

## Editorial

### Water reuse: achievements and future challenges

Over the next 40 years, approximately 800,000 new urban residents will be added every week to existing and new cities around the world. With this growth comes the need for increased food and energy production, both having a significant 'water footprint'. Scarcity of locally available water supplies, competition for water with agriculture and energy, climate change impacts, rising energy prices and the need to mitigate for greenhouse gas emissions, environmental restoration, and economics will require cities to use water far more efficiently than today's urban systems. In this context, water reclamation and water reuse will play an increasingly important role in future urban water portfolios. These applications will build upon the strong track record of non-potable reuse for agricultural and landscape irrigation and will further consider/adopt/incorporate drinking water augmentation projects including direct potable reuse.

This special issue of the *Journal of Water Supply: Research and Technology – AQUA* includes six selected articles that describe some important achievements in the water reclamation and reuse field and address remaining issues and future challenges for its continued advancement. The objective is to provide the reader with insight on some critical issues related to the operation and implementation of water reuse schemes as well as the potential of water reuse for integrated water resource planning and management in the future.

The first paper of this issue presents findings from a long-term monitoring programme in Australia in relation to reclaimed water quality and compliance issues considering increasingly more stringent regulatory requirements (Shishkina *et al.* 2012). The following paper by Van Houtte & Verbauwheide (2012) describes a state-of-the-art approach to indirect potable reuse in Belgium using a combination of membrane treatment followed by managed aquifer recharge, including some novel approaches for brine disposal. The next paper provides evidence regarding the important role of

water reuse for integrated water resource management by analyzing select water reuse projects in Spanish and Portuguese islands (Delgado *et al.* 2012). The presence of emerging trace organic chemicals at concentrations above health relevance levels in product water of potable reuse schemes represents a significant concern among regulators and the general public. Linge *et al.* (2012) conducted a comprehensive characterization study on product water of an indirect potable reuse scheme after reverse osmosis treatment in Australia, resulting in strong evidence that these schemes can be operated with a high degree of safety while providing excellent drinking water quality. Public confidence is a particularly critical element for the success of potable water reuse programs. Rock *et al.* (2012) report on a study from Arizona, USA emphasizing that personal education proved to be the most significant demographic factor affecting perception of terminology and recycled water uses. Finally, McClelland *et al.* (2012) provide guidance for long-range water reuse planning by determining key factors and challenges that affect the future of water reuse.

The editors hope that the findings and discussions included in these papers will help readers in recognizing the important achievements made by water reuse projects in improving integrated management of water resources, and in visualizing the major challenges facing the further development of water reuse in the future. We appreciate the contributions made by authors, reviewers and editorial staff of *AQUA* for the successful completion of this special issue.

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## REFERENCES

- McClelland, C. J., Linden, K., Drewes, J. E., Khan, S. J., Raucher, R. & Smith, J. 2012 [Determining key factors and challenges that affect the future of water reuse](#). *J. Water Supply Res. T.* **61** (8), 518–528.
- Delgado, S., Rodríguez-Gómez, L. E., Vera, L., Álvarez, M., Fernando Díaz, F. & Rodríguez-Sevilla, J. 2012 [Water reuse in the management of island water resources: the case of the Canary Islands and the Region of Madeira](#). *J. Water Supply Res. T.* **61** (8), 484–493.
- Linge, K. L., Blair, P., Busetti, F., Rodriguez, C. & Heitz, A. 2012 [Chemicals in reverse osmosis-treated wastewater: occurrence, health risk, and contribution to residual dissolved organic carbon](#). *J. Water Supply Res. T.* **61** (8), 494–505.
- Rock, C., Solop, F. I. & Gerrity, D. 2012 [Survey of statewide public perceptions regarding water reuse in Arizona](#). *J. Water Supply Res. T.* **61** (8), 506–517.
- Shishkina, N., Hannelly, T. & Rodriguez, C. 2012 [Water recycling in Western Australia: analysis of 2003–2009 water quality monitoring programme](#). *J. Water Supply Res. T.* **61** (8), 463–472.
- Van Houtte, E. & Verbauwheide, J. 2012 [Sustainable groundwater management using reclaimed water: the Torreele/St-André case in Flanders, Belgium](#). *J. Water Supply Res. T.* **61** (8), 473–483.