



# Resilient cooling of building- A review of definition and assessment criteria

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## ABSTRACT

- With climate change, extreme events are going to increase in intensity and frequency. Overheating caused by heatwaves or power outages is a disruption, which will have a bigger impact on buildings. To mitigate overheating effects, the use of air conditioning is popularized in buildings. However, it is not a sustainable solution. As a consequence, the term resilient cooling was introduced.
- Our objective is to propose a definition framework to identify criterias which make a building cooling resilient.
- Based on literature review and focus group discussions, a framework for the definition of resilient cooling is proposed. We identified four main criteria: vulnerability, resistance, robustness and recovery.

## KEYWORDS

Climate change, overheating, adaptation, cooling technologies, resilience

## PROBLEM

- Overheating is a disruption which impacts more and more buildings cooling efficiency and energy requirements. It is driven by many factors such as climate change and urbanisation.
- To guide cooling development towards sustainable solutions, the term resilient cooling is now promoted as a desired feature in the built environment. However there is a need for conceptual clarity in using this notion.

## OBJECTIVE / HYPOTHESIS

- Our goal is to propose a framework which define a building that procure a resilient cooling. We will identify criteria that will help us assess qualitatively the cooling resilience of buildings.

## AUDIENCE

Public authorities, built policies

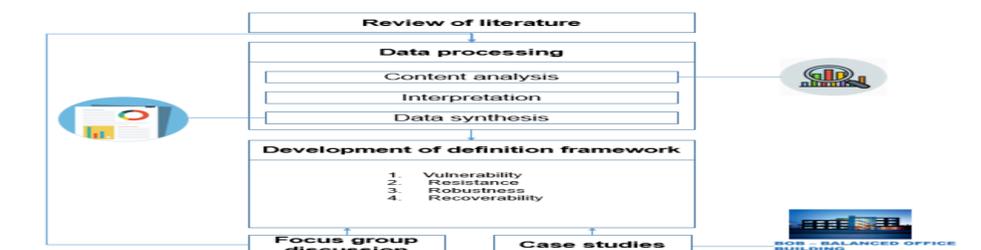
## RESEARCH QUESTION

- What make a building cooling resilient is a four part question: resilience of what, to what, by what means and with what outcome?

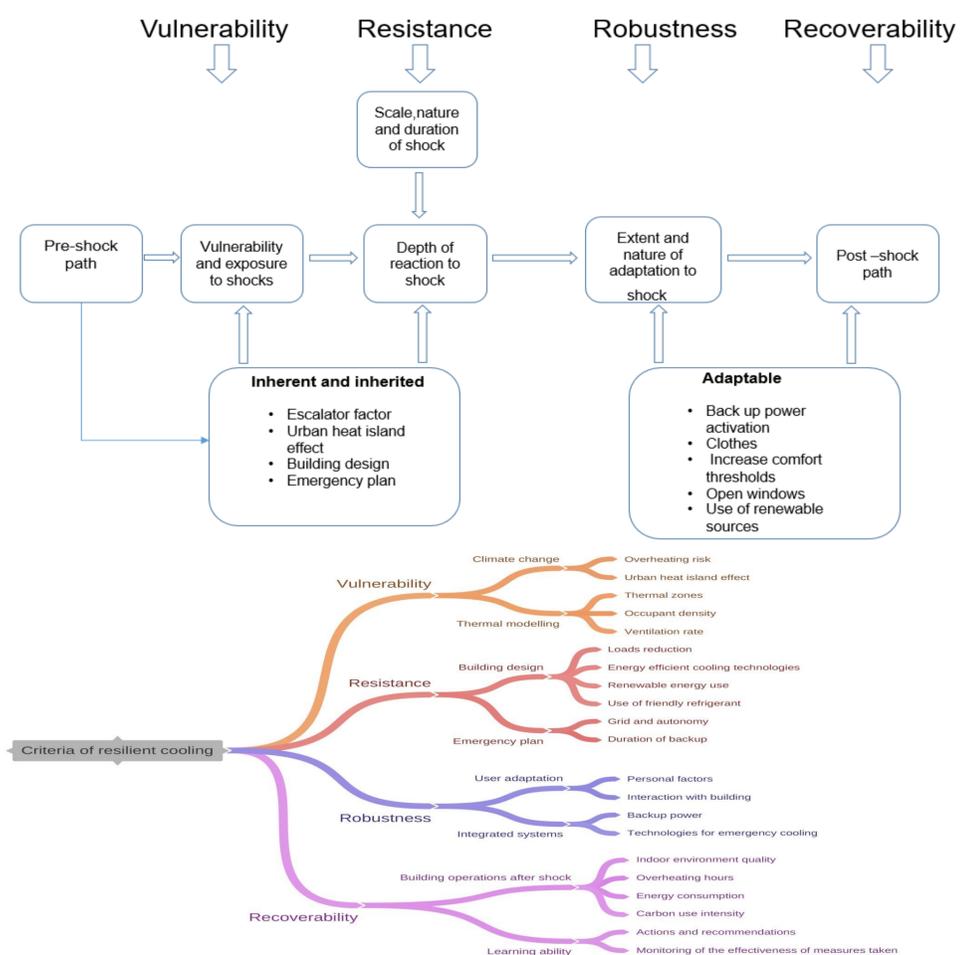
## ORIGINALITY

- Resilient cooling is a concept relatively new so there aren't any publications which propose a definition and assessment framework.

## METHODOLOGY



## RESULTS



## CONCLUSION

- This framework allows us to ensure the cooling performance of a building during all its life cycle and to improve its resiliency after each disruptions.
- Cooling resilience is a process that involves several elements: vulnerability, resistance, robustness and recoverability.
- Building cooling resiliency can be assess from the preparedness to overheating with simulations and parametization, the use of passive/active adaptive strategies to the implementation of new recommendations after the shock.

## Resources

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