

Editorial of the IWA H₂ Open Journal**Disseminating research addressing 21st century water challenges to all**

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The importance of water within the UN's sustainable development goals is evident. Not only in terms of Goal #6 (Frost 2016) (clean water and sanitation for all) but also its influence on the achievement of goals on health, education and gender issues to name a few (Frost 2016). These challenges are truly global with the impacts of a changing climate, population growth and urbanisation challenging our ability to meet the requirements without exceeding economic, resource and environmental affordability. The scale and magnitude of the problems are well understood, from the 1.8 billion people expected to reside in areas experiencing water scarcity in the next 10 years to the anticipation that water stress will impact up to two-thirds of the global population by 2025 (UN Water 2007). In emerging economies, many communities still have no choice but to use unsafe water which, when combined with poor sanitation, becomes a major contributing factor to childhood mortality by diarrhoeal disease. This remains responsible for almost 1 in 5 childhood deaths, particularly in Africa and South Asia which collectively account for 80% of them (World Health Organisation and UNICEF 2009).

Additionally, we must live within both our means and those of the planet, necessitating a reimagining of how we value water so that where possible energy, chemicals and freshwater are generated from wastewater, not consumed. However, concepts of value should extend beyond just products and embrace societal and environmental considerations. The latter prompts us to reflect on catchments as sources of fresh water and receptors for treated wastewater and storm flows. The total system is facing additional pressures due to the changing climate we live in requiring a redefining of our treatment paradigms towards a more holistic vision where treatment and catchment management work in unison.

Living within our means also needs to reflect the legacy of the ageing centralised infrastructure that exists in many parts of the world. It is incumbent upon the water community to retain, maintain and repurpose as much of our existing asset base as possible. To achieve this, technology needs to be smarter and more adaptable which necessitates better monitoring, modelling and utilisation of the available information. However, the burden of an ageing infrastructure legacy is far from universal and this offers the potential to reimagine what water and sanitation services should look like. This

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is most apparent in the emerging economies and it is likely that they will be the source of significant innovation in the future leading to a rebalancing of knowledge and technology transfer towards a more global exchange.

The challenge is a truly interdisciplinary one and the solutions must reflect this. Cutting edge technological innovations alone are not enough and must be framed within appropriate governance regimes that deliver resilient services for communities and which themselves are founded on sound scientific insights. Aligned to this is the need to understand what the most appropriate economic models, policies and regulatory approaches are to deliver the desired outcomes. Delivery of change involves many stakeholders, including the end user, and understanding the needs and values of all actors along the implementation journey becomes increasingly important when considering local solutions and circular economic approaches.

To meet these challenges, the findings and conclusions of good science from across the disciplinary spectrum needs to be made available to all. If innovation uptake and knowledge transfer are to keep pace with the changing water landscape then researchers, industry, not-for-profits, government and the public need to have easy access to the latest scholarship and knowledge. This imperative is reflected in the requirement placed on open access publishing by many funding agencies and other research supporting bodies.

Accordingly, it is our pleasure and privilege to announce the launch of a new open access water journal as part of the IWA family. The Editorial Board of the IWA H₂ Open Journal has been carefully selected to provide expert coverage across a broad range of subject areas and international contexts as will undoubtedly be required. We believe that the key strengths of this journal will be 1) our ability to provide a high quality of submission reviewing across a multitude of specialist, interlinking areas, achieved via our diverse and internationally recognised editorial team, and 2) our ability to provide rapid processing of submitted manuscripts, in line with our aim to expedite the dissemination of water research findings to user communities.

We look forward to your support and encourage manuscripts that report studies on all aspects of water research to assist in providing the necessary fundamental and translational research that will be required to realise a sustainable 21st Century water future.

REFERENCES

- Frost, B. 2016 Ending extreme poverty, what do the SDGs mean for access to water, sanitation and hygiene. In: *IWA World Water Congress*, 8th–13th October 2016, Brisbane.
- UN Water 2007 *Coping With Water Scarcity: Challenge of the Twenty-First Century*. <http://www.unwater.org/downloads/escarcity.pdf>.
- World Health Organisation and UNICEF 2009 *Diarrhoea: Why Children are Still Dying and What Can be Done*. http://www.unicef.org/health/files/Final_Diarrhoea_Report_October_2009_final.pdf (accessed 7/10/2016).