

<p>1.21 INTEGRATED DIGITAL WATER UTILITY</p> <p>Chairs: Zoran Kapelan, <i>Netherlands</i> and Kelvin Mwangi Wambui, <i>Kenya</i></p> <p>How is digital transformation impacting the water utility sector? Insights from a worldwide online utility survey, Ivo Daniel, <i>Technische Universität Berlin, Germany</i></p> <p>Understanding the challenges and opportunities of smart water technology - water utility perspectives, Heather Smith, <i>Cranfield University, United Kingdom</i></p> <p>Integrated urban wastewater management in Greater Copenhagen and its digital future, Barbara Greenhill, <i>BIOFOS, Denmark</i></p> <p>WaterLAB and SuperDMA — R&D and demonstration platforms for smart water applications, Patryk Wójtowicz, <i>Savonia University of Applied Sciences, Finland</i></p> <p>--- POSTERS ---</p> <p>Lessons learned from an ongoing digital journey in a smaller water utility, Annika Malm, <i>Kungsbacka Municipality, Sweden</i></p> <p>LEAK365 full scale smart water leakage management, Thorkil Neergaard, <i>Brønderslev Water Utility Ltd, Denmark</i></p>	<p>Room B3 a Technical</p>	<p>Monday 10:30 -12:00 Digital Water</p> <p>10:30-10:50</p> <p>10:50-11:10</p> <p>11:10-11:30</p> <p>11:30-11:50</p> <p>11:50-11:55</p> <p>11:55-12:00</p>
<p>2.5.1 SEWER CORROSION AND ODOUR MANAGEMENT</p> <p>Chairs: Liu Ye, <i>Australia</i> and Irina Pulyakhina, <i>Netherlands</i></p> <p>Hydrogen sulphide control in sewer systems by gravity aerators, Jarmo Sallanko, <i>AFRY Finland Oy, Finland</i></p> <p>Sewer process modelling as a tool to predict and manage odour and corrosion in a drainage system, Esther Vollertsen, <i>EnviDan, Denmark</i></p> <p>Liquid H₂S online measurement for optimized sewer system insights and H₂S control, Marie Inizan, <i>HACH, France</i></p> <p>Network-wide control of sewer corrosion and odour by optimization of chemical dosing, Jiuling Li, <i>the University of Queensland, Australia</i></p> <p>--- POSTERS ---</p> <p>Modelling the addition of liquid oxygen to prevent hydrogen sulphide production in a pressurized sewer using WEST, Fabio Polese, <i>DHI A/S, Denmark</i></p> <p>Monitoring and predicting of N₂O emissions in wastewater treatment plants with adaptive data-driven soft-sensors, Pedram Ramin, <i>Technical University of Denmark, Denmark</i></p>	<p>Room B5 a Technical</p>	<p>Monday 10: 30-12:00 Sewer corrosion</p> <p>10:50-11:10</p> <p>11:10-11:30</p> <p>11:30-11:50</p> <p>11:50-11:55</p> <p>11:55-12:00</p>
<p>POLICY TO PRACTICE DIALOGUE FOR NATURE-BASED SOLUTIONS</p> <p>Chair: Kari Vigarstol, <i>United States</i> and Eric Tardieu, <i>France</i></p> <p>Nature-based solutions (Nbs) have emerged globally as one of the key sustainable and affordable ways to fix the broken urban water cycle and contribute to improve river/ basin – cities health. While appropriate public policies are essential to mainstream the use of Nbs, revisiting practical Nbs implementation cases can provide important inputs to better understand how to properly shape these policies.</p> <p>Based on case studies from different geographies and social and economic contexts, this session aims to discuss how to create an enabling environment for mainstreaming Nbs in urban and basin water management, considering the various implementation scales, the multiple stakeholders involved, and the technological solutions available.</p> <p>Speakers: Tony Wong, Sustainable Development, Monash University (AU), Katharine Cross, Australian Water Partnership (AWP)(AU), Hitesh Vaidya, National Institute of Urban Affairs (NIUA) (IN), Pawel Licznar, Retencja (PL), Kirsty Carden, University of Cape Town (SA), Sophie Tremolet, The Nature Conservancy (TNC) (UK), Suresh Rohilla, International Water Association (IWA) (UK)</p>	<p>Room C0 Workshop</p>	<p>Monday 10:30-12:00 Nature-based solutions (Nbs)</p>

<p>2.3.2-1 ADVANCED OXIDATION PROCESSES - GROUP 1</p> <p>Chairs: Pablo Ledezma, <i>Australia</i> and Dana Hernandez, <i>United States</i></p> <p>Effects of conventionally-treated and additionally ozonated wastewater on survival, biomarkers and behavior of two aquatic invertebrate species, Louisa Rothe, <i>University of Duisburg-Essen, Germany</i></p> <p>Water treatment by combining of a plug-flow tubular cavitation reactor in with H₂O₂ dosage, Andreas Schmid, <i>University of Applied Sciences Hof, Germany</i></p> <p>Assessment of CuO nanomaterials assisted oxidation versus self activation of peroxymonosulfate for the degradation of recalcitrant pollutants, Pieter van Aken, <i>KU Leuven, Belgium</i></p> <p>Emerging advanced oxidation processes for water and wastewater treatment — a guideline for future research, Uwe Huebner, <i>Technical University of Munich, Germany</i></p> <p style="text-align: center;">--- POSTERS ---</p> <p>A digital twin for the ozonation process at the Wervershoof WWTP: towards real-time prediction of micropollutant removal and bromate formation, Wim Audenaert, <i>AM-Team, Belgium</i></p> <p>Effects of water matrices on removal of pharmaceuticals by photo-fenton process and ozone-based oxidation processes, Masahiro Tokumura, <i>University of Shizuoka, Japan</i></p>	<p>Room B3 f Technical</p>	<p>Monday 10:30-12:00 Advanced oxidation</p> <p style="text-align: center;">11:50-11:55</p>
<p>1.12 INFRASTRUCTURE REHABILITATION</p> <p>Chairs: Cor Merks, <i>Netherlands</i> and Francis Mwai Karingithi, <i>Kenya</i></p> <p>Integrated radar and ultrasonic pipe scanner for condition-based maintenance of water and wastewater pipes, Andreas Reason Dahl, <i>Equanostic as, Norway</i></p> <p>First impoundment response analysis of an earth dam using coupled numerical-soft computing technique, Mir Jafar Sadegh Safari, <i>Yasar University, Turkey</i></p> <p>An asset management-oriented methodology for sustainable pipe rehabilitation planning, Kristiane Jensen, <i>Greater Copenhagen Utility, Denmark</i></p> <p>Anticipated challenges and suggestive solutions for sewer network design in Cold Desert Region (Ladakh) of India, Anjali Bansa, <i>Ramboll, India</i></p> <p style="text-align: center;">--- POSTERS ---</p> <p>Development and optimization of parametric tools and methods for the evaluation of the physical integrity of sewage networks, Axumawit Tesfamariam, <i>University of Oulu, Finland</i></p> <p>JalTantra: a web-based open-source platform for water network optimal design, Abhishek Sinha, <i>IIT Bombay, India</i></p>	<p>Room B4 d Technical</p>	<p>Monday 10:30-12:00 Infrastructure</p> <p style="text-align: center;">11:50-11:55</p> <p style="text-align: center;">11:55-12:00</p>
<p>HIGH-LEVEL SUMMIT — WATER AS A KEY TO ACTION ON CLIMATE AND THE SDGS</p> <p>INNOVATIVE FINANCING FOR SDGS AND CLIMATE CHANGE ACTION</p> <p>Chair: Tom Mollenkopf, <i>IWA President</i></p> <p>Summit organised by the International Water Association, Danish Water and Wastewater Association, the Municipality of Copenhagen, P4G and the Confederation of Danish Industry, in cooperation with the Ministry of Environment of Denmark and the Ministry of Foreign Affairs of Denmark. With water prominent in the SDG and climate agendas, the Summit will contribute to a powerful message on the need for cities to elevate water as they pursue their ambitions to create smart and secure liveable cities for all.</p> <p>The first session will focus on innovative financing for the SDGs and climate change action.</p> <p>By invitation</p> <p>Discussion facilitator: Corinne Trommsdorff, <i>Water Cities</i></p>	<p>Room A2 Summit</p>	<p>Monday 10:30-12:00 Climate and SDGs</p>

<p>4.4.3 MICROBIAL AND CHEMICAL RISKS FOR CITY PLANNING</p> <p>Room B3 b Technical</p> <p>Chairs: Willy Verstraete, <i>Belgium</i> and Sital Uprety, <i>Switzerland</i></p> <p>Application of hydraulic modelling and quantitative microbial risk assessment (QMRA) for cloudburst management in cities with combined sewer systems, Claus Jørgensen, <i>DHI A/S, Denmark</i></p> <p>Microbial drinking water safety requirements of river catchments in view of global climate change - The QMRACatch approach, Katalin Demeter, <i>TU Wien, ICC Water & Health, Austria</i></p> <p>Low flow diversion — an alternative solution to manage polluted stormwater in highly urbanized areas?, Ida Knudsen, <i>Hofor A/S, Denmark</i></p> <p>Identifying measurement errors in continuous stormwater quality data by comparison with traditional sampling and analysis, Kelsey Flanagan, <i>Luleå University of Technology, Sweden</i></p>		<p>Monday 10:30-12:00 Microbial risks</p> <p>10:30-10:50</p>
<p>5.1 BOTTOM-UP RESILIENCE PLANNING ACROSS THE WATER CYCLE</p> <p>Room B4 b Technical</p> <p>Chairs: Mariska Ronteltap, <i>Netherlands</i> and Lee-Ann Modley, <i>South Africa</i></p> <p>A rethinking of community based water management planning through a renewed focus on seasonal representations, Miriam Jensen, <i>AAU, Denmark</i></p> <p>Urban stormwater management in the face of extreme events and failure incidents: diverse resilience perspectives through participatory modelling in the BEJonD Project, Katharina Kearney, <i>University of Natural Resources and Life Sciences, Vienna, Austria</i></p> <p>Stream regeneration for flood prevention, and a better Saavedra Park, Mariano Kristoff, <i>Ciudad Autónoma de Buenos Aires, Argentina</i></p> <p>Decolonialising sustainabilities: reflecting on the coproduction of nature-based solutions as empowerment for researchers, communities and the landscape in, Patience Mguni, <i>University of Copenhagen, Denmark</i></p> <p>---- POSTERS ----</p> <p>Principles of sustainable water services systems and resilient organisations, Tapio Katko, <i>Tampere University, Finland</i></p> <p>Review on the slippage factors towards open defecation after the implementation of the Community Led Total Sanitation (CLTS) a pproach, Hemez Ange Aurélien Kouassi, <i>International Institute for Water and Environmental Engineering (2iE), Burkina Faso</i></p>		<p>Monday 10:30-12:00 Resilience</p> <p>10:50-11:10</p>
<p>5.6 YOUNG WATER ENTREPRENEURS: ENTREPRENEURSHIP AS A WAY TO BRIDGE RESEARCH AND PRACTICE</p> <p>Room B4 c Workshop</p> <p>Chair: Inês Lousinha Breda, <i>Denmark</i></p> <p>For existing and novel technologies to turn into water solutions, YWPs must recognise their role in the co-creation process of end-user driven solutions and bring them to the market. The session aims to provide guidance to young water professionals by identifying the value proposition and the partnerships that can support the implementation of new water solutions. The session will include practical examples and propose next steps towards a stronger IWA network that can support entrepreneurship, business development, and water solution applications at both local and global scales.</p> <p>Speakers: Inês Lousinha Breda, <i>Eurowater A/S (DK)</i>, Pia Rask, Wim Audenaert, <i>AM Team (BE)</i> & Lars Andersen, <i>China Resources Management (DK)</i></p>		<p>Monday 10:30-12:00 YWPs</p>

<p>2.1.2-1 ANAEROBIC DIGESTION AND ENHANCED PERFORMANCE</p> <p>Room C3 Technical</p> <p>Chairs: Ioannis Alexiou, United Kingdom and Gabriel Capson Tojo, Spain</p> <p>Fungal bioflocculation of <i>Euglena Gracilis</i>: a rapid harvesting method, Danielle Bansfield, Aalto University and the Finnish Environment Institute, Finland</p> <p>Fungi-assisted bioflocculation as a promising strategy for microalgae harvesting: a statistical analysis of literature and experimental study, Jesna Fathima, IIT Hyderabad, India</p> <p>The impact of concentration in electrolyte on ammonia removal in flow electrode capacitive deionization system, Kuo Fang, Tsinghua University, China</p> <p>Innovative technology to remove nitrogen and produce climate friendly fertilizer, Anna Lundbom, Ragn-Sells AB, Sweden</p> <p style="text-align: center;">--- POSTERS ---</p> <p>Effect of nutrient media on lipid content of microalgae: a statistical analysis, Asams MA, College of Engineering, Trivandrum, India</p> <p>Anaerobic digestion of sewage sludge - semi full-scale thermophilic capacity experiment, Jesper Olsson, Käppalaförbundet, Sweden</p>		<p>Monday 10:30-12:00 Anaerobic digestion</p>
<p>2.2.1-1 WATER RECLAMATION FOR NON-POTABLE REUSE</p> <p>Room B3 e Technical</p> <p>Chairs: Esper Ncube, South Africa and Alba Martinez, Denmark</p> <p>Disinfection of extracellular antibiotic resistance genes using peracetic acid (PAA) and performic acid (PFA), Hiroki Kobayashi, Kitasato University, Japan</p> <p>Microbiology contamination in grass irrigated with different water sources, Rita Lourinho, Instituto Superior Técnico, Portugal</p> <p>Sustainable and synergic solutions to increase wastewater reuse in industrial sectors, Cecilia Bruni, Marche Polytechnic University, Italy</p> <p>Frequency and application of dual water supply systems, Seyed Ali Ghassemi, Mashhad Water and Wastewater Company, Iran</p> <p style="text-align: center;">--- POSTERS ---</p> <p>New fluorescence sensor for pathogen monitoring in wastewater reuse, Santiago, AIMEN Technology Centre, Spain</p>		<p>Monday 10:30-12:00 Non-potable reuse</p>
<p>2.1 FUTURE CHALLENGES FOR REMOVAL OF MICROPOLLUTANTS IN WASTEWATER TREATMENT PLANTS</p> <p>Room B3 d Workshop</p> <p>Chairs: Jan Christensen, Denmark and Peter Mortensen, Denmark</p> <p>Improved treatment of wastewater is a key target in addressing the global need for clean water (SDG targets 6.3 and 3.9). Studies measuring the joint toxicity of whole wastewater samples and identifying how much of the toxicity is explained by the monitored chemicals show very large gaps in our present knowledge. Wastewater treatment plants of today often focus on sanitary treatment and the removal of nutrients only. Future plants will have to further address the growing concern of toxic chemicals being emitted into the environment. The purpose of the workshop is to provoke a fruitful discussion about the future ways to monitor and control the emission of micropollutants. We will discuss the present knowledge we have about existing wastewater related chemicals and their toxicity on the basis of research conducted in Denmark, Sweden and Germany.</p> <p>Speakers: Peter Mortensen, Eurofins Environment Denmark (DK), Jan Christensen, Copenhagen University (DK), Kristoffer Kilpinen, Eurofins Miljø a/s (DK), Mafalda Castro, University of Copenhagen (DK), Nina Cedergreen, Dines Thornberg, BIOFOS (DK)</p>		<p>Monday 10:30-12:00 Micropollutants</p>

<p>GROUNDWATER FORUM I — GROUNDWATER MANAGEMENT</p> <p>Chair: Ida Holm Olesen, Denmark</p> <p>Introduction by Anders Bækgaard, IWA WWC President and Dr Stephen Foster, IWA Groundwater Management Specialist Group: Groundwater Frontiers for a Sustainable and Resilient Future</p> <p>Embracing the challenges and strengthening the synergies, Karen Villholth, Principal Researcher, International Water Management Institute, South Africa</p> <p>Groundwater management in Kenya: opportunities and challenges, Julia Gathu, Operations Manager-Drilling for Life, Kenya and Secretary for the IWA Groundwater Management Specialist Group</p> <p>Replenishing aquifers in water-scarce countries: assessing groundwater quality changes induced by the large-scale injection of reclaimed wastewater, Dr. Henning Prommer, Principal Research Scientist at CSIRO Land and Water, Australia, and Winthrop Research Professor at the University of Western Australia</p>	<p>Room A3 Forum</p>	<p>Monday 10:30-12:00 Groundwater</p>
<p>NEXT GENERATION WATER ACTION — THE WORLD'S BEST WATER NEWS IN 2030</p> <p>Chairs: DTU Skylab, DTU Sustain, IWA & IWA Young Water Professionals, ICDK Bangalore</p> <p>Join a facilitated innovation workshop to discuss, co-create and share ideas on what solutions will make the headlines in 2030 for their impact on transforming future cities.</p> <p>Participants are invited to jointly create visionary ambitions together with international young and experienced individuals from academia and start-up environments in India, Korea, Mexico, Denmark and Kenya.</p> <p>We promise a creative, engaging and visionary session, a hands-on experience with innovation tools used by DTU Skylab – the hub for innovation and entrepreneurship at DTU, and connections to the international youth delegation that is part of www.NextGenerationWaterAction.com.</p>	<p>Room C1 NextGen</p>	<p>Monday 10:30-12:00 Future cities</p>
<p>5.8 THE ART OF COLLABORATION: CROSSING BORDERS TO SOLVE SYSTEMS-BASED PROBLEMS</p> <p>Chairs: Shannon Spurlock, United States and Eric Rosenblum, Unites States</p> <p>Building water security and resiliency across a region requires deliberate, collective action. Decision-makers and practitioners must keep an eye on the needs of their immediate community while working toward more robust, regional solutions. With respect to water, agencies across the region can work together to identify their individual opportunities and constraints, and collaborate to achieve a multi-benefit outcome that simultaneously addresses many water, wastewater, and storm water challenges.</p> <p>In this session, attendees will engage with each other to gain an understanding of the various aspects of collaboration, including regulation, governance, economics, management, and leadership. Roundtable exercises will build an awareness of how regional opportunities can be actualized when agencies work together for the collective good. Hypotheses will be presented, and participants will also have an opportunity to share their experiences with collaboration on a local, regional, and national scale.</p> <p>Speakers: Shannon Spurlock, Ochotona LLC (US), Eric Rosenblum, Water Resource Consultant (US) & Felicia Marcus, Water Policy Group (US)</p>	<p>Room C2 Workshop</p>	<p>Monday 10:30-12:00 Collaboration to solve systems-based problems</p>

<p>3.1 TECHNOLOGIES AND OPERATIONS I</p> <p>Chairs: Yaroslav Olach, <i>United States</i> and Muhammad Anique Azam, <i>Pakistan</i></p> <p>Comparison of water treatment processes' potential to cope with climate change related challenges and related costs, Irene Slavik, <i>University of Applied Sciences Magdeburg-Stendal, Germany</i></p> <p>Environmental impact of NOM-removal from drinking water by enhanced coagulation: the importance of process design, Paula Pellikainen, <i>Bergen Vann, Norway</i></p> <p>Investigating virus reduction efficiencies in coagulation-sedimentation—rapid sand filtration or coagulation—microfiltration by a combination of full-scale, Daiki Shirakawa, <i>Hokkaido University, Japan</i></p> <p>Effects on biostability in drinking-water from treatment with ozonation and activated carbon filtration, Per Paulsson, <i>Ramboll, Sweden</i></p> <p style="text-align: center;">--- POSTERS ---</p> <p>Divalent oxyanion and bicarbonate synergistically enhance hydrolysis and coagulation performance of high-basicity PACl coagulants, Yize Chen, <i>Hokkaido University, Japan</i></p> <p>Bio-based activated carbon from locally available biomass: comparison of carbon activation methods on water treatment performance, Oleksii Tomin, <i>Aalto University, Finland</i></p>	<p>Room B5 b Technical</p>	<p>Monday 10:30-12:00 Technologies</p>
<p>3.12 WATER MANAGEMENT: SOURCE TO CONSUMER</p> <p>Chairs: Regina Sommer, <i>Austria</i> and Xorse Doe-Bansah, <i>Ghana</i></p> <p>Distribution network failures as threats for Finnish drinking water safety, Ilkka Miettinen, <i>Finnish Institute for Health and Welfare, Finland</i></p> <p>Case study on response to eutrophication of the New River, Belize, Stacey Alpuche, <i>Ministry of Sustainable Development, Climate Change and Disaster Risk Management, Belize</i></p> <p>Water demand management and use efficiency: customer metering & demand management, Pedro Pina, <i>Xylem inc, United Arab Emirates</i></p> <p>Comprehensive study on factors affecting consumers' choice of bottled drinking water: a case study of Dar Es Salaam, Margaret Kironde, <i>Water Institute, Tanzania</i></p> <p style="text-align: center;">--- POSTERS ---</p> <p>Statistical tools and water quality indices for the groundwater quality assessment and suitability for agriculture - a study case of Thiaroye Quaternary Aquifer Sands in Senegal, Huguette Emvoutou, <i>UCAD, Senegal</i></p> <p>Intermittent supply system challenges and optimisation: customer metering, Pedro Pina, <i>Xylem, Inc, United Arab Emirates</i></p>	<p>Room B4 a Technical</p>	<p>Monday 10:30-12:00 Source to consumer</p>
<p>4.1 THE ROLE OF WATER AND WASTEWATER UTILITIES IN SUPPORTING SUSTAINABLE DEVELOPMENT GOALS</p> <p>Chairs: Arlinda Ibrahimllari, <i>Albania/Canada</i> and Sylvain Usher, <i>Côte d'Ivoire</i></p> <p>The 2030 Agenda for Sustainable Development, adopted by the United Nations (UN) in September 2015, has given a new impetus to global efforts to achieve sustainable development.</p> <p>Water and wastewater utilities globally play a vital role in supporting several of the SDGs. A primary challenge faced by utilities is to analyse the various SDGs and develop strategic plans for addressing the goals where there is the most impact and where they have the most capacity. The workshop will provide examples of how such strategic plans have been developed by utilities in Europe, Asia, Latin America, and Africa. The workshop will address not only SDG 6 relating specifically to drinking water but all SDG's where water utilities can contribute.</p> <p>Expected participants: Individuals of any age or level of expertise interested in learning how to use the SDGs as a framework for corporate strategic planning.</p> <p>Speakers: Arlinda Ibrahimllari, <i>IWA SG Sustainability in the Water Sector / UK Consulting Company (AL)</i>, Sylvain Usher, <i>African Water Association (AfWA) (CI)</i>, Troels Kærsgaard Bjerre, <i>VCS (DK)</i>, Nerina di Lorenzo, <i>Melbourne Water (AU)</i>, Labrini Niaama, <i>Jose Luis Inglese & Faustina Boachie, Ghana Water Company Limited, GH</i></p>	<p>Room B3 c Workshop</p>	<p>Monday 10:30-12:00 SDGs</p>

1.3 | ADDRESSING WATER SHORTAGE MITIGATION IN THE MEDITERRANEAN REGION

Room B3 g
Technical

Speakers: **Günter Langergraber**, *Austria* and **Manuel Sapiano**, *Malta*

This session aims to contribute to the open debate on local water shortage mitigation and Mediterranean environmental challenges through state-of-the-art knowledge on NCWR techniques, management, planning and skills to reuse at territorial level for domestic and agricultural purposes.

Speakers: **Konstantinos Plakas**, *Centre for Research and Technology-Hellas (CERTH) (GR)*, **Günter Langergraber**, *Mediterranean Agronomic institute of Bari (CIHEAM Bari) (AT)*, **Manuel Sapiano**, *Energy and Water Agency (MT)* & **Fabio Masi**, *IRIDRA Srl (IT)*

Monday
10:30-12:00
Mediterranean
region