Editorial

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Editorial

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Urban communities around the world depend on the critical services provided by infrastructure systems to be resilient in the face of natural hazards and man-made shocks such as earthquake, climate change, landslide, population growth, urbanisation, fire, war and pandemic diseases. Therefore, infra- structure needs to both be resilient itself, and to ensure that the services contribute to urban resilience. Any type of failure of infrastructure can cause numerous issues from financial damages to social disruption and disaster events such as human loss and spread of viral diseases due to lack or failure of services in urban infrastructure. These services include potable water, access to safe and reliable energy provision, ability to connect to work and society through communications networks. To enhance resilience of urban infrastructure, interventions are needed at all stages of the infrastructure life cycle from policy and planning through to operation and maintenance of existing systems. Analysis and monitoring are essential tools for decision making both to understand the response to potential shocks and stresses, and to evaluate the performance of potential interventions. This can involve authorities and policy makers or can be actively engaged with local communities and can be effectively contributed by private investors and public organisations to financially support final decision making. Appropriate intervention strategies such as renewable energy, water reuse (Landa-Cansigno *et al.*, 2020), smart schemes (Behzadian *et al.*, 2018) can cover a range of options through new technologies/services/processes that will lead to better coping capacity or faster recovery after failure from extreme events and disruptions.

This latest edition of *Municipal Engineer* brings four publications that show a diverse range of studies, each of which con- tributes to urban resilience decision making, from physical damage to pedestrian roads, to the behavioural factors influencing household demand. The first two papers directly analyse the resilience of water and transportation infrastructure and aim to evaluate and strengthen them by using computer modelling and simulation. The other two papers analyse the social and policy impacts on the water and transportation infrastructure in cities. Note that the journal publishes its most recent articles Ahead of Print on its Virtual Library homepage if readers would like to study them earlier (https://www.icevirtual- library.com/toc/jmuen/0/0). The outline and key findings ofthese papers related to this Themed Issue are summarised below.

Resilient water infrastructure

Parkinson *et al*. (2022) used hydrological modelling for assessment of sustainable drainage systems (SuDS) in a real-world urban drainage systems in Myanmar to improve resilience in water infrastructure. They also involved key stakeholders in decision-making for practical implications of SuDS adoption. Their results show that SuDS can significantly reduce flooding areas but need to be adopted at scale that maximum benefit is sought although this adoption has some constraints in existing developments. They suggested green fields to be considered as best potential sites for SuDS development in existing planning applications process.

Resilient transportation infrastructure

Ku *et al*. (2022) used image deep learning models to evaluate the safety and economic problems associated with transportation vulnerabilities, especially pedestrian paths, and identify the critical conditions and then find solutions to achieve high resilience in footpaths and pavements in urban areas. They calculated a resilience triangle based on the discrimination automation method through convolutional neural networks to identify any obstacles in the road surface conditions of walk- ways. The results of application of the methodology to a case

Social impacts on water infrastructure

Santos et al. (2022) analysed the impacts of social and cultural factors on water consumption in urban areas based on a questionnaire filled out by participants mainly in São Paulo (Brazil), London (UK) and Los Angeles (USA). They used a data model analysis framework based on capability– opportunity–motivation–behaviour to identify influences. Their results showed that motivation is the most reported driver of water consumption followed by the capability dimension in all analysed cities. The findings from this research can suggest the best practices to alleviate the overwhelming pressure on water consumption and hence improve the resilience of service in water infrastructure.

Policy impacts on transportation infrastructure

Fontoura et al. (2022) analysed the challenges for enforcing urban mobility policy (UMP) in Brazil. They used a system dynamics (SD) model to evaluate the impacts of this policy for different UMP mitigation measures in two Brazilian megacities (i.e. Rio de Janeiro and São Paulo). Their results showed that the enforcement of UMP can reduce the negative externalities of transportation systems and improve the resilience of transportation infrastructure.

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