

Strategies for Implementing Climate-Resilient Urban Public Spaces: Key Principles of Public Space Design based on People-Centred and Climate-Responsive

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Abstract : The impacts of climate change are increasingly affecting major cities around the world. In April 2024, floods paralyzed Dubai, while in May of the same year, the city of Sao Leopoldo in southern Brazil, Rio Grande do Sul, experienced significant flooding that resulted in hundreds of casualties. In Europe, extreme weather along the Czech-Polish border caused rivers to overflow, carrying debris that destroyed historic cities and bridges and damaged homes. By the end of October 2024, further torrential flooding in Valencia, Spain, led to fatalities. Meanwhile, Southeast Asian cities, particularly Jakarta, are also highly vulnerable to the impacts of climate change and face the threat of being submerged due to rising sea levels. In response, the Indonesian government plans to relocate the capital to East Kalimantan, as Jakarta is no longer suitable as the capital city due to major urban problems and the impact of climate change. Given these circumstances, urgent action is needed to develop climate-resilient urban mitigation and adaptation strategies. One promising approach involves developing public space infrastructure that serves multiple functions, enhances resilience, and improves community welfare. Current urban design trends that adapt to climate change can create a new typology of spaces that respond to present or future climatic conditions. Small-scale interventions, such as designing and developing climate-resilient public spaces strategically located within spatial planning, can drive large-scale changes by transforming the urban context and enhancing the city's resilience to climate change. Public spaces represent the identity of a city, and functional public spaces that consider natural elements foster a harmonious interaction between the city and its environment. Additionally, the environmental design of these public spaces can help reduce hot temperatures in densely populated urban areas. The objective of this research is to identify suitable public spaces for transformation that can address climate adaptation challenges. Strategies for creating climate-resilient urban public spaces are categorized into two main aspects: tangible and intangible. Intangible strategies focus on community engagement and incorporate the 'Penta Helix' model, which includes five key elements: government, community, academia, business, and media. Tangible strategies encompass infrastructure design that adapts to climate change and adheres to several key principles: community co-creation, community health and welfare, learning through local themes, encouraging behavior change and new habits, fostering green entrepreneurship, enhancing environmental resilience, and promoting ecosystem integration. The outcome of these strategies is to create distinctive and inclusive public space architecture, including biophilic design elements. The methodologies employed in this study include both quantitative and qualitative approaches. The result of this study is a strategic concept that outlines key principles for designing community-centered and climate-responsive public spaces. By identifying the vital role of public spaces, this strategy can serve as a foundation for city-level climate adaptation efforts and raise awareness about the urgency of urban resilience, leveraging existing infrastructure opportunities. Furthermore, this research contributes to the global understanding of resilient urban design, offering valuable insights for other regions facing similar challenges.

Keywords : climate adaptation, city resilience, urban public space, community engagement

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