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Editorial

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This century will certainly be the 'century of the cities'. According to reports from the Organisation for Economic Co-operation and Development and others, the world's urban population be around 6 billion by 2050 and 9 billion by 2100, with 85% of our descendants living in cities by the end of the century.

To address this challenge, we will need the skills and competences of civil engineers as never before to design, build and operate the increasingly complex structures and infrastructure required by our ever-expanding urban populations.

In China, where the demographic challenge is already a big one, the government is encouraging a dramatic increase in the density of cities through greater use of high-rise buildings. These structures still raise many issues related to hazard mitigation against extreme actions and environments, integrated structural frameworks and facades, complex connections and constructional and energy efficiency.

Wang (2016) presents an interesting review in this issue of four recent high-rise building projects in China, discussing the evolution in engineering design, construction and management that has been required for their successful delivery.

Urbanisation is also crucial in developing countries, where unplanned or uncontrolled development is not unusual – as was discussed in our recent special issue on humanitarian engineering (Kent and Adler, 2016). Without proper structural and risk analyses, or adequate civil infrastructure, many urban areas are barely liveable.

In this issue, Holcombe *et al.* (2016) address rainfall-triggered landslide risk in such urban areas in countries where conventional slope stabilisation techniques are often unaffordable – and where most risk-reduction investment is currently made post-disaster. Based on studies in the Caribbean, the authors propose a promising and effective community-based surface water drainage system based on bioengineering schemes.

A recent misrepresentation of urbanisation and mobility has suggested that European countries no longer need to invest in civil infrastructure – and some have already started to rein in spending. The economic reality is that cities need to be more interconnected than ever, even if this proves increasingly difficult.

An example in the UK is Leigh Road Bridge in Slough, only the second bridge in the UK to have been launched across a railway using trailers – and one of the largest structures constructed by this method anywhere in the world.

Unfortunately, as described in this issue by O'Connor *et al.* (2016), an unforeseen incident occurred during the launch. The methodology and successful realignment operation led to some very pertinent learning points for future similar launches.

And finally, in addition to new delivering new interconnecting infrastructure, civil engineers need to keep existing infrastructure operational – which can involve some particularly challenging and large-scale replacement of worn parts. In the lead paper of this issue, Collins and Smith (2016) report on a 2-year project to do just that on the world's seventh largest suspension bridge.

Humber Bridge carries the A15 highway 2.2 km over the Humber estuary between Hessle, East Yorkshire and Barton, North Lincolnshire, UK. An innovative technique was used to replace the main span's four A-frames – which carry up to 1600 t each – with vertical pendels and horizontal wind shoes without disrupting traffic. It is likely to inspire similar solutions worldwide.

I hope you enjoy the papers and articles in this issue; that they help you appreciate your own role in building a bright and sustainable future; and that they encourage you to share your experiences of doing so in this and other ICE *Proceedings* journals.

References

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