Engineering Sustainability
Volume 170 Issue ES3

Editorial
Stronati

ice | proceedings

Proceedings of the Institution of Civil Engineers
Engineering Sustainability 170 June 2017 Issue ES3
Pages 131–132 http://dx.doi.org/10.1680/jensu.2017.170.3.131

ice Institution of Civil Engineers
publishing

Editorial

Davide Stronati MPhil
Global Sustainability Leader, Mott MacDonald, London, UK

One of the great features of engineering is the ability of the discipline to transcend the micro and the macro. On the one hand, we are witnessing engineering solutions that create sustainable outcomes in the detailed design of assets that underpin our industry. One the other hand, there are large-scale changes – those that present themselves as radical and transformative. It is important that we understand that what we do, and what the wider community does, has a role to play in creating a more sustainable world. I'm delighted that *Engineering Sustainability* recognises the need for a comprehensive approach to embedding sustainability into everything that we do and I believe this issue brings this to light.

The global landscape for our industry is in flux with 2016 and the beginning of 2017 seeing major changes to the political and social landscape. We have seen an increased focus on the role of engineering in helping to achieve some of the world's greatest challenges. I have been impressed with the response of the engineering world to challenges presented by the United Nation's Sustainable Development Goals (SDGs) and it is noticeable how the language of engineering is changing to focus on more inclusive and socially responsible outcomes.

Over the course of this issue you will notice the balance between micro and macro sustainable interventions and how they are each addressing pressing challenges for the industry. Lu *et al*. (2017) speak to the macro in their work on modelling the impacts of climate change in cities. In the modern world people are moving into cities at an unprecedented rate. This major trend has happened so quickly that we have often been unable to fully comprehend the consequences of this shift. Lu *et al*. (2017) look at this challenge from a Chinese perspective, creating a tool based on a finite number of indices to describe a complex problem like the effect of climate change on urban sustainability. In tackling the SDGs, we must first understand how our world is changing – getting to grips with mass urban migration is a major part of this.

Central to tackling the major climate change issues addressed by Lu *et al*. (2017) is a 'decarbonisation' of the built environment. Brás (2017) considers the importance of capital carbon dioxide when it comes to reducing the overall carbon dioxide footprint of retrofit solutions for walls. It is quickly becoming apparent that cutting carbon dioxide cuts costs and, therefore, by tackling capital carbon dioxide you not only reduce the environmental impact of the engineering solution but also the capital cost. Given the fact that the building sector contributes to 30% of global greenhouse gas emissions annually it is clear that by tackling issues such as whole-life carbon dioxide across the value chain and in all areas of the built environment could have a transformational effect on the sector.

Addressing some of the biggest issues facing us as an industry and a society more widely is going to take a change in the way in which we approach planning interventions across the engineering discipline. Blom and Guthrie (2017) make this explicit in their work on system performance. They argue that we must move beyond a project-by-project perspective on performance to a more system-level approach that would allow the industry to consider how it is performing more effectively and allow engineers to face up to the challenges facing them.

Buildings performance in Hong Kong, specifically the environmental impacts of buildings, is the focus of Ng *et al*. (2017) in the last article for this issue. Looking at the significant proportion of environmental impacts that come from the building environment, we must first understand the impact of buildings in the context of the local environment itself. Ng *et al*. (2017) followed this principle in detail by identifying the top five materials in terms of environmental impacts in the Hong Kong territory.

Engineering Sustainability is a publication that allows us to illuminate the biggest challenges to the industry and how people are actively seeking to address these. This issue puts an emphasis on both the macro and the micro scale. It provides a focus on the long-term challenges facing engineers working across several different sectors. I look forward to the continued success of the journal and seeing it enlightening our readers to working to create a more sustainable future for all.

REFERENCES

Blom CM and Guthrie PM (2017) Towards long-term infrastructure system performance. *Proceedings of the Institution of Civil Engineers – Engineering Sustainability* **170(3)**: 157–168, http://dx.doi.org/10.1680/jensu.15.00035.

Brás A (2017) Embodied carbon minimisation of retrofit solutions for walls. *Proceedings of the Institution of Civil Engineers – Engineering Sustainability* **170(3)**: 141–146, http://dx.doi.org/10.1680/jensu.15.00047.

Lu C, Ren W, Jiang L and Xue B (2017) Modelling impact of climate change and air pollution in cities. *Proceedings of the Institution of Civil Engineers – Engineering Sustainability* **170(3)**: 133–140, http://dx.doi.org/10.1680/jensu.16.00002.

Ng ST, Chan JHL, Chan GKC and Zou JWW (2017) Environmental impacts of construction material production. *Proceedings of the Institution of Civil Engineers – Engineering Sustainability* **170(3)**: 169–184, http://dx.doi.org/10.1680/jensu.15.00009.