Introduction

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We are delighted to welcome you to this special issue of *Civil Engineering* on humanitarian engineering. It could be said engineering that directly promotes human welfare is the highest calling for our profession – the very essence of ‘directing the great sources of power in nature for the use and convenience of man’.

The purpose of this special issue is to share and celebrate some of the tremendous projects that civil engineers are carrying out in the humanitarian field and to open discussions about best practice and lessons learnt for the future.

Lee and Potangaroa (2016) start by seeking to explain the extent and scale of the world’s humanitarian needs, followed by a call to action for civil engineers to share the skills they can offer. Several case studies are presented showing the pivotal role that civil engineers can and must play in delivering humanitarian projects.

Westerink and Alonso Barco (2016) share their experience of working on two community footbridge projects delivered by Bridges to Prosperity in Central America and Africa. They discuss the positive impact that improved access to essential services can have on advancing development. They also detail the design and delivery of the footbridges themselves and consider the progressive legacy this can leave to a community.

Righi and Gardner (2016) also focus on the key issue of access for and to communities, this time from a road infrastructure perspective. They discuss some of the challenges and opportunities associated with addressing the infrastructure gap in the most fragile and least-resilient states in Africa, with a clear call for sustainability to be an essential part of any road development project.

Resilience is a key theme across many humanitarian projects, and Kaminski *et al.* (2016) explore methods for increasing resilience in the design and construction of housing in El Salvador. They explain how traditional construction methods can be engineered to offer a vernacular yet improved housing style for both disaster relief and long-term development.

Hanrahan *et al.* (2016) present a thought-provoking discussion that opens with the scale and impact of contaminated land on health and mortality around the world. They discuss their approach for identifying and appraising contaminated sites and then share three case studies where interventions have significantly improved the quality of life for the affected communities.

Flower (2016) reviews the excellent work carried out by Engineers for Overseas Development since its inception in 2000 as a result of a challenge set by the Institution of Civil Engineers. It is admirable to see the growth of the organisation and the increasing value of projects it is delivering. The paper also highlights the value that humanitarian work can bring to early-career engineers carrying out the work, as well as the communities they are working with.

Reed and Fereday (2016) discuss the level of competence engineers should have in responding to humanitarian need. They rightly argue that those in great need must be protected from incompetence, no matter how well-meaning in origin. The application of civil engineering in a humanitarian context requires a unique and difficult-to-measure skillset.

Brown (2016) concludes with a reminder that while humanitarian engineering work can take place in challenging circumstances, there is still a professional duty to ensure safety on humanitarian engineering projects. He discusses the approaches that can be used to promote safety throughout the project life cycle.

The papers were selected from over 50 abstracts and 21 submitted manuscripts, a testament to the many civil engineers working around the world to improve human welfare. We trust you find them inspiring and useful, and also that they encourage you and your colleagues to share your own experiences of civil engineering for the greater good in this and other *ICE Proceedings* journals.

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