

Kirklees Council

Climate Change Risk and Vulnerability Assessment



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Executive Summary

Kirklees Council declared a climate emergency in January 2019, establishing a district-wide target to be Net Zero and Climate Ready by 2038. Being “Climate Ready” is the focus of this document, which is to identify, report on and guide actions related to the risks and opportunities of a changing climate for Kirklees. A Climate Change Risk and Vulnerability Assessment (CCRVA) has been undertaken by WSP, on behalf of Kirklees Council.

This CCRVA is a key part of the evidence base required to inform the development of a Climate Change Action Plan (CCAP) for Kirklees, which will outline a number of actions that can be taken by Kirklees Council, Key Partners and members of the wider community in order to achieve the 2038 target.

Climate projections for the Kirklees district indicate that the area will experience milder, wetter winters and hotter, drier summers, with more intense storms occurring. Additionally, there will be an increase in levels of humidity, an increase in the risk of wildfires and shifts in the growing seasons.

There are a number of vulnerable population groups within Kirklees which may be more adversely affected by climate change such as the elderly, minority communities, persons with disabilities and chronic health conditions and low-income households.

The Climate Change Risk and Vulnerability Assessment (CCRVA) identified hundreds of potential risks to the Kirklees area from climate change and rated them as low, medium, high and very high based on the likelihood they would occur and their potential impact. The priority risks are summarised within this document relating to, water, waste, culture, tourism and leisure, agriculture and the environment, health and wellbeing, buildings and properties, services and energy and infrastructure.

The changing climate not only poses risks to Kirklees Council, it's residents and the organisations and businesses that call it home, but also opportunities such as enhancing biodiversity and landscaping, improving health and wellbeing and providing business opportunities and cost savings.

Following this CCRVA, a suite of adaptation actions has been produced, which will feed into the CCAP for Kirklees. These actions consist of existing and recommended measures for Kirklees Council to implement in order to manage the key climate risks.

Background

Kirklees Council declared a climate emergency in January 2019, establishing a district-wide target to be Net Zero and Climate Ready by 2038. The climate emergency programme, however, does not solely consider emission reduction, also covering the requirements of adapting to climate change to ensure that the district of Kirklees is resilient to future climatic pressures.

Furthermore, Kirklees Council is a partner in delivering the West Yorkshire Combined Authority’s Climate and Environment Plan 2021-2024, which encompasses the theme of ‘Climate Ready’. This covers adaptation and resilience, alongside identifying the risks and opportunities of a changing climate.’

Kirklees Council is also signed up to the CDP, formally known as the Carbon Disclosure Project, and is a signatory to the Global Covenant of Mayors (GCoM), meaning that Kirklees are to report on their Climate Risk and Vulnerability.



What is the CDP?

The CDP (formerly the Carbon Disclosure Project) is a not-for-profit charity that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts.

CDP supports these organisations and regions in measuring and managing their and opportunities on climate change, water security and deforestation.

Disclosing environmental data through CDP Cities allows for improved engagement to centralising data and tracking progress.



What is the Global Covenant of Mayors (GCoM)?

The Global Covenant of Mayors is the largest international alliance of cities, local governments, and partners committed to combating climate change.

By becoming part of the alliance, cities and local governments are empowered to drive climate action in their communities by working with city/regional networks, national governments, and international institutions.

Kirklees Council has therefore engaged WSP to deliver a Climate Change Risk and Vulnerability Assessment (CCRVA) for the Kirklees area to support their climate emergency programme, the West Yorkshire Combined Authorities Climate and Environment Plan 2021-2024 and reporting in line with the CDP and GCoM.

Scope

The work carried out by WSP on behalf of Kirklees Council included three steps:

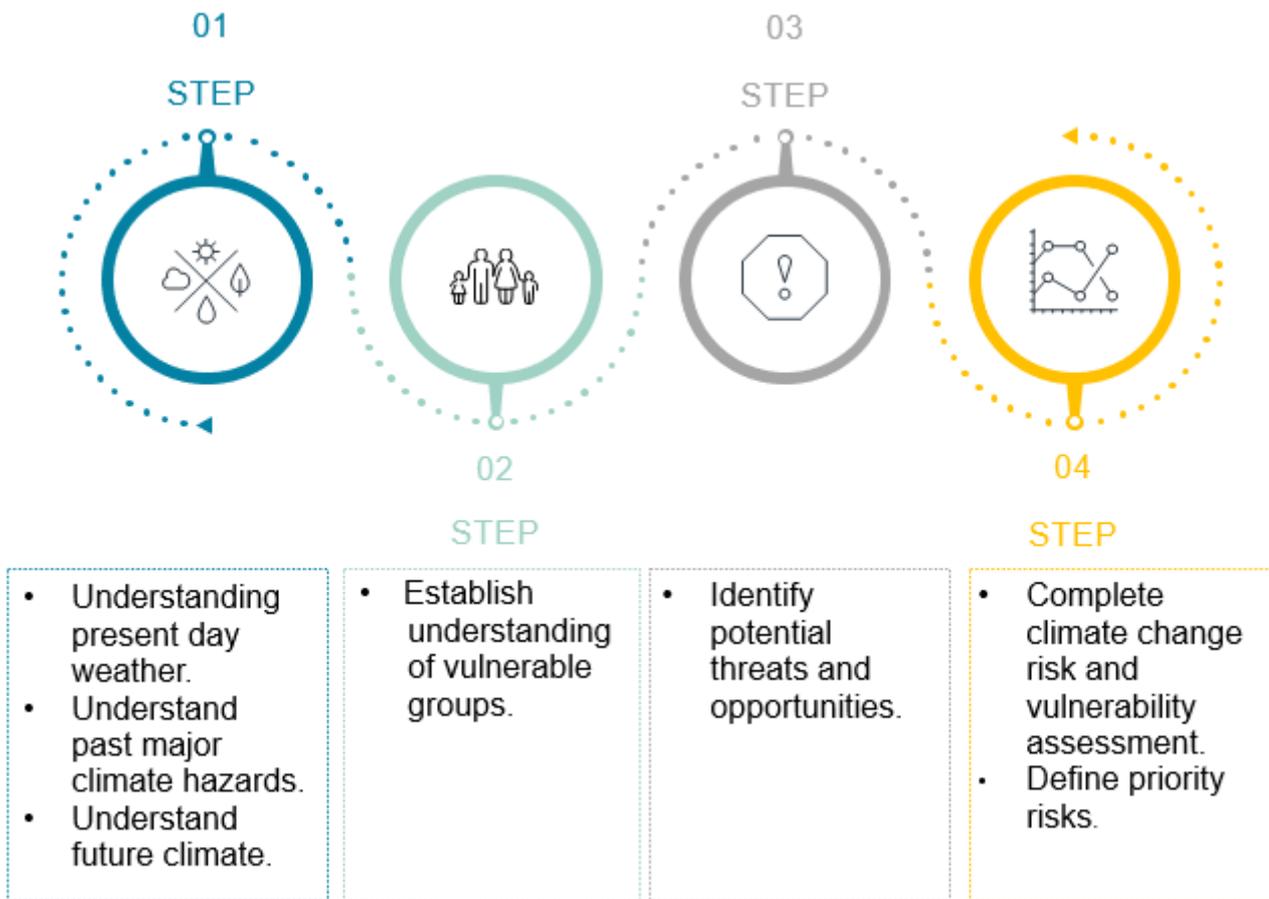


This report focuses on the initial Step 1: Understanding of climate risks and vulnerability. Therefore, the report will include the overall approach used to conduct the CCRVA, an overview of the future climate projections and an outline of the vulnerable population groups. This is presented alongside the key findings of the CCRVA including the priority risks and the opportunities.

- Step 2 and Step 3 are additional pieces of work undertaken by WSP. Step 2: Action planning and implementation will be incorporated within the impending Kirklees Climate Action Plan. Additionally, Step 3: Capacity development will be delivered by WSP to Kirklees Council employees to ensure that the correct interpretation and implementation of the outputs of the CCRVA by Kirklees Council officers.

Approach

This section sets out the approach used to conduct the CCRVA.



The threats and opportunities to the area of Kirklees from climate change were identified through:

- A Gap Analysis of documentation provided by Kirklees Council and associated partners;
- A review of the most recent UK Climate Change Risk Assessment (CCRA3);
- Stakeholder engagement with Kirklees Council staff and partnerships such as the Mid Yorkshire Hospitals NHS Trust, the Canal and River Trust and Moors for the Future; and
- WSP expertise from working with local authorities across the UK.

Risks were rated as low, medium, high and very high. This was assessed based on the likelihood of the climate event occurring (i.e., the regions exposure) and should the climate hazard occur what would the impact or disruption look like (i.e., the impact). It also considered the measures already in place across the council which would help alleviate these impacts (i.e., the adaptive capacity).

Future Climate Projections

WSP has utilised the latest UK Climate projections (UKCP18) and related tools to identify projected changes in climate for the Kirklees region. Projections were identified for the 2030s, 2050s and 2080s, indicating that the Kirklees region will experience:

-  Milder winters, hotter summers, and an increase in the likelihood of heatwaves and hot spells
-  Wetter winters and drier summers with an increase in the frequency and intensity of rainfall events
-  Reduction in snow fall during winter
-  Shift in the growing seasons
-  Increase in humidity
-  Increase in the risk of wildfire
-  Potential for more intense storms

Vulnerable Population Groups

Climate change and extreme weather events threaten our health by affecting the food we eat, the water we drink and the air we breathe, alongside the weather we experience. Therefore, climate change can affect anyone. However, particular members of society are more vulnerable than others. For Kirklees, these include:

- Women and girls;
- Elderly;
- Children and Youth;
- Marginalised/minority communities;
- Persons with disabilities;
- Persons with chronic health conditions;
- Low-income households and unemployed individuals;
- Persons living in sub-standard housing;
- Outdoor workers; and
- Frontline workers.

The way in which these members are more vulnerable to climate change than others include:

Vulnerable Groups



WOMEN AND GIRLS

Vulnerable to climate change based on biophysical characteristics as well as a result of their position in society (often being of lower socioeconomic status in society).



ELDERLY

More likely to be increasingly physically, financially, and emotionally at risk to the impact of climate change, largely due to changes in mobility, physiology and restricted access to resources.



CHILDREN AND YOUTH

Face disproportionate health effects particularly from heat related impacts as they are dependent on adults to help them adapt in their behaviour and clothing, this can have a detrimental impact on mental health and wellbeing.



MARGINALISED/MINORITY COMMUNITIES

Can be disproportionately affected by climate change. This is generally linked to the vulnerabilities associated with people on lower incomes due to historic and systemic inequalities faced by these communities.



PERSONS WITH DISABILITIES

Can experience significant levels of vulnerability to changes in climate as a result of limitations presented across local infrastructure and services.



PERSONS WITH CHRONIC HEALTH CONDITIONS

Existing medical conditions can make individuals more sensitive to climatic changes, increasing the potential for health impacts and worsening symptoms.



LOW-INCOME HOUSEHOLDS AND UNEMPLOYED INDIVIDUALS

Those on low income are less able to deal with climate events as they lack the economic or financial capacity to invest in measures to make their home more resilient or to obtain e.g., flood insurance.



OUTDOOR WORKERS

Vulnerable to extreme heat and weather events, impacting their occupational health and safety as well as influencing their line of work.



PERSONS LIVING IN SUB-STANDARD HOUSING

Tenants in the social and private rented sector are likely to have a lower ability to adapt to climate change and extreme weather events compared to homeowners. As they rely on their landlord to ensure that they live in a building which is appropriately insured and retrofitted with appropriate equipment (e.g., air conditioning/heating).



FRONTLINE WORKERS

Health, education and emergency service workers become increasingly vulnerable as climate change exacerbates conditions as they have increased exposure to people suffering from climate induced health problems (e.g., vector-borne diseases), as well as an increase in strain on services due to demand impacting the physical and mental health of frontline workers.

Key Climate Risks to the Area of Kirklees

As part of the CCRVA process, 392 risks were identified across 8 themes, being: water, waste, culture, tourism and leisure, agriculture and the environment, health and wellbeing, buildings and properties, services and energy and infrastructure

Presented below is a summary of the key findings of priority risks, per theme, identified during the CCRVA process.



- Water supply interruptions/restrictions imposed by suppliers.
- Increase in daily peak demand.
- Waste seepage into water supply (e.g., leaching from closed landfill).
- Poor water quality (e.g., increased risk of cryptosporidium).



- Increase in wet waste.
- Increase in weight of waste.
- Reduction in the efficiency of energy plants (cooling steam to generate electricity).
- Bin collections disrupted.



- Flooding of leisure services and provisions.
- Overheating of playgrounds and outdoor sports facilities with no shade.
- Closure of businesses (e.g., damaged buildings, not being retrofitted with cooling systems / appropriate outdoor seating).



- Damage to service buildings and assets - such as schools, prisons, care homes, children's homes & centres etc., commercial, private and council properties.
- Increase in demand for and pressure on health and social care services (e.g., through increase in hospital admissions).
- Damage to bespoke/specialist equipment.
- Increase in response time / wait time for services reaching those in need.
- Disruption to delivery services (e.g., due to road closures).



- Risk to terrestrial species and habitats.
- Increase in pests, pathogens and invasive species.
- Damage to Sites of Special Scientific Interests (SSSI).
- Damage to soils (e.g., due to periods of drought).
- Drying out of blanket bog.
- Bare peat from past industrial pollution at risk of erosion/being washed away.
- Limitations in the window for peatland restoration work (e.g., due to extreme weather events).



- Increased incidences of heat exhaustion, dehydration and other heat related incidents.
- Increased anxiety due to army presence during evacuation or extreme weather events.
- Increased anxiety in children and young people due to relatives being out in hazardous weather conditions (e.g., flood wardens, firefighters).
- Increase in vector borne diseases.
- Further risks to homeless communities without safe shelter available.
- Unsafe working conditions for site, outdoor workers and frontline workers



- Damage to energy assets (e.g., wind turbines, energy plant structures, reservoirs).
- Risk of gas supply infrastructure failure.
- Damage to IT infrastructure (e.g., overhead lines impacted by high temperatures, flooding of substations).
- Loss of external power supply.
- Damage to transport infrastructure (e.g., road melt, damage to retaining walls supporting highways, damage to street lighting and traffic signals).
- Increase in local accidents on motorways and major trunk roads.



- Overheating of buildings.
- Increased requirement for retrofitting properties with cooling systems.
- Risk to household energy demands from increased cooling/heating requirements.
- Increase in risk of condensation, damp, mould growth, mildew and staining of buildings.
- Changes in ground water levels.
- Increase in risk of subsidence.

OPPORTUNITIES

As part of the risk assessment, various opportunities for the Kirklees region were identified which may come about because of future climate changes. These opportunities include:

NATURAL ENVIRONMENT, BIODIVERSITY AND LANDSCAPING



New/alternative species becoming more suitable, resulting in opportunities for agriculture and forestry productivity.



Opportunities for natural carbon stores and sequestration which can reduce the amount of carbon in the atmosphere.



Opportunities for landscape character, with new/alternative species becoming suitable.

HEALTH AND WELLBEING



Increase in outdoor leisure pursuits, resulting in a positive impact on social health and well-being.



Potential for less cold weather-related illnesses.



Potential to lesson symptoms of conditions like arthritis (hotter summers, warmer winters).

BUSINESS AND COST SAVING



Increase in tourism, leisure pursuits and extension of the tourism season can result in new business opportunities.



Improved solar PV gains and increase in demand for renewable energy, therefore creating business opportunities and labour skills in retrofitting these systems.



Cost savings and reduced energy usage due to reduction in energy for heating in households.

What's Next

Following this CCRVA, an integrated Climate Change Action Plan (i.e., covering both climate risk and carbon reduction measures) will be published. The development of Action Plan is being informed by the outcomes of this CCRVA and associated list of adaptation actions, developed by WSP in collaboration with Kirklees Council.

The actions developed as part of this CCRVA, set out list of existing and recommended measures for the Council, Key Partners, and Community stakeholders to implement to manage the high and very high climate risks in the CCRVA.

A more detailed description of the method adopted to develop this CCRVA, alongside a full list of climate change risks and opportunities identified, can be provided upon request. Please contact ClimateChange@kirklees.gov.uk.



References

Kirklees Climate Risk and Vulnerability Assessment Stakeholder Sessions:

- Health and Wellbeing (23rd May 1400 to 15:00);
- Infrastructure (24th May 10:00 to 11:00);
- Culture, Leisure and Tourism (25th May 10:30 to 11:30); and
- Housing and Buildings (25th May 14:00 to 15:00).

CDP Disclosure Insight Action [CDP website](#)

Global Covenant of Mayors for Climate and Energy [Global Covenant of Mayors for Climate and Energy website](#)

HM Government (2022) UK Climate Change Risk Assessment 2022 Available at: [UK Climate Change Risk Assessment 2022](#).

Met Office (2019) UK Climate Projections 2018 (UKCP18) Available at: [Met Office UK Climate Projections \(UKCP\)](#)

Images used throughout this document are Adobe stock images

ABBREVIATIONS

CCAP: Climate Change Action Plan

CCRVA: Climate Change Risk and Vulnerability Assessment.

CCRA3: 3rd UK Climate Change Risk Assessment (2022).

GCOM: Global Covenant of Mayors.

UK: United Kingdom.

UKCP18: UK Climate Projections 2018.

DEFINITIONS

ADAPTATION

Adaptation refers to adjustments in ecological, social, or economic systems in response to actual or expected climate hazards and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change. In simple terms, countries and communities need to develop adaptation solutions and implement action to respond to the impacts of climate change that are already happening, as well as prepare for future impacts.

ADAPTIVE CAPACITY

Adaptive capacity is the ability of a system, institution or persons to adjust its characteristics or behaviour, in order to expand its ability to cope under climate hazards. In practical terms, adaptive capacity is the ability to design and implement effective adaptation strategies, or to react to evolving hazards and stresses to reduce the likelihood of the occurrence and/or the magnitude of harmful outcomes resulting from climate-related hazards.

CLIMATE

Climate refers to the weather of a specific region, averaged over a long period of time (ranging from months to many years).

CLIMATE CHANGE

Climate change refers to long-term shifts in temperatures and weather patterns. These shifts may be natural, such as through variations in the solar cycle. But since the 1800s, human activities have been the main driver of climate change, primarily due to burning fossil fuels like coal, oil and gas.

CLIMATE CHANGE RISK AND VULNERABILITY ASSESSMENT

A Climate Change Risk and Vulnerability Assessment (CCRVA) identifies the climate risks and vulnerabilities of a specified area, with the intention to develop appropriate adaptation measures and improve the adaptive capacity of residents and/or stakeholders.

Climate risk itself is measured through three components. These are exposure (likelihood), sensitivity (magnitude of impact), and adaptive capacity.

THE GLOBAL COVENANT OF MAYORS

The Global Covenant of Mayors (GCoM) is the largest global alliance for city climate leadership, built upon the commitment of over 11,500 cities and local governments. GCoM serves cities and local governments by mobilizing and supporting ambitious, measurable, and planned climate and energy action in their communities.

HAZARD

Hazard refers to the potential occurrence of climate-related physical events or trends that may cause damage and loss. This includes extreme precipitation events, extreme temperature events, mean precipitation changes and so forth.

RESILIENCE

Climate resilience is the ability to prepare for, recover from and adapt to climate hazards.

RISK

The potential for consequences where something of value is at stake or where the outcome is uncertain.

UKCP18

UK Climate Projections 2018 delivers a major upgrade to the range of UK climate projection tools designed to help decision-makers assess their risk exposure to climate.

VULNERABILITY

Social vulnerability is defined as a matter of how external events convert to losses in well-being. A variety of personal, environmental, and social factors underpin the social vulnerability of people and places.

- Person factors: sensitivities associated with age and health;
- Environmental factors: the physical attributes of the neighbourhood, including green and blue spaces, characteristics of housings equating to how exposed the neighbourhood is; and
- Social factors: impacting the ability to prepare, respond and recover relating to income inequalities, social networks, social isolation and social characteristics of neighbourhoods.

WEATHER

Weather refers to short term atmospheric conditions (ranging from days to months).

