Special Issue

Emission Reduction Paths Through Energy-Saving Technology Innovation for Buildings

Message from the Guest Editor

Buildings account for over 40% of global energy consumption, with environmental control systems—particularly air conditioning. Accelerated urbanization and extreme weather intensify demand, driving urgent innovation in energy-efficient technologies to meet carbon neutrality goals. However, fragmented systems and high lifecycle costs hinder progress. Analyzing spatiotemporal innovation patterns and carbon reduction pathways can advance regional and household decarbonization strategies. This Special Issue emphasizes spatiotemporal dynamics, socioeconomic drivers, and emission reduction impacts. Topics of interest include, but are not limited to:

- The spatiotemporal characteristics of energy-saving technology innovation for buildings;
- The economic and social drivers of energy-saving technology innovation for buildings;
- The impact of energy-saving technology innovation on household carbon neutrality;
- The influence of energy-saving technology innovation for buildings on carbon efficiency;
- The contribution of energy-saving technology innovation for buildings to air pollution mitigation;
- Health co-benefits of energy-saving technology innovation for buildings.

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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