AQUA
Water Infrastructure, Ecosystems and Society

IWA PUBLISHING

 AQUA — Water Infrastructure, Ecosystems and Society Vol 73 No 3, v doi: 10.2166/aqua.2024.001

Editorial: Water saving and management

INTRODUCTION

Global population growth, changes in industrial structure, climate change, and water pollution present significant challenges to the sustainable development of freshwater resources. According to the UN World Water Development Report (Loudière & Gourbesville 2020) forecast, there is a projected 40% decrease in freshwater resources by 2030, while water demand is expected to increase by 20–30% by 2050. In light of these circumstances, water conservation and efficient management have emerged as crucial areas of research. The integration of emerging technologies such as artificial intelligence, new materials, and biotechnology into the water treatment industry has facilitated greener and smarter approaches toward water-saving technology and resource management.

Overview of the special issue

Ana Clara da Rosa Santos (Ireland) proposes essential steps for determining the total cost of water at industrial facilities that encompass considerations related to supply and demand costs, opportunities, and strategies while promoting energy systems thinking. This approach offers an internationally replicable solution for calculating the true cost of water (da Rosa Santos & McCormack 2022). Mugdha Trivedi (India) develops an efficient method for optimizing reservoir operation (Trivedi & Shrivastava 2023). Jaya Gangwar (India) devises a sustainable, affordable, and cost-effective technique utilizing leaf extracts from *Strobilanthes barbatus* to synthesize zinc oxide nanoparticles. These nanoparticles serve as potential catalysts for degrading textile dyes before their release into aquatic environments (Gangwar *et al*. 2023). Amos Iloabuchi Ugwuoti (Nigeria) demonstrates how geospatial technologies including Remote Sensing Geographic Information Systems (GIS), Hydrographic Surveying, and Geophysical Surveying can be employed in designing efficient urban water distribution networks within undulating terrains (Ugwuoti *et al*. 2023). Mohaddeseh Dadras (Iran) employs the EPANET pressure-dependent hydraulic analysis and the gray wolf optimization algorithm to optimize volumetric reliability in a district of the Hamedan urban water distribution network, aiming to mitigate inequitable water distribution during intermittent supply scenarios (Dadras *et al*. 2023).

Our heartfelt gratitude goes out to the authors for their exceptional papers, which we firmly believe have enriched our scientific knowledge in the field of Water Saving and Management. Additionally, we extend our deepest appreciation to the reviewers and IWA Publishing staff whose contributions were instrumental in making this special issue a resounding success.

Guest Editors
Wenjun Sun
School of Environment, Tsinghua University, China,
E-mail: wsun@tsinghua.edu.cn

Shane Allen Snyder
School of Civil and Environmental Engineering, Nanyang Technological University, Singapore,
E-mail: ssnyder@ntu.edu.sg

REFERENCES

Dadras, M., Masoumi, F., Masoumzadeh, S., Najjar-Ghabel, S., Nikoo, M. R. & Yazdani, S. 2023 Evaluating the impact of leakage in intermittent water supply networks considering justice index: A case study. *AQUA – Water Infrastructure, Ecosystems and Society* **72**, 1894–905.

Gangwar, J., Singh, A. P., Marimuthu, N. & Sebastian, J. K. 2023 Environmentally sustainable zinc oxide nanoparticles for improved hazardous textile dye removal from water bodies. *AQUA – Water Infrastructure, Ecosystems and Society* **72**, 1198–210.

Loudière, D. & Gourbesville, P. 2020 World Water Development Report - Water and Climate Change. *Houille Blanche-Revue Internationale De L Eau*, 76–81.

da Rosa Santos, A. C. & McCormack, D. 2022 Demystification of the true cost of water within industrial facilities. *AQUA – Water Infrastructure, Ecosystems and Society* **71**, 1440–52.

Trivedi, M. & Shrivastava, R. K. 2023 Reservoir operation management using a new hybrid algorithm of Invasive Weed Optimization and Cuckoo Search Algorithm. *AQUA – Water Infrastructure, Ecosystems and Society* **72**, 1607–28.

Ugwuoti, A. I., Ojinnaka, O. C., Ibem, E. O. & Uzodinma, V. N. 2023 Geospatial mitigation of the effect of undulating terrain on efficient water distribution network: A case study of Enugu Urban, South-Eastern Nigeria. *AQUA – Water Infrastructure, Ecosystems and Society* **72**, 1784–99.