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Urban Water: meeting the challenges of tomorrow today

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It is widely accepted that a major challenge of the 21st century is to provide safe drinking water and basic sanitation for all, particularly in urban areas. More people die from unsafe water than from all forms of violence, including war. On all continents, cities are facing growing dynamic regional and global pressures: climate change, population growth, migration from rural areas, aging infrastructure renewal and carbon reduction. As a consequence, most cities need to adapt their water systems.

Conventional urban water management strategies are unlikely to cope adequately with the predicted changes. There is a need for a marked shift in the way urban water is managed and this shift must be based on a foundation of high quality research, leading to technological and organisational innovation. Current research directions include seeking: safe approaches to the increased recycling of wastewater; energy efficient treatment options using natural systems; flexible urban water systems that are resilient to future changes; decentralized systems such as green roofs for stormwater and energy management as well as for urban biodiversity; and, expanded urban groundwater development for water storage, recycling and thermal energy production.

The required research is necessarily interdisciplinary and collaborative. Through its Water Science and Water Engineering groups, the University of Birmingham is working with academic partners and practitioners around the world to deliver the new knowledge for change. Staff at Birmingham are part of a global consortium whose overall goal is to catalyse change towards more sustainable urban water management in the 'City of the Future'.

The challenges of providing clean water have at times been overshadowed by the broader issues of climate change and emissions. Nevertheless, this is a problem that will grow in significance and therefore needs to be addressed. This can only be done through international cooperation. We are major partners in a leading European research project called SWITCH (Sustainable Water Management Improves Tomorrow's Cities Health), comprising an international consortium of 32 partners including academics, urban planners, water utilities and design consultancies, which works closely with UNESCO. This is an excellent model: however, there is more that ought to be done to ensure everyone has the access to clean water supplies in the future.

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