

Preface

Engineering disciplines have a pivotal role to play in the solution of global humanitarian challenges, enabling our society to take steps towards sustainable human development. Engineering can be used as the catalyst for the change that the world needs; from water supply to renewable energy provision, engineering knowledge and application underpin the responses needed for us all to pursue a sustainable future. Because the issue of humanitarianism is not just engineering problems, there is a need to engage with professionals, breakdown previously siloed approaches and obdurate practices, and introduce interdisciplinary education and training to enhance combinational expertise. The need for a more human-centered approach to engineering has relatively recently led to what we call humanitarian engineering.

This book aims at providing relevant frameworks and, the latest research and education outcomes and impact in the theme of humanitarian engineering. It is written from researchers and professionals who want to improve the strategic role of humanitarian engineering at different levels of the modern world and the various challenges facing our society.

Transcending Humanitarian Engineering Strategies for Sustainable Futures covers research, practice, and applications associated to humanitarian engineering and, offers insights to educational frameworks as a means for future-proofing our communities. Covering topics such as disaster mitigation, natural hazards, land use change and, education for training future leaders in engineering and sustainable development, this premier highly interdisciplinary book is an excellent resource for engineers, scientists, environmentalists, sociologists, government officials, students and educators of higher education, non-profit organizations, researchers, and academicians.

The book investigates transcending challenges and approaches in the field of humanitarian engineering, presenting research, real-life case studies, innovative models and approaches to education, and other work that lies in the presented theme. The interdisciplinarity of the authors combined with the chapters that analyze and focus on real events and conditions in the most vulnerable countries (e.g., Indonesia, Bangladesh, Vietnam, etc.) makes it a valuable tool for academics, researchers, and students in the field.

The first part of the book brings together a series of chapters showcasing recent research outcomes and/or the impact of research, practice and field experience at the intersection of engineering and science, technology, design and community development across a range of topics such as land use and ecosystems, land subsidence, natural hazards, health and neuroimaging, and environmental impact of human activity.

The second discusses the delivery of engineering education globally by introducing modern, innovative pedagogical approaches, identifying, and tackling inherent barriers in quality, knowledge organisation, content, and hierarchy to support the advancement of emerging skills. Reference is made to needs and requirements imposed to education approaches from Quality Assurance, Industry and Higher Education providers.

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