**Water quality and the urban water cycle : Moving toward sustainable solutions**

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Throughout recorded history, urban water and wastewater management has been one of the principal responsibilities of municipalities. Advances in drinking water and wastewater treatment have contributed enormously to the improvement of public health, especially in urban areas. With ever-increasing urban populations in low- and middle-income countries (LMICs), issues related to the urban water cycle are a major challenge for the future. Conventional models for urban water infrastructure tend to prioritize fully centralized systems, reflecting historical developments in Europe and North America. In the rapidly-growing urban areas of LMICs, however, the use of water for waste conveyance is often unsuitable for the climate. Furthermore, the demand for water in arid and semi-arid regions and the need to conserve energy and resources are not well served by conventional models. Development and implementation of a “circular economy” for the urban water cycle poses important challenges related to water quality; chemistry plays a critical role in monitoring water quality and designing novel technologies for water and wastewater treatment that integrate resource recovery with protection of the environment and human health.