IWA Digital World Water Congress

24 MAY – 4 JUNE 2021

digital.worldwatercongress.org
#WorldWaterCongress

IWA the international water association | DIGITAL World Water Congress

Congress **Programme**

Connecting the dots for a water-wise world

- Water utility management
- Wastewater treatment & resource recovery
- Drinking water & potable reuse
- City-scale planning & operations
- Communities, communication & partnerships
- Water resources & large-scale water management

Contents

About the IWA

The International Water Association (IWA) is the leading network and global knowledge hub for water professionals, and anyone committed to the future of water. IWA, which is a non-profit organisation, has a legacy of over 70 years.

IWA connects water professionals in over 130 countries to find solutions to global water challenges as part of a broader sustainability agenda. IWA connects scientists with professionals and communities so that pioneering research provides sustainable solutions.

In addition, the association promotes and supports technological innovation and best practices through international frameworks and standards. Through projects, events, and publications, IWA engages with its members to stimulate innovative ideas and content in support of IWA's vision of a water-wise world.

About the Digital World Water Congress

IWA's Digital World Water Congress (DWWC) will take place virtually from 24 May – 4 June 2021.

During this major virtual event, water professionals and global experts will speak about the biggest issues affecting the water sector, from Covid-19 to progress towards reaching the Sustainable Development Goals (SDGs).

Registration is still open for thew event, which has already attracted unprecedented interest from across the industry. Register now at **https://digital.worldwatercongress.org**

The Digital World Water Congress represents one of the biggest online events for water professionals covering the full water cycle. It includes 32 hours of content and activity, spans across eight days and covers multiple time zones to accommodate a global audience.

The event consists of plenary sessions with keynote speakers, technical presentations from industry experts, smart-networking and social opportunities accessible through a dedicated platform. There will also be a poster hall, with presentations and Q&As available from each author.

Introduction

to DWWC programme

Dear colleagues and friends,

We are delighted to welcome you to IWA's 2021 Digital World Water Congress.

This virtual event has been a classic case of necessity being the mother of invention. As a result of Covid-19, none of us could meet face to face in 2020. However, given IWA had already developed an outstanding programme of activity, we still wanted to provide members and stakeholders with a platform to share ideas and network.

This determination to be a positive force for good for our industry, despite the challenges we face, highlights the value of IWA to our members and the industry.

Our focus now is rising to the current and future issues the water sector faces, and to provide compelling and enduring solutions. A key part of this is the 'build back better' agenda, a phrase recently popularised by the UN and World Bank, among others.

Our question to you all therefore is - how can the water sector play a role in building back our economies and societies post-coronavirus in a way which protects the natural environment and is sustainable?

We believe there are huge opportunities in all contexts across the world. For instance, technology can play a critical role in improving access to water and sanitation in low-income countries. Meanwhile, many high-income countries don't have a circular approach to water usage – meaning there are substantial efficiencies to be found.

IWA looks forward to discussing this topic during the Digital World Water Congress, as well as showcasing presentations from dozens of members from around the world, across six themes.

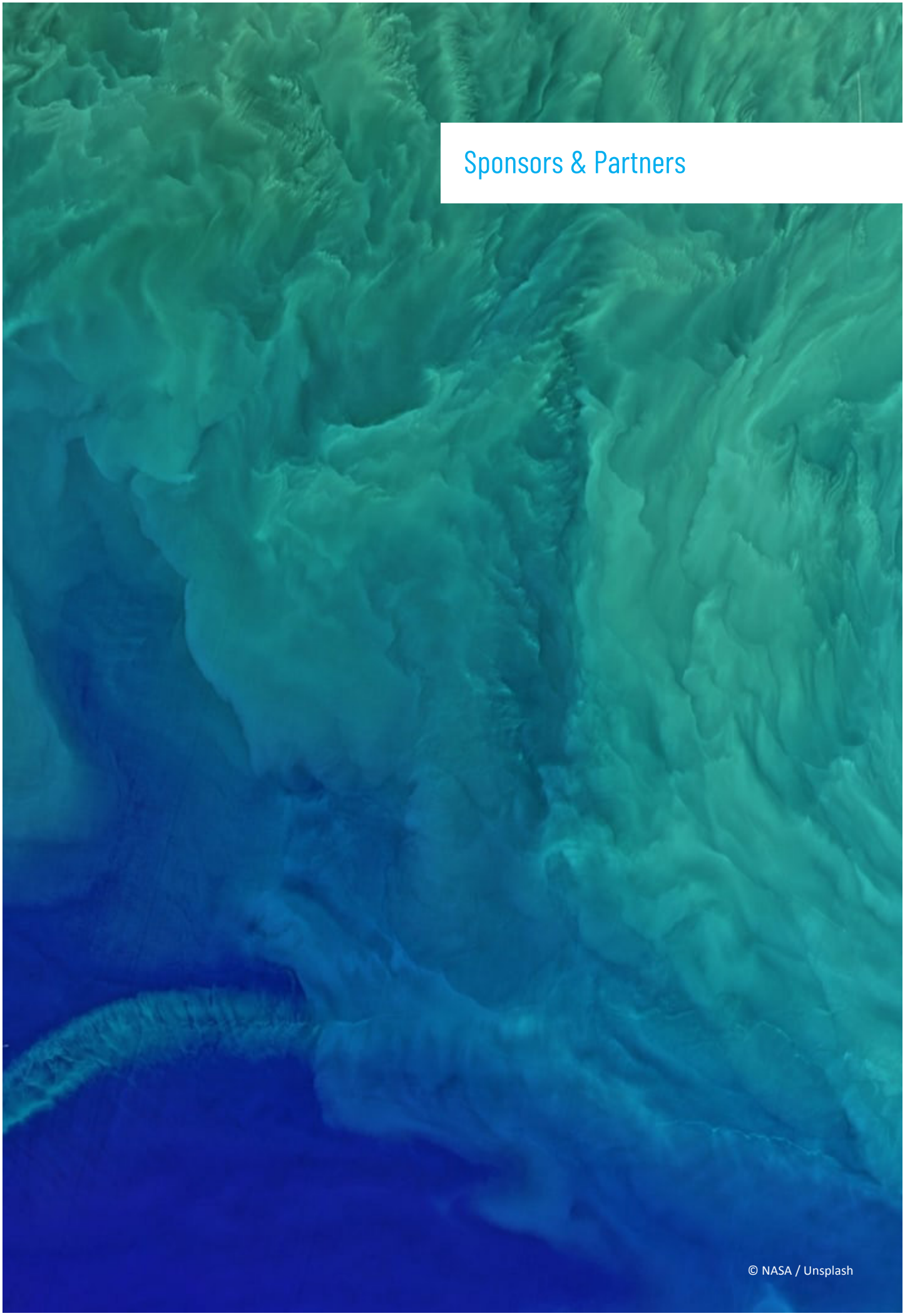
As well as the core schedule, there is also a poster presentation hall, covering further research and insight into how we move to a more water-wise world. The event will also play host to the IWA Awards, as well as offering networking, the opportunity to view three exciting water documentaries free on-demand, and more.

Now is the time for us all to collaborate and work with a laser-like focus on solutions to enable benefits to be felt across an array of social, environmental, economic and health outcomes. We therefore hope the event proves compelling, informative and engaging – and helps enable these conversations and initiatives to develop.

If you haven't already registered for the event, there is still time – please visit **https://digital.worldwatercongress.org**. We look forward to seeing you all there!

Tom Mollenkopf, *IWA President*
Kala Vairavamoorthy, *IWA Executive Director*

Sponsors & Partners



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Sponsors

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www.grundfos.com

kamstrup

At Kamstrup, we believe no one should have to question their access to clean water. For over 15 years, we have partnered with water utilities worldwide to help them solve their challenges by delivering reliable, cost-effective ways to measure and manage water consumption. Our smart metering solutions empower utilities to reduce water loss and optimize operations. Intelligence from our meters lights up the distribution networks that supply communities every day. Our sponsorship with the IWA grows from our shared belief that data and digital solutions are key to addressing the industry's challenges and SDG targets.

www.kamstrup.com

xylem *(Plenary sponsor)*

Xylem (XYL) is a leading global water technology company committed to solving critical water and infrastructure challenges with innovation. Our more than 16,000 diverse employees delivered revenue of $4.88 billion in 2020. We are creating a more sustainable world by enabling our customers to optimize water and resource management, and helping communities in more than 150 countries become water-secure.

www.xylem.com

Gold sponsors

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Our expertise is to devise, plan and implement large-scale projects within infrastructure, no-dig, climate change adaptation, the environment, energy and construction – from design to handing-over. Our point of departure is a strong position in Denmark and the Baltic Sea region, and we solve projects in most parts of the world.

www.aarsleff.com

COWI

COWI is a leading consulting group that creates value for customers, people and society through our unique 360° approach. Based on our world-class competencies within engineering, economics and environmental science, we tackle challenges from many vantage points to create coherent solutions for our customers. Together, we create coherence in tomorrow's sustainable societies.

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We use our chemistry to improve your everyday. We add optimal quality, functionality and strength to paper and board products, we ensure safety and hygiene of water and food packaging, and we maximize yield from energy resources. We serve customers around the world and improve their product quality, resource efficiency and sustainability.

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Ramboll is a leading engineering, architecture and consultancy company founded in Denmark in 1945. We partner with our clients to create sustainable societies where people and nature flourish. With our unique combination of technical excellence and socio-economic insights we deliver enduring structures, resource-efficient solutions and socially cohesive communities for today and tomorrow.

www.ramboll.com

Sponsors

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www.dhigroup.com

For more than 50 years Danfoss has contributed globally to meeting the need for energy-efficient infrastructure, connected systems, and integrated renewable energy. Danfoss engineers a better tomorrow for the water and wastewater sector, with technology including quality application-optimized drives, pressure transmitters and switches.

www.danfoss.com

Silhorko-Eurowater A/S – a Grundfos Company is manufacturing water treatment plants for drinking water, process water, boiler water, and district heating. More than 400 people are employed internationally running activities in most European countries – either through subsidiary companies or through local distributors that all are water treatment specialists with local service facilities.

www.eurowater.com

Eurofins Scientific pledges to be the world leader in water, food, environment and pharmaceutical products testing. With over 47,000 staff in more than 800 laboratories across 45 countries, Eurofins offers a portfolio of over 200,000 analytical methods for evaluating the safety, identity, composition, authenticity, origin and purity of biological substances and products.

www.eurofins.com

Vewin is the national association of water companies in the Netherlands. The companies, with municipal and provincial authorities as their shareholders, deliver high-quality drinking water throughout the Netherlands 24/7. The principal task of Vewin is to represent in The Hague and Brussels the interests of its members. Our aim is to establish and maintain favourable conditions for the continuous production of good drinking water.

www.vewin.nl

Partners

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Hosted by Spain Water and IWHR, China

IRC Supporting water sanitation and hygiene services for life

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The official IWA Digital World Water Congress Magazine

Environmental Science & Engineering MAGAZINE

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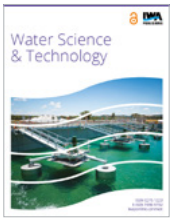
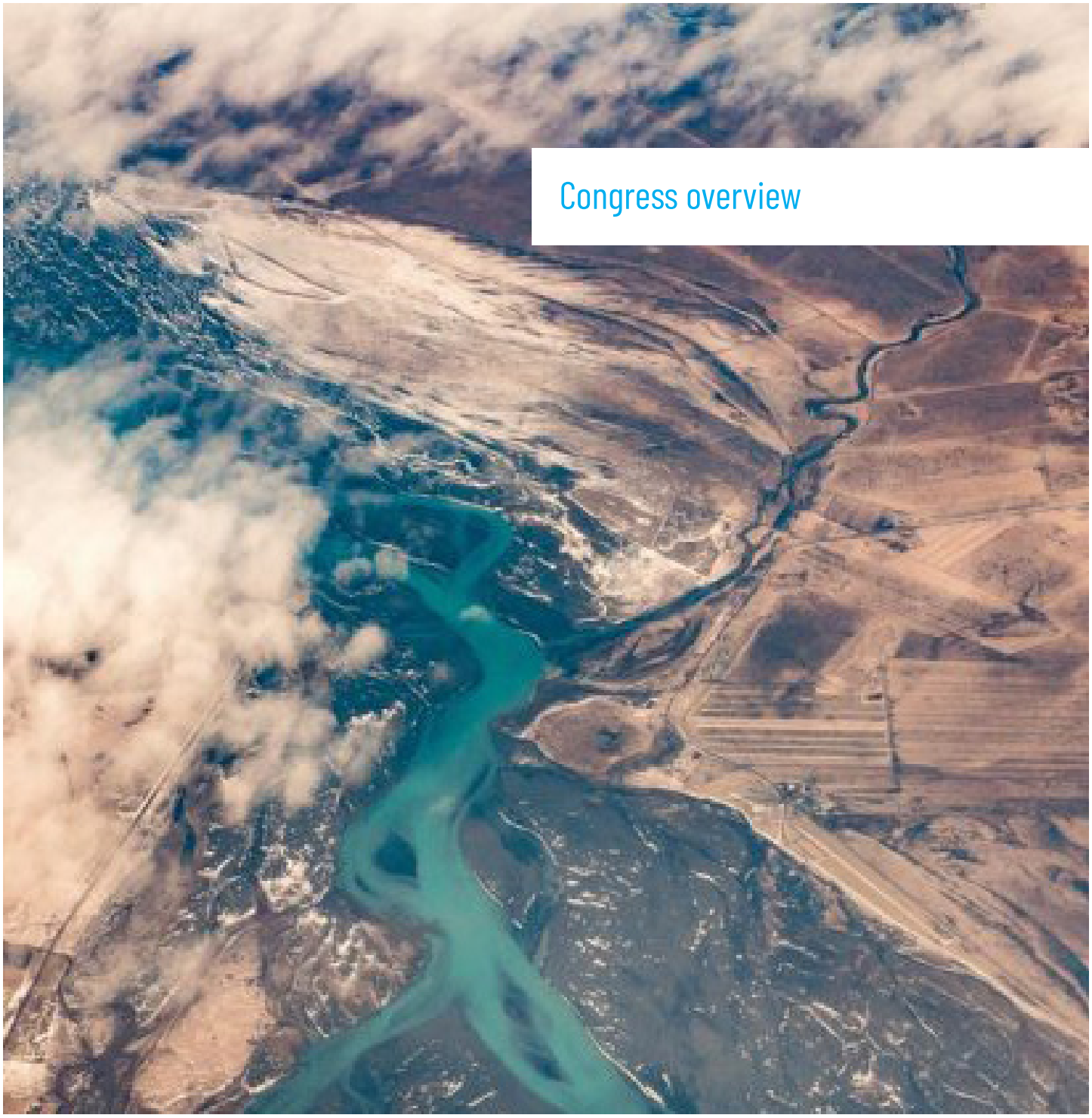
AcquAgenda



Water Technology

WaterWorld

Congress overview



Track 1
Water utility management

Track 2
Wastewater treatment & resource recovery

Track 3
Drinking water & potable reuse

Track 4
City-scale planning & operations

Track 5
Communities, communication, & partnerships

Track 6
Water resources & large-scale water management

Congress themes

Connecting the dots for a water-wise world

Track 1
Water utility management

The water sector needs to improve utility management to guarantee efficient operations. This covers a wide range of actions: from infrastructure development for water supply to improvement in public-private sector cooperation, up to the management of the full urban water cycle. The need to maintain high performance while implementing environmentally sustainable models for water management will affect future developments in water utilities' strategies.

Track 2
Wastewater treatment & resource recovery

Before returning to the water cycle (rivers, lakes, estuaries, oceans), wastewater needs to be treated via biological or physicochemical treatments, or a combination of these, to be safely discharged with acceptable impact on the environment. In this process, wastewater is recognised as a valued source of renewable resources. It is therefore crucial to adapt wastewater facilities to ensure the recovery of energy and valuable compounds, including water itself. For this purpose, it is also crucial to highlight the importance of digital technologies which can be implemented in daily operations to improve efficiencies.

Track 3
Drinking water & potable reuse

Potable water reuse refers to the process of using treated wastewater for drinking water. This represents a practical source of drinking water, in response to growing pressures on available water resources. The optimisation of potable water reuse practices necessitates effective drinking water production technologies as well as efficient distribution systems. To ensure this, as well as high water quality standards, an in-depth investigation of water management and socio-political aspects is needed. These can also be facilitated by the use of digital tools and technologies.

Track 4
City-scale planning & operations

Cities all over the world are facing similar challenges in terms of climate change, increased urbanisation, pressure on resources and rising demands for liveable cities. Addressing these challenges requires an adaptation of current city planning to include a more resilient design. Smart, resilient and liveable cities need therefore to be developed by establishing a partnership between different sectors of the society (e.g. water management, infrastructure, operations and city planning). In this framework, digital solutions can also enable the transformation towards sustainability, liveability and, therefore, the SDGs.

Track 5
Communities, communication, & partnerships

At the core of the transformation towards a more sustainable and resilient future, there are the people who constitute society. The water sector, as well as every other sector, needs to ensure that societal needs are met and the well-being of the community is the main focus and driver of the decision making process. To guarantee this, it is crucial to take into consideration cross-sectorial planning as well as to ensure that incentives are equally distributed among communities.

Track 6
Water resources & large-scale water management

Exploiting the potential of water resources (e.g. groundwater and surface water) requires appropriate management of them. In particular, water management needs to include the monitoring of water quality and quantity, as well as implementation of methods to treat contaminated water resources, to ensure their availability in an environmentally sustainable way.

Programme overview

Week 1

Track 1
Water utility management

Track 2
Wastewater treatment & resource recovery

Track 3
Drinking water & potable reuse

Track 4
City-scale planning & operations

Track 5
Communities, communication, & partnerships

Track 6
Water resources & large-scale water management

Week 1	Monday 24 May			Tuesday 25 May			Wednesday 26 May	Thursday 27 May			Friday 28 May *			* 28 May
11.00 — 12.00	OPENING CEREMONY			S7	S8	S9	REST DAY	S16	S17	S18	DOCUMENTARY — BRAVE BLUE WORLD			11.00 — 12.00
12.00 — 12.30	BREAK			BREAK				BREAK			PANEL EVENT			12.00 — 12.30
12.30 — 13.30	S1	S2	S3	S10	S11	S12		S19	S20	S21	BREAK			12.30 — 13.00
13.30 — 14.00	BREAK			BREAK				BREAK			S25	S26	S27	13.00 — 14.00
14.00 — 15.00	S4	S5	S6	S13	S14	S15		S22	S23	S24	WATER INDUSTRY QUIZ			14.00 — 15.00

Week 1	Monday 24 May			Tuesday 25 May		
11.00 — 12.00	OPENING CEREMONY & KEYNOTE SPEAKER IWA AWARDS			**SESSION 7** Resource recovery from wastewater	**SESSION 8** Oxidation and other processes	**SESSION 9** Drinking water production
12.30 — 13.30	**SESSION 1** Resource recovery from wastewater	**SESSION 2** Management of climate adaptation	**SESSION 3** Utility efficiency and excellence	**SESSION 10** Modelling integrated wastewater treatment processes	**SESSION 11** Electrochemical and oxidation processes	**SESSION 12** Drinking water production
14.00 — 15.00	**SESSION 4** Resource recovery from wastewater	**SESSION 5** Strategic water management in cities	**SESSION 6** Water quality standards, regulations and economics	**SESSION 13** Modelling integrated wastewater treatment processes	**SESSION 14** Micropollutants and nanoplastics	**SESSION 15** Distribution system microbiology and biofilms

Week 1	Thursday 27 May			Friday 28 May *			* 28 May
11.00 — 12.00	**SESSION 16** Emergent contaminants	**SESSION 17** Water utility digital practice	**SESSION 18** Potable reuse and alternative drinking water production	**DOCUMENTARY SCREENING** Brave Blue World			11.00 — 12.00
				PANEL DISCUSSION, HOSTED BY IWA Challenges and opportunities for the water sector			12.00 — 12.30
12.30 — 13.30	**SESSION 19** Emergent contaminants	**SESSION 20** Becoming a digital water utility of the future	**SESSION 21** Microbial and chemical risk assessment	**SESSION 25** Water reclamation	**SESSION 26** Smart management of water and wastewater networks	**SESSION 27** Antibiotic resistance and biodegradation of pesticides	13.00 — 14.00
14.00 — 15.00	**SESSION 22** Anammox-based nitrogen removal	**SESSION 23** Smart management of wastewater collection systems	**SESSION 24** Disinfection techniques in drinking water production	**WATER INDUSTRY QUIZ**			14.00 — 15.00

Programme overview

Week 2

Track 1
Water utility management

Track 2
Wastewater treatment & resource recovery

Track 3
Drinking water & potable reuse

Track 4
City-scale planning & operations

Track 5
Communities, communication, & partnerships

Track 6
Water resources & large-scale water management

Week 2	Monday 31 May	Tuesday 01 June			Wednesday 02 June			Thursday 03 June			Friday 04 June		
12.00 — 13.00	REST DAY	WEEK 2 OPENING			S34	S35	S36	S40	S41	S42	WATER INDUSTRY TV AWARDS		
13.00 — 13.30		BREAK			BREAK			BREAK			BREAK		
13.30 — 14.30		S28	S29	S30	S37	S38	S39	S43	S44	S45	S49	S50	S51
14.30 — 15.00		BREAK			BREAK			BREAK			BREAK		
15.00 — 16.00		S31	S32	S33	DOCUMENTARY — LORDS OF WATER			S46	S47	S48	CLOSING CEREMONY		

Week 2	Tuesday 01 June			Wednesday 02 June		
12.00 — 13.00	WEEK 2 OPENING & KEYNOTE SPEAKER IWA AWARDS			**SESSION 34** Nutrient removal	**SESSION 35** Lifecycle analysis and the circular economy	**SESSION 36** Distribution system modelling and sustainability
13.30 — 14.30	**SESSION 28** Operation of full-scale WWTP	**SESSION 29** Smart measurements for better decisions	**SESSION 30** Nature-based solutions and sustainable water management	**SESSION 37** Specific nitrogen removal processes	**SESSION 38** Integrated modelling of nature based solutions towards water-wise cities	**SESSION 39** Community engagement and collaboration for improved water resource and liveability outcomes
15.00 — 16.00	**SESSION 31** Large wastewater treatment plants	**SESSION 32** Enhancing urban flood resilience through technology	**SESSION 33** Ecosystems services and understanding water resources	DOCUMENTARY SCREENING Lords of Water		

Week 2	Thursday 03 June			Friday 04 June		
12.00 — 13.00	**SESSION 40** Microbiology of WWTP - phosphorus removal	**SESSION 41** Integrating water management and urban planning with many stakeholders	**SESSION 42** Government and industry collaborations for improved water sector resilience	WATER INDUSTRY TV AWARDS		
13.30 — 14.30	**SESSION 43** Biosolids management	**SESSION 44** Planning for rehabilitation and retrofitting	**SESSION 45** Communication with stakeholders & disaster management	**SESSION 49** Membrane fouling control and lifespan	**SESSION 50** Minimising gaseous emissions	**SESSION 51** Modelling flood risk and resilience to identify solutions
15.00 — 16.00	**SESSION 46** Biofilm and membrane bioreactors	**SESSION 47** Urban drainage of the future	**SESSION 48** Water quality and pollution	CLOSING CEREMONY		

Daily programme

Track 1
Water utility management

Track 2
Wastewater treatment & resource recovery

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Drinking water & potable reuse

Track 4
City-scale planning & operations

Track 5
Communities, communication, & partnerships

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Day 1 — Monday 24 May

11.00 – 12.00 GMT

Opening ceremony

The Congress opening ceremony will include the following:

- Introduction from IWA President Tom Mollenkopf & IWA Executive Director Kala Vairavamoorthy
- Keynote speech: David Sedlak, Professor, UC Berkeley, United States
- IWA Awards
- Introduction to the programme, by co-chairs Eveline Volcke & Jurg Keller

Keynote speaker
David Sedlak,
Professor, UC Berkeley, United States

Break

12.30 – 13.30 GMT

Session 1

RESOURCE RECOVERY FROM WASTEWATER

The potential of resource recovery and energy generation from wastewater treatment and the need for synergies between technical, operational and political factors in the water and energy sectors.

Chair: Yanchen Liu, *China*
Co-chair: Pau Juan-Garcia, *United Kingdom*

Application at different scales of demand-driven biogas production from anaerobic digestion of sewage sludge Mauro Lafratta, *United Kingdom*

Membrane harvesting for optimised wastewater treatment using micro-algae Franziska Schwertner, *Germany*

Recovery of valuable elements from drainage water in selected mine sites in Finland Malgorzata Szlachta, *Finland*

Session 2

MANAGEMENT OF CLIMATE ADAPTATION

Experiences in adaptation to climate change in the water sector.

Chair: Rui Pedro Silvestre Sancho, *Portugal*
Co-chair: Philip De Souza, *South Africa*

The challenges of implementing climate-resilient water safety plans — a utility management group perspective Claudia Guerreiro, *Portugal*

Danish cross-functional climate adaptation network Jens Lonholdt, *Denmark*

Impacts of climate change on drinking water quality in Norway Vidar Lund, *Norway*

Session 3

UTILITY EFFICIENCY AND EXCELLENCE

Benchmarking and econometrics that drive water utility operational improvement.

Chair: Francisco Cubillo, *Spain*
Co-chair: Yang Villa, *Phillipines*

Challenges in securing sustainable benchmarking and improvement activities for European water utilities Peter Dane, *The Netherlands*

Analysis of water supply service in Jordan through key performance indicators and customer response Ryuji Ogata, *Jordan*

Performance assessment — NRW reduction protocol. Canal De Isabel II — A case study Francisco Javier Fernández, *Spain*

Break

14.00 – 15.00 GMT

Session 4

RESOURCE RECOVERY FROM WASTEWATER

Demonstrating the integration of sustainability with wastewater treatment technologies.

Chair: Sagar Gupta, *United States*
Co-chair: Arifur Rahman, *India*

From industrial wastewater to high performance bioplastics: knowledge integration for efficient decision-making Miguel Mauricio Iglesias, *Spain*

Integrated food waste management with wastewater treatment: transformation, energy, balance, economic analysis Feixiang Zan, *China*

Valorisation of sewage sludge in co-digestion with cheese whey to produce volatile fatty acids and polhydroxyalkanoates Maria Veiga, *Spain*

Session 5

STRATEGIC WATER MANAGEMENT IN CITIES

Using data science and a holistic strategy to better achieve water planning outcomes at large scale.

Chair: Helena Alegre, *Portugal*
Co-chair: Riddhi Singh, *India*

Digital water cities: Mexico case study in the context of preventing flash flooding events Oliver Mendoza-Cano, *Mexico*

Total water management strategy to achieve sustainability and enhance resilience of Hong Kong Ka Man Lam, *Hong Kong, China*

Future-proofing city water systems using citizen data, monitoring and integrated models Anja Ziegler, *Denmark*

Session 6

WATER QUALITY STANDARDS, REGULATIONS AND ECONOMICS

Economic analysis of municipal water supply with an alternative approach to the water balance, a proposal for optimal drinking water quality, and a potential correlation between magnesium in drinking water and health risks.

Chair: Shervin Hashemi, *South Korea*
Co-chair: Hayat Raza, *Canada*

A holistic approach in the analysis of municipal water supply systems — the perspectives of a financier Konstant Bruinette, *South Africa*

Defining targets for optimal drinking water quality: a nationwide assessment Martin Rygaard, *Denmark*

A brick in the puzzle — is magnesium in drinking water associated with cardiovascular death and atrial fibrillation? Kirstine Wodschow, *Denmark*

Day 2 — Tuesday 25 May

11.00 – 12.00 GMT

Session 7

RESOURCE RECOVERY FROM WASTEWATER

Research on methodologies for the recovery and reuse of water, energy and nutrients.

Chair: Ana Soares, *United Kingdom*
Co-chair: Prasanna Jogdeo, *India*

Electro-dialysis of phosphate at pilot scale and subsequent recovery as calcium salt in a lamella plate clarifier Boudewijn Meesschaert, *Belgium*

Moving towards a realistic application of purple phototrophic bacteria for resource recovery Gabriel Capson-Tojo, *Australia*

Exploring GHG emissions in the mainstream SCEPPHAR configuration during wastewater resource recovery Juan Baeza, *Spain*

Session 8

OXIDATION AND OTHER PROCESSES

Oxidation by ozonation of micropollutants, and test of anaerobic digested sludge.

Chair: Jorge Rodríguez, *United Arab Emirates*
Co-chair: Ashton Busani Mpofu, *South Africa*

Removal of micropollutants at WWTPs without nitrogen removal — experiences from pilot test at Främby WWTP Melviana Hedén, *Sweden*

New innovative way to remove recalcitrant PFOS compounds from water Maria Nymann, *Denmark*

Retention time crash test for mesophilic and thermophilic digestion of WWT sludge Sofia Andersson, *Sweden*

Session 9

DRINKING WATER PRODUCTION

Insight on treatment technologies for drinking water production from groundwater sources, such as biofiltration and softening, focusing on the removal of manganese, hardness and arsenic.

Chair: Stephen Foster, *United Kingdom*
Co-chair: Xiaoyuan Zhang, *China*

Manganese removal in drinking water biofilters — from start-up to matured filters Ines Breda, *Denmark*

Gaining control of redox processes lowers footprint and enhances removal efficiencies in groundwater treatment Doris van Halem, *The Netherlands*

Softening technology of high hardness drinking water based on the principle of modified induced crystallisation Changgeng Li, *China*

Break

12.30 – 13.30 GMT

Session 10

MODELLING INTEGRATED WASTEWATER TREATMENT PROCESSES

Using mathematical and computer simulative models to enhance the operation and the management of wastewater treatment systems.

Chair: How Yong Ng, *Singapore*
Co-chair: Bibilore Omotosho, *Nigeria*

An integrated water quality model for planning of the new Sjölunda WRRF in Malmö (SE) Lorenzo Benedetti, *Croatia*

Cost-efficient electricity consumption by smart aeration in municipal wastewater treatment Peter Stentoft, *Denmark*

Integrated wastewater treatment modelling — accelerating the implementation of a research topic as an industrial tool Thibaud Maruejouls, *France*

Session 11

ELECTROCHEMICAL AND OXIDATION PROCESSES

Insights on the treatment of wastewater using ozone/UV and electrochemical processes.

Chair: Olivier Lefebre, *Singapore*
Co-chair: Roberto Paulo de Freitas Negrini, *Brazil*

Ozone and ozone/UV induced degradation of benzalkonium chloride in water: process variables and kinetics Pieter Van Aken, *Belgium*

High-perfomance photoelectrochemical degradation of ciofibric acid using sustainable CoOx/g-C_3N_4/FTO photoanode Hui Wang, *China*

The effect of ionic strength and zeta potential on competitive biosorption of nickel by *E. coli*: equilibrium study Jeong Choi, *South Korea*

Session 12

DRINKING WATER PRODUCTION

Introducing a series of treatment technologies such as coagulation, biofiltration and powder activated carbon.

Chair: Arslan Ahmad, *The Netherlands*
Co-chair: Gamze Kirim, *Canada*

Residual fine carbon particles after water treatment in full-scale plants: effective control by process optimisation Yoshifumi Nakazawa, *Japan*

Trace metal supplementation enhances nitrification in biofilters for drinking water production Florian B. Wagner, *Denmark*

PACI coagulants with the same Al speciation perform differently for production methods and SO_4^{2} concentrations Yize Chen, *Japan*

Break

14.00 – 15.00 GMT

Session 13

MODELLING INTEGRATED WASTEWATER TREATMENT PROCESSES

Using mathematical and computer simulative models to enhance the operation and the management of wastewater treatment systems.

Chair: Andrea Turolla, *Italy*
Co-chair: Sagar Gupta, *India*

Optimisation potential and capacity liberation options in a full-scale industrial wastewater system using a digital twin Vicente Monje Lopez, *Denmark*

Estimating risk to sewage treatment plants from upstream chemical spills using a dynamic, online version of SimpleTreat John Hader, *Sweden*

Development of hydrodynamics coupled with water quality model for one-dimensional intermittent tidal locked channel Anusha Nadella, *India*

Session 14

MICROPOLLUTANTS AND NANOPLASTICS

Insights on the increased amount of microplastics in wastewater and technologies for micropollutants removal.

Chair: Chao Chen, *China*
Co-chair: Mbali Sibiya, *South Africa*

How effective is chemical treatment in removing microplastics in wastewater? Outi Gronfors, *Finland*

Removal of organic micropollutants in the biological units of a Swedish wastewater treatment plant Cecilia Bruzio, *Sweden*

Microplastics in conventional and innovative WWTPs and a preliminary tertiary treatment on polyethylene microplastics Alessia Foglia, *Italy*

Session 15

DISTRIBUTION SYSTEM MICROBIOLOGY AND BIOFILMS

Characterization of municipal distribution systems, including observations from chlorinated and unchlorinated distribution systems.

Chair: Regina Sommer, *Austria*
Co-chair: Temple Chukwuemeka Oraek, *Nigeria*

A method for chemical risk evaluation on drinking water treatment plants Caroline Lecarpentier, *France*

Combining geographic information systems and hydraulic modelling to predict disinfection by-products Waldo Bitencourt, *Brazil*

Archaea community characterisation from a full-scale unchlorinated drinking water distribution system Tarja Pitakanen, *Finland*

Day 3 — Thursday 27 May

11.00 – 12.00 GMT

Session 16

EMERGENT CONTAMINANTS

Removal of pollutants, oxidation kinetics, and water treatment processes.

Chair: Josef Lahnsteiner, *Austria*
Co-chair: Adeolu Adesanya, *Nigeria*

A novel kinetic ozonation model predicting bromate formation, bromate mitigation and trace organic contaminant removal Wim Audenaert, *Belgium*

Multiple water treatment processes combine to sustainably manage emerging contaminants in water Muhammad Haroon Rasheed, *Australia*

Session 17

WATER UTILITY DIGITAL PRACTICE

Water utilities share their experiences in implementing digital strategies to improve their asset management and customer outcomes.

Chair: Peter Dane, *The Netherlands*
Co-chair: Jacob Kwasi Amengor, *Ghana*

From data to optimised asset management of networks Kia Aksela, *Finland*

Initiatives to build a smart water system in Tokyo, Japan Yutaka Takei, *Japan*

Data utilisation and hydraulic modelling in the Danish water utility sector: the practice at Fors Forsyning, Denmark Nurudeen Salau, *Denmark*

Session 18

POTABLE REUSE AND ALTERNATIVE DRINKING WATER PRODUCTION

Overview of the long term experience of potable reuse in Namibia and operation of UV in the chloramine process towards potable water reuse.

Chair: Jan Hofman, *United Kingdom*
Co-chair: Qing Ding, *Japan*

50 years of direct potable reuse in Windhoek — current status Thomas Honer, *Namibia*

Resource-efficient process optimisation by applying flotation technology for further reuse of landing water Laura Agneessens, *Denmark)*

Micropollutant abatement by UV photolysis of inorganic chloramines towards potable water reuse Ran Yin, *Hong Kong, China*

Break

12.30 – 13.30 GMT

Session 19

EMERGENT CONTAMINANTS

Models of removal of pharmaceuticals in the environment — treatment in pilot and full-scale scenarios.

Chair: Val S. Frenkel, *United States*
Co-chair: Pabel Cervantes, *Mexico*

Model of pharmaceutical accumulation in Baltic Sea catchments supporting WWTP management and environmental planning Alena Kaiser, *Germany*

Treatment of leachate from PFAS pilot studies for process selection Andriy Malovanyy, *Sweden*

Wastewater treatment plants: A possible breeding ground for emerging pathogens? Zaakirah Delair, *South Africa*

Session 20

BECOMING A DIGITAL WATER UTILITY OF THE FUTURE

Lessons and learnings from water utilites which have started their journey towards the digitalisation of their operations.

Chair: Juan Antonio Baeza, *Spain*
Co-chair: Jedrzej Bylka, *Poland*

How to transform into a digital water utility — maturity model digitalisation Martin Offermann, *Germany*

Becoming a digital utility of the future Randolf Waters, *United States*

Opportunities and challenges of big data analysis in the drinking water sector Kristina Wencki, *Germany*

Session 21

MICROBIAL AND CHEMICAL RISK ASSESSMENT

Microbial risk assessments for drinking water treatment technologies, including conventional filtration and ultrafiltration membranes, and a model proposal for data acquisition to support antimicrobial resistance risk analysis.

Chair: Daisuke Sano, *Japan*
Co-chair: Georgina Herbert, *South Africa*

Risk-based evaluation of improvements in drinking water treatment using cost-benefit analysis Nils-Petter Skold, *Sweden*

QMRA of particle removal steps for river water treatment Beate Hambsch, *Germany*

Quantitative antimicrobial resistance risk assessment for the water and wastewater community: steps towards a comprehensive strategy Kerry Hamilton, *United States*

Break

14.00 – 15.00 GMT

Session 22

ANAMMOX-BASED NITROGEN REMOVAL

Experiences with Anammox bacteria for biological nitrogen removal from wastewater, in various reactor designs.

Chair: Barth F. Smets, *Denmark*
Co-chair: Innocent Twesigye, *Uganda*

A decade of ANITA Mox: what have we learned? Magnus Christensson, *Sweden*

Coupling of Anammox and denitrifying bacteria to achieve enhanced total nitrogen removal in wastewater Qingkun Wang, *Singapore*

Side stream treatment with membrane aerated biofilm reactors — no carbon, no alkalinity and no bubbles Daniel Coutts, *Italy*

Session 23

SMART MANAGEMENT OF WASTEWATER COLLECTION SYSTEMS

How smart sensors and equipment can be used to gain operational insights and improve outcomes in the management of wastewater and stormwater collection systems.

Chair: Alessandro Bettin, *Italy*
Co-chair: Niti B. Jadeja, *India*

Distributed temperature sensing for pinpointing inflow and infiltration in wastewater networks Hugh Blake-Manson, *New Zealand*

Urban drainage asset management — also for blue-green infrastructure Jeroen Langeveld, *The Netherlands*

Sediment monitoring in sewerage based on a 3D camera and ultrasound sensor Diego Ruiz, *Spain*

Session 24

DISINFECTION TECHNIQUES IN DRINKING WATER PRODUCTION

By-products of chlorine-based disinfectants and assessment of UVC-LED for point of use applications or remote communities. The session is complemented by a microbiological quantitative risk assessment on drinking water treatment plants.

Chair: Miller Alonso Camargo-Valero, *United Kingdom*
Co-chair: Junjie Shen, *United Kingdom*

The comparative formation of trihalomethanes using chlorine-based disinfectants within a model system Gillian Clayton, *United Kingdom*

Microbiological quantitative risk assessment (QMRA): an efficient operating tool for drinking water treatment plants Caroline Lecarpentier, *France*

Demonstrating UVC-LED disinfection for small remote communities and point of use/entry water systems Karl Linden, *United States*

Day 4 — Friday 28 May

11.00 – 12.00 GMT

Documentary

BRAVE BLUE WORLD

Brave Blue World paints an optimistic picture of how humanity is adopting new technologies and innovations to re-think how water is managed. The film highlights scientific and technological advancements that have been taking place, often behind the scenes, to ensure the world's population has access to clean water and safe sanitation services and the environment is protected.

12.00 – 12.30 GMT

Panel Discussion

CHALLENGES AND OPPORTUNITIES FOR THE WATER SECTOR

Chaired by IWA, with a guest panel

Break

13.00 – 14.00 GMT

Session 25

WATER RECLAMATION

Sustainable initiatives for water reclamation from various types of wastewater.

Chair: Andreas N. Angelakis, *Greece*
Co-chair: Liudmyla Odud, *Ukraine*

Post-treatment of UASB effluent using aluminum sulfate and ultrafiltration membranes Rodrigo Almeria Ragio, *Brazil*

Inactivation kinetic modelling of *Escherichia coli* in concentrated synthetic urine Oishi Wakana, *Japan*

Post-treatment of USAB effluent using aluminium sulphate and ultrafiltration membranes Eduardo Subbtil, *Brazil*

Session 26

SMART MANAGEMENT OF WATER AND WASTEWATER NETWORKS

Improvements in condition assessment and asset optimisation of water and wastewater networks through smart sensors and data analytics.

Chair: Joe Dalton, *Bahrain*
Co-chair: Katerina Charalambous, *Cyprus*

Benchmarking pipe failure prediction models across mutilple distribution systems Alberto Quiroz, *United States*

Customer meters metrological behaviour — apparent loses management optimisation Ana Rita Santos, *Portugal*

Integrated asset management in a historic perspective Sveinung Saegrov, *Norway*

Session 27

ANTIBIOTIC RESISTANCE AND BIODEGRADATION OF PESTICIDES

Starts by characterizing antibiotic resistance genes present in source water for drinking water production and over different treatment steps. Pesticide removal is then characterized by two methods: combined membrane filtration and biodegradation and microbial co-metabolic degradation in rapid sand filters of pesticides.

Chair: J Paul Chen, *Singapore*
Co-chair: Maria Alejandra Caicedo Londoño, *Colombia*

Use of cell-based bioassays in reaching the sustainable goal of safe drinking water Johan Lundqvist, *Sweden*

Combined membrane filtration and biodegradation — a novel hybrid concept of BAM removal in drinking water production Jens Muff, *Denmark*

Microbial co-metabolic degradation of pesticide metabolites (e.g. DMS, DPC) in groundwater-based drinking water treatment Anne Holm Thomsen, *Denmark*

14.00 – 15.00 GMT

Quiz

WATER INDUSTRY QUIZ

Join IWA for a fun and relaxing end to week 1.
Test your knowledge on the water sector and beyond!

There will be a prize for winner. Good luck!

Day 5 — Tuesday 01 June

12.00 – 13.00 GMT

Opening of Week 2

Keynote speaker
Emma Howard Boyd,
Chair, Environment Agency, England

Opening session to include:

- Keynote speech: Emma Howard Boyd, Chair, Environment Agency, England
- IWA Awards (part two)

Break

13.30 – 14.30 GMT

Session 28

OPERATION OF FULL-SCALE WWTP

Various operational aspects of full-scale wastewater treatment plants, including start-up, greenhous gas emissions and bioaugmentation of activated sludge.

Chair: Jacek Mąkinia, *Poland*
Co-chair: Jing Sun, *China*

Full-scale start-up of two aerobic granular sludge reactors for treatement of municipal wastewater Jennifer Ekholm, *Sweden*

The investigation of nitrous oxide emissions from wastewater treatment processes Takanori Awata, *Japan*

Can we solve operational problems with full-scale activated sludge transplantation at water resource recovery facilities? Dorottya Wagner, *Denmark*

Session 29

SMART MEASUREMENTS FOR BETTER DECISIONS

How smart tools (meters, sensors, warning systems) can be used to improve risk management.

Chair: Matthew Wade, *United Kingdom*
Co-chair: Maxwell Akosah-Kusi, *Ghana*

Building the business case for smart water metering Benny Nielsen, *Denmark*

Online near real-time monitoring of *E. coli* at urban beaches — towards better assessment and management of microbial risk Jean-Baptiste Burnet, *Canada*

The neural network based radar warning system at VA SYD — probably the best regional warning system in the world Nicholas South, *Sweden*

Session 30

NATURE-BASED SOLUTIONS AND SUSTAINABLE WATER MANAGEMENT

Case studies from Spain and Denmark on solutions to urban and coastal flooding and a case study on sustainable water use in industry in Pakistan.

Chair: Albert Guisasola Canudas, *Spain*
Co-chair: Chataigne Djuma Kiza, *Democratic Republic of Congo*

La Marjal Park: a smart urban nature-based solution for flood prevention Ignacio Casals, *Spain*

Impacts of land subsidence and subsurface properties on water management Niels Henrik Broge, *Denmark*

Finding sustainable development pathways for the cotton and textile industry in Pakistan Kristina Wencki, *Germany*

Break

15.00 – 16.00 GMT

Session 31

LARGE WASTEWATER TREATMENT PLANTS

Sustainable and innovative initiatives tested at pilot scale or implemented at full scale at large wastewater treatment plants around the world.

Chair: Kimberly Solon, *Belgium*
Co-chair: Prasanna Jogdeo, *India*

Ready for the next decade? How wastewater sites can enhance their UV systems to be up to future tasks Kirsten Meyer, *Germany*

Providing a frequency containment reserve as an anciliary service from operation of your wastewater treatment plant Jonas Wied Pedersen, *Denmark*

Municipal wastewater UV disinfection modelling based on artificial neural networks for real-time process control Manuela Antonelli, *Italy*

Session 32

ENHANCING URBAN FLOOD RESILIENCE THROUGH TECHNOLOGY

How to use enhancements in technology for better urban flood resilience.

Chair: Gary Wyeth, *Thailand*
Co-chair: Thor Danielsen, *Denmark*

Blue-green-grey systems for liveable and resilient streets Martin Vysoký, *Sweden*

A real-time prediction model of flash floods on street level Guido Vaes, *Belgium*

Combined sewer overflow reduction by using the BLU-X real time decision support platform to manage conveyance Luis Montestruque, *United States*

Session 33

ECOSYSTEMS SERVICES AND UNDERSTANDING WATER RESOURCES

How ecosystem services and natural capital assessment are increasingly being used to support decision making in relation to water resources.

Chair: Evina Katsou, *United Kingdom*
Co-chair: Kari Elisabeth Fagernaes, *Norway*

Promoting ecosystem services provision in the perimeters of drinking water sources in metropolitan regions Nilo Nascimento, *Brazil*

ASAP — a scalable water prognosis for any location in the world Dennis Trolle, *Denmark*

Water scarcity management in a Mediterranean region in southern Portugal Paulo Diogo, *Portugal*

Day 6 — Wednesday 02 June

12.00 – 13.00 GMT

Session 34

NUTRIENT REMOVAL

High efficient removal of nutrients (N and/or P) from wastewater up to low concentrations.

Chair: Hassimi Abu Hasan, *Malaysia*
Co-chair: Michel Caluwé, *Belgium*

Recovering bioavailable P from nutrient saturated engineered filter media for wastewater treatment Solvei Jensen, *Italy*

Tertiary filtration to achieve ultra-low phosphorus concentrations — how low can we go with phosphorus? Alexander Sperlich, *Germany*

Nitrogen and phosphorus removal by SND-P in the Hias process Torgier Saltnes, *Norway*

Session 35

LIFECYCLE ANALYSIS AND THE CIRCULAR ECONOMY

International case studies on the application of environmental and economic valuation to resource recovery, the circular economy and wider water services.

Chair: Mara Ramos, *Brazil*
Co-chair: Saravanamuthu Vigneswaran, *Australia*

Measuring the environmental and economic consequences of a water resource recovery facility in Copenhagen, Denmark Maria Farago, *Denmark*

Enabling the circular economy for sanitation in India, Malawi and Kenya Adrian Mallory, *United Kingdom*

Water services as a basis for identifying costs and benefits of water protection measures Andreas Lindhe, *Sweden*

Session 36

DISTRIBUTION SYSTEM MODELLING AND SUSTAINABILITY

Models targeting energy savings and links to the Sustainable Development Goals with a focus on trihalomethanes reduction, hydraulic power and stormwater control.

Chair: Gang Liu, *China*
Co-chair: Ashwani Kumar Tiwari, *India*

Advanced hydraulic modelling and full-scale demonstration of THM reductions throughout a regional water distribution system Brian Edwards, *United States*

Superiority of hydraulic power generation utilising excess pressure at water supply stations Toshihiko Tanaka, *Japan*

Integrating stormwater inflow control as a way to address multiple UN SDGs in the context of overflow minimisation Nadia Lund, *Denmark*

Break

13.30 – 14.30 GMT

Session 37

SPECIFIC NITROGEN REMOVAL PROCESSES

Use of bioreactors for wastewater treatment at low temperature, denitrification and methane oxidation.

Chair: Yan Zhou, *Singapore*
Co-chair: Eugene Fotso Simo, *India*

Low temperature moving bed bioreactor denitification as a mitigation measure to reduce agricultural nitrate losses Pieter Van Aken, *Belgium*

Simulation and experimental validation of high rate activated sludge to optimise organic matter and nitrogen removal Josefina Torán, *Spain*

Compositional and functional dynamics of soil bacterial community in response to single/repeated NP contamination Yujia Zhai, *The Netherlands*

Session 38

INTEGRATED MODELLING OF NATURE-BASED SOLUTIONS TOWARDS WATER-WISE CITIES

How digitalisation and nature-based solutions can work together towards more liveable, sustainable, smart cities.

Chair: Jeroen Langeveld, *The Netherlands*
Co-chair: Palsiri Srirungruang, *Thailand*

Developing a holistic approach for establishment and monitoring of nature-based solutions Maria Dubovik, *Finland*

SCALGO + NBS: New tool enables early integration of nature-based stormwater measures in urban (re)development projects Sara Lerer, *Denmark*

Session 39

COMMUNITY ENGAGEMENT AND COLLABORATION FOR IMPROVED WATER RESOURCE AND LIVEABILITY OUTCOMES

Learnings from case studies and literature to identify important elements for building community support and beneficial outcomes.

Chair: Joost Buurman, *Singapore*
Co-chair: Anya Eilers, *South Africa*

Building community support for drinking water from source to tap: the case of Philadelphia Nina Gallagher, *United States*

Water source management in cooperation with Tokyo residents: making water source forests with the community Takehiko Otani, *Japan*

Quantifying liveability outcomes in the urban water sector: review of literature Beata Sochacka, *Australia*

Break

15.00 – 16.00 GMT

Documentary

LORDS OF WATER

They call it 'blue gold.' Banks, investment funds and hedge funds are all rushing to invest billions of euros in anything related to water. From California to Australia, from New York to London via Marseille, they investigate the financialization of water. It's a battle taking place on many fronts: ideological, political, environmental, and of course, economic.

Awards: Special Jury Award (Water, Sea, Oceans International Film Festival 2020, Czech Republic), Coup de Coeur du Jury du Prix Tournesol au Festival du Film Vert 2020 (Switzerland).

Day 7 — Thursday 03 June

12.00 – 13.00 GMT

Session 40

MICROBIOLOGY OF WWTP — PHOSPHORUS REMOVAL

Overview of the microorganisms in WWTPs across the world with focus on PAOs and GAOs.

Chair: Adeline Seak May Chua, *Malaysia*
Co-chair: Mohamed Mahmoud, *Egypt*

The microbiome of wastewater treatment plants across the world Morten Simonsen Dueholm, *Denmark*

Intelligent and dynamic control of optimal WWTP operation from microbial sequencing Mikkel Stokholm-Bjerregaard, *Denmark*

Diversity and ecophysiology of novel polyphosphate accumulating organisms in full-scale EBPR systems Miriam Peces, *Denmark*

Session 41

INTEGRATING WATER MANAGEMENT AND URBAN PLANNING WITH MANY STAKEHOLDERS

Case studies from Denmark, UK and Belgium on water management towards a more resilient city.

Chair: Duan Chen, *China*
Co-chair: Neha Agarwa, *India*

Integrating urban renewal into cloudburst management, case study: Northwest catchment, Copenhagen Jes Clauson Kaas, *Denmark*

A strategic, integrated water management approach in Greater Manchester Mark Turner, *United Kingdom*

Antwerp waterplan, towards a future-proof water city Samuel Van de Vijver, *Belgium*

Session 42

GOVERNMENT AND INDUSTRY COLLABORATIONS FOR IMPROVED WATER SECTOR RESILIENCE

Understanding and creating successful collaborations between governments and industry as well as between industry players in different countries. With a focus on the responses to short- and long-term challenges to help improve resilience against future disasters and emerging threats.

Chair: Katharine Cross, *Thailand*
Co-chair: Emma Weisbord, *The Netherlands*

Public-private partnerships for disaster risk management: case study of Japan during the 2019 typhoon events Tomoko Takeda, *Japan*

Understanding components of an enabling governance environment for water sensitive design in Cape Town K Carden, *South Africa*

Knowledge exchange for water sector resilience in Vietnam: the importance of non-technical skills Clare Stephens, *Australia*

Break

13.30 – 14.30 GMT

Session 43

BIOSOLIDS MANAGEMENT

Focus on anaerobic digestions, pretreatment and dewatering.

Chair: Kwok-Wai Richard Tsang, *United States*
Co-chair: Farokh Iaqa Kakar, *Canada*

Integration of sludge ultra-dewatering into the energy positive WWTP of tomorrow Marlene Choo-Kun, *France*

Post-digestion thermal hydrolysis for cost-efficient sludge drying and incineration Kine Svensson, *Norway*

Dewatering optimisation using UV-vis absorbance: Real-time determination of optimum polymer dose and maturation Banu Ormeci, *Canada*

Session 44

PLANNING FOR REHABILITATION AND RETROFITTING

Smart technologies and decision support systems to improve wastewater and stormwater management.

Chair: Kai Udert, *Switzerland*
Co-chair: Lloyd Fisher-Jeffes, *South Africa*

Future city flow, a decision support system for the reduction of wastewater emissions into receiving waters Emelie Alenius, *Sweden*

Adopting smart technologies to test and certify pipe repairs, rehabilitation, and capital investments Charles Hansen, *United States*

Low-technology beneficiation of faecal sludge to biochar by franchising partnerships Oliver Ive, *South Africa*

Session 45

COMMUNICATION WITH STAKEHOLDERS AND DISASTER MANAGEMENT

Successes and failures of multi-stakeholder initiatives: pesticide contamination in groundwater recharge areas, a river restoration project, and a water supply system.

Chair: Prosun Bhattacharya, *Sweden*
Co-chair: Radoslav Zhekov Tonev, *Bulgaria*

Targeted measures against pesticide contamination in main groundwater recharge areas in Aarhus — groundwater protection Ulla Ladekarl, *Denmark*

Introducing community participation in the Magdelena River restoration project: learning from failure in Mexico City Fernanda Garcia Alba Garciadiego, *United Kingdom*

Water safety plan for a large-scale water supply system: the case study of Florence Leonardo Rossi, *Italy*

Break

15.00 – 16.00 GMT

Session 46

BIOFILM AND MEMBRANE BIOREACTORS

Process optimization examples for biofilm reactors and membrane bioreactors: comparative study of membrane bioreactors with and without activated carbon, process control based on off-gas monitoring and biofilm technologies for the treatment of fish-canning wastewater.

Chair: Tao Guihe, *Singapore*
Co-chair: Nelson Zagabe, *Kenya*

Large-scale comparison of two membrane bioreactors with and without powdered, activated carbon addition Daniel Bastian, *Germany*

Exhaust gas monitoring from MABR: A new alternative for biological process control Dwight Houweling, *Canada*

Application of biofilm based technologies for the treatment of complex industrial effluents Tamara Casero Diaz, *Spain*

Session 47

URBAN DRAINAGE OF THE FUTURE

How to obtain water-wise cites through rainwater reuse and sustainable city planning, with case studies from Denmark, Norway and the United Kingdom.

Chair: Pedro Carvalho, *Denmark*
Co-chair: Shotaro Goto, *Japan*

Reuse of rainwater for a city Carsten Fjorback, *Denmark*

From plan to completion: case study of 17 LID module construction projects in Oslo, Norway Anine Drageset, *Norway*

Integrated modelling of the hydraullic and water quality performance of permeable pavement Selena Zang, *United Kingdom*

Session 48

WATER QUALITY AND POLLUTION

Remediation of groundwater pollution, fluoride in groundwater and the fate of sewage pollution after rainfall events.

Chair: Andrea G. Capodaglio, *Italy*
Co-chair: Palash Sanyal, *Canada*

Remediation of groundwater pollution of trichloethene: use of a groundwater recirculation system with biobarriers Sylvie Seurinck, *Belgium*

Hydrogeochemical processes controlling the release of flouride in groundwater in Rajastan, India Anupma Sharma, *India*

Laboratory and modelling based studies to explain the fate of sewage markers in the Toyko coastal area after rainfall events Chomphunut Poopipattana, *Japan*

Day 8 — Friday 04 June

12.00 – 13.00 GMT

Awards

WATER INDUSTRY TV AWARDS

The Water Industry Video Awards are a new initiative, run by Water Industry TV.

The competition aims to build awareness about the challenges facing the world's water systems, and solutions that can tackle these issues and help propel the water industry into the digital age.

The awards are supported by a number of industry organisations, including the IWA, WaterAid, Institute of Water, British Water, Future Water Association, Royal Society of Biology, Current, and the Pipeline Industries Guild.

In addition, the awards are sponsored by: Enebio, WaterAid, and Sentry.

More information can be found at: https://waterindustrytv.com

Break

13.30 – 14.30 GMT

Session 49

MEMBRANE FOULING CONTROL AND LIFESPAN

Research conducted in the area of membrane fouling control and mitigation strategies.

Chair: Nguyen Bruno, *France*
Co-chair: Michael Johnson, *Nigeria*

Surface charge regulation of reverse osmosis membrane for anti-silica and organic fouling Shu Wang, *China*

Pulse dose of 200-nm activated carbon particles after coagulation completely prevents transmembrane pressure rise Yuanjun Zhao, *Japan*

Performance of reverse osmosis membrane for water reuse and reclamation — fouling investigation Julien Ogier, *Germany*

Session 50

MINIMISING GASEOUS EMISSIONS

Research in the area of minimizing N_2O emissions in wastewater treatment processes and vaporisation of effluents.

Chair: Teodor Popa, *Romania*
Co-chair: Zhihao Chen, *Singapore*

Effect of nitrogen loading and control strategies on online N_20 emission and CO_2 accounting at full-scale Mikkel Andersen, *Denmark*

Data mining techniques to optimise N_20 emission sampling requirements in the wastewater sector Vasileia Vasilaki, *United Kingdom*

Beyond biogas: anaerobic valorisation of fish cannery and dairy effluents to obtain volatile fatty acids Alvaro Silva-Teira, *Spain*

Session 51

MODELLING FLOOD RISK AND RESILIENCE TO IDENTIFY SOLUTIONS

Developing resilience of the water sector and improved water management through strategies, plans and assessments.

Chair: Dennis Daniel Mwanza, *United Kingdom*
Co-chair: Nilo Nascimento, *Brazil*

Adapative pathways, creating resilient strategies and plans for the Australian water sector Ryan Brotchie, *Australia*

Integration of energy and water in a neighbourhood with the Power-to-X Concept Els van der Roest, *The Netherlands*

Development of a living wall system for greywater treatment Andreas Aicher, *Germany*

Break

15.00 – 16.00 GMT

Closing ceremony

The Congress will finish with:

- Announcement of the Poster Award winner
- Young Water Professional panel discussion
- Introduction to the IWA World Water Congress & Exhibition 2022 in Copenhagen

Keynote speakers

Keynote speakers

David Sedlak
Professor, UC Berkeley, United States

Day 1 – Monday 24 May
11.00 – 12.00 GMT

David Sedlak is the Plato Malozemoff Professor in the Department of Civil & Environmental Engineering at UC Berkeley where he is the Co-Director of the Berkeley Water Center and Deputy Director of the NSF engineering research center for Reinventing the Nation's Urban Water Infrastructure (ReNUWIt).

He is is a member of the National Academy of Engineering and recipient of numerous awards including the Paul Busch Award for Innovation in Applied Water Quality Research and the Clarke Prize for Excellence in Water Research.

He is also the author of "Water 4.0: The Past, Present and Future of the World's Most Vital Resource".

Emma Howard Boyd
Chair, Environment Agency, England

Day 5 – Tuesday 01 June
12.00 – 13.00 GMT

Emma Howard Boyd has been the Chair of the Environment Agency since 2016. The Agency is a public body responsible for the protection and enhancement of the environment in England.

She is also an ex officio board member of the Department for Environment, Food & Rural Affairs (DEFRA), an Advisor to the Board of Trade, and a Global Ambassador for Race to Zero and Race to Resilience ahead of COP26.

Emma, with a background in finance, is a board member or advisor to many organisations which include The Prince's Accounting for Sustainability Project, the Green Finance Institute, the Coalition for Climate Resilient Investment, the Centre for Greening Finance and Investment, the Council for Sustainable Business, the European Climate Foundation, and Menhaden PLC. Emma was the UK Commissioner to the Global Commission on Adaptation from 2018 until its sunset in January 2021.

Posters

Track 1
Water utility management

Track 2
Wastewater treatment & resource recovery

Track 3
Drinking water & potable reuse

Track 4
City-scale planning & operations

Track 5
Communities, communication, & partnerships

Track 6
Water resources & large-scale water management

Posters

Track 1	Track 2	Track 3	Track 4	Track 5	Track 6
Water utility management	Wastewater treatment & resource recovery	Drinking water & potable reuse	City-scale planning & operations	Communities, communication, & partnerships	Water resources & large-scale water management

Solving the puzzle of digital twins in urban drainage in a utility Agnethe Nedergaard Pedersen, *VCS Denmark*	Denmark
Approach for measuring CSO discharges, assuring data quality and estimating service level Alex Jørgensen, *Krüger A|S*	Denmark
Bridging the water-energy nexus in public administration building auditing approaches Ana Poças, *ADENE*	Portugal
Improving biogas fermentation of sludge and cosubstrates by combining acidification with disintegration systems Andreas Schmid, *University of Applied Sciences Hof*	Germany
Transforming wastewater treatment in regional communities with robust technology for multiple benefits Andrew Ward, *Advanced Water Management Center University of Queensalnd*	Australia
Optimal operation of combined sewer systems — an evaluation of static and dynamic strategies based on measured data Anna Bachmann-Machnik, *Ruhrverband*	Germany
Room for rain Anna Lund, *University of Copenhagen, Gottlieb Paludan Architects*	Denmark
New and performant porous media to improve rapid filtration to produce better filtered water at a lower cost Anne-Claire Mulot, *Saint-Gobain*	Denmark
Ignorance is bliss? A case study of (un)politicized water services Annina Takala, *Tampere University*	Finland
Development of compact zero-waste water dispensers Anthony Cheng, *Nano and Advanced Materials Institute Ltd*	Hong Kong, China
A non-parametric statistical approach for minimum night flow estimation in water distribution networks Athanasios Serafeim, *Univercity of Patras*	Greece
Management of turbidity in water treatment plants by optimizing activated carbon filters Babak Mehravaran, *Mashhad Water & Wastewater Company*	Iran
An analysis of possible environmental and economic benefits of pipe renewal using trenchless technology Bjørn Skaar, *Norwegian University of Life Sciences*	Norway
Benchmarking of control strategies in view of improving plant performance, nutrient recovery and minimizing GHG on WRRF Borja Solís, *Universitat Autonoma de Barcelona*	Spain
Performance monitoring and failure cause isolation of submersible pumps Carsten Kallesøe, *Grundfos*	Denmark
Using data science to optimize meter asset management: a case study in 2 large utilities Christine Boyle, *Xylem*	United States
Functional modeling in the water industry — improving monitoring and automation of water treatment plants Christopher Reinartz, *Technical University of Denmark*	Denmark
Cell-to-cell communication in *Chlorella* via newly endogenous signalling molecules: benzoic acid and salicylic acid Dandan Zhou, *Northeast Normal University*	China
Water: elixir of life David DeSouza, *Project5r|SEED Foundation*	India
Reducing water quality risks and energy consumption of water reservoir operations using CFD and compartmental modelling David Geysen, *Pidpa*	Belgium
Smart filtration suite, a data analytics solution for membrane filtration systems Dominik Dominiak, *Grundfos Holding A|S*	Denmark
UV treatment of food processing water: challenges and opportunities Eirini Vitzilaiou, *University of Copenhagen*	Denmark
Applicability of sensors and internet of things for monitoring storm and groundwater infiltration in sewage systems Emilio Alvarenga, *Våler Municipality (Viken)*	Norway
Dynamic water source management — integrating and digitalizing of water resources Ewa Lind, *IVL Swedish Environmental Institute*	Sweden
Investment prioritization in sanitation with the use KPIs — outcomes and program contracts Ezequiel Santos, *SABESP*	Brazil
The use of hybrid modelling and multi-dimensional optimization for leak localization in drinking water networks Filip Vancoillie, *De Watergroep*	Belgium
Performance assessment — NRW reduction protocol. Canal De Isabel II — a case study Francisco Javier Fernández, *Canal de Isabel II, S.A.*	Spain

It came from the sewers — what about asset management? Franz Tscheikner-Gratl, *Norwegian University of Science and Technology*	Norway
Molecular characterization on directionally removed NOM by coagulation Gefei Ma, *Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences*	China
Innovative leakage reduction program to avoid water crisis in Oslo Gitte Marlene Jansen, *NIRAS*	Denmark
Pro-active leak management based on DMA fingerprints Guido Vaes, *HydroScan*	Belgium
New methods for sustainable capacity building for maintenance of water and wastewater infrastructure Gunn-Mari Lofdahl, *RISE Research Institutes of Sweden*	Sweden
The use of laboratory and BactoSense online flow cytometry to detect and reduce bacteriological risk in potable water Helen Pickett, *Severn Trent*	United Kingdom
LSTM based plug-and-play controller for dissolved oxygen control in wastewater treatment Ivan Pisa, *Head Research Group*	Spain
NB-IoT technology for smart water reading Jaime Flores, *Canal de Isabel II*	Spain
Removal of micropollutants and pathogens in retention soil filters for the advanced treatment of combined sewer overflows Jan Ruppelt, *RWTH Aachen University*	Germany
Water manhole rehabilitation Jan Stenersenl, *TroVA AS*	Norway
Water temperature impact on water mains failures — the SEDIF case study Jean-François Closet, *Altereo*	France
Nitrous oxide emissions from MBR-processes and their impact in the total environmental performance of the process Jing-Jing Yang, *IVL Swedish Environmental Research Institute*	Sweden
Infrastructural condition of water supply networks and non-revenue water — an indissociable relationship João Feliciano, *AGS*	Portugal
Energy efficiency and generation opportunities for wastewater services — perspective from a developing country John Zvimba, *Water Research Commission*	South Africa
A tool for identification and prioritization of micropollutant sources of urban wastewater and design of action plans Jolanda Boisson, *IRH IC*	France
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Documentaries

Documentaries

Award winning documentaries to feature at the Digital World Water Congress

Three compelling documentaries on the water industry – *Brave Blue World, Lords of Water* and *Dry Times* – will be exclusively available to Digital World Water Congress participants. The documentaries will be available free during the event (24 May - 4 June).

These captivating titles shine light on crucial issues related to water, such as the financialisation of water, innovative water technologies and solutions, and ways of adapting to and coping with water scarcity, droughts and climate change.

We hope that these documentaries will spark debate, innovation and change, especially among young water professionals who have the power to shape a water-wise future.

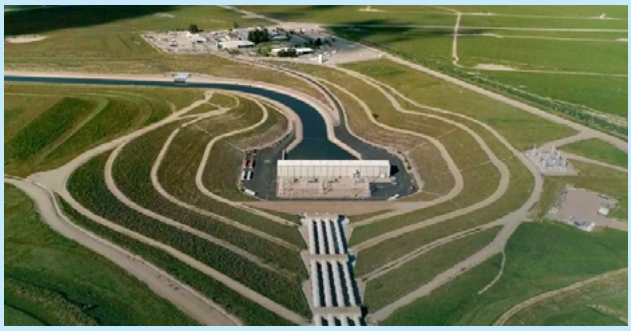
BRAVE BLUE WORLD (2019)

Brave Blue World paints an optimistic picture of how humanity is adopting new technologies and innovations to re-think how water is managed. The film highlights scientific and technological advancements that have been taking place, often behind the scenes, to ensure the world's population has access to clean water and safe sanitation services and the environment is protected. (50m)

LORDS OF WATER (2019)

They call it 'blue gold.' Banks, investment funds and hedge funds are all rushing to invest billions of euros in anything related to water. From California to Australia, from New York to London via Marseille, they investigate the financialization of water. It's a battle taking place on many fronts: ideological, political, environmental, and of course, economic. (42m)

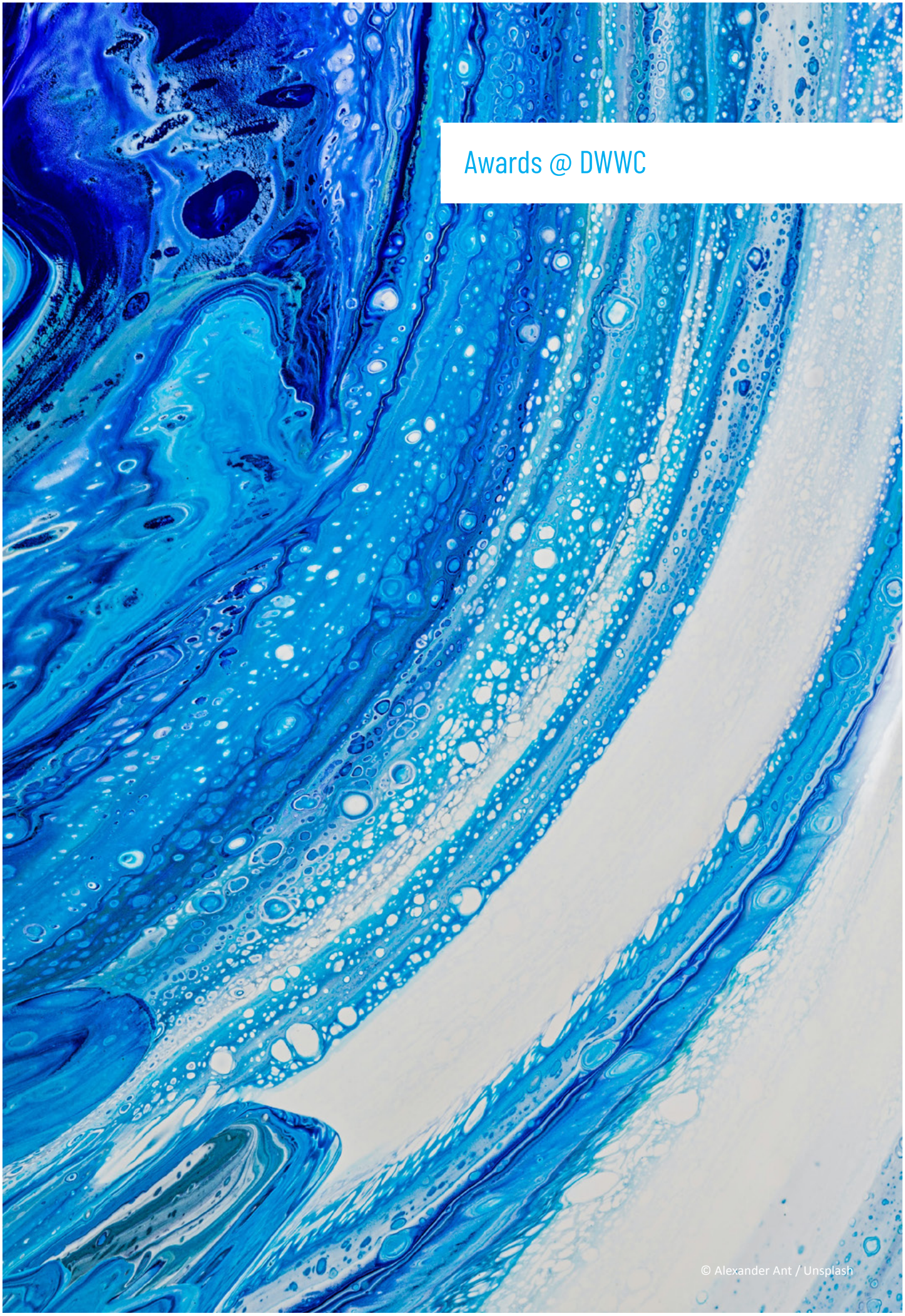
Awards: *Special Jury Award (Water, Sea, Oceans International Film Festival 2020, Czech Republic), Coup de Coeur du Jury du Prix Tournesol au Festival du Film Vert 2020 (Switzerland).*



DRY TIMES (2020)

Dry Times looks back to 2016, in the midst of California's worst drought in decades. The story follows three individuals across the state, hundreds of miles apart, all uniquely affected by the same drought. Dry Times brings these personal stories together to show California's vast connection with water, and how weather impacts each of us differently. (76m)

Awards @ DWWC



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Awards

at the Digital World Water Congress

The Digital World Water Congress will be host to to IWA's 2021 Awards. The awards, held every two years, recognise the outstanding achievements of IWA members and water sector professionals.

Each winner will receive an official certificate and will be invited to give a short speech to inspire and motivate the audience.

IWA will recognise outstanding professionals within the following categories:

The IWA Global Water Award recognises those individuals who, through innovative leadership and practice, have made a significant contribution to a world in which water is wisely managed.

The IWA Women in Water Award celebrates the work of women in the field of water. The award recognises the key role played by women, but also seeks to encourage greater inclusion and female leadership in the water sector.

The Professional Development Award recognises water sector companies that are making a significant contribution to the professional development of their employees, supporting the attraction, development and retention of the next generation of water leaders.

The IWA Young Leadership Award is granted to an exceptional young water professional who demonstrates significant achievements in their career, outstanding leadership and potential to play an influential role in the water industry in the future. Renowned scientist and engineer Dr. Siddhartha Roy has already been announced as the award winner.

The IWA Membership Awards reward the achievements of IWA members who make significant contributions to the association and water industry.

The Water Industry Video Awards are a new initiative, run by Water Industry TV.

The competition aims to build awareness about the challenges facing the world's water systems, and solutions that can tackle these issues and help propel the water industry into the digital age.

More information can be found at: **https://waterindustrytv.com/**

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