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Front Cover Story (see: Lijie Zhou, Hongwu Wang, Zhiqiang Zhang, Jian Zhang, Hongbin Chen, Xuejun Bi, Xiaohu Dai, Siqing Xia, Lisa Alvarez-Cohen, Bruce E. Rittmann, 2021, 15(1): 16)

Demand for water is expanding with increases in population, particularly in urban areas in developing countries. Moreover, urban water system needs a novel perspective for upgradation with urbanization. We present a novel 5R approach for managing urban water resources: Recover (storm water), Reduce (toilet flushing water), Recycle (gray water), Resource (black water), and Reuse (advanced-treated wastewater). This 5R generation incorporates the latest ideas for harvesting storm water, gray water, and black water in its several forms. We have briefly demonstrated each R of 5R generation for water treatment and reuse. China has the chance to upgrade its urban water systems according to 5R principles. Already, a demonstration project of 5R generation has been installed in Qingdao International Horticultural Exposition, and Dalian International Convention Center (China) has applied 5R, achieving over 70% water saving. The 5R offers promise for moving solutions for urban water scarcity from "hoped for in the future" to "realistic today".

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