



UK Health
Security
Agency

Climate Change and Impact of adverse weather on health

ADPH Workshop - Wednesday 18 January 2022

Agenda

- Climate Change
- Cold Weather
- Heatwaves
- Flooding
- Drought
- OHID Midlands: Climate and sustainability

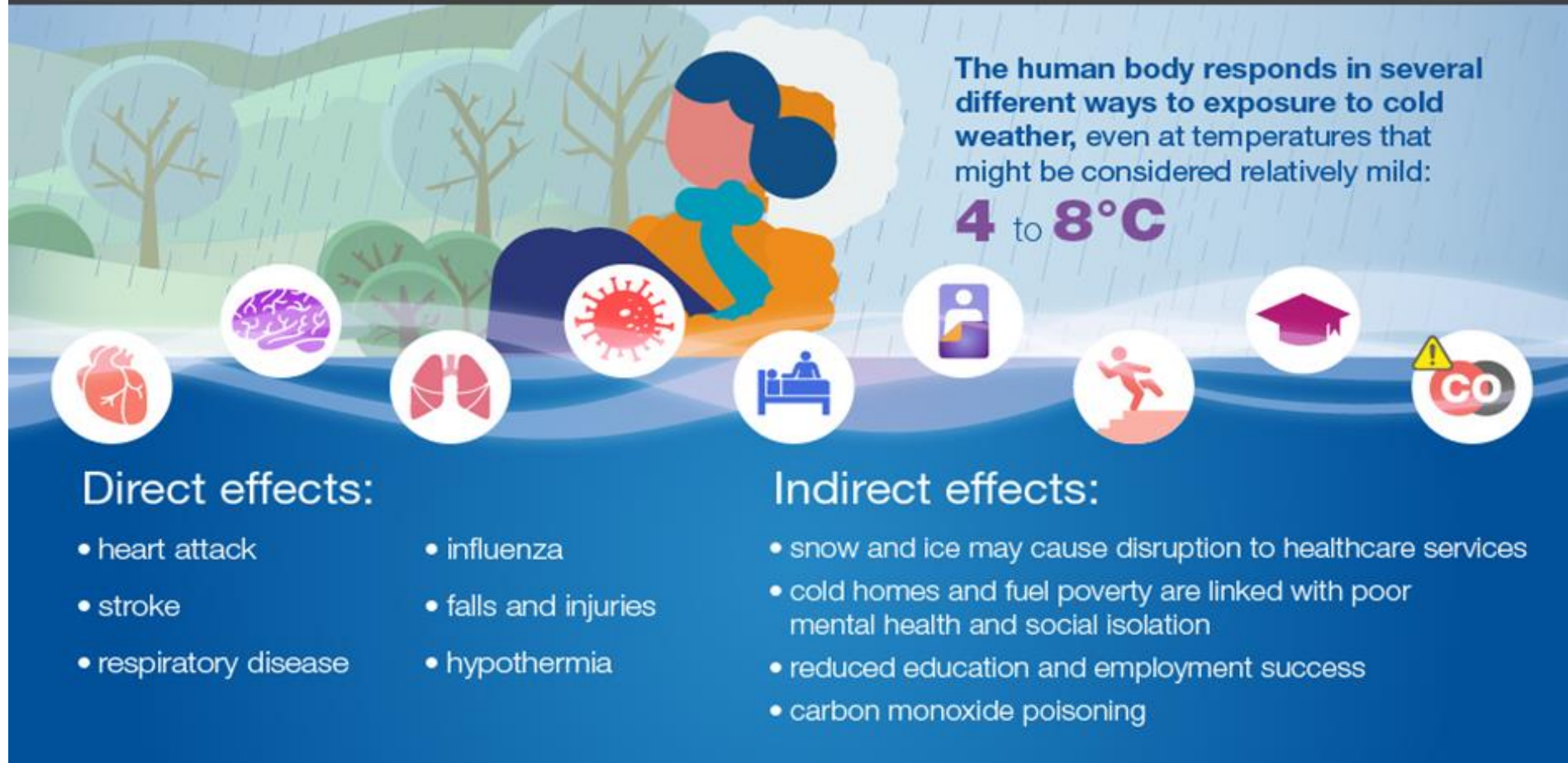
- Workshop questions

Climate Change impacts

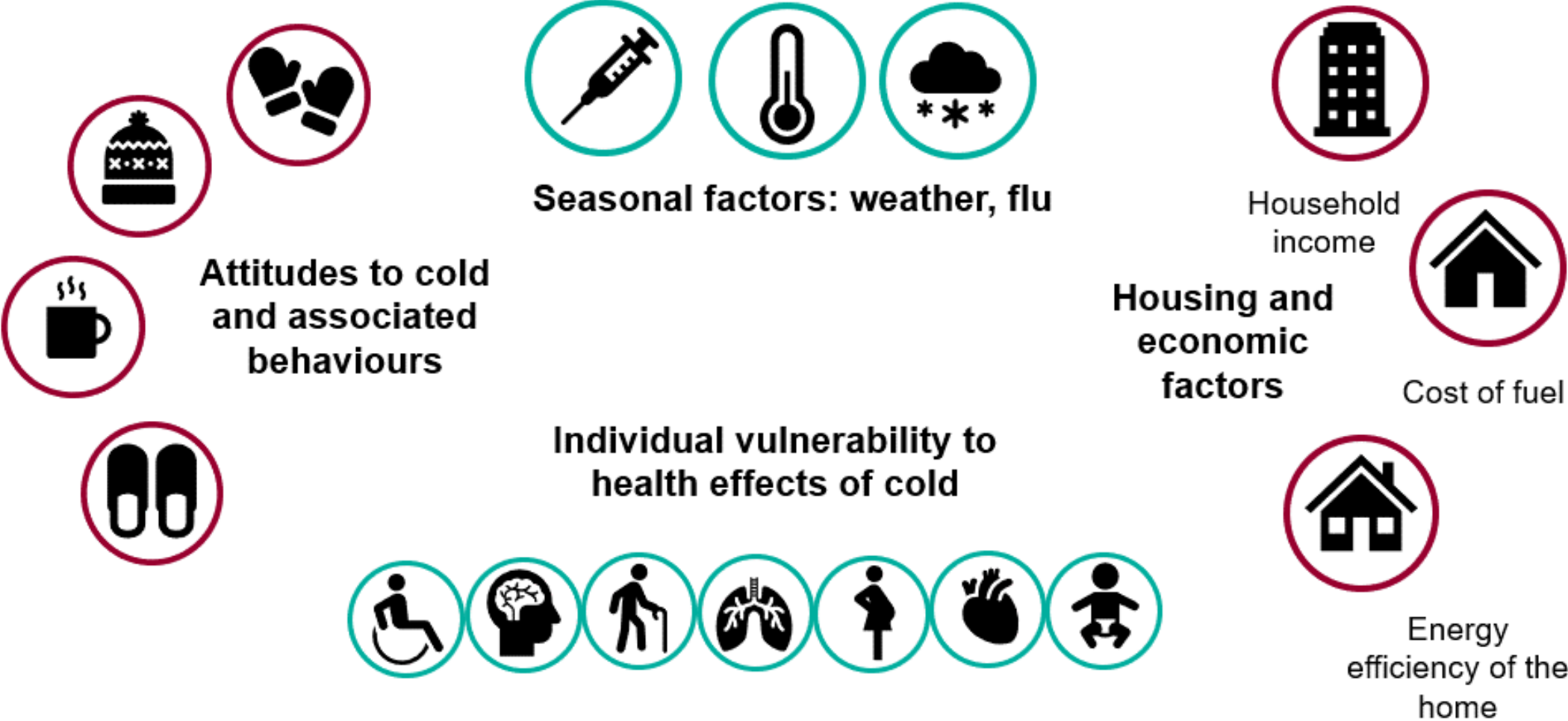
- An increase in greenhouse gases, notably CO₂ is leading to a warmer climate.
- Climate change is a public health emergency. Impacts to health are seen directly through extreme weather events such as heatwaves and flooding, but also indirectly through changing patterns of disease.
- Adverse weather events are becoming more frequent, more intense and longer lasting.
- No country is immune from the health impacts of worsening climate change. In the UK, the effects of climate change will not be felt equally and are likely to increase health inequalities.

Cold weather-related health risks

The direct and indirect health effects of winter weather



Who is affected by the cold?



Key findings from winter 2019-20

- The latest year for which we have comprehensive data is 2019-20. The winter in which COVID-19 was first identified.
- An estimated 28,300 excess winter deaths (excluding COVID) occurred in England and Wales in 2019/20. 19.6% higher than 2018/19.
- The usual peak in excess winter deaths is usually seen in January/February, however, in 2019/20 the peak was seen in December and January. The rise in deaths in late March and early April, what is typically at the end of the influenza season was associated with COVID-19 deaths.
- The identification of place and cause of deaths, permit targeted public health intervention, particularly for those unable to adapt their own behaviours or indoor environments

Concurrent Risks

- Fuel Poverty
- Cost of living crisis
- Circulating respiratory illnesses
- Industrial action impacting on health services

Cold Weather Planning resources

General guidance

- [Cold weather plan for England: protecting health and reducing harm from cold weather](#)
- [Cold weather health risks and COVID-19: actions to prevent harm](#)
- [Tips for staying warm and well this winter](#)
- [How to stay well in winter](#)

Specific guidance

- [NICE guideline NG6: Excess winter deaths and illness and the health risks associated with cold homes](#)
- [NG6: A quick guide for home care managers](#)
- [Quality standard QS 117: Preventing excess winter deaths and illnesses associated with cold homes](#)
- [Action cards for cold weather alert service](#)
- [Data sources to support local services tackling health risks of cold homes](#)

Capacity building

- [E-module on cold homes and health for frontline practitioner - Helping People Living in Cold Homes](#)
- [Excess winter deaths and the winter: Information for the NHS](#)
- [Excess winter deaths and the winter: Information for the Local Authorities](#)

Health impacts of hot weather

Heat syncope – dizziness and fainting, due to dehydration, vasodilation, cardiovascular disease and certain medications

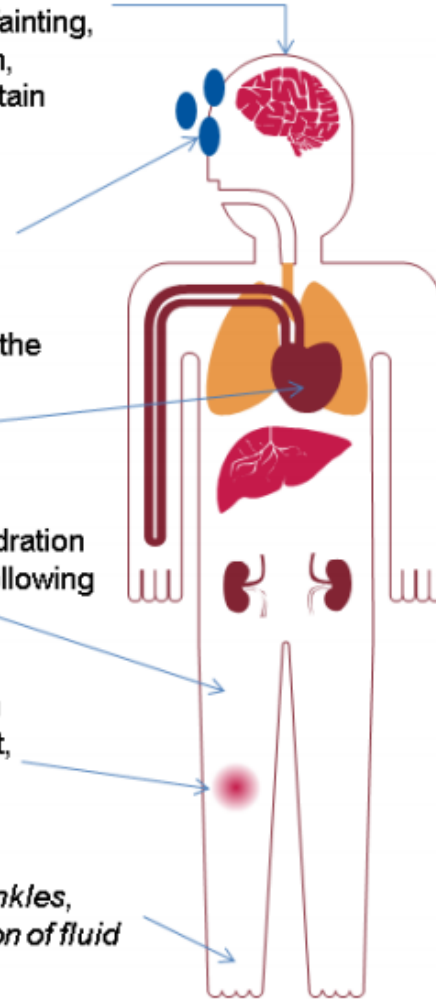
Excessive sweating can deplete fluid and salts

When blood temperature rises, the body stimulates sweat glands, dilates blood vessels and increases the heart rate

Heat cramps – caused by dehydration and loss of electrolytes, often following exercise

Increased blood flow to the skin cools the body by radiating heat, leading to heat rash (small, red itchy papules)

Heat oedema – mainly in the ankles, due to vasodilation and retention of fluid



Health effects of heat

The main causes of illness and death during a heatwave are respiratory and cardiovascular diseases. Additionally, there are specific heat-related illnesses including:

Heat Exhaustion

- Nausea or irritability
- Dizziness
- Muscle Cramps or weakness
- Feeling faint
- Headache
- Fatigue
- Heavy sweating
- High body temperature

Heatstroke

- Hot, dry skin or profuse sweating
- Confusion
- Loss of consciousness
- Seizures
- Very high body temperature

Total all-cause excess mortality – summer 2020

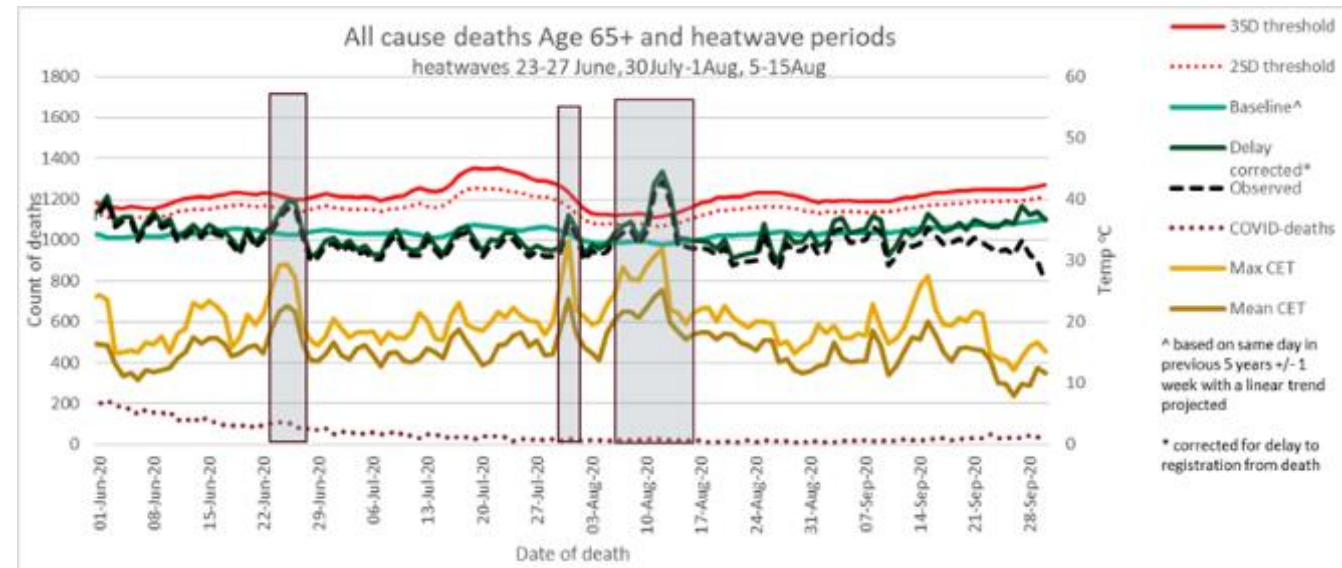
A total of **2,556** excess all-cause deaths occurred across three episodes of heatwaves we analysed (2,244 in 65+ years group)

Episode 1 lasted 5 days (23 to 27 June), during which time the East Midlands, West Midlands, East of England, London, South East and South West of England were at HHA Level 3 and CET reached 20C. **576** excess deaths.

Episode 2 (E2) lasted 3 days (30 July to 1 August). No region reached the threshold for HHA Level 3, but CET reached 20C. **246** excess deaths.

Episode 3 (E3) lasted 11 days (5 to 15 August), with East of England, London and the South East of England at HHA Level 3 HHA, CET also reached 20C. **1,734** excess deaths.

All-cause excess mortality in the 65+ years group



Key Findings - Heatwave Impacts

- 2020 was the first year in which the concurrent risks of heat and COVID-19 may have overlapped to amplify the observed impacts.
- Summer 2020 observed the highest mortality since the introduction of the Heatwave Plan for England in 2004.
- 68% of the total heatwave excess mortality occurred during the third episode of heat (5-15th August 2020).
- Total cumulative all-cause excess mortality in summer 2020 analysis of **2,556** excess deaths was highest in England and exceeded:
 - 2003 pan-European heatwave (**2,234** English excess deaths);
 - 2006 Heatwave event (**2,323** excess deaths).

Heatwave Planning Resources

- [Heatwave Plan for England collection page](#)
- [Heatwave Plan for England](#)
- [Supporting vulnerable people before and during a heatwave: for care home managers and staff](#)
- [Supporting vulnerable people before and during a heatwave: for health and social care professionals](#)
- [Looking after children and those in early years settings during heatwaves: for teachers and professionals](#)
- [Beat the heat: staying safe in hot weather](#)
- [Beat the heat: keep cool at home checklist](#)
- [Beat the heat: poster](#)

Flooding – Mental Health impacts

- The immediate dangers to physical health from flooding events are highly visible. However, the majority of impacts on health in England are associated with mental rather than physical health. UKHSA has publishes guidance.
- [Flooding and public mental health: assessment and management - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/flooding-and-public-mental-health-assessment-and-management)
- Mental Health impacts are also seen with other adverse weather events and not just flooding.

Drought

- Following the hot summer of 2022, there are regions still in drought.
- There is a risk that regions would not have recovered from last years drought going into the summer of 2023 with restricted water resources.
- This will impact heavily on agriculture and lead to increase in food prices.

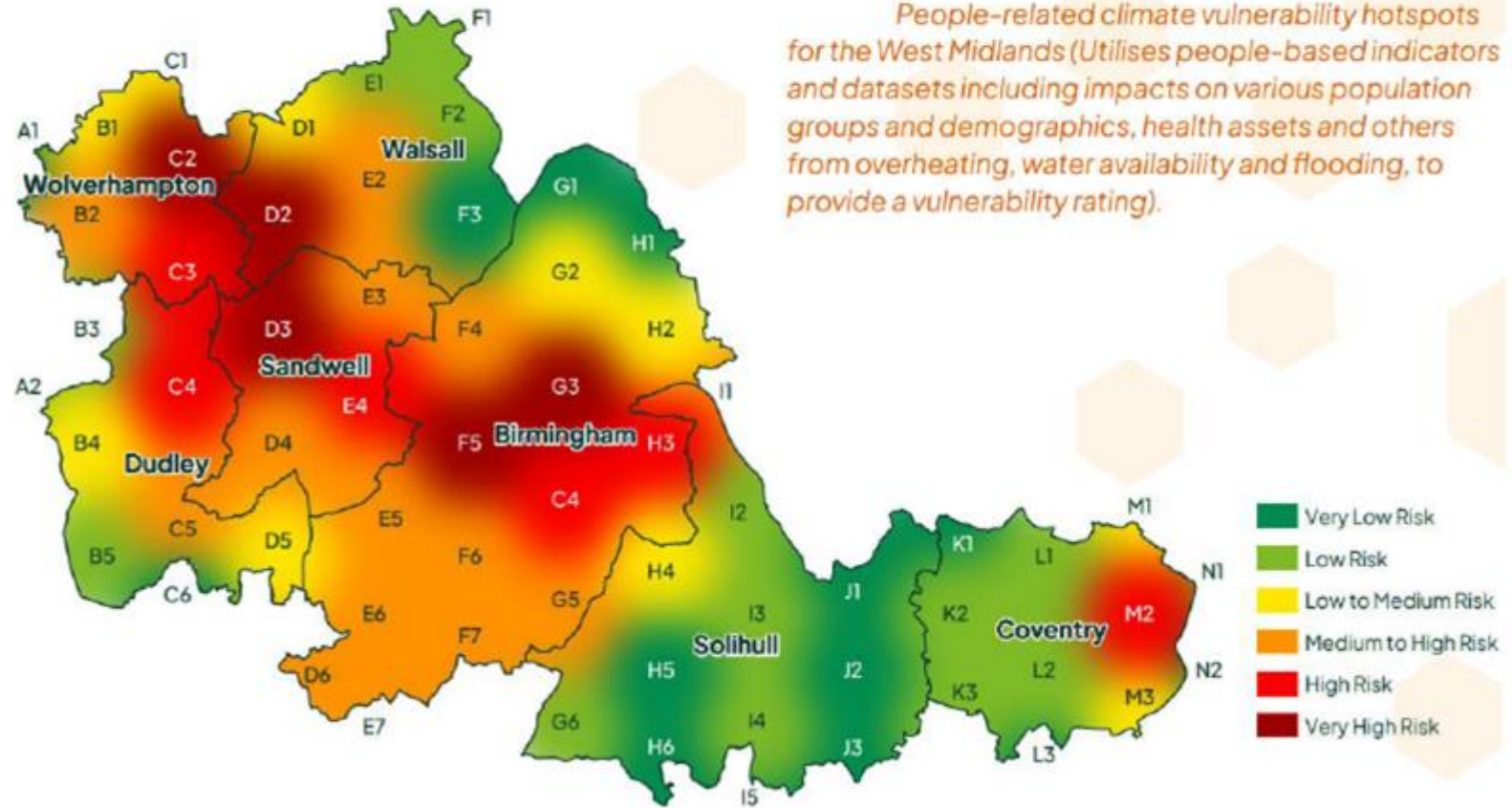
- **Public health impact of drought: advice for the public**
- Information on the potential health impacts of drought in England and the measures that people can take to stay healthy during these events.

- [Public health impact of drought: advice for the public - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

Climate change workshop – Paul Fisher

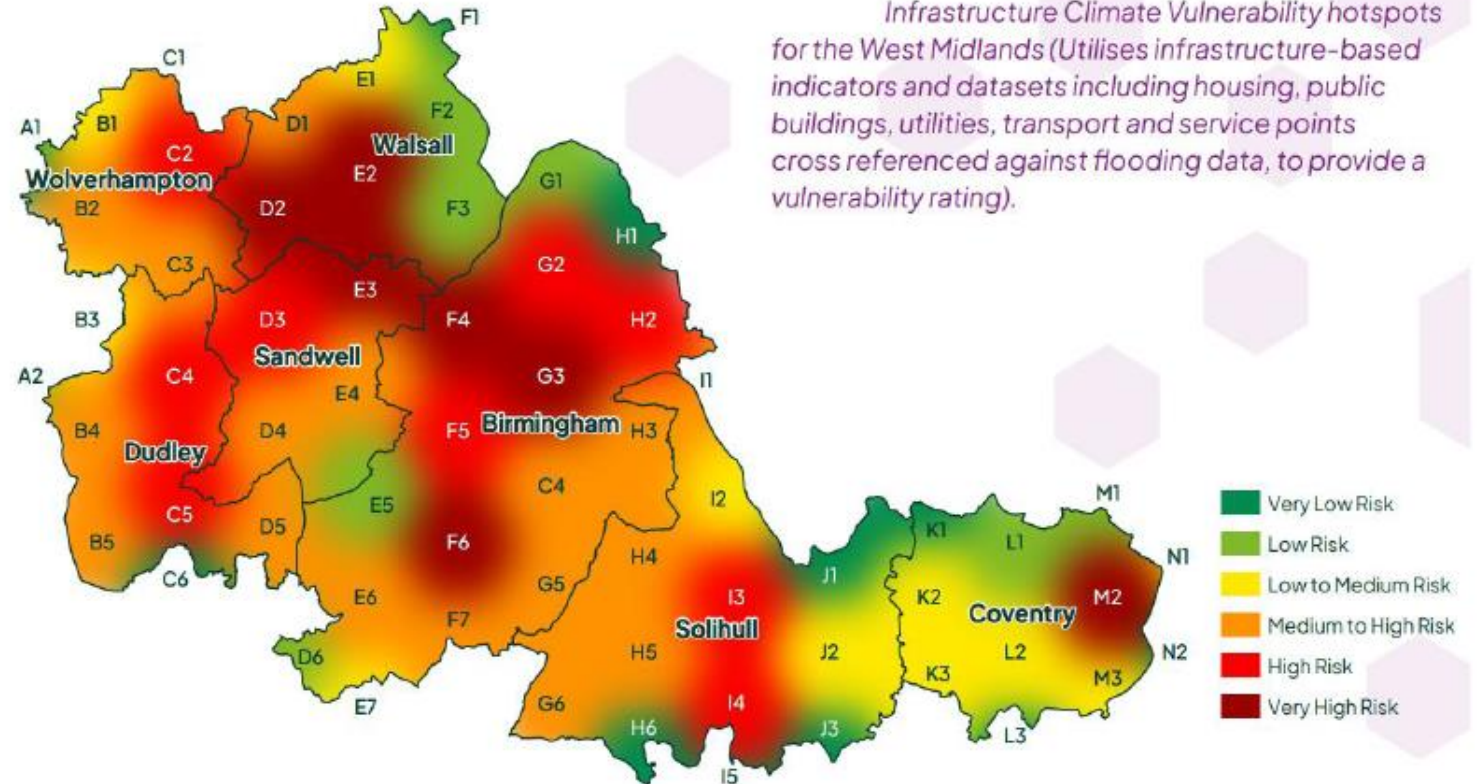
People

Climate Parameter	Impacts
Decreased precipitation	Increased water scarcity causing higher demand and raising water prices, affecting access to lower income households.
Increased average air temperature and humidity	Health impact of heatwaves on people with pre-existing vulnerabilities (e.g. heat deaths).
Increased average air temperature	Changes to the pattern of peak electricity demand increasing energy prices, putting lower income households at financial risk.
Increased precipitation	Increased financial damages associated with costs from flood damage repair, particularly affecting lower income households.
	Increased health inequality due to increasingly extreme climate factors, e.g. vulnerability to flooding.



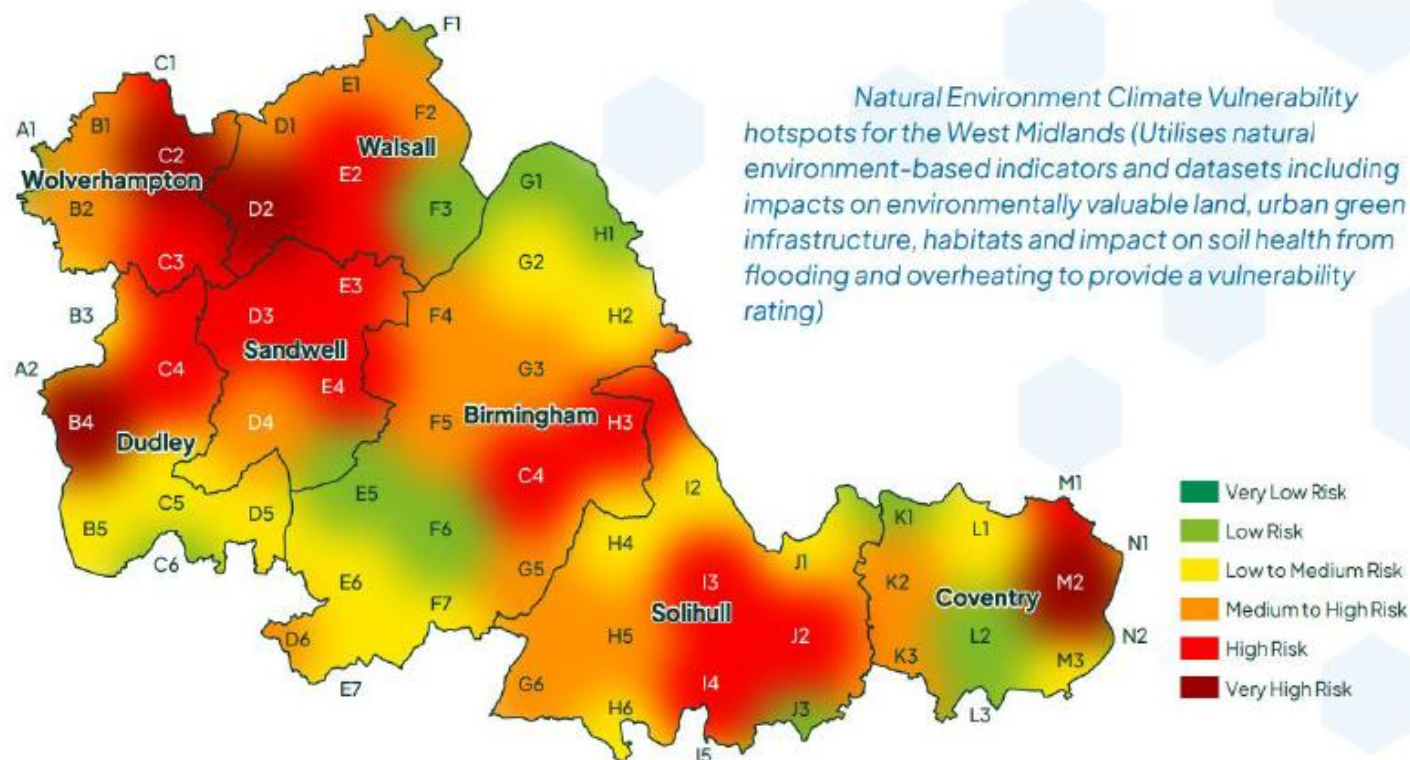
Infrastructure

Climate Parameter	Impact
Decreased precipitation	Buried infrastructure such as underground cabling damaged by subsidence. More frequent power shut offs of energy infrastructure as a required safety response to drier weather and higher temperatures causing sparking or wildfire risk.
Increased temperature	Cascading failure of the infrastructure network; failure of one system leading to multiple failures in others as a result of more extreme weather, including heatwaves.
Increased precipitation and increased temperature	Slope and embankment failure affecting transport networks.
Increased precipitation	Disruption to infrastructure services associated with fluvial flooding and erosion. Risks to buried infrastructure, such as water pipelines, with damage potentially becoming more frequent in future due to flooding and subsidence.



Natural Environment

Climate Parameter	Impacts
Increased temperature	<p>Extreme events and changing climatic conditions damaging biodiversity and resulting in further water scarcity, wildfire and flooding.</p> <p>Damage to green assets resulting in habitat fragmentation (resulting in knock on impacts to flora and fauna), and increase the urban heat island effect.</p>
Increased precipitation	<p>Biodiversity loss in terrestrial and freshwater ecosystems.</p> <p>More frequent and extensive river, surface water and groundwater flooding leading to a greater water pollution risk.</p> <p>Negative impacts on cultural heritage due to changes in precipitation, groundwater and landscape change (e.g. parks, gardens and designed landscapes).</p>
Decreased precipitation	<p>Increased food insecurity due to agricultural failure associated with high temperatures and drought.</p> <p>Higher water temperatures and scarcity of water due to reduced precipitation.</p>



VALUING SANDWELL'S URBAN FOREST



Most Common Tree Species: Field Maple, English Oak, Bird Cherry

Urban forests provide people with a range of benefits (or ecosystem services) that help make our towns and cities better places to live.

Trees filter air pollution, improve our health, store carbon and reduce flooding, whilst also providing important habitat for wildlife and a multitude of other benefits.

Black Country Consortium Ltd worked in partnership with Birmingham Tree People, Barton Hyett Associates and Treeconomics to survey the trees in Sandwell. Using a plot sample assessment in i-Tree Eco the team quantified the structure of Sandwell's urban forest and valued a range of the ecosystem services it provides to society.

The tree measured with the highest replacement cost in the Black Country is a Beech in Sandwell valued at £28,367. It stands 28m high, has a DBH of 274cm, and provides £37.86 annually!

Number of Trees
265,000

18.1%
Tree Cover

108
Tree Species

31
Trees per hectare

Sandwell's urban forest contains an estimated 265,000 trees benefiting over 328,000 people. That's 0.8 trees per person.

In addition, Sandwell's trees:

-  Cover an area equivalent to 1,550 ha with a leaf area of 7,450 ha.
-  Intercept around 130,000 m³ of rain water every year, equivalent to an estimated £128,000 in avoided water treatment costs.
-  Filter an estimated 15.3 tonnes of airborne pollutants each year, worth £828,000.
-  Remove an estimated 5,550 tonnes of carbon from the atmosphere each year, worth £5 million.
-  Store an impressive 361,000 tonnes of carbon worth £328 million.
-  Are at risk from pests and diseases - Ash dieback could affect 22,300 trees in Sandwell.
-  Would cost £684 million to replace like-for-like.



Leaf area is equivalent to 24 times the area of Sandwell Valley Country Park (308 ha)!



Avoided runoff is equivalent to 52 olympic swimming pools of water!

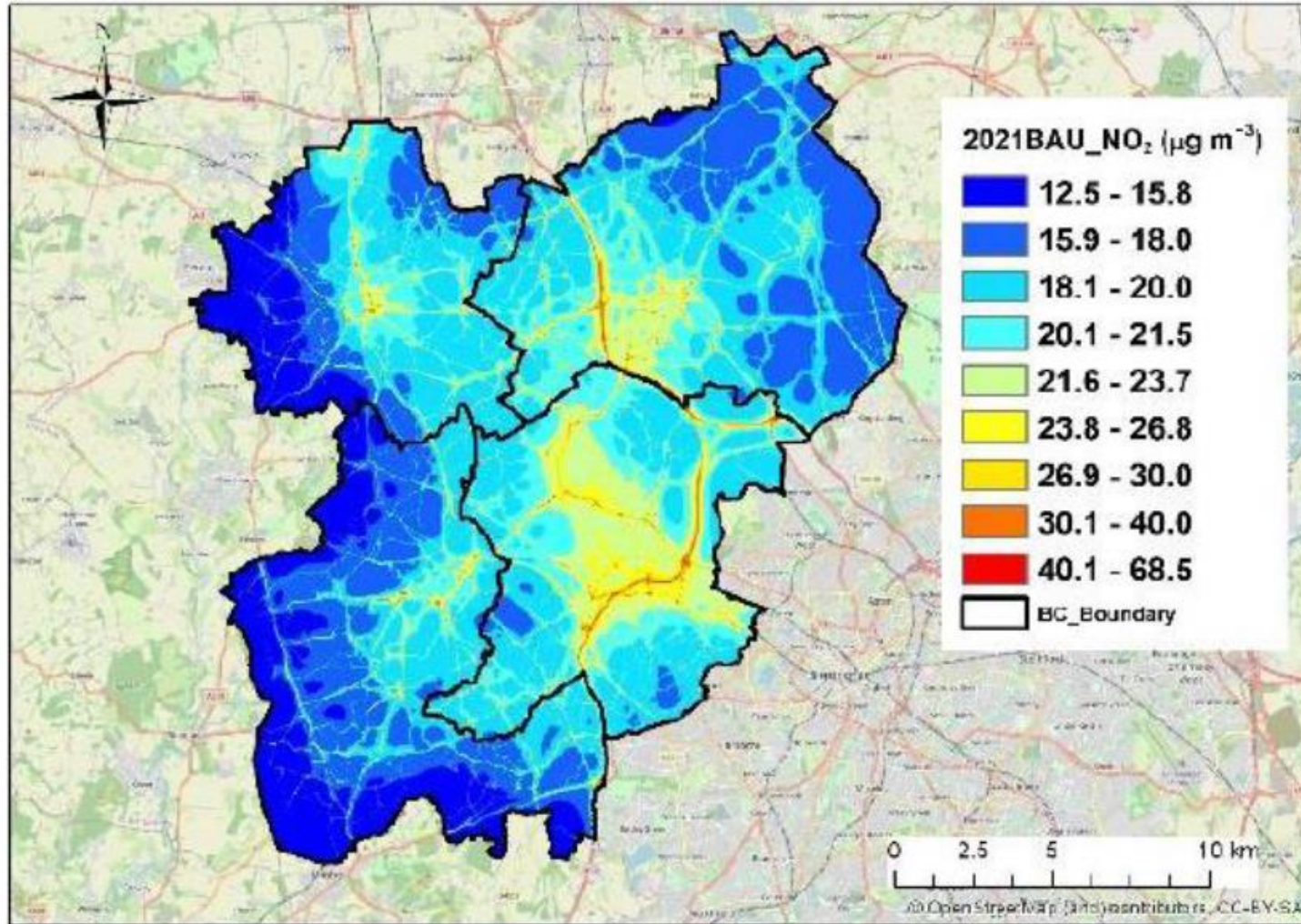


Carbon sequestration is equivalent to the annual CO₂ emissions of 11,730 cars!



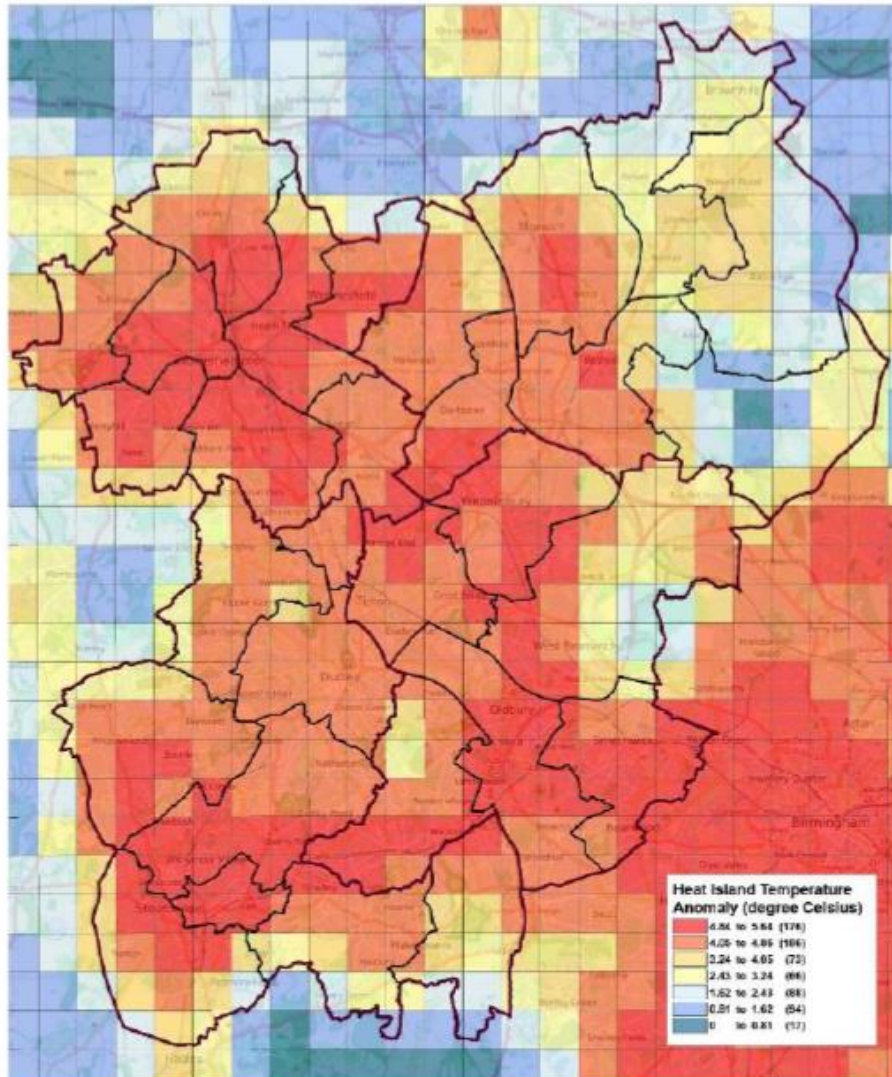
Carbon storage is equivalent to the weight of 29,000 new London double-decker buses (12.4 tonnes)!

Urban Stress - Air Quality



64% of the Black Country' population live in wards exceeding the 2005 WHO guideline level for PM_{2.5}

Urban Stress - Urban Heat Island

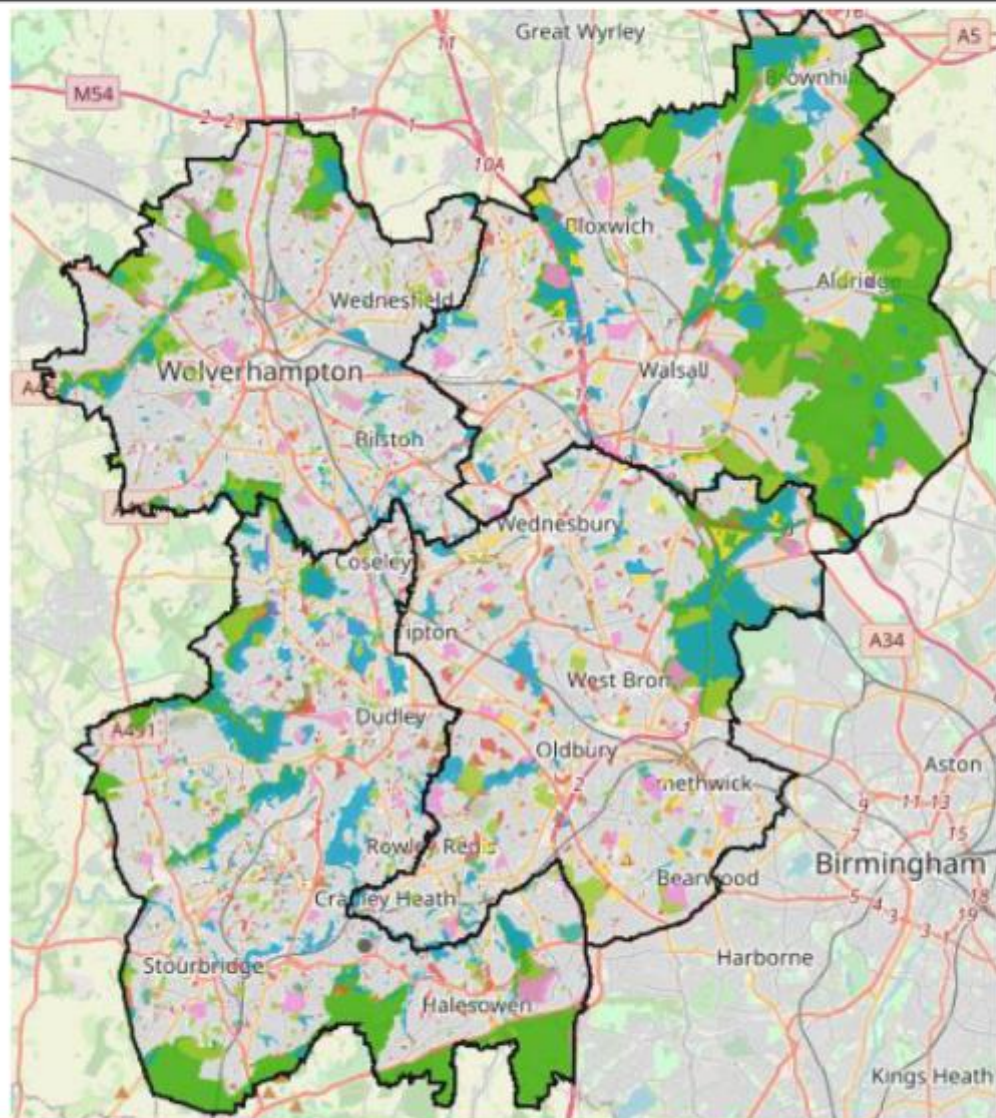


The urbanised nature of the Black Country means the area is more prone to higher temperatures via the urban heat island effect











Urban Stress – Access to Greenspace

Black Country Consortium

Economic Intelligence Unit



Greenspace_region

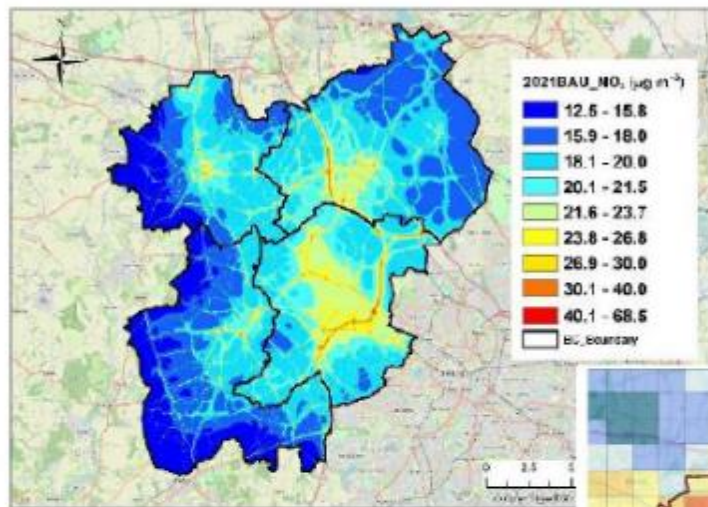
-  Amenity Greenspace
-  Natural and Semi Natural Urban Greenspace
-  Outdoor Sports Facilities
-  Provision for Children & Young People
-  Allotment
-  Institutional Land
-  Parks and Gardens
-  Green Corridor
-  Cemeteries/Churchyards
-  Grazing

Greenbelt

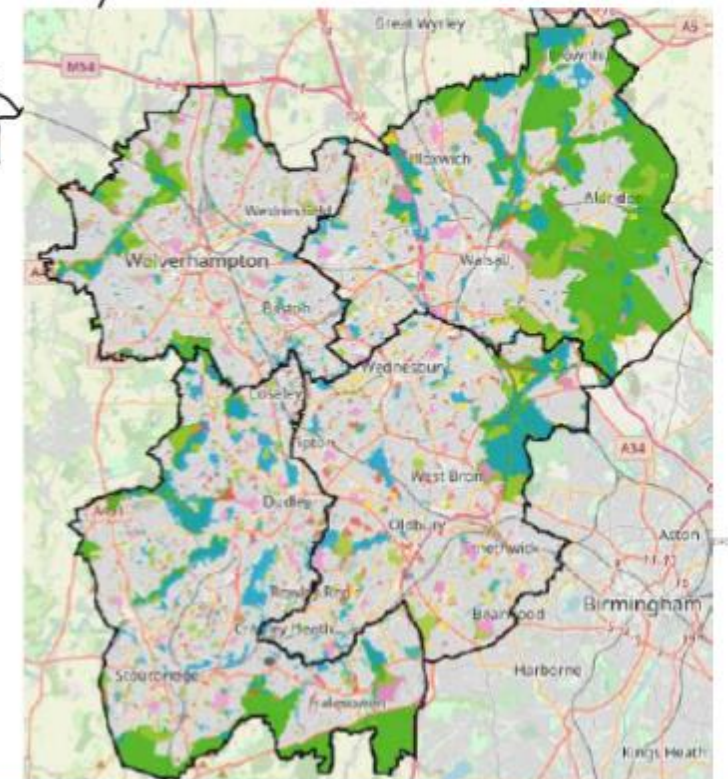
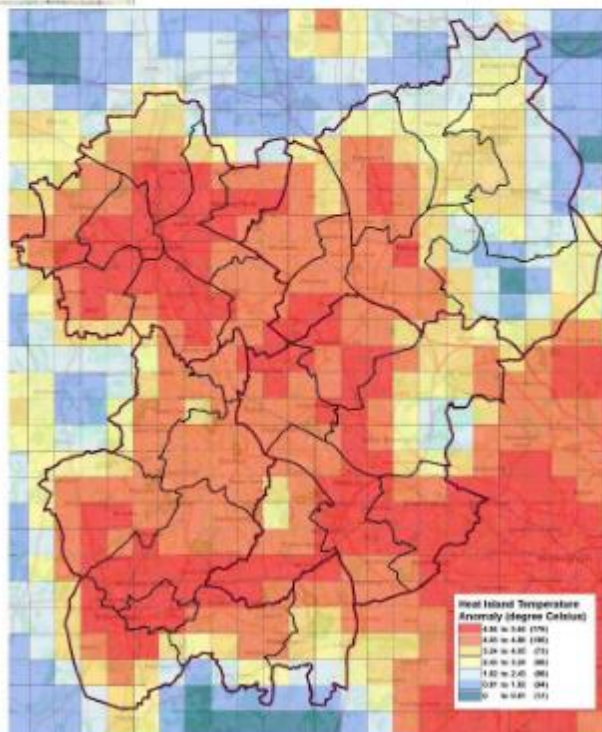
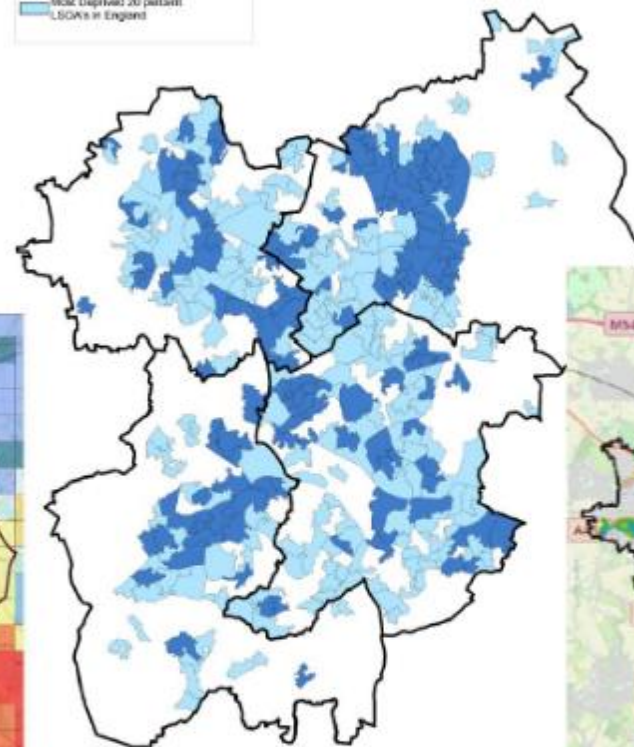
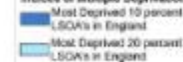


19.1% of LSOAs in the Black Country are in the most 10% deprived nationally

Tree Planting Opportunity Map



Indices of Multiple Deprivation 2019





Department
of Health &
Social Care

OHID Midlands: Climate and sustainability



Office for Health
Improvement
& Disparities

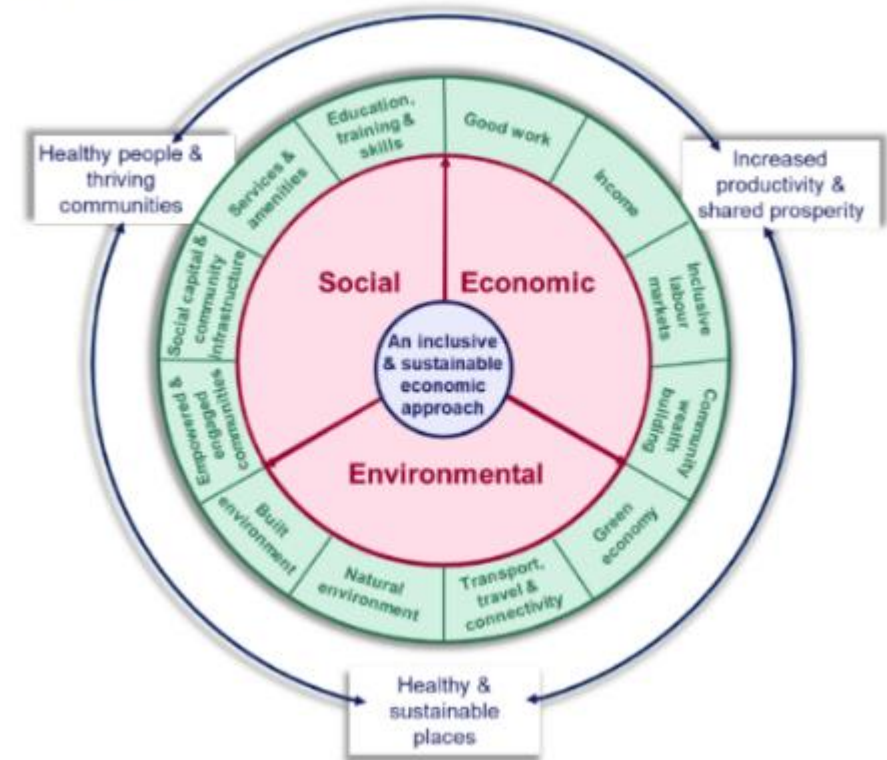


Inclusive sustainable economies approach

An Inclusive Sustainable Economy (ISE) is a mechanism to reduce health inequalities through improving the health of people and communities, ensuring that economic activity is sustainable and achieving shared prosperity for all, with no-one left behind. It also protects the needs of future generations by ensuring that these can be met within the means of our planet.

An inclusive and sustainable economies framework (Figure 1) was developed by Public Health England to focus whole system action using a six step approach. It illustrates that action is required across the social, economic and environmental determinants of health.

Figure 1. Framework to support planning and action on inclusive and sustainable economies





ISE Midlands Collaborative proposal

- Further to local consultation, we will be jointly holding a **Midlands wide Inclusive Sustainable Economies Collaborative (ISE) engagement** event on 8th March 2023. We are proposing 3 interrelated priority themes:
 1. Anchor whole system approach
 2. Climate and sustainability
 3. Health and work
- There's a tremendous amount of local activity in this space covering a range of local partners. The engagement event will provide an opportunity to showcase local examples across the 3 themes as well as an opportunity to shape collaborative arrangements going forward. Aim is to bring together, not duplicate existing work/networks
- The event will be of interest to a wide range of stakeholders including Local Authorities, NHS, Universities, LEPs, BEIS, DWP, Midlands Engine, UKHSA, LGA, Chamber of Commerce etc
- Please email ahmed.khan@dhsc.gov.uk if you wish to be included

Workshop Questions

- What public health impacts are you seeing in the West Midlands region?
- What Networks and Groups are you aware of working on impacts of Climate Change?
- What adaptations are needed now and in the future and how will they be undertaken?