Preface

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The world is now experiencing unprecedented challenges. Climate change is fast happening—much, much faster than one would have expected. Climate and ecosystems are under growing strain...

*UN Secretary-General Ban Ki-Moon,
World Economic Forum, 2013*

Climate change is being substantially worsened by the carbon we release into the atmosphere. It does not respect borders. It is a global challenge that calls for global solidarity, as it appears to be speeding up. In light of this threatening situation, studying the current effects of climate change on human quality of life, especially civil infrastructures, is very important now and also in the near

future, as the situation is expected to become worse in view of the cumulative effects of global change drivers. In this context and toward building sustainable and enduring civil infrastructure, the engineering community around the globe continues to pursue research and development to improve the existing design, modeling, and analytical capabilities. Such initiatives are also the core mission of the Soil-Structure Interaction Group in Egypt (SSIGE) to contribute to the ongoing research toward sustainable infrastructure.

Ancient peoples built their structures to withstand the test of time (e.g., Fig. 1). If we think in the same way, our current projects will be a heritage for future generations. In this context, an urgent need has quickly motivated the SSIGE and its friends around the globe to start publishing a new journal that can bring together engineers and engineering researchers to pursue “Innovative Infrastructure Solutions.” The journal is a unique forum in the Middle East and Africa, which scientifically addresses this critical concern.

In collaboration with Springer, our journal “Innovative Infrastructure Solutions” was initiated a year ago and aims at presenting innovative studies serving the general disciplines of geotechnical engineering and sustainable infrastructure. In addition, its goal is to help all countries refine and introduce existing and new infrastructure in terms of mitigating and adapting to climate change. Engineers and researchers in the related fields from around the world are invited to submit their contributions and share their knowledge. The journal’s topics cover a broad array of contemporary issues for professionals involved in the design of bridges, pavement, tunnels, railways and water structures, geomechanics, geo-environmental, geotechnical, geosciences, geophysics, and emerging techniques for

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Fig. 1 **a** The Giza Pyramids in Egypt (photo from the SSIG in Egypt). The grandest pyramid was built for Sneferu's son, Khufu, and the two smaller pyramids nearby were for Khufu's son, Khafre, and his grandson, Menkaure. The Giza Pyramids are considered to be some of the oldest green structures in the world. The construction of the Pyramids started in 2584 B.C. using materials which consisted of 2.3 million limestone blocks, and the estimated weight is about 6.5 million tons. The base area is about 52,900 square meters, and hence the applied uniform stresses under the Pyramids are about 122.87 kPa. The pharaohs had chosen the best place in order to construct this sustainable building, with a high bearing capacity that could carry these large stresses without any problem from the date

of initiation till now. This clearly shows how the pharaohs built their buildings thinking of the next generations, by considering the sustainability from all sides. **b** The Great Pyramid of Khufu on the Giza plateau (photo from <http://www.HowStuffWorks.com>) is the largest and most elaborately constructed pyramid in existence, representing the most advanced aspects of pyramid construction (Freudenrich [1]). It is considered to be some of the oldest green structures in the world for several reasons (e.g., Sustainable structural system (optimized geometry for high-rise structure); Green construction and use of natural green materials; Natural ventilation system; Natural lighting system; Durability with minimum maintenance; Harmony with surrounding environment)

safety inspections, and super- and infrastructures. The journal accepts technical notes, technical papers, regular/review articles, and state-of-the-art papers. Theoretical papers are welcome, provided there is a clear and significant potential for practical application of the theory. Practice-oriented papers and case studies are particularly welcome and encouraged.

More than 100 full papers were received in response to the journal's initial call for papers to kick off volume 1 for 2016. All papers were peer reviewed following the same high international standards of indexed journals in Web of Science (former ISI). Papers were first checked for plagiarism and then reviewed by a minimum of two international experts. The evaluation was then conducted by topical expert associate editors and supervised by the co-editors-in-chief and the managing editor.

It is hoped that readers of this volume will be stimulated and inspired by the wide range of papers, which were

written by a distinguished group of national and international authors to address this timely global concern of sustainable infrastructure in the face of global change.

Publishing this volume would not have been possible without the dedication and professionalism of the reviewers, editorial board members, and the associate editors. We also wish to extend our heartfelt thanks to the editorial assistants and the journal's team from the SSIGE and Springer, who worked hard to make this first volume available to the global community.

Reference

1. Freudenrich C (2007) "How Pyramids Work" 30 August 2007 (<http://www.HowStuffWorks.com>)