Climate Adaptation and Resilience: are we climate ready?

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Adaptation and Resilience

Aim to adapt our buildings and systems to prepare for the effects of climate change.

What are resilience, adaptation & mitigation?

Mitigation (Decarbonisation)

"A human intervention to reduce emissions or enhance the sinks of greenhouse gases."

Intergovernmental Panel on Climate Change (IPCC), Glossary

https://www.ipcc.ch/sr15/chapter/glossary

Resilience

"The capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation."

Intergovernmental Panel on Climate Change (IPCC), 2014

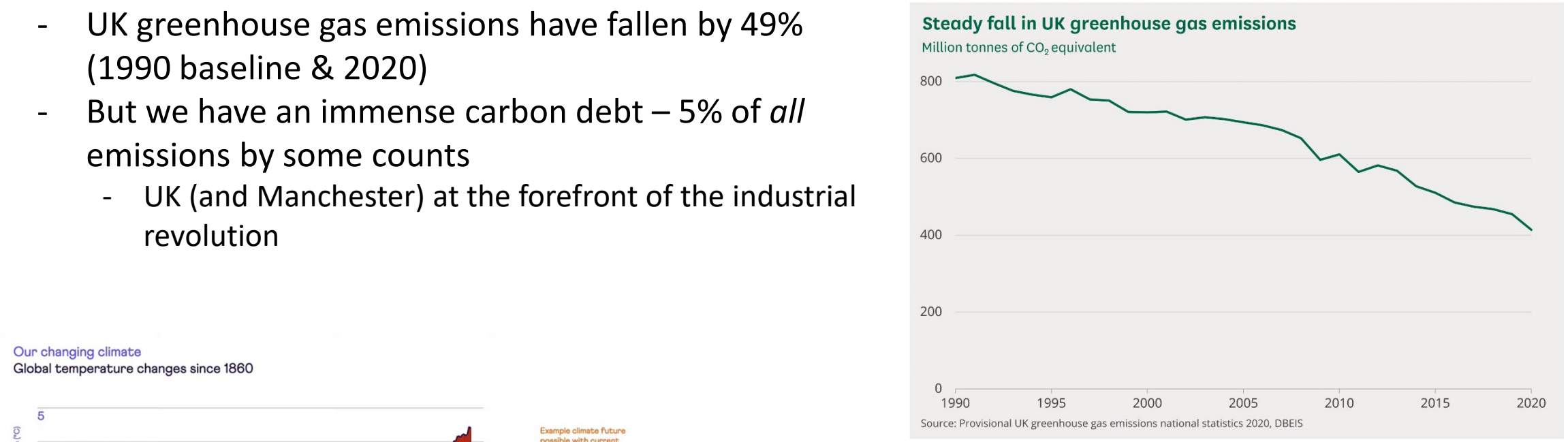
Adaptation

"Adaptation to climate change refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli 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."

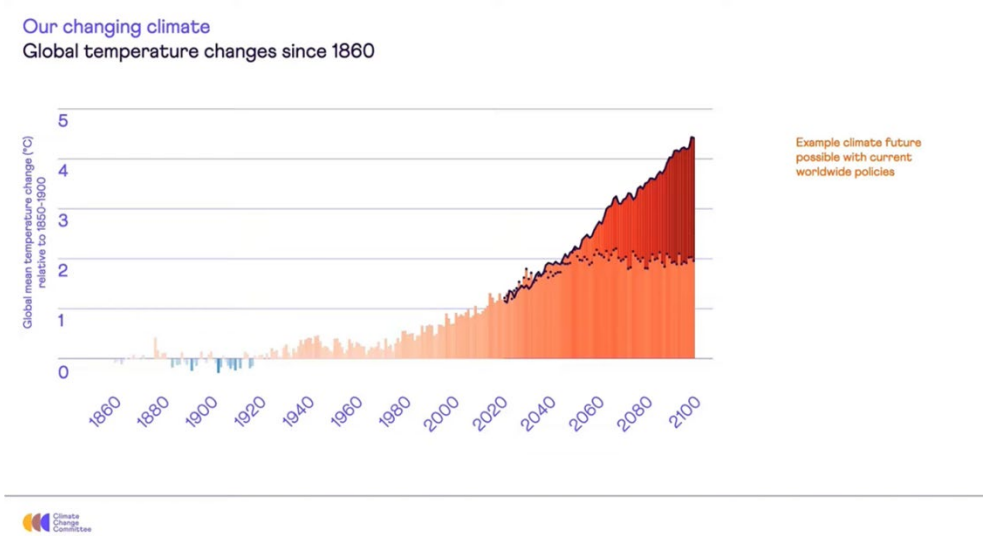
United Nations Framework Convention on Climate Change (UNFCCC)

Our changing climate

- UK greenhouse gas emissions have fallen by 49% (1990 baseline & 2020)
- But we have an immense carbon debt – 5% of *all* emissions by some counts
  - UK (and Manchester) at the forefront of the industrial revolution



https://commonslibrary.parliament.uk/uk-and-global-emissions-and-temperature-trends/

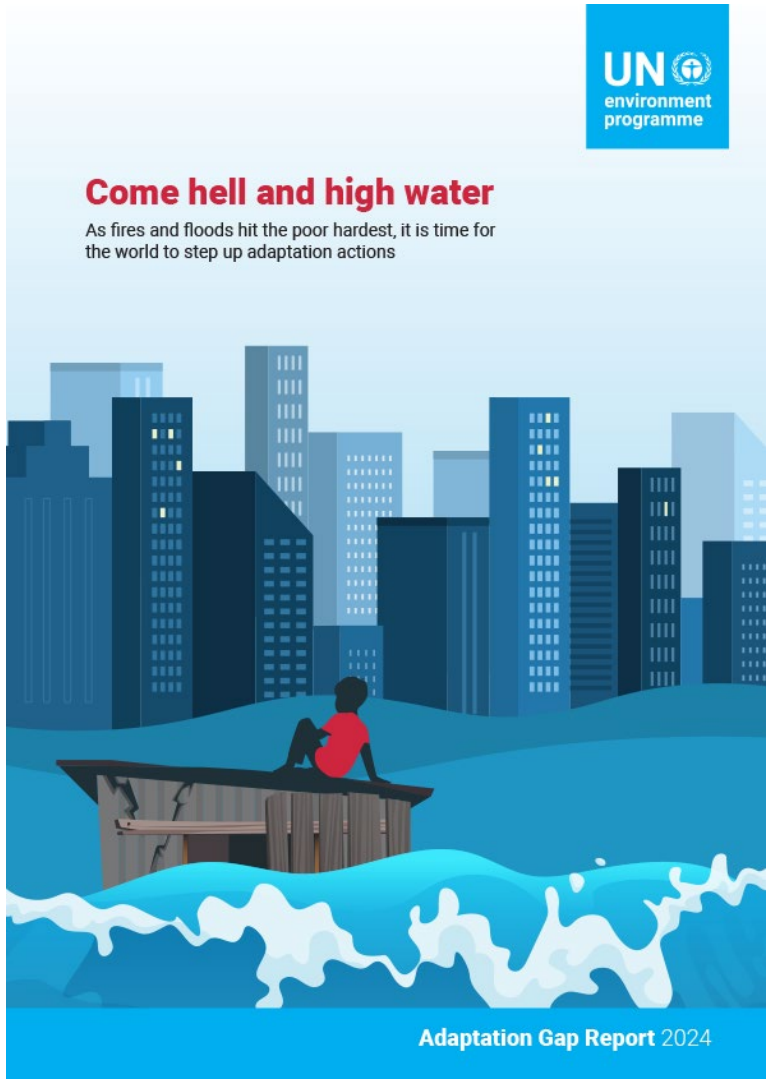


Committee on Climate Change – June 2021

The further we (collectively) fall short on mitigation, the greater the climate risk……and the greater the scale of the challenge for climate adaptation

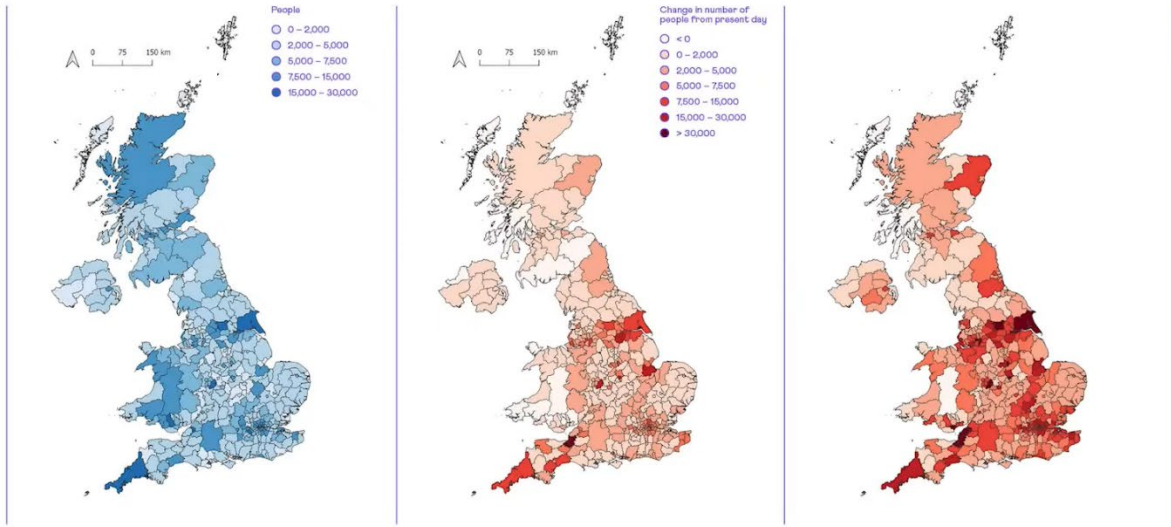
Are we doing enough?

- **Adaptation gap** – between what we need to do and what we're doing
  - Risks & impacts have worsened in the last ten years – we know more about these, but we're doing little to address them
- Growing probability of seeing *unprecedented* impacts
- Without action on adaptation, we can't meet other Governmental/ societal goals
  - Climate change now also having an impact on mitigation
  - Act now to avoid lock in / path dependency



Our changing climate

Change in number of people at flood risk from present day



Present day – 2021

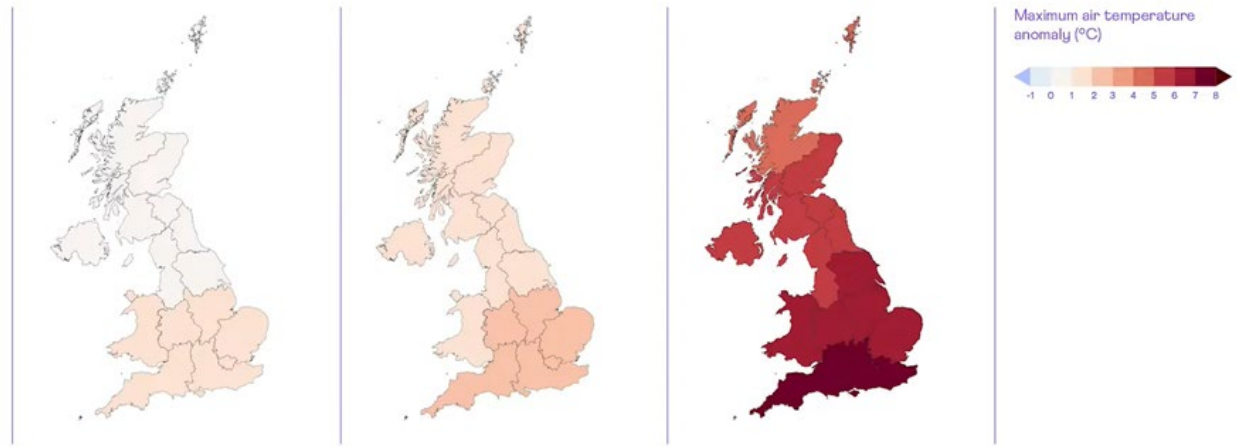
2050s on a pathway to 2°C global warming by the end of the century

2080s on a pathway to 4°C global warming by the end of the century

Climate Change Committee

Our changing climate

Change in maximum summer air temperature from 1981-2000 baseline



Present day – 2021

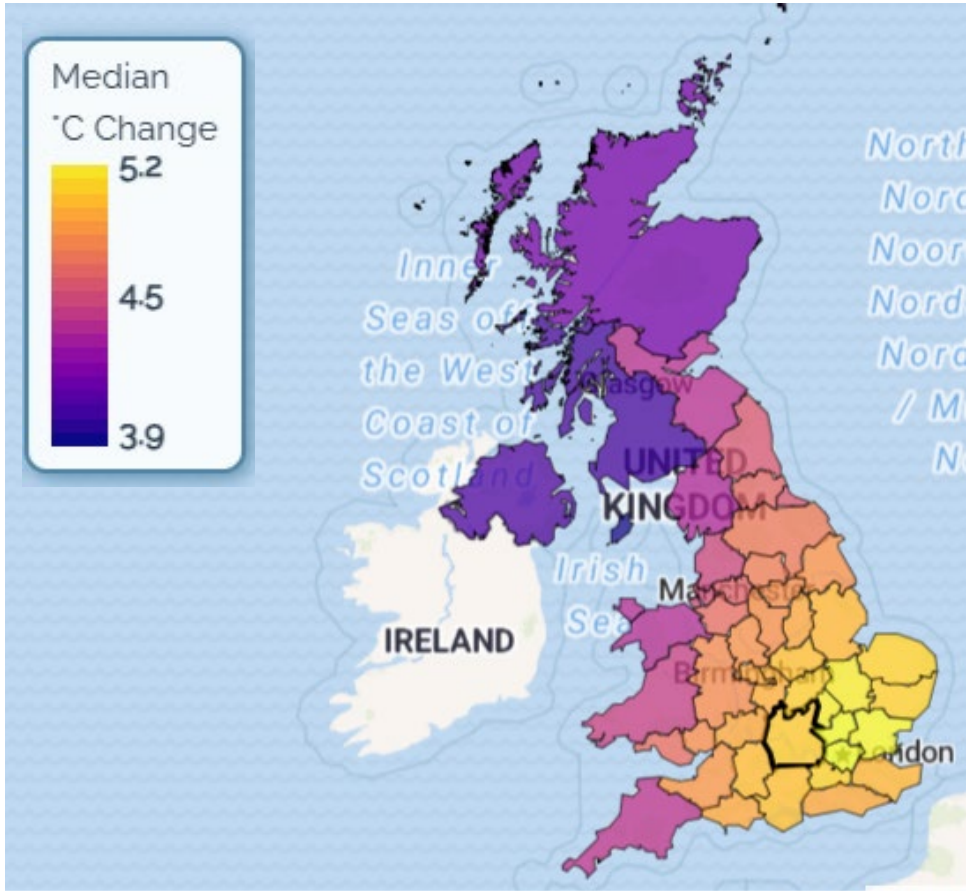
2050s on a pathway to 2°C global warming by the end of the century

2080s on a pathway to 4°C global warming by the end of the century

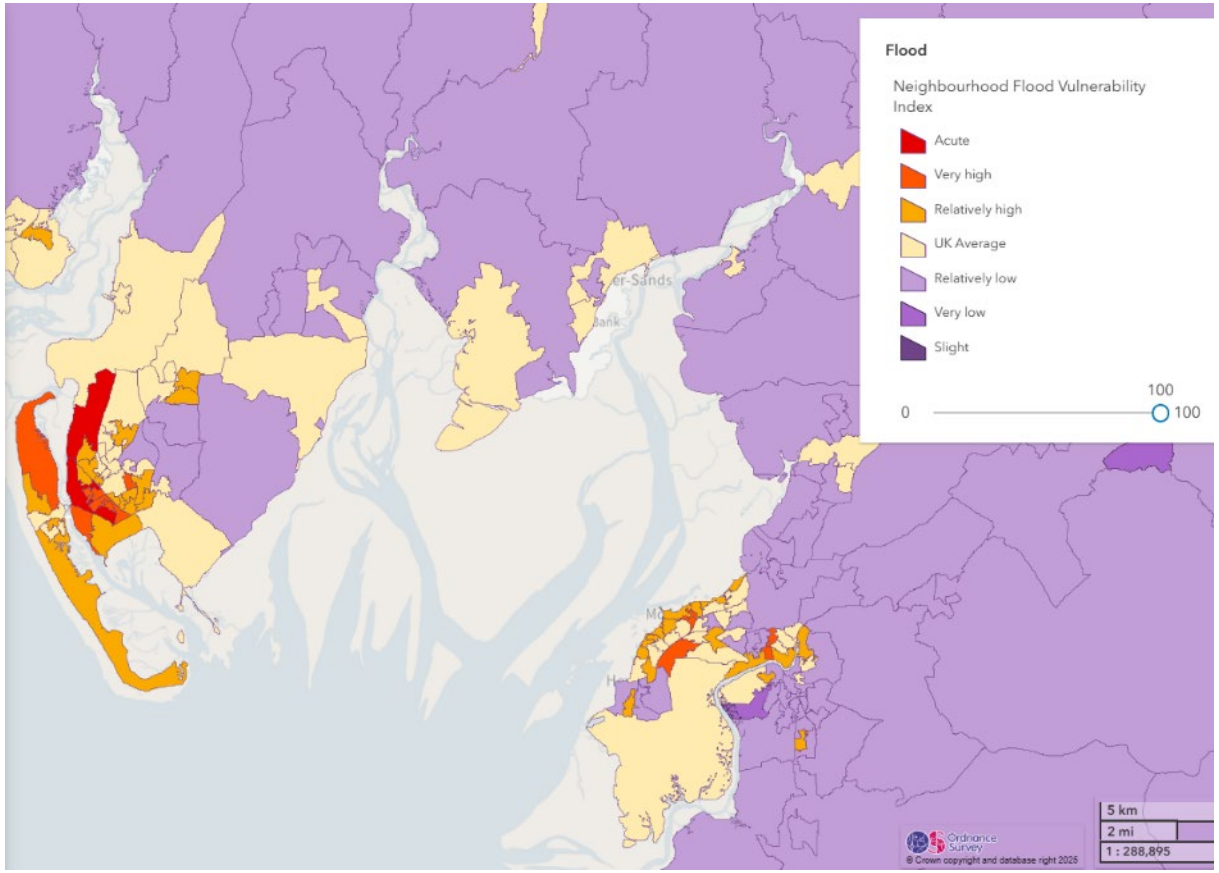
Source: UKCP18 projections

Climate Change Committee

Understanding local impacts

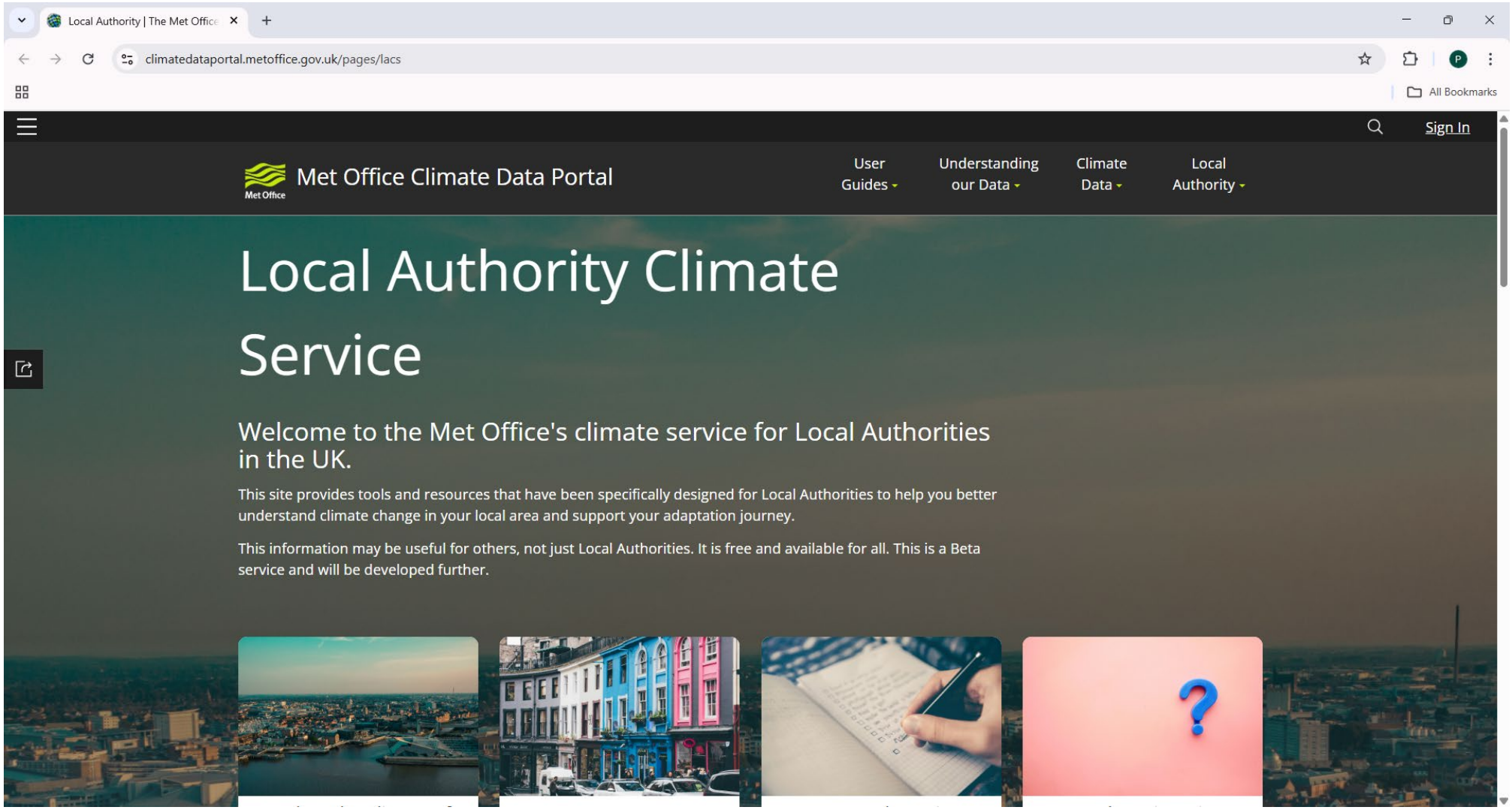


Climate Risk Indicators
https://uk-cri.org/



Climate Just Map Tool
www.climatejust.org.uk/map

Local authority climate tool



https://climatedataportal.metoffice.gov.uk/pages/lacs

Why do *we* need to adapt? Northwest / Morecambe bay impacts

Our climate will be warmer, wetter, with ever greater variability & extremes

	2030s	2050s	2080s	
Summer Average Air Temperature (°C)	+0.9 to +1.9	+1.4 to +3.3	+2.6 to +6.4	↑
Summer Maximum Air Temperature (°C)	+0.9 to +2.2	+1.6 to +3.8	+2.9 to +7.4	↑
Winter Average Air Temperature (°C)	+0.7 to +1.7	+1.1 to +2.6	+1.7 to +4.5	↑
Winter Minimum Air Temperature (°C)	+0.7 to +1.7	+1.2 to +2.8	+1.7 to +4.9	↑
Annual Average Air Temperature (°C)	+0.8 to +1.5	+1.2 to +2.5	+2.0 to +4.7	↑
Summer Precipitation Rate (%)	-2 to -21	-11 to -35	-19 to -52	↓
Winter Precipitation Rate (%)	+2 to +11	+4 to +18	+9 to +32	↑

Available online:

https://themetoffice.maps.arcgis.com/apps/dashboards/506ff7d53c884badb0d8fd36d6280a91

Met Office Climate Report for Lancaster

Department for Environment Food & Rural Affairs

Introduction

This Climate Report provides high level, non-technical summaries of climate change projections for a local authority area. It uses scientific research to provide robust climate information to help decision makers plan for the future, enabling local authorities to become more resilient to climate change.

Each local authority experiences its own unique challenges from climate change. For example, urban areas are affected by the urban heat island effect resulting in higher urban temperatures compared with rural surroundings, whereas low-lying coastal areas may be at greater risk of flooding from rising sea levels.

What affects the region's weather?

Lancaster is located within the North West England climate region. The types of weather that North West England experiences across a year include:

The range of topography and altitude in North West England provides a varied climate, which includes both the coldest (Cross Fell) and wettest (Lakeland fells) locations in England. In low-lying areas where most urban areas are found, mean annual temperatures are around 10°C.

North West England includes some of the wettest places in the UK although this is localised to upland areas which are exposed to westerly maritime air masses. Areas in the lee of these uplands receive less rainfall, as do the large urban areas of Liverpool and Manchester.

Sunshine hours in North West England range from around 1200 hours in the higher Pennines to around 1500 hours at the coast, with values over 1600 reached on the Isle of Man.

North West England is one of the more exposed parts of the UK and may experience strong winds associated with the passage of deep lows. The frequency and strength of these depressions is greatest during winter, with the strongest winds coming in off the Irish Sea from the SW to WNW.

Climate change & schools

English schools face 'overheating' for one-third of year under 2C warming

14 May 2024

CarbonBrief
CLEAR ON CLIMATE

15k schools will be at 'significant flood risk' by 2050, with half already in danger

5 Nov, 2021

SCHOOLS WEEK

Rise of 'eco-anxiety' affecting more and more children says Bath climate psychologist

UNIVERSITY OF BATH

Tuesday 25 August 2020

Schools forced to close in parts of southeast England after taps run dry in heatwave

14 June 2023

sky news

Heat stress

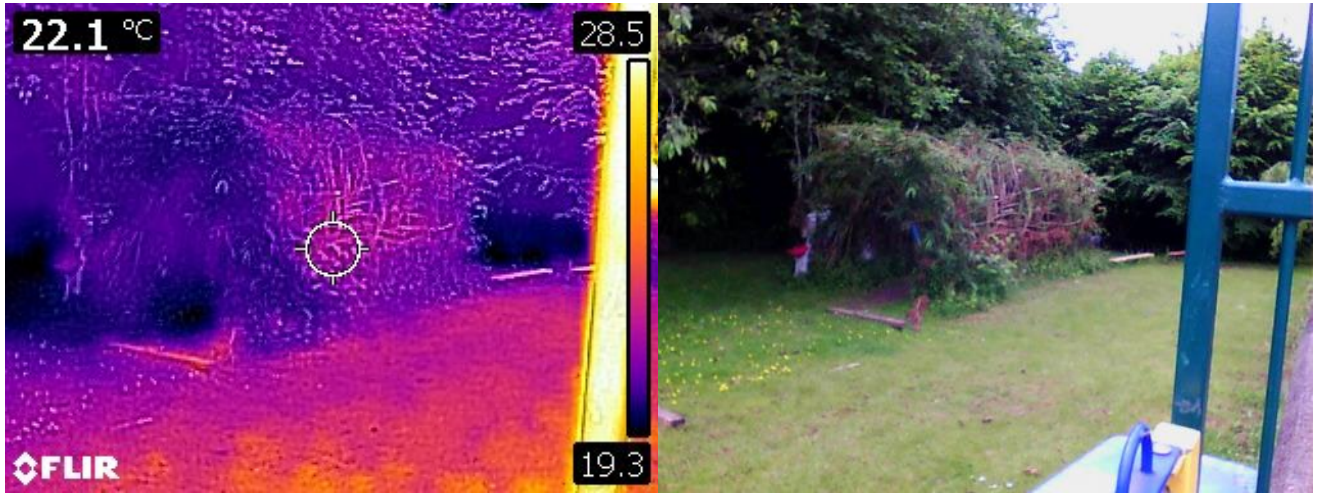
Water scarcity

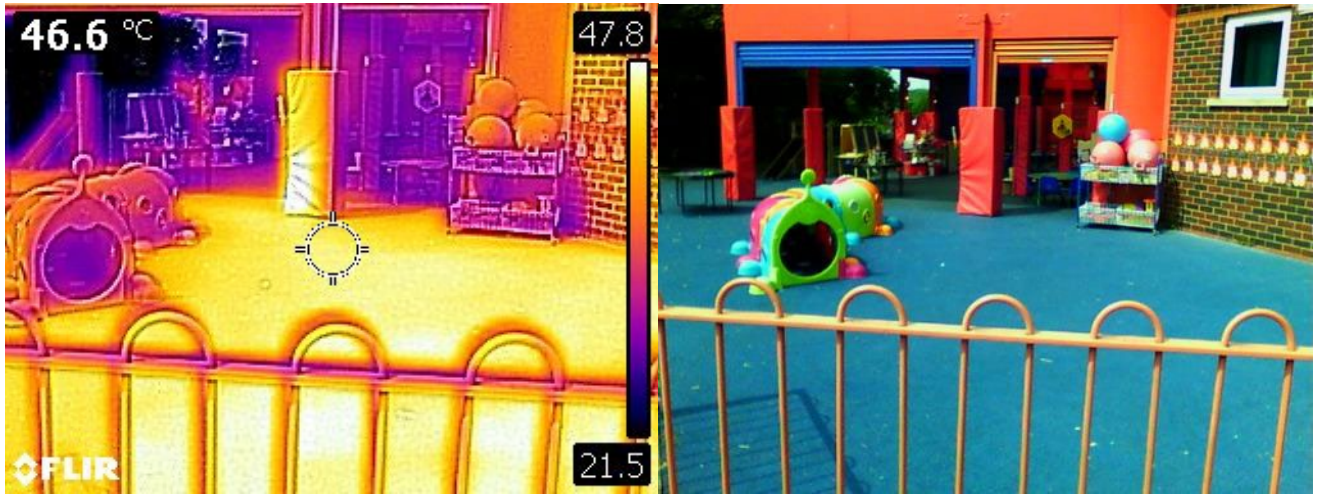
Air quality

Flooding

Food safety & security

Extreme weather



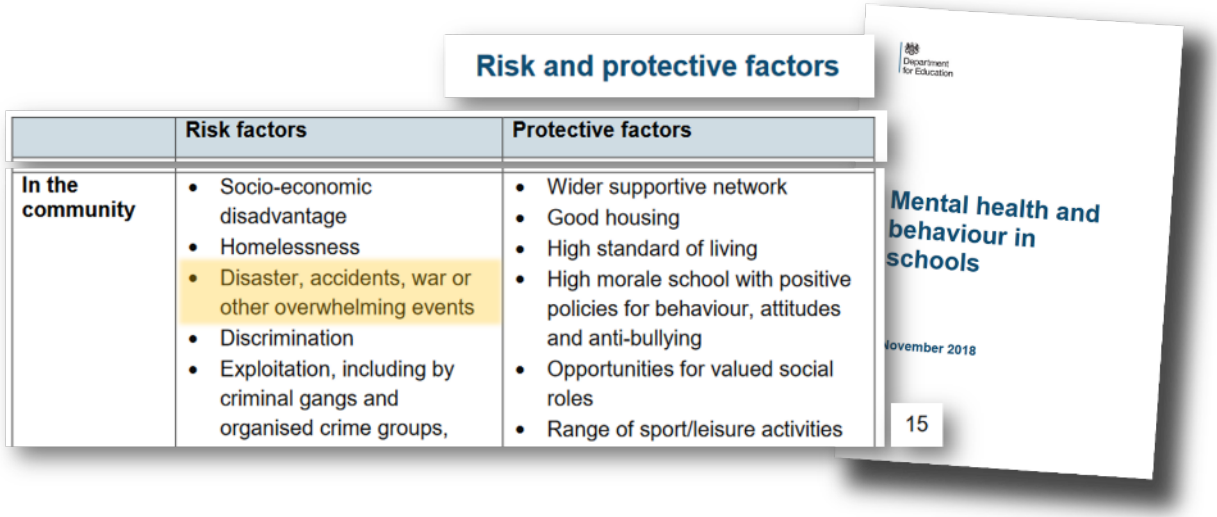


Climate Ambassador school visit

Infra-red photos* show 28°C difference between Early Years playground and willow tunnel

* Photos by Sylvia Knight

Climate change: a safeguarding issue



Risk and protective factors

	Risk factors	Protective factors
In the community	• Socio-economic disadvantage • Homelessness • Disaster, accidents, war or other overwhelming events • Discrimination • Exploitation, including by criminal gangs and organised crime groups,	• Wider supportive network • Good housing • High standard of living • High morale school with positive policies for behaviour, attitudes and anti-bullying • Opportunities for valued social roles • Range of sport/leisure activities

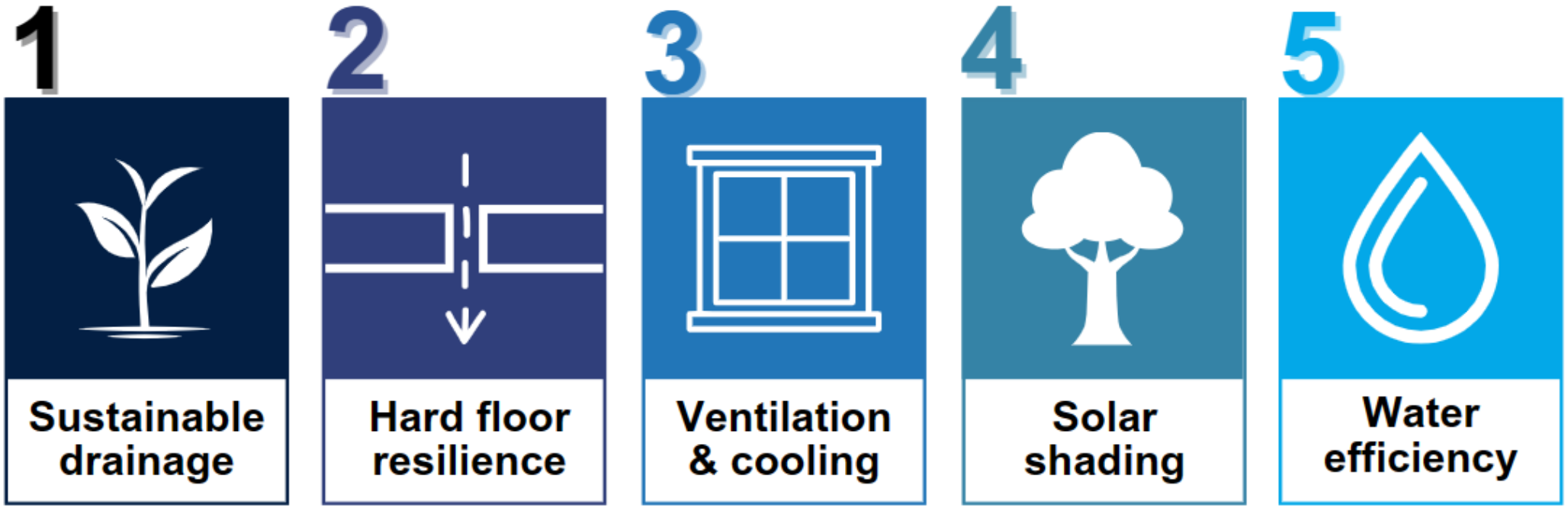
Department for Education

Mental health and behaviour in schools

November 2018

15

Areas of Action: 5 steps to be a Climate Resilient School



By the Greater London Authority

SuDS for schools

Sustainable drainage systems for schools – environmentally friendly flood prevention

Amy Greenough, Lead for Schools Water Strategy, 4 December 2023 - Advice and support

About this blog

The Buying for Schools blog is run by the Department for Education's (DfE) Schools Commercial Team. We're here to support people who buy for schools and buying decision makers in schools around all those potentially tricky areas of procurement.

Find out more.

Sign up and manage updates

Email Atom

Recent posts

- A new way to buy energy for your school or trust, April 2, 2025
- How Academy Transformation Trust saved over £500,000 through better contract management, March 3, 2025
- Embracing flexible working in schools and trusts, February 11, 2025

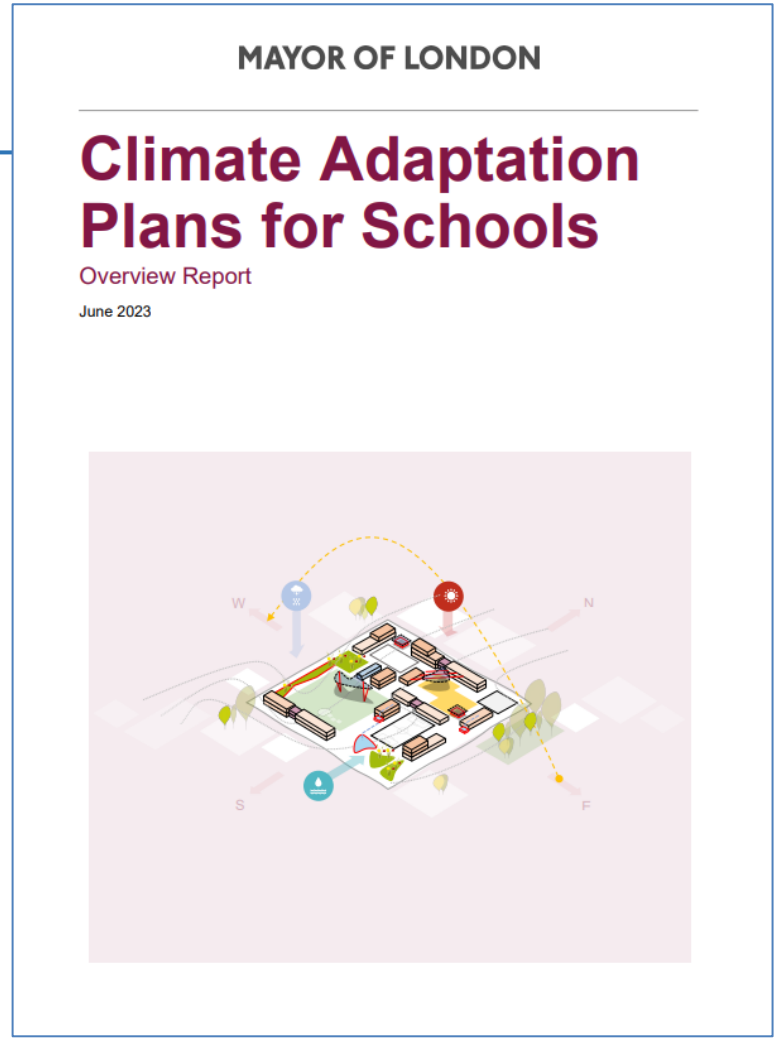
Comments and moderation

Read our guidelines.

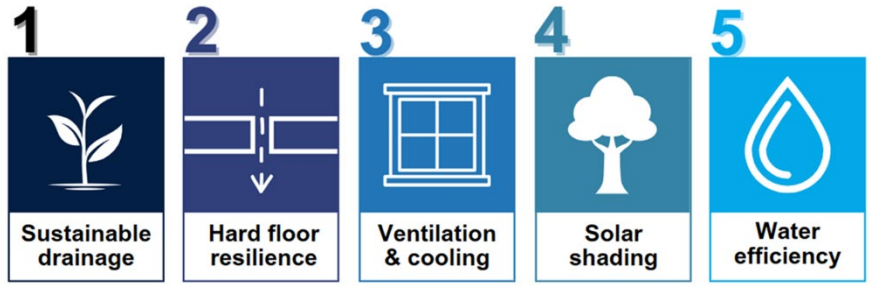
https://buyingforschools.blog.gov.uk/2023/12/04/sustainable-drainage-systems-for-schools-environmentally-friendly-flood-prevention/

Putting adaptation & resilience on your action plan

- Schools already manage risk – on a daily basis and from a more strategic perspective. Check your risk register/ ‘business’ continuity plan / severe weather plan
- Should be a whole of school effort – Eco-school committee / school council / teaching staff / students / grounds & maintenance
- Appoint / identify a ‘Champion’
- Learn from past events / near misses – e.g. heatwave in 2022, ‘already coping’ strategies
- Develop synergies with other agendas – maintenance programmes, safeguarding



https://www.london.gov.uk/sites/default/files/2023-06/CAPS_OR_finalissue_09June2023.pdf



1

Hazards:

- Have any of your settings experienced the effects of extreme weather in the past?
- If so, what aspects of school life were affected by these hazards. What damages were incurred?
- If not, what are the potential impacts?

Exposure and vulnerability:

- Do you have any vulnerable staff or students that could be at greater risk?
- Identify any important infrastructure that you need to ensure remains operational, or is high cost.

2

Risk matrix:

- Examine the 5 x 5 risk assessment matrix. This has two components, likelihood and consequence.
- **Likelihood refers to the chance of a hazard** occurring (from rare to almost certain) and the impact of that hazard on your setting (from negligible to catastrophic). The top right of the matrix is characterised as at **extreme risk**, the bottom left **low risk**.

Risks of high temperatures and flooding:

- Using past experience, place a marker in the square that reflects your assessment of **current risk from high temperatures**.
- Estimate an assessment of the **possible future likelihood and consequence** under 2°C and 4°C of global warming e.g. think about how the changes in hot days might affect your setting?
- Repeat the above steps for your assessment of the risks related to **flooding**

3

Adaptation action: action or change that seeks to reduce the risks posed by climate changes, or to benefit from any associated opportunities.

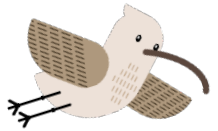
Using the deck of adaptation options, identify what would be your top 3 - 5 priorities in your setting. You can consider costs, feasibility or any barriers to implementation.

Further information

- Met Office '**city and heat packs**' provide non-technical summaries of future climates. **Look up your nearest city** to find out about their future climate. Enter your postcode in this **'What will climate change look like near me?'** tool.
- To check current and future risks:
  - Check current **long-term flood risk** and view a surface water flood risk map (postcode)
  - Get a map of **current flood zones** for your setting – again, all you need is a postcode.
  - The **Climate Just** map tool provides maps of flooding and heat risk and vulnerable populations.
- Information on climate risks and adaptation:
  - The Climate Change Committee have **a factsheet on climate change adaptation** aimed at children and young people.
  - Guidance on conducting the first stage of a climate change risk assessment using a **Local Climate Impacts Profile**.
  - Accessible guidance on adaptation for schools and early years settings is provided in the **GLA Schools Adaptation Guidance Report** and examples in the **higher education sector**.
- Borrow an instrument (eg infrared camera, rain gauge): https://www.metlink.org/fieldwork-resource/instruments-and-fieldwork/

Teas, coffees and stalls in the hub in Bowland Bar!

After that, please head to your next location!



A. **Adaptation and Resilience:** Bowland North 10
B. **Biodiversity and Green Infrastructure:** Welcome Centre Lecture Theatre 4
C. **Climate Education, Green Skills and Careers:** Welcome Centre Lecture Theatre 1
D. **Decarbonisation and energy efficiency:** Bowland North 07
E. **Engagement and Leadership:** Bowland North 20

Time for Roundtable Sessions!

Early Years Discussion	Bowland North Room 7
Primary Discussion	Bowland North Room 10
Secondary Discussion	Bowland North Room 20
Alternative Provision and SEND Discussion	Welcome Centre Lecture Theatre 4
FE Discussion	Welcome Centre Lecture Theatre 1
Nature Connectedness with Natural England	Bowland North Room 1
Pupil voice in Climate Action Plans with CDEC	Bowland North Room 4
Empowering Youth with Another Way	Bowland North Room 5
Carbon Literacy and Climate Fresk with Futureproof Cumbria	Bowland North Room 8
A Day at the Beach with Lynn Reddy	Bowland North Room 9
In-School Gardening with Rewilding Roots	Bowland North Room 11
Exploring Climate Migration with Global Link	Bowland North Room 12
After the Flood with Mary Brydon-Miller	Bowland North Room 13
Nature and Taking Action with Andy Harrod	Bowland North Room 15
Coastal Adaptation with JBA Trust	Bowland North Room 18
Engaging Students with Environmental sustainability with LUSU Green	Bowland North Room 21
Developing your staff as sustainability lead with Maggie Cawthorn	Bowland North Room 22