

<p>4.4.6 HOLISTIC URBAN WATER MANAGEMENT PLANNING</p> <p>Room B3 b Technical</p> <p>Chairs: Nilo Nascimento, <i>Brazil</i> and Dhruv Pasricha, <i>India</i></p> <p>Developing sustainable and resilient urban wastewater solutions using integrated sewer and treatment system process models, Julian Sandino, <i>Jacobs, United States</i></p> <p>Development of a multi-criteria spatial analysis tool for decision support on the location of blue-green stormwater management infrastructure in canadian context, Sandrine Lacroix, <i>Polytechnique Montreal, Canada</i></p> <p>Integration of snow management decision criteria in a strategic planning tool for green infrastructures, Garance Gougeon, <i>Polytechnique Montreal, Canada</i></p> <p>Positive futures as decision-support tools for urban water planning, Varsha Sivagurunathan, <i>The University of New South Wales, Australia</i></p> <p>--- POSTERS ---</p> <p>Holistic decision-making for planning water supply, urban drainage, wastewater treatment and water reuse through linear optimization by using the urban water mass balance, Timo Christopher Dilly, <i>Technisch Universität Kaiserslautern, Germany</i></p>		<p>Thursday 13:30-15:00 Urban water</p> <p>13:30-13:50</p> <p>13:50-14:10</p> <p>14:10-14:30</p> <p>14:30-14:50</p> <p>14:50-14:55</p>
<p>1.14 INTEGRATION OF DECENTRALISED SOLUTIONS IN A CENTRALISED SYSTEM</p> <p>Room B3 a Technical</p> <p>Chairs: Eiman Karar, <i>South Africa</i> and Avinash Vijay, <i>France</i></p> <p>Can we sum the performance of green infrastructures? The potential of system-based planning, Vincent Pons, <i>Norwegian University of Science and Technology, Norway</i></p> <p>"Water 4 Later" — Collective rainwater storage and reuse, coupled to ASR, within a business park in Keiberg-Vossem, Ian Montauban van Swijndregt, <i>De Watergroep, Belgium</i></p> <p>Cluster-based faecal sludge and septage management in the hilly region: a case study of Uttarakhand, Mahreen Matto, <i>National Institute of Urban Affairs, India</i></p> <p>Hybrid water model: a strategic decision making tool for sustainable water management, Lousie Vanysacker, <i>De Watergroep, Belgium</i></p> <p>--- POSTERS ---</p> <p>Sustainable water management for Indian cities — a conceptual framework, Suresh Sharma, <i>S P School of Global Management, India</i></p> <p>Mitigation of hospital centralisation caused increases of antibiotic-resistant bacteria in sewers by source treatment utilising peracetic acid, Henrik Andersen, <i>DTU, Denmark</i></p>		<p>Thursday 13:30-15:00 Integration</p> <p>14:30-14:50</p>
<p>3.11 MICROBIAL, CHEMICAL, AND BY-PRODUCT RISK AND MANAGEMENT</p> <p>Room B5 b Technical</p> <p>Chairs: Daisuke Sano, <i>Japan</i> and Mads Koustrup Jørgensen, <i>Denmark</i></p> <p>Maximum formation potential of trihalomethanes in tap water by heating: monitoring parameter considering household water use, Akifumi Abe, <i>Waterworks Bureau, City of Kawasaki, Japan</i></p> <p>Development of metabolism-coupled cell-independent anti-acetylcholinesterase assay for evaluating change in toxicity of organophosphorus insecticides during chlorination, Taku Matsushita, <i>Hokkaido University, Japan</i></p> <p>Optical sensors in turbid waters: AbspectroscOPY, a Python toolbox for absorbance-based sensor data, Claudia Cascone, <i>IVL Swedish Environmental Research Institute, Sweden</i></p> <p>The implication of unmanaged sanitation practices in water bodies: a review from ten Nepalese cities, Jagam Shrestha, <i>Environment and Public Health Organization, Nepal</i></p> <p>--- POSTERS ---</p> <p>What's in your water? Rapid water quality assessment for low resource settings, Esther Shaylor, <i>UNICEF, Denmark</i></p> <p>Predicting free chlorine residual and disinfection by-products in a water distribution network in southern Quebec with a variable reaction rate model, Faezah Absalan, <i>Polytechnique Montreal, Canada</i></p>		<p>Thursday 13:30-15:00 Risk</p> <p>14:55-15:00</p>

<p>3.5 AN INNOVATIVE PARADIGM IN WATER INFORMATICS FOR SMART CITY APPLICATIONS</p> <p>Room B4 b Workshop</p> <p>Chairs: Amlan Chakrabarti, <i>India</i> and Joyti Gautam, <i>India</i></p> <p>Encompassing most of the latest technologies under the roof of Water Informatics and discussion of the case studies.</p> <p>Speakers: Amlan Chakrabarti, <i>University of Calcutta (IN)</i> & Jyoti Gautam, <i>AKTU (IN)</i></p>		<p>Thursday 13:30-15:00 Water informatics</p>
<p>6.16 LIFECYCLE SYSTEM THINKING AND SYSTEM BOUNDARIES FOR SUSTAINABILITY ASSESSMENT OF WATER MANAGEMENT</p> <p>Room B3 e Workshop</p> <p>Chairs: Martin Rygaard, <i>Denmark</i> and Maria Farago, <i>Denmark</i></p> <p>Sustainability Development Goals and Planetary Boundaries are taking water management by storm. In that storm, well-conducted lifecycle assessments (LCA) and cost-benefit analyses can provide quantitative decision support for strategic planners and management as for such support tools, the first step is always a thorough understanding of the water system and its interaction with associated energy, material, and transport systems. In this training session, you will be introduced to the concept of lifecycle systems thinking. We will provide an example based on state-of-the-art water resource recovery. Following the introduction, an interactive session with peers will challenge you to map your own system and identify all links to upstream and downstream processes. The session is a modified version of training sessions successfully held with participants from Argentina, China, Denmark, Egypt, Ghana, Kenya, and South Africa.</p> <p>Speakers: Martin Rygaard, <i>Technical University of Denmark (DK)</i> & Maria Farago, <i>Technical University of Denmark (DK)</i></p>		<p>Thursday 13:30-15:00 Lifecycle assessments (LCA)</p>
<p>4.8 ACTIONABLE PATHWAY TO IMPLEMENTATION OF NATURE-BASED SOLUTIONS</p> <p>Room B3 d Workshop</p> <p>Chairs: Maria Dubovik, <i>Finland</i> and Laura Wendling, <i>Finland</i></p> <p>The session brings together Europe's leading experts in nature-based solutions design, implementation and impact evaluation. The session presents the components of the NBS implementation cycle and offers participants an opportunity to engage in NBS discussions. Components of the NBS cycle discussed will include the identification of important stakeholders, co-creation, policy contexts, and means to strengthen and upscale nature-based interventions via monitoring and impact assessment. After the session, participants will be able to identify key stakeholders and steps necessary for targeted NBS implementation, performance and impact evaluation, and replication. Local experts can translate the session's learning outcomes to local agendas and decision-making, and replicate the NBS implementation process for the local environmental, social and economic challenges.</p> <p>Speakers: Maria Dubovik, <i>VTT Technical Research Centre of Finland (FI)</i> & Laura Wendling, <i>VTT Technical Research Centre of Finland (FI)</i>, Raúl Sanchez, <i>CARTIF Foundation (ES)</i>, Chiara Baldacchini, <i>CNR-IRET & University of Tuscia (IT)</i> & Adina Dumitru, <i>University of A Coruna (ES)</i></p>		<p>Thursday 13:30-15:00 Pathway to NbS</p>

<p>REGULATORS FORUM V — COPING WITH UNCERTAINTY: FORWARD-LOOKING APPROACHES TO COPE WITH UNCERTAINTY AND HELP DELIVER REGULATORY MANDATES</p> <p>Chair: Jaime Baptista, <i>Portugal</i></p> <p>The 7th International Water Regulators Forum offers a platform for water sector regulators from all over the world to exchange experiences, transfer skills and build new partnerships. It gathers high-level representatives of regulatory authorities and officials of agencies with regulatory and supervisory functions over the provision of water, sanitation, and drainage services, as well as their peers from public health and environmental regulators. The discussions will focus on how regulatory functions are being supplied in times of increasing natural, social, and economic uncertainty. During the Forum, discussions are structured around highly interactive sessions that combine short inspirational presentations and roundtable discussions led by the speakers.</p>	<p>Room A3 Forum</p>		<p>Thursday 13:30-15:00 Regulators</p>
<p>CSU RECOGNITION PROGRAMME</p> <p>Chair: Carlos Diaz, <i>International Water Association</i></p> <p>The IWA Climate Smart Utilities Recognition Programme aims to inspire utilities and all their stakeholders to transition to be increasingly Climate Smart and to embrace the cultural shift on three interconnected pillars for action:</p> <ul style="list-style-type: none"> • Adaptation: Resilience in the face of climate change is increased. • Mitigation: GHG emissions are assessed and aim to be reduced. • Leadership: You are a national, regional, or international champion. <p>This Recognition Programme builds on the vision endorsement, where utility leaders around the world committed to endorsing a shared vision to build momentum for greater progress. The objective of the programme is to celebrate utilities on the journey to becoming climate smart. This session will showcase adaptation and mitigation actions taken by celebrated utilities according to the framework of IWA Climate Smart Utilities.</p> <p>Speakers: Carlos Diaz, <i>Manager Climate Smart Utilities Initiative, IWA (UK)</i>, Brenda Apomah, <i>Programmes Officer Climate Smart Utilities Initiative, IWA (UK)</i>, Norbert Jardin, <i>Ruhrevrband, CEO (DE)</i>, Bernat Cami Xavier, <i>Aigües de Barcelona, Climate Action Director (ES)</i>, Juan José Iervasi Scokin, <i>AySA, Technical Advisor (AG)</i>, Pauline Ottoy, <i>De Watergroep, Program Manager R&D Circular Systems (BE)</i>, Reshma Ghisaidoobe, <i>DUNEA DUNIN & WATER (NL)</i></p>	<p>Room C1 Climate Smart</p>		<p>Thursday 13:30-15:00 Climate Smart Utilities</p>
<p>5.6 INNOVATION & ENTREPRENEURSHIP: DEVELOPING ENTREPRENEURIAL CAPABILITIES FOR THE WATER SECTOR</p> <p>Chairs: Odwa Ntsika Mtembu, <i>South Africa</i> and Mbali Sibiya, <i>South Africa</i></p> <p>This highly interactive and collaborative training aims at equipping water professionals with the skills to develop entrepreneurial and innovative ideas to tackle challenges in the water sector.</p> <p>Speakers: Odwa Ntsika Mtembu, <i>World Merit South Africa (ZA)</i>, Mbali Sibiya, <i>Umgeni Water (ZA)</i>, Jacob Amengor, <i>University of Calgary (CA)</i> & Lee-Ann Modley, <i>University of Johannesburg (ZA)</i></p>	<p>Room C2 Workshop</p>		<p>Thursday 13:30-15:00 Innovation</p>

<p>2.5 AEROBIC GRANULAR SLUDGE: INTENSIFYING AND GREENING WWTPS</p> <p>Chairs: Andreas Giesen, <i>Netherlands</i>, Bryce Figdore, <i>United States</i> and Mark van Loosdrecht, <i>Netherlands</i></p> <p>The goal of the workshop is to disseminate current best-practices for AGS in SBR and FT systems and determine needs, and trigger collaboration, for scientific and application research that will enable more practitioners and societies across the globe to benefit from the sustainability advantages.</p> <p>Speakers: Andreas Giesen, <i>Royal HaskoningDHV (NL)</i>, Mari Winkler, <i>University of Washington (US)</i>, Mark van Loosdrecht, <i>Delft University of Technology (NL)</i>, Bryce Figdore, <i>HDR (US)</i>, Per Overgaard Pedersen, <i>Aarhus ReWater (DK)</i> & Erik Rekswinkel, <i>Water Board Hoogheemraadschap De Stichtse Rijnlanden (NL)</i></p>	<p>Room C3 Workshop</p>	<p>Thursday 13:30-15:00 Aerobic granular sludge (AGS)</p>
<p>2.3.4 OTHER PHYSICO-CHEMICAL TREATMENT TECHNIQUES</p> <p>Chairs: David Garman, <i>Australia</i> and Joseph Maudjorm, <i>Germany</i></p> <p>Enhanced phosphorus removal in dewatering filtrate with CO₂ stripping and surface-modification of steel-slag, Jungheon Kim, <i>Pusan National University, Republic of Korea</i></p> <p>Molecular two phase properties of water, can this be exploited? Michael Bache, <i>BA Chemical ApS, Denmark</i></p> <p>Use of Atmospheric Dissolved Air Flotation (DAF) in removal of surfactants, Ali Rostamiiranagh, <i>Water and Wastewater Company East Azarbaijan Province, Azerbaijan & Azarbaijan Shahid Madani University, Iran</i></p>	<p>Room B5 a Technical</p>	<p>Thursday 13:30-15:00 Physico-chemical treatment</p>
<p>3.1 SG HEALTH RELATED WATER MICROBIOLOGY AND WHO WORKSHOP: RECREATIONAL WATER QUALITY TRANSLATING SCIENCE TO POLICY</p> <p>Chairs: Regina Sommer, <i>Austria</i></p> <p>In this workshop, the requirements of best-practice guideline development will be discussed in the context of the recently released WHO recreational water quality guidelines, in light of the scientific results of recent high-quality reviews on the human health impact of faecal pollution in recreational waters, sand, and harmful algal blooms.</p> <p>Speakers: Regina Sommer, <i>Medical University of Vienna (AT)</i>, Kate Medicott, <i>World Health Organization (SZ)</i>, David Kay, <i>CREH (UK)</i>, João Brandão, <i>National Institute of Health Dr. Ricardo Jorge (PT)</i>, David Cunliffe, <i>Public Health Service (AU)</i>, Anne Roiko, Maria Sonabel & Maja Feder</p>	<p>Room B4 a Workshop</p>	<p>Thursday 13:30-15:00 Recreational water quality</p>

<p>1.2 UTILITY EFFICIENCY AND EXCELLENCY</p> <p>Chairs: Linda Åmand, <i>Sweden</i> and Hamred Chungani, <i>Kenya</i></p> <p>Assessing the financial sustainability of water service providers in Kenya, Kelvin Mwangi, <i>Nairobi City Water and Sewerage Company Ltd, Kenya</i></p> <p>Benchmarking the sewage treatment facilities of Indian cities using a novel index-based approach, Dina Zaman, <i>Indian Institute of Technology Kharagur, India</i></p> <p>Towards collaborating and integrated water companies, Carl Heyrman, <i>AquaFlanders, Belgium</i></p> <p>Benchmarking sustainability of European water services, Peter Dane, <i>EBC Foundation, Netherlands</i></p> <p style="text-align: center;">--- POSTERS ---</p> <p>Alliance for water stewardship: a case study of sustainable water stewards in the northern Italy, Gabriele Andreani, <i>Philip Morris Manufacturing and Technology, Italy</i></p> <p>Achieving a sustainable step-change in water management in a UK campus environment, James Daly, <i>University of Surrey, United Kingdom</i></p>	Room B4 c Technical	<p>Thursday 13:30-15:00 Efficiency and excellence</p>
<p>1.1 ARE YOU ADEQUATELY ASSESSING YOUR WATER LOSSES? LEARN TO USE THE WL PERFORMANCE INDICATORS</p> <p>Chairs: Enrique Cabrera, <i>Spain</i></p> <p>The purpose of the workshop is to promote a better understanding of the proper use of one or more specific PIs when addressing water losses, with regard to the context in which they are being applied. A secondary purpose is for participants to apply that understanding to the updated EU Drinking Water Directive (DWD) for their context.</p> <p>Speakers: Enrique Cabrera, <i>IWA BPA SG Chair, IWA Senior VicePresident, IWA Publishing Chair (ES)</i>, Alan Wyatt, <i>BPA SG MC member (US)</i> & Aleksandar Krstic, <i>BPA SG MC member (RS)</i></p>	Room B4 d Workshop	<p>Thursday 13:30-15:00 Water losses</p>
<p>4.7 SANITATION IN URBAN INFORMAL SETTLEMENTS</p> <p>Chairs: Bo N Jacobsen, <i>Denmark</i></p> <p>The workshop will put into focus how to share and transfer knowledge and good experiences from new technical-scientific findings to large-scale practical implementations of sustainable sanitation solutions in urban informal settlements. Linkages to the Congress themes, e.g., Wash and community scale water management, and to the IWA Strategic Plan 2019–24, e.g., providing a targeted platform that helps utilities (and communities) share experiences, recognise and learn from emerging disruption, and adapt and embrace change.</p> <p>The outcome of the workshop will be documented as a legacy. It is planned to involve an IWA Young Water Professional in the rapporteur process and in writing a blog to share the outcomes.</p> <p>Speakers: Bo N Jacobsen, <i>Engineers Without Borders & IAWPRC-IAWQ-IWA Member since 1990 (DK)</i>, Hezekiah Pireh, Yirah O. Conteh, <i>Shack/Slum Dwellers International (SDI) (SL)</i>, Jay Bhagwan, <i>Water Research Commission (ZA)</i>, Stuart White, <i>University of Technology Sydney (AU)</i>, Kai Udert, Markus Starkl, <i>BOKU Wien (AT)</i> & James Ebdon, <i>University of Brighton (UK)</i></p>	Room B3 c Workshop	<p>Thursday 13:30-15:00 Urban informal settlements</p>

1.4 | THE DIGITAL WORKER — CHALLENGES AND LESSONS LEARNED BY INTERNATIONAL UTILITIES

Room B3 f
Workshop

Thursday
13:30-15:00
Digital worker

Chairs: Cheryl Davis, *United States* and Lisa Bross, *Germany*

The purpose of this workshop is to identify and discuss workforce challenges and lessons learned in relation to issues (e.g., selection of tools, organisational culture, staff training, human resource issues, and IT support) that are key to the effective use of digital tools. A combination of presentations and facilitated discussion will be used to document challenges and lessons learned. Output from this session will be used as the basis for the creation of future reports, presentations, and guidelines for effective use of digital tools by utilities.

Speakers: Cheryl Davis, *Chair of IWA Specialist Group on Sustainability in the Water Sector CKD Consulting (US)* & Lisa Bross, *WVR (DE)*, Nozomi Ishida, *Tokyo Metropolitan Government (JP)*, Victor Faria, *CEDEA (BR)* & Juan Iervasi, *Agua y Saneamientos Argentinos (AR)*