Special Issue

Low-Carbon Urban Development and Building Design

Message from the Guest Editor

Urban development and building design are affecting the living environment via inducing carbon emission during urban and building operation. In the face of environmental challenges, such as the depletion of natural resources, the deterioration of indoor and outdoor air quality, human thermal comfort and an aging society, architects and urban designers are required to create designs that combine related technologies. From the perspective of sustainable urban development, research related to low-carbon building evaluation and technology development is focusing on individual buildings. For sustainable urban planning and building design, the environmental effects of building layout and building facade design, as well as vegetation, should be evaluated. For low-carbon development, the relationship between outdoor climate change and indoor energy consumption should be considered because building design and surrounding conditions are effecting the overall carbon emission. The aim of this Special Issue is to gather research that addresses comprehensive environmental problems and seeks to break the barriers between the building and urban scales.

Guest Editor

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About the Journal

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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