

## Resilient Design Solutions for Megathermal Climates of the Global South

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**Abstract :** The impacts of climate change on urban settlements is growing. In the global south, communities are even more vulnerable and suffer there is an increased vulnerability from due to climate change disasters such as flooding and high temperatures. This is primarily due to high intensity rainfall, low-lying coasts, inadequate infrastructure, and limited resources. According to the Emergency Events Database, floods were the leading cause of disaster -based deaths in the global south between 2006 and 2015. This includes deaths from heat stress related health outcomes. Adapting to climate vulnerabilities is paramount in reducing the significant redevelopment costs from climate disasters. Governments and urban planners provide top-down approaches such as evacuation, and disaster and emergency communication. While they address infrastructure and public services, they are not always able to address the immediate and critical day to day needs of poor and vulnerable populations. There is growing evidence that some bottom-up strategies and grassroots initiatives of self-build housing such as in urban informal settlements are successful in coping and adapting to hydroclimatic impacts. However, these research findings are not consolidated and the evaluation of the resilience outcomes of the bottom-up strategies are limited. Using self-build housing as a model for sustainable and resilient urban planning, this research aimed to consolidate the flood and heat stress resilient design solutions, analyze the effectiveness of these solutions, and develop guidelines and methods for adopting these design solutions into mainstream housing in megathermal climates. The methodological approach comprised of analyses of over 40 ethnographic based peer reviewed literature, white papers, and reports between the years 2000 and 2019 to identify coping strategies and grassroots initiatives that have been applied by occupants and communities of the global south. The results of the research provide a consolidated source and prioritized list of the best bottom-up strategies for communities in megathermal climates to improve the lives of people in some of the most vulnerable places in the world.

**Keywords :** resilient, design, megathermal, climate change

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