

Tuesday, 13 September



Track 1 WATER UTILITY MANAGEMENT	Track 2 WASTEWATER TREATMENT AND RESOURCE RECOVERY	Track 3 DRINKING WATER AND POTABLE REUSE	Track 4 CITY-SCALE PLANNING AND OPERATIONS	Track 5 COMMUNITIES, COMMUNICATION AND PARTNERSHIPS	Track 6 WATER RESOURCES AND LARGE- SCALE WATER MANAGEMENT
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Tuesday | Programme

Keynote Plenary	09:00 - 09:50	<p>Keynote: Empowering Communities to Shape Sustainable Water Solutions — Incorporating Indigenous Knowledge, Dawn Martin-Hill Panel: Tom Mollenkopf, Louise Dudley, Liby T. Johnson, Bradley Moggridge, Tanja Nielsen</p>	
Coffee Break	09:50 - 10:30		
Session 1	10:30 - 12:00		
<p>UTILITY LEADERS FORUM I — WATER UTILITIES AS COMMUNITY LEADERS — CREATING INTEGRATED WATER MANAGEMENT FOR CITIES OF THE FUTURE</p> <p>Chair: Hamanth Kasan, <i>IWA Vice President</i></p> <p>Igniting talks:</p> <p>Diane Taniguchi-Dennis, <i>CEO, Clean Water Services, Hillsboro, Oregon, US</i>, Dr. Eng. Silver Mugisha, <i>MD National Water & Sewerage Corporation, Uganda</i>, William Fernandes, <i>Director, Toronto Water, Canada</i>, Claudia Castell-Exner, <i>President EurEau, Brussels, Belgium</i></p> <p>Panel discussion facilitator: Ed McCormick, <i>Chair of IWA SC Utility Engagement Group</i></p>	Room A2 Forum	<p>FORUM FOR INDUSTRIAL WATER USERS I — PERSPECTIVES ON WATER STEWARDSHIP</p> <p>Through better water management, many industries can not only reduce their environmental impact and meet societal demands for clean water, but also improve process performance and ultimately reduce costs. The Forum for Industrial Water Users was formed to exchange ideas and approaches for industries to mitigate and overcome water-related challenges in a sustainable manner.</p>	Room A3 Forum
Lunch	12:00 - 13:30		
Session 2	13:30 - 15:00		
<p>UTILITY LEADERS FORUM II — ACCELERATING ADOPTION OF INNOVATION</p> <p>Chair: Jonathan Clement, <i>IWA LET Chair</i></p> <p>Igniting talks:</p> <p>Claus Homann, <i>CSO/COO, Aarhus Water, Denmark</i>, Chris Rockey, <i>Director South West Water, UK</i>, Bernard Koh, <i>Assistant CE, PUB Singapore</i>, Dr Asma El Kasmi, <i>Director Cooperation and Communication, ONEE, Morocco</i>, Rik Thijssen, <i>Director Business Development & Innovation, Vitens NL</i></p> <p>Roundtables and panel discussion facilitator: Helle Katrine Andersen, <i>COO DANVA</i></p>	Room A2 Forum	<p>FORUM FOR INDUSTRIAL WATER USERS II — INCENTIVISING SUSTAINABILITY: FROM SDGS TO REGULATION & SUSTAINABLE TOOLS AND APPLICATIONS</p> <p>Through better water management, many industries can not only reduce their environmental impact and meet societal demands for clean water, but also improve process performance and ultimately reduce costs. The Forum for Industrial Water Users was formed to exchange ideas and approaches for industries to mitigate and overcome water-related challenges in a sustainable manner.</p>	Room A3 Forum
Coffee Break	15:00 - 15:45		
Session 3	15:45 - 17:15		
<p>UTILITY LEADERS FORUM III — EVOLVING WITH CLIMATE CHANGE</p> <p>Chair: Shaunna Berendsen, <i>Head of Innovation Engagement, Anglian Water</i></p> <p>Igniting talks:</p> <p>Simon Parsons, <i>Director, Scottish Water, United Kingdom</i>, Pat McCafferty, <i>MD, Yarra Valley Water, Australia</i>, Dan Naidoo, <i>Regional Manager of Umgeni Waterboard, Kwazulu Natal, South Africa and chair of WISA Water Institute of Southern Africa</i>, Brian Hansen, <i>Head of Planning, Utility of Greater Copenhagen, Denmark</i>, Matt Collings, <i>Assistant GM, Moulton Niguel Water District, California, United States</i>, Gari Villa-Landa Sokolova, <i>Head of International Affairs, AEAS, Spain</i></p> <p>Roundtables and panel discussion facilitator: Miriam Feilberg, <i>Head of Climate, DANVA</i></p>	Room A2 Forum	<p>FORUM FOR INDUSTRIAL WATER USERS III — TABLE-TOP GROUP DISCUSSIONS OF ISSUES PERTAINING TO AND ASSOCIATED WITH THE PANELS EARLIER IN THE DAY</p> <p>Through better water management, many industries can not only reduce their environmental impact and meet societal demands for clean water, but also improve process performance and ultimately reduce costs. The Forum for Industrial Water Users was formed to exchange ideas and approaches for industries to mitigate and overcome water-related challenges in a sustainable manner.</p>	Room A3 Forum
Break	17:15 - 17:30		
Keynote Plenary	17:30 - 18:20	<p>Keynote: Digital Water Unpacked, Oliver Grievson & Enrique Cabrera Rochera Panel: Corinne Cheeseman, Pernille Ingildsen, Ramón Dolz Mollá, HP Nanda</p>	

Keynote Plenary	09:00 - 09:50		
Keynote: Empowering Communities to Shape Sustainable Water Solutions — Incorporating Indigenous Knowledge, Dawn Martin-Hill Panel: Tom Mollenkopf , Louise Dudley , Libby T. Johnson , Bradley Moggridge , Tanja Nielsen			
Coffee Break	09:50 - 10:30		
Session 1	10:30 - 12:00		
EMERGING WATER LEADERS FORUM I		Room C0 Forum	LEARNINGS FROM INCLUSIVE URBAN SANITATION INITIATIVES
Chair: Emily Ryan, Australia			Chairs: Suresh Kumar Rohilla, United Kingdom and Yvonne Magawa, Zambia
The Emerging Water Leaders Forum is an open platform for young and emerging water leaders to work with peers to start planning for the future of the water sector that they will lead. The topic of this year's Forum is Challenges in the Water Sector and How to Make an Impact as a Young Water Professional (YWP). Participants are invited to discuss and design solutions among their peers to address big challenges in the water sector across their region.			Sustainable Development Goals require water and sanitation concepts and norms to look beyond provision of infrastructure. Increased focus is on safety, inclusion, environment, public health, and multiple technology solutions tailored to different geographies and socio-economic contexts for building climate resilient cities. Approaches to inclusive urban sanitation have gained momentum in recent years, especially across low and middle-income countries. This session will bring together key public and private stakeholders who have implemented this approach across different geographies. They will share their experiences and lessons learnt, as well as discuss ways for advancing (or even the need for revisiting) frameworks for inclusive urban sanitation.
			Speakers: Jay Bhagwan, Water Research Commission (WRC) (SA) , Srinivas Chary, Administrative Staff College India (ASCI) (IN) , Deepa Karthykeyan, Athena Infonomics (US) , Mathi Vathanan, Housing & Urban Development Department, Odisha (IN) , Anindita Mukherjee, Centre for Policy Research (CPR) (IN) , Manoj Roy, Lancaster University (UK) , Hezekiah Pireh, UN-HABITAT (KE)
Lunch	12:00 - 13:30		
Session 2	13:30 - 15:00		
EMERGING WATER LEADERS FORUM II		Room C0 Forum	GENDER EQUALITY, LEADERSHIP, AND INCLUSION IN THE WASH SECTOR
Chair: Emily Ryan, Australia			Chair: Siyka Radilova, United Kingdom and Prof. Juliet Willetts, Australia
The Emerging Water Leaders Forum is an open platform for young and emerging water leaders to work with peers to start planning for the future of the water sector that they will lead. The topic of this year's Forum is Challenges in the Water Sector and How to Make an Impact as a Young Water Professional (YWP). Participants are invited to discuss and design solutions among their peers to address big challenges in the water sector across their region.			Gender minorities are underrepresented in utilities, government and private enterprises in the water and sanitation sector. This workshop will equip participants with knowledge and skills to address this critical area, sharing the experiences of leading organisations and professionals in the field and strategies used to improve gender and inclusion in respective workplaces. A panel of sector actors will discuss the real-life challenges they have faced in creating change and disrupting the status quo, what it is to be a gender minority in the water and sanitation sector and recommendations on how to break the glass ceilings for the next generation to come.
			Speakers: Prof. Juliet Willetts, University of Technology Sydney (AU) , Hasin Jahan, WaterAid Bangladesh (BD) , Mathi Vathanan, Housing & Urban Development Department, Odisha (IN) , Leticia Ackun, African Water Association (AfWA) (CI) , Margaret Maina, Women in Water and Sanitation (WIWAS) (KE)
Coffee Break	15:00 - 15:45		
Session 3	15:45 - 17:15		
WATER SAFE CITIES		Room C0 Forum	ADVANCEMENTS IN NON-SEWERED SANITATION
Chair: Lykke Leonardsen, Denmark			Chair: Sudhir Pillay, South Africa
The purpose of this session is to present the results and work of the global partnership between C40 Cities and Grundfos and to introduce the participants to how active partnerships can lead to focused action that can accelerate the work in cities. It will also discuss the complexity of water management in cities and the importance of involving all stakeholders in policy planning, implementation, and financing. The session will: 1. Present the results from Water Safe Cities and 2. Introduce Water Safe Cities II			Series of presentation on the workshop topic followed by panel discussion with all presenters.
Speakers: Lykke Leonardsen, Resilient and Sustainable City Solutions (DK) , Daniela Bemfica, IWA (UK) , Kin Nørh Skibsted, Kevin Austin, C40 (UK) , Rohit Aggarwala & Daryl Johnston			Speakers: Sudhir Pillay, Water Research Commission (ZA) , Jay Bhagwan, Water Research Commission (ZA) , Kartik Chandran, Columbia University (US) , Stanley Sam, Eawag (SZ) , Damir Brdanovic, IHE Delft Institute for Water Education (NL) , Konstantina Velkushonova, Najib Lukooya & Marianela Sanders
Break	17:15 - 17:30		
Keynote Plenary	17:30 - 18:20		
Keynote: Digital Water Unpacked, Oliver Grievson & Enrique Cabrera Rochera Panel: Corinne Cheeseman , Pernille Ingildsen , Ramón Dolz Mollá , HP Nanda			

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Coffee Break		09:50 - 10:30	
Session 1		10:30 - 12:00	
5.3 PUTTING CROSS BORDER COLLABORATION INTO PRACTICE		Room C2 Workshop	2.2 BIOCLUSTER WORKSHOP — MICROBIAL ECOLOGY IN WATER ENGINEERING: FROM THEORY TO PRACTICE
Chairs: Fionn Boyle, United Kingdom and Jan Gooijer, Netherlands <p>The purpose of this session is to discuss the value of working across borders between utilities, to provide evidence of what has been achieved through the coalition set up between Anglian Water, Global Omnium and Vitens; and to develop strategies that others can use to establish coalitions.</p> <p>A key focus of the workshop will be mapping priorities between companies as well as implementing the use of a matrix to discover relative strengths and weaknesses between those involved, which can then be used as the basis to target the sharing of knowledge, skills, and expertise between utilities.</p> <p>The ideal output from this workshop would be the commitment of other utilities across the world to establish their own coalitions, which could then target another strategic area of utility management and become part of a larger framework of delivery and dissemination of knowledge.</p> <p>Speakers: Fionn Boyle, Anglian Water (UK) & Jan Gooijer, Vitens N.V. (NL), Andrew Smith, Anglian Water Services (UK), Rik Thijssen, Vitens N.V., (NL), Joukje Keuning & Jaime Castillo Soria, Global Omnium (ES)</p>			Chairs: Per Nielsen, Denmark and Barth Smets, Denmark <p>Methodological approaches to characterise microbial communities in engineering water systems have advanced significantly over the last decade. Yet, the framework to integrate these data into a coherent understanding of and control of microbial communities. This session will highlight leading edge examples of the use of ecological theory combined with state-of-the-art 'omics approaches and conventional modeling approaches to design and control microbial communities across the engineering water cycle.</p> <p>BioCluster Grand Prize and Rising Start ceremony (2020 and 2022)</p> <p>Speakers: Per Nielsen, Aalborg University (DK) & Barth Smets, Technical University of Denmark (DK), Joe Zhou, Fanyong Ling, Washington University at St Louis (US) & Tom Curtis, Newcastle University (UK)</p>
Lunch		12:00 - 13:30	
Session 2		13:30 - 15:00	
1.4 DEVELOPING CONSENSUS AND GOOD PRACTICES FOR DIGITAL TWIN APPLICATIONS — A		Room C2 Workshop	2.1.6 MICROBIAL ECOLOGY (COMMUNITIES, META-OMICS)
Chairs: Elena Torfs, Belgium and Borja Valverde-Pérez, Denmark <p>The workshop brings together water professionals from different backgrounds (academics, utilities, etc.) and sectors (wastewater, urban drainage, drinking water, etc.) to build consensus on the state-of-the art, challenges, and good practises in the application of digital twins. Discussions will be built around real cases of successful digital twin projects in different water domains for design, control, and decision-making.</p> <p>Speakers: Elena Torfs, Ghent University (BE), Borja Valverde-Pérez, Technical University of Denmark (DK), Peter Steen Mikkelsen, Technical University of Denmark (DK), Niels Nicolaï, Université Laval (CA), Gigi Karmous-Edwards, Karmous-Edwards Digital Consulting (US), Agnethe Nedergaard Pedersen, VCS Denmark (DK), Saba Daneshgar, Ghent University (BE), Andrew Smith, Anglian Water Services (UK), Peter Alexander Stentoft, Krüger-Veolia (DK), Bruce Johnson, Jacobs, (US), Jorge Helmbrecht, Idrica (ES), Min Zhong, NEOM (SA)</p>			Chairs: Anu Kettunen, Finland and Mohammad Azari, Germany <p>Re-evaluation of the phylogenetic diversity and global distribution of the genus <i>Candidatus Accumulibacter</i>, Francesca Petriglieri, Aalborg University, Denmark</p> <p>Novel PAOs play the key role to achieve combined biological short-cut nitrogen and phosphorus removal in the one-sludge system with side-stream sludge treatment, Liu Ye, Chalmers University of Technology, Sweden</p> <p>Temporal and geographical impact of microbial immigration in wastewater treatment plants, Giulia Dottorini, Instituto Superior Técnico, Portugal</p> <p>Viral diversity, dynamics, and host-associations in mesophilic anaerobic digesters, Oskar Modin, Marche Polytechnic University, Italy</p> <p>---- POSTERS ----</p> <p>Nitrate removal from agro-industrial effluents using cork aerated saturated vertical-flow treatment wetland: analysing the microbial community involved in the nitrogen cycle, Jordi Morato, Universitat Politècnica de Catalunya (UPC-BarcelonaTech), Spain</p> <p>One-stage nitrogen removal coupling partial nitrification, anammox and methane-dependent nitrite nitrate reduction (PNAM) in membrane biofilm reactor, Tao Liu, The University of Queensland, Australia</p>
Coffee Break		15:00 - 15:45	
Session 3		15:45 - 17:15	
1.4 DEVELOPING CONSENSUS AND GOOD PRACTICES FOR DIGITAL TWIN APPLICATIONS — B		Room C2 Workshop	2.1.3 A ACTIVATED SLUDGE PROCESSES: MICROBIAL COMMUNITY DYNAMICS
Chairs: Elena Torfs, Belgium and Borja Valverde-Pérez, Denmark <p>The workshop brings together water professionals from different backgrounds (academics, utilities, etc.) and sectors (wastewater, urban drainage, drinking water, etc.) to build consensus on the state-of-the art, challenges, and good practises in the application of digital twins. Discussions will be built around real cases of successful digital twin projects in different water domains for design, control, and decision-making.</p> <p>Speakers: Elena Torfs, Ghent University (BE), Borja Valverde-Pérez, Technical University of Denmark (DK), Peter Steen Mikkelsen, Technical University of Denmark (DK), Niels Nicolaï, Université Laval (CA), Gigi Karmous-Edwards, Karmous-Edwards Digital Consulting (US), Agnethe Nedergaard Pedersen, VCS Denmark (DK), Saba Daneshgar, Ghent University (BE), Andrew Smith, Anglian Water Services (UK), Peter Alexander Stentoft, Krüger-Veolia (DK), Bruce Johnson, Jacobs, (US), Jorge Helmbrecht, Idrica (ES), Min Zhong, NEOM (SA)</p>			Chairs: Andreas Schmid, Germany and Dorotyya Sarolta Wágner-Zafirov, Denmark <p>Mitigation of N₂O in WWTPs by controlling the nitrifier activity using DNA sequencing in combination with online sensors, Mikkel Stokholm-Bjerregaard, Krüger A S, Denmark</p> <p>A new approach to advanced treatment for modified activated sludge process by multiple-input single-output extremum seeking control, Osamu Yamanaka, Toshiba Infrastructure Systems and Solutions Corporation, Japan</p> <p>Microbiological aspects of controlling the Prague waste water treatment plant, Martin Srb, Praské Vodovody a Kanalizace, a.s, Czech Republic</p> <p>Know your activated sludge community dynamics through time series: ready for on-site and fast monitoring and control, Susan Hansen, Aalborg University, Denmark</p> <p>---- POSTERS ----</p> <p>Potential estimation of advanced wastewater treatment by operational control for conventional activated sludge process, Onishi Yuuta, Toshiba Infrastructure Systems & Solutions Corporation, Japan</p> <p>Determination of species-level seasonal dynamics shows recurrent patterns in full-scale activated sludge plants, Miriam Peces Gomez, Aalborg University, Denmark</p>
Break		17:15 - 17:30	
Keynote Plenary		17:30 - 18:20	
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Keynote Plenary	09:00 - 09:50		
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Coffee Break	09:50 - 10:30		
Session 1	10:30 - 12:00		
2.4.2-1 BIOSOLIDS MANAGEMENT & REUSE		Room B5 a Technical	3.3 GROUNDWATER BASED PRODUCTION — I
Chairs: Francesco Fatone , <i>Italy</i> and Zhiyao Wang , <i>Australia</i>			Chairs: N K Goel , <i>India</i> and Somaparna Ghosh , <i>India</i>
Presence of antibiotic resistance genes (ARGs) and Taxonomic composition of sludge originating from five Northern wastewater treatment plants, Maria Valtari , <i>Aalto University, Finland</i>			What can benchmarking teach us about the biofiltration treatment process?, Loren Ramsay , <i>VIA University College, Denmark</i>
Biogas residues as feedstock for hydrothermal conversion: bio-oil yield optimisation and fate of drugs, Stian Hegdahl , <i>University of Bergen, Norway</i>			Ammonia oxidation and nitrifier dynamics in a full-scale bioreactor treating groundwater by copper dosing, Kazuyoshi Koike , <i>Kanazawa University, Japan</i>
Lipophilic substances in grease traps on WRRFs: an Auxiliary parameter to optimize resource recovery, Anastasia Ruf , <i>Universität der Bundeswehr München, Germany</i>			Trace metal supplementation enhances nitrification in biofilters for drinking water production, Florian B. Wagner , <i>Norconsult AS, Norway</i>
Agronomic waste-derived biochars for stabilization of multiple heavy metals in paddy soils: effect of feedstock variety and pyrolysis temperature, Van Bien Dao , <i>National Central University, Chinese Taipei</i>			Removal of vanadium in drinking water treatment by adsorption on granular ferric hydroxide, Carsten Bahr , <i>GEH Wasserchemie GmbH & Co. KG, Germany</i>
---- POSTERS ----			---- POSTERS ----
Assessment of new sludge management strategies in the Cape Flats wastewater treatment works, South Africa, Xavier Flores-Alsina , <i>DTU, Denmark</i>			Studies on the effects of functional group in anion exchange resins on the selectivity of nitrate removal from drinking water, Lesege Siwela , <i>Cwenga Technologies, South Africa</i>
			Green solution for treating nitrate and micropollutants in groundwater to meet drinking standards, Marlene Mendoza , <i>IRTA, Spain</i>
Lunch	12:00 - 13:30		
Session 2	13:30 - 15:00		
2.4.2-2 BIOSOLIDS MANAGEMENT & REUSE		Room B5 a Technical	3.4 GROUNDWATER BASED PRODUCTION — II
Chairs: Srikanth Mutnuri , <i>India</i> and Matia Mainardis , <i>Italy</i>			Chairs: Irene Slavik , <i>Germany</i> and Loren Ramsay , <i>Denmark</i>
Pyrolysis/Gasification: a hot approach to energy independence, resource recovery and decarbonization, Julian Sandino , Jacobs , <i>United States</i>			Reverse osmosis for groundwater treatment - challenges and opportunities for arsenic removal with chlorine, Vadim Malkov , Hach , <i>United States</i>
Integrated drying and pyrolysis of biosolids for optimal resource recovery, ground water, and climate protection, Christian Wieth , AquaGreen , <i>Denmark</i>			Anaerobic groundwater treatment: a modern take to this ancient drinking water source, Doris van Halem , <i>Delft University of Technology, Netherlands</i>
Characterisation of HTC-biocoal from sewage sludge, Aleksandra Lazic , Roslagsvatten AB Sweden			Biological-adsorptive iron removal: sustainably producing drinking water from heavily iron-laden groundwater, David Geysen , Pidpa , <i>Belgium</i>
Cascade systems to recover resources from sludge by integrating pre-treatments to fermentation-based anaerobic process, Barbara Tonanzi , Water Research Institute C.N.R. , <i>Italy</i>			Does Softening with pellet reactors affect the functionality of biological sand filters? Mathilde Hedegaard , Hofor AJS , <i>Denmark</i>
			---- POSTERS ----
			Iron oxidizing bacteria build porous iron-coatings bridging biological and abiotic processes in groundwater biofilters, Simon Müller , Delft University of Technology , <i>Netherlands</i>
			Arsenic removal using electrocoagulation followed by hematite granular filter, Somaparna Ghosh , IIT Bombay , <i>India</i>
Coffee Break	15:00 - 15:45		
Session 3	15:45 - 17:15		
2.4.3-4 MICROPLASTICS AS EMERGING CONTAMINANTS OF CONCERN		Room B5 a Technical	3.8 NONREVENUE WATER, LEAKAGE MANAGEMENT AND INTERMITTENT WATER SUPPLY
Chairs: Innocent Nhapi , <i>Zimbabwe</i> and Linda Li , <i>Canada</i>			Chairs: Mohammad Abdullah , <i>Bangladesh</i> and Titilola Bright-Oridami , <i>Nigeria</i>
Microplastics as hubs enriching antibiotic-resistant bacteria and pathogens in municipal activated sludge, Mengyan Li , New Jersey Institute of Technology , <i>United States</i>			Integration of predictive models in a drinking water quality index for managing a distribution network, David Abert , Universitat de Girona , <i>Spain</i>
Threat of microplastic release due to COVID-19 Generated plastic waste, Chihhao Fan , National Taiwan University , <i>Chinese Taipei</i>			Pressure management based leakage reduction of water distribution networks, Tamás Huzsvár , Budapest University of Technology and Economics , <i>Hungary</i>
Microplastics in Toulon Area: Occurrence and efficiency of wastewater treatment plants (MEDITPLasT Project), Marie-Pierre Denieul , Veolia Research & Innovation , <i>France</i>			Leakage prevention measures using various types of leak survey equipment in Tokyo, Takahiro Matsuo , Bureau of Waterworks , Tokyo Metropolitan Government , <i>Japan</i>
Microplastics & organics — a comparative study of sorption of triclosan & malachite green onto polyethylene, Gökçe Çiftçi , Middle East Technical University , <i>Turkey</i>			Zonal storage with hydraulic isolation structure for equitable water supply, Pardip Kalbar , Indian Institute of Technology Bombay , <i>India</i>
---- POSTERS ----			---- POSTERS ----
Microplastics removal from wastewater with coagulants, Outi Grönfors , Kemira Oyj , <i>Finland</i>			Leak localization with the dual model on a real-world water distribution system, Erik Nordahl , Norwegian University of Science and Technology , <i>Norway</i>
Microplastics from textile industry: facts and solutions, Johann van Aartsen , Ramboll , <i>Singapore</i>			A Hybrid modelling approach for leak localization with input from sensors, customers and multi-model output, Pieter Haest , De Watergroep , <i>Belgium</i>
Break	17:15 - 17:30		
Keynote Plenary	17:30 - 18:20		
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Coffee Break	09:50 - 10:30		
Session 1	10:30 - 12:00		
3.13 WATER MANAGEMENT IN DIVERSE CONTEXTS	Room B4 a Technical	5.3 ENABLING HEALTH, WELL-BEING AND LIVEABILITY OUTCOMES	Room B4 b Technical
<p>Chairs: S Mohan, India and Liudmyla Odud, Ukraine</p> <p>Achieving universal access to safely managed water services in rural Cambodia: The case for the complementarity of water supply solutions, Julien Ancelet, 1001fontaines, France</p> <p>The use of water safety planning to modernise and improve water supply and quality in Lilongwe, Malawi, Charles Kachingwe, Lilongwe Water Board, Malawi</p> <p>Water demand management in the medical manufacturing industry, Johann van Aatsen, Ramboll, Singapore</p> <p>Collaborative water management in Northwest England, Dan Turner, The Rivers Trust, United Kingdom</p> <p>---- POSTERS ----</p> <p>Countermeasures against a long-term blackout in the Sendai City waterworks bureau in light of the great east Japan earthquake, Akio Arato, Sendai City Waterworks Bureau, Japan</p> <p>Water science and Human Rights: a case study from the Niger Delta, Gustaf Olsson, Lund University, Sweden</p>		<p>Chairs: Jes Clauson-Kaas, Denmark and Anya Eilers, South Africa</p> <p>Roadmaps to urban water security in developing countries — Pakistan case studies, Amy Syvrud, Aither, United States</p> <p>Water sector institutional reform as an enabling factor towards health, wellbeing and liveability outcomes - Timor- Leste case study, Mário Santos, Águas de Portugal, East Timor</p> <p>Hand hygiene facilities in public spaces, Sylvain Bertrand, UNICEF, Nepal</p> <p>Danish Design drinking water epidemiology, Jörg Schullehner, Aarhus University, Denmark</p> <p>---- POSTERS ----</p> <p>Citizen involvement for sanitation and biodiversity: worldwide case-studies, Sarah Hercule-Bobroff, Veolia VESA, France</p> <p>The short-run impacts of reducing water collection times on time use, well-being and education in rural Kenya, Joseph Cook, Washington State University, United States</p>	
Lunch	12:00 - 13:30		
Session 2	13:30 - 15:00		
6.5 COORDINATED MANAGEMENT FROM SOURCE TO SEA — IN THE BALTIC SEA AND OTHER BASINS	Room B4 a Workshop	5.4 PARTNERSHIPS AND COOPERATION IN AND BEYOND THE WATER SECTOR	Room B4 b Technical
<p>Chairs: Torkil Jønch Clausen, Denmark and Agnieszka Ilola, Finland</p> <p>Our seas suffer serious degradation from land-based activities in basins and cities; only holistic approaches from source-to-sea can reverse that. The Sustainable Development Goals on water (SDG 6) and oceans (SDG 14) need hand-in-hand implementation.</p> <p>The Nordic/Baltic region is a case in point. Highly developed with strong governance frameworks and organizations to facilitate cooperation, ie. the EU Water Framework Directive, EU Strategy for the Baltic Sea Region and the Helsinki Convention, but still facing serious challenges related to water quality, eutrophication, plastics and pharmaceuticals, emerging pollutants, pesticides, urban water management etc.</p> <p>We aim to discuss approaches to address burning water and environmental challenges from source to sea, with the Baltic Sea region as the prime example.</p> <p>Speakers: Torkil Jønch Clausen, Sea Management (DK) & Agnieszka Ilola, Union of the Baltic Cities Sustainable Cities Commission (FI), Miriam Feilberg, Danva (DK), Lars Moeslund Svendsen, Ivar Annus, Frank Zhang, Despo Fatta-Kassimos, Kai Bester & Torgny Holmgren, Stockholm International Water Institute (SE)</p>		<p>Chairs: Michiko Iwanami, Japan and Kopal Khare, India</p> <p>Multi-agency water reuse programs: lessons for successful collaboration, Eric Rosenblum, Water Resource Consultant, United States</p> <p>How understanding climate change adaptation partnerships can accelerate transition to water for smart liveable cities, Dorthe Selmer, Central Denmark Region, Denmark</p> <p>Boosting rural productivity to achieve commercial viability of water systems, Anise Sacranie, Grundfos Holding A/S, Denmark</p> <p>Think H₂O! — An educational project to raise high school students' awareness of the future water challenges, Sandra Nordstrom, Sydvaatten, Sweden</p> <p>---- POSTERS ----</p> <p>The Leading Coalition — A CEO's View of How Cross Border Collaboration Works in Practice, Fionn Boyle, Anglian Water, United Kingdom</p> <p>Management of the advanced centre for water treatment Bilbao Bizkaia, Santos Paunero, Consorcio de Aguas Bilbao Bizkaia, Spain</p>	
Coffee Break	15:00 - 15:45		
Session 3	15:45 - 17:15		
3.2 ALLEVIATING WATER SCARCITY USING GROUNDWATER: THE ROLE OF KNOWLEDGE EXCHANGE THROUGH INTERNATIONAL COOPERATION	Room B4 a Workshop	5.2 TOWARDS CLIMATE SMART UTILITIES	Room B4 b Workshop
<p>Chairs: Ryle Gejl, Denmark</p> <p>The session aims at sharing experiences and understanding good practises in terms of international cooperation between public authorities. Denmark is cooperating with a number of partners (South Africa, India, and the State of California) to alleviate water scarcity, which is key to obtaining liveable cities. Three different projects with groundwater challenges and strategies for alleviating groundwater stress will be presented. In South Africa, "Day Zero" initiated new solutions/cooperations and practises in and around Cape Town. In California, the management of groundwater use has changed due to overexploitation. In India, the need for Increased knowledge of aquifers and the possibilities of recharge is key. Finally, a Danish partner will present the reciprocal benefits of bilateral cooperation – the benefits go both ways.</p> <p>Speakers: Ryle Gejl, Danish Environmental Protection Agency (DK), Candice Lasher Scheepers, City of Cape Town (ZA), John Sibanyoni, Breede-Gouritz Catchment Management Agency (ZA), Bjørn Kaare Jensen, Danish Water Forum (DK) & Saxena</p>		<p>Chairs: Jabulile Mashwama, Eswatini and Joao Feliciano, Portugal</p> <p>The impacts of climate change on urban water management threaten the capacity of utilities to deliver safe water, protect rivers and oceans, as well as protect people and assets from flooding. While water, sanitation, and urban drainage utilities are the cornerstone of cities' climate adaptation strategies, they can also contribute up to 15% of their cities' greenhouse gas (GHG) emissions. This workshop will discuss actions taken by utilities on the following three interconnected topics:</p> <ul style="list-style-type: none"> • Measuring and reducing GHG emissions, through reducing consumption, producing resources, and making strategic decisions • Planning for resilient adaptive infrastructure that combines centralised and decentralised approaches, as well as natural and built infrastructure • Leadership: engaging citizens, industries, and planning stakeholders to embrace the change needed for resilient and low-carbon water and wastewater utilities; engaging regulators; and inspiring other utilities at a national and international level. <p>Speakers: Jabulile Mashwama, Eswatini Water Services (SZ), Joao Feliciano, AGS (PT), Rune Holmstad, Veas (NO), Eva Martinez Diaz, FCC AQUALIA SA (ES), Charlie Littlefair, South East Water (AU), Marcio Da Silva Jose, Aquapolo Ambiental S.A. (BR), Rose Kagwa, NWSC (UG), Ms. Gresikova (CZ) & Dan Lert / Benjamin Gestin, Eau de Paris (FR)</p>	
Break	17:15 - 17:30		
Keynote Plenary	17:30 - 18:20		
Keynote: Digital Water Unpacked, Oliver Grievson & Enrique Cabrera Rochera Panel: Corinne Cheeseman, Pernille Ingildsen, Ramón Dolz Mollá, HP Nanda			

Keynote Plenary	09:00 - 09:50		
Keynote: Empowering Communities to Shape Sustainable Water Solutions — Incorporating Indigenous Knowledge, Dawn Martin-Hill Panel: Tom Mollenkopf , Louise Dudley , Libby T. Johnson , Bradley Moggridge , Tanja Nielsen			
Coffee Break	09:50 - 10:30		
Session 1	10:30 - 12:00		
<p>5.7 CREATING AN EFFECTIVE INNOVATIVE ECO-SYSTEM. HOW THE UK ENHANCES & ENABLES INNOVATION AND WHAT WE CAN CONTINUE TO LEARN</p> <p>Chairs: Shaunna Berendsen, <i>United Kingdom</i> and Lila Thompson, <i>United Kingdom</i></p> <p>The UK has undergone a radical transformation to enable and enhance innovation in recent years. Ofwat, our economic regulator, has created a £200m innovation fund, a national innovation strategy has been created* an Innovation Centre of Excellence (Spring) has been established and companies are more collaborative than ever, working closely with the supply chain with the aim of unlocking transformational innovation and fast-tracking the UK to being one of the smartest liveable cities.</p> <p>This session takes us through those changes, what projects have been unlocked and how continuing to work and learn From other sectors, regions and centres of excellence will continue to transform the sector for the better, setting a higher standard for smart, holistic and liveable city solutions, utilising synergies and adapting to a changing climate, amongst other challenges.</p> <p>Speakers: Shaunna Berendsen, <i>Spring (UK)</i>, Lila Thompson, <i>British Water (UK)</i>, John Russell, <i>Ofwat (UK)</i>, Nate Allen, Jason Tucker, <i>Anglian Water (UK)</i> & Adam Lovell, <i>WSAA (AU)</i></p>	Room B4 c Workshop	<p>1.9 ASSET MANAGEMENT AND OPTIMISATION INNOVATION</p> <p>Chairs: Helena Alegre, <i>Portugal</i> and Mauro Lafratta, <i>United Kingdom</i></p> <p>Automated Sewer Inspection Robot (ASIR) — status and results, David Getreuer Jensen, <i>EnviDan, Denmark</i></p> <p>Management and optimisation: pressure transient monitoring, Ian Rodgers, <i>Xylem inc, United Arab Emirates</i></p> <p>Using measured rates of internal and external iron pipe degradation to estimate and extend residual service life, Noé Kinet, <i>France</i></p> <p>Using satellite remote sensing scanning in water pipeline condition assessment program: a case at Piave Servizi, Carlo Pesce, <i>Piave Servizi Water Utility, Italy</i></p> <p>--- POSTERS ---</p> <p>Preparation of a data-driven asset management plan for better water management, Cor Merks, Ramboll, <i>Netherlands</i></p> <p>Reopening of culverted streams and rivers, Øystein Rapp, <i>Sweco Norge AS, Norway</i></p>	Room B4 d Technical
Lunch	12:00 - 13:30		
Session 2	13:30 - 15:00		
<p>1.5 RESEARCH TO TECHNOLOGY — TURNING HIGH IMPACT RESEARCH INTO BREAKTHROUGH TECHNOLOGY</p> <p>Chairs: David Garman, <i>Australia</i> and Avner Adin, <i>Israel</i></p> <p>This workshop will look at 3 areas that have had intensive research activity over recent years, with significant numbers of high-impact published papers. The presenters will show those advances that show a future as operational technologies and have the potential to become standard technologies.</p> <p>Speakers: David Garman, <i>Western Sydney University (AU)</i> & Avner Adin, <i>Hebrew University of Jerusalem (IL)</i>, Kangsheng (Alex) Liu, Helena Alegre, <i>LNEC (PT)</i> & Paul Reiter</p>	Room B4 c Workshop	<p>1.10 ASSET MANAGEMENT AND OPTIMISATION MODELLING</p> <p>Chairs: Zoran Kapelan, <i>Netherlands</i> and Amin Ebrahim Bakhshpour, <i>Germany</i></p> <p>A Case for digital twins used for effective asset monitoring on deep aquifer boreholes, Carike Anker, <i>Stellenbosch University, South Africa</i></p> <p>Modeling of degradation pattern in cast iron water mains, Navid Arani, <i>Fleming College, Canada</i></p> <p>Innovative digital tools to assess impacts of land subsidence and subsurface properties on water management, Neils Broge, <i>Geopartner Inspections, Denmark</i></p> <p>Predicting sewer structural condition using machine learning algorithms, Lam Nguyen, <i>Norwegian University of Science and Technology, Norway</i></p> <p>--- POSTERS ---</p> <p>Seven years of experience with asset management, digitalization, and long-term investment planning, Benny Nielsen, Herning Vand, <i>Denmark</i></p> <p>Cost optimization of water main condition assessment and asset management, Reza Moslemi, <i>Fleming College, Canada</i></p>	Room B4 d Technical
Coffee Break	15:00 - 15:45		
Session 3	15:45 - 17:15		
<p>6.7 WATER STRESS, DROUGHTS AND FLOODS, INCLUDING IMPACT OF CLIMATE CHANGE</p> <p>Chairs: Jotham Sempewo, <i>Uganda</i> and Meg Cummins, <i>Australia</i></p> <p>Industry water scarcity assessment and mitigation, Mads Terkelsen, <i>Ramboll, Denmark</i></p> <p>The Importance of water in the emergence of the hydrogen rainbow, Rod Naylor, <i>GHD, Australia</i></p> <p>An environmental-economic view on the climate change induced trade-off between drinking water availability from reservoirs and downstream water flow, Clemens Strehl, <i>IWW Water Centre, Germany</i></p> <p>Life cycle assessment, water efficiency, water footprint, virtual water: asset condition assessment, Ian Rodgers, <i>Xylem inc, United Arab Emirates</i></p> <p>--- POSTERS ---</p> <p>A Key component of the sustainable urban water cycle: water resource gardens, Attila Bodnar, <i>Organica Water, Hungary</i></p>	Room B4 c Technical	<p>1.11 ASSET MANAGEMENT AND OPTIMISATION CASE STUDIES</p> <p>Chairs: Matt Rolls, <i>United States</i> and Helena Alegre, <i>Portugal</i></p> <p>Improving inflow & infiltration control in wastewater systems — a methodology applied to a real case study, Ana Neto, <i>AGS, Portugal</i></p> <p>Asset management maturity level - a self-check to verify the quality of the management of assets, Maxim Juschak, <i>IWW Water Centre, Germany</i></p> <p>Including odour and corrosion in asset management of sewer system, Søren Højmark Rasmussen, <i>EnviDan, Denmark</i></p> <p>National rehabilitation guidelines to boost rehabilitation of the pipe networks, Annika Malm, <i>Kungsbacka municipality, Sweden</i></p> <p>--- POSTERS ---</p> <p>Cost-benefit analysis as decision support for legal requirements for leakage control, Johanna Merisalu, <i>Chalmers University of Technology, Sweden</i></p>	Room B4 d Technical
Break	17:15 - 17:30		
Keynote Plenary	17:30 - 18:20		
Keynote: Digital Water Unpacked, Oliver Grievson & Enrique Cabrera Rochera Panel: Corinne Cheeseman , Pernille Ingildsen , Ramón Dolz Mollá , HP Nanda			

Tuesday | Programme

Keynote Plenary	09:00 - 09:50		
Keynote: Empowering Communities to Shape Sustainable Water Solutions — Incorporating Indigenous Knowledge, Dawn Martin-Hill Panel: Tom Mollenkopf , Louise Dudley , Liby T. Johnson , Bradley Moggridge , Tanja Nielsen			
Coffee Break	09:50 - 10:30		
Session 1	10:30 - 12:00		
1.5 UTILITIES WATER REUSE THROUGHOUT THE WATER CYCLE	Room B3 a Technical	4.4.1 DATA-DRIVEN MODELLING AT CITY SCALE	Room B3 b Technical
<p>Chairs: Josef Lahnsteiner, <i>Austria</i> and Bhairavi Sawant, <i>Ireland</i></p> <p>Water Reuse in agriculture irrigation at Mediterranean Alentejo region: two success stories in the AdP Group, Joana Pinto Coelho, <i>AdP VALOR, Serviços Ambientais, Portugal</i></p> <p>A simplified methodology for assessing the microbiological risk to human health in agricultural water reuse, Ana Santos, <i>Universidade do Estado do Rio de Janeiro, Brazil</i></p> <p>Towards a closed water cycle: combining technology and an instrumental framework, Roland Koolen, <i>Dutch Water Authority HHNK, Netherlands</i></p> <p>PtX and water management, Lars Nørgård Holmegaard, <i>Lemvig Vand, Denmark</i></p> <p>---- POSTERS ----</p> <p>Effect-based monitoring: a literature review of applications in wastewater, drinking water and reuse treatment schemes, Jerome Enault, <i>Suez, France</i></p>		<p>Chairs: Jyoti Gautam, <i>India</i> and Ivo Daniel, <i>Germany</i></p> <p>Optimizing data quality assurance for operational intelligence and predictive analytics in water industry, Christian Kazadi Mbamba, <i>The University of Queensland, Australia</i></p> <p>Data-driven modelling of urban water demands across multiple spatio-temporal scales: the case study of Milan, Italy, Wenjin Hao, <i>Politecnico di Milano, Italy</i></p> <p>Exploiting machine learning to radically change the way hydrodynamic simulations support planning and operation of smart liveable cities, Morten Grum, <i>WaterZerv, Denmark</i></p> <p>Water DataPaths: graph-based solution for works data management tool, Juan José Iervasi Scokin, <i>Agua y Saneamientos Argentinos (AySA), Argentina</i></p> <p>---- POSTERS ----</p> <p>A LSTM AI based model to forecast inflows-outflows from-to SMABA Reservoir (Rabat-Morocco) at medium-long run, Mustapha Hajji, <i>Office National de l'Electricite et de l'Eau Potable, Morocco</i></p> <p>Drainman — unintended water and intelligent management, Preben Simonsen, <i>NIRAS A/S, Denmark</i></p>	
Lunch	12:00 - 13:30		
Session 2	13:30 - 15:00		
1.5 HOW TO BUILD INTEGRATIVE, REGIONAL STRATEGIES FOR RESPONSIBLE WATER REUSE?	Room B3 a Workshop	4.4.4 PLANNING IN RESPECT OF NATURE IMPACTS	Room B3 b Technical
<p>Chairs: Klaasjan Raat, <i>Netherlands</i> and Shafick Adams, <i>South Africa</i></p> <p>Participants will learn to see how water reuse can be part of a regional strategy to improve water system robustness and will discuss new ideas for strategies to improve water system robustness in their own region. Examples of regional strategies across the globe will be provided.</p> <p>Speakers: Ruud Bartholomeus, <i>KWR Water Research Institute & Wageningen University (NL)</i>, Han Vervaeren, <i>De Watergroep (BE)</i> & Heather Smith, <i>Cranfield University (UK)</i></p>		<p>Chairs: Konstantinos Pragkatis, <i>Iceland</i> and Patrick Waweru Mwangi, <i>Kenya</i></p> <p>From increased flood risks to more attractive cities — how Buenos Aires and Copenhagen Adapts to climate change by re-embracing their waterways, Mariano Kristoff, <i>Ciudad Autónoma de Buenos Aires, Argentina</i></p> <p>A decision-support tool for area estimation of nature-based solutions to meet the EQS, early in the planning process, Linnea Lundberg, <i>Sustainable Waste and Water, City of Gothenburg, Sweden</i></p> <p>Compensation for influences of climate changes and morphological changes on future storm surge levels in the Limfjord, Jørgen Nørgaard, <i>Ramboll, Denmark</i></p> <p>Influence on nature and biodiversity in denmark from climate induced sea level rise, Torben Ebbensgaard, <i>COWI A/S, Denmark</i></p> <p>---- POSTERS ----</p> <p>Quantifying the services provided by vertical, evaporation-based blue green infrastructure, Mark Randall, <i>University of Copenhagen, Denmark</i></p>	
Coffee Break	15:00 - 15:45		
Session 3	15:45 - 17:15		
1.2 ON-SITE REUSE OF WATER ACROSS THE WORLD	Room B3 a Workshop	4.4.9 POLLUTION OF URBAN WATER: MONITORING, MODELLING, AND CONTROLLING	Room B3 b Technical
<p>Chairs: Pia Jacobsen, <i>Denmark</i> and Krishna Pagilla, <i>United States</i></p> <p>On-site reuse of water is becoming more widespread around the world for different reasons and purposes. There are opportunities for the water sector to develop sustainable water reuse solutions to address the SDGs. Each water supplier gathers experience with different solutions, including structural, organizational, and technical ones. The speakers will give inspiration to discuss different experiences and the value (business-case) of water reuse systems. This workshop will share cases from around the world and provide knowledge from one another in an interactive setting.</p> <p>Speakers: Pia Jacobsen, <i>Aarhus Vand (DK)</i>, Krishna Pagilla, <i>University of Nevada (US)</i>, Steve Muir, <i>South East Water (AU)</i>, Paula Kehoe, <i>San Francisco Public Utilities Commission (US)</i>, Nonhlanhla Kalebaila, <i>Water Research Commission (ZA)</i>, Carsten Fjorback, <i>Cowi (DK)</i>, Nuno Brôco, <i>Águas de Portugal (PT)</i> & Martin Rygaard, <i>The Technical University of Denmark (DK)</i></p>		<p>Chairs: Neil Armitage, <i>South Africa</i> and Ramkumar D., <i>India</i></p> <p>Microplastics in tunnel wash and road runoff water, Subhash Rathnaweera, <i>Aquateam COWI, Norway</i></p> <p>Traffic stormwater BMPs for micropollutant reduction in the city of Gothenburg, Helen Galfi, <i>Kretslopp och vatten, Göteborgs Stad, Sweden</i></p> <p>Impact of de-icing salt on the performance of bioretention in cold climate: water quantity and quality, Henry Beral, <i>University of Montreal, Canada</i></p> <p>Resilient cities - citizen data and scenario modelling for understanding the interactions between groundwater, sewer system and watercourse, Anja Ziegler, <i>Aalborg Utility, Denmark</i></p> <p>---- POSTERS ----</p> <p>Full scale study - usage of existing sand filter for polishing phosphorus to meet stricter effluent requirements, Sofia Bramstedt, <i>Käppala Association, Sweden</i></p> <p>Constructed wetlands for the treatment of harmful algal blooms: a multidisciplinary approach, Alba Martinez i Quer, <i>Aarhus University, Denmark</i></p>	
Break	17:15 - 17:30		
Keynote Plenary	17:30 - 18:20		
Keynote: Digital Water Unpacked, Oliver Grievson & Enrique Cabrera Rochera Panel: Corinne Cheeseman , Pernille Ingildsen , Ramón Dolz Mollá , HP Nanda			

Keynote Plenary	09:00 - 09:50		
Keynote: Empowering Communities to Shape Sustainable Water Solutions — Incorporating Indigenous Knowledge, Dawn Martin-Hill Panel: Tom Mollenkopf, Louise Dudley, Libby T. Johnson, Bradley Moggridge, Tanja Nielsen			
Coffee Break	09:50 - 10:30		
Session 1	10:30 - 12:00		
4.4 TAPPING THE VALUE OF URBAN DRAINAGE SYSTEMS (UDS) DATA Chairs: Jose Anta, Spain, Elodie Brelot, Germany and Jesper E. Nielsen, Denmark <p>The workshop will investigate three issues arising from new data collection, storage, and analysis capabilities: (i) data quality and assurance of big data; (ii) the use of data to enhance performance and ensure compliance; and (iii) the dangers and opportunities to society from "open data" approaches.</p> <p>Speakers: Jose Anta, Universidade da Coruña (ES), Elodie Brelot, GRAIE (DE) & Jesper E. Nielsen, Aalborg University (DK), Michael R. Rasmussen, Aalborg University (DK), Jean-Luc Bertrand-Krawjeski, INSA-Lyon (FR), Alma Schellart, University of Sheffield (UK), Simon Tait, University of Sheffield (UK) & Thomas Brüggemann</p>	Room B3 c Workshop	2.4.3-1 PFAS AS EMERGING CONTAMINANTS OF CONCERN Chairs: Josef Klinger, Germany and Allyson Junker, Denmark <p>Pilot trials with combined activated carbon and Ion-exchange for removal of pharmaceuticals and PFAS from wastewater at Kungsängsverket WWTP, Uppsala, Anna Sundin, Uppsala Water and Waste, Sweden</p> <p>Development of energy efficient microwave system with reflected wave circulating module and carbon nanotubes-quartz vessel to remove soluble PFOS, Junghyeon Kim, Pusan National University, Republic of Korea</p> <p>PFAS Removal from landfill leachate — state of the art, Andriy Malovanyy, IVL Swedish Environmental Research Institute, Sweden</p> <p>Pre-treatment of complex water for subsequent PFAS-removal, Rikke Markfoged, Danish Technological Institute, Denmark</p> <p>---- POSTERS ----</p> <p>Evaluation of thyroid hormone disruption by PFAS in WWTP influent effluent and surface waters, Harrie Besselink, BioDetection Systems BV (BDS), Netherlands</p> <p>Bio-innovative wastewater surveillance towards optimising dedicated treatment of contaminants of emerging concern, George Ruck, INRAE, France</p>	Room B3 d Technical
Lunch	12:00 - 13:30		
Session 2	13:30 - 15:00		
4.5 EXPLORING FRAMEWORK CONDITIONS FOR UTILITIES TO REDUCE GHG EMISSIONS Chairs: Jonathan Jene, Germany and Carlos Diaz, United Kingdom <p>The Paris Agreement requires all sectors to contribute to greenhouse gas (GHG) emissions reductions. Although the (urban) water sector is strongly vulnerable to the impacts of climate change (CC) and therefore a priority for adaptation, it also has to contribute to mitigation, as water and wastewater utilities (WWU) can generate a significant share of municipal GHG-emissions. Since 2013, the WaCCliM-project, jointly implemented by IWA and GIZ on behalf of the German Ministry for the Environment (BMU), has been working on the development and implementation of solutions for WWU to become climate-smart and has accumulated strong expertise, especially concerning framework conditions for successful implementation. This session aims to showcase good practises for incentivizing GHG-measurement and mitigation action in the water sector and enable conditions for making actions visible at national and international climate policy and finance levels.</p> <p>Speakers: Jonathan Jene, German Cooperation for Development Cooperation (DE), Carlos Diaz, IWA (UK), Friedrich Hetzel, DWA (DE), Nadine Ghantous, Corinne Trommsdorff, Water Cities (FR), Diego Polonia, CRA (CO), Pericles S Weber, Igua Saneamiento (BR), Sarah Bergado, Manila Water (PH) & Zoe Czempinski, Yarra Valley Water (AU)</p>	Room B3 c Workshop	2.4.3-2 MICROPOLLUTANTS AS EMERGING CONTAMINANTS OF CONCERN Chairs: Gayh Ulrike, Germany and Fabio Polesel, Denmark <p>Approaching breakthrough: micropollutant removal through large-scale pilot tests with an MBR-GAC configuration at Syvab WWTP, Ross Roberts, IVL Swedish Environmental Research Institute, Sweden</p> <p>Toxicity removal efficiencies from influent to effluent wastewater streams in Denmark, Mafalda Castro, University of Copenhagen, Denmark</p> <p>Micropollutant removal at river catchment scale — inventory, feasibility studies and pilot projects, Christoph Brepols, Erftverband, Germany</p> <p>Bioremediation of rapid sand filters for removal of organic micropollutants for drinking water production, Peer Timmers, KWR Water Research, Netherlands</p> <p>---- POSTERS ----</p> <p>Micropollutant removal in conventional activated sludge process - comparison of efficiency with integrated ozonation and integrated activated carbon, Tahereh Faraji, SUEZ, Denmark</p> <p>Environmentally friendly synthesized nano zero valent iron for the removal of micropollutants from wastewater, Simos Malamis, National Technical University, Greece</p>	Room B3 d Technical
Coffee Break	15:00 - 15:45		
Session 3	15:45 - 17:15		
4.9 GROUNDWATER MANAGEMENT FOR CLIMATE CHANGE ADAPTATION CONSIDERING THE INTERACTION BETWEEN INFRASTRUCTURE AND GROUNDWATER Chairs: Constantin Radu Gogu, Romania and Stephen Foster, United Kingdom <p>The resilience of cities depends greatly on efficiently used and sustainably managed groundwater. Urban groundwater is a critical dataset for the development of resilient cities, and the needs of a wide range of urban groundwater stakeholders have to be addressed. Several mechanisms for involving these stakeholders in supporting groundwater monitoring networks and knowledge have been identified. These include warning and informing local and regional authorities, improving legislation (including EU law), applying properly open data and information regulations, counselling utilities companies, and increased attractiveness for civil engineering and geotechnical companies. A set of mid-term actions supporting city planning will be drawn up for discussion. The workshop will strengthen the cities' capacity to reduce the impact of climate change (UN-SDGs 11 & 13).</p> <p>Speakers: Constantin Radu Gogu, IWA Groundwater Management Specialist Group; Technical University Civil Engineering, Bucharest (RO), Stephen Foster, IWA Groundwater Management Specialist Group; University College London (UK), Susie Mielby, GEUS (DK), Michael Eichholz, BGR (DE), Ricardo Hirata, University of São Paulo (BR), Valentim Zaharia, VEOLIA (RO) & Jane Dottridge, International Association of Hydrogeologists (IAH) (UK)</p>	Room B3 c Workshop	2.4.3-3 PHARMACEUTICALS AS EMERGING CONTAMINANTS OF CONCERN Chairs: Sarah Hendry, United Kingdom and Jan Ruppelt, Germany <p>Relevant pharmaceutical contaminants in water, soil, and crops in the HYDROUSA Project: prioritization and upgrade of analytical methodologies, Marc Castaño-Trias, ICRA, Spain</p> <p>Sustainable wastewater treatment of pharmaceuticals at the sunset WWTP Växjö, Anneli Chan, Ramboll, Sweden</p> <p>Constructed wetlands for safeguarding antibiotics emission into aquatic systems, Pedro Carvalho, Aarhus University, Department of Environmental Science, Denmark</p> <p>Micropollutant and antibiotic-resistant germs removal using PAC & membrane technology, Alexander Merz, Hochschule Darmstadt, Germany</p> <p>---- POSTERS ----</p> <p>Comparison of Ibuprofen Removal from water using activated carbon and immobilized bacteria onto chars derived from agriculture waste, Yves Andres, IMT Atlantique / GEPEA, France</p>	Room B3 d Technical
Break	17:15 - 17:30		
Keynote Plenary	17:30 - 18:20		
Keynote: Digital Water Unpacked, Oliver Grievson & Enrique Cabrera Rochera Panel: Corinne Cheeseman, Pernille Ingildsen, Ramón Dolz Mollá, HP Nanda			

Tuesday | Programme

Keynote Plenary	09:00 - 09:50		
Keynote: Empowering Communities to Shape Sustainable Water Solutions — Incorporating Indigenous Knowledge, Dawn Martin-Hill Panel: Tom Mollenkopf , Louise Dudley , Liby T. Johnson , Bradley Moggridge , Tanja Nielsen			
Coffee Break	09:50 - 10:30		
Session 1	10:30 - 12:00		
6.1 GROUNDWATER HOLISTIC APPROACHES AND REGULATION FOR WATER SECURITY	Room B3 e Technical	2.3.3 NANOMATERIALS AND NANOTECHNOLOGY	Room B3 f Technical
<p>Chairs: Sophie Tremolet, <i>France</i> and Titilola Bright-Oridami, <i>Nigeria</i></p> <p>Accessible on-site system for detection of heavy metals in potable water, Tommi Tiihonen, <i>University of Eastern Finland, Finland</i></p> <p>Tracking salinity sources and mechanisms in groundwater from the water cycle and anthropogenic activities through a hybrid approach, Huguette Emvoutou, <i>Regional Water and Environmental Sanitation Centre, KNUST, Senegal</i></p> <p>How the history of contaminated site remediation has evolved in an effective, economically and sustainable way, John Flyvbjerg, <i>Capital Region of Denmark, Denmark</i></p> <p>Integration of electromagnetic and electrical resistivity for groundwater exploration in Kintampo South district, Bono East region of Ghana, Albert Acheampong, <i>KNUST (RWESCK) (World Vision Ghana), Ghana</i></p> <p>---- POSTERS ----</p> <p>California's state-wide AEM surveys, Max Halkjaer, <i>Ramboll, Denmark</i></p> <p>The availability of arsenic in vaal catchment area as a result of acid mine drainage in South Africa, Sibusiso Mnguni, <i>Rand Water, South Africa</i></p>		<p>Chairs: Jan Hofman, <i>United Kingdom</i> and Jenny Radeva, <i>Germany</i></p> <p>Reusable carbon nanotubes embedded polystyrene polyacrylonitrile nanofibrous sorbent for oil clean-up, Siyoung Byun, <i>Pusan National University, Republic of Korea</i></p> <p>Quantification of metal-based nanoparticles in wastewater treatment plants, Pabel Cervantes-Avilés, <i>Tecnológico de Monterrey, Mexico</i></p> <p>High efficiency, stable, easily separable, and recovery novel magnetic nanocomposite adsorbent for phosphate removal, Denny Dermawan, <i>Chung Yuan Christian University, Chinese Taipei</i></p> <p>Piezo-photo coupling effect of ultrathin $\text{Bi}_{1-x}\text{O}_x\text{Cl}_2$ nanosheets for carbamazepine degradation, Feiyan Wu, <i>DTU environment, Denmark</i></p> <p>---- POSTERS ----</p> <p>Applications of nanoparticles in wastewater treatment, Irem Ayrarınar, <i>Kahramanmaraş Sutcu Imam University, Turkey</i></p> <p>Recovery of water and valuable metals by low pressure nano filtration and sequential adsorption from Acid Mine Drainage (AMD), Charith Dalindra Jude Fonseka, <i>Australia</i></p>	
Lunch	12:00 - 13:30		
Session 2	13:30 - 15:00		
6.2 GROUNDWATER MANAGEMENT — KEY'S TO SDGS	Room B3 e Technical	6.6 STRATEGIC DIGITAL CONTROL OF WATER MANAGEMENT	Room B3 f Technical
<p>Chairs: Stephen Foster, <i>United Kingdom</i> and Julia Gathu, <i>Kenya</i></p> <p>Water sector governance & operations — the Danish model, Peter Mikkelsen, <i>Technical University of Denmark, Denmark</i></p> <p>Towards water security and climate resilience in Kenya Through effective water resources management and planning, Mekuria Beyene, <i>DHI, South Africa</i></p> <p>Building sustainable water services: subsidiarity, multi-level governance and resilience approach, Jarmo Hukka, <i>Tampere University, Finland</i></p> <p>Lowering of groundwater levels and their effect on water, sanitation and hygiene services in the savelugu district, northern region of Ghana, Albert Acheampong, <i>KNUST (RWESCK) (World Vision Ghana), Ghana</i></p> <p>---- POSTERS ----</p> <p>An investigation of unexplained exceedances of DOC and fluoride from landfill at Kvio in Norway, Lelum Manamperuma, <i>Aquateam COWI AS, Norway</i></p> <p>The web-based OMEGA Platform for supporting reservoir management in Portugal, Ana Oliveira, <i>Instituto Superior Técnico, Portugal</i></p>		<p>Chairs: Mads Leth, <i>Denmark</i> and Elif Erdem, <i>Turkey</i></p> <p>How digital transformation streamlines sewer infiltration-inflows management, Anna Ohlin Saletti, <i>Chalmers University of Technology, Sweden</i></p> <p>Towards Soil Aquifer Treatment (SAT) optimization: a SAT Basin dynamic simulation with a machine learning prediction model for the infiltration rate, Roy Elkayam, <i>Mekorot water company, Israel</i></p> <p>Comparing disposal strategies for arsenic-rich water treatment residuals using life cycle assessment, Case van Genuchten, <i>Geologic Survey of Denmark and Greenland, Denmark</i></p> <p>Delivering Strategic water supply resilience in the UK — water recycling solutions for London, Christopher Kyne, <i>Jacobs, United Kingdom</i></p> <p>---- POSTERS ----</p> <p>Level of water stress: the contribution by reductions in the water loss in Brazilian water supply systems, Marcelo Libânio, <i>UFMG, Brazil</i></p> <p>Mapping pharmaceuticals in the environment using sales data and modelling — a risk assessment tool, Kristina Buus Kjær, <i>DHI, Denmark</i></p>	
Coffee Break	15:00 - 15:45		
Session 3	15:45 - 17:15		
2.3 HIGH VALUE PRODUCTS BASED ON CARBON IN WASTEWATER — HOW DO WE SELECT AND IS IT SUSTAINABLE?	Room B3 e Workshop	6.3 GROUNDWATER — RESILIENCE APPROACHES	Room B3 f Technical
<p>Chairs: Mark van Loosdrecht, <i>Netherlands</i> and Jeanette Agertved Madsen, <i>Denmark</i></p> <p>Discussion of new processes as well as R & D within the production of high-value products based on carbon in wastewater. Upscaling, value chain development, handling requirements from end users and regulatory.</p> <p>Speakers: Iriní Angledaki, <i>Prof., Technical University of Denmark (DK)</i>, Franco Fatone, <i>Prof., University Politecnica delle Marche (IT)</i>, Olaf van der Kolk, <i>CEO Aquaminerals, Co-chair Cluster Resource Recovery IWA (NL)</i>, Frank Rogalla, <i>Director of Innovation and Technology, Aqualia (ES)</i> & Alan Werker, <i>Co-owner, Promiko AB (SE)</i></p>		<p>Chairs: Gabriel Racoviteanu, <i>Romania</i> and Craig Tinashe Tanyanyiwa, <i>South Africa</i></p> <p>Comparative analysis of regulation, definition and classification of relevant and non-relevant metabolites in the EU and Denmark, France and Germany — status and outlook, Steffen Foss Hansen, <i>Technical University of Denmark, Denmark</i></p> <p>Innovative real-time sensing of flow dynamics in groundwater and sediments to map anthropogenic & climate change impact, Goedele Verreydt, <i>iFLUX - Universiteit Antwerpen, Belgium</i></p> <p>Groundwater data and decision support tools at local to Pan-European scale for sustainable and integrated management of water resources in support of EU, Klaus Hinsby, <i>Geological Survey of Denmark and Greenland (GEUS), Denmark</i></p> <p>Applying SkyTEM to improve sustainable management of groundwater systems in a built-up area — the Hawke's Bay 3D aquifer mapping project in New Zealand, Steven Johnson, <i>SkyTEM Australia Pty Ltd, Australia</i></p> <p>---- POSTERS ----</p> <p>Airborne electromagnetic mapping of shallow depth to bedrock supports land management in northeast Wisconsin, Flemming Effersø, <i>SkyTEM, United States</i></p> <p>Assessing risks to shallow groundwater wells in cold climate conditions using real-time online monitoring, Stable Water Isotopes, and 16S Amplicon Sequencing, Kevin Lyons, <i>University of Oulu, Finland</i></p>	
Break	17:15 - 17:30		
Keynote Plenary	17:30 - 18:20		
Keynote: Digital Water Unpacked, Oliver Grievson & Enrique Cabrera Rochera Panel: Corinne Cheeseman , Pernille Ingildsen , Ramón Dolz Mollá , HP Nanda			

Keynote Plenary	09:00 - 09:50	
Coffee Break	09:50 - 10:30	
Session 1	10:30 - 12:00	
1.6 SUSTAINABLE UTILITY MANAGEMENT — THE NORDIC EXPERIENCE		Room B3 g Technical
<p>Chairs: Martin Rygaard, Denmark and Magnus Arnell, Sweden</p> <p>Energy positive and carbon neutral wastewater treatment in Copenhagen, Carsten Thirsing, BIOFOS A/S, Denmark</p> <p>From a vision to a sustainable preliminary concept for New Sjölanda WWTP using an innovative and holistic approach, Jeanette Madsen, EnviDan, Denmark</p> <p>Using carbon footprint from the construction phase as a parameter in asset management and rehabilitation planning, Sarah Brudler, EnviDan, Denmark</p> <p>Application of sustainability index in municipal water and wastewater organizations in Sweden for improved asset management: some case studies as good, Nasik Najjar, School of Engineering Jönköping University, Sweden</p> <p style="text-align: center;">---- POSTERS ----</p> <p>A systematic concept for the extension of Copenhagen's WWTPs, Jeanette Madsen, EnviDan, Denmark</p>		
Lunch	12:00 - 13:30	
Session 2	13:30 - 15:00	
1.7 SUSTAINABLE UTILITY MANAGEMENT		Room B3 g Technical
<p>Chairs: Ed Smeets, Netherlands and Abdul Majeed Osman, Ghana</p> <p>Prague Water Net Zero Strategy 2025 — methodology and roadmap, Martin Srb, Prazské vodovody a kanalizace, a.s, Czech Republic</p> <p>Environmentally and socially responsible activated carbon filtration, Panu Laurell, Helsinki Region Environmental Services, Finland</p> <p>Normalized approach for carbon footprint determination: long term measurements in real wastewater treatment plants, Enrico Marinelli, UNIVPM, Italy</p> <p>Implementation at full scale of demand-driven biogas production from anaerobic digestion of sewage sludge, Mauro Lafratta, University of Surrey Thames Water Utilities, United Kingdom</p> <p style="text-align: center;">---- POSTERS ----</p> <p>Methane emissions on small wastewater treatment plants, Johannes Blattenberger, Bundeswehr University Munich, Germany</p> <p>Effect-based monitoring: perception and perceived barriers to implementation, Magali Dechesne, Veolia Research & Innovation, France</p>		
Coffee Break	15:00 - 15:45	
Session 3	15:45 - 17:15	
1.8 GREENHOUSE GAS EMISSIONS IN DENMARK		Room B3 g Technical
<p>Chairs: Eveline Volcke, Belgium and Haoran Duan, Australia</p> <p>Reduction of greenhouse gas emissions in the water sector — a Danish perspective, Jacob Kragh Andersen, EnviDan, Denmark</p> <p>Quantification and assessment of greenhouse gas emissions from wastewater treatment plants, Charlotte Scheutz, Technical University of Denmark, Denmark</p> <p>Direct effect of activated sludge concentration on N₂O emission and CO₂-eqv accounting at full-scale, Mikkel Andersen, Unisense, Denmark</p> <p>N₂O abatement from WWTPs by catalytic treatment, Britta Lauritzen, Hillerød Forsyning, Denmark</p> <p style="text-align: center;">---- POSTERS ----</p> <p>Emissions of nitrous oxide from danish WWTPs and their effect on global warming — a nationwide study, Anna Katrine Vangsgaard, EnviDan, Denmark</p> <p>Predicting N₂O production in activated sludge process using data-driven modelling, Laura Hansen, Krüger, Denmark</p>		
Break	17:15 - 17:30	
Keynote Plenary	17:30 - 18:20	

BUSINESS FORUM ROOM 1 (HALL E)
10:30 — 11:15 | KEMIRA
How to reduce the global warming potential (GWP) of wastewater treatment plants

How do you calculate the overall global warming potential of a WWTP and which levers can move the needle towards net-zero and contribute to UN SDG13.

- Energy sourcing and consumption (BOD/COD, sludge treatment) vs. energy production (i.e. biogas)
- Chemistry – responsible sourcing and efficient consumption
- Nutrient removal/recovery
- Data-driven process automation

- Jean-Christophe Ades, Kemira (Chair), Jesper Berner, Kemira (subject matter expert),
- Dines Thornberg, BIOFOS (Panelist), Per Henrik Nielsen, Vand Center Syd (Panelist),
- Magnus Rahmberg, IVL - Swedish Environmental Institute (Panelist)

11:15 — 12:00 | XYLEM
Let's redefine what's possible for Water

Xylem Vue is our full suite of digital solutions that combines smart and connected technologies, intelligent systems and services, and 100+ years of problem-solving expertise — empowering utilities to deliver transformative outcomes to their communities. We will discuss how we can help utilities use digital innovation to help improve performance and bottom-line... so they can better serve their community.

- Joost Aloserij, Director Business Development Vue Solution Team

12:15 — 13:00 | DENMARK PAVILION
Alternative water sources for water supply

The scarcity of water supply is a serious and increasing threat for many communities around the world, and this challenge calls for investigation and development of alternative sources. The session will show examples of urban water planning and present some of the innovative solutions to overcome water scarcity.

- Kristian Brunmark, Project Manager, Aarhus Vand
- Søren Duch-Hennings, Product and process Manager, SILHORKO-EUROWATER A/S
- Carsten Fjorback, Development Director - Climate Adaptation, COWI A/S
- Ole Silkjær, Business Development Director, Eurofins Environment Denmark

13:30 — 14:15 | REZATEC
Advance Warning From Advanced Data: How to identify Pipeline Risk using Geospatial AI

To be announced later

14:15 — 15:00 | VEOLIA
Optimisation of energy production at wastewater treatment plants

Stakeholders from the industry will present solutions and operating results from their wwtps in this business forum.

Through interesting discussions, the participants will gain a valuable understanding of the mechanisms involved in obtaining energy-efficient and sustainable solutions for their WWTPs.

**15:45 — 16:30 | FINNISH WATER FORUM
EMBASSY OF FINLAND IN COPENHAGEN**
Finnish Water Way – Network Reception

Finnish Water Forum together with Embassy of Finland in Copenhagen invites you to explore the leading practices of Finnish Water Way through showcases of Smart Water Management, Managed Aquifer Recharge and Resource & Energy Recovery. Join us to expand your networks with Finnish water sector – the world-leaders in Sustainable Water Management!

- Finland at IWA WWCE 2022
- Bjoern Biedermann

BUSINESS FORUM ROOM 2 (HALL C)
10:30 — 11:15 | AVK/NIRAS
Moving Towards Smart Water Network

We will look at smart water networks in a holistic context of drinking water systems. By pin-pointing challenges that many utilities face we will present new and upcoming technologies that will improve smart water systems further by combining technologies, creating digital twins and adding new IoT sensors and smart devices.

- Klavs Høgh, Gerner H. Knudsen, Michael Ramlau Hansen

11:15 — 12:00 | PALADERI
Mechanical and hydraulic behaviour of hdpe spiral pipes with steel reinforcement under extreme loads

Politecnico Milano's study concerning mechanical tests on polymeric pipes with steel reinforcements, with results of creep tests on different plastic pipes types:

- Ring stiffness tests, ring flexibility and resistance to collapse of steel-reinforced polyethylene spiral pipe.
- Collapse test male-female joint of steel-reinforced polyethylene spiral pipe.
- Polymeric material pipes creep tests

- Andrea Cirino Pomicino, CEO

12:15 — 13:00 | NETHERLANDS (NWP)
The Dutch Water Sector is constantly moving forward and happy to attend the IWA WWCE in Copenhagen!

Please meet: Netherlands Water Partnership, Water Alliance, PB International, Senoterra International B.V., Water Test Network, EBC Foundation, Vewin, Hydraloop, Join the Pipe and others. In this session we will give you an update on the latest developments and solutions from the Netherlands. We are actively looking for cooperation.

- NL pavilion participants

13:30 — 14:15 | NOURYON
UV-C and Hydrogen Peroxide : the sustainable route to micropollutant free waters by Nouryon and Van Remmen UV

In an interactive and multimedia approach the societal need, technical features, technology benefits and experiences in the UV-H2O2 application will be presented. The experiences shared are ranging from scientific papers to long term full-scale trials to commercial installations. External independent parties will make statements and open up for discussions with the audience.

- Clara Thege, Thomas Greschik

14:15 — 15:00 | BPC INSTRUMENTS
Gas Endeavour® from BPC Instruments

Gas Endeavour® from BPC Instruments (formerly Bioprocess Control) allows for an easy execution of microbial activity analysis based on volumetric gas methodology. The instrument is a fully automated respirometer for continuous gas volume measurement. It is an ideal solution for anaerobic and aerobic respirometry using samples of sludge and wastewater.

- Dr. Jing Liu, CEO & prof. Gustaf Olsson

15:45 — 16:30 | IDROTHERM
Underground polyethylene pipe networks in the frame of circular economy

A sustainable approach has been explored with recycled materials providing a remarkable outlet for disposable plastics. Selected grades of HDPE from post-use recovery and industrial scraps combined with multilayer pipe extrusion technology have been the basis for renovated sewerage networks and electric cables protection of a major multiutility for one of the biggest project for wastewater in Italy.

- Dr Marco Michelotti – Technical Manager Idrotherm 2000