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# CIGOS 2021, Emerging Technologies and Applications for Green Infrastructure

Proceedings of the 6th International  
Conference on Geotechnics, Civil  
Engineering and Structures

 Springer

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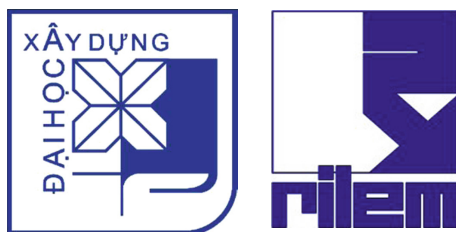
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# Preface

Climate change and environmental damage are two of the most dramatic challenges facing the world today. Among the causes of these serious threats to society, and to the future of our planet, buildings and construction together are responsible for 39% of global carbon emissions according to the Global Status Report 2017 published by UN Environment and the International Energy Agency. Therefore, there is an increasing urgency for governments, industries and communities to respond to these challenges. The global industry must innovate in its technologies, materials and approaches in order to support and accelerate the transition toward a more sustainable, greener future. Governments and policymakers need to play an active role in driving green infrastructure (GI) via policy and political support and coordinating measurement of green infrastructure practices.

This publication covers the sixth edition of the International Conference series on Geotechnics, Civil Engineering and Structures (CIGOS 2021), which was originally planned to take place in Halong city, Vietnam, but then was finally held in “hybrid mode” in Hanoi, the capital of Vietnam, due to the global COVID-19 situation. The COVID-19 pandemic has intensified the importance of urban GI in not only increasing cities’ resilience to the effects of climate change but also providing a positive effect on public and the overall well-being of urban residents. By focusing on the theme of “Emerging Technologies and Applications for Green Infrastructure,” the book highlights the key role of GI in providing natural and ecosystem solutions, helping alleviate many of the environmental, social and economic problems caused by rapid urbanization as well as climate crisis. Moreover, by sharing knowledge and experiences around emerging GI technologies and policy issues, the book aims at encouraging adoption of GI technologies as well as building capacity for implementing GI practices at all scales.

The great interest in the CIGOS 2021 event is indeed reflected by about 500 abstracts submitted from 40 different countries, and among them, 197 papers were accepted for publication in the proceedings. They have been authored by worldwide academics, researchers, practitioners, policymakers and entrepreneurs and cover numerous important aspects related to GI, ranging from traditional fields such as architectural plan, building materials and structures to new emerging fields including

applying advanced machine learning, big data and Internet of Things. They contain a wealth of information, which would be useful for researchers, practicing engineers as well as policymakers in planning, designing, constructing and managing sustainable buildings and infrastructure. The book is organized into eight parts:

1. Advanced Modeling and Characterization of Structures
2. Sustainable Construction Materials and Technologies
3. Geotechnics for Environment and Energy Efficiency
4. Smart Technologies for Big Construction Projects
5. Architecture and Planning for Sustainable Community
6. Construction Economics and Management
7. Green Transport and Environment
8. Bigdata, Data Mining and Internet of Things

The editors would like to thank the co-organizers and the scientific partner, all members of the international advisory board, scientific and organizing committees and reviewers for their important contributions in the organization of this conference as well as the assistance in the review process. We wish to thank the keynote speakers, authors and participants for their efforts in preparing papers.

We would also like to acknowledge the sponsors, the Quang Ninh province and Halong city for supporting and facilitating the CIGOS 2021 event.

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