

Special Issue

Data-Driven Approaches for Building Energy Assessment and Sustainable Retrofit

Message from the Guest Editors

The building sector is a major contributor to global energy use and carbon emissions, and its energy intensity directly affects progress toward carbon neutrality and sustainable urban development. With the rapid advancement of IoT, big data, and artificial intelligence, data-driven approaches offer new perspectives for energy assessment, operational optimization, and renovation strategies, improving prediction accuracy and retrofit performance. This Special Issue aims to present recent research and reviews on data-driven methods for building energy assessment, diagnostic analysis, energy-saving potential identification, and sustainable retrofit strategies. Research areas may include, but are not limited to:

- Multi-source energy data processing
- Data-driven building energy assessment methods and models
- Construction and optimization of prediction models
- Big data and AI applications in building energy efficiency
- Monitoring and optimization technologies for energy performance
- Carbon accounting and low-carbon retrofit pathways
- Sustainable design and retrofit technologies
- Energy consumption simulation for regional building clusters

Guest Editors

Dr. Jinxin Gao

School of Economics and Management, Dalian University of Technology, Dalian 116081, China

Dr. Yanyan Ke

College of Harbour and Coastal Engineering, Jimei University, Xiamen 361021, China

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Buildings
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
buildings@mdpi.com

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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

Prof. Dr. David Arditi

Construction Engineering and Management Program, Department of Civil, Architectural, and Environmental Engineering, Illinois Institute of Technology, 3201 South Dearborn Street, Chicago, IL 60616, USA

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