

Ambient vulnerability: Mapping air-energy-climate interrelations in cities

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Project summary

From its temperature and humidity, to its toxicity, **our immediate ambient environment is essential to health, comfort and wellbeing**, however its quality varies between people and places.

For cities in England, this project evidences and maps ambient vulnerabilities, focusing on the interrelations between climate, energy and air.



Mapping spatialities (WP2)

How do we map and model ambient vulnerability?

We use Geographic Data Science approaches (Arribas-Bel & Singleton, 2021) to generate new small area indicators of ambient vulnerability in cities in England, and for detailed case studies of Liverpool and Bristol.

Concept + framework (WP1)

What is ambient vulnerability?

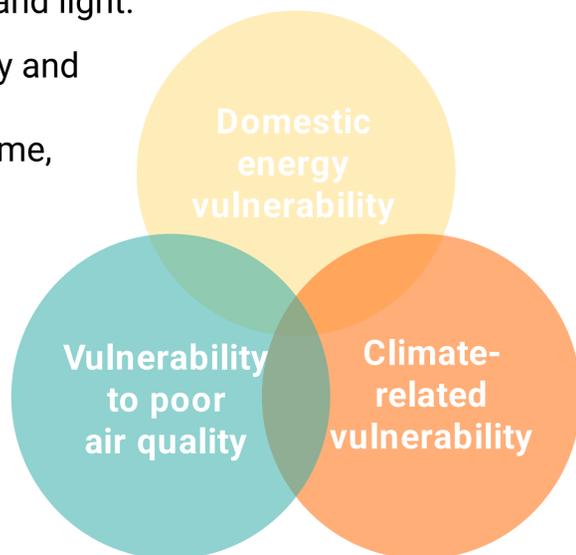
Ambience is the multiple, overlapping and shifting material forms that constitute a person's immediate surroundings – such as air quality, humidity, temperature and light.

The ambient environment is locally and temporally contingent, enveloping different spaces – whether the home, neighbourhood, or a journey - with inequitable implications.

While in the physical science sophisticated models are used to understand and predict the ambient environment for global systems (e.g., the IPCC), there is no overarching framing to consider the uneven implications for specific populations or places in cities.

Instead interconnected vulnerabilities are often dealt with in silos, limiting policymakers and practitioners ability to respond effectively.

Yet understanding how ambient vulnerabilities accumulate is integral to some of the most pressing social justice questions facing cities globally e.g., poor air quality, energy poverty, and extreme heat events.



Robinson & Williams (forthcoming in *Global Environmental Change*)

Energy vulnerability

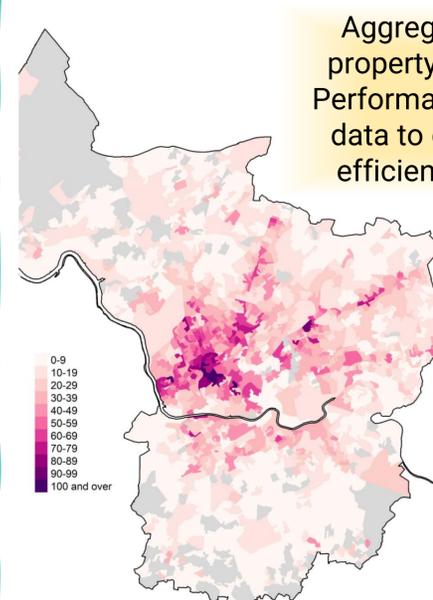


Fig. 1. Count of private rental properties with efficiency rating D or below across Bristol (DLUHC 2021, ONS 2022)

Excess urban heat

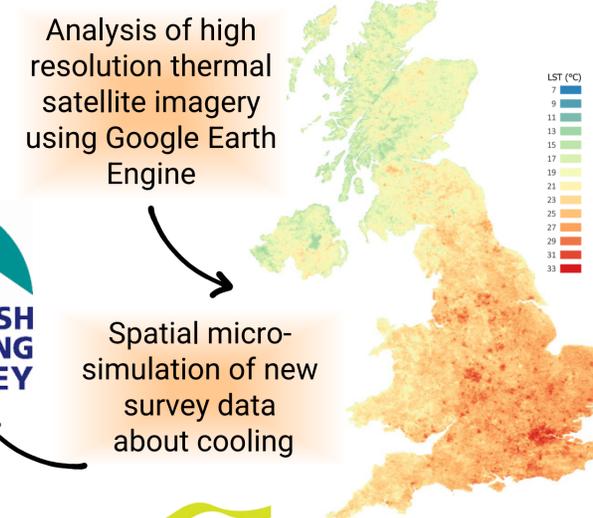


Fig. 2. Example of mapping Land Surface Temperature (MODIS 2022)

Indoor air quality

Integration of different data sources to understand intersection of indoor and outdoor pollutants



Policy + Practice (WP5)

How do we translate findings into impact?

Project collaborator, National Energy Action, is providing expertise to support with policy translation activities including a review of indoor air quality, calls for evidence, horizon scanning and stakeholder workshops.



Interested to find out more? I would love to hear from you
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