



# IWA Water Reuse 2019

12<sup>th</sup> IWA International Conference on Water Reclamation and Reuse

16 – 20 June 2019 · Berlin · Germany

**Overcoming Water Stress**  
by  
**Water Reclamation and Reuse**

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# PROGRAMME

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## ORGANIZING COMMITTEE

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## PROGRAMME COMMITTEE

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|                             |  |
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| <b>Rafael Mujeriego</b>     | Universidad Politecnica de Catalonia, Barcelona/E              |
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## PROGRAMME AT A GLANCE

## Sunday, 16 June 2019

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|-------|---|---|--|---------------------------------------|
| Room: | MOA 6-7   | MOA 3   | MOA 4  | MOA 5                                 |
| 10:00 | Workshop 1  | Workshop 2  | Workshop 3   | Workshop 4                            |
| 13:00 | Lunch for workshop participants                           |   |  |                                       |
| Room: | MOA 6-7   |   |  |                                       |
| 14:00 | OPENING CEREMONY  |   |  |                                       |
|       | WELCOME LECTURES  |   |  |                                       |
| 14:30 | Simon   |   |  |                                       |
| 14:50 | Gerten  |   |  |                                       |
| 15:10 | Conference Introduction<br>Drewes                         |   |  |                                       |
|       | Coffee break with posters and exhibition                  |   |  |                                       |
| Room: | MOA 6-7   | MOA 3   | MOA 4  | MOA 5                                 |
|       | Reuse in Developing Countries<br>Agricultural reuse       | Direct Potable Reuse<br>Direct potable reuse across the globe | Industrial Reuse<br>Chemical and petro-chemical industry | Integrating reuse in existing systems |
| 16:00 | Kluge   | Lovell  | Schießer   | Adin                                  |
| 16:20 | Sinn  | Mosher  | Veleva   | Roccaro                               |
| 16:40 | Lima da Silva   | Olivieri  | Sanz   | Caucci                                |
| 17:00 | Kätzl   | Swartz  | Vanoppen   | Mohr                                  |
| 17:20 | Ronen   | Jefferson   | Kochan   | Ramin                                 |
| 17:40 | WELCOME RECEPTION<br>in the exhibition hall (17:40-20:00) |   |  |                                       |

## PROGRAMME AT A GLANCE

## Monday, 17 June 2019

|       |   |   |  |   |
|-------|---|---|--|---|
| Room: | MOA 6-7   |   |  |   |
|       | PLENARY LECTURES  |   |  |   |
| 8:30  | Bahri   |   |  |   |
| 9:00  | van Rensburg  |   |  |   |
| Room: | MOA 6-7   | MOA 3   | MOA 4  | MOA 5   |
|       | Reuse in Developing Countries<br>Treatment technologies                 | Direct Potable Reuse<br>DPR developments in the United States   | Industrial Reuse<br>Food and beverage industry                                 | New perspectives in reuse                           |
| 9:30  | Beck  | Steinle-Darling   | Godskesen  | Helmi   |
| 9:50  | Noophan   | Pecson  | Albrechtsen  | Lavrnić   |
| 10:10 | Cintra  | Debroux   | Dickhoff   | Londoño   |
| 10:30 | Coffee break with posters and exhibition                                |   |  |   |
|       | Reuse in Developing Countries<br>Reviews, strategies, risks             | Direct Potable Reuse<br>Performance assessment for DPR trains   | Industrial Reuse<br>Miscellaneous industries                                   | Integrated reuse systems (industrial, urban, rural) |
| 11:00 | Goyal   | Li  | Lahnsteiner  | Nahrstedt   |
| 11:20 | Chen  | Ni  | Henkel/Slagt/Groot   | Raat  |
| 11:40 | Kalebaila   | Fujioka   | Echevarria   | Albrechtsen   |
| 12:00 | Nas   | Yonetani  | Mattingly  | Gukelberger   |
| 12:20 | Poster pitches  | Poster pitches  | Poster pitches   | Poster pitches                                      |
| 12:40 | Lunch break with posters and exhibition                                 |   |  |   |
|       | Groundwater Recharge<br>Managed aquifer recharge                        | Direct Potable Reuse<br>Challenges in DPR   | Industrial Reuse<br>Planning and assessment of industrial water reuse concepts | Risk Management<br>Risk management of reuse schemes |
| 13:40 | Sperlich  | Szczuka   | Bauer  | Drewes  |
| 14:00 | Gerdes  | Fujioka   | Pohl   | Grützmaker  |
| 14:20 | Sanz Prat   | Peterson  | Jacob  | Smeets  |
| 14:40 | Ho  | Minakata/Kibler   | Kureck   | Mueller   |
| 15:00 | Poster pitches  | Poster pitches  | Poster pitches   | Poster pitches                                      |
| 15:20 | Coffee break with posters and exhibition                                |   |  |   |
|       | Groundwater recharge<br>Enhancement of managed aquifer recharge systems | Innovative Treatment Technologies & Applications<br>Disruptive membrane treatments and their applications | Agricultural Reuse<br>Role of reclaimed water in agricultural irrigation       | Risk Management<br>Risk mitigation strategies       |
| 15:50 | Vaidya  | Rodriguez-Roda  | Sheikh   | Le-Clech  |
| 16:10 | Wünsch  | de la Torre   | Salgot   | Vanysacker  |
| 16:30 | Reeve   | Baaklini  | Scheideler   | Honda   |
| 16:50 | Gnirss  | Guo   |  | Tanaka  |
| 17:10 | Donnaz  | Viegas  | Bartholomeus   | Jahne   |
| Room: | MOA 6-7   |   |  |   |
| 17:35 | CANDIDATE 2021 PRESENTATIONS  |   |  |   |
| 18:10 | POSTER AND EXHIBITION PARTY<br>with drinks and buffet<br>(18:10-21:00)  |   |  |   |

## PROGRAMME AT A GLANCE

### Tuesday, 18 June 2019

|       |  |   |   |   |
|-------|--|---|---|---|
| Room: | MOA 6-7  |   |   |   |
|       | PLENARY LECTURES   |   |   |   |
| 8:30  | Simón Andreu   |   |   |   |
| 9:00  | Delacamara   |   |   |   |
| Room: | MOA 6-7  | MOA 3   | MOA 4   | MOA 5   |
|       | <b>Potable Reuse</b><br>New concepts of potable reuse                | <b>Innovative Treatment Technologies &amp; Applications</b><br>Disruptive technologies for hard-to-treat wastewater | <b>Agricultural Reuse</b><br>Transfer of contaminants into irrigated crops            | <b>Risk Management</b><br>Validation procedures                                       |
| 9:30  | Mattingly  | Yogendran   | Reemtsma  | Maruya  |
| 9:50  | Orsoni   | Lefebvre  | Srikantaiah   | Khan  |
| 10:10 | Hogard   | Huang   | Wanner  | Kohn  |
| 10:30 | Coffee break with posters and exhibition                             |   |   |   |
|       | <b>Potable Reuse</b><br>New groundwater recharge concepts            | <b>Innovative Treatment Technologies &amp; Applications</b><br>Control and applications of biological processes     | <b>Agricultural Reuse</b><br>Benefits of agricultural irrigation with reclaimed water | <b>Social &amp; Economic Perspectives</b><br>Economic and sustainability perspectives |
| 11:00 | Peri   | Choo  | Mange/Wéry/Ait Mouheb   | Listowski   |
| 11:20 | Warner   | Ali   | Coppini   | Haak  |
| 11:40 | Karakurt   | Zhang   | Watanabe  | Declercq  |
| 12:00 | Filter   | Risse   | Bliedung  | Wencki  |
| 12:20 | Poster pitches   | Poster pitches  | Poster pitches  | Poster pitches  |
| 12:40 | Lunch break with posters and exhibition                              |   |   |   |
|       | <b>Potable Reuse</b><br>New treatment concepts for potable reuse     | <b>Innovative Treatment Technologies &amp; Applications</b><br>Trends in membrane distillation                      | <b>Agricultural Reuse</b><br>Environmental impacts                                    | <b>Social &amp; Economic Perspectives</b><br>Regional perspectives                    |
| 13:40 | Grischek   | Hai   | Weidhaas  | Hahn/Kirschke   |
| 14:00 | Katz   | Deka  | Beraud  | Francik   |
| 14:20 | Scheideler   | Guo   | Phung Duc   | Mattingly   |
| 14:40 | Stefan   | Farid   | Barros  | Collard   |
| 15:00 | Poster pitches   | Poster pitches  | Poster pitches  | Poster pitches  |
| 15:20 | Coffee break with posters and exhibition                             |   |   |   |
|       | <b>Small-scale/ Decentralized Systems</b>                            | <b>Extending the Limits of Traditional Treatment</b>  | <b>Case Studies: from 0% up to 100% Reuse</b>   | <b>Developing Risk Assessment Models</b><br>Microbial and chemical components         |
| 15:50 | Ramezaniapour  | Kehrein   | Madouh  | Smeets  |
| 16:10 | Avellán  | Zhang   | Blach   | Delli Compagni  |
| 16:30 | Kätzl  | Baresel   | Schwaller   | Wigginton   |
| 16:50 | Zinati Shoah   | Foschi  | Cao   | Nocker  |
| 17:10 | Wang   | Khazada   | Döpkens   | Zhiteneva   |
| 17:30 | Lübbe  | Wei   | Billenkamp  | Rien  |
| 17:50 | IWA WATER REUSE SPECIALIST GROUP MEETING (MOA3) (17:50-18:20)        |   |   |   |
| 19:00 | CONFERENCE DINNER (19:00-23:00)<br>(separate registration necessary) |   |   |   |

## PROGRAMME AT A GLANCE

### Wednesday, 19 June 2019

|       |  |   |   |   |
|-------|--|---|---|---|
| Room: | MOA 6-7  |   |   |   |
|       | PLENARY SESSION  |   |   |   |
| 8:30  | Van Houtte   |   |   |   |
|       | McArdell   |   |   |   |
|       | TBA  |   |   |   |
| 9:10  | PANEL DISCUSSION AND POSTER AWARDS                     |   |   |   |
| Room: | MOA 6-7  | MOA 3   | MOA 4   | MOA 5   |
|       | <b>Operation, Maintenance and Service Arrangements</b> | <b>Innovative Treatment Technologies &amp; Applications</b><br>Combining ozonation and biofiltration for potable reuse trains | <b>Urban Reuse including Landscape Irrigation</b><br>Microbial aspects          | <b>Monitoring and Compliance</b><br>Microbial contaminants and decision support |
| 9:30  | Rudolph  | Hübner  | Bell  | Brinkman  |
| 9:50  | Staaks   | Sundaram  | Wu  | Roccaro   |
| 10:10 | Deka   | Bell  | Sathasivan  | Pettenati   |
| 10:30 | Coffee break with posters and exhibition               |   |   |   |
|       | <b>Public Perception and Acceptance</b>                | <b>Innovative Treatment Technologies &amp; Applications</b><br>Combining ozonation and biofiltration for advanced treatment   | <b>Urban Reuse including Landscape Irrigation</b><br>Case studies and valuables | <b>Monitoring and Compliance</b><br>Organic and inorganic contaminants          |
| 11:00 | Kalebaila  | Sauter  | Al-Azzawi   | Steinle-Darling   |
| 11:20 | Montginoul   | Trussell  | Bettazzi  | Hoppe-Jones   |
| 11:40 | Etale  | Slipko  | Salgot  | Neubauer  |
| 12:00 | Schramm/Ebert  | Olvera-Vargas   | Dao   | Takeuchi  |
| 12:20 | Baresel  | Telegang Chekem   | Clement   | Ganguly   |
| 12:40 | Lunch break with posters and exhibition                |   |   |   |
|       | <b>Regulation, Governance and Engagement</b>           | <b>Innovative Treatment Technologies &amp; Applications</b><br>Towards a sustainable society                                  | <b>Concentrate and Residual Management</b>                                      | <b>Market Acceptance of Reuse Solutions</b>                                     |
| 13:40 | Maharaj/Schalkwyk                                      | Viegas  | Hogen   | Steinle-Darling/Thomure/Meeker/Sinicropi/Poling                                 |
| 14:00 | Martinez Lopez   | Xiao  | Hegde   |   |
| 14:20 | Echevarría   | Reoyo-Prats   | Shi   |   |
| 14:40 | Miehe  | Casadellà   |   |   |
| 15:00 | Zimmermann   | Roest   | Xu  | Jeffrey   |
| 15:20 | Coffee break with posters and exhibition               |   |   |   |
| Room: | MOA 6-7  |   |   |   |
| 15:50 | CLOSING SESSION  |   |   |   |

### Thursday, 20 June 2019

|  |  |  |  |  |
|--|--|--|--|--|
|  | TECHNICAL TOURS<br>(separate registration necessary) |  |  |  |
|--|--|--|--|--|



## PROGRAMME

SUNDAY, 16 JUNE 2019

|       |   |  |
|-------|---|--|
|       | Room: MOA 3   | Room: MOA 4  |
| 10:00 | <b>WORKSHOP</b><br>BMBF funding measure WavE:<br>risk management in water reuse –<br>national and international perspectives  | <b>WORKSHOP</b><br>AquaNES QMRA-tool: a webtool for quantitative<br>microbial risk assessment of water reuse<br>applications |
|       | Room: MOA 5   | Room: MOA 6-7  |
| 10:00 | <b>WORKSHOP</b><br>Water reclamation and reuse in development<br>cooperation case studies – challenges, approaches,<br>achievements and the way forward   | <b>WORKSHOP</b><br>Young Water Reuse Professionals development and<br>integration workshop                                   |
| 13:00 | Lunch for workshop participants   |  |
|       | Room: MOA 6-7   |  |
|       | <b>OPENING CEREMONY</b>   |  |
| 14:00 | <b>WELCOME ADDRESS</b><br>J. Drewes <sup>1</sup> ; <sup>1</sup> Technical University of Munich, Garching-Munich/D<br>T. Track <sup>1</sup> ; <sup>1</sup> DECHEMA e.V., Frankfurt am Main/D<br>M. Delay <sup>1</sup> ; <sup>1</sup> Projektträger Karlsruhe, Karlsruhe/D<br>D. D'Arras <sup>1</sup> ; <sup>1</sup> International Water Association/UK   |  |
| 14:30 | <b>WELCOME LECTURE</b><br>Managing the urban water cycle in Berlin<br>J. Simon <sup>1</sup> ; <sup>1</sup> Berliner Wasserbetriebe, Berlin/D  |  |
| 14:50 | <b>WELCOME LECTURE</b><br>Water scarcity, climate change and food security: a solution spectrum<br>D. Gerten <sup>1</sup> ; <sup>1</sup> Potsdam Institute for Climate Impact Research (PIK), Potsdam/D   |  |
| 15:10 | <b>Conference Introduction</b><br>J. Drewes <sup>1</sup> ; <sup>1</sup> Technical University of Munich, Garching-Munich/D   |  |
| 15:30 | Coffee break with posters and exhibition  |  |
|       | Room: MOA 6-7   |  |
|       | <b>Reuse in Developing Countries</b><br>Agricultural reuse  |  |
|       | <i>Chair: P. Cornel; TU Darmstadt/D</i>   |  |
| 16:00 | <b>Integrating sanitation, water reuse and the production of food crops – 6 years of experiences in Central Northern Namibia</b><br>T. Kluge <sup>1</sup> ; S. Liehr <sup>1</sup> ; M. Zimmermann <sup>1</sup> ; P. Cornel <sup>2</sup> ; <sup>1</sup> ISOE - Institute for Social-Ecological Research, Frankfurt am Main/D; <sup>2</sup> Technische Universität Darmstadt/D  |  |
| 16:20 | <b>Waste stabilisation ponds with pre-treatment provide irrigation water – a case study in Namibia.</b><br>J. Sinn <sup>1</sup> ; S. Lackner <sup>1</sup> ; P. Cornel <sup>1</sup> ; <sup>1</sup> TU Darmstadt/D  |  |
| 16:40 | <b>Wastewater disinfection for agricultural reuse using solar radiation in a developing county: field observations</b><br>T. Lima da Silva <sup>1</sup> ; <sup>1</sup> São Paulo State University (UNESP) - Agronomic Science Faculty, Campus of Botucatu/BR  |  |
| 17:00 | <b>On-farm wastewater treatment using biochar from local agroresidues promotes safer irrigation water for food production and enhanced crop yields in West Africa</b><br>K. Kätzl <sup>1</sup> ; M. Lübken <sup>1</sup> ; B. Marschner <sup>1</sup> ; G. Nyarko <sup>2</sup> ; G. Kranjac-Berisavljevic <sup>2</sup> ; K. Stenchly <sup>3</sup> ; M. Wichern <sup>1</sup> ; <sup>1</sup> Ruhr-Universität Bochum/D; <sup>2</sup> University for Development Studies, Tamale/GH; <sup>3</sup> Universität Kassel, Witzenhausen/D |  |
| 17:20 | <b>Remove of antibiotic-resistant bacteria from greywater</b><br>Z. Ronen <sup>1</sup> ; <sup>1</sup> Ben Gurion University of the Negev, Midreshet Ben Gurion/IL   |  |
| 17:40 | <b>WELCOME RECEPTION</b> in the exhibition hall (17:40-20:00)   |  |

SUNDAY, 16 JUNE 2019

## PROGRAMME

|       |   |
|-------|---|
|       | Room: MOA 6-7   |
|       | <b>OPENING CEREMONY</b>   |
| 14:00 | <b>WELCOME ADDRESS</b><br>J. Drewes <sup>1</sup> ; <sup>1</sup> Technical University of Munich, Garching-Munich/D<br>T. Track <sup>1</sup> ; <sup>1</sup> DECHEMA e.V., Frankfurt am Main/D<br>M. Delay <sup>1</sup> ; <sup>1</sup> Projektträger Karlsruhe, Karlsruhe/D<br>D. D'Arras <sup>1</sup> ; <sup>1</sup> International Water Association/UK   |
| 14:30 | <b>WELCOME LECTURE</b><br>Managing the urban water cycle in Berlin<br>J. Simon <sup>1</sup> ; <sup>1</sup> Berliner Wasserbetriebe, Berlin/D  |
| 14:50 | <b>WELCOME LECTURE</b><br>Water scarcity, climate change and food security: a solution spectrum<br>D. Gerten <sup>1</sup> ; <sup>1</sup> Potsdam Institute for Climate Impact Research (PIK), Potsdam/D   |
| 15:10 | <b>Conference Introduction</b><br>J. Drewes <sup>1</sup> ; <sup>1</sup> Technical University of Munich, Garching-Munich/D   |
| 15:30 | Coffee break with posters and exhibition  |
|       | Room: MOA 3   |
|       | <b>Direct Potable Reuse</b><br>Direct potable reuse across the globe  |
|       | <i>Chair: M. Meeker<sup>1</sup>; V. Zhiteneva<sup>2</sup>; <sup>1</sup> Gwinnett County, Lawrenceville, GA/USA; <sup>2</sup> Technical University of Munich, Garching/D</i>   |
| 16:00 | <b>The view from Australia</b><br>S. Wilson <sup>1</sup> ; A. Lovell <sup>1</sup> ; D. Francis <sup>1</sup> ; <sup>1</sup> Water Services Association of Australia, Sydney/AUS  |
| 16:20 | <b>Development of regulatory criteria for direct potable reuse in the United States</b><br>J. Mosher <sup>1</sup> ; J. Minton <sup>2</sup> ; G. Vartanian <sup>3</sup> ; <sup>1</sup> Carollo Engineers, Los Angeles/USA; <sup>2</sup> The Water Research Foundation, Alexandria/USA; <sup>3</sup> National Water Research Institute, Fountain Valley/USA   |
| 16:40 | <b>Potable water reuse in California – Update on recent developments, regulations and research topics (USA)</b><br>A. Olivieri <sup>1</sup> ; <sup>1</sup> EOA, INC., USA/USA   |
| 17:00 | <b>Emerging contaminants in wastewater treated for direct potable re-use: the human health risk priorities in South Africa</b><br>C. Swartz <sup>1</sup> ; B. Genthe <sup>2</sup> ; J. Menge <sup>3</sup> ; C. Coomans <sup>1</sup> ; <sup>1</sup> Chris Swartz Water Utilisation Engineers, Durbanville, Cape Town/ZA; <sup>2</sup> Council for Scientific and Industrial Research (CSIR), Stellenbosch/ZA; <sup>3</sup> Consultant/City of Windhoek, Windhoek/NAM |
| 17:20 | <b>How will switching from water recycling to resource factories impact disinfection by product formation?</b><br>B. Jefferson <sup>1</sup> ; <sup>1</sup> Cranfield University, Cranfield/UK   |
| 17:40 | <b>WELCOME RECEPTION</b> in the exhibition hall (17:40-20:00)   |

## PROGRAMME

SUNDAY, 16 JUNE 2019

Room: MOA 6-7

| OPENING CEREMONY |  |
|------------------|--|
| 14:00            | <p><b>WELCOME ADDRESS</b></p> <p><u>J. Drewes</u><sup>1</sup>; <sup>1</sup> Technical University of Munich, Garching-Munich/D<br/> <u>T. Track</u><sup>1</sup>; <sup>1</sup> DECHEMA e.V., Frankfurt am Main/D<br/> <u>M. Delay</u><sup>1</sup>; <sup>1</sup> Projektträger Karlsruhe, Karlsruhe/D<br/> <u>D. D'Arras</u><sup>1</sup>; <sup>1</sup> International Water Association/UK</p> |
| 14:30            | <p><b>WELCOME LECTURE</b></p> <p><b>Managing the urban water cycle in Berlin</b><br/> <u>J. Simon</u><sup>1</sup>; <sup>1</sup> Berliner Wasserbetriebe, Berlin/D</p>  |
| 14:50            | <p><b>WELCOME LECTURE</b></p> <p><b>Water scarcity, climate change and food security: a solution spectrum</b><br/> <u>D. Gerten</u><sup>1</sup>; <sup>1</sup> Potsdam Institute for Climate Impact Research (PIK), Potsdam/D</p>   |
| 15:10            | <p><b>Conference Introduction</b><br/> <u>J. Drewes</u><sup>1</sup>; <sup>1</sup> Technical University of Munich, Garching-Munich/D</p>  |
| 15:30            | Coffee break with posters and exhibition   |

Room: MOA 4

| Industrial Reuse<br>Chemical and petro-chemical industry   |   |
|--|---|
| <i>Chair: J. Lahnsteiner; VA TECH WABAG GmbH, Vienna/A</i> |   |
| 16:00  | <p><b>Recycling of industrial process brines</b><br/> <u>Y. Schießer</u><sup>1</sup>; C. Bloecher<sup>1</sup>; <sup>1</sup> Covestro Deutschland AG, Leverkusen/D</p>   |
| 16:20  | <p><b>Innovative technologies for reuse of petrochemical condensates</b><br/> <u>I. Veleva</u><sup>1</sup>; M. Vanoppen<sup>1</sup>; N. Groot<sup>2</sup>; A. Verliefe<sup>1</sup>; <sup>1</sup> Ghent University (UGent), Ghent/B; <sup>2</sup> Dow Benelux NV, Terneuzen/NL</p>   |
| 16:40  | <p><b>Industrial reuse of advanced reclaimed water: six years of experience in Camp de Tarragona</b><br/> <u>J. Sanz</u><sup>1</sup>; R. Mujeriego<sup>2</sup>; D. Montserrat<sup>3</sup>; Y. Poussade<sup>4</sup>; V. Gómez<sup>5</sup>; <sup>1</sup> Veolia Water Technologies, Sant Cugat del Vallès/E; <sup>2</sup> Universidad Politécnica de Catalunya, Barcelona/E; <sup>3</sup> AITASA, Bonavista/E; <sup>4</sup> VEOLIA, Aubervilliers/F; <sup>5</sup> Dow Water Solutions, Tarragona/E</p>  |
| 17:00  | <p><b>Condensate reuse in the chemical industry - pilot scale experience</b><br/> <u>M. Vanoppen</u><sup>1</sup>; E. De Meyer<sup>1</sup>; I. Hitsov<sup>1</sup>; F. Fasaei<sup>2</sup>; H. Cappon<sup>2</sup>; E. van den Brande<sup>3</sup>; A. Verliefe<sup>1</sup>;<br/> <sup>1</sup> Ghent University (UGent), Gent/B; <sup>2</sup> Hogeschool Zeeland, Vlissingen/NL; <sup>3</sup> Yara Sluiskil B.V., Sluiskil/NL</p>  |
| 17:20  | <p><b>Advanced Zero Liquid Discharge concept for the chemical industry</b><br/> M. Pastur Romay<sup>1</sup>; S. Vila<sup>2</sup>; C. Niewersch<sup>2</sup>; C. Pătruț<sup>3</sup>; <u>J. Kochan</u><sup>4</sup>; R. Wünsch<sup>5</sup>; L. van Dijk<sup>3</sup>; C. Kazner<sup>6</sup>; J. Koppe<sup>7</sup>;<br/> J. Palacín<sup>1</sup>; F. Zorn<sup>4</sup>; <sup>1</sup> Clariant Ibérica Producción, Tarragona/E; <sup>2</sup> Dow Water &amp; Process Solution, Tarragona/E;<br/> <sup>3</sup> Blue-Tec, Renkum/NL; <sup>4</sup> Clariant Produkte (Deutschland) GmbH, Frankfurt/D; <sup>5</sup> FHNW - University of Applied Sciences and Arts Northwestern Switzerland, Basel/CH; <sup>6</sup> Ruhr Universität Bochum, Bochum/D;<br/> <sup>7</sup> MOL Katalysatortechnik GmbH, Schkopau/D</p> |
| 17:40  | <b>WELCOME RECEPTION</b> in the exhibition hall (17:40-20:00)   |

SUNDAY, 16 JUNE 2019

Room: MOA 6-7

| OPENING CEREMONY |  |
|------------------|--|
| 14:00            | <p><b>WELCOME ADDRESS</b></p> <p><u>J. Drewes</u><sup>1</sup>; <sup>1</sup> Technical University of Munich, Garching-Munich/D<br/> <u>T. Track</u><sup>1</sup>; <sup>1</sup> DECHEMA e.V., Frankfurt am Main/D<br/> <u>M. Delay</u><sup>1</sup>; <sup>1</sup> Projektträger Karlsruhe, Karlsruhe/D<br/> <u>D. D'Arras</u><sup>1</sup>; <sup>1</sup> International Water Association/UK</p> |
| 14:30            | <p><b>WELCOME LECTURE</b></p> <p><b>Managing the urban water cycle in Berlin</b><br/> <u>J. Simon</u><sup>1</sup>; <sup>1</sup> Berliner Wasserbetriebe, Berlin/D</p>  |
| 14:50            | <p><b>WELCOME LECTURE</b></p> <p><b>Water scarcity, climate change and food security: a solution spectrum</b><br/> <u>D. Gerten</u><sup>1</sup>; <sup>1</sup> Potsdam Institute for Climate Impact Research (PIK), Potsdam/D</p>   |
| 15:10            | <p><b>Conference Introduction</b><br/> <u>J. Drewes</u><sup>1</sup>; <sup>1</sup> Technical University of Munich, Garching-Munich/D</p>  |
| 15:30            | Coffee break with posters and exhibition   |

Room: MOA 5

| Integrating Reuse in Existing Systems                    |  |
|--|--|
| <i>Chair: S. Geißen; Technische Universität Berlin/D</i> |  |
| 16:00  | <p><b>Sustainable integration of water reuse in a multi-resources system</b><br/> <u>A. Adin</u><sup>1</sup>; <sup>1</sup> Hebrew University of Jerusalem, Herzliya/IL</p>   |
| 16:20  | <p><b>Evaluation of the sustainability of wastewater reuse in agriculture: development and application of a holistic approach</b><br/> <u>P. Roccaro</u><sup>1</sup>; <sup>1</sup> Università degli Studi di Catania, Catania/I</p>  |
| 16:40  | <p><b>Making it happen: water reuse regulatory frame in Colombia: bottleneck and wicked problems to overcome</b><br/> <u>S. Caucci</u><sup>1</sup>; H. Hettiarachchi<sup>1</sup>; N. Jimenez<sup>1</sup>; <sup>1</sup> United Nations University -Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES), Dresden/D</p>  |
| 17:00  | <p><b>Water reuse in hydroponic systems: results from four European feasibility studies</b><br/> <u>M. Mohr</u><sup>1</sup>; T. Günkel-Lange<sup>2</sup>; M. Fischer<sup>3</sup>; J. Germer<sup>4</sup>; M. Winker<sup>3</sup>; G. Bürgow<sup>5</sup>; <sup>1</sup> Fraunhofer IGB, Stuttgart/D;<br/> <sup>2</sup> aquadrat ingenieure GmbH, Griesheim/D; <sup>3</sup> ISOE - Institut fuer sozial-oekologische Forschung, Frankfurt/D;<br/> <sup>4</sup> University of Hohenheim, Stuttgart/D; <sup>5</sup> aquatectura, Berlin/D</p> |
| 17:20  | <p><b>Design of a water reuse network in an industrial site in Kenya</b><br/> <u>E. Ramin</u><sup>1</sup>; C. Schneider<sup>1</sup>; V. Takou<sup>1</sup>; A. Damgaard<sup>1</sup>; A. Setti<sup>1</sup>; C. Helix-Nielsen<sup>1</sup>; X. Alsina<sup>1</sup>; P. Ramin<sup>1</sup>; K. Gernaey<sup>1</sup>;<br/> M. Andersen<sup>1</sup>; <sup>1</sup> Technical University of Denmark (DTU), Kgs. Lyngby/DK</p>  |
| 17:40  | <b>WELCOME RECEPTION</b> in the exhibition hall (17:40-20:00)  |

## PROGRAMME

MONDAY, 17 JUNE 2019

## MORNING

Room: MOA 6-7

08:30 **PLENARY LECTURE**  
**Opportunities and challenges to implement and grow water reuse in Africa**  
 A. Bahri<sup>1</sup>; <sup>1</sup> National Agricultural Institute of Tunisia (INAT), Tunis/TN

09:00 **PLENARY LECTURE**  
**The experience on practicing direct potable reuse in Windhoek, Namibia**  
 P. van Rensburg<sup>1</sup>; <sup>1</sup> City of Windhoek, Windhoek/NAM

Room: MOA 6-7

**Reuse in Developing Countries**  
 Treatment technologies

Chair: S. Karakurt; Technical University of Munich, Garching/D

09:30 **Evaluating woven textile filtration and ultraviolet light emitting diodes (UV-LEDs) for water reuse in developing economies**  
 S. Beck<sup>1</sup>; <sup>1</sup> EAWAG, Dübendorf/CH

09:50 **Comparison of treated effluents characteristics from full-scale of wetland systems in Thailand, Japan, and USA**  
 P. Noophan<sup>1</sup>; <sup>1</sup> Faculty of Engineering, Kasetsart University, Kasetsart U, Bangkok/T

10:10 **Characterization and treatment of greywater from a commercial building by dissolved air flotation for non-potable reuse**  
 T. Cintra<sup>1</sup>; J. Schner<sup>1</sup>; G. Ramos<sup>1</sup>; R. Etchepare<sup>1</sup>; <sup>1</sup> UFPR, Curitiba/BR

10:30 Coffee break with posters and exhibition

Room: MOA 6-7

**Reuse in Developing Countries**  
 Opportunities, strategies, risks

Chair:

11:00 **Wastewater reclamation and reuse in India: review and strategic issues**  
 K. Goyal<sup>1</sup>; A. Kumar<sup>1</sup>; <sup>1</sup> Indian Institute of technology, Roorkee, Roorkee/IND

11:20 **Evaluation of water reuse models and development potentials in urban areas of China**  
 Z. Chen<sup>1</sup>; <sup>1</sup> Tsinghua University, Beijing/CN

11:40 **Safe reuse of water in developing countries: a risk-based approach for managing emerging contaminants**  
 N. Kalebaila<sup>1</sup>; <sup>1</sup> Water Research Commission of South Africa, Pretoria/ZA

12:00 **Opportunities and obstacles for wastewater reclamation and reuse in Turkey**  
 B. NAS<sup>1</sup>; S. UYANIK<sup>2</sup>; S. Doğan<sup>1</sup>; A. Aygün<sup>3</sup>; T. Dolu<sup>1</sup>; <sup>1</sup> Konya Technical University, Konya/TR; <sup>2</sup> Harran University, Şanlıurfa/TR; <sup>3</sup> Bursa Technical University, Bursa/TR

12:20 **Poster pitches**

12:40 Lunch break with posters and exhibition

MONDAY, 17 JUNE 2019

## PROGRAMME

## MORNING

Room: MOA 6-7

08:30 **PLENARY LECTURE**  
**Opportunities and challenges to implement and grow water reuse in Africa**  
 A. Bahri<sup>1</sup>; <sup>1</sup> National Agricultural Institute of Tunisia (INAT), Tunis/TN

09:00 **PLENARY LECTURE**  
**The experience on practicing direct potable reuse in Windhoek, Namibia**  
 P. van Rensburg<sup>1</sup>; <sup>1</sup> City of Windhoek, Windhoek/NAM

Room: MOA 3

**Direct Potable Reuse**  
 DPR developments in the United States

Chair: J. Mosher; Carollo Engineers, Los Angeles/USA

09:30 **Novel Non-RO direct potable reuse in the United States**  
 A. Salveson<sup>1</sup>; E. Steinle-Darling<sup>2</sup>; J. Mosher<sup>3</sup>; <sup>1</sup> Carollo Engineers, Walnut Creek/USA; <sup>2</sup> Carollo Engineers, Austin/USA; <sup>3</sup> Carollo Engineers, Los Angeles/USA

09:50 **Potable reuse and public health: QMRA from the DPR demonstration project**  
 B. Pecson<sup>1</sup>; R. Trussell<sup>2</sup>; S. Triolo<sup>1</sup>; A. Olivieri<sup>3</sup>; R. Trussell<sup>4</sup>; <sup>1</sup> Trussell Technologies, Inc., Oakland/USA; <sup>2</sup> Trussell Technologies, Inc., Solana Beach/USA; <sup>3</sup> EOA, INC., Oakland/USA; <sup>4</sup> Trussell Technologies, Inc., Pasadena/USA

10:10 **Direct potable reuse research update: DPR-4, treatment for averaging chemical peaks**  
 J. Debroux<sup>1</sup>; R. Trussell<sup>2</sup>; M. Plumlee<sup>3</sup>; <sup>1</sup> Kennedy/Jenks Consultants, San Francisco/USA; <sup>2</sup> Trussell Technologies, Inc., San Diego/USA; <sup>3</sup> Orange County Water District, Fountain Valley/USA

10:30 Coffee break with posters and exhibition

Room: MOA 3

**Direct Potable Reuse**  
 Performance assessment for DPR trains

Chair: M. Muston; University of Wollongong, Fairy Meadow NSW/AUS

11:00 **Application of pre-ozonation and biofiltration in potable reuse water reclamation – Characterization of microbial community**  
 L. Li<sup>1</sup>; T. Guarin<sup>2</sup>; V. Sundaram<sup>3</sup>; L. Peri<sup>4</sup>; K. Pagilla<sup>2</sup>; <sup>1</sup> University of Nevada, Reno, Reno, NV, USA/USA; <sup>2</sup> University of Nevada, Reno, Reno/USA; <sup>3</sup> Stantec, Sacramento/USA; <sup>4</sup> Washoe County CSD, Reno/USA

11:20 **Reclamation of secondary effluents from the municipal wastewater plant – A pilot test and economic evaluation**  
 F. Ni<sup>1</sup>; <sup>1</sup> Eco-digital Tech Inc., Taipei/RC

11:40 **Real-time bacteriological counting for integrity monitoring of reverse osmosis treatment for potable reuse**  
 T. Fujioka<sup>1</sup>; M. Leddy<sup>2</sup>; <sup>1</sup> Nagasaki University, Nagasaki/J; <sup>2</sup> Essential Environmental and Engineering Systems, Huntington Beach/USA

12:00 **Validation of ceramic membrane filtration for removing enteric viruses in tertiary treated wastewater**  
 T. Yonetani<sup>1</sup>; A. Hata<sup>2</sup>; Y. Matsui<sup>1</sup>; L. A. Ikner<sup>3</sup>; C. P. Gerba<sup>3</sup>; H. Katayama<sup>2</sup>; <sup>1</sup> METAWATER co., Ltd., Tokyo/J; <sup>2</sup> The University of Tokyo/J; <sup>3</sup> The University of Arizona, Tucson, Arizona/USA

12:20 **Poster pitches**

12:40 Lunch break with posters and exhibition

## PROGRAMME

MONDAY, 17 JUNE 2019

## MORNING

Room: MOA 6-7

08:30 **PLENARY LECTURE**  
**Opportunities and challenges to implement and grow water reuse in Africa**  
 A. Bahri<sup>1</sup>; <sup>1</sup> National Agricultural Institute of Tunisia (INAT), Tunis/TN

09:00 **PLENARY LECTURE**  
**The experience on practicing direct potable reuse in Windhoek, Namibia**  
 P. van Rensburg<sup>1</sup>; <sup>1</sup> City of Windhoek, Windhoek/NAM

Room: MOA 4

### Industrial Reuse

Food and beverage industry

Chair: T. Track; <sup>1</sup> DECHEMA e.V., Frankfurt am Main/D

09:30 **Eco-efficiency of on-site water reclamation at a large brewery**  
 B. Godskesen<sup>1</sup>; D. Sundaram D.<sup>1</sup>; H. Albrechtsen<sup>1</sup>; M. Rygaard<sup>1</sup>; <sup>1</sup> Technical University of Denmark (DTU), Lyngby/DK

09:50 **Water efficiency in food industry – ways to improvements**  
 H. Albrechtsen<sup>1</sup>; <sup>1</sup> Technical University of Denmark, Kgs. Lyngby/DK

10:10 **Water reuse in food industry – Practical examples from dairy and potato processing industry**  
 K. Dickhoff<sup>1</sup>; <sup>1</sup> EnviroChemie GmbH, Rossdorf/D

10:30 Coffee break with posters and exhibition

Room: MOA 5

### Industrial Reuse

Miscellaneous industries

Chair: N. Groot; <sup>1</sup> Dow Benelux BV, Hoek/NL

11:00 **Industrial water reclamation and reuse in India**  
 J. Lahnsteiner<sup>1</sup>; P. Andrade<sup>2</sup>; R. Mittal<sup>2</sup>; <sup>1</sup> VA TECH WABAG, Vienna/A; <sup>2</sup> VA TECH WABAG Ltd., Chennai/IND

11:20 **The Dow Terneuzen 2025 water reuse concept – Incorporating over 20 years of industrial water reuse experience**  
 J. Henkel<sup>1</sup>; M. Slagt<sup>2</sup>; N. Groot<sup>2</sup>; <sup>1</sup> Dow DuPont, Rheinmuenster/D; <sup>2</sup> Dow Benelux BV, Terneuzen/NL

11:40 **Advanced RO for water reuse and brine concentration in Copper Smelter effluents**  
 I. Martín García<sup>1</sup>; J. Salinero<sup>1</sup>; M. Arnaiz Orts<sup>1</sup>; X. Bernat<sup>1</sup>; A. Mejía<sup>2</sup>; I. Ruiz<sup>2</sup>; G. Rios<sup>2</sup>; C. Echevarria<sup>1</sup>; <sup>1</sup> Cetaqua, Centro tecnológico del agua, Cornellà de Llobregat,/E; <sup>2</sup> Atlantic Copper S.L.U., Huelva/E

12:00 **Water Research Foundation's agricultural water reuse research efforts**  
 K. VandenHeuvel<sup>1</sup>; J. Mattingly<sup>2</sup>; <sup>1</sup> Water Research Foundation, Alexandria/USA; <sup>2</sup> Water Research Foundation, Alexandria, VA/USA

12:20 **Poster pitches**

12:40 Lunch break with posters and exhibition

MONDAY, 17 JUNE 2019

## PROGRAMME

## MORNING

Room: MOA 6-7

08:30 **PLENARY LECTURE**  
**Opportunities and challenges to implement and grow water reuse in Africa**  
 A. Bahri<sup>1</sup>; <sup>1</sup> National Agricultural Institute of Tunisia (INAT), Tunis/TN

09:00 **PLENARY LECTURE**  
**The experience on practicing direct potable reuse in Windhoek, Namibia**  
 P. van Rensburg<sup>1</sup>; <sup>1</sup> City of Windhoek, Windhoek/NAM

Room: MOA 5

### New Perspectives in Reuse

Chair:

09:30 **Smart Ferti Tool: a smart fertigation solution as a decision support tool to irrigate with treated wastewater**  
 K. Helmi<sup>1</sup>; S. Grellier<sup>1</sup>; B. Teiser<sup>2</sup>; T. Dockhorn<sup>3</sup>; C. Siemers<sup>4</sup>; <sup>1</sup> Veolia Recherche et Innovation, Maisons-Laffitte/F; <sup>2</sup> AVB - Abwasserverband Braunschweig, Wendenburg/D; <sup>3</sup> TUBS - Technische Universität Braunschweig/D; <sup>4</sup> SEBS - Stadtentwässerung Braunschweig/D

09:50 **Constructed wetlands in Italy between national and proposed EU reuse regulations: viable option for water reuse in agriculture?**  
 S. Lavrnić<sup>1</sup>; A. Toscano<sup>1</sup>; <sup>1</sup> University of Bologna/I

10:10 **Potential of electrically driven membrane processes for water reuse applications**  
 D. Londoño<sup>1</sup>; E. Gilbert<sup>1</sup>; <sup>1</sup> EnviroChemie GmbH, Rossdorf/D

10:30 Coffee break with posters and exhibition

Room: MOA 4

### Integrated Reuse Systems (industrial, urban, rural)

Chair: K. Krömer<sup>1</sup>; C. Jungfer<sup>2</sup>; <sup>1</sup> OOWV (Oldenburgisch-Ostfriesischer Wasserverband), Brake/D; <sup>2</sup> DECHEMA e.V., Frankfurt am Main/D

11:00 **Reuse of municipal wastewater for different purposes based on a modular treatment concept**  
 A. Nahrstedt<sup>1</sup>; B. Zimmermann<sup>1</sup>; A. Gaba<sup>1</sup>; A. Rohn<sup>1</sup>; K. Krömer<sup>2</sup>; Y. Tiemann<sup>2</sup>; C. Starke<sup>3</sup>; J. Lipnitski<sup>4</sup>; U. Dölchow<sup>4</sup>; K. Mende<sup>5</sup>; <sup>1</sup> IWW Zentrum Wasser, Mülheim an der Ruhr/D; <sup>2</sup> OOWV (Oldenburgisch-Ostfriesischer Wasserverband), Brake/D; <sup>3</sup> Inge GmbH, Greifenberg/D; <sup>4</sup> Lanxess Deutschland GmbH, Köln/D; <sup>5</sup> De.EnCon GmbH, Oldenburg/D

11:20 **Aquifer storage and recovery (ASR) to enable water reuse across sectors: wastewater from food industry turned into irrigation water for greenhouses**  
 K. Raat<sup>1</sup>; <sup>1</sup> KWR Watercycle Research Institute, Nieuwegein/NL

11:40 **Use of salty groundwater for toilet flushing to substitute drinking water – water and microbial quality**  
 H. Albrechtsen<sup>1</sup>; <sup>1</sup> Technical University of Denmark, Kgs. Lyngby/DK

12:00 **Upscaling of innovative PBM coating for Polyether Sulfone membranes within the VicInAqua pilot project**  
 E. Gukelberger<sup>1</sup>; F. Galiano<sup>2</sup>; R. Mancuso<sup>3</sup>; J. Mamo<sup>4</sup>; K. Hoevenaars<sup>4</sup>; J. Hoinkis<sup>1</sup>; B. Gabriele<sup>3</sup>; A. Figoli<sup>2</sup>; <sup>1</sup> Hochschule Karlsruhe - Technik und Wirtschaft, Karlsruhe/D; <sup>2</sup> Institute on Membrane Technology ITM-CNR, Rende (CS)/I; <sup>3</sup> University of Calabria, Rende (CS)/I; <sup>4</sup> AquaBioTech Group, Mosta/M

12:20 **Poster pitches**

12:40 Lunch break with posters and exhibition



## PROGRAMME

MONDAY, 17 JUNE 2019

## AFTERNOON

Room: MOA 6-7

## Groundwater Recharge

New managed aquifer recharge and biofiltration concepts

## Chair:

- 13:40 **Managed aquifer recharge: history, practice and applied research in Berlin, Germany**  
A. Sperlich<sup>1</sup>; S. Schimmelpfennig<sup>1</sup>; G. Grützmacher<sup>1</sup>; G. Massmann<sup>2</sup>; J. Greskowiak<sup>2</sup>; J. Drewes<sup>3</sup>; U. Hübner<sup>3</sup>; R. Gnirss<sup>1</sup>; <sup>1</sup> Berliner Wasserbetriebe, Berlin/D; <sup>2</sup> Carl von Ossietzky Universität Oldenburg/D; <sup>3</sup> TU München/D
- 14:00 **Groundwater recharge as a key technology for water reuse**  
H. Gerdes<sup>1</sup>; M. Ergh<sup>1</sup>; <sup>1</sup> BGS Umweltplanung GmbH, Darmstadt/D
- 14:20 **Multidimensional reactive transport model of trace organic compounds in an infiltration pond (Baumwerder Island, Berlin)**  
A. Sanz Prat<sup>1</sup>; V. Burke<sup>1</sup>; J. Greskowiak<sup>1</sup>; I. Schröter<sup>1</sup>; C. Rohde<sup>1</sup>; J. Diether<sup>2</sup>; J. Frankenstein<sup>2</sup>; A. Sperlich<sup>2</sup>; G. Massmann<sup>1</sup>; <sup>1</sup> Carl von Ossietzky University of Oldenburg, Oldenburg/D; <sup>2</sup> Berliner Wasserbetriebe, Berlin/D
- 14:40 **Elimination of antibiotic resistant bacteria, viruses and indicator bacteria in sequential bio filtration for purification of WWTP effluent**  
J. Ho<sup>1</sup>; J. Bühler<sup>1</sup>; U. Hübner<sup>2</sup>; J. Drewes<sup>2</sup>; A. Tieh<sup>1</sup>; <sup>1</sup> TZW: DVGW-Technologiezentrum Wasser, Karlsruhe/D; <sup>2</sup> Technical University of Munich, Garching/D
- 15:00 **Poster pitches**
- 15:20 **Coffee break with posters and exhibition**

Room: MOA 6-7

## Groundwater Recharge

Enhancement of managed aquifer recharge systems

## Chair:

- 15:50 **Enhancing the removal of trace organic contaminants in an ozone-biofiltration process for advanced water treatment and managed aquifer recharge**  
R. Vaidya<sup>1</sup>; G. Salazar-Benites<sup>2</sup>; C. Wilson<sup>2</sup>; C. Bott<sup>2</sup>; <sup>1</sup> Virginia Tech, Blacksburg/USA; <sup>2</sup> Hampton Roads Sanitation District, Virginia Beach/USA
- 16:10 **UV/H<sub>2</sub>O<sub>2</sub> as pre-treatment before managed aquifer recharge in drinking water production – impact on bulk water parameters and micropollutant abatement**  
R. Wünsch<sup>1</sup>; J. Plattner<sup>2</sup>; F. Eugster<sup>2</sup>; C. David<sup>3</sup>; N. Rastetter<sup>3</sup>; R. Hochstrat<sup>3</sup>; J. Gebhardt<sup>4</sup>; P. Temmler<sup>2</sup>; R. Wülser<sup>2</sup>; U. von Gunten<sup>2</sup>; T. Wintgens<sup>3</sup>; <sup>1</sup> FHNW University of Applied Sciences and Arts Northwestern Switzerland/ Ecole Polytechnique Fédérale de Lausanne (EPFL), Muttenez/CH; <sup>2</sup> IWB (Industrielle Werke Basel), Basel/CH; <sup>3</sup> FHNW University of Applied Sciences and Arts Northwestern Switzerland, Muttenez/CH; <sup>4</sup> Xylem Services GmbH, Herford/D; <sup>5</sup> Ecole Polytechnique Fédérale de Lausanne (EPFL) / Eawag, Lausanne/CH
- 16:30 **The removal of emerging organic contaminants in managed aquifer recharge schemes to ensure a safe, sustainable and high quality water resource.**  
P. Reeve<sup>1</sup>; I. Wallis<sup>1</sup>; J. Hutson<sup>1</sup>; H. Fallowfield<sup>1</sup>; <sup>1</sup> Flinders University, Adelaide/AUS
- 16:50 **Managing the urban water cycle in Berlin: Implementing barriers for trace organic compounds and antibiotic resistant bacteria**  
R. Gnirss<sup>1</sup>; A. Sperlich<sup>1</sup>; M. Jekel<sup>2</sup>; C. Stange<sup>3</sup>  
<sup>1</sup> Berliner Wasserbetriebe, Berlin/D; <sup>2</sup> Technische Universität Berlin, Berlin/D; <sup>3</sup> DVGW-Technologiezentrum Wasser (TZW), Karlsruhe/D
- 17:10 **Recharge local water cycle from surface water and wastewater reuse**  
S. DONNAZ<sup>1</sup>; M. Sanz<sup>1</sup>; <sup>1</sup> Suez International Treatment Infrastructure, RUEIL-MALMAISON/F

Room: MOA 6-7

Candidate 2021 presentations

18:10 **POSTER AND EXHIBITION PARTY with drinks and buffet (18:10 – 21:00)**

MONDAY, 17 JUNE 2019

## PROGRAMME

## AFTERNOON

Room: MOA 3

## Direct Potable Reuse

Challenges in DPR

Chair: R. Gnirss; <sup>1</sup> Berliner Wasserbetriebe, Berlin/D

- 13:40 **Anaerobic secondary treatment and potable reuse: RO fouling and DBP formation**  
A. Szczuka<sup>1</sup>; W. Mitch<sup>2</sup>; <sup>1</sup> Stanford University, STANFORD/USA; <sup>2</sup> Stanford University, Stanford, CA/USA
- 14:00 **Online monitoring of N-nitrosodimethylamine for assessing the removal of trace organic chemicals by reverse osmosis**  
T. Fujioka<sup>1</sup>; H. Takeuchi<sup>2</sup>; H. Tanaka<sup>2</sup>; L. Nghiem<sup>3</sup>; H. Kodamatani<sup>4</sup>; <sup>1</sup> Nagasaki University, Nagasaki/J; <sup>2</sup> Kyoto University, Otsu/J; <sup>3</sup> University of Technology Sydney/AUS; <sup>4</sup> Kagoshima University, Kagoshima/J
- 14:20 **Evaluating disinfection byproduct regulations for limiting human health risk after ozone-biofiltration-GAC treatment for potable reuse**  
E. Peterson<sup>1</sup>; S. Johnson<sup>1</sup>; S. Shiokari<sup>1</sup>; Y. Yu<sup>1</sup>; S. Cook<sup>1</sup>; R. Summers<sup>1</sup>; <sup>1</sup> University of Colorado Boulder/USA
- 14:40 **Development of a group contribution method to predict the mass transfer coefficients of small molecular weight neutral organics through RO membranes for potable reuse application**  
D. Minakata<sup>1</sup>; R. Kibler<sup>1</sup>; M. Zhang<sup>1</sup>; L. Breitner<sup>2</sup>; K. Howe<sup>3</sup>; <sup>1</sup> Michigan Technological University, Houghton/USA; <sup>2</sup> Trussell Technologies, Inc., San Diego/USA; <sup>3</sup> University of New Mexico, Albuquerque/USA
- 15:00 **Poster pitches**
- 15:20 **Coffee break with posters and exhibition**

Room: MOA 3

## Direct Potable Reuse

Disruptive membrane treatments and their applications

## Chair:

- 15:50 **Advances in forward osmosis to combine desalination and reuse**  
G. Blandin<sup>1</sup>; J. Comas<sup>2</sup>; A. Verliefe<sup>3</sup>; P. Le-Clech<sup>4</sup>; I. Rodriguez-Roda<sup>2</sup>; <sup>1</sup> University of Girona, GIRONA/E; <sup>2</sup> Fundació Català de Recerca de l'Aigua (ICRA), Girona/E; <sup>3</sup> Ghent University (UGent), Ghent/B; <sup>4</sup> UNSW, Sydney/AUS
- 16:10 **FO-NF treatment of municipal wastewater for customized agricultural reuse**  
A. Álvarez<sup>1</sup>; T. de la Torre<sup>1</sup>; J. Malfeito<sup>1</sup>; <sup>1</sup> Acciona Agua, El Prat de Llobregat/E
- 16:30 **Disruptive water reuse scheme based on Direct Ultrafiltration (DUF) of municipal wastewater**  
D. Baaklini<sup>1</sup>; H. Humbert<sup>1</sup>; <sup>1</sup> Veolia, Aubervilliers/F
- 16:50 **A novel self-cleaning electrospun BiOBr/Ag photocatalyst membrane with UV exposure applied for membrane distillation treatment of textile wastewater.**  
J. GUO<sup>1</sup>; <sup>1</sup> City University of Hong Kong, City University of Hong Kong/HK
- 17:10 **Water reclamation with hybrid powdered activated carbon / ceramic microfiltration: pilot studies for the removal of EfOM and contaminants of emerging concern**  
R. Viegas<sup>1</sup>; E. Mesquita<sup>1</sup>; M. Campinas<sup>1</sup>; C. Almeida<sup>2</sup>; M. Rosa<sup>1</sup>; <sup>1</sup> LNEC – National Civil Engineering Laboratory, Lisbon/P; <sup>2</sup> Department of Toxicological and Bromatological Sciences, Faculty of Pharmacy, University of Lisbon, Lisbon/P
- 17:35 **Candidate 2021 presentations**
- 18:10 **POSTER AND EXHIBITION PARTY with drinks and buffet (18:10 – 21:00)**

Room: MOA 6-7

## PROGRAMME

MONDAY, 17 JUNE 2019

## AFTERNOON

Room: MOA 4

## Industrial Reuse

Planning and assessment of industrial water reuse concepts

## Chair:

- 13:40 **Sustainability requirements of wastewater management concepts for new industrial park developments in water-stressed regions**  
S. Bauer<sup>1</sup>; A. Dell<sup>1</sup>; J. Behnisch<sup>2</sup>; H. Linke<sup>1</sup>; M. Wagner<sup>2</sup>; <sup>1</sup> Technische Universität Darmstadt, Institut für Geodäsie, Darmstadt/D; <sup>2</sup> Technische Universität Darmstadt/ Institut IWAR, Darmstadt/D
- 14:00 **Dealing with uncertainty in the conceptual design of industrial water reuse networks**  
D. Pohl<sup>1</sup>; M. Beier<sup>2</sup>; S. Köster<sup>2</sup>; <sup>1</sup> Leibniz University Hannover, Hannover/D; <sup>2</sup> Leibniz University Hannover, Institute of Sanitary Engineering and Waste Management (ISAH), Hannover/D
- 14:20 **development of a decision support tool to foster water reuse**  
M. Jacob<sup>1</sup>; B. Delahaye<sup>2</sup>; J. Bayart<sup>3</sup>; <sup>1</sup> Total S.A., LACQ/F; <sup>2</sup> Total S.A., Paris/F; <sup>3</sup> Quantis, Lausanne/CH
- 14:40 **Zero Liquid Discharge by reuse of wastewater in an office complex in India**  
M. Kureck<sup>1</sup>; <sup>1</sup> Koch Membrane Systems, Aachen/D
- 15:00 **Poster pitches**
- 15:20 **Coffee break with posters and exhibition**

Room: MOA 5

## Agricultural Reuse

Role of reclaimed water in agricultural irrigation

## Chair:

- 15:50 **Motivations for increased use of recycled water for agricultural irrigation**  
B. Sheikh<sup>1</sup>; K. Nelson<sup>2</sup>; A. Thebo<sup>3</sup>; B. Haddad<sup>4</sup>; T. Gardner<sup>5</sup>; J. Kelly<sup>5</sup>; A. Adin<sup>6</sup>; R. Tsuchihashi<sup>7</sup>; N. Funamizu<sup>8</sup>; S. Spurlock<sup>9</sup>; K. VandenHeuvel; <sup>1</sup> Bahman Sheikh Water Reuse Consulting, San Francisco, CA/USA; <sup>2</sup> University of California, Berkeley, Berkeley/USA; <sup>3</sup> Pacific Institute, Oakland/USA; <sup>4</sup> university of California, Santa Cruz, Santa Cruz/USA; <sup>5</sup> ARRIS Water, Highgate, SA/AUS; <sup>6</sup> Hebrew University of Jerusalem, Jerusalem/IL; <sup>7</sup> AECOM, San Francisco, CA/USA; <sup>8</sup> Hokkaido University, Sapporo/J; <sup>9</sup> Denver Urban Gardens, Denver, CO/USA; The Water Research Foundation, Alexandria, VA/USA
- 16:10 **Risks of pollution and its assessment in wastewater irrigated agricultural systems (ROUSSEAU)**  
M. Salgot<sup>1</sup>; M. Folch<sup>1</sup>; S. Diaz-Cruz<sup>2</sup>; D. Barceló<sup>2</sup>; A. Fernandez-Alba<sup>3</sup>; M. Bueno<sup>3</sup>; G. Garcia<sup>2</sup>; A. Soler<sup>2</sup>; <sup>1</sup> Universitat de Barcelona, Barcelona/E; <sup>2</sup> Institute of Environmental Assessment and Water Research, Spanish Council for Scientific Research (IDAEA- CSIC), Barcelona/E; <sup>3</sup> Almeria University, Almeria/E
- 16:30 **Sustainable wastewater reuse for agricultural application**  
A. Lazic<sup>1</sup>; J. Scheideler<sup>2</sup>; <sup>1</sup> Xylem Inc., Sundbyberg/S; <sup>2</sup> Xylem Services GmbH, Herford/D
- 16:50
- 17:10 **Matching agricultural freshwater supply and demand: using recycled water for subirrigation purposes**  
R. Bartholomeus<sup>1</sup>; M. van Huijgevoort<sup>2</sup>; A. van Loon<sup>2</sup>; G. van den Eertwegh<sup>3</sup>; K. Raat<sup>2</sup>; <sup>1</sup> KWR Watercycle Research Institute & Wageningen University, Nieuwegein/NL; <sup>2</sup> KWR Watercycle Research Institute, Nieuwegein/NL; <sup>3</sup> KnowH2O, Berg en Dal/NL

17:35 **Candidate 2021 presentations**

Room: MOA 6-7

18:10 **POSTER AND EXHIBITION PARTY with drinks and buffet (18:10 – 21:00)**

MONDAY, 17 JUNE 2019

## PROGRAMME

## AFTERNOON

Room: MOA 5

## Risk Management

Risk management of reuse schemes

## Chair: S. Khan; University of New South Wales, University of New South Wales/AUS

- 13:40 **The status of de facto potable reuse – A national reconnaissance of Germany**  
J. Drewes<sup>1</sup>; <sup>1</sup> Technical University of Munich, Garching-Munich/D
- 14:00 **Risk management for drinking water production in a partially closed water cycle – The Berlin case**  
G. Grützmacher<sup>1</sup>; S. Schimmelpfennig<sup>1</sup>; G. Lorenzen<sup>1</sup>; D. Petersohn<sup>1</sup>; J. Feddern<sup>1</sup>; <sup>1</sup> Berliner Wasserbetriebe, Berlin/D
- 14:20 **Safe wastewater reuse in the United Arab Emirates; safety assessment from concept to realisation**  
P. Smeets<sup>1</sup>; M. Dingemans<sup>1</sup>; M. Stenzel<sup>2</sup>; <sup>1</sup> KWR Watercycle Research Institute, Nieuwegein/NL; <sup>2</sup> TANQIA SIYANA, Fujairah/UAE
- 14:40 **Water reuse as a sustainable water scarcity risk reduction measure: Integrating risk and sustainability assessment frameworks**  
A. Mueller<sup>1</sup>; T. Avellán<sup>2</sup>; J. Schanze<sup>3</sup>; <sup>1</sup> Technische Universität Dresden and United Nations University – Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES), Dresden/D; <sup>2</sup> United Nations University -Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES), Dresden/D; <sup>3</sup> Technische Universität Dresden, Dresden/D
- 15:00 **Poster pitches**
- 15:20 **Coffee break with posters and exhibition**

Room: MOA 4

## Risk Management

Risk mitigation strategies

## Chair:

- 15:50 **Facilitating adoption of MBR for water reuse by improved risk management and development of better guidance**  
P. Le-Clech<sup>1</sup>; A. Branch<sup>1</sup>; C. Robillot<sup>2</sup>; <sup>1</sup> UNSW, Sydney/AUS; <sup>2</sup> Headstart Development, Brisbane/AUS
- 16:10 **The risk of rainwater reuse in household installations**  
L. Vanysacker<sup>1</sup>; B. De Gussemé<sup>2</sup>; B. Buysschaert<sup>2</sup>; K. Van den Belt<sup>3</sup>; B. De Winter<sup>1</sup>; <sup>1</sup> De Watergroep, Brussel/B; <sup>2</sup> FARYS/TMVW, Ghent/B; <sup>3</sup> Flanders Environmental Agency, Brussel/B
- 16:30 **Assessment of elevated risk by antibiotic resistance in indirect reuse of treated livestock wastewater for irrigation**  
R. Honda<sup>1</sup>; M. Lin<sup>1</sup>; T. Hirata<sup>1</sup>; H. Hara-Yamamura<sup>1</sup>; R. Yamamoto-Ikemoto<sup>1</sup>; T. Watanabe<sup>2</sup>; <sup>1</sup> Kanazawa University, Kanazawa/J; <sup>2</sup> Yamagata University, Tsuruoka/J
- 16:50 **Quantitative microbial risk assessment of non-potable water reuse by MBR and CAS based on long-term virus monitoring data**  
K. Sasaki<sup>1</sup>; D. Sugita<sup>2</sup>; N. Yamashita<sup>3</sup>; H. Tanaka<sup>4</sup>; <sup>1</sup> Kyoto University, Graduate School of Engineering, Umebayashi, Otsu city, Shiga prefecture, Japan/D; <sup>2</sup> Kyoto University, Amagasaki city/J; <sup>3</sup> Ehime University, Matsuyama city/J; <sup>4</sup> Kyoto University, Otsu city/J
- 17:10 **Risk-based guidance for onsite non-potable water systems**  
M. Jahne<sup>1</sup>; M. Schoen<sup>2</sup>; J. Garland<sup>1</sup>; <sup>1</sup> United States Environmental Protection Agency (US-EPA), Cincinnati, OH/USA; <sup>2</sup> Soller Environmental, Inc., Berkeley, CA/USA

17:35 **Candidate 2021 presentations**

Room: MOA 6-7

18:10 **POSTER AND EXHIBITION PARTY with drinks and buffet (18:10 – 21:00)**

## PROGRAMME

TUESDAY, 18 JUNE 2019

## MORNING

Room: MOA 6-7

- 08:30 **PLENARY LECTURE**  
**Murcia's experience in the use of reclaimed water for agricultural irrigation**  
P.J. Simón Andreu<sup>1</sup>; <sup>1</sup> ESAMUR, Espinardo/E
- 09:00 **PLENARY LECTURE**  
**Economic analysis of water reuse – pricing long-term water security**  
G. Delacamara<sup>1</sup>; <sup>1</sup> IMDEA Water, Madrid/E

Room: MOA 6-7

### Potable Reuse

New concepts of potable reuse

## Chair:

- 09:30 **Water Research Foundation Potable Reuse Program**  
J. Minton<sup>1</sup>; J. Mattingly<sup>2</sup>; <sup>1</sup> Water Research Foundation, Alexandria/USA; <sup>2</sup> The Water Research Foundation, Alexandria, VA/USA
- 09:50 **Planned indirect potable water reuse to overcome water deficit in Vendée (France): “Jourdain” project as an experimental demonstrator**  
J. Orsonil<sup>1</sup>; <sup>1</sup> VENDEE EAU, LA ROCHE SUR YON/F
- 10:10 **Startup, Operation, and Optimization of HRSD's 3.8 MLD SWIFT Research Center for Advanced Water Treatment and Managed Aquifer Recharge**  
S. Hogard<sup>1</sup>; G. Salazar-Benites<sup>2</sup>; R. Pearce<sup>1</sup>; P. Buehlmann<sup>1</sup>; T. Nading<sup>3</sup>; C. Wilson<sup>2</sup>; C. Bott<sup>2</sup>; <sup>1</sup> Virginia Tech, Blacksburg/USA; <sup>2</sup> Hampton Roads Sanitation District, Virginia Beach/USA; <sup>3</sup> Jacobs Engineering Group Inc., Denver/USA
- 10:30 Coffee break with posters and exhibition

Room: MOA 6-7

### Potable Reuse

New groundwater recharge concepts

## Chair:

- 11:00 **Soil aquifer treatment and subsurface-water interactions during groundwater recharge**  
L. Peri<sup>1</sup>; K. Pagilla<sup>2</sup>; <sup>1</sup> University of Nevada, Reno., Reno, Nevada/USA; <sup>2</sup> University of Nevada, Reno., Reno/USA
- 11:20 **Improving water resiliency and reducing potential water stress by advanced water reclamation and aquifer storage**  
K. Pagilla<sup>1</sup>; R. Warner<sup>2</sup>; <sup>1</sup> University of Nevada, Reno, Reno/USA; <sup>2</sup> Nevada Water Innovation Institute/Washoe County, Reno/USA
- 11:40 **Coupling high-rate infiltration trench technology with a plug-flow bioreactor (SMARTplus) for indirect potable reuse via groundwater recharge**  
S. Karakurt<sup>1</sup>; <sup>1</sup> Technical University Munich, Garching-Munich/D
- 12:00 **Options for implementing denitrification in Sequential Managed Aquifer Recharge Technology (SMART) systems**  
J. Filter<sup>1</sup>; C. Bosinsky<sup>1</sup>; A. Ruhl<sup>1</sup>; M. Jekel<sup>1</sup>; <sup>1</sup> Technische Universität Berlin/D
- 12:20 **Poster pitches**
- 12:40 **Lunch break with posters and exhibition**

TUESDAY, 18 JUNE 2019

## PROGRAMME

## MORNING

Room: MOA 6-7

- 08:30 **PLENARY LECTURE**  
**Murcia's experience in the use of reclaimed water for agricultural irrigation**  
P.J. Simón Andreu<sup>1</sup>; <sup>1</sup> ESAMUR, Espinardo/E
- 09:00 **PLENARY LECTURE**  
**Economic analysis of water reuse – pricing long-term water security**  
G. Delacamara<sup>1</sup>; <sup>1</sup> IMDEA Water, Madrid/E

Room: MOA 3

### Innovative Treatment Technologies & Applications

Disruptive technologies for hard-to-treat wastewater

## Chair:

- 09:30 **Systematic determination of the inert COD of industrial wastewaters in the context of COD fractionation**  
A. Yogendran<sup>1</sup>; M. Beier<sup>1</sup>; S. Köster<sup>1</sup>; <sup>1</sup> Leibniz University Hannover, Institute of Sanitary Engineering and Waste Management (ISAH), Hannover/D
- 09:50 **A novel gas diffusion electrode reactor for the treatment of highly concentrated membrane fabrication wastewater.**  
O. Garcia-Rodriguez<sup>1</sup>; A. Peh Shu Fang<sup>1</sup>; H. Olvera-Vargas<sup>1</sup>; O. Lefebvre<sup>1</sup>; <sup>1</sup> National University of Singapore, Singapore/SGP
- 10:10 **A study of synergistic oxidation between ozone and chlorine on benzalkonium chloride removal for municipal wastewater reclamation RO (mWRRO) concentrate treatment**  
N. Huang<sup>1</sup>; W. Wang<sup>1</sup>; Z. Xu<sup>1</sup>; Q. Wu<sup>1</sup>; H. Hu<sup>1</sup>; <sup>1</sup> Tsinghua University, Beijing/CN; <sup>2</sup> Tsinghua University, Shenzhen/CN
- 10:30 Coffee break with posters and exhibition

Room: MOA 3

### Innovative Treatment Technologies & Applications

Control and applications of biological processes

## Chair: S. Mutnuri; BITS Pilani K K Birla Goa campus, Goa/IND

- 11:00 **Layered quorum quenching media for more sustainable biofouling control in membrane bioreactors**  
K. Choo<sup>1</sup>; H. Yu<sup>2</sup>; X. Zhang<sup>1</sup>; K. Lee<sup>1</sup>; <sup>1</sup> Kyungpook National University, Daegu/ROK; <sup>2</sup> Harbin Institute of Technology, Harbin/CN
- 11:20 **Adaptation of marine ANAMMOX bacterium to low salinity and organics to simulate complete nitrogen removal saline wastewaters**  
M. Ali<sup>1</sup>; D. Shaw<sup>1</sup>; P. Saikaly<sup>1</sup>; <sup>1</sup> King Abdullah University of Science and Technology (KAUST), Thuwal/SAR
- 11:40 **Microalgae cultivation in a ceramic membrane photobioreactor for nutrients removal from secondary effluent of WWTP and microalgal biomass production**  
Q. Zhang<sup>1</sup>; <sup>1</sup>, No. 2279, lishui road, nanshan district, Shenzhen City of Guangdong Province/CN
- 12:00 **awaregio – Modular wastewater treatment processes for the reuse of wastewater, nutrients and energy**  
H. Risse<sup>1</sup>; T. Breuer<sup>1</sup>; <sup>1</sup> FiW at Aachen University (RWTH), Aachen/D
- 12:20 **Poster pitches**
- 12:40 **Lunch break with posters and exhibition**



## PROGRAMME

TUESDAY, 18 JUNE 2019

## MORNING

Room: MOA 6-7

08:30 **PLENARY LECTURE**  
**Murcia's experience in the use of reclaimed water for agricultural irrigation**  
 P.J. Simón Andreu<sup>1</sup>; <sup>1</sup> ESAMUR, Espinardo/E

09:00 **PLENARY LECTURE**  
**Economic analysis of water reuse – pricing long-term water security**  
 G. Delacamara<sup>1</sup>; <sup>1</sup> IMDEA Water, Madrid/E

Room: MOA 4

## Agricultural Reuse

Transfer of contaminants into irrigated crops

Chair: A. Olivieri; EOA, INC., Oakland/USA

09:30 **Agricultural reuse of treated municipal wastewater and the transfer of contaminants of concern into food**  
 H. Mass<sup>1</sup>; M. Moeder<sup>1</sup>; C. Riemenschneider<sup>1</sup>; B. Seiwert<sup>1</sup>; T. Reemtsma<sup>1</sup>; <sup>1</sup> Helmholtz Centre for Environmental Research-UFZ, Leipzig/D

09:50 **The reuse of untreated wastewater in a small town in India A case study from Vijayapura, Karnataka**  
 V. Srikantaiah<sup>1</sup>; <sup>1</sup> Biome Environment Trust, Bengaluru/IND

10:10 **Distribution of selected pharmaceuticals between soil and plants when irrigated by treated municipal wastewater**  
 J. Wanner<sup>1</sup>; <sup>1</sup> University of Chemistry and Technology Prague, Praha 6/CZ

10:30 **Coffee break with posters and exhibition**

Room: MOA 5

## Agricultural Reuse

Benefits of agricultural irrigation with reclaimed water

Chair: P. Noophan; Faculty of Engineering, Kasetsart University, Kasetsart U, Bangkok/T

11:00 **Urban raw or treated wastewater drip-irrigation for lettuces and leeks crops: chemical and microbiological properties of soil and plants**  
 A. Mange<sup>1</sup>; N. Wéry<sup>2</sup>; N. Ait Mouheb<sup>1</sup>; <sup>1</sup> IRSTEA - UMR G-EAU, Montpellier/F; <sup>2</sup> LBE, Univ Montpellier, INRA, Narbonne/F

11:20 **Impact of treated wastewaters reused for irrigation in strawberry cultivation**  
 E. Coppini<sup>1</sup>; D. Fibbi<sup>1</sup>; R. Camisa<sup>1</sup>; M. Bruzzoniti<sup>2</sup>; E. Giordani<sup>3</sup>; L. Rivoira<sup>2</sup>; M. Castiglioni<sup>2</sup>; M. Del Bubba<sup>4</sup>; <sup>1</sup> GIDA SpA, Prato/I; <sup>2</sup> Department of Chemistry, University of Turin, Turin/I; <sup>3</sup> Department of Agri-Food and Environmental Science, University of Florence, Florence/I; <sup>4</sup> Department of Chemistry „Ugo Schiff“, University of Florence/I

11:40 **High Yield and Nutritional Quality of Forage Rice (Oryza sativa) Achieved by Continuous Irrigation of Treated Municipal Wastewater without Synthetic Fertilizers in Pilot- and Real-Scale Experiments**  
 H. Arichi<sup>1</sup>; T. Watanabe<sup>2</sup>; L. Phung<sup>3</sup>; M. Nishiyama<sup>2</sup>; H. Kato<sup>4</sup>; D. Pham<sup>2</sup>; <sup>1</sup> Tsuruoka City Government, Tsuruoka/); <sup>2</sup> Yamagata University, Tsuruoka/); <sup>3</sup> Iwate University, Morioka/); <sup>4</sup> Tohoku University, Sendai/)

12:00 **The HypoWave-System – Nutrient and heavy metal flows within an integrated system of adapted wastewater treatment and subsequent water reuse in a hydroponic system**  
 A. Bliedung<sup>1</sup>; T. Dockhorn<sup>1</sup>; J. Germer<sup>2</sup>; B. Fiebig<sup>3</sup>; G. Peters<sup>4</sup>; P. Rossmann<sup>5</sup>; A. Wieland<sup>6</sup>; <sup>1</sup> TU Braunschweig, Institute of Sanitary and Environmental Engineering, Braunschweig/D; <sup>2</sup> University of Hohenheim, Institute of Agricultural Sciences in the Tropics, Stuttgart/D; <sup>3</sup> Abwasserverband Braunschweig, Braunschweig/D; <sup>4</sup> Wolfsburger Entwässerungsbetriebe, Braunschweig/D; <sup>5</sup> ACS-Umwelttechnik GMBH & Co. KG, Rielasingen-Worblingen/D; <sup>6</sup> Xylem Services GmbH, Herford/D

12:20 **Poster pitches**

12:40 **Lunch break with posters and exhibition**

TUESDAY, 18 JUNE 2019

## PROGRAMME

## MORNING

Room: MOA 6-7

08:30 **PLENARY LECTURE**  
**Murcia's experience in the use of reclaimed water for agricultural irrigation**  
 P.J. Simón Andreu<sup>1</sup>; <sup>1</sup> ESAMUR, Espinardo/E

09:00 **PLENARY LECTURE**  
**Economic analysis of water reuse – pricing long-term water security**  
 G. Delacamara<sup>1</sup>; <sup>1</sup> IMDEA Water, Madrid/E

Room: MOA 5

## Risk Management

Validation procedures

Chair:

09:30 **Bioanalytical tools for monitoring of recycled water – advisory panel recommendations for the State of California (USA)**  
 K. Maruya<sup>1</sup>; <sup>1</sup> SCCWRP, Costa Mesa/USA

09:50 **Development of a Validation Process for UV-AOPs for Potable Water Reuse**  
 S. Khan<sup>1</sup>; A. Branch<sup>1</sup>; <sup>1</sup> University of New South Wales, Sydney/AUS

10:10 **Proxies to monitor the inactivation of viruses by ozone**  
 C. Wolf<sup>1</sup>; A. Pavese<sup>2</sup>; U. von Gunten<sup>2</sup>; T. Kohn<sup>1</sup>; <sup>1</sup> Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne/CH; <sup>2</sup> Ecole Polytechnique Fédérale de Lausanne (EPFL) / Eawag, Lausanne / Dübendorf/CH

10:30 **Coffee break with posters and exhibition**

Room: MOA 4

## Social &amp; Economic Perspectives

Economic and sustainability perspectives

Chair: A. Hahn; United Nations University - Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES), Dresden/D

11:00 **Economic viability of recycled water scheme – Can we afford it?**  
 A. LISTOWSKI<sup>1</sup>; <sup>1</sup> University of Technology Sydney, Newington/AUS

11:20 **Economic benefits of indirect potable reuse in Reno, Nevada**  
 L. Haak<sup>1</sup>; L. Perry<sup>2</sup>; R. Warner<sup>2</sup>; K. Pagilla<sup>1</sup>; <sup>1</sup> University of Nevada, Reno, Reno/USA; <sup>2</sup> Washoe County CSD, Reno/USA

11:40 **Using cost-benefit analysis to assess economic interests of integrated and multi-purposes reuse scenarios: Cannes basin case-study**  
 R. DECLERCQ<sup>1</sup>; <sup>1</sup> ECOFILAE, Montpellier/F

12:00 **Sustainability assessment of water reuse technologies – Application of a decision support tool in international case studies**  
 K. Wenckj<sup>1</sup>; V. Thöne<sup>1</sup>; D. Becker<sup>2</sup>; K. Krömer<sup>4</sup>; I. Sattig<sup>4</sup>; G. Lischeid<sup>5</sup>; M. Zimmermann<sup>3</sup>; <sup>1</sup> IWW Water Centre, Mülheim an der Ruhr/D; <sup>2</sup> DECHEMA, Frankfurt am Main/D; <sup>3</sup> ISOE - Institut fuer sozial-oekologische Forschung, Frankfurt am Main/D; <sup>4</sup> OOWV (Oldenburgisch-Ostfriesischer Wasserverband), Brake/D; <sup>5</sup> Leibniz-Zentrum für Agrarlandschaftsforschung (ZALF) e.V., Müncheberg/D

12:20 **Poster pitches**

12:40 **Lunch break with posters and exhibition**



## PROGRAMME

TUESDAY, 18 JUNE 2019

## AFTERNOON

Room: MOA 6-7

## Potable Reuse

Potable reuse (surface water augmentation and groundwater recharge)

## Chair:

- 13:40 **Bank filtration at highly polluted rivers**  
T. Grischek<sup>1</sup>; C. Sandhu<sup>2</sup>; F. Musche<sup>2</sup>; P. Otter<sup>2</sup>; H. Boernick<sup>3</sup>; <sup>1</sup> HTW University of Applied Sciences Dresden, Dresden/D; <sup>2</sup> HTW Dresden, Dresden/D; <sup>3</sup> TU Dresden, Dresden/D
- 14:00 **A novel measurement of MBR integrity to augment monitoring in potable reuse applications**  
S. Katz<sup>1</sup>; P. Cote<sup>2</sup>; J. Citulski<sup>1</sup>; D. Mosqueda-Jimenez<sup>1</sup>; <sup>1</sup> SUEZ Water Technologies & Solutions, Oakville/CDN; <sup>2</sup> COTE Membrane Separation, Ltd, Hamilton/CDN
- 14:20 **Non RO based treatment trains for reuse – A solution for inland facilities**  
J. Scheideler<sup>1</sup>; <sup>1</sup> Xylem Services GmbH, Herford/D
- 14:40 **UV advanced oxidation processes for potable reuse: Pilot study at the largest recycled water treatment facility in Northern California**  
M. Stefan<sup>1</sup>; M. Kwon<sup>1</sup>; P. Baltar<sup>2</sup>; Z. Helsley<sup>2</sup>; S. McDermid<sup>1</sup>; A. Royce<sup>1</sup>; <sup>1</sup> Trojan Technologies, London, Ontario/CDN; <sup>2</sup> Santa Clara Valley Water District, Santa Clara, CA/USA
- 15:00 **Poster pitches**
- 15:40 **Coffee break with posters and exhibition**

Room: MOA 6-7

## Small-Scale/Decentralized Systems

## Chair:

- 15:50 **The water-energy regenerative house**  
M. Ramezaniapour<sup>1</sup>; M. Sivakumar<sup>2</sup>; H. Chen<sup>1</sup>; T. Vessey<sup>1</sup>; <sup>1</sup> Ara Institute of Canterbury, Christchurch/NZ; <sup>2</sup> University of Wollongong, Wollongong/AUS
- 16:10 **Sustainability and success of operation of decentralized, small scale SUWA systems: a case study in central Mexico**  
L. Benavides<sup>1</sup>; T. Avellán<sup>1</sup>; A. Müller<sup>1</sup>; A. Hahn<sup>1</sup>; S. Caucci<sup>1</sup>; C. Paillés<sup>2</sup>; E. Muñoz<sup>2</sup>; A. Velasco<sup>2</sup>; <sup>1</sup> United Nations University -Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES), Dresden/D; <sup>2</sup> Fideicomiso de Infraestructura Ambiental de los Valles de Hidalgo (FIAVHI), Tepeji del Rio/MEX
- 16:30 **Improving water quality and pathogen removal using a low-cost anaerobic wastewater filtration – applicable for small-scale agricultural production in developing countries**  
K. Kätzl<sup>1</sup>; M. Lübken<sup>1</sup>; G. Uzun<sup>1</sup>; T. Gehring<sup>2</sup>; E. Nettmann<sup>1</sup>; K. Stenchly<sup>3</sup>; M. Wichern<sup>1</sup>; <sup>1</sup> Ruhr-Universität Bochum, Bochum/D; <sup>2</sup> Ruhr-Universität Bochum, Bocu/D; <sup>3</sup> Universität Kassel, Witzenhausen/D
- 16:50 **Assessment of source separated sanitation technologies for sustainable wastewater management**  
T. Zinati Shoa<sup>1</sup>; M. Schütze<sup>2</sup>; M. Barjenbruch<sup>3</sup>; A. Wrieger-Bechtold<sup>3</sup>; <sup>1</sup> Technical University of Berlin, Berlin/D; <sup>2</sup> Department Water and Energy, ifak, Magdeburg/D; <sup>3</sup> Technical University of Berlin, Department of urban water management, Berlin/D
- 17:10 **High-integrate membrane bioreactor for wastewater treatment and reclamation in rural areas of China**  
Q. Wang<sup>1</sup>; L. Zang<sup>2</sup>; Z. Wu<sup>1</sup>; <sup>1</sup> Tongji university, Shanghai/CN; <sup>2</sup> Shanghai Zizheng Environmental Technology Co., Ltd, Shanghai/CN
- 17:30 **Techno-economic analysis of decentralized wastewater treatment plants: A case study from Northern India**  
S. Desai<sup>1</sup>; A. Thanki<sup>2</sup>; N. Singh<sup>3</sup>; <sup>1</sup> Marwadi University, Gujarat, India/IND; <sup>2</sup> Marwadi University, Rajkot/IND; <sup>3</sup> Marwadi Education Foundation Group of Institutions, Rajkot, Gujarat, Rajkot/IND
- 17:50 **IWA WATER REUSE SPECIALIST GROUP MEETING (17:50-18:20)** MOA3
- 19:00 **CONFERENCE DINNER AT „ZOLLPACKHOF“ (separate registration necessary) (19:00-23:00)**

TUESDAY, 18 JUNE 2019

## PROGRAMME

## AFTERNOON

Room: MOA 3

## Innovative Treatment Technologies &amp; Applications

Trends in membrane distillation

Chair: K. Choo; <sup>1</sup> Kyungpook National University, Daegu/ROK

- 13:40 **Emerging micropollutants removal by combined persulfate oxidation – membrane distillation process for wastewater reuse**  
F. Hai<sup>1</sup>; <sup>1</sup> University of Wollongong, Wollongong/AUS
- 14:00 **Electrospun nanofiber membranes incorporating PDMS-aerogel superhydrophobic coating with enhanced flux and improved selectivity for membrane distillation**  
B. Deka<sup>1</sup>; <sup>1</sup> City University Hong Kong, Hong Kong/HK
- 14:20 **A real seawater membrane distillation system development by reproducible superhydrophobic TiO<sub>2</sub> electrospun membrane with anti-fouling and anti-wetting function**  
J. GUO<sup>1</sup>; <sup>1</sup> City University of Hong Kong, City University of Hong Kong/HK
- 14:40 **Developing a hybrid structured photothermal distillation membranes for seawater desalination**  
M. Farid<sup>1</sup>; A. An<sup>2</sup>; <sup>1</sup> City University of Hong Kong, Prince Edward Kowloon Hong Kong/HK; <sup>2</sup> City University of Hong Kong, Hong Kong/HK
- 15:00 **Poster pitches**
- 15:40 **Coffee break with posters and exhibition**

Room: MOA 3

## Extending the Limits of Traditional Treatment

## Chair:

- 15:50 **A strategical planning and assessment framework to design municipal wastewater treatment plants from a resource recovery perspective**  
P. Kehrein<sup>1</sup>; <sup>1</sup> TU Delft, Den Haag/NL
- 16:10 **Start-up and nitrogen removal performance of SNAD process in a pilot-scale oxidation ditch**  
X. Zhang<sup>1</sup>; X. Li<sup>2</sup>; Y. Liu<sup>2</sup>; J. Zhang<sup>3</sup>; <sup>1</sup> Fuzhou University, Fuzhou University, Fuzhou, Fujian, PR China/CN; <sup>2</sup> Fuzhou University, Fuzhou/CN; <sup>3</sup> Fujian Provincial Academy of Environmental Science, Fuzhou/CN
- 16:30 **Membrane bioreactors (MBR) in municipal WWTPs as turning point in wide-ranging water reuse?**  
K. Westling<sup>1</sup>; C. Baresel<sup>1</sup>; S. Andersson<sup>1</sup>; M. Narongin<sup>1</sup>; <sup>1</sup> IVL Swedish Environmental Research Institute, Stockholm/S
- 16:50 **Integrated use of real-time sensors and process modelling to optimize wastewater disinfection by peracetic acid**  
M. Cascio<sup>1</sup>; J. Foschi<sup>1</sup>; A. Turolla<sup>1</sup>; M. Antonelli<sup>1</sup>; <sup>1</sup> Politecnico di Milano, Milano/I
- 17:10 **Graphene oxide cross-linking polydopamine reverse osmosis (GO-PDA-RO) membrane for desalination and water reclamation**  
N. Khanzada<sup>1</sup>; <sup>1</sup> City University of Kong Kong, Hong Kong/HK
- 17:30 **Electrochemical treatment of typical micropollutants from secondary effluent using a three-dimensional electrode reactor with BDD anode and SnO<sub>2</sub>-SbO<sub>2</sub> doped granular activated carbon as particle electrode**  
B. Shen<sup>1</sup>; X. Wen<sup>1</sup>; W. Qin<sup>1</sup>; <sup>1</sup> Tsinghua University, Beijing/CN
- 17:50 **IWA WATER REUSE SPECIALIST GROUP MEETING (17:50-18:20)** MOA3
- 19:00 **CONFERENCE DINNER AT „ZOLLPACKHOF“ (separate registration necessary) (19:00-23:00)**

## PROGRAMME

TUESDAY, 18 JUNE 2019

## AFTERNOON

Room: MOA 4

## Social &amp; Economic Perspectives

Environmental impacts

## Chair:

- 13:40 **Quantitative microbial risk from wastewater reuse for irrigation in a peri-urban setting**  
J. Weidhaas<sup>1</sup>; M. Olsen<sup>1</sup>; <sup>1</sup> University of Utah, Salt Lake City/USA
- 14:00 **Tackling wastewater reuse issues in Tunisia with a multithematic and multiscale approach**  
J. BERAUD<sup>1</sup>; T. JALABERT<sup>2</sup>; H. KENNOU<sup>3</sup>; <sup>1</sup> Société du Canal de Provence, Aix-en-Provence Cedex 5/F; <sup>2</sup> Société des Eaux de Marseille, Marseille/F; <sup>3</sup> Institut Méditerranée de l'Eau, Marseille/F
- 14:20 **Reduction of greenhouse gas emissions from paddy fields in response to continuous irrigation with treated municipal wastewater**  
L. Phung Duc<sup>1</sup>; D. Pham Viet<sup>2</sup>; S. Masuda<sup>3</sup>; F. Takakai<sup>4</sup>; N. Kaku<sup>2</sup>; M. Nishiyama<sup>2</sup>; T. Watanabe<sup>2</sup>; <sup>1</sup> Iwate University, Morioka/J; <sup>2</sup> Yamagata University, Tsuruoka/J; <sup>3</sup> National Institute of Technology, Akita College, Akita/J; <sup>4</sup> Akita Prefecture University, Akita/J
- 14:40 **Essential oil production in Brasil (*Ocimum basilicum*) irrigated with treated effluent**  
A. MELO<sup>1</sup>; E. GOMES<sup>1</sup>; W. LEITE<sup>2</sup>; M. KATO<sup>2</sup>; K. BARROS<sup>1</sup>; <sup>1</sup> Federal University of Pernambuco, Caruaru/BR; <sup>2</sup> Federal University of Pernambuco, Recife/BR
- 15:00 **Poster pitches**
- 15:40 **Coffee break with posters and exhibition**

Room: MOA 5

## Case Studies: from 0% up to 100% Reuse

## Chair:

- 15:50 **Severity of water security crisis in GCC countries**  
A. Alva<sup>1</sup>; T. Madouh<sup>2</sup>; <sup>1</sup> Kuwait Institute for Scientific Research (KISR), Kuwait/KWT; <sup>2</sup> Kuwait Institute for Scientific Research, Shuwaik/KWT
- 16:10 **Overcoming urban water scarcity through the reuse of energy-efficient treated grey and black water: SEMIZENTRAL's large-scale plant case study**  
T. Blach<sup>1</sup>; M. Engelhart<sup>1</sup>; M. Wagner<sup>1</sup>; <sup>1</sup> TU Darmstadt, Institute IWAR, Darmstadt/D
- 16:30 **Feasibility of water reclamation for agricultural and urban reuse in Northern Franconia, Germany**  
C. Schwaller<sup>1</sup>; F. Zumkeller<sup>2</sup>; B. Helmreich<sup>1</sup>; D. Gondhalekar<sup>1</sup>; H. Gerdes<sup>3</sup>; J. Drewes<sup>1</sup>; <sup>1</sup> Technische Universität München/D; <sup>2</sup> Regierung von Unterfranken, Würzburg/D; <sup>3</sup> BGS Umweltplanung GmbH, Darmstadt/D
- 16:50 **Demonstration of environment friendly water reclamation plant: Beijing Bishui Underground Water Reclamation Plant case study**  
X. Cao<sup>1</sup>; H. Pang<sup>1</sup>; P. Li<sup>1</sup>; <sup>1</sup> China Water Environment Group Limited, Beijing/CN
- 17:10 **ZLD installations in India for F&B, chemistry and metal processing**  
E. Döpkins<sup>1</sup>; <sup>1</sup> REMONDIS Aqua Industrie GmbH Co KG, Hannover/D
- 17:30 **Up to 100% Reuse: Zero Liquid Discharge versus production-integrated water management**  
E. Billenkamp<sup>1</sup>; <sup>1</sup> EnviroChemie GmbH, Rossdorf/D

17:50 IWA WATER REUSE SPECIALIST GROUP MEETING (17:50-18:20)

MOA3

19:00 CONFERENCE DINNER AT „ZOLLPACKHOF“ (separate registration necessary) (19:00-23:00)

TUESDAY, 18 JUNE 2019

## PROGRAMME

## AFTERNOON

Room: MOA 5

## Social &amp; Economic Perspectives

Regional perspectives

## Chair:

- 13:40 **Designing transdisciplinary research to solve complex problems - A comparative case study of wastewater management in Latin America and the Caribbean**  
A. Hahn<sup>1</sup>; S. Kirschke<sup>1</sup>; T. Avellán<sup>1</sup>; S. Caucci<sup>1</sup>; L. Benavides<sup>1</sup>; <sup>1</sup> United Nations University -Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES), Dresden/D
- 14:00 **Implementation of the DWA guideline A 272 for the planning, designing and evaluating of new alternative sanitation systems – a case study of the AWAREGIO project**  
M. Hedrich<sup>1</sup>; H. Francik<sup>1</sup>; <sup>1</sup> University of Leipzig, Leipzig/D
- 14:20 **Alternative drivers for potable and nonpotable reuse**  
J. Mattingly<sup>1</sup>; J. Minton<sup>2</sup>; <sup>1</sup> The Water Research Foundation, Alexandria, VA/USA; <sup>2</sup> The Water Research Foundation, Alexandria VA/USA
- 14:40 **The reuse as a reinvention of wastewater use**  
A. Collard<sup>1</sup>; N. Ait Mouheb<sup>1</sup>; R. Barbier<sup>2</sup>; <sup>1</sup> IRSTEA - UMR G-EAU, Montpellier/F; <sup>2</sup> UMR GESTE, Irstea, ENGEES, Strasbourg/F
- 15:00 **Poster pitches**
- 15:40 **Coffee break with posters and exhibition**

Room: MOA 4

## Developing Risk Assessment Models

Microbial and chemical components

## Chair: H. Hu; Tsinghua University, Beijing/CN

- 15:50 **Rolling literature review on pathogen reduction by water treatment processes**  
P. Smeets<sup>1</sup>; K. Linden<sup>2</sup>; U. Miehe<sup>3</sup>; <sup>1</sup> KWR Watercycle Research Institute, Nieuwegein/NL; <sup>2</sup> University of Colorado-Boulder, Boulder/USA; <sup>3</sup> Kompetenzzentrum Wasser Berlin (KWB), Berlin/D
- 16:10 **Application of a model for supporting risk assessment of emerging contaminants in the context of wastewater reuse for irrigation**  
R. Delli Compagni<sup>1</sup>; F. Polesel<sup>2</sup>; K. von Borries<sup>2</sup>; Z. Zhang<sup>2</sup>; M. Gabrielli<sup>1</sup>; A. Turolla<sup>1</sup>; S. Trapp<sup>2</sup>; L. Vezzaro<sup>2</sup>; M. Antonelli<sup>1</sup>; <sup>1</sup> Politecnico di Milano, Milan/I; <sup>2</sup> Technical University of Denmark (DTU), Copenhagen/DK
- 16:30 **Virus detection methods for water reuse applications**  
K. Wigginton<sup>1</sup>; N. Rockey<sup>1</sup>; <sup>1</sup> University of Michigan, Ann Arbor/USA
- 16:50 **Flow cytometric monitoring of a German pilot study for treating municipal wastewater to different water quality standards**  
A. Nocker<sup>1</sup>; B. Zimmermann<sup>1</sup>; A. Nahrstedt<sup>1</sup>; K. Krömer<sup>2</sup>; Y. Tiemann<sup>2</sup>; <sup>1</sup> IWW Water Centre, Muelheim an der Ruhr/D; <sup>2</sup> OÖWV (Oldenburgisch-Ostfriesischer Wasserverband), Brake/D
- 17:10 **Quantitative exposure and risk assessments of sequential biofiltration within a potable reuse treatment train**  
V. Zhiteneva<sup>1</sup>; J. Rodriguez<sup>1</sup>; M. Ehre<sup>2</sup>; J. Drewes<sup>1</sup>; U. Hübner<sup>1</sup>; <sup>1</sup> Technical University of Munich, Garching/D; <sup>2</sup> Technical University of Munich, Munich/D
- 17:30 **Reduction of viruses using a semi-industrial and near-natural system for advanced wastewater treatment**  
C. Rien<sup>1</sup>; H. Selinka<sup>2</sup>; R. Szewzyk<sup>2</sup>; S. Karakurt<sup>3</sup>; J. Drewes<sup>3</sup>; <sup>1</sup> German Environment Agency, Berlin/D; <sup>2</sup> German Environment Agency, Berlin/D; <sup>3</sup> Technical University of Munich/D

17:50 IWA WATER REUSE SPECIALIST GROUP MEETING (17:50-18:20)

MOA3

19:00 CONFERENCE DINNER AT „ZOLLPACKHOF“ (separate registration necessary) (19:00-23:00)

## PROGRAMME

WEDNESDAY, 19 JUNE 2019

## MORNING

Room: MOA 6-7

## PLENARY SESSION

- 08:30 **Overcoming water stress by water reclamation and reuse**  
E. Van Houtte<sup>1</sup>; <sup>1</sup> IWVA, Koksijde/B
- The Swiss approach in reducing trace organic chemicals in the aquatic environment**  
C. McArdell<sup>1</sup>; <sup>1</sup> Swiss Federal Institute of Aquatic Science and Technology (Eawag), Dübendorf/CH  
TBA
- 09:10 **PANEL DISCUSSION and POSTER AWARDS**

Room: MOA 6-7

## Operation, Maintenance and Service Arrangements

Chair: M. van der Walt; Bigen Africa Pty Ltd, Pretoria/ZA

- 09:30 **Extension of water reuse in Windhoek**  
K. Rudolph<sup>1</sup>; J. Hilbig<sup>2</sup>; K. Stroemer<sup>3</sup>; S. Weil<sup>4</sup>; <sup>1</sup> IEEM gGmbH, Witten/D; <sup>2</sup> IEEM gGmbH - Institute of Environmental Engineering and Management at Witten/Herdecke University, Witten/D; <sup>3</sup> GWFA - Global Water Franchise Agency GmbH, Witten/D; <sup>4</sup> REMONDIS (Aqua) Australia Pty Ltd., Sidney/AUS
- 09:50 **Treatment of wastewater containing powdered activated carbon with inside-to-Out ultrafiltration membranes**  
C. Starke<sup>1</sup>; D. Vial<sup>2</sup>; P. Buchta<sup>1</sup>; R. Winkler<sup>1</sup>; P. Berg<sup>1</sup>; C. Staaks<sup>1</sup>; <sup>1</sup> INGE GMBH / BASF, Greifenberg/D; <sup>2</sup> BASF France SAS, Levallois-Perret Cedex/F
- 10:10 **Optical coherence tomography (OCT) for the MF fouling investigation under different pretreatment scenarios**  
B. Deka<sup>1</sup>; <sup>1</sup> City University Hong Kong, Hong Kong/HK
- 10:30 **Coffee break with posters and exhibition**

Room: MOA 6-7

## Public Perception and Acceptance

Chair: M. Helmecke; Umweltbundesamt, Dessau/D

- 11:00 **Why communication, education and public participation matters: case studies from South Africa**  
N. Kalebaila<sup>1</sup>; <sup>1</sup> Water Research Commission of South Africa, Pretoria/ZA
- 11:20 **Water reuse in France - Social perception of an unknown practice**  
B. Noury<sup>1</sup>; P. Garin<sup>2</sup>; M. Montginoul<sup>2</sup>; M. Campardon<sup>2</sup>; <sup>1</sup> Société du Canal de Provence / Irstea UMR G-EAU / IMSIC, Aix en Provence/F; <sup>2</sup> IRSTEA - UMR G-EAU, Montpellier/F
- 11:40 **Potable water re-use: the influence of trust and past water restrictions**  
A. Etale<sup>1</sup>; K. Fielding<sup>2</sup>; A. Schäfer<sup>3</sup>; M. Siegrist<sup>4</sup>; <sup>1</sup> University of the Witwatersrand, Johannesburg/ZA; <sup>2</sup> University of Queensland/ AUS; <sup>3</sup> Karlsruhe Institute of Technology (KIT), Karlsruhe/D; <sup>4</sup> ETH Zurich/CH
- 12:00 **Operator models for the reuse of municipal wastewater in hydroponic systems: potentials and options for Central and Mediterranean Europe**  
E. Schramm<sup>1</sup>; B. Ebert<sup>1</sup>; <sup>1</sup> ISOE - Institute for Social-Ecological Research, Frankfurt am Main/D
- 12:20 **Sweden's first beer brewed with recycled water to raise the value of water reuse**  
C. Baresel<sup>1</sup>; S. Filipsson<sup>1</sup>; J. Karlsson<sup>1</sup>; C. Junestedt<sup>1</sup>; <sup>1</sup> IVL Swedish Environmental Research Institute, Stockholm/S
- 12:40 **Lunch break with posters and exhibition**

WEDNESDAY, 19 JUNE 2019

## PROGRAMME

## MORNING

Room: MOA 6-7

## PLENARY SESSION

- 08:30 **Overcoming water stress by water reclamation and reuse**  
E. Van Houtte<sup>1</sup>; <sup>1</sup> IWVA, Koksijde/B
- The Swiss approach in reducing trace organic chemicals in the aquatic environment**  
C. McArdell<sup>1</sup>; <sup>1</sup> Swiss Federal Institute of Aquatic Science and Technology (Eawag), Dübendorf/CH  
TBA
- 09:10 **PANEL DISCUSSION and POSTER AWARDS**

Room: MOA 3

## Innovative Treatment Technologies &amp; Applications

Combining ozonation and biofiltration for potable reuse trains

Chair: R. Trussell; Trussell Technologies, Inc., Pasadena/USA

- 09:30 **Development of novel treatment concepts based on sequential biofiltration for indirect potable reuse**  
U. Hübner<sup>1</sup>; K. Hellauer<sup>1</sup>; J. Müller<sup>1</sup>; J. Drewes<sup>1</sup>; <sup>1</sup> Technische Universität München, Garching/D
- 09:50 **Emerging frontiers in potable reuse ozone-biofiltration treatment systems**  
V. Sundaram<sup>1</sup>; L. Li<sup>1</sup>; T. Guarín<sup>1</sup>; L. Peri<sup>1</sup>; K. Pagilla<sup>1</sup>; <sup>1</sup> University of Nevada, Reno, Reno/USA
- 10:10 **Evaluating direct potable reuse using ozone biological filtration without reverse osmosis**  
D. Funk<sup>1</sup>; J. Hooper<sup>2</sup>; K. Bell<sup>3</sup>; J. Mattingly<sup>4</sup>; <sup>1</sup> Gwinnett County, Lawrenceville, GA/USA; <sup>2</sup> CDM Smith, Bellevue, WA/USA; <sup>3</sup> Brown and Caldwell, Nashville, TN/USA; <sup>4</sup> Water Research Foundation, Alexandria, VA/USA
- 10:30 **Coffee break with posters and exhibition**

Room: MOA 3

## Innovative Treatment Technologies &amp; Applications

Combining ozonation and biofiltration for advanced treatment

Chair: U. Hübner; Technische Universität München, Garching/D

- 11:00 **Post-treatment options for ozonation in tertiary municipal wastewater treatment**  
D. Sauter<sup>1</sup>; A. Sperlich<sup>1</sup>; R. Bloch<sup>1</sup>; R. Gnirss<sup>1</sup>; J. Schuetz<sup>2</sup>; <sup>1</sup> Berliner Wasserbetriebe, Berlin/D; <sup>2</sup> Kompetenzzentrum Wasser Berlin gGmbH, Berlin/D
- 11:20 **O<sub>3</sub>/BAC versus chloramines: innovative pretreatment to membranes and enhanced energy efficiency of potable reuse treatment train**  
R. Trussell<sup>1</sup>; A. Pisarenko<sup>1</sup>; E. Chen<sup>1</sup>; A. Kolakovsky<sup>1</sup>; L. Breitner<sup>1</sup>; J. Quicho<sup>2</sup>; <sup>1</sup> Trussell Technologies, Inc., Solana Beach, California/USA; <sup>2</sup> City of San Diego, San Diego, California/USA
- 11:40 **Impact of operating conditions of an advanced wastewater treatment plant combining ozonation and granular activated carbon on antibiotic resistant bacteria and antibiotic resistance genes**  
K. Slipko<sup>1</sup>; L. Wallmann<sup>1</sup>; E. Radu<sup>1</sup>; H. Schaar<sup>1</sup>; N. Kreuzinger<sup>1</sup>; <sup>1</sup> Vienna University of Technology, Vienna/A
- 12:00 **Electro-Fenton treatment of real pharmaceutical wastewater: a feasibility study**  
H. Olvera-Vargas<sup>1</sup>; N. Gore-Datar<sup>2</sup>; S. Mutnuri<sup>2</sup>; O. Lefebvre<sup>1</sup>; <sup>1</sup> National University of Singapore, Singapore/SGP; <sup>2</sup> bits pilani goa campus, Goa/IND
- 12:20 **Activation of perulfates for water decontamination on pilot scale solar equipment: the example of interreg SUDOE 4KET4Reuse project**  
C. Telegang Chekem<sup>1</sup>; <sup>1</sup> Centre national de la recherche scientifique (CNRS), Perpignan/F
- 12:40 **Lunch break with posters and exhibition**



## PROGRAMME

WEDNESDAY, 19 JUNE 2019

## MORNING

Room: MOA 6-7

## PLENARY SESSION

- 08:30 **Overcoming water stress by water reclamation and reuse**  
E. Van Houtte<sup>1</sup>; <sup>1</sup> IWVA, Koksijde/B
- The Swiss approach in reducing trace organic chemicals in the aquatic environment**  
C. McArdell<sup>1</sup>; <sup>1</sup> Swiss Federal Institute of Aquatic Science and Technology (Eawag), Dübendorf/CH  
TBA
- 09:10 **PANEL DISCUSSION and POSTER AWARDS**

Room: MOA 4

## Urban Reuse including Landscape Irrigation

Microbial aspects

## Chair:

- 09:30 **Non-potable reuse – getting squeezed out in favor of potable reuse?**  
K. Bell<sup>1</sup>; <sup>1</sup> Brown and Caldwell, Nashville, TN/USA
- 09:50 **Can chlorine disinfection control the biofouling of reverse osmosis membrane used for municipal wastewater reclamation?**  
Y. Wang<sup>1</sup>; X. Tong<sup>1</sup>; Y. Bai<sup>1</sup>; X. Zhao<sup>1</sup>; N. Ikuno<sup>2</sup>; Y. Wu<sup>1</sup>; H. Hu<sup>1</sup>; <sup>1</sup> Tsinghua University, Beijing/CN; <sup>2</sup> Kurita Water Industries Ltd., Tokyo/J
- 10:10 **Factors affecting chlorine stability in recycled water distribution system: how much do we know?**  
A. Sathasivan<sup>1</sup>; <sup>1</sup> Western Sydney University, Penrith/AUS
- 10:30 **Coffee break with posters and exhibition**

Room: MOA 5

## Urban Reuse including Landscape Irrigation

Case studies and valuables

## Chair: B. Jimenez; National Autonomous University of Mexico, Mexico City/MEX

- 11:00 **Urban water reclamation with resource recovery as key potential to close resource loops in Munich, Germany and Leh, India**  
M. Al-Azzawi<sup>1</sup>; D. Gondhalekar<sup>1</sup>; J. Drewes<sup>1</sup>; <sup>1</sup> Technische Universität München, Garching/D
- 11:20 **Enhancement of water reuse in GIDA: design of a biodiversity garden and a service area**  
D. Iacopini<sup>1</sup>; M. Allocca<sup>1</sup>; B. Gargani<sup>2</sup>; G. Bettini<sup>2</sup>; E. Bettazzi<sup>1</sup>; <sup>1</sup> Gestione Impianti Depurazione Acque S.p.A., Prato/I; <sup>2</sup> Studio Biosfera, Prato/I
- 11:40 **Golf courses irrigation with reclaimed water: a risk approach**  
M. Salgot<sup>1</sup>; M. Folch<sup>1</sup>; <sup>1</sup> Universitat de Barcelona, Barcelona/E
- 12:00 **Determining the standard of nitrogen and phosphorus concentration in reuse of wastewater in scenic water based on microalgal growth potential**  
G. Dao<sup>1</sup>; C. Yang<sup>2</sup>; H. Hu<sup>3</sup>; <sup>1</sup> School of Environment, Tsinghua University, School of Environment, Tsinghua University, Haidian district-Beijing/CN; <sup>2</sup> Tsinghua University, Graduate School of Shenzhen, ShenZhen/CN; <sup>3</sup> School of Environment, Tsinghua University, Beijing/CN
- 12:20 **The role of ceramic membranes in water recycling**  
J. Clement<sup>1</sup>; <sup>1</sup> Nanostone Water GmbH, Abcoude/NL
- 12:40 **Lunch break with posters and exhibition**

WEDNESDAY, 19 JUNE 2019

## PROGRAMME

## MORNING

Room: MOA 6-7

## PLENARY SESSION

- 08:30 **Overcoming water stress by water reclamation and reuse**  
E. Van Houtte<sup>1</sup>; <sup>1</sup> IWVA, Koksijde/B
- The Swiss approach in reducing trace organic chemicals in the aquatic environment**  
C. McArdell<sup>1</sup>; <sup>1</sup> Swiss Federal Institute of Aquatic Science and Technology (Eawag), Dübendorf/CH  
TBA
- 09:10 **PANEL DISCUSSION and POSTER AWARDS**

Room: MOA 5

## Monitoring and Compliance

Microbial contaminants and decision support

## Chair:

- 09:30 **Developing biological surrogates for monitoring treatment performance of onsite non-potable water systems**  
N. Brinkman<sup>1</sup>; S. Keely<sup>2</sup>; E. Wheaton<sup>2</sup>; M. Jahne<sup>2</sup>; J. Garland<sup>2</sup>; <sup>1</sup> US EPA, Ohio/USA; <sup>2</sup> US EPA, Cincinnati/USA
- 09:50 **Monitoring emerging contaminants in wastewater reuse systems by fluorescence EEM**  
P. Roccaro<sup>1</sup>; <sup>1</sup> Università degli Studi di Catania, Catania/I
- 10:10 **Information and communication technology (ICT) for optimized water reuse solution combining natural-engineered treatment systems in coastal area**  
M. Pettenati<sup>1</sup>; <sup>1</sup> Bureau de Recherches Géologiques et Minières (BRGM), Orléans/F
- 10:30 **Coffee break with posters and exhibition**

Room: MOA 4

## Monitoring and Compliance

Organic and inorganic contaminants

## Chair:

- 11:00 **Demonstrating real-time collection system monitoring for enhanced source control in potable reuse**  
E. Steinle-Darling<sup>1</sup>; G. Dorrington<sup>2</sup>; N. Nye<sup>3</sup>; P. Carlo<sup>4</sup>; A. Salveson<sup>5</sup>; <sup>1</sup> Carollo Engineers, Inc., Austin/USA; <sup>2</sup> Ventura Water, Ventura, California/USA; <sup>3</sup> El Paso Water, El Paso, Texas/USA; <sup>4</sup> Carollo Engineers, Inc., Sacramento, California/USA; <sup>5</sup> Carollo Engineers, Inc., Walnut Creek, California/USA
- 11:20 **Characterization of organic matter and contaminants during DPR processes compared to surface water supplies**  
C. Hoppe-Jones<sup>1</sup>; S. Beitel<sup>1</sup>; K. Daniels<sup>1</sup>; I. Lopez<sup>1</sup>; M. Park<sup>1</sup>; S. Snyder<sup>2</sup>; <sup>1</sup> University of Arizona, Tucson/USA; <sup>2</sup> Nanyang Technological University, Singapore/SGP
- 11:40 **Is the water fit for use or reuse? How determination and characterization of organics data drives decisions for critical control of potable reuse treatment processes.**  
A. Scott<sup>1</sup>; J. Neubauer<sup>2</sup>; <sup>1</sup> Suez Water Technologies and Solutions Analytical Instruments, Boulder/USA; <sup>2</sup> SUEZ WTS Germany GmbH, Ratingen/D
- 12:00 **A steric pore-flow model to predict N-nitrosamines rejection by reverse osmosis membranes**  
H. Takeuchi<sup>1</sup>; T. Fujioka<sup>2</sup>; L. Nghiem<sup>3</sup>; H. Tanaka<sup>1</sup>; <sup>1</sup> Kyoto University, Otsu/J; <sup>2</sup> Nagasaki University, Nagasaki/J; <sup>3</sup> University of Technology Sydney/AUS
- 12:20 **Deleterious role of silica and lead contaminated drinking water in the induction of Chronic Kidney Disease**  
S. Mascarenhas<sup>1</sup>; A. Ganguly<sup>1</sup>; S. Mutnuri<sup>1</sup>; <sup>1</sup> BITS Pilani K K Birla Goa campus, Zuarinagar/IND
- 12:40 **Lunch break with posters and exhibition**



## PROGRAMME

WEDNESDAY, 19 JUNE 2019

## AFTERNOON

Room: MOA 6-7

## Regulation, Governance and Engagement

Chair:

- 13:40 **Establishment of a national learning platform for direct potable reuse in South Africa**  
L. Maharaj<sup>1</sup>; M. Schalkwyk<sup>1</sup>; M. Mnguni<sup>1</sup>; <sup>1</sup> Umgeni Water, Pietermaritzburg/ZA
- 14:00 **Promoting waste water reuse through a reclaimed water master plan in the Consorci Besòs Tordeà environment**  
B. Martínez Lopez<sup>1</sup>; P. Aguiló Martos<sup>1</sup>; <sup>1</sup> Consorci Besòs Tordera, Granollers/E
- 14:20 **Water Reuse Hubs as enablers of water reuse implementation**  
C. Echevarría<sup>1</sup>; X. Bernat<sup>1</sup>; M. Arnaldos Orts<sup>1</sup>; M. Termes Rife<sup>2</sup>; <sup>1</sup> CETAQUA, Barcelona/E; <sup>2</sup> University of Barcelona/E
- 14:40 **Compliance of combined nature-based and engineered systems with European water reuse regulations**  
U. Miehe<sup>1</sup>; <sup>1</sup> Kompetenzzentrum Wasser Berlin gGmbH, Berlin/D
- 15:00 **Capacity development for wastewater management and water reuse in Informal partnerships in Northern Namibia**  
M. Zimmermann<sup>1</sup>; F. Frick-Trzebitzky<sup>1</sup>; T. Kluge<sup>1</sup>; <sup>1</sup> ISOE - Institute for Social-Ecological Research, Frankfurt am Main/D

15:20 Coffee break with posters and exhibition

Room: MOA 6-7

## 15:50 CLOSING SESSION

WEDNESDAY, 19 JUNE 2019

## PROGRAMME

## AFTERNOON

Room: MOA 3

## Innovative Treatment Technologies &amp; Applications

Hybrid systems and alternative concepts

Chair: O. Lefebvre; National University of Singapore/SGP

- 13:40 **Modelling and predicting the potential application of new waste-derived activated carbons for controlling pharmaceutical compounds in conventional wastewater treatment**  
R. Viegas<sup>1</sup>; E. Mesquita<sup>1</sup>; M. Campinas<sup>1</sup>; A. Mestre<sup>2</sup>; A. Carvalho<sup>2</sup>; M. Rosa<sup>1</sup>; <sup>1</sup> LNEC – National Civil Engineering Laboratory, Lisbon/P; <sup>2</sup> Centro de Química Estrutural, Faculdade de Ciências, Universidade de Lisboa, Lisbon/P
- 14:00 **Biodegradable ion-exchange resins for nutrient recovery from effluents of anaerobic membrane bioreactors**  
Y. Xiao<sup>1</sup>; <sup>1</sup> Shantou University, Shantou/CN
- 14:20 **Solar photo-oxidation process: an innovative technology to partially mineralize three major pharmaceuticals to make them biodegradable.**  
B. REOYO-PRATS<sup>1</sup>; C. JOANNIS-CASSAN<sup>2</sup>; M. HAMMADI<sup>1</sup>; C. DEZANI<sup>1</sup>; V. GOETZ<sup>1</sup>; C. CALAS-BLANCHARD<sup>3</sup>; S. LACORTE BRUGUERA<sup>4</sup>; G. PLANTARD<sup>1</sup>; <sup>1</sup> Laboratoire PROCédés, Matériaux et Energie Solaire (PROMES), CNRS UPR 8521, Perpignan/F; <sup>2</sup> Université de Toulouse, INPT, Laboratoire de Génie Chimique / CNRS, Laboratoire de Génie Chimique, UMR 5503,, Toulouse/F; <sup>3</sup> Laboratoire Biocapteurs-Analyse-Environnement (BAE), CNRS UMR 5054, Perpignan/F; <sup>4</sup> Department of Environmental Chemistry, IIQAB-CSIC, Jordi Girona, Barcelona/E
- 14:40 **Water reclamation using regenerated membranes for indirect potable reuse and irrigation of private gardens**  
S. Casas<sup>1</sup>; A. Serra<sup>1</sup>; A. Casadellà<sup>1</sup>; J. Ribera<sup>1</sup>; X. Martínez<sup>1</sup>; S. Reyes<sup>2</sup>; A. Perez<sup>2</sup>; L. Sala<sup>3</sup>; A. Con<sup>4</sup>; J. Couso<sup>5</sup>; <sup>1</sup> CTM Foundation - EURECAT, Manresa/E; <sup>2</sup> Water Agency of Catalonia (ACA), Barcelona/E; <sup>3</sup> CCB - Consorci Costa Brava, Girona/E; <sup>4</sup> Aigües Costa Brava, Girona/E; <sup>5</sup> Ajuntament Tossa de Mar, Tossa de Mar/E
- 15:00 **CoRe Water: from WWTP to a sustainable water factory**  
K. Roest<sup>1</sup>; L. van Dijk<sup>2</sup>; A. Polman<sup>2</sup>; H. Ramaekers<sup>3</sup>; A. Hendriks<sup>3</sup>; E. Cornelissen<sup>1</sup>; <sup>1</sup> KWR Watercycle Research Institute, Nieuwegein/NL; <sup>2</sup> Blue-Tec, Renkum/NL; <sup>3</sup> Royal HaskoningDHV, Amersfoort/NL

15:20 Coffee break with posters and exhibition

Room: MOA 6-7

## 15:50 CLOSING SESSION

## PROGRAMME

WEDNESDAY, 19 JUNE 2019

## AFTERNOON

Room: MOA 4

**Concentrate and Residual Management***Chair: C. Blöcher; Covestro Deutschland AG, Leverkusen/D*

- 13:40 **Conditioning of super-concentrate brines from industrial water recycling for salt recovery**  
T. Hogen<sup>1</sup>; M. Kieselbach<sup>1</sup>; S. Geißen<sup>1</sup>; J. Wellmann<sup>1</sup>; <sup>1</sup> Technische Universität Berlin, Berlin/D
- 14:00 **Experimental results on brine treatment with special configuration of membrane distillation**  
V. Hegde<sup>1</sup>; D. Winter<sup>1</sup>; R. Schwantes<sup>2</sup>; J. Went<sup>1</sup>; <sup>1</sup> Fraunhofer ISE, Freiburg/D; <sup>2</sup> SolarSpring GmbH, Freiburg/D
- 14:20 **Concentration of reverse osmosis concentrate from incineration leachate using membrane distillation coupled with a pre-treatment process**  
J. Shi<sup>1</sup>; D. Sun<sup>2</sup>; <sup>1</sup> , Beijing/CN; <sup>2</sup> Beijing Forestry University, Beijing/CN
- 14:40
- 15:00 **Transformation of organic matters in reverse osmosis concentrate from a municipal wastewater reclamation plant**  
Z. Xu<sup>1</sup>; W. Wang<sup>1</sup>; Q. Wu<sup>1</sup>; H. Hu<sup>1</sup>; <sup>1</sup> Tsinghua University, Beijing/CN
- 15:20 [Coffee break with posters and exhibition](#)

Room: MOA 6-7

15:50 **CLOSING SESSION**

WEDNESDAY, 19 JUNE 2019

## PROGRAMME

## AFTERNOON

Room: MOA 5

**Market Acceptance of Reuse Solutions***Chair: M. Meeker; Gwinnett County, Lawrenceville, GA/USA*

- 13:40 **DISCUSSION:**  
**Reuse in not a Project, it is Life**  
*Moderator: E. Steinle-Darling, Carollo Engineers, Inc., Austin, TX/USA*  
P. Alexander, Gwinnett County, Lawrenceville, GA/USA  
**Reuse – Essential for Quality of Life**  
M. Meeker, Gwinnett County, Lawrenceville, GA/USA  
**Reuse – Key Driver of Innovation**  
P. Sinicropi, WaterReuse Association, Alexandria, VA/USA  
**Reuse – Critical to the Economy**  
M. Poling, Clean Water Services, Hillsboro, OR/USA  
**Reuse – And Beer of Course!**
- 15:00 **The growth of water reuse in Europe: 2006 to 2017**  
S. Boubekri<sup>1</sup>; P. Jeffrey<sup>1</sup>; K. Le Corre<sup>1</sup>; <sup>1</sup> Water Reuse Europe, Cranfield/UK
- 15:20 [Coffee break with posters and exhibition](#)

Room: MOA 6-7

15:50 **CLOSING SESSION**

## WORKSHOPS

SUNDAY, 16 JUNE 2019

10:00 – 13: 00

Room: MOA 6-7

**Young Water Reuse Professionals development and integration workshop**

Organizer: IWA Young Water Reuse Professionals, Olivier Lefebvre, SGP

**Discription:** During this experiential workshop, Young Water Reuse Professionals (YWRP) will integrate in teams guided by a senior mentor to develop an innovative solution to a local case study that will be proposed by the organizers (e.g., design a water reuse system for the hotel facility in which the conference is held). The teams will present their solution to a panel of judges for feedback and recognition.

**Fees:** 25,- Euro  
(limited to 30 Participants)

10:00 – 13: 00

Room: MOA 3

**BMBF funding measure WavE: “risk management in water reuse – national and international perspectives”**

Organizer: BMBF funding measure WavE/D

**Discription:** The funding measure WavE is developing innovative technologies and management concepts to realize a sustainable increase in water availability. The focus is on: (I) water reuse of municipal wastewater, (II) reuse of water in industry, (III) use of saline ground- and surface water. The workshop will discuss challenges and barriers for implementation of reuse solutions and ways forward towards and efficient use of innovative solutions.

**Fees:** 30,- Euro  
supported by BMBF funding measure WavE/D

10:00 – 13: 00

Room: MOA 4

**AquaNES QMRA-tool: a webtool for quantitative microbial risk assessment of water reuse applications**

Organizer: Patrick Smeets, KWR Watercycle Research Institute, Nieuwegein/NL; Ulf Miehe, Kompetenzzentrum Wasser Berlin, D

**Discription:** It is important to determine the microbial safety of reused water to prevent spreading of diseases. Quantitative Microbial Risk Assessment provides a methodology to assess health risks from water reuse. This workshop introduces a free, web-based QMRA tool for both beginners and experienced users that uses state of the art scientific knowledge and approaches.

**Fees:** 60,- Euro

10:00 – 13: 00

Room: MOA 5

**Water reclamation and reuse in development cooperation case studies – challenges, approaches, achievements and the way forward**

Organizer: KfW Development Bank/D; GIZ - Deutsche Gesellschaft für Internationale Zusammenarbeit/D; BGR Federal Institute for Geosciences and Natural Resources/D

**Discription:** The main objective of the workshop is to bring together practitioners of the Development Cooperation (Consultants, Engineers, Agriculture, Industry), the scientific community, representatives of partner countries and politicians in order to share experiences based on the presented case studies and to proceed to a reality check on drivers, challenges, unexpected obstacles and unexpected dynamics with regard to the implementation of water reclamation and reuse projects. In conclusion of the workshop ideas and recommendations with regard to the way forward should be compiled and highlighted.

**Fees:** 30,- Euro  
(limited to 50 Participants) supported by KfW Development Bank/D

THURSDAY, 20 JUNE 2018

TECHNICAL TOURS

**TECHNICAL TOUR 1**

Full day

**Water management in support of urban potable/non-potable water supply**

Location: Berlin area

**Discription:** Berlin is a constantly growing city and it's drinking water supply heavily relies on bank filtration from streams and lakes that also receive significant amounts of wastewater discharge. Currently only natural treatment processes followed by conventional drinking water treatment are employed. Different measures are being implemented at the city scale to proactively manage this unplanned indirect potable reuse scheme. Besides a new concept of managed aquifer recharge (SMART), various installations ensuring a sustainable water supply will be visited, addressing further reuse specific aspects: Micropollutant and pathogens removal, managed aquifer recharge, surface water treatment and decentralised urban non-potable water reuse installations.

**Fees:** 75- Euro plus VAT  
(minimum number of participants 30, maximum 50)  
supported by Berliner Wasserbetriebe

**TECHNICAL TOUR 2**

Half day

**Water reuse and concentrate treatment in industrial applications**

Location: Berlin area

**Discription:** The tour gives different examples of water reuse in industry. (I) In an industrial laundry about 40 % of the used water is recycled by a multistep membrane processes. In parallel a high amount of wastewater based residual heat is reused. (II) In a food production site (coffee extract) a scheme for increasing water reuse up to 60 % by membrane bioreactor and reverse osmosis is under implementation. Challenges are the hardly biodegradable fraction of the wastewater and the chemical and hygienic permeate quality for reuse. For both sites, innovative solutions for concentrate treatment are currently implemented and will be featured during the tour.

**Fees:** 50,- Euro plus VAT  
(minimum number of participants 20, maximum 30)

**TECHNICAL TOUR 3**

Full day

**Towards water reuse in agriculture**

Location: Wolfsburg area

**Discription:** Solutions for upgrading reclaimed water in such a way that water and nutrients are available for the use within hydroponic plant growth systems in agriculture will be shown. In addition recovery of nutrients as phosphorus and efficient wastewater treatment installations will be shown.

**Fees:** 90,- Euro plus VAT  
(minimum number of participants 30, maximum 50)