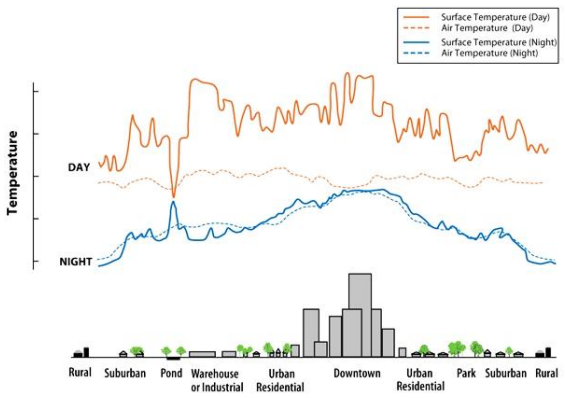
RP2005

RETROFITTING AUSTRALIAN PRECINCTS FOR HEATWAVE RESILIENCE

Problem

The frequency and intensity of heatwaves are rising (Alexander et al. 2007; Nairn and Fawcett 2013). Heatwaves are exacerbated by the urban heat island (UHI). In Australia, heatwaves were responsible for more deaths than all the other natural hazards combined (Coates 1996).

Figure 2 UHI on a city section, adopted from US EPA



1. Vulnerability to urban heatwave (UHW) studies miss location-specific weather data and the characteristics of built environment

2. Studies on mitigation do not integrate socioeconomic vulnerability and thermal perception

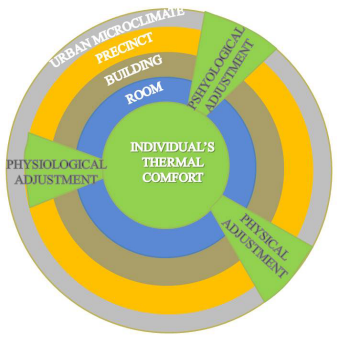


Figure 1 Thermal comfort in urban microclimate

3. Retrofitting existing building stock is unmanaged and overlooks population's willingness to retrofit

4. Missing link between mitigation and adaptation

5. Only a few precinct-scale studies exist

6. UHWs in suburbs are overlooked.

Solution

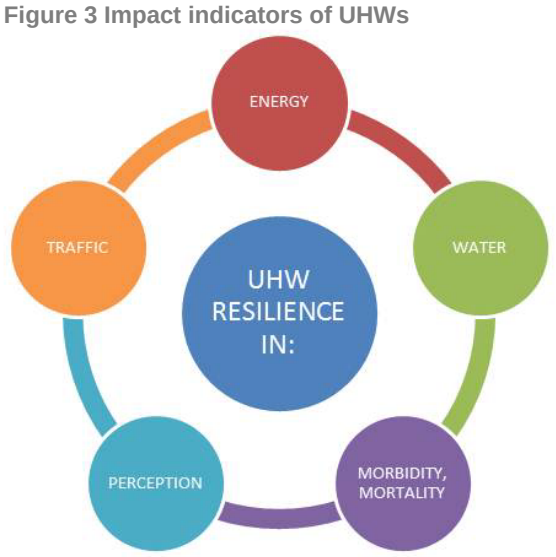
Function and climate conscious retrofitting of precincts considering the characteristics of the local population and built environment.

Benefits

1. The knowledge of the different level of precincts' heatwave resilience in water, energy and morbidity is vital.

2. The quantification of precinct resilience is essential to gauge the effectivity of retrofitting techniques on heatwave resilience.

Figure 3 Impact indicators of UHWs



3. An evaluation tool for retrofitting can illuminate aspects such as social feasibility, local vulnerability and number of adaptive opportunities available.

Future research on mitigation and adaptation techniques to heatwaves has to be more overarching across disciplines.

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