Editorial

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Welcome to this issue of *Municipal Engineer*, which explores the theme of management of water and sanitation services. All five papers focus on specific angles of management from economic management, public and private management models, managing at scale in China and modelling faecal sludge management. To a large extent these topics overlap and are addressed in all the papers, although with varying emphasis.

A common thread, underlined by all the authors, is the critical importance of urban governments (municipal, city and metropolitan) in planning and managing water and sanitation. While urban governments do not necessarily have to implement and fund services, they must provide the framework (including policy, strategy, institutional arrangements, regulations, incentives and management) that encourages and supports improved access. Getting this enabling framework right is one of the most important yet difficult issues to grapple with. The papers in this themed issue provide a useful insight into the kinds of management models currently being adopted as a lever for improvements in access to drinking water and sanitation.

In the first paper, Booth (2014) considers the economics of supply and demand management of water infrastructure. He outlines the factors relevant to cost-effective supply (such as recognition of stakeholders, defined property rights for water, supporting institutional arrangements and clear allocation processes) and considers the potential of water pricing and trading to augment supply and limit demand. He makes the link between sustainability, food security and climate change and then applies this analysis to Brazil, Russia, India, China and South Africa.

Recognition of the value of water, Booth argues, will create the conditions for private participation in public infrastructure through public–private partnerships (PPPs). Two papers in this issue make substantive contributions to the literature on PPPs in water and sanitation. The review by Heller *et al.* (2014) of water and sanitation in Brazil charts the swing back and forth between public and private management models in the sector. It shows how PPPs are being conceived in Brazil, especially with regard to changes in their institutional framework and in mobilising finance, and adjusting urban planning. It suggests that a focus on more tangible and operational aspects of inexperienced and under-resourced regulatory bodies would help in the delivery of the new national plan for water and sanitation.

The second paper on PPPs, by Save and Ryan-Collins (2014), presents the Al Manara water treatment project in Sudan,

highlighting an innovative way to finance water infrastructure that combines a donor grant with a development bank loan and loans from two commercial banks. However, this PPP also provides an important mechanism to improve management capacity in fragile states.

The issue contains case studies of two of the world's largest and most populous countries, China and Brazil, where governments have sought to address similar issues. Opening this issue, the briefing by Lima (2014) complements that of Heller *et al.* by taking the long view on 'municipal' or 'urban' engineering in Brazil. Looking at historical trends, Lima indicates that time, resources and effort must be invested in the enabling environment to ensure that changes associated with increases in access are fully embedded and properly sustained. The briefing paper notes instances in which new approaches were tried with more success, and suggests areas of focus for the future. In countries still striving for better levels of access to water and sanitation, attention to these kinds of issues will play a major part in efforts to improve the management of services.

The case study, by Zhang and Zhao (2014), describes the remarkable progress in increasing access to safe drinking water supply and sanitation in China over the past two decades. This progress has improved the quality of life of millions of people and has been achieved in spite of population growth and urbanisation, factors that often constrain progress and put pressure on existing water and sanitation facilities and has serious planning implications. Zhang and Zhao highlight the potential for technology and innovation to improve environmental management.

Zhang and Zhao present an optimistic argument: as people get materially richer their levels of access to improved water and sanitation will necessarily improve. Although access in China has progressed at speed, it should be noted that improvements in access are not driven by economic growth alone. In other countries, despite substantial economic growth, there has either been little progress in access to improved water and sanitation or else progress has created inequalities or gaps in services. A number of the authors in this issue note that increased attention must be given to those that are being left behind in order to eliminate these inequities.

More than half of the world's population now live in urban areas; by 2050, this proportion will increase to 7 out of 10 people (WHO and UN Habitat, 2010). Almost all urban

population growth in the next 35 years will occur in cities, mega-cities and secondary cities as well as the informal settlements of developing countries. Projected growth presents a growing challenge to the provision of sanitation for the urban poor, who tend to rely on on-site sanitation, requiring systematic management of faecal sludge. The paper by Kennedy-Walker *et al.* (2014) introduces and assesses a proof-of-concept model for road-based faecal sludge management, making it a valuable addition to the literature on sanitation planning.

The model simulates the transport of faecal sludge from the 158 public toilets within Kibera settlement in Nairobi over a road-based sanitation network. The results show that the location of the transfer station is a critical factor in network optimisation. Network analysis is one approach that can help bring a whole-sanitation-chain approach (policies, planning and budgeting as well as regulation) to help improve the management of sewage treatment and disposal in developing countries (Baum *et al.*, 2013).

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