



**Health and Equity Impacts of Climate  
ChAnge Mitigation measures on indoor  
and outdoor air pollution exposure**

**Ten questions concerning the future of  
residential indoor air quality and its  
environmental justice implications -  
HEICCAM Early Career Researchers  
collaboration**



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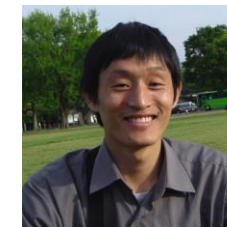
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# Why?

Make use of the collective knowledge from our network in:

- indoor and outdoor air pollution measurements and modelling
- building design and airflow
- exposure assessment in the indoor and outdoor environment and health effects of air pollution
- social responsibility around occupant behaviour
- environmental justice

to determine, what we believe to be, the ten most important questions regarding the future of indoor air quality, and take a transdisciplinary approach to answering them

# Dimensions of environmental justice



**Distributive** – Who is exposed to better or worse IAQ?

**Procedural** – How are decisions that affect IAQ made? Who is involved and has influence? What processes exist to challenge decisions? Who has access to IAQ information?

**Recognition** – Are certain groups the subject of discrimination or misrecognition leading to poor IAQ?

**Capabilities** – What is the capability of people to achieve good IAQ?

**Epistemic** – Who is respected in their capacity to know about IAQ? How are different groups' testimonies of poor IAQ are received?





# Question 1: What are the interactions between social gradients in health and exposure to poor indoor air quality?

- Social gradient in health - social characteristics such as SES correlates with worse health, a complex relationship that is not fully understood for IAQ
- Discuss the existing evidence as to why this is, such as inability to mitigate exposure due to financial, educational, and cultural barriers

# Question 2: What is understood about the inequalities of indoor air pollution?

- The complex relationship between environmental justice and sources of indoor air pollution
- Difficulty assessing distributive EJ claims for many indoor sources



## Question 3: What role can ventilation play in improving indoor air quality?

- Intentional and unintentional aspects of ventilation
- Energy efficiency and fuel-poverty vs IAQ, and the increased need for mechanical ventilation systems
- The need to integrate effective ventilation strategies into housing energy efficiency

## Question 4: How will climate change affect indoor air quality?

- Direct affects to outdoor air quality which will influence indoor environmental conditions
- Increased temperature in indoor environments will alter photochemical processes
- Adapting to climate change will induce changes in building design and resident behaviour (window opening, use of air conditioning, moving house), and who has access to these



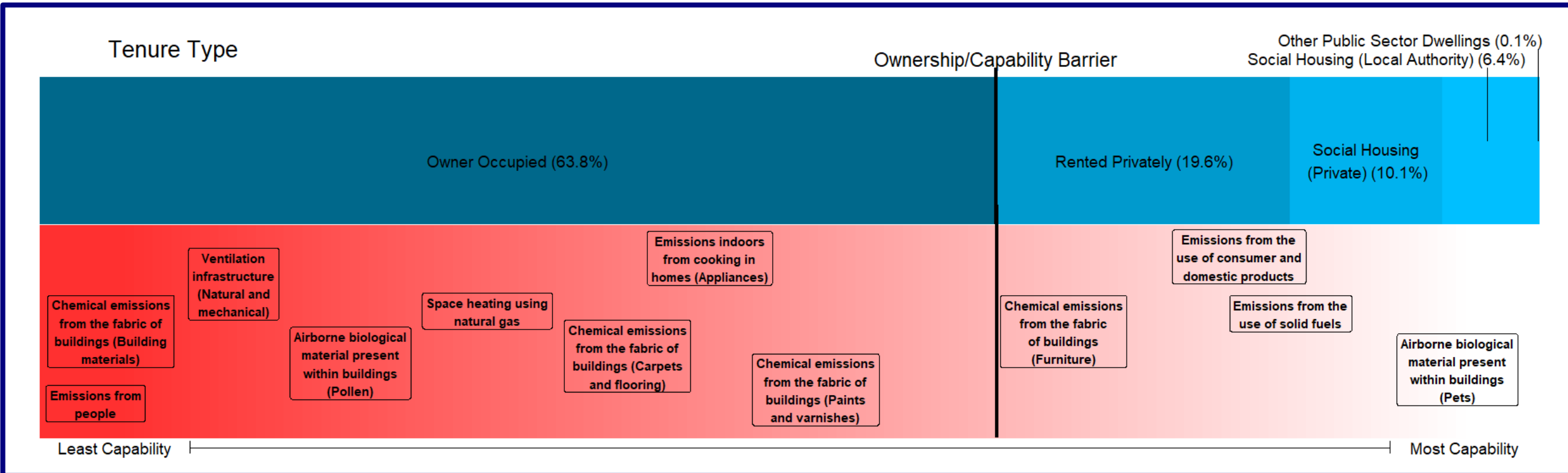
## Question 5: How will Net Zero policies affect indoor air quality?

- The extent to which possible improvements to IAQ through net zero policies will be equitably distributed
- Low-carbon building technologies as potential new pollutant sources and their influence on ventilation
- The change in the ingress of outdoor pollutants due to Net Zero transport policies aiming to reduce tailpipe emissions

## Question 6: How will the adoption of technological innovations indoors affect indoor air quality?

- Air cleaning devices, their potential ozone production, and associated costs
- Use of low-cost sensors could show how IAQ is distributed, and the barriers to who can access and use them
- Engaging with the data and translating knowledge into action

# Question 7: How will future population shifts and demographic changes impact indoor air quality?



Consumers have a limited ability to make informed product purchase and use decisions due to lack of information

- Tenure type as a capability barrier for behaviour change to improve IAQ





## Question 9: How should indoor air quality improvement strategies be incorporated into regulations?

- Shortcomings in current building design and construction regulations, including ventilation provision
- Source control (consumers) vs regulation of products and technologies whose use results in pollutant exposure (government) vs policy and advisory interventions (manufacturers)
- Devising effective regulation - coordinated action across government departments at the national level that is implementable at the local level

## Question 10: How can a transdisciplinary approach lead to better indoor air quality?

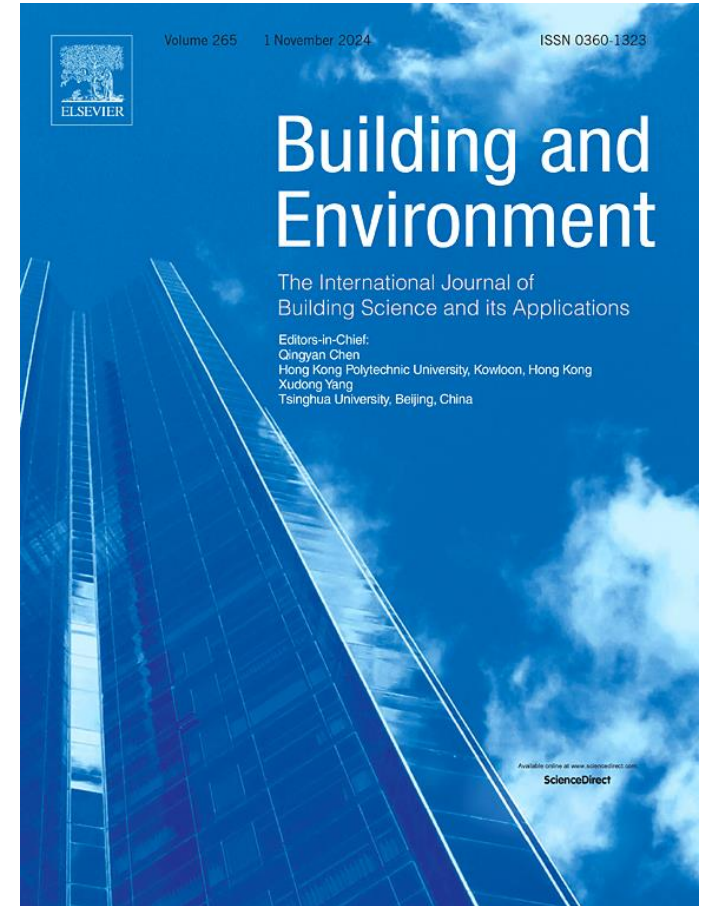
- The need to work across disciplines to develop new knowledge on how to improve IAQ through technological, behaviour and policy innovation
- The benefits of co-producing research with affected communities to ensure that the local context, lived experience, and priorities of affected communities are regarded



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