Special Issue

Computer-Aided Sustainable Development in Underground Engineering

Message from the Guest Editors

Underground engineering has emerged as a critical infrastructure solution for addressing the growing challenges of urbanization, resource scarcity, and environmental sustainability. As global populations continue to concentrate in urban areas, the efficient utilization of underground space becomes increasingly vital for sustainable city development. The integration of advanced computer-aided technologies with sustainable engineering practices represents a paradigm shift in how we design, construct, monitor, and maintain underground infrastructure systems. The convergence of computational methods, artificial intelligence, digital twin technologies, and sustainable engineering principles offers unprecedented opportunities to optimize underground projects while minimizing environmental impact. From smart tunneling systems and automated construction processes to predictive maintenance and lifecycle assessment tools, computer-aided approaches are revolutionizing the field of underground engineering. These technological advances enable engineers to make data-driven decisions, reduce material waste, and enhance structural performance

Guest Editors

Dr. Junling Qiu
School of Highway, Chang'an University, Xi'an 710064, China

Dr. Enlin Ma
School of Architecture and Civil Engineering, Xihua University, Chengdu 610039, China

Prof. Dr. Jinxing Lai
School of Highway, Chang'an University, Xi'an 710064, China

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

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Editor-in-Chief

Prof. Dr. Steve W. Lyon
School of Environment and Natural Resources, Ohio State University, Columbus, OH 43210, USA

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