number of vibrant towns and villages, including Strabane. In addition, DCSDC shares a 140 km border with Donegal County Council in the Republic of Ireland. DCSDC is one of eleven local authorities in Northern Ireland providing a range of services including waste management, green infrastructure, tourism and economic development, planning, building control and environmental health. In 2019, DCSDC employed 904 people with land ownership extending to over 1000 hectares of land and property.

Policy Context and Potential Integration Opportunities

To be effective, adaptation planning should extend beyond managing severe weather events to include long-term planning for a changing climate as an integral part of ensuring business continuity, safeguarding people and places, protecting and enhancing the natural environment, and contributing to a resilient economy. Figure 7.1 details relevant policy developments from 1997 to 2020, categorised as national and international, regional and local.

National Policy

The UK Climate Change Act 2008 requires a UK Climate Change Risk Assessment every five years, part of which includes a detailed technical evidence report for Northern Ireland. This in turn informs the Northern Ireland Climate Change Adaptation Programme (NICCAP) – prepared by the Northern Ireland government Department for Agriculture, Environment and Rural Affairs (DAERA). There is currently no legal requirement for local authorities to take general action or meet targets in the 2008 Act. However, many local authorities consider they have a

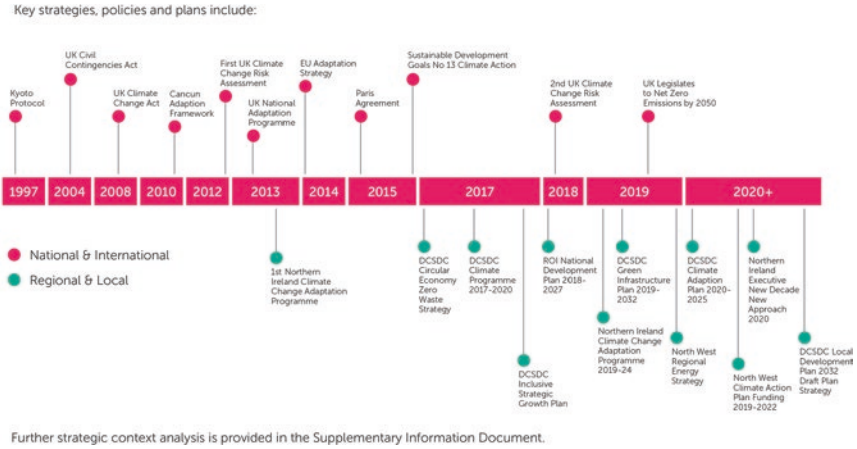


Fig. 7.1 Derry City and Strabane District Council climate change adaptation CCA planning strategic context (DCSDC, 2020a)

moral obligation based on their traditional duties (European Commission, 2018). In addition, the UK Civil Contingencies Act (2004) requires that risk assessments in the UK respond quickly to changes in the risk environment, including climate change. The UK National Risk Register of Civil Emergencies lists climate change and severe weather events as major risks to society. This includes flooding, storms, heatwaves, poor air quality and wildfires, (UK, 2017).

In Northern Ireland, the DAERA Climate Change Unit leads on development, implementation and monitoring of the NICCAP, with responsibility for action shared across all government departments and coordination through the Cross–Departmental Working Group on Climate Change and Adaptation Sub-Group. DAERA also work with Climate Northern Ireland to ensure engagement with local government and non-government sectors on the impacts of climate change, sharing best practice and promoting adaptation action.

The Northern Ireland Draft Programme for Government Outcome 2 supports climate adaptation with the aim: 'We live and work sustainably – protecting the environment.' Over three years (from January 2017 to January 2020) the lack of a working executive within the devolved

administration in Northern Ireland impeded the development of a regional climate change act which would certainly have strengthened the case for adaptation planning at a local authority level. However, with the restoration of the NI Executive in January 2020, the New Decade, New Approach (NDNA) deal committed that the Executive will tackle climate change head-on with a strategy to address its immediate and longer-term impacts. The NI Climate Change Bill is undergoing its passage through the Northern Ireland Assembly at time of writing.

Until recently, local authorities in Northern Ireland were not involved in climate change adaptation research or planning. However, Climate Northern Ireland[2] undertook a consultation exercise with local authorities in late 2017. Participating local authorities provided information on adaptation work that they have completed, is underway, or can be scheduled before 2024, which could help address the UK Climate Change Risk Assessment recommendations for addressing the risks facing Northern Ireland. This exercise highlighted that a number of initiatives were taking place across Northern Ireland which could be categorised as adaptation (e.g. community resilience planning, food growing projects enhancing food security, and coastal and biodiversity management projects). However, it was evident that none of the participating local authorities were taking a strategic or planned approach to climate change adaptation with relevant activities more often linked to economic, social or environmental factors, other than climate change (Climate Northern Ireland, 2018). In 2019, Climate Northern Ireland established the Northern Ireland Local Government Climate Action Network (LGCAN) to support local councils in adaptation planning. DCSDC are involved in LGCAN by sharing learning and best practice of adaptation planning.

In Northern Ireland, central government recognises the role of local authorities in climate resilience:

> Councils lead local action to protect communities and businesses from risks posed by severe weather events and are responsible for protecting local areas from development which could increase vulnerability to flooding. (DAERA, 2019)

[2] Climate Northern Ireland (NI) is a cross-sectoral adaptation network which supported DCSDC through the adaptation planning process.

However, it is recognised that certain responsibilities lie outside of council control such as rivers, water management, road and rail infrastructure, education, public housing and social services. It is therefore critical that all levels of government, businesses, the third level sector and communities work together to adapt to the impacts of climate change.

Local Policy and Plans

Within DCSDC, the strategic direction for climate adaptation is provided by a number of key policies and plans as outlined in Table 7.1. Four strategies and plans are identified, along with a number of relevant statements, as having particular relevance to climate change adaptation, disaster risk reduction and sustainable development. These potential integration opportunities are further explored in this chapter under the section heading of 'Further Mainstreaming Outcomes and Opportunities'.

Adaptation Plan Development

The catalyst for mainstreaming climate adaptation within DCSDC was the adaptation planning process developed and undertaken as part of the INTERREG CLIMATE project. Working with partners from Climate Northern Ireland and University College Cork/Climate Ireland, DCSDC followed the best practice five-step adaptation planning model/process outlined below. The completion of each step resulted in increased adaptation capacity through enhanced awareness, knowledge, data gathering and cross departmental collaboration, leading to a greater integration of climate change adaptation across all areas of planning and development in the organisation (Fig. 7.2).

Tonmoy et al. (2019) outline a three-tier climate risk assessment process for climate change adaptation at a local scale. This tiered assessment process allows organisations to systematically apply a risk management process to identify and manage their climate change risks. The levels from one to three are dependent on resources and time available. Therefore, a first-pass assessment demands less time, data and resources

Table 7.1 Derry City and Strabane District Council strategic context

DCSDC strategy/policy	Relevant statement(s)
Strategic Growth Plan 2017–2032	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 Strategic Growth Plan, importance is given to climate change and supporting the 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.'
Local Development Plan 2032 Draft Plan Strategy	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 state that development should demonstrate how they 'mitigate against the effects of climate change, adapt to its impacts, and ensure resilience.'

(*continued*)

Table 7.1 (continued)

DCSDC strategy/policy	Relevant statement(s)
Green Infrastructure Plan 2019–2032	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
A Circular Economy/ Zero Waste Strategy for Derry City and Strabane District Council 2017	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, notably the constraints of climate change

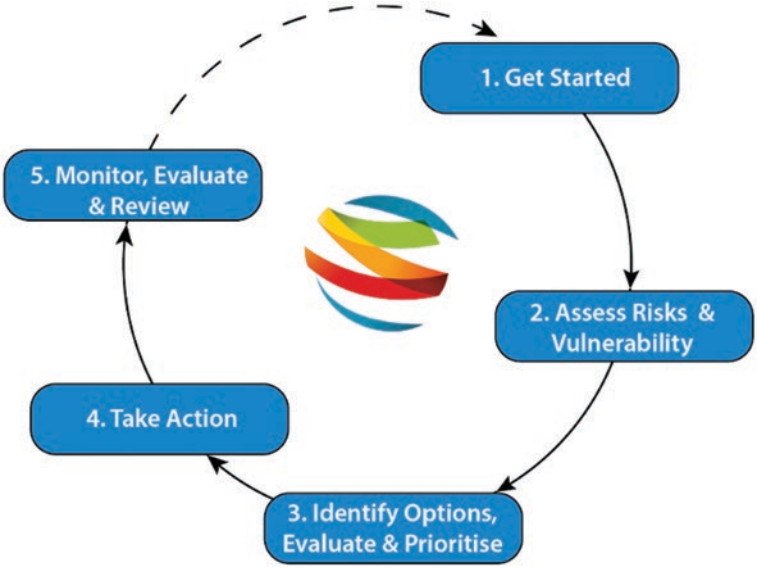


Fig. 7.2 CLIMATE project best practice adaptation planning model

than a more sophisticated and granular third-pass assessment. A first-pass assessment is a rapid and qualitative process carried out to gain an understanding of the climate change risks faced. A second-pass assessment builds on the first-pass assessment by including more intensive stakeholder engagement and the creation of a risk register to support the identification of adaptation options and opportunities. A third-pass assessment focuses on the further investigation of prioritised, shortlisted and site-specific risks. This process is resource-intensive, and is often employed in the case of costly and long-lived engineering projects that require detailed quantitative information on exposure and vulnerability to climate change-related risks, before implementing design and investment decisions.

The assessment carried out by DCSDC can be considered a hybrid of the first-pass and second-pass assessment. An overview of the five plan development steps and the main actions carried out within each is presented in Fig. 7.2. The actions carried out within each step were specifically tailored to work within the local government landscape of DCSDC, reflecting the prevailing levels of adaptive capacity (Table 7.2). The five key factors: (1) strong policy frameworks; (2) sustained and persistent leadership; (3) coordination mechanisms across sectors and between government departments; (4) information and tools; and (5) supportive financial processes, to implement mainstreaming effectively, were carefully considered throughout the process. Sustained and persistent leadership is evidenced from the outset with the creation of the position of Climate Programme Manager and the formation of the Climate Adaptation Working Group (as detailed under Step One). The importance of supportive financial processes is also captured under Step One in terms of liaising with DCSDC's finance department to explore potential budgetary requirements to support adaptation measures. Coordination mechanisms across sectors and between government departments are evident in Step One with the process of stakeholder mapping, the formation of a Climate Adaptation Working Group and the inclusion of climate change within the corporate risk register. This is also evident in Step Two where climate impact and risks across council are scored using the DCSDC risk matrix (DCSDC, 2020b). All actions documented within steps Three and Four also support this mainstreaming factor. The creation of strong policy

Table 7.2 Overview of adaptation plan development steps

Step	Summary of main actions
One	Climate Programme Manager undertook a situational analysis to assess adaptive capacity of the organisation Stakeholder mapping Formation of Climate Adaptation Working Group Climate change added to the corporate risk register Liaised with finance department to explore potential budgetary requirements to support adaptation measures
Two	Climate impact profile for the City and District developed to chart the effect of severe weather events Climate impact risks scored using the DCSDC risk matrix, and the UK Climate Change Risk Assessment urgency scoring was applied to identify priorities Future socio-economic profile of the City and District analysed Creation of a climate adaptation video highlighting both the human and service impacts of severe weather events locally, supporting the case for adaptation planning to improve resilience
Three	One-to-one meetings and working group workshops established the strategic direction of the plan and reached agreement on priorities Cross-cutting and functional themes created (See Fig. 7.3) Agreement to deliver CCA plan vision with a supporting action plan to be delivered within the initial five-year period by Council
Four	Finalisation of the climate adaptation plan including consultation across all directorates in DCSDC with final approval at committee by elected representatives Associated action and implementation plan circulated for final approval with commitments made across all relevant service areas
Five	Monitoring and review programme established including a quarterly progress review and annual report produced by the Climate Programme Manager The annual review process will include the following: Targets /Key Performance Indicators (KPIs) met Adaptive Capacity Assessment Policy and Procedural Review Reports to be submitted to the Environment and Regeneration Committee and Full Council meetings where appropriate, as well as the All Party Climate Emergency Working Group The Climate Programme Manager will report progress within the Civil Society and Local Government Adapts programme of the Northern Ireland Climate Change Adaptation Programme, providing the link between government and local authority level adaptation planning

frameworks is evident in Step Five where the governance and reporting mechanisms are set out. Communication, through the provision of information and tools, is captured under Step Two with the development of a climate impact profile for Derry City and District and the creation of a climate adaptation video highlighting both the human and service impacts of severe weather events in the region.

Further Mainstreaming Outcomes and Opportunities

DCSDC have committed to mainstream climate adaptation into policies and plans, and prepare Council staff for the effects of climate change through the cross-cutting themes of delivery and collaboration, communication and awareness, and knowledge and information (Fig. 7.3). This recognises that integrating and mainstreaming climate adaptation into policies is an effective mechanism to ensure resilience and preparedness. For example, the inclusion of climate adaptation considerations through a 'screening' of Council's existing and emerging policies will ensure that the future direction and procedures of services are resilient to climate

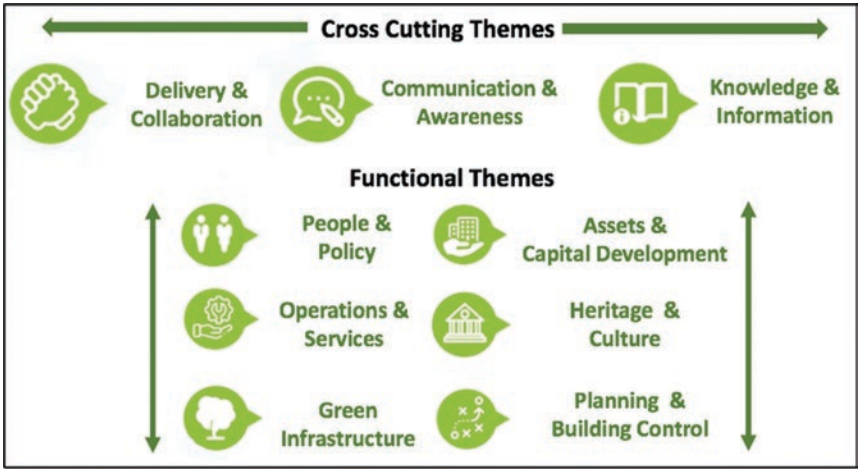


Fig. 7.3 Thematic priorities of the DCSDC climate adaptation plan (after DCSDC, 2020a)

impacts. This has extended to the inclusion of climate change considerations in all reports presented to the committee.

Assets and Capital Development

DCSDC's Assets & Capital Development Team have committed to prepare for and address the impacts of climate change, ensuring protection of Council assets, property and infrastructure. DCSDC's assets and estate including property, fleet and IT systems are at risk of damage from severe weather events and rising sea levels, resulting in service disruption and increased costs for repair and insurance premiums. It is recognised that all new developments, infrastructure projects and building refurbishments should be designed and built with changes in future weather patterns in mind. To this end, a Climate Change Risk & Opportunities Assessment has been undertaken for two major regeneration projects as part of the City Deal (DCSDC, 2021), with the intention that this will set the standards necessary for all future Council development projects.

Operations and Services

DCSDC recognises that service delivery is at risk from disruptions to energy supply, transport networks, staff access to places of work and impacts on productivity, and have committed to ensuring that operations, services and digital infrastructure are prepared and resilient to the effects of climate change, including waste management, recreation and leisure facilities, and ongoing daily operations across all services. In addition, DCSDC will ensure it is prepared for severe weather events and climate shocks through its emergency planning and risk reduction functions.

Green Infrastructure

Green infrastructure is acknowledged by DCSDC to have a critical role in the environmental, economic and social success of the region, and has developed the Green Infrastructure Plan 2019–2032 as a framework to

value and maximise the benefits for all. Climate change is a strategic theme within the GI Plan with opportunities identified across the city and district to deliver adaptation. It is widely accepted that nature-based solutions delivered through green infrastructure offer 'no regret' responses to climate change, delivering multiple benefits to society and the environment. DCSDC has committed to ensuring the protection and enhancement of green infrastructure against climate change impacts, while maximising the benefits and opportunities GI provides for climate adaptation.

Heritage and Culture

DCSDC has committed to embedding climate adaptation within the heritage and culture functions of the organisation through further identifying and addressing the impacts, risks and opportunities of climate change to local heritage assets, collections, cultural programmes, festivals and events. A detailed heritage and museum risk and adaptation planning report was completed in 2019 to further embed adaptation within the relevant service areas.

Planning and Building Control

Population, socio-economic profiles, settlements and land use influence the impacts of climate change. As a result, DCSDC has a critical role in mitigating and preventing the effects of climate change as well as adapting to them, particularly through its planning function. Effective development planning and design has a central role to play in future-proofing the city and district in order to address climate change and improve adaptive capacity and resilience. DCSDC recognises that, if used positively, planning has a significant contribution to make by enabling high standards of development and raising awareness and aspirations, rather than simply implementing regulations. To this end, the adaptation plan includes the thematic priority of ensuring that all new built developments and land uses across the district will be designed and built to adapt

to climate change. DCSDC will seek to ensure that all new built developments and land uses across the district will deliver climate adaptation through the new Local Development Plan, by applying current planning policies and building controls in combination with the Council's own new climate change planning policies. When deciding on planning applications, DCSDC will continue to apply existing regional planning policies to ensure that all public and private developers are undertaking sustainable forms of development (e.g. by ensuring that new buildings or land uses are not located in flood plains where they could flood or cause flooding elsewhere). Similarly, DCSDC's Building Control function will apply the latest building standards for all developments, consistent with best practice in climate change adaptation. DCSDC is preparing the Local Development Plan 2032 which, when adopted, will govern all planning applications and guide development across the District in a sustainable manner that will embed climate change considerations.

People and Policy

The City & District Local Community Growth Plans provide frameworks for development of community initiatives, projects and regeneration. Within the Local Community Growth Plans climate change is noted as one of the main challenges facing the region, with key actions included to ensure the resilience of local communities.

Climate adaptation has also been embedded in DCSDC's involvement in regional working groups, in particular those pertaining to coastal management, sustainability, emergency planning and resilience, water management and flooding. DCSDC recently passed a motion to establish an all-party working group to address the issue of climate change, the initial focus being the development of a climate pledge outlining Council's commitment to mitigation and adaptation. A multi-agency team has been established to facilitate coordinated climate action across the North West. Lead by DCSDC, the team held its inaugural meeting in November 2019 with further meetings arranged throughout 2020.

Reflections and Lessons Learned

The main challenges facing DCSDC relate to securing support and buy-in for adaptation planning. Despite increased media coverage of climate change and significant flood events in the city and district, there remains a gap in knowledge and skills. A significant amount of engagement is required to increase understanding of the relevance of climate change and adaptation planning to each service area. This can then lead to challenges in terms of time and resources. The ability to communicate risks and solutions has been the most important tool when undertaking adaptation planning, particularly when discussing the process and securing input or support from colleagues. Over thirty one-to-one meetings were held alongside a series of workshops to engage relevant teams in the development of the adaptation plan. The teams included those from risk and emergency planning, finance, digital services, planning, green infrastructure, capital development, economic development, health and safety, property and fleet management, energy management, human resources, heritage and museums, festivals and events, and marketing and public relations. In addition, it is important to note the resource challenges to mainstreaming climate adaptation within local authorities. The development of the DCSDC adaptation plan was made possible with EU funding support and provision of staff to lead the process. In the absence of such funding support, it is likely that adaptation planning will become an additional duty for existing staff, thereby reducing the capacity for research, coordination and engagement.

The adaptation planning process has enabled greater understanding of the specific risks to DCSDC and created a dedicated working group on climate action, as well as acted as a catalyst for further climate action, culminating in approval to take forward the Climate Change Adaptation Plan which aims to 'Deliver climate action on a cross sectoral multi agency basis to achieve greater adaptation and resilience to the effects of climate change while leading by example to reduce emissions and mitigate against further global warming.'

Acknowledgements The authors would like to acknowledge funding from the Interreg Northern Periphery and Arctic Programme CLIMATE project, as well as project partners in Climate Northern Ireland, Sweden, Iceland, the Faroe Islands and Finland. Project website details can be found here: https://climate.interreg-npa.eu/

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