



A stakeholder view on the SNACC (Suburban Neighbourhood Adaptation for a Changing Climate) research project

Overall relevance & usefulness of research:

Over 85% of the population in England live in areas classified as 'suburban' which differ in physical characteristics, socio-economic and cultural characteristics of residents. Although awareness of climate change is increasing, our Quality of Life survey (www.bristol.gov.uk/page/council-and-democracy/quality-life-bristol) shows how few people make any link between a changing climate; and the impact upon daily life, homes and neighbourhoods.

Led by Professor Katie Williams at the University of the West of England working with researchers at Oxford Brookes and Heriot Watt universities, the SNACC project aimed to answer the research question '*How can suburban neighbourhoods be best adapted for a changing climate?*'

This research not only helps build our evidence base for climate risks in the city but also has implications for strategic planning policy, community resilience, neighbourhood planning, asset management, protection of vulnerable people and our own retrofitting programme.

Climate risks were appraised through a combination of downscaling UK climate projections, monitoring household summertime temperatures and computer modelling around 150-200 homes in two neighbourhoods. Focus groups were held with residents in St Werburghs and Upper Horfield to explore attitudes to risk and the acceptability of retrofitting measures at the home and neighbourhood scale to tackle overheating, water shortages, flooding etc.

SNACC highlights how the process of change in the suburbs is complex, with multiple stakeholders being responsible for climate risks, the built and natural environment. The majority of actions being undertaken by homeowners now focus on energy efficiency with adaptation not a priority, unless it helps save money or is related to hobbies e.g. rainwater butts for gardening. Likewise at the neighbourhood scale action is limited unless the area is part of a wider regeneration scheme.

The research highlights the extent to which homes – old and new – are overheating today. Although potentially 100% of homes could overheat by 2050 (based on a High Emissions scenario and 90% probability), the majority of residents in focus groups did not consider this to be a risk for reasons including recent poor summers and climate scepticism. Opening windows and other behavioural

means were also considered sufficient to cool their homes rather than having to resort to anything more substantial such as fabric changes.

What does the research tell us about a particular issue:

During the lifetime of a building there are limited windows of opportunity to make major alterations. SNACC has highlighted the need to seize any opportunities which present themselves during routine repairs and maintenance, whilst also pursuing integrated solutions for low carbon, resilient homes during major refurbishments. Energy saving measures need to complement climate adaptation measures rather than present conflicts or exacerbate risks e.g. insulation worsening overheating.

SNACC highlights the key factors contributing to overheating risk such as house orientation, street exposure (shading from trees), internal heat gains, local microclimate, ventilation, built form, glazing and building thermal mass. The three main ways of cooling homes are managing: i) the microclimate, ii) the effect of solar radiation, and iii) internal heat gains.

Underlying principles of the outputs:

The SNACC project presents a succinct overview of the risks facing suburbs as a result of climate change and the measures for improving resilience. It establishes ways of improving homes and the wider neighbourhood area which are acceptable to residents in the case study areas and explores their motivations for making home improvements. Importantly, it also considers climate mitigation and climate adaptation in a holistic way.

Engagement of stakeholders and the benefits accrued from exchange of information:

Through working with resident focus groups, the project team have established a suite of relatively simple and affordable measures which could be employed to reduce overheating e.g. external shading, solar film on windows and insulating primary pipework.

The research also highlights the potential confusion amongst homeowners on flood protection. Residents were unsure as to whether they needed to invest in flood resilience measures themselves or whether they would be protected by larger-scale flood defences. There were also concerns about implementing measures which might draw attention to the risks and affect future saleability of their property.

Did the outcomes meet the needs of you as a stakeholder:

Our involvement and commitment to the SNACC project has been more than validated through the wealth of results generated by the research team. The research has also facilitated a dialogue with colleagues about the challenges facing our neighbourhoods. Plus the research findings are very accessible in terms of language, visuals and conclusions, making them easier to disseminate and practical to use.

Initial expectations were that the project might yield information on the city's urban heat island through the downscaling of the UK climate change projections. However it became clear early on that this was an unrealistic aspiration and that a separate study would be required.

Comments on the utility and transferability of the outputs, potential conflicts or risk of uncertainty with respect to other available similar outputs possibly with a different message:

The ARCC programme includes a number of projects with similar outputs, including those looking at community resilience and overheating risk of buildings. It would be useful for the ARCC to produce synthesis papers on specific themes assimilating these outputs and making overall recommendations for practitioners, which will help iron out any inconsistencies or conflicts. This information could be contextualised by drawing on the latest thinking from industry leaders as well.

Value of knowledge exchange:

Participation in SNACC gave us access to leading experts well versed on the challenges facing our cities. We also helped shape the research by feeding our aspirations in at key points of the project and exchanging our knowledge of the city with the research team.

By attending the annual ARCC conferences we also were exposed to cutting edge research on the resilience of buildings, urban environments, transport networks, water resources and energy systems.

Problems/limitations and lessons learned for a user perspective:

Forums such as the resident focus groups are an invaluable way of engaging communities and the research team were successful in getting people to attend. For future events we will explore different types of emphasis and focus as a route to engagement including community resilience and quality of life. We are also keen to feedback the team's research findings to those residents and communities involved in the case study areas.

Evidence gaps and further research requirements:

The SNACC team used the UKCP09 Weather Generator to produce data on extreme weather events for us, such as heatwaves and the number of hot days exceeding defined thresholds. We had hoped to include this information in our corporate climate change training. However, to make this data more accessible to colleagues we need further support on explaining the limitations and inherent assumptions behind this data in order to improve its application.

Council's like ours also need more support to develop our evidence base of some climate risks at a citywide scale. For example, understanding our urban heat island better so that the city is prepared for heatwaves in the longer-term.

Promoting value to other stakeholders:

We're sharing SNACC's findings with colleagues across the council and shall continue to promote the research with our partners and communities, including our neighbourhood planning forums.

SNACC emphasises the need to implement packages of measures to make homes fit for the future. These need to be tailored to individual suburbs taking into account the type of housing, climate threats and response capacity of the area i.e. available resources and the socio-economics of residents.

Climate risks and initiatives to bring about change need to be framed appropriately. For example, focusing on home improvement, quality of life and comfort may be more successful with communities than starting with the climate science. Overheating risk needs to be emphasised, particularly amongst groups vulnerable to heat stress.

Local authorities and other key stakeholders need to provide clarification for communities on the pathways for change in suburbs. Together we also need to foster the 'normalisation' of home improvements which reduce energy use; and provide robust, safe and comfortable homes into the future.

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