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Climate Change and Building Energy Efficiency

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Message from the Guest Editors

Dear Colleagues,

The building sectors are estimated to be responsible for 30-40% of the total global energy consumption and 20% of the global greenhouse gas emissions; therefore, improving the energy efficiency of infrastructure is critical to solving the climate crisis. Considering that building and construction assets are typically designed to last for several decades or even centuries, the resiliency of the buildings and their energy systems to climate change should be evaluated and improved. Building designs and energy-saving interventions should be reconsidered under different climate scenarios, specifically future scenarios, to evaluate the robustness of these strategies and to determine their potential risks.

In this Special Issue, articles on topics such as climate change's impacts on buildings, mitigation of climate change effects on infrastructure, building energy saving and performance evaluations for future climate predictions, net-zero energy buildings, climate-resilient building and so on are of interest.

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Message from the Editor-in-Chief

Current urban environments are home to multi-modal transit systems, extensive energy grids, a building stock, and integrated services. Sprawling neighborhoods are composed of buildings that accommodate living and working quarters. However, it is expected that the cities and communities of the future will face complex and enormous challenges, including maintenance, interconnectivity, resilience, energy efficiency, and sustainability issues, to name but a few. A smart city uses advanced technologies and a digital infrastructure to improve the outcomes in every aspect of a city's operations. A smart building optimizes the experience of occupants, staff, and management by using a modern and connected environment. Innovations in technology that can bring dramatic improvements to design, planning, and policy are critical in developing the cities and buildings of the future.

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