



BLUE PLANET

Berlin Water Dialogues



AquaNES

Inspired by Nature: Combining Natural and Engineered Systems in Water Management

9 April 2019, 9:00 am–5:00 pm
at Berlin-Brandenburgische
Akademie der Wissenschaften,
entrance via Markgrafenstraße 38,
10117 Berlin

The participation is free of charge.
www.blueplanetberlin.de

From Research into Practice – presentations followed by Q&A · International demonstration cases for combined natural and engineered systems · Panel Discussion · Inspirational lecture

Funding authorities

Supported by:



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Horizon 2020
European Union Funding
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Senate Department for
Economics, Energy
and Public Enterprises



Project leader

KOMPETENZZENTRUM
WasserBerlin

Project office

German Water
Partnership

PROGRAMME

Registration and Networking Snack start at 9:30

Moderation

Katie Gallus, Geographer and Moderator

Graphic recorder

Susanne Asheuer

9:00 Welcoming Remarks

Thomas Stratenwerth, Head of Division, Fundamental, International and European Aspects of Water Management, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)

Jörg Simon, Chairman of the Board, Berliner Wasserbetriebe

9:30 Keynote Speech

Leaving no one behind in access to water and sanitation – the potential of nature-based solutions

Stefan Uhlenbrook, Coordinator and Director, United Nations World Water Assessment Programme (UNESCO WWAP)

10:00 Introducing Combined Natural and Engineered Treatment Processes (cNES)

Addressing water management challenges with cNES

Thomas Wintgens, AquaNES Project Coordinator, Professor at FHNW School of Life Sciences, Head of Environmental Technology Group

10:30 Coffee Break

Learn more about technical and scientific activities around cNES in the Gallery (see page 6)

From Research Into Practice – Presentations Followed by Q&A

11:00 Ozonation combined with natural filtration processes – water quality gains

Regina Gnirss, Berliner Wasserbetriebe

11:30 Flexible use of modified retention soil filters to treat wastewater treatment plant effluent and combined sewer overflow

Andrea Brunsch, Erftverband

12:00 Tailored ICT tool for optimised operation of a managed aquifer recharge site

Axel Aurouet, Antea Group

12:30 Realising combined natural engineered systems (cNES) – Insights from public perceptions and governance

Heather Smith, Cranfield University

13:00 Lunch

AquaNES Responses to Water Management Challenges: International Demonstration Cases for Combined Natural and Engineered Systems

	Room I	Room II	Room III	Gallery IV
13:45	Membranes to complement bank filtration Leo Vredenbregt, Pentair X-Flow	Solutions for rural communities, remote locations and emerging countries Heribert Rustige, AKUT Umweltschutz Philipp Otter, AUTARCON GmbH	Managed aquifer recharge – pros and cons of advanced oxidation processes for pre-treatment Thomas Wintgens, FHNW School of Life Sciences	Learn more about technical and scientific activities around cNES in the Gallery (see page 6)
14:15	Rotation			
14:30	Resilient bank filtration: operational & design concepts Thomas Grischek, University of Applied Sciences Dresden	cNES performance assessment challenges – tools and methods to manage water safety Thomas ter Laak, KWR Water Research Institute	Creating multifunctional cNES Heather Smith, Cranfield University	Learn more about technical and scientific activities around cNES in the Gallery (see page 6)
15:00	Coffee Break			Learn more about technical and scientific activities around cNES in the Gallery (see page 6)
15:30	From Research Into Practice – Panel Discussion and Q&A			
	Made to last? Overcoming challenges for the implementation of cNES by research, demonstration and innovation.			
	Sebastian Piltz, Acting Managing Director, Isle Utilities GmbH Gábor Till, Senior Consultant, Budapest Waterworks Claudia Wendland, Senior Water and Sanitation Specialist, HAMBURG WASSER Thomas Wintgens, AquaNES Project Coordinator, FHNW Peter Vale, Severn Trent Water			
16:30	Inspirational Lecture			
	Combining natural and engineered systems for Water-wise Cities Corinne Trommsdorff, Head of the IWA Water-Wise Cities Initiative			
17:00	End of conference			



KEYNOTE SPEAKER

1 Stefan Uhlenbrook

is the Coordinator of the UNESCO World Water Assessment Programme (WWAP) and the Director of the UNESCO Programme Office on Global Water Assessment. His main expertise includes water assessments, hydrological process research, river basin modelling and water resources management. Many of his research and development projects have demonstrated the impact of global changes on water cycle dynamics in different hydro-climate regions in Africa and Asia. He is keen on translating science-based water knowledge to effective policies and strategies that contribute to environmental, economic and societal sustainability. Professor Uhlenbrook is a professor for experimental hydrology at Delft University of Technology, The Netherlands.

SPEAKERS (ORDER OF APPEARANCE)

2 Katie Gallus

Acclaimed moderator & geographer who worked for Deutsche Welle and ZDF. Following her passion as an explorer and storyteller, she did research in the Caucasus of Georgia, Sierra Leone, Kyrgyzstan and Brazil.

3 Thomas Wintgens

Chemical engineer and expert in water treatment technologies. Lecturer at FHNW. His research includes membranes, adsorption and advanced oxidation processes while promoting concepts like water reuse and resources recovery.

4 Regina Gnirss

Head of Research and Development at Berliner Wasserbetriebe (BWB). Engaged in a number of projects around water and wastewater treatment as well as water cycle management.

5 Andrea Brunsch

Researcher at the water board Erftverband. Her work focuses on the occurrence and behaviour of organic micropollutants in surface waters, sewage treatment plants and retention soil filters (RSF).

6 Axel Aurouet

Head of "Water resources Modeling and Information System" Department at the Directorate Innovation & Research of Antea Group France. He has strong interest in developing user-friendly ICT tools for water management applications.

7 Heather Smith

Lecturer in Water Governance at Cranfield Water Science Institute. Her research focuses on the governance of the water sector, and the links between technological innovation, policy, and social drivers around water services.

**8 Thomas Grischek**

Professor of Water Sciences at the University of Applied Sciences Dresden, Germany. Dr. Grischek has 28 years experience in groundwater management and water supply. His main research interest is riverbank filtration.

9 Leo Vredenbregt

Researcher at Pentair X-Flow and specialized in membrane processes for clean-water production. Involved in development of new types of capillary nanofiltration membranes for the removal of micropollutants.

10 Thomas ter Laak

Scientific Researcher at KWR Water Research Institute. Environmental chemist and expert in fate, behaviour and monitoring aspects of organic micropollutants in the water cycle.

11 Heribert Rustige

Environmental and project engineer at AKUT Umweltschutz Ingenieure Burkard und Partner. He is expert for constructed wetlands design with vast experience in scheme planning and implementation in Europe and China.

12 Philipp Otter

Environmental Engineer at AUTARCON GmbH and expert in off-grid water treatment for remote regions. He implements drinking water treatment plants along with business models in India, Tanzania, Nepal, and Egypt.

13 Sebastian Piltz

Acting Managing Director at Isle Utilities GmbH, a global consultancy for the water, wastewater and environmental sectors. Isle acts as a match-maker between technology developers, utilities and industry end-users.

14 Gábor Till

Senior Consultant and engineer at Budapest Waterworks where he is mainly active in research and innovation and EU-funded projects. He is an experienced project manager in international relations.

15 Peter Vale

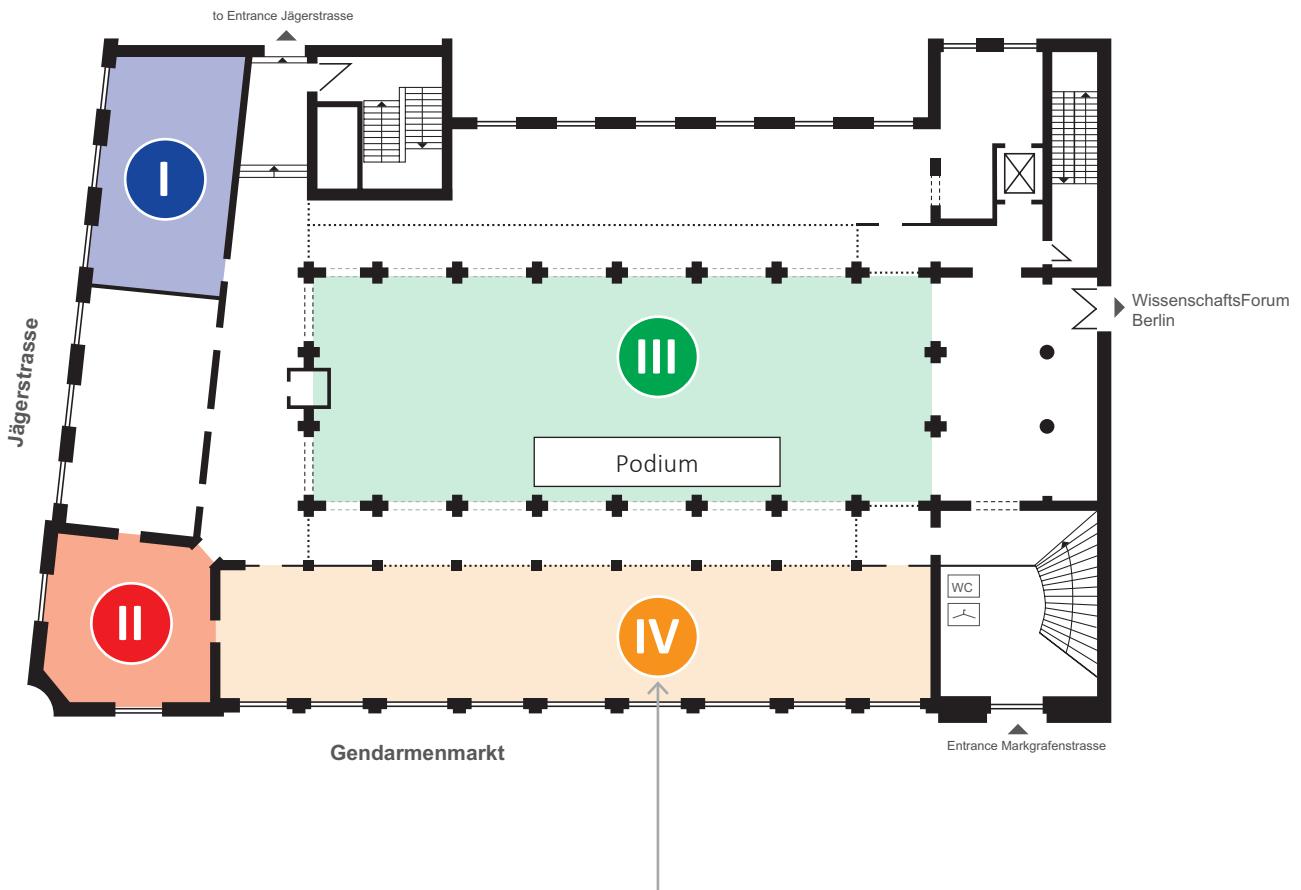
Technical Lead in Severn Trent Water's Innovation Team. A current area of focus in his work is on developing and evaluating technologies that will deliver energy neutral, material recovery wastewater treatment flowsheets.

16 Claudia Wendland

Senior water and sanitation expert at HAMBURG WASSER with experience in project management, implementation, lecturing and research with a focus on wastewater, sludge treatment, and innovative sanitation concepts.

17 Corinne Trommsdorff

Experienced consultant in the water sector and manager of the Cities of the Future Programme at IWA. She has led the development of the water-energy-carbon framework as well as the Principles for Water-Wise Cities.



GALLERY TOUR

Discuss with operators and researchers about testing activities and results in the AquaNES demonstration sites. Find practice examples and recommendations on design and operation at 25 individual stands. Exhibits, demonstrators, videos and posters allow you to explore different aspects around cNES which we have clustered into these topics:

Future proofing bank filtration sites for drinking water production

- Various technical post-treatment options responding to chemical and microbial water quality challenges
- Assuring sustainable yields under varying flow conditions

Exploiting and maintaining treatment and storage capacity in managed aquifer recharge

- Protecting groundwater resources by appropriate pre-treatment processes
- ICT tools for optimized operation

Constructed wetlands in cNES flowsheets for different treatment purposes. Potential and design recommendations for

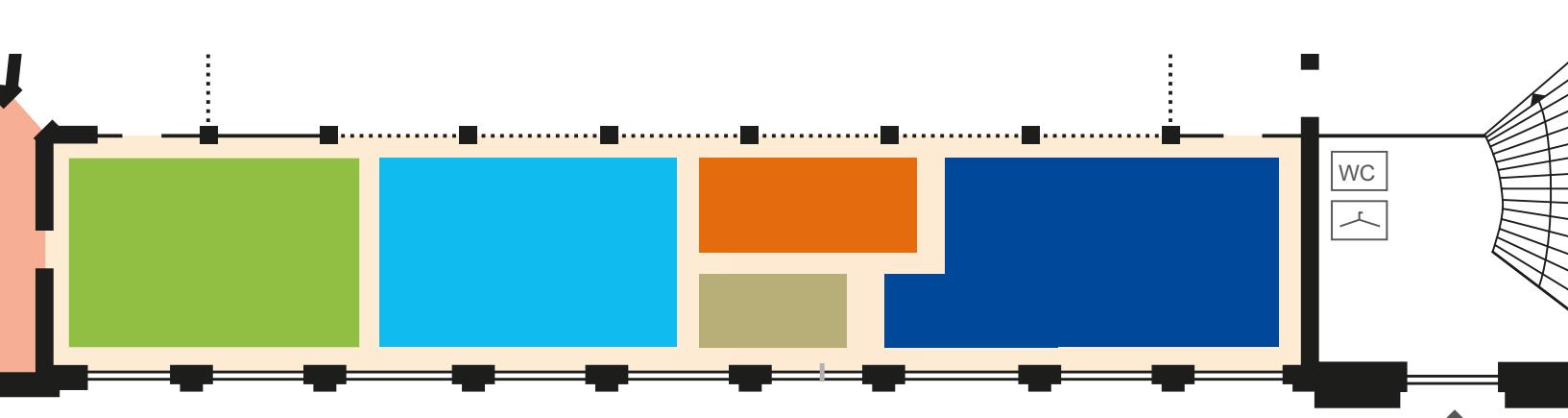
- enhanced secondary wastewater treatment and reuse
- advanced wastewater treatment eliminating organic micropollutants
- phosphorous removal

Addressing challenges beyond scheme operation

- Tools and methods to control and assess performance of cNES
- Capturing knowledge on cNES for decision support

Benefitting the environment and involving the public

- Ecosystem services analysis of green infrastructures: providing societal and environmental benefits
- Outreach tools for public engagement



Future proofing bank filtration sites for drinking water production

- 1** » Securing water quality of bank filtrate by upgrading single wells with nanofiltration
- 2** » Combined River Bank Filtration and Ultrafiltration for drinking water treatment
- 3** » Software tool SIPHON for energy efficient siphon well operation
- 4** » Riverbank filtration coupled to reverse osmosis: cNES pilot experience in Budapest, Hungary
- 5** » Bank filtration combined with reverse osmosis: Experience in Baja, Hungary
- 6** » Bank filtration combined with ozonation + GAC: natural organic matter and bacteria removal
- 7** » Safe drinking water in rural developing areas through River Bank Filtration + Solar Driven Electrochlorination (ECl_2)

Exploiting and maintaining treatment and storage capacity in MAR

- 8** » Towards indirect potable reuse: the role of enhanced oxidation before soil aquifer treatment
- 9** » Electrical Pulse Oxidation Process (EPOP) – an alternative pre-treatment for soil-aquifer treatment in indirect potable reuse
- 10** » Protecting drinking water resources from micro-pollutants: Potential of $\text{UV}/\text{H}_2\text{O}_2$ treatment before soil infiltration
- 11** » Enabling aquifer storage and recovery (ASR) by high flowrate filtration for improved water management
- 12** » Advanced monitoring for optimised MAR/SAT system design & operation, Agon-Coutainville, FR
- 13** » Subsurface Monitoring Device Real time monitoring of the dynamic of salt /fresh water interface
- 14** » LYXEA® Real Time Monitoring and Modelling: A suite of solutions for integrated MAR/SAT management

Gallery Tour Stations

Benefitting the environment and involving the public

- 15** » Ecosystem services from cNES for water and wastewater treatment systems
- 16** » Raising awareness for cNES: Serious Gaming and Citizen Science for stakeholder and social engagement

Constructed wetlands in cNES flow sheets for different treatment purposes

- 17** » Ozonation combined with natural filtration processes - water quality gains
- 18** » RSF plus: a flexible concept to reduce the micro-pollutant and microbial load from WWTPs
- 19** » Constructed Wetlands as solutions for small scale communities: Experiences from two Greek Islands
- 20**
- 21** » Constructed wetlands in cNES flowsheets - what for and how to design
- 22** » Phosphorus removal and biomass valorisation with an immobilised algae bioreactor (IABR)

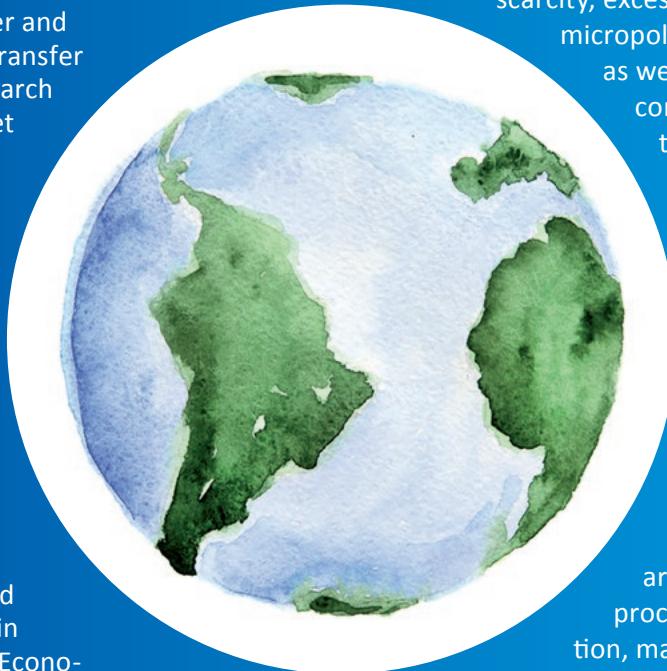
Addressing challenges beyond scheme operation

- 23** » BACTcontrol: online monitoring of bacterial contamination
- 24** » Evaluation of water treatment technologies using a panel of effect-based CALUX bioassays
- 25** » Managing water safety: A Water Quality Assessment Framework
- 26** » Workflow for Quantitative Microbial Risk Assessment with AquaNES online tool
- 27** » Capturing knowledge on cNES: The AquaNES DSS

ABOUT BLUE PLANET AND AQUANES

BLUE PLANET Berlin Water Dialogues is the leading platform in Europe for the trans-disciplinary and transboundary exchange on water-related global challenges since 2015. The conference series addresses the geopolitical role of water and aims at facilitating the transfer from water-related research into practice. Blue Planet brings together stakeholders from the public and private sectors as well as academia to discuss trends, find partners and develop solutions for water management problems. The export initiative environmental technologies of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the Berlin Senate Department for Economics, Energy and Public Enterprises, Kompetenzzentrum Wasser Berlin, as well as German Water Partnership come together as supporters and partners of Blue Planet. It has become an international "marketplace" where global water management issues are analysed and brought together with the expertise and problem-solving skills of the German water industry and international experts. Because global challenges such as water stress, the deterioration of freshwater quality, the contamination with micropollutants as well as the lack of access to drinking water in many parts of the world require environmentally and economically sustainable solutions.

The EU-funded Horizon 2020 project AquaNES catalyzes innovations in water and wastewater treatment processes and management through improved combinations of natural and engineered components. The sustainable measures are inspired by nature and maintain and enhance natural capital while simultaneously meeting environmental and socio-economic objectives.



In demonstrating the impacts and benefits of combined natural and engineered water treatment systems, AquaNES aims at promoting more sustainable adaptations to issues such as water scarcity, excess water in cities and micropollutants in the water cycle as well as to make substantive contributions to Europe's transition to a Green Economy.

The project focuses on 13 demonstration sites in Europe, India and Israel covering a representative range of regional, climatic, and hydro geological conditions. Among the demonstrated solutions are natural treatment processes such as bank filtration, managed aquifer recharge, and constructed wetlands plus engineered pre- and post-treatment options.

AquaNES aims at demonstrating the benefits of post-treatment options such as membranes, activated carbon and ozonation after bank filtration for the production of safe drinking water, validating the treatment and storage capacity of soil-aquifer systems in combination with oxidative pre-treatments, demonstrating the combination of constructed wetlands with different technical post- or pre-treatment options (ozone or bioreactor systems) as a wastewater treatment option. Moreover, the project shall serve as evidence the reduction in operating costs and energy consumption and has the goal to test a robust risk assessment framework for cNES while delivering design guidance for cNES, informed by industrial or near-industrial scale experiences, and to identify and profile market opportunities in Europe and overseas for cNES.

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**Further information about the
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is available from:**

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Photographs will be taken at today's event
and may be used for publicity purposes.

Project office



German Water
Partnership