Breathing City

Future Urban Ventilation Network

Theme 3

Breathing City into Practice

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University of Strathclyde Glasgow

Theme 3: Challenges

Challenges

Awareness of pollution outdoors

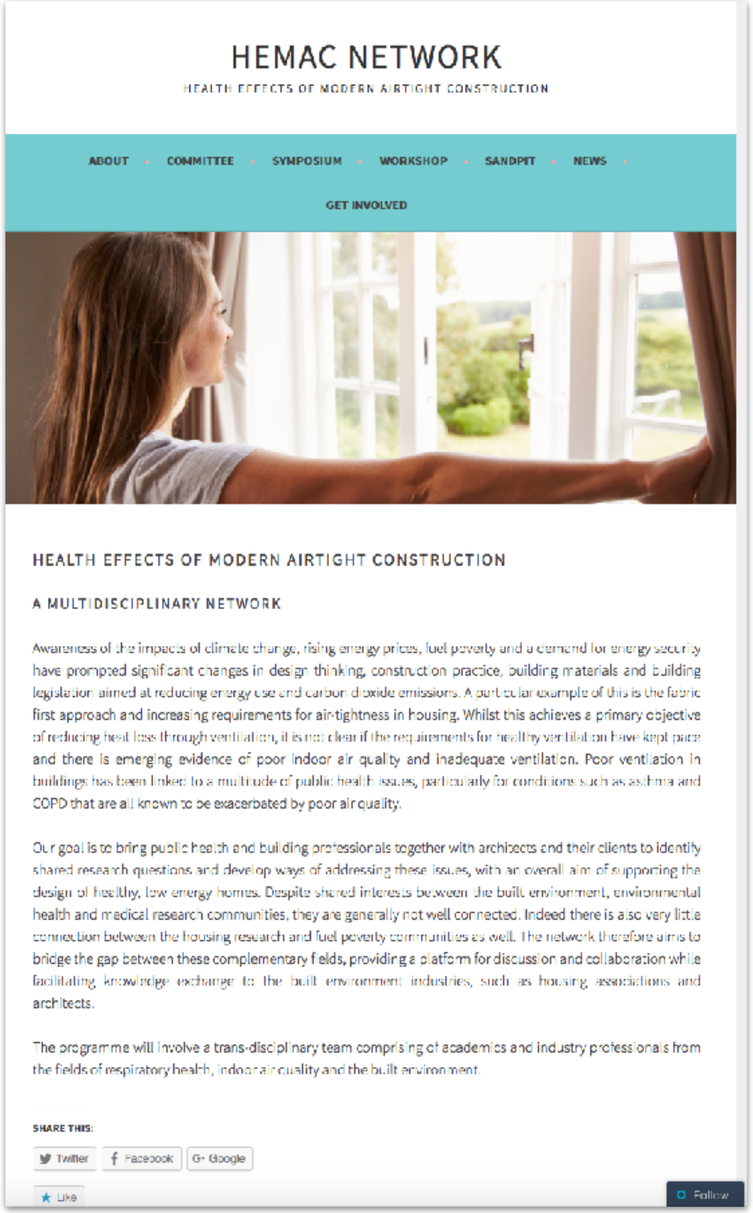
Challenges

Awareness of pollution outdoors
Increasing awareness of pollution indoors

- Health Effects of Modern Airtight Construction
- http://hemacnetwork.com

- Royal College of Paediatrics and Child Health
- https://www.rcpch.ac.uk/resources/inside-story-health-effects-indoor-air-quality-children-young-people

- National Institute for Health and Care Excellence (NICE): Indoor air quality at home
- https://www.nice.org.uk/guidance/ng149



HEMAC NETWORK

HEALTH EFFECTS OF MODERN AIRTIGHT CONSTRUCTION

ABOUT • COMMITTEE • SYMPOSIUM • WORKSHOP • SANDPIT • NEWS •

GET INVOLVED

HEALTH EFFECTS OF MODERN AIRTIGHT CONSTRUCTION

A MULTIDISCIPLINARY NETWORK

Awareness of the impacts of climate change, rising energy prices, fuel poverty and a demand for energy security have prompted significant changes in design thinking, construction practice, building materials and building legislation aimed at reducing energy use and carbon dioxide emissions. A particular example of this is the fabric first approach and increasing requirements for air-tightness in housing. Whilst this achieves a primary objective of reducing heat loss through ventilation, it is not clear if the requirements for healthy ventilation have kept pace and there is emerging evidence of poor indoor air quality and inadequate ventilation. Poor ventilation in buildings has been linked to a multitude of public health issues, particularly for conditions such as asthma and COPD that are all known to be exacerbated by poor air quality.

Our goal is to bring public health and building professionals together with architects and their clients to identify shared research questions and develop ways of addressing these issues, with an overall aim of supporting the design of healthy, low energy homes. Despite shared interests between the built environment, environmental health and medical research communities, they are generally not well connected. Indeed there is also very little connection between the housing research and fuel poverty communities as well. The network therefore aims to bridge the gap between these complementary fields, providing a platform for discussion and collaboration while facilitating knowledge exchange to the built environment industries, such as housing associations and architects.

The programme will involve a trans-disciplinary team comprising of academics and industry professionals from the fields of respiratory health, indoor air quality and the built environment.

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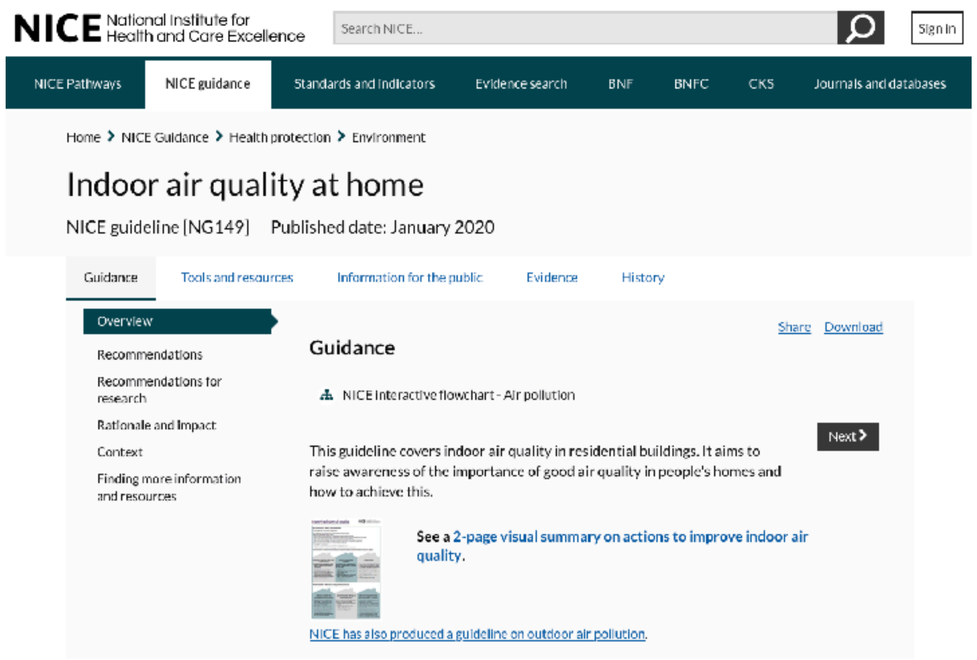
Challenges

Awareness of pollution outdoors

Increasing awareness of pollution indoors



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Challenges

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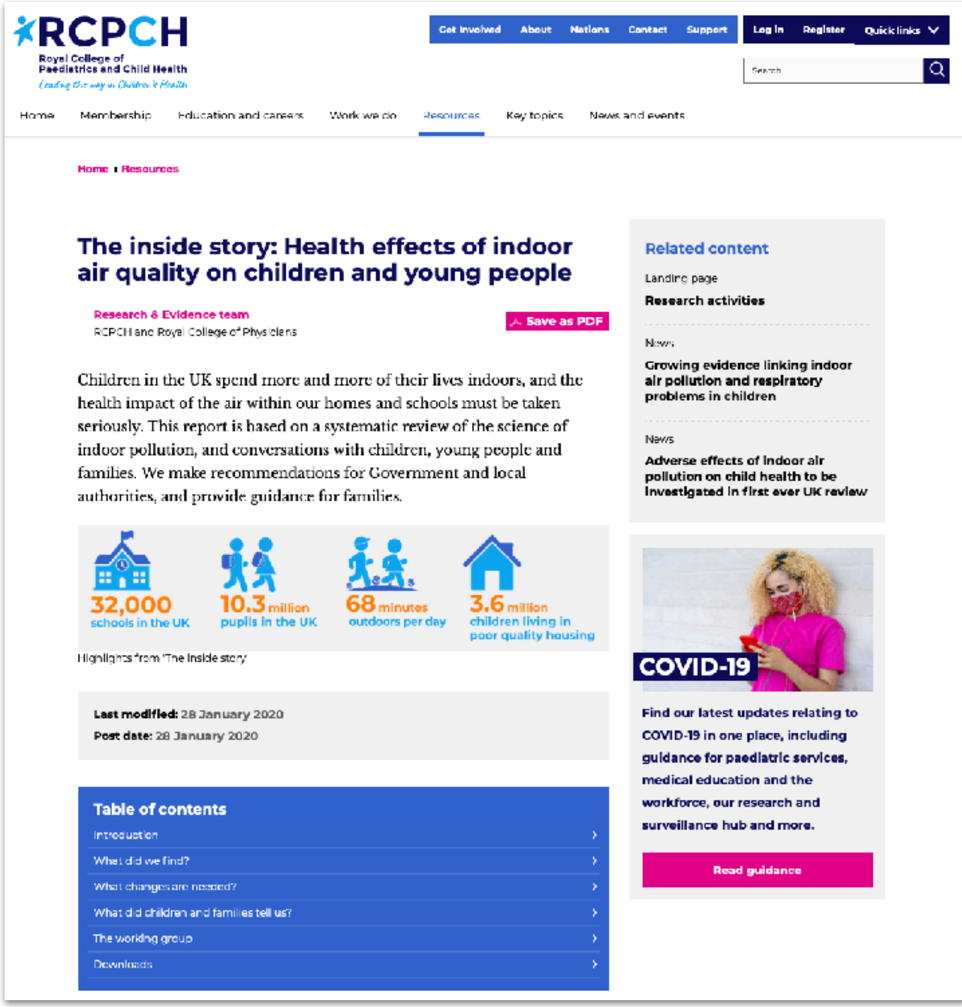

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Challenges

Where do these problems overlap?

Poor regulation - fragmented standards
Lack of compliance
Lack of design skills and tools
Lack of knowledge to inform user behaviour
No connection between urban and building scale problems

Challenges

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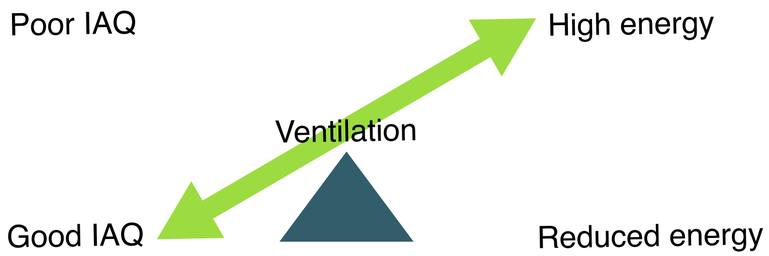

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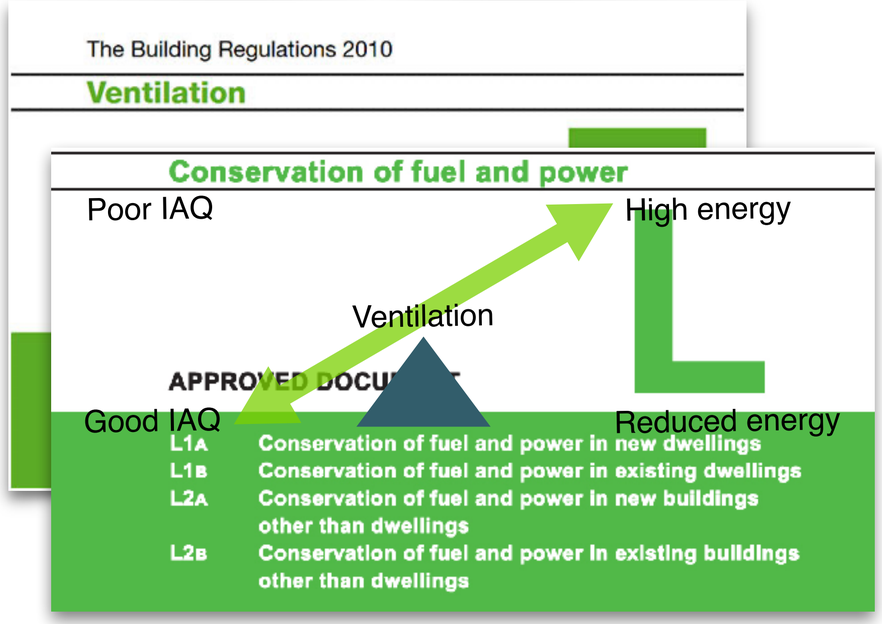

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Challenges

Dwelling	Fan Location	Avg	Design	Pass/Fail
IA1	Kitchen	25.60	60	Fail
	Utility	29.40	30	Pass
	Shower	7.50	15	Fail
	Bathroom	7.50	15	Fail
IA2	Kitchen	34.50	60	Fail
	Utility	31.90	30	Pass
	Shower	3.70	15	Fail
	Bathroom	4.60	15	Fail
IB1	WC	3.20	7	Fail
	Bathroom	4.90	15	Fail
IB2	WC	5.20	7	Fail
	Bathroom	4.00	15	Fail
	Kitchen	62.60	30	Fail
IC1	Kitchen	5.80	60	Fail
	Bathroom	7.30	15	Fail
IC2	Kitchen	8.50	60	Fail
	Bathroom	5.90	15	Fail
ID2	Kitchen	26.10	60	Fail
	Bathroom	6.90	15	Fail
BC1	Bathroom	11.83	15	Fail
	Kitchen	64.27	60	Pass
BB1	Bathroom	17.30	15	Pass
	Kitchen	71.87	60	Pass
BA1	WC	12.40	15	Fail
	Bathroom	2.80	15	Fail
	Kitchen	0.00	60	Fail
GB3	Bathroom	9.20	15	Fail
	Kitchen	32.57	60	Fail
GB1	Bathroom	11.13	15	Fail
	Kitchen	41.43	60	Fail
GB2	Kitchen	30.10	60	Fail
	Bathroom	16.30	15	Pass
LA5	Kitchen	67.80	60	Pass
	Bathroom	4.60	15	Fail
LA6	Kitchen	73.80	60	Pass
	Bathroom	7.40	15	Fail

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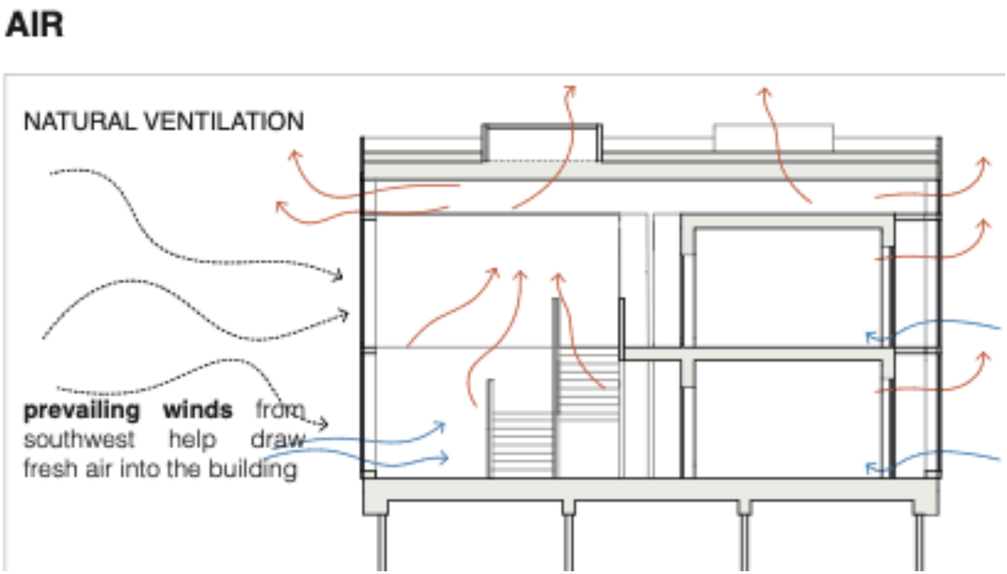

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Theme 3: Objectives

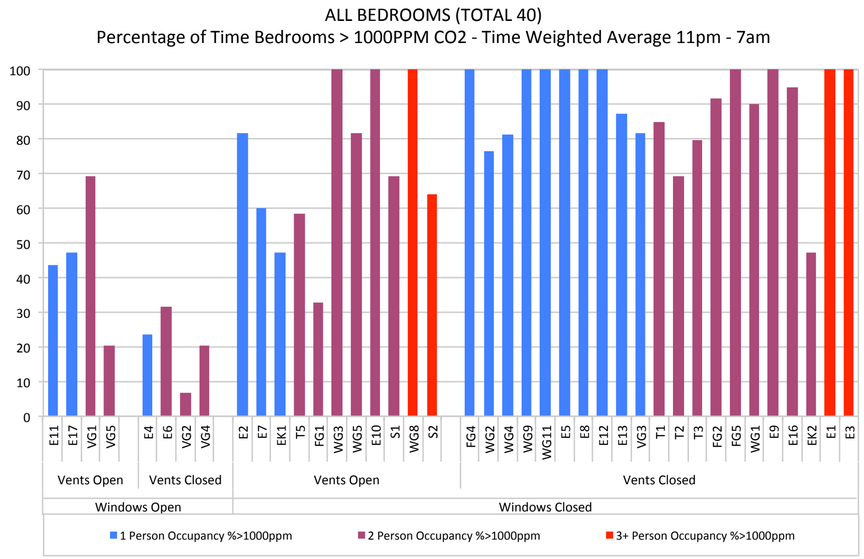
Using the networks knowledge and expertise to inform:

- **Policy, planning and regulation**
- **Tools and guidance for designers and clients**
- **Engage with industry and manufacturing**
- **Information, advice and tools for owners and occupants**
- **Citizen Science**
- **Data collection**

Theme 3: Objectives

How we inform policy and regulation

“… but no-one died”



The Scottish Government

Mackintosh Environmental Research Unit
Anderson Bell Christie
ASSIST DESIGN
ESRU, Dept of Architecture, Strathclyde University

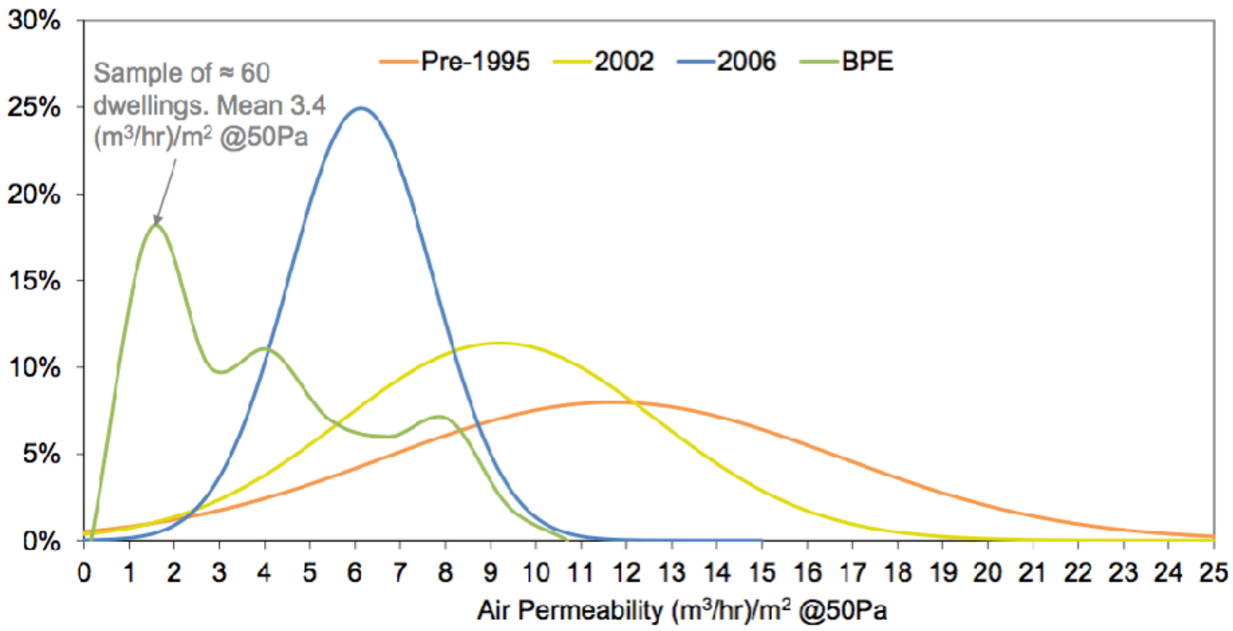
Research Project To Investigate Occupier Influence On Indoor Air Quality In Dwellings

21 August 2014

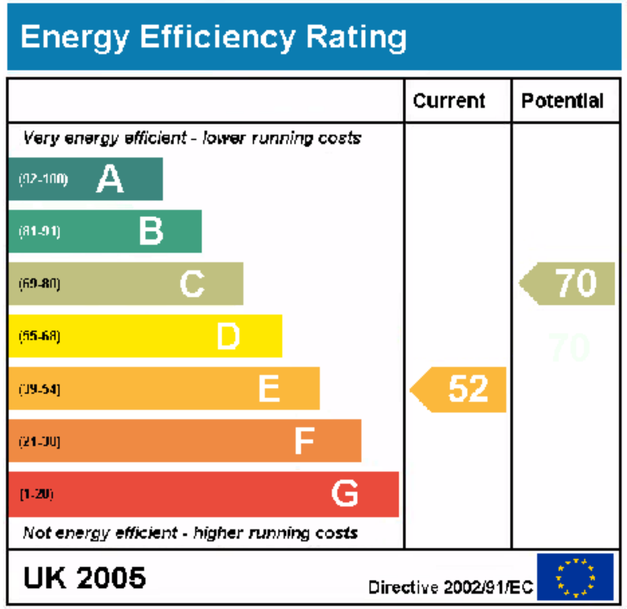
A8460432

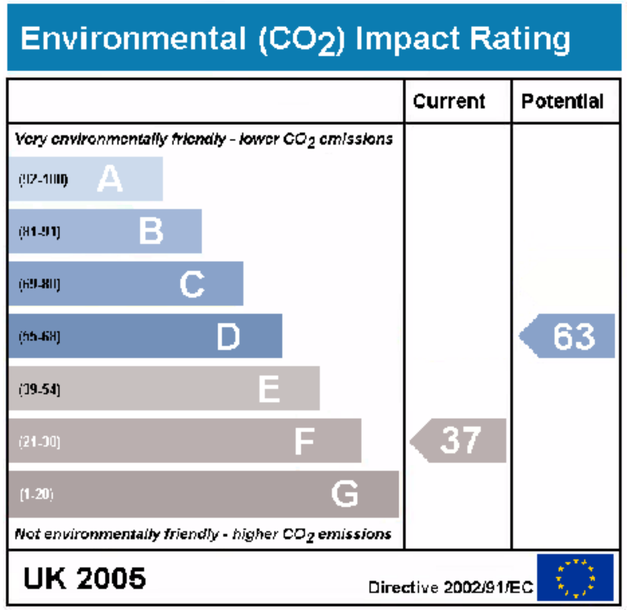
Theme 3: Objectives

How we improve design



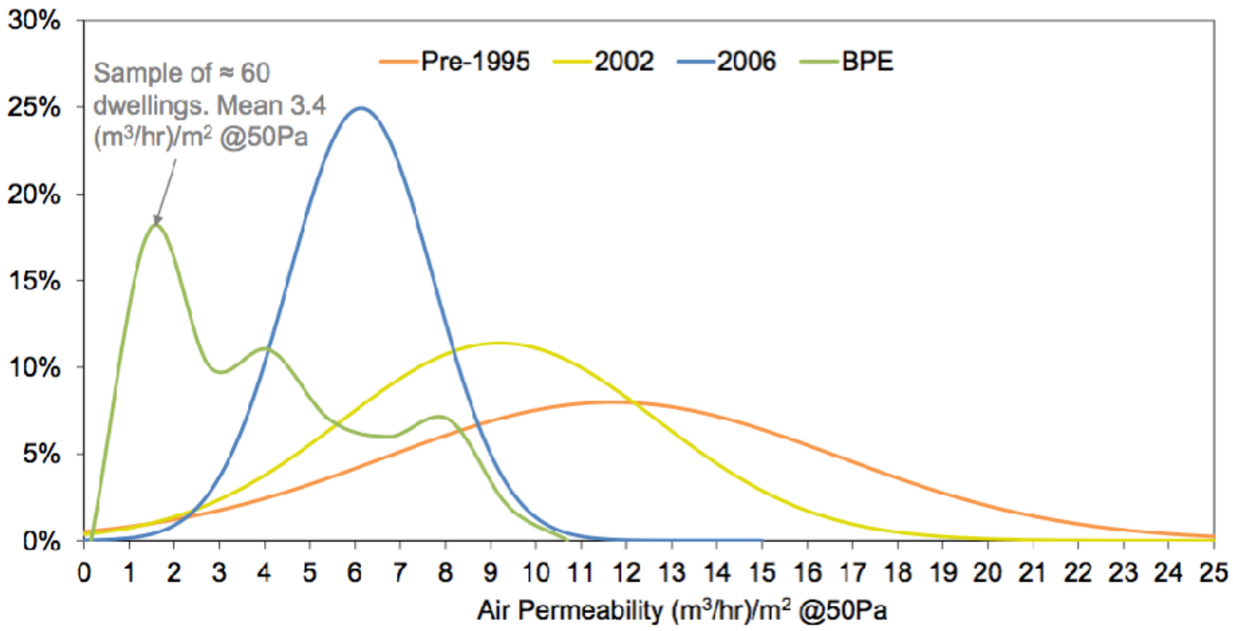
Source: Fourwalls, Building Sciences (RSK); Leeds Beckett University; Innovate UK BPE portfolio

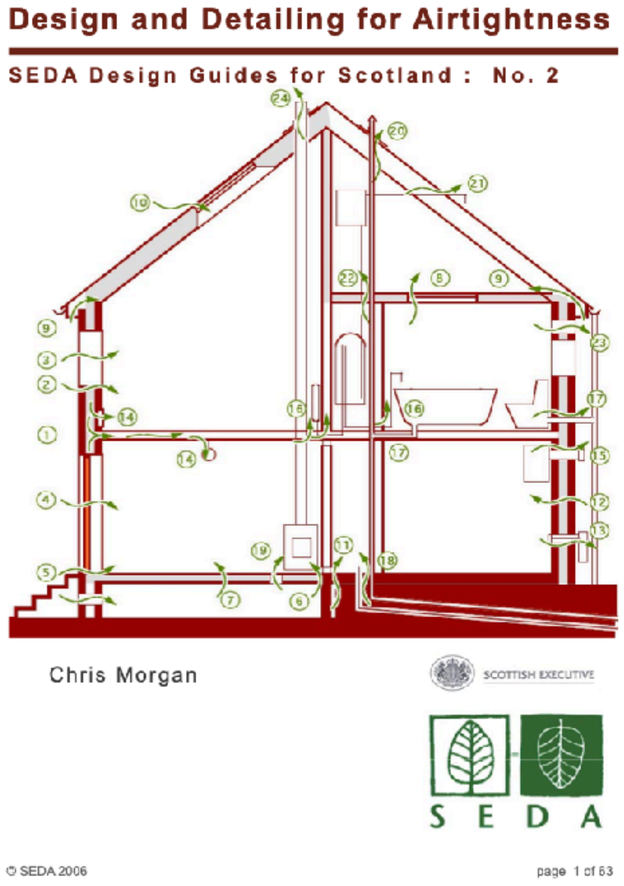




Theme 3: Objectives

How we improve design





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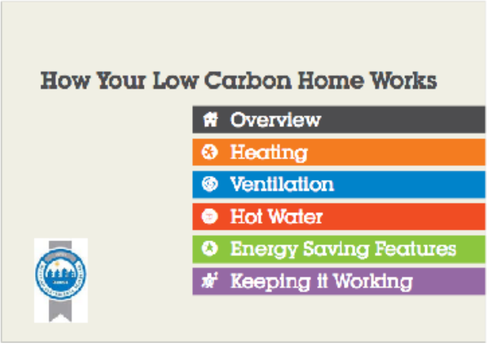
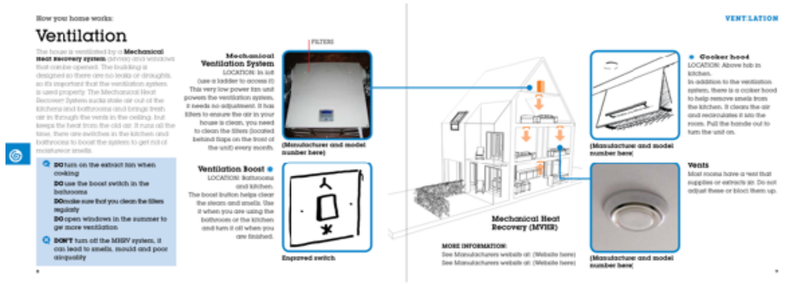
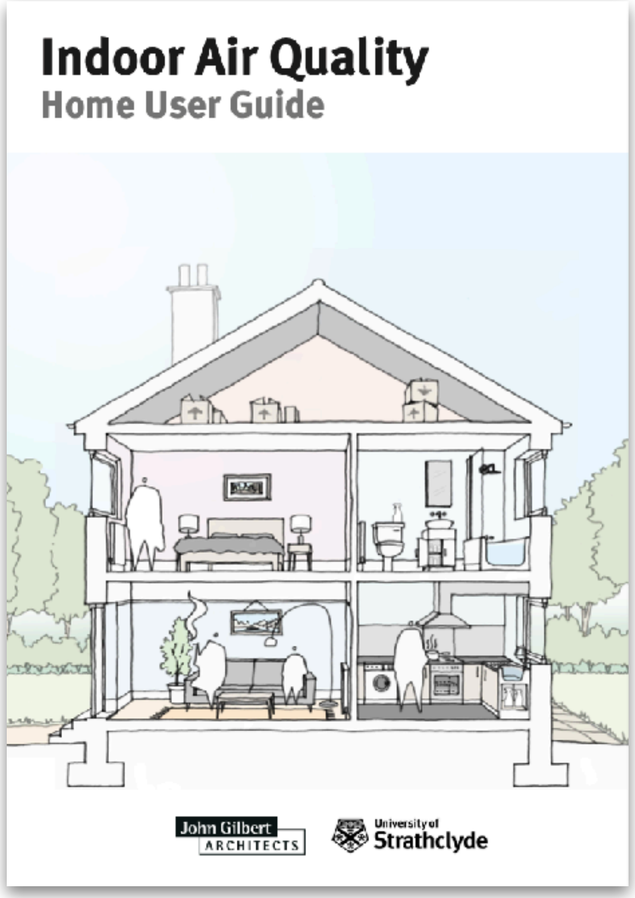
Theme 3: Objectives

How we inform and involve building users







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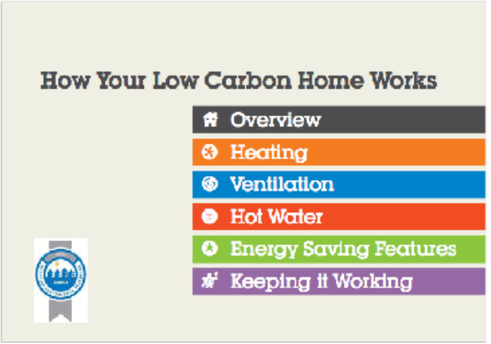
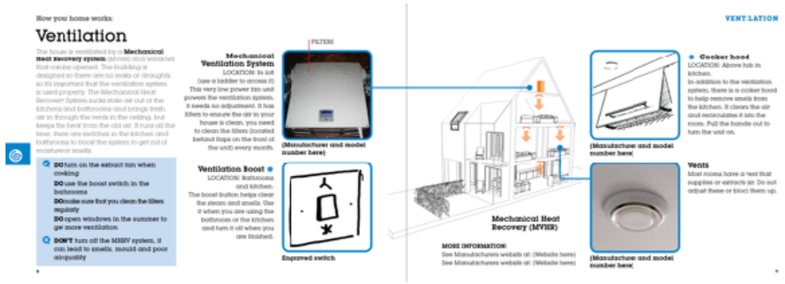
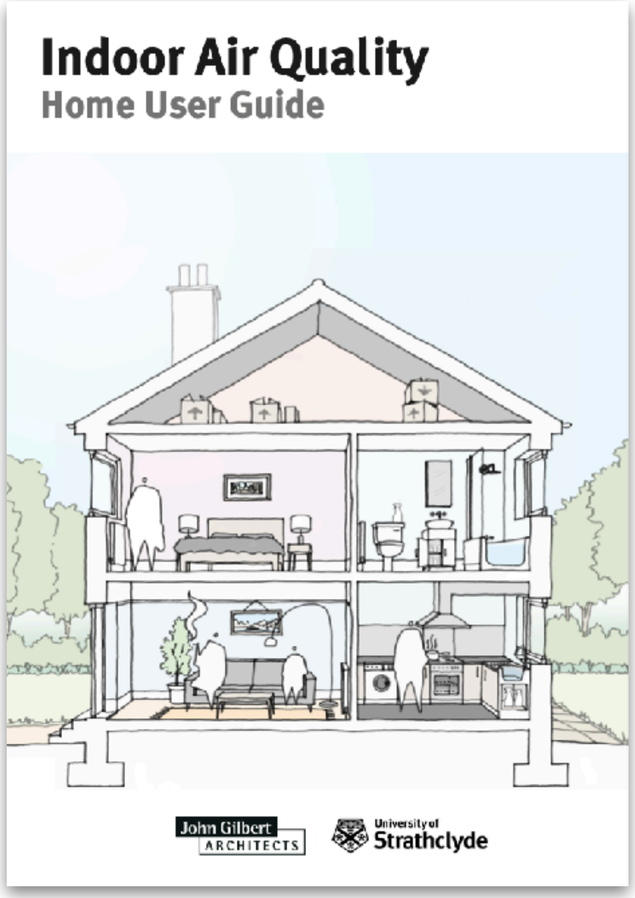


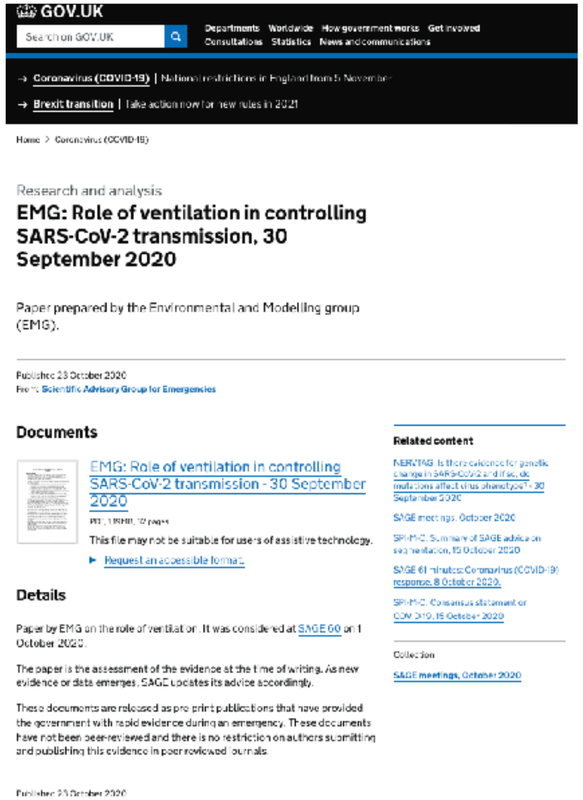




Outcomes

COVID: Translating knowledge into actions

Policy



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Research and analysis

EMG: Role of ventilation in controlling SARS-CoV-2 transmission, 30 September 2020

Paper prepared by the Environmental and Modelling group (EMG).

Published 23 October 2020
From: Scientific Advisory Group for Emergencies

Documents

EMG: Role of ventilation in controlling SARS-CoV-2 transmission - 30 September 2020

PDF, 1.19MB, 12 pages

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Details

Paper by EMG on the role of ventilation. It was considered at SAGE 60 on 1 October 2020.

The paper is the assessment of the evidence at the time of writing. As new evidence or data emerges, SAGE updates its advice accordingly.

These documents are released as pre-print publications that have provided the government with rapid evidence during an emergency. These documents have not been peer-reviewed and there is no restriction on authors submitting and publishing this evidence in peer reviewed journals.

Related content

NERVTAG: Is there evidence for genetic change in SARS-CoV-2 and if so, do mutations affect virus phenotype? - 30 September 2020

SAGE meetings, October 2020

SPI-M-O: Summary of SAGE advice on ventilation, 15 October 2020

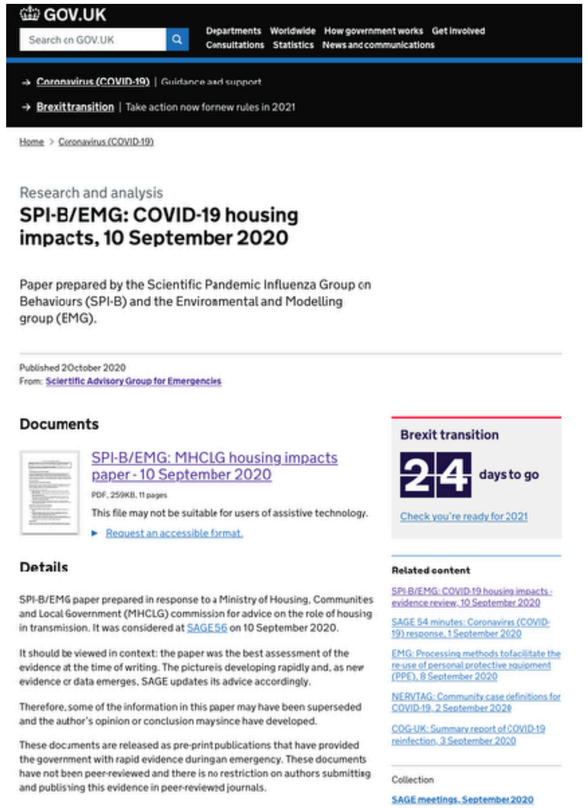
SAGE 61 minutes: Coronavirus (COVID-19) response, 8 October 2020.

SPI-M-O: Consensus statement on COVID-19, 15 October 2020

Collection

SAGE meetings, October 2020

Published 23 October 2020



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Research and analysis

SPI-B/EMG: COVID-19 housing impacts, 10 September 2020

Paper prepared by the Scientific Pandemic Influenza Group on Behaviours (SPI-B) and the Environmental and Modelling group (EMG).

Published 20 October 2020
From: Scientific Advisory Group for Emergencies

Documents

SPI-B/EMG: MHCLG housing impacts paper - 10 September 2020

PDF, 259KB, 11 pages

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Details

SPI-B/EMG paper prepared in response to a Ministry of Housing, Communities and Local Government (MHCLG) commission for advice on the role of housing in transmission. It was considered at SAGE 56 on 10 September 2020.

It should be viewed in context: the paper was the best assessment of the evidence at the time of writing. The picture is developing rapidly and, as new evidence or data emerges, SAGE updates its advice accordingly.

Therefore, some of the information in this paper may have been superseded and the author's opinion or conclusion may since have developed.

These documents are released as pre-print publications that have provided the government with rapid evidence during an emergency. These documents have not been peer-reviewed and there is no restriction on authors submitting and publishing this evidence in peer-reviewed journals.

Brexit transition

24 days to go

Check you're ready for 2021

Related content

SPI-B/EMG: COVID-19 housing impacts - evidence review, 10 September 2020

SAGE 54 minutes: Coronavirus (COVID-19) response, 1 September 2020

EMG: Processing methods to facilitate the re-use of personal protective equipment (PPE), 8 September 2020

NERVTAG: Community case definitions for COVID-19, 2 September 2020

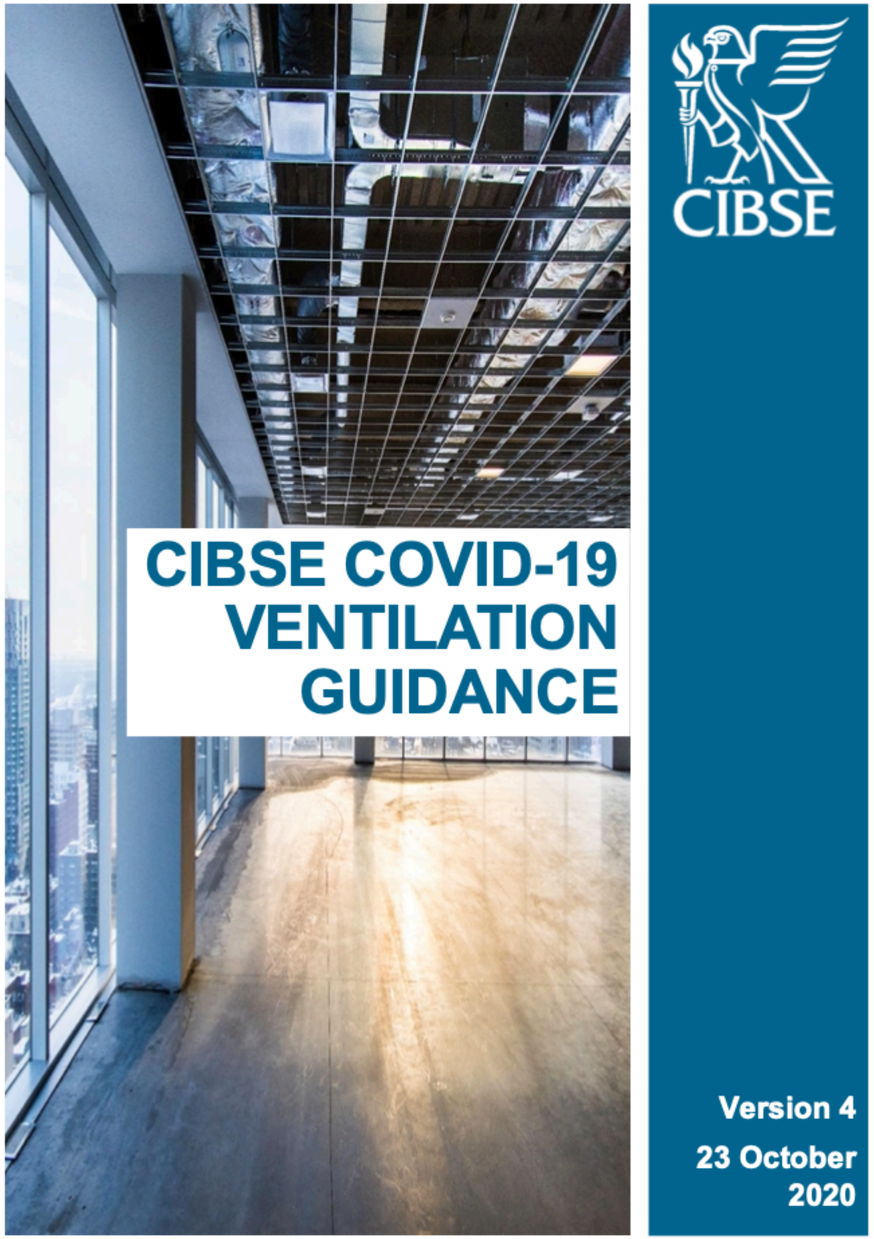
COG-UK: Summary report of COVID-19 reinfection, 3 September 2020

Collection

SAGE meetings, September 2020

Outcomes

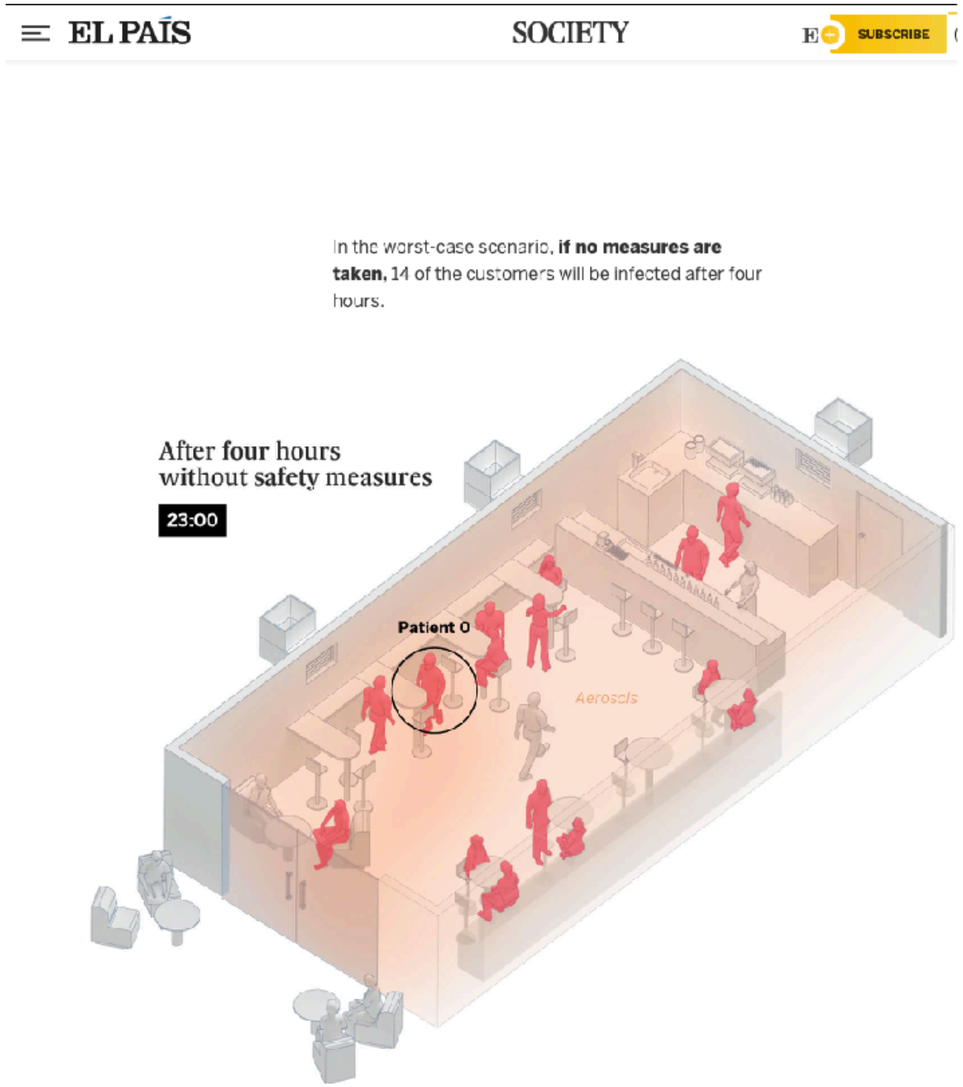
Translated into guidance for industry



Challenges

Translated into actions for people

- Initial Theme 3 project to survey ventilation awareness and use



https://english.elpais.com/society/2020-10-28/a-room-a-bar-and-a-class-how-the-coronavirus-is-spread-through-the-air.html

Challenges

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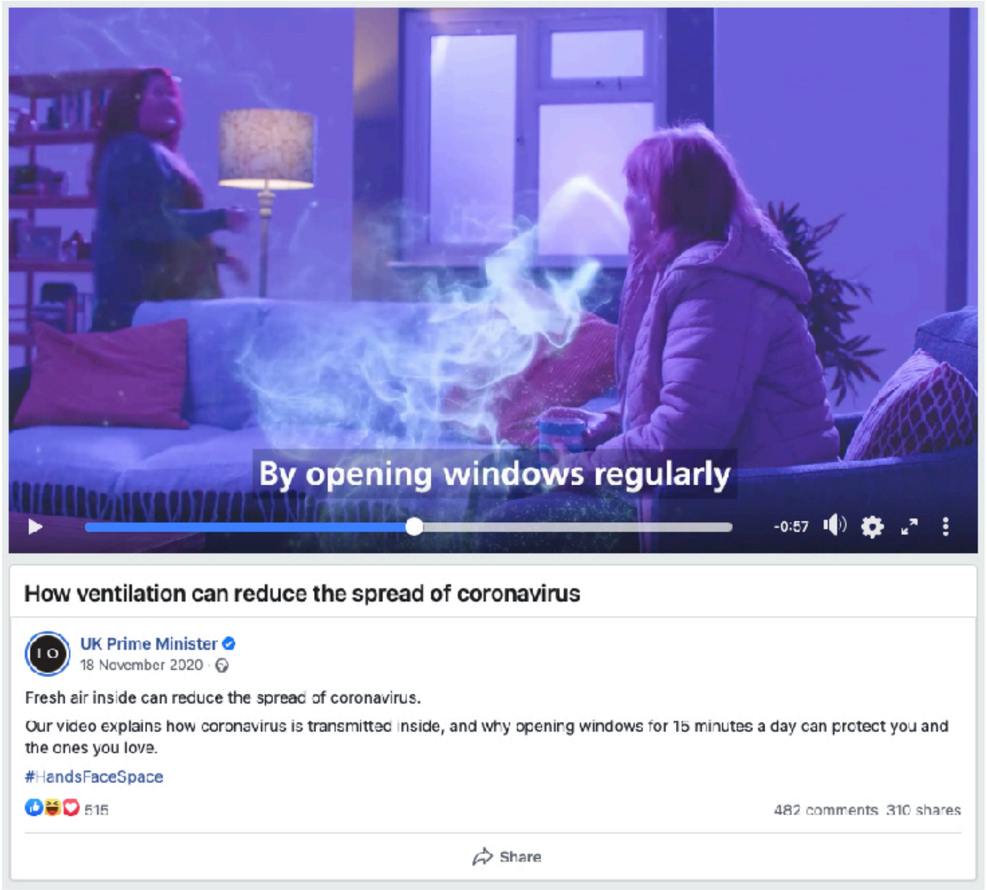

https://www.facebook.com/10downingstreet/videos/how-ventilation-can-reduce-the-spread-of-coronavirus/666766760697972/

Theme 3: Activities

Theme 3: Activities

Engage and inform users and stakeholders from micro to macro scales

Policymakers, regulators, standards, designers, building owners and operators and end users

Range of events, workshops, focus groups, pump priming studies, engagement activities planned over the course of the network.

Theme 3 citizen science activities – doing things *with* people not *to* people

Theme 3: How?

Theme 3 - Key Questions

Who are the key stakeholders that we need to engage with?

Stakeholders: Gaps in knowledge - what do they need to know?

What evidence is needed to drive policy and regulatory change?

How do we engage and inform built environment professionals?

What tools are needed to connect design from room/building/street/town/city? - where are the gaps?

Theme 3 - Key Questions

How can we collect data on pollution and health in buildings?

What information, advice, advocacy is needed by building users?

How can we engage with and inform building clients and users?

How can the network support people with health vulnerabilities?

Theme 3: Impact

“Buildings don’t use energy, people do” K. Janda

“Buildings don’t get sick, people do”