

<p>4.4.1 DATA-DRIVEN MODELLING AT CITY SCALE</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>	<p>Room B3 b Technical</p>	<p>Tuesday 10:30 -12:00 Data-driven models</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>4.4 TAPPING THE VALUE OF URBAN DRAINAGE SYSTEMS (UDS) DATA</p> <p>Chairs: Jose Anta, <i>Spain</i>, Elodie Brelot, <i>Germany</i> and Jesper E. Nielsen, <i>Denmark</i></p> <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, <i>Universidade da Coruña (ES)</i>, Elodie Brelot, <i>GRAIE (DE)</i> & Jesper E. Nielsen, <i>Aalborg University (DK)</i>, Michael R. Rasmussen, <i>Aalborg University (DK)</i>, Jean-Luc Bertrand-Krawjeski, <i>INSA-Lyon (FR)</i>, Alma Schellart, <i>University of Sheffield (UK)</i>, Simon Tait, <i>University of Sheffield (UK)</i> & Thomas Brüggemann</p>	<p>Room B3 c Workshop</p>	<p>Tuesday 10:30 -12:00 Big data</p>
<p>2.2 BIOCLUSTER WORKSHOP — MICROBIAL ECOLOGY IN WATER ENGINEERING: FROM THEORY TO PRACTICE</p> <p>Chairs: Per Nielsen, <i>Denmark</i> and Barth Smets, <i>Denmark</i></p> <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, <i>Aalborg University (DK)</i> & Barth Smets, <i>Technical University of Denmark (DK)</i>, Joe Zhou, Fanqiong Ling, <i>Washington University at St Louis (US)</i> & Tom Curtis, <i>Newcastle University (UK)</i></p>	<p>Room C3 Workshop</p>	<p>Tuesday 10:30 -12:00 Microbial ecology</p>

<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, Israel</i></p> <p>--- POSTERS ---</p> <p>Preparation of a data-driven asset management plan for better water management, Cor Merks, <i>Ramboll, Netherlands</i></p> <p>Reopening of culverted streams and rivers, Øystein Rapp, <i>Sweco Norge AS, Norway</i></p>	<p>Room B4 d Technical</p>	<p>Tuesday 10:30 -12:00 Optimisation</p> <p>10:50-11:10</p> <p>11:50-11:55</p>
<p>1.6 SUSTAINABLE UTILITY MANAGEMENT — THE NORDIC EXPERIENCE</p> <p>Chairs: Martin Rygaard, <i>Denmark</i> and Magnus Arnell, <i>Sweden</i></p> <p>Energy positive and carbon neutral wastewater treatment in Copenhagen, Carsten Thirsing, <i>BIOFOS A/S, Denmark</i></p> <p>From a vision to a sustainable preliminary concept for New Sjölund WWTP using an innovative and holistic approach, Jeanette Madsen, <i>EnviDan, Denmark</i></p> <p>Using carbon footprint from the construction phase as a parameter in asset management and rehabilitation planning, Sarah Brudler, <i>EnviDan, Denmark</i></p> <p>Application of sustainability index in municipal water and wastewater organizations in Sweden for improved asset management: some case studies as good, Nasik Najar, <i>School of Engineering Jönköping University, Sweden</i></p> <p>--- POSTERS ---</p> <p>A systematic concept for the extension of Copenhagen's WWTPs, Jeanette Madsen, <i>EnviDan, Denmark</i></p>	<p>Room B3 g Technical</p>	<p>Tuesday 10:30 -12:00 Sustainability</p> <p>10:30-10:50</p>
<p>2.3.3 NANOMATERIALS AND NANOTECHNOLOGY</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 Bi₁₂O₁₇Cl₂ nanosheets for carbamazepine degradation, Feiyan Wu, <i>DTU environment, Denmark</i></p> <p>--- POSTERS ---</p> <p>Applications of nanoparticles in wastewater treatment, Irem Ayranpinar, <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>	<p>Room B3 f Technical</p>	<p>Tuesday 10:30 -12:00 Nanotechnology</p>

<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>	<p>Room A2 Forum</p>		<p>Tuesday 10:30 -12:00 Cities of future</p>
<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>	<p>Room A3 Forum</p>		<p>Tuesday 10:30 -12:00 Water stewardship</p>
<p>EMERGING WATER LEADERS FORUM I</p> <p>Chair: Emily Ryan, <i>Australia</i></p> <p>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.</p>	<p>Room C0 Forum</p>		<p>Tuesday 10:30 -12:00 YWPs</p>

<p>LEARNINGS FROM INCLUSIVE URBAN SANITATION INITIATIVES</p> <p>Chairs: Suresh Kumar Rohilla, <i>United Kingdom</i> and Yvonne Magawa, <i>Zambia</i></p> <p>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.</p> <p>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)</p>	<p>Room C1 Sanitation</p>	<p>Tuesday 10:30 -12:00 Urban sanitation</p>
<p>5.3 PUTTING CROSS BORDER COLLABORATION INTO PRACTICE</p> <p>Chairs: Fionn Boyle, <i>United Kingdom</i> and Jan Gooijer, <i>Netherlands</i></p> <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, <i>Anglian Water (UK)</i> & Jan Gooijer, <i>Vitens N.V. (NL)</i>, Andrew Smith, <i>Anglian Water Services (UK)</i>, Rik Thijssen, <i>Vitens N.V., (NL)</i>, Joukje Keuning & Jaime Castillo Soria, <i>Global Omnium (ES)</i></p>	<p>Room C2 Workshop</p>	<p>Tuesday 10:30 -12:00 Cross border collaboration</p>
<p>2.4.2-1 BIOSOLIDS MANAGEMENT & REUSE</p> <p>Chairs: Francesco Fatone, <i>Italy</i> and Zhiyao Wang, <i>Australia</i></p> <p>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></p> <p>Biogas residues as feedstock for hydrothermal conversion: bio-oil yield optimisation and fate of drugs, Stian Hegdahl, <i>University of Bergen, Norway</i></p> <p>Lipophilic substances in grease traps on WRRFs: an Auxiliary parameter to optimize resource recovery, Anastasia Ruf, <i>Universität der Bundeswehr München, Germany</i></p> <p>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></p> <p>--- POSTERS ---</p> <p>Assessment of new sludge management strategies in the Cape Flats wastewater treatment works, South Africa, Xavier Flores-Alsina, <i>DTU, Denmark</i></p>	<p>Room B5 a Technical</p>	<p>Tuesday 10:30 -12:00 Biosolids</p>

<p>3.3 GROUNDWATER BASED PRODUCTION — I</p> <p>Chairs: N K Goel, <i>India</i> and Somaparna Ghosh, <i>India</i></p> <p>What can benchmarking teach us about the biofiltration treatment process?, Loren Ramsay, VIA University College, Denmark</p> <p>Ammonia oxidation and nitrifier dynamics in a full-scale bioreactor treating groundwater by copper dosing, Kazuyoshi Koike, <i>Kanazawa University, Japan</i></p> <p>Trace metal supplementation enhances nitrification in biofilters for drinking water production, Florian B. Wagner, <i>Norconsult AS, Norway</i></p> <p>Removal of vanadium in drinking water treatment by adsorption on granular ferric hydroxide, Carsten Bahr, <i>GEH Wasserchemie GmbH & Co. KG, Germany</i></p> <p style="text-align: center;">POSTERS</p> <p>Studies on the effects of functional group in anion exchange resins on the selectivity of nitrate removal from drinking water, Lesego Siwela, <i>Cwenga Technologies, South Africa</i></p> <p>Green solution for treating nitrate and micropollutants in groundwater to meet drinking standards, Marlene Mendoza, <i>IRTA, Spain</i></p>	<p>Room B5 b Technical</p>	<p>Tuesday 10:30 -12:00 Groundwater based production</p>
<p>3.13 WATER MANAGEMENT IN DIVERSE CONTEXTS</p> <p>Chairs: S Mohan, <i>India</i> and Liudmyla Odud, <i>Ukraine</i></p> <p>Achieving universal access to safely managed water services in rural Cambodia: The case for the complementarity of water supply solutions, Julien Ancele, 1001fontaines, France</p> <p>The use of water safety planning to modernise and improve water supply and quality in Lilongwe, Malawi, Charles Kachingwe, <i>Lilongwe Water Board, Malawi</i></p> <p>Water demand management in the medical manufacturing industry, Johann van Aatsen, <i>Ramboll, Singapore</i></p> <p>Collaborative water management in Northwest England, Dan Turner, <i>The Rivers Trust, United Kingdom</i></p> <p style="text-align: center;">--- 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, <i>Sendai City Waterworks Bureau, Japan</i></p> <p>Water science and Human Rights: a case study from the Niger Delta, Gustaf Olsson, <i>Lund University., Sweden</i></p>	<p>Room B4 a Technical</p>	<p>Tuesday 10:30 -12:00 Diverse contexts</p>
<p>5.3 ENABLING HEALTH, WELL-BEING AND LIVEABILITY OUTCOMES</p> <p>Chairs: Jes Clauson-Kaas, <i>Denmark</i> and Anya Eilers, <i>South Africa</i></p> <p>Roadmaps to urban water security in developing countries — Pakistan case studies, Amy Syvrud, <i>Aither, United States</i></p> <p>Water sector institutional reform as an enabling factor towards health, wellbeing and liveability outcomes - Timor- Leste case study, Mário Santos, <i>Águas de Portugal, East Timor</i></p> <p>Hand hygiene facilities in public spaces, Sylvain Bertrand, <i>UNICEF, Nepal</i></p> <p>Danish Design drinking water epidemiology, Jörg Schullehner, Aarhus University, Denmark</p> <p style="text-align: center;">--- POSTERS ---</p> <p>Citizen involvement for sanitation and biodiversity: worldwide case-studies, Sarah Hercule-Bobroff, <i>Veolia VESA, France</i></p> <p>The short-run impacts of reducing water collection times on time use, well-being and education in rural Kenya, Joseph Cook, <i>Washington State University, United States</i></p>	<p>Room B4 b Technical</p>	<p>Tuesday 10:30 -12:00 Health, well-being</p>

<p>5.7 CREATING AN EFFECTIVE INNOVATIVE ECO-SYSTEM. HOW THE UK ENHANCES & ENABLES INNOVATION AND WHAT WE CAN CONTINUE TO LEARN</p> <p>Room B4 c Workshop</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, <i>Anglian Water (UK)</i> & Adam Lovell, <i>WSAA (AU)</i></p>		<p>Tuesday 10:30 -12:00 Innovative ecosystem</p>
<p>1.5 UTILITIES WATER REUSE THROUGHOUT THE WATER CYCLE</p> <p>Room B3 a Technical</p> <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>Tuesday 10:30 -12:00 Water reuse</p>
<p>2.4.3-1 PFAS AS EMERGING CONTAMINANTS OF CONCERN</p> <p>Room B3 d Technical</p> <p>Chairs: Josef Klinger, <i>Germany</i> and Allyson Junker, <i>Denmark</i></p> <p>Pilot trials with combined activated carbon and Ion-exchange for removal of pharmaceuticals and PFAS from wastewater at Kungsängsverket WWTP, Uppsala, Anna Sundin, <i>Uppsala Water and Waste, Sweden</i></p> <p>Development of energy efficient microwave system with reflected wave circulating module and carbon nanotubes-quartz vessel to remove soluble PFOS, Junghyeon Kim, <i>Pusan National University, Republic of Korea</i></p> <p>PFAS Removal from landfill leachate — state of the art, Andriy Malovanyy, <i>IVL Swedish Environmental Research Institute, Sweden</i></p> <p>Pre-treatment of complex water for subsequent PFAS-removal, Rikke Markfoged, <i>Danish Technological Institute, Denmark</i></p> <p>--- POSTERS ---</p> <p>Evaluation of thyroid hormone disruption by PFAS in WWTP influent effluent and surface waters, Harrie Besselink, <i>BioDetection Systems BV (BDS), Netherlands</i></p> <p>Bio-innovative wastewater surveillance towards optimising dedicated treatment of contaminants of emerging concern, George Ruck, <i>INRAE, France</i></p>		<p>Tuesday 10:30 -12:00 Emerging contaminants</p>

<p>6.1 GROUNDWATER HOLISTIC APPROACHES AND REGULATION FOR WATER SECURITY</p> <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>Room B3 e Technical</p>	<p>Tuesday 10:30 -12:00 Groundwater</p>
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