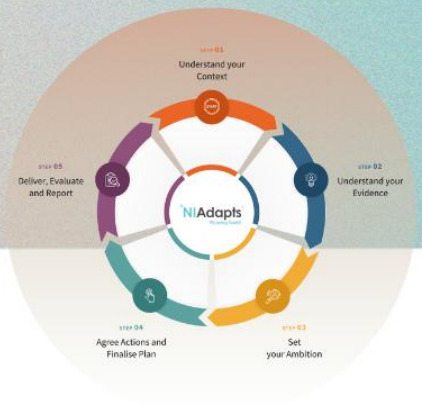

How to develop a Climate Risk Assessment

For the purposes of introducing Climate Risk Assessment, NI Adapts will help you understand and develop a basic climate risk assessment. The intention is that your organisation makes this process more refined and detailed over time.

Activities:

Develop an organisational climate risk assessment as part of Step 2 of NI Adapts. The information gathered by completing the following actions (Part A-C) will form the basis of a climate change risk register for your organisation. Each part is briefly explained on this page, with further guidance provided in the following sections of this document.

Past Impacts

1. **Part A** - Create a list of previous Climate Hazards which affected your organisation, known as a Local Climate Impacts Profile (LCLIP)
    - **Download link:** LCLIP Template
2. **Part B** – Using Exercise 1 in the Risk Assessment Worksheet, consider the chain of impacts from different types of severe weather that may affect your organisation and its operations, and what procedures are already in place when an event occurs.
    - **Download link:** Risk Assessment Worksheet

Future Impacts

3. **Part C –** Using Exercise 2 from the Risk Assessment Worksheet (linked in Step 2 above), think ahead to how these impacts might change by undertaking scenario planning to better understand future impacts.

Part A – Create a Local Climate Impacts Profile (LCLIP)

What is the purpose of preparing an LCLIP?

The purpose of preparing a Local Climate Impacts Profile (LCLIP) is to understand existing vulnerability to weather events.

BEFORE YOU BEGIN
Determine the required outputs to meet or goals to set:

- priority geographical areas (e.g. coastal regions, areas of social deprivation)
- priority sectors or departments in your organisation
- the data currently available

Part A; Action 1 - Research

The main component of an LCLIP is a spreadsheet designed to capture information on weather events that have had an impact on your business or organisation. Download the LCLIP template spreadsheet using the link on page 1.

Consider instances when the following events have impacted your organisation or its services in the last 10 years:

- Heavy Rainfall
- Snow
- Storms
- Flooding
- Extreme heat/heatwaves/drought
- Extreme cold/ice/frost

You can use the Climate NI Extreme Weather Timeline as a starting point for your research. It would also be useful to look for and include record breaking weather events over the last 25 years.

Part A; Action 2 – Short Interviews

Using the completed LCLIP spreadsheet, identify some relevant staff for interviews. The interview should aim to:

- **Verify and Expand Information:** Confirm details from Step 1 and gather more qualitative data to determine how well the organisation is prepared for weather events.
- **Identify Similar Events:** Discover other similar incidents.
- **Collect Records/Documents:** Collate any additional records not initially available.
- **Survey Attitudes:** Understand corporate attitudes towards weather, climate change, and/or adaptation.

Key points to capture in the interviews:

- staff time required
- costs
- reputational impacts
- the overall significance of this type of event for their work
- similar kinds of events or 'near misses'
- thoughts on being better prepared

Part A, Action 3 - Report

Bring together your findings in the LCLIP spreadsheet. Ensure you include:

- a list of weather events
- an understanding of what those events meant for your organisation or business

Useful Links

- Climate Northern Ireland Extreme Weather Timeline - https://climatenorthernireland.org.uk/the-climate-challenge/extreme-weather-events-in-northern-ireland/
- Case Study- Aberdeen City LCLIP (best to research other case studies for best practice examples) - https://www.aberdeencity.gov.uk/sites/default/files/Aberdeen_City_LCLIP.pdf
- Met Office Weather and Climate News - https://www.metoffice.gov.uk/about-us/press-office/news/weather-and-climate
- Met Office Past Weather Events - https://weather.metoffice.gov.uk/learn-about/past-uk-weather-events

Part B – Assessment of Current Risk

Use the Risk Assessment Worksheet (linked on page 1, under 'Part B') to help understand extreme weather impacts for your organisation in greater detail, and to provide a range of initial climate hazards. You have the option to add others if you please.

Part B, Exercise 1 – Current Vulnerability

For each of the Hazards listed in the worksheet table, identify one or two examples from your completed LCLIP and define the impacts in greater detail (see a worked example below):

Exercise 1 – Current Vulnerability						
Hazard	**Examples of Hazard**	**Consequence of Event** (Detail what was affected and how)				**What data is available?**
		Functions and Services	**Physical Assets and Staff**	**Reputation/trust or legal and compliance**	**External Impacts**	
Example: River Flooding/High Precipitation	*Heavy Summer rainfall event*	*Emergency response required. Waste collection badly disrupted for one week, staff unable to get to work affecting key functions*	*Leisure centres and on-site pathways badly damaged, staff unable to get to work, fleet vehicles swept away, hundreds of additional environmental health inspections*	*Contract delayed on construction of new facility. Costs incurred.*	*100s of businesses and homes damaged, oil tanks washed into rivers, emergency shelter required*	*Overtime and business losses were not calculated. Losses of £360,000, and additional insurance payments*

Figure 1 – Worked example of Part B, Exercise 1: Current Vulnerability.

Consider Relevant UK Climate Change Risk Assessment risks

As a final action in Part B, Exercise 1, now that you've thought about your organisation's experience of climate impacts, it will also be useful to briefly consider risks from the most recent UK Government Climate Change Risk Assessment (CCRA).

Look through the Risk descriptions in the National Summary for NI at the different climate risks identified for the region, and use this to support or add to your own risks.

Part B, Exercise 2 – What ongoing work addresses these climate risks?

For the same hazards as in Exercise 1 above, fill in the worksheet table to understand what existing work is already in place (see a worked example below). Do not worry if there is some overlap in policies that are relevant for all hazards:

Exercise 2 - What ongoing work addresses these climate risks?				
Hazard	**Policies and Procedures** (What current policies and procedures are in place within your organisation to address these impacts?)	**External Organisations** (Is management of the risk and impact in full control of your organisation? Describe the collaboration required/already in place.)	**What priority level is this risk?** (Scale of the impact vs importance/sensitivity the affected asset – in terms of required action)	**What data could be gathered to better understand the risk?** (Could be new data be required, or is existing data available which has not yet been used?)
Example: River Flooding/High Precipitation	*Emergency plan, business continuity plan, corporate risk assessment, health and safety…*	*Housing Executive, DfI, DAERA, PHA…*	*High – Significant impact and damaged key assets, homes and businesses…*	*Staff overtime cost, local business losses, number of homes affected, future flood projections, repair costs, disruption, insurance…*

Figure 2 – Worked example of Part B, Exercise 2: Ongoing Work.

Part B, Exercise 3 – Validation

It is important to validate the results of this study with a range of colleagues. This could be achieved through sending to colleagues after undertaking a desk-based study, or there is the option of developing all of Part B through a workshop with colleagues in the room. Choose the option that best suits you.

Part C – Assessment of Future Risk and Scenario Planning

Now that you have considered how you are currently being impacted by climate hazards, it is important to look ahead at how these might change. This will enable you to think not only about how you need to change in the short term, but also what actions and evidence you may need to start gathering to address the larger and more long-term risks.

A 2°C world is the target from the UN Paris Agreement which means global average temperatures are kept within no more than 2°C from pre-industrial levels. However, we are still on course for as much as 3°C or 4°C rises in global average temperature by the end of the century. Each degree of global warming has a significant impact on the global climate system, and subsequently acts as a risk multiplier for our society, environment and economy.

Dealing with uncertainty of future risks requires consideration of a wide range of possible future warming scenarios. Adequate preparation includes preparing for the likely 2°C emissions trajectory of the Paris Agreement, but being aware of the more extreme or precautionary scenarios where average increase in global surface temperatures reach up to 4°C.

Consider Future Risks using a Scenario Analysis

In Part A (Local Climate Impacts Profile) and Part B (Assessment of Current Risk), you have considered what impacts you are currently seeing in your organisation and what areas of operation are being affected. Part C of the Risk Assessment worksheet will now support you through a quick analysis of how these risks will impact the areas in which you live and work in the future.

There are numerous quantitative (i.e. numerical) modelling techniques available that can provide data for a wide range of scenarios, one of which may be the option best suited for your organisation. However, the guidance in this document is designed to support all organisations, particularly those new to climate risk assessment or who may have limited capacity.

As mentioned in Step 1 of the Toolkit, the UK Climate Change Committee 10 Principles for Good Adaptation includes advice for organisations to *prepare* for a 2°C world but *plan* for 4°C. For context, experts now believe that we are likely to pass the 1.5°C threshold mentioned in the Paris Agreement by the early 2030s. Every incremental increase in global warming, manifests in greater atmospheric and climatic changes, leading to greater weather variation and more frequent extreme weather events.

Scenario Planning Tools: Explore Local Future impacts at 2°C and 4°C
These tools were created by the BBC and the Met Office to show projected changes in heat and rainfall at a regional and local level across a variety of global warming scenarios: • BBC – *'What will climate change look like near me?'* - Link • Met Office – Local Authority Climate Explorer - LACS

Part C, Exercise 1

Utilising the Local Authority Climate Service (LACS) tool from the Met Office enables you to generate a climate report containing various future scenarios for each council area in Northern Ireland.

a. Download the LACS Climate Report for the relevant council area. *(If your organisation works across multiple council areas, you will need to download more than one).*
b. Read through the pack.
    i. Take note of the tables on page 5 and 6, and the Sea-level rise section on page 8.
    ii. These tables list a range of different climate indicators, such as *summer precipitation rate* or *Winter Minimum Temperature*. The tables then state how different Global Warming Levels (GWL) scenarios would change each indicator: 2°C and 4°C are the columns we want to use for assessing changes to future risk.

Climate models create a range of possible futures, and for each scenario there is some uncertainty. For each GWL you will see that there is a central projection (the 'median' or middle figure) and then two other figures, on the left and right of that median, showing a lower and higher value. These show the uncertainty range around that central projection, where the figures are possible, but less likely.

c. Use Part C of the Risk Assessment Worksheet**.** For each indicator in the table, insert information based on the tables from page 5 and 6 of the LACS report (sea-level rise features separately on page 8):
    i. Insert the Median (middle) value for the baseline period (1981-2000) into the table
    ii. For the 2°C and 4°C columns, insert the Median (middle) number and the Upper value from the range.

In the final column, make an initial list of which assets and services would be affected. You will then move on to explore this in more detail in the second stage of Part C.

Part C, Exercise 2

Now think in more detail about what impacts you are already seeing in your organisation.
In the first stage of Part C, you developed a list of potential changes in the future climate and started to think about the impacts of those changes.

The final activity is to populate the tables (depicted below) in the Risk Assessment Worksheet. When answering these questions, consider the information listed in Part B and Part C Exercise 1, as well as any examples of impacts gathered from Part A.

The tables on the following page are for illustrative purposes only, make sure that any data entered is on the Risk Assessment worksheet you have been using throughout this exercise.

Future Risks	
Question	**Comment**
1. **How might the following be impacted in your organisation in a 2°C and 4°C world:**	
i. Assets	
ii. Services and operations	
iii. Supply chain, and other transboundary risks	
iv. Finance and insurance.	
2. **Are there any thresholds where you know capacity will be breached? E.g. water levels, temperature thresholds, financial thresholds, service provision/operational delivery thresholds, etc...**	
3. **Are there any known data gaps, and if yes, highlight which are a priority to address and why?**	
4. **How might these changes affect non-physical risks such as reputation, technology, markets, policy & legislation in a way that would impact your organisation and its functions?**	

Future Actions	
Question	**Comment**
1. **How might your governance, finance or procurement procedures need to change between a 2°C and 4°C world?**	
2. **How might your risk management processes need to change between a 2°C and 4°C world? Think about how these risks interact with each other and other events.**	
3. **What metrics and data are you already gathering or planning to gather - which could help inform these decisions? (E.g. weather-related losses, supply disruption).**	
4. **Is there anything beyond this risk assessment for your organisation that needs to be considered to better address or prepare for the current and predicted impacts of climate change? For example, are there currently unknowns regarding vulnerable people/groups who access your assets or services?**	
5. Might there be any opportunities arising from the impacts of a changing climate which your organisation should consider in an action plan?	

Figures 3 and 4 – Second Stage, Part C of NI Adapts Climate Vulnerability Assessment

End of Section

If you have completed Parts A, B and C, then your climate vulnerability assessment is now **complete**. The next task is to use this information to develop a climate risk register for your organisation.

Further Scenario Planning Resources:

1. **The UK Climate Risk Indicators project website:**

This resource allows users to see how extreme temperatures, droughts, river floods, and wildfire will affect risks in their local area and at the national scale. The estimates are available for different time periods up to the end of the century and for different future scenarios.

2. **Carbon Brief summary on the IPCC's Sixth Assessment Report:**

Carbon Brief have summarised the IPCC's sixth assessment report on how climate change impacts the world including information on different warming scenarios.

3. **Information on GIS Data from Local Government Climate Action Network**

Some organisations prefer to develop their own GIS risk analysis system. The first iteration of NI Adapts previously offered this GIS guidance based on previous workshops held in Northern Ireland.