Special Issue

Sustainability Beyond Building(s) Toward Real Zero-Impact Buildings

Message from the Guest Editor

Sustainability in the built environment extends far beyond the walls of individual structures. While zeroenergy and low-carbon goals have informed building design for decades, true long-term balance demands that we reconceive how we procure, use, and regenerate resources—both within buildings and across the larger infrastructure systems that support them. We invite interdisciplinary perspectives that probe questions of scale and temporality: How do short-lived building components interact with century-scale resource cycles? What benchmarks can guide "absolute" evaluations of sustainability rather than relative improvements? How can we learn from traditional, low-impact dwellings—such as earthen or timber structures—that have inherently low embodied impacts and rely on local, regenerative materials? By fostering collaboration among architects, engineers, ecologists, and systems analysts, we aim to accelerate the shift toward buildings—and supporting infrastructure -that genuinely operate within planetary limits and endure for generations to come.

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.

Editor-in-Chief

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