



European Water Association
Yearbook 2022/2023

| **Raymond Erpelding**
EWA President 2021-2023



It is a privilege and a great pleasure for me to present the 2022/2023 Yearbook of the European Water Association to you.

Last Year the European Water Association celebrated its 40th anniversary in spite of Covid-19 pandemic. Instead of meeting physically for this celebration, we only could meet virtually on the 4th of May for the EWA 40th Anniversary Celebration. A very interesting Padlet was created during this celebration where greetings from all over Europe were posted. Here [you can find the link to this padlet](#). Practically all the activities with physical presence from spring 2020 on had to be cancelled or organised as Webconference.

The EWA contributed also to the virtual EU GREEN WEEK HIGH LEVEL OPENING EVENT on May 31 in the Green Capital of Europe 2021 – Lahti – by organising a Session regarding Stormwater Management in Water Sensitive Cities.

Another activity was the Water Online Conference on Micropollutants (EWA Spring Conference) organised on 22nd of June together with our Luxemburgish National member Association ALUSEAU and with an Anniversary Message from Mrs. Carole Dieschbourg, the Luxemburgish Minister of Environment, Climate Change and sustainable Development.

The first activity with at least partial physical presence was the EWA – Brussels Conference 2021 organised on 9th of November 2021 at the House of the Dutch Provinces in a hybrid mode.

For 2022 it looks at least regarding the Covid-19 pandemic a little bit more positive with the lifting of most of the restrictions, allowing again to organise meetings and conferences in presence.

We are particularly happy that the IFAT 2022 – the World's Leading Trade Fair for Water, Sewage, Waste and Raw Materials Management will take place from May 30 to June 3, 2022 at Messe München in Munich. In the context of IFAT 2022 – EWA will be responsible for organising the 20th EWA International Symposium “Integration of the Water Sector in the Circular Economy” with many interesting contributions from all over the world. EWA in cooperation with the German Association for Water, Wastewater and Waste, DWA, organises also an Innovation Workshop: Surveillance of SARS-CoV-2 and its Variants in Waste Water as a part of the technical program of the IFAT 2022.

I am also confident that the annual Brussels Conference can be held on 8 November 2022 and that from 15 to 17 November 2022 can finally be held the 7th JSWA/EWA/WEF Specialty Joint Conference in Sendai, Japan on the Topic of: Resilience of Water service.

Regarding the EU-Legislation, many things happened since the European Commission announced in December 2019 the “European Green deal” with the main target to achieve a climate neutral EU before 2050. As Water is linked to many of the legislative initiatives taken by the EU Commission, only to name a few who had yet been adopted, are followed-up in the frame of the Water Fitness Check, or are in a revision process:

- On 16 December 2020, the EU Parliament formally adopted the revised Drinking Water Directive 2020/2184
- The Regulation of 25 May 2020 on minimum requirements for water reuse entered into force and the new rules will apply from 26 June 2023 on.

Water Framework Directive, Groundwater Directive, Floods Directive and the Environmental Quality Standards Directives are followed up in the Frame of the Water Fitness Check, and the following Directives are in the Revision Process: Urban Waste Water Treatment Directive, Sewage Sludge Directive and the Bathing Water Directive. EWA is through its European Policy Committee contributing to this revision processes.

The EWA would like to thank all the contributors to this issue of the Yearbook, especially Mrs. Pernille Weiss, MEP and Member of the Committee on the Environment, Public Health and Food Safety, for their reflections about upcoming Water Challenges in Europe. The Yearbook contains also the following scientific and technical artic-

les tackling some current hot topics related to Water; “Water reuse” by Prof. Jiri Wanner, “Water aspects in the EU Taxonomy regulation” by Karoly Kovacs, “Digitalisation in the education of water professionals – project Digiwater” by Prof. Harsha Rathnaweera, “Groundwater in distal relations: visible and invisible in multiple ways” by Fanny Frick-Trzebitzky, “Phosphorus Recovery from sewage sludge ash – as a part of circular economy” by Hendrik Schurig and finally “Water, energy and waste: The great European deal for the environment” by Vincenzo Naddeo.

Moreover, the Yearbook takes the opportunity to present EWA’s Sponsor, National, Corporate and Research Members.

To conclude, I would like to address my sincere thanks to the whole team of EWA in Hennef, Germany, led by Secretary General Johannes Lohaus, also to our Vice-President Wendy Francken, our Past President Bjorn Kaare Jensen, the whole members of the Management committee, Standing Committees and Council Members for their enormous efforts to the European Water Community.

We keep on working for clean Water for Europe!

Raymond Erpelding, President



Luxembourg on 13th of March 2022

| Content



Facts about EWA



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THE EUROPEAN WATER ASSOCIATION

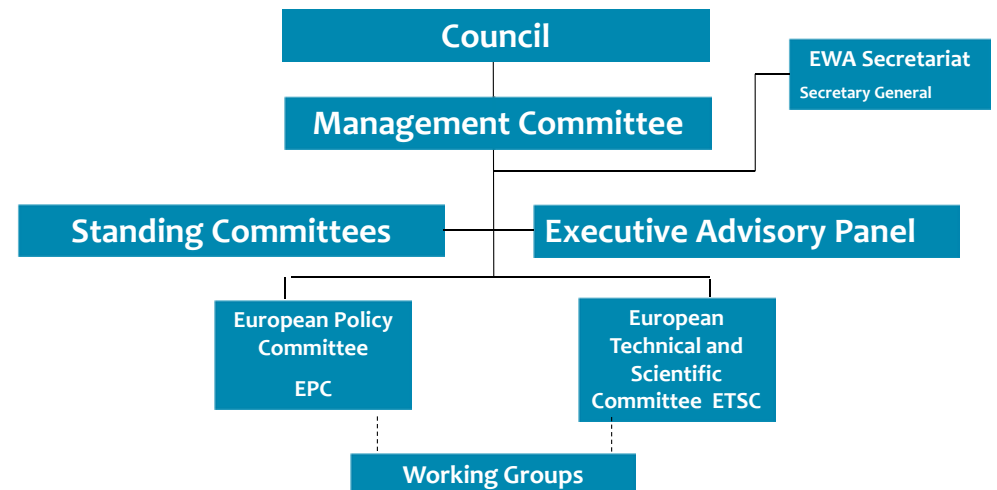
Clean Water for Europe

European Water Association (EWA) is the pan-European, non-governmental, non-profit-making, technical and scientific umbrella organisation of and for national, corporate and research member associations bringing together all professionals involved in the water cycle. Simply, it is the voice of water in Europe. It is the platform and turntable for discussion, exchange and transfer of information and know-how in the European Water landscape on technical and scientific level, not only between the national member associations and with the corporate members, but also for distribution of information from the EU to the members and from the members to EU. EWA's national members and all their working groups and specialized members will build a real task-force to analyse, discuss, translate and communicate the European Agenda to their national, regional and local authorities, the involved consultants, the industry, the contractors and even the general public. Thus; the EWA represents about 50,000 professional individuals working in the broad field of water and environmental management.

Organisation and Structure

The highest authority of the EWA is the Council – it has the executive power of decision. Each member association (22) is represented on the Council and these representatives meet annually to discuss and plan the activities of the association. The smaller Management Committee has responsibility for developing policy and is in charge of the daily work of the association, supported by the Secretariat

Organization and Structure



at. The Association is represented by the President, who chairs the Council and the Management Committee. The Secretary General executes the day-to-day operations of the Association. In addition, Standing Committees and Working Groups support the work of the Association.

| The EWA Standing Committees

From its initiation, the Association has laid emphasis on the exchange of information and knowledge between professional experts. Through this exchange of knowledge, the EWA contributes to a sustainable water management: safe water supply and the protection of water and the environment. Numerous conferences and workshops are a result of the EWA network. These exchanges of knowledge take place all over Europe and covers a very broad range of water related topics such as current European water legislation (covering the Water Framework Directive, the Urban Wastewater Directive, as well as the Groundwater Directive, Sewage Sludge Directive etc.). Moreover, technical questions such as the significance of small wastewater treatment plants in rural areas, or scientific conferences and other topics of the European agenda, which are directly or indirectly involving the water cycle, add to the areas of expertise of the organisation. The European Water Association organizes conferences and symposia at regular intervals, on events such as the International Trade Fair (IFAT) in Munich, as well as its own annual EWA Brussels conference. An increase in the number of members from Central and Eastern Europe (accession countries) has raised the interest for events dealing with water protection issues.

The different EWA Committees and Working Groups are the basis of the organisation's relentless goal to achieve Clean Water for Europe. They rely on the voluntary work of experts deriving from the various European National Member Associations and work together on various subjects of current interest in the water and environmental field.

European Policy Committee (EPC)

The committee follows the work of the European Commission and arranges regular meetings with officials in the Commission, responsible for activities of relevance to water management. The committee gives comments and advice to official European institutions on behalf of its members. The EWA is attending meetings of the Strategic Co-ordination Group under the WFD Common Implementation Strategy. Furthermore, the EWA is in close contact with other European associations and institutions, which has some interdisciplinary contact with the field of water and wastewater.

The objectives and responsibilities of the European Policy Committee (EPC), under the guidance of the governing bodies of the European Water Association, and within its rules of procedure, are the following:

- Organise and coordinate relationships of EWA with European level bodies, and especially with bodies of the European Union;
- Facilitate and create the necessary and useful flows of information amongst the persons and groups representing EWA towards European level bodies, as well as between the former and the National Associations (NA), members of EWA;



Wendy Francken
Chairwoman EPC



Fabio Tatano
Chairman ETSC

European Technical and Scientific Committee (ETSC)

As a particular and “historic” EWA standing committee, the ETSC, European Technical and Scientific Committee provides a unique European point for the discussion, the exchange and evaluation of knowledge and information, and the comparison and definition of positions on key technical-scientific issues and aspects affecting water, wastewater and the related environment at the European level.

The ETSC activities are a product of voluntary and passionate work and contributions of water and wastewater specialists having a qualified technical and/or scientific profile that are active in the different European countries. Under the ETSC, specific task groups gather to discuss topics or aspects that are relevant and strategic for the water and wastewater management at the European level. The ETSC produces technical and scientific papers and strategic position documents. Furthermore, the ETSC is able to cooperate with any national member association within EWA in response to specific national technical-scientific topics or issues to be discussed, evaluated and compared at an appropriate European level.

The ETSC is also responsible for the organization and sponsorship of EWA workshops, seminars, conferences, and symposia having a defined technical-scientific profile (including the well-established International Water and Wastewater Symposium during the biennial international trade fair IFAT in Munich, Germany).

- Identify emerging issues and important trends in water related European policies and issues, which are of interest to EWA and its members, in order to allow EWA to anticipate future changes and to contribute efficiently to European policy development;
- In consequence, and in conjunction with the European Technical and Scientific Committee (ETSC), propose the evolution of thematic activities and actions of EWA.

| EWA Management Committee (MC)

Members of the EWA Management Committee (MC)



Raymond Erpelding, LU
President



Mara Pavelić, HR
MC Member



Wendy Francken, BE
Vice President and Chairwoman
“European Policy Committee” (EPC)



Harsha Ratnaweera, NO
MC Member



Bjørn Kaare Jense, DK
Past President



Fabio Tatàno, IT
Chairman „European Technical and
Scientific Committee“ (ETSC)



Thomas Wintgens, DE
Honoray Treasurer
(proposed for the election)



Johann Wiedner, AT
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| The William Dunbar Medal

This prestigious medal is awarded to an individual of a member country of the EWA, in recognition of his or her outstanding contribution in applied technical development in the field of sewage and waste treatment and disposal. This

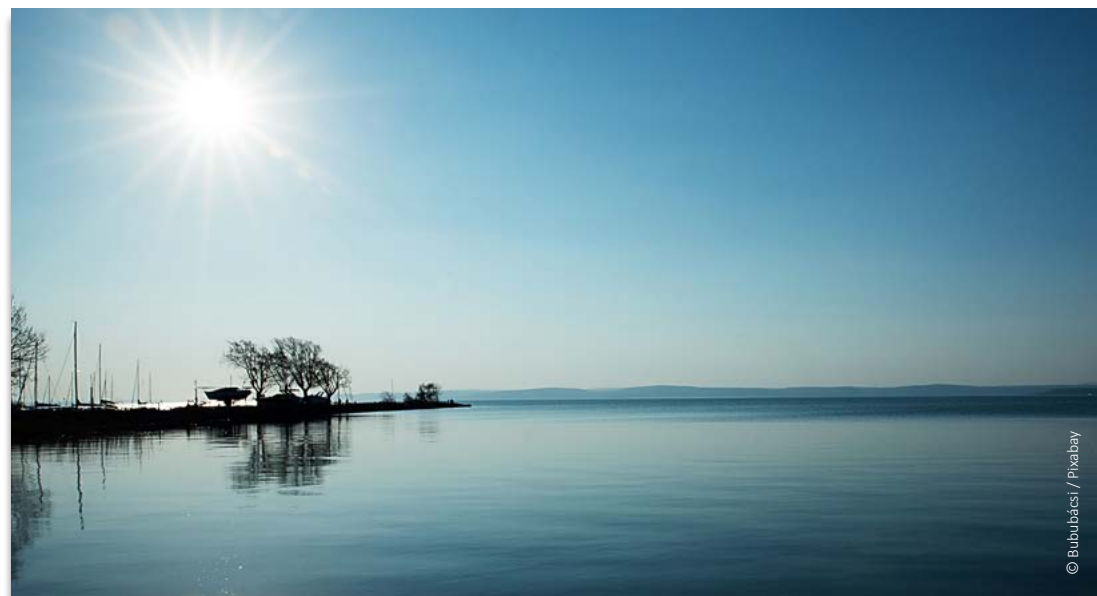
Award, donated by IFAT, the international trade fair for water, sewage, refuse, and recycling, which is organised by the Messe München International, has been adopted by the European Water Association.

The medal was presented every two years on the occasion of the EWA Symposium held in conjunction with the IFAT event but has become since 2012 a highlight at the EWA Brussels Conference.

This year (2022), the esteemed medal will be once again handed over during the next edition of IFAT during the State Ministry Reception (Staatsempfang) on the first day of the fair.

The award consists of a gold medal and a certificate. The medal bears the portrait of William Dunbar on one side and on the other the logos of the EWA and IFAT. It is given in remembrance of William Philips Dunbar, born in 1863 in Minnesota (USA), who was appoin-

ted as Director of the Government Hygienic Institute in Hamburg in September 1892 to assist in managing the disastrous cholera epidemic. Dunbar improved the detection procedure for cholera and other pathogens and his pioneering improvements in city sanitation made him an authority that is still internationally recognised in the sector.



William Dunbar Medal Award Winners 1975 – 2022

| Year | Award Winner | Country |
|------|--|---------|
| 2022 | Prof. Jörg E. Drewes | DE |
| 2019 | Prof. Jean Berlamont | BE |
| 2017 | Prof. Dr. Milenko Roš | SI |
| 2015 | Prof. Dr. László Sómlyódy | HU |
| 2013 | Prof. Dr.-Ing. Karl-Heinz Rosenwinkel | DE |
| 2012 | Philippe Duchène | FR |
| 2010 | Prof. OBE, PHD, FCIWEM, CWEM, CEnv Peter Matthews | UK |
| 2008 | Prof., MSc, PhD, DSc Jiří Wanner | CZ |
| 2005 | o. Prof. Dipl.-Ing. Dr. techn. Helmut Kroiss | AT |
| 2002 | Prof. Dr.-Ing. Rolf Kayser | DE |
| 1999 | Prof. Mogens Henze | DK |
| 1996 | Prof. Dr.-Ing. E.h. Klaus R. Imhoff | DE |
| 1993 | Geoffrey Ashworth Truesdale | UK |
| 1990 | em. o. Prof. Dr.-Ing. habil. Franz Pöpel | DE |
| 1987 | Prof. Dr.-Ing. Wilhelm von der Emde | AT |
| 1984 | Herbert A. Hawkes | UK |
| 1981 | Prof. Dr. sc. nat. E.A. Thomas | CH |
| 1978 | Dr. Ir. Aale Pasveer | NL |
| 1975 | Dr. A.L. Downing | UK |

The recipient of the William Dunbar Medal 2022: Professor Jörg E. Drewes



Prof. Jörg E. Drewes

Jörg E. Drewes is Chair Professor of Urban Water Systems Engineering at the Technical University of Munich (TUM), Germany, where he also serves as Academic Director of the Environmental Engineering Program. Before joining TUM in 2013, he served as Full Professor of Civil and Environmental Engineering at the Colorado School of Mines (CSM), USA (2001-2013).

Professor Drewes' research and scholarly activities are closely related to the common theme of energy efficient advanced water treatment systems and water recycling. In particular, he is interested in novel design approaches for natural and engineered treatment systems; distributed non-potable water reuse; potable water reuse; monitoring strategies and treatment performance assessments; state-of-the-art analysis of emerging trace organic chemicals (pharmaceutical residues, household chemicals, PFAS) and pathogens (including viruses and antibiotic resistance) in natural and engineered systems. Professor Drewes has been a dedicated teacher to educate the next generation of engineers and scientist for more than 30 years.

Professor Drewes is a member of the Advisory Council on Global Change directly advising the German Government (WBGU). He was awarded Fellow of the International Water Association (IWA) and is a member of the Strategic Council of IWA. He also served as the Chair of IWA's Water Reuse Specialist Group (2013-2019). He is also a member of the Drinking Water Commission, German Federal Ministry of Health and serves as the Associate Editor of ACS Environmental Science & Technology.



| EWA Online

Find the European Water Association on Social Media:

Don't hesitate to follow us to receive the latest news from EWA and our members. You will not only receive update on our upcoming events but also water related news from Europe and beyond. We also use this platform to share our members activities.

Every two month, we publish the EWA Newsletter. You will be well informed about the different activities and initiatives of the EWA, but also of the events organised by our members. Furthermore we will provide you with interesting inside news directly from the EU capital Brussels, from the European Commission and the European institutions.

You can sign up here:

Activities



| Recent Activities



| Phosphorus Recovery from Waste Water

On September 21st 2021 the third innovation web seminar on the topic “Phosphorus Recovery from Waste Water” was organized in cooperation with the utility companies [HAMBURG WASSER](#) and [REMONDIS](#).



Phosphorus symbol © AdobeStock – concept w

Waste water is not only waste, it is also a resource. Especially phosphorus is an essential, yet limited resource, which is not replaceable by any other element. This is why there are increasing efforts to recycle phosphorus contained in waste water. It involves the recovery of phosphorus and, normally, the separation of phosphates from harmful substances. Phosphorus can be recovered from waste water, sewage sludge, as well as from the ash of incinerated sewage sludge, and can be combined with phosphorus removal in most cases. Up to now, there is limited experience in industrial-scale implementation. The utility companies in Hamburg, HAMBURG WASSER and REMONDIS, have built the world’s first large-scale plant to recover this vital raw material at the Hamburg sewage treatment plant.

For the first time worldwide, this process allows the important raw material concentrated in sewage sludge ash during waste water treatment to be recycled economically and efficiently. Phosphorus is in limited supply worldwide, but is essential for plant growth and thus for food production as a whole. In the long term, the sewage sludge ash produced in Hamburg is to be completely recycled in order to recover phosphorus.



Live from HAMBURG WASSER ©EWA



Mr. Heinz Habegger, moderator of the event

This event was live streamed from HAMBURG WASSER and was moderated by Mr. Heinz Habegger from VSA. As a first presentation, Mr. Habegger presented a case study of phosphorus recovery in Switzerland: Sludge to Resources Recovery; Utilization Strategies for Phosphorous Recovery from Sewage Sludge in Europe. Following, Mr. Christian Günner from Hamburg Wasser presented the Waste Water Treatment Plant Köhlbrandhöft, Dradenau. And to conclude this webinar, Mr. Hendrig Schurig, also from Hamburg

Wasser gave us insight on the “Phosphorous Recovery Plant in Hamburg: Description of the Wastewater Treatment Plant and Description of the Phosphorous Recovery Unit First Operation Experiences”. This very successful event with participants from all over Europe was concluded by a Q&A Session with the participants.

After the event, EWA Water Policy Officer Dr. Noama Shareef and Mr. Habegger visited the Wastewater Treatment Plant.



Visit of the Wastewater Treatment Plant, HAMBURG WASSER © Noama Shareef

| EU Green Week high Level Opening Event



Stormwater Management in Water Sensitive Cities

Urban areas are the source of many of today's environmental challenges – not surprisingly, since two out of three Europeans live in towns and cities. Local governments and authorities can provide the commitment and innovation needed to tackle and resolve many of these problems.

The European Commission's (European) Green Capital Award, recognizes and rewards local efforts to improve the environment, and thereby the economy and the quality of life in cities. The Award is given each year to a city, which is leading the way in environmentally friendly urban living. In 2021, the city of Lahti in Finland received the prestigious Green Capital title.

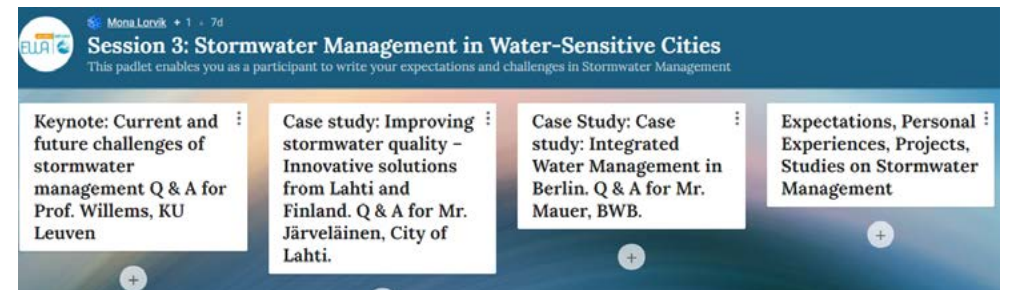
For the opening of the EU Green Week, the city of Lahti organized the “[EU Green Week High Level Opening Event](#)”.

The European Green Week High-Level Opening Event dedicated to Citizen Science for Zero Pollution took place virtually from Lahti on 31 May 2021. The event aimed to shed light on the citizen-driven research and planning activities that target towards Zero-Pollution future of Europe.

Citizen Science for Zero Pollution event opened the discussion of the EU Zero Pollution Action Plan with the three themes: air, water and soil. Decisionmakers, city officials, experts, students and researchers from European cities were welcome to join the event and share their ideas.

The European Water Association organized a session on “[Stormwater Management in Water Sensitive Cities](#)”. As moderator of the session, Mrs. Annina Takala, President of the Water Association in Finland was invited. The first presentation was given by Professor Patrick Willems from KU Leuven (Germany) on the current and future challenges of storm water management. Mr. Juhani Järveläinen from the city of Lahti presented a first case study. He gave insight on “Improving storm water quality – Innovative solutions from Lahti and Finland”. The second case study was given by Gerhard Mauer from Berliner Wasserbetriebe on “Integrated Water Management in Berlin”.

A padlet was issued for the participants to leave their questions or showcase their work on stormwater management. The padlet is still available [here](#).

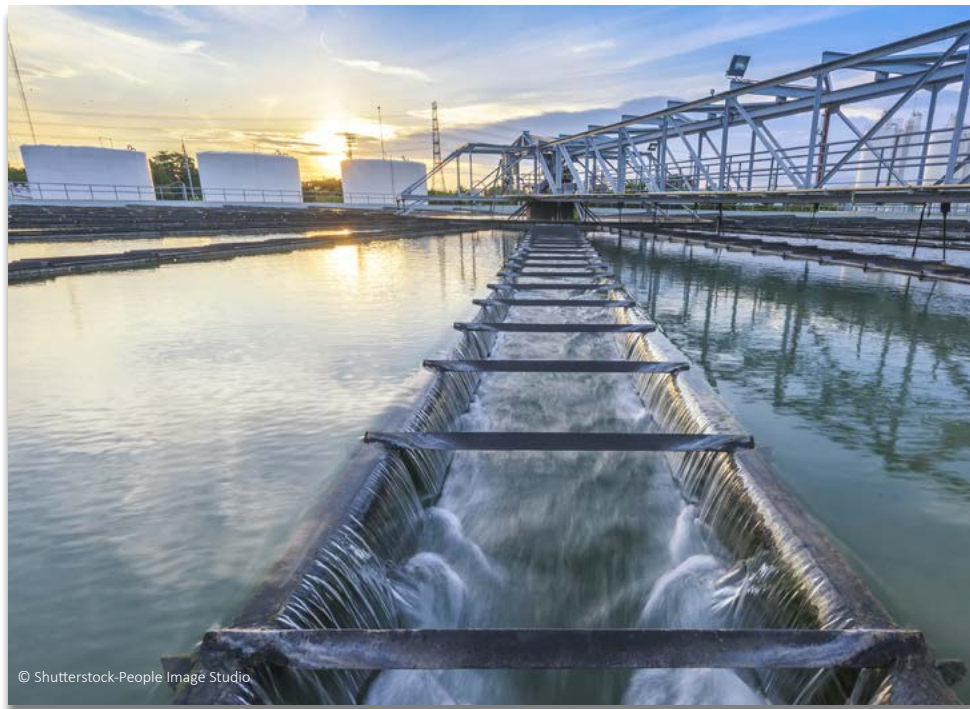


Padlet on Stormwater Management in Water Sensitive Cities.

| EWA 40th Anniversary Water Web-Seminar

EWA 40th Anniversary Water Online Conference on Micropollutants

The EWA 40th anniversary Water Online Conference on Micropollutants was held on June 22nd, 2021. Micropollutants are a challenge for wastewater operators whose mission is to treat wastewater to ensure the protection of the environment and ecosystems. Moreover, it is also important for drinking water operators who have to rely on drinking water resources to produce drinking water.



Carole Dieschbourg during her welcoming address.
© EWA

The conference discussed the European approaches to the challenges of these organic and mineral contaminants which are of anthropogenic as well as natural origins.

The webinar was organized in two sessions. The first session on “[European Challenges and Strategies](#)” was moderated by Prof. Silvio Beier from Bauhaus University Weimar. After the opening of the event by the EWA President Raymond Erpelding, Carole Dieschbourg, Minister for the Environment, Climate and Sustainable Development at the Grand Duchy of Luxembourg welcomed the participants.

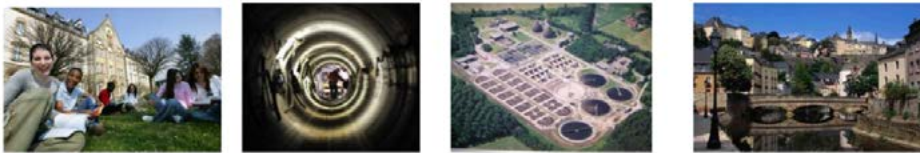
Dr. Caroline Whalley from Water Industries and Pollution at the European Environmental Agency gave the first presentation on “Urban Wastewater Treatment and Micropollutants Assessing Micropollutants at EU Level“. Followed by Prof. Norbert Kreuzinger, Head of “Scientific and Technical Basic Research for Water Quality Management” at the Institute for Water Quality and Resource Management, TU Vienna. His presentation presented “Technical Options and Boundaries to Reduce Micropollutants”. To close the first session, Prof. Damià Barceló, PhD, Director at Catalan Institute for Water Research (ICRA) in Spain, shared his expertise on “Micropollutants in Groundwater”.



Technological options for the elimination of Micropollutants in small WWTP

Prof. Dr.-Ing. Joachim Hansen (Université du Luxembourg)
Dr. Silvia Venditti, Hanka Brunhoferova

EWA 40th Anniversary Water online conference on Micropollutants
22.06.2021



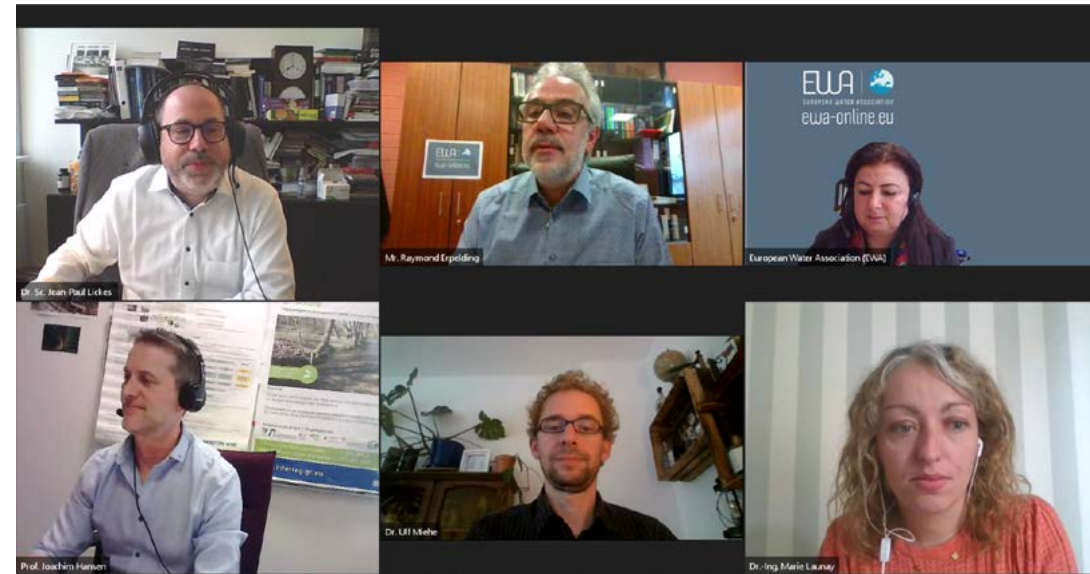
Prof. Joachin Hansen during his online presentation ©EWA

The second session was focused on "Elimination of Micropollutants" and was moderated by Dr. Sc. Jean-Paul Lickes, Water-Director – Water Management Agency of Luxembourg.

For this session, Prof. Joachim Hansen, Associate professor in Hydraulic Engineering/ Urban Water Engineering at the University of Luxemburg focused on "Technological Options to Eliminate Micropollutants in Small Wastewater Treatment Plants".

Dr. Pascal Wunderlin from VSA shared "Best Practice to Eliminate Micropollutants in Switzerland". To continue, Dr.-Ing. Ulf Mieke from Kompetenzzentrum Wasser Berlin highlighted "Options to reduce pharmaceutical input to the Baltic Sea". As a last speaker, Dr.-Ing. Marie Launay, Leader of „Kompetenzzentrum Spurenstoffe BW“ (KomS), Institute for Sanitary Engineering, Water Quality and Solid Waste Management at the University of Stuttgart gave insight on "Practical Experiences from Wastewater Treatment Plants in Baden-Württemberg".

Both sessions were followed by a Q&A Session.



Q&A Session for the second session ©EWA

| 16th Brussels Conference: Water in the value Chain

16th EWA Brussels Conference “Water in the Value Chain”

On November 9th 2021, EWA organized its 16th Brussels Conference on the topic “[Water in the Value Chain](#)”. For the first time ever, the EWA organized an hybrid event with participants online and in person. In the context of the pandemic, the conference was the first physical event organized in 2 years. The 16th edition of the Brussels conference was hosted as usual in Brussels but in a new location, The House of Dutch Provinces. And we would like, once again, take this opportunity to thank them for welcoming us.

We are also very thankful for the generous contributions by our sponsors: [Steinzeug Keramo](#), [HUBER](#), [WILO](#), [IDEXX](#) and [Zahnen Technik](#), who made this event possible.



House of Dutch Provinces, Brussels

In order to achieve a common cross-sectoral strategy on the topic of water, a fast and a cross-sectoral collaboration is imperative. The goal of the 16th Brussels Conference was to show some of the inter-disciplinary initiatives.

The president of EWA, Raymond Erpelding opened the conference by welcoming everyone. His speech was followed by a talk on “The Member States Role in implementing the EU Water Policy – What the Commission does to Enforce Policy, Incentivize and Facilitate its Implementation” from Bettina Doeser, Head of unit – Clean Water ENV.C.1 , DG Environment, European Commission.



EWA President Raymond Erpelding during his opening speech

The first session “[European Legislation and Initiatives](#)” was moderated by EWA vice president and chairwoman of the EWA European Policy Committee, Wendy Francken. This session included two presentations. Starting with Xavier Leflaive from OECD on “Financing Water Supply, Sanitation and Flood Protection- Challenges in EU Member States and Policy Options”. Followed by Károly Kovacs who talked about the “Multiple roles of Water in the taxonomy regulation”.

The second session titled “[Circular Water / Integrated Water Resource Management](#)” had the goal to show the Commission’s expectations to the Revision of the Urban Waste Water Treatment Directive and the European legal road map on the circular uptake of raw materials from waste water. Dieter Staat from Vewin, was moderating this session. The first lecture was held by Michel Spornar from DG Environment at the European Commission on “The Revision of the Urban Wastewater Treatment Directive – its Contribution to IWRM and the Circular Economy”. His presentation was followed by Katrien Bijl from the WOW!-project. Her presentation was titled “A European Legal Roadmap Towards the Circular Uptake of Raw Materials from Waste Water”.

The aim of the third session on “[Protection of the Water Resources](#)” was to elaborate on the strategies to guard the existing water resources and was moderated by Tom Schaul, Advisor of the Ministry of Environment, Climate and Sustainable Development of Luxembourg. The first lecture from Claudia Olazábal, DG Environment at the European Commission was on “Support for Water Policy from the CAP and CAP Strategic Plans”. The last presentati-

on for this session was given by Marc Daniel Heintz from ICPR on the “Impact of agriculture in the Rhine River Basin, how the Rhine Commission (ICPR) plans to address them, and how it could be supported by the CAP “.



Marc Daniel Heintz during his presentation

The last session of the 16th Brussels Conference named “[Climate Adaptation Strategies](#)” had for moderator Claudia Suppan, Director of the EU-representation of Steiermark of Austria. The first presentation was given by Elena Višnar Malinovská, and dealt with “The Role of Water in Climate Adaptation in the EU – how to make it happen in the Member States”. The last presentation of the day was given by Jurgen Bals and answered the question “What does this mean for the local authorities?”.



Claudia Suppan, Tom Schaul, Raymond Erpelding, Wendy Francken, Dieter Staat, Johannes Lohaus

After a Q&A session, the president of EWA Raymond Erpelding closed the conference and invited the participants sitting in Brussels to network. Numerous participants in the room have not been in an physical event event since the start of the pandemic and really appreciated to be in contact again and network.

The 17th Brussels Conference will take place on November 8th 2022 and will be on the topic “[Integration of the Water Sector in the Circular Economy](#)“.

| EU Water Policy and Legislation Introduction Course

Introduction course to EU Water Policy and Legislation

Since 2014, the European Water Association organises an Introduction Course to EU Water Policy and Legislation. The seminar has always been offered in person, but since the start of the pandemic, the course has been held online and has been very successful. During this course, participants are made familiar with development and principles of EU water policy, the decision-taking and implementation/scrutiny process, governance at EU level (openness, transparency, citizens' right on access to documents; rights of complaint and petition), as well as the key legislative elements of EU water policy and their implementation. This course is offered as a 2-day event. Following the online course participants also get the possibility of downloading a comprehensive documentation of the issues presented (policy documents, legislation, implementation reports and court judgments).

A certificate is also sent out to all participants attending both on-line sessions.

This course targets persons working for:

- Governmental and advisory bodies, experts, planners and other practitioners at local, regional and national level involved in water management and water protection;
- Industries involved in planning, permitting, monitoring and analysis;



Dr. Helmut Blöch ©EWA

- Research and training institutions, consultants involved in the water sector;
- Water utilities and management associations in the waste water and drinking water sector;
- Non-governmental organisations and stakeholder bodies involved in the water sector;

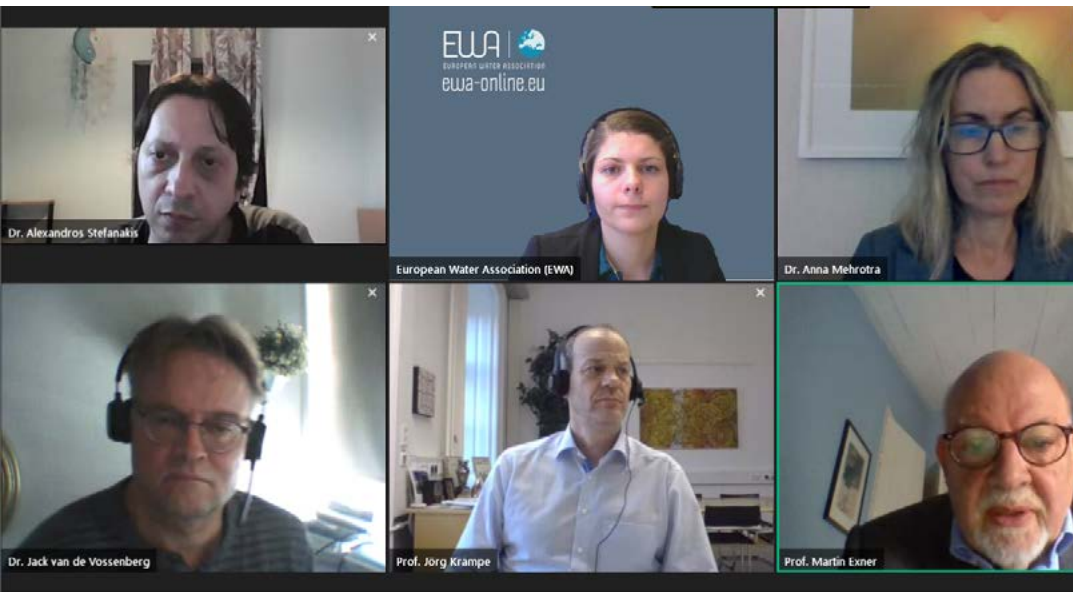
Dr. Helmut Blöch, Political Consultant of the EWA and former Head of the Water Sector at the EU Commission, Brussels conduct this course.

The last course has been given on January 25th and 26th, 2022 and you can find the date of the next course on our website or on our upcoming activities. If you would like to offer this course to your team, students to give them knowledge on water policy and legislation, contact us and we can together see what we can offer.

| Hygienic and Safe Waste Water Reuse Webinar

Innovation Webinar: Hygienic and Safe Wastewater Reuse

Our last Innovation Webinar on the topic: Hygienic and Safe Wastewater Reuse was held on March 8th, 2022 as an online seminar. This online web-seminar aimed to present selected innovative solutions for the hygienic and safe reuse of treated wastewater in EU countries, to highlight successful case studies from the EU and USA; to identify the challenges, and to promote recent innovative technologies that meets the current legislation in Europe.



Q&A Session at the end of the webinar



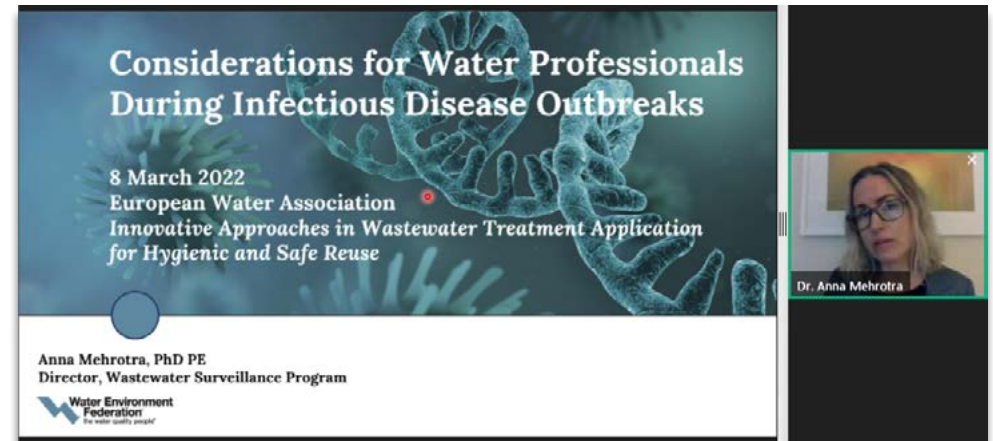
For this event, we were very lucky to have Dr. Alexandros Stefanakis from TU Crete-Greece as a moderator but also speaker. Dr Stefanakis is Assistant Professor at the School of Chemical and Environmental Engineering, Technical University of Crete, Greece. He is an Environmental Engineer and Researcher focusing on water engineering, specifically on nature-based solutions. He is also an expert on sustainable water and wastewater treatment systems such as Constructed Wetlands.

To launch the webinar, we welcomed the prestigious Prof. emeritus Dr. med. Dr. h.c. Martin Exner M.D. from the Department of Hygiene and Public Health of Bonn University Bonn, Germany. He presented “An Overview of Water Wastewater Hygiene- Where Hygiene Application Makes Sense!”. Following his presentation, Dr. Jack Van de Vossenbergh from IHE Delft Institute for Water Education gave us insight on “Application of Disinfection Methods for Treated Wastewater and Water Quality Monitoring”. After his talk, Prof. Jörg Krampe from the Institute for Water Quality and Resource Management, TU Wien made a presentation on: “Agricultural Reuse of Treated Wastewater – Challenges as a Result of Seasonal Water Demands”. As a fourth speaker, we were very lucky to have Dr. Anna Mehrotra, Director of the National Wastewater Surveillance System Program at the Water Environment Federation, speaking live from the United States. Her talk was focused on the “Considerations for Water Professionals during Infectious Disease Outbreaks.” And for the last presentation, the moderator Dr. Alexandros Stefanakis presented Case Studies of Nature-based Solutions for Waste Water Treatment with/without Disinfection for Effluent Reuse and/or Environmental Discharge.



Prof. Martin Exner

As usual, the webinar was closed with a Q&A Sessions where questions from both participants and speakers were answered. You can consult our website to learn more on our next Innovation Webinar on May 12th 2022 on the topic: [New Opportunities and Challenges for Waste Water Reuse](#).



Dr. Anne Mehrotra, starting her presentation

| IFAT 2022

After a long pause due to COVID-19, the well-known World's Leading Trade Fair for Water, Sewage, Waste and Raw Materials Management IFAT Munich finally took place again in Munich from May 30th to June 3rd 2022. With a total of 2 984 exhibitors from 59 countries and 119,000 visitors from 155 countries, the European Water Association held a booth right at the entrance of the fair.

To kick off the event, a webinar on “**New opportunities and challenges for Waster Water Reuse**” was organized on May 12th.

Reuse of treated waste water gains a more and more important impact due to climate change. The European Regulation on minimum requirements for water reuse for agricultural irrigation has entered into force in June 2020. These new rules will apply from 26 June 2023 and are expected to stimulate and facilitate water reuse for the agricultural irrigation as well as for other purposes within the whole European Union. Speakers from Italy, Czech Republic, Austria, Germany and Portugal where gathered to talk about innovative solutions of water reuse opportunities as well as challenges and the new water reuse legislation in Europe. With more than 300 registrations from all over the world, the webinar was a great event to kick off the fair. But don't worry, if you have missed it, you can still watch it on our Youtube Channel. →

During the week, the European Water Association welcomed many visitors at the booth, providing them information about the association, our upcoming events and how to become a member. Thank you to everyone who came to visit us! We also organized many



First day of IFAT Munich 2022 © Alex Fettich



meetings with our members. A council meeting, an executive director meeting and a research member meeting took place during the week. During the **council meeting**, Dr. Károly Kovács, Head of the Economic Committee of the EWA, former President of the EWA and Chairman of the Hungarian Water Association and Dr. Kalanithy Vairavamoorthy, Executive Director of the International Water Association (IWA) received the prestigious title of **Honorary Members**.



Raymond Erpelding, EWA President awarding the honorary members. © Alex Fettich

On the first night of the fair, during the “Staatsempfang” at the Kaisersaal der Residenz in Munich, **Professor Jörg E. Drewes** was awarded the **Dunbar Medal** in recognition of an outstanding contribution in applied technical development in the water sector. “His extremely comprehensive research achievements, and in particular his current research on the development of wastewater monitoring to combat the corona pandemic, have impressed the EWA committees,” Johannes Lohaus said, Secretary General of the European Water Association. “We are pleased that with the award of the Dunbar Medal to Professor Drewes this year, the forward-looking approach of “wastewater as a source of information is receiving attention” Stefan Rummel, Managing Director of Messe München, added.



*Dunbar Medal ceremony with Raymond Erpelding, EWA President, Thorsten Glauber MdL, Bavarian State Minister for the Environment and Consumer Protection, award winner Professor Jörg E. Drewes, Johannes Lohaus, Secretary General of the EWA and Stefan Rummel, managing director Messe München GmbH.
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On May 31st the European Water Association, in cooperation with DWA, the German Water Association organized an innovation workshop on “**Surveillance of SARS-CoV-2 and its Variants in Water Water**”. In March 2021 the EU Commission published the “COMMISSION RECOMMENDATION (EU) 2021/472” about a common approach to establish a systematic surveillance of SARS-CoV-2 and its variants in wastewaters in the EU. The seminar gave an overview about the implementation of this recommendation within the EU, described the cooperation between the environmental and the public health sectors and demonstrated the approaches in several European countries. Following the workshop, the participants and speakers gathered for a get together.



Last but not least, the EWA celebrated the 20th **EWA International Symposium on the “Integration of the Water Sector in the Circular Economy”**. The well-known Symposium was organized on two days and split into four sessions:

- Value of water
- Challenges in the water sector
- Sludge management and use
- And Blue and Green infrastructures in urbanized areas.

During those 2 days, speakers from all over the world came to share their insights and to discuss these important topics. This edition of the symposium was also an official EU Green Week partner.

The next edition of IFAT Munich will take place from **May 13-17 2024**. Make sure you save the date as once again the European Water Association will be present with a full program.

| Transforming Research Results into Innovation Uptakes

This paper summarises a workshop held at the International Water Association (IWA)'s World Water Congress & Exhibition in Copenhagen, Denmark from 11 – 15 September 2022. The workshop was organised and run by the European Water Association.

The aims of the workshop were to:

- Identify the bottlenecks in the innovation uptake process
- Share experiences on tools, incentives, processes and practices
- Consolidate guidelines of good practices accelerating the innovation uptake

Over 90 attendees from across the water sector participated, including universities, suppliers and utility end users.

Background

The water sector needs to innovate if it is to achieve its goals of addressing human health, climate change and pollution challenges. Innovation can also drive new legislation. This requires the sector

Examples of challenges to human health and environment:

- Emerging contaminants and micropollutants
- Microbiological quality
- Organic and nutrients loads
- Carbon and physical footprints
- Chemicals and energy use in water utilities

to focus on emerging contaminants, reduction of organic pollutants and nutrients, reduction of carbon and physical footprints, building resilience, being more energy efficient and employing a greener and circular economy approaches.

However, whilst the research community is carrying out intensive and comprehensive research and development on these issues, the water sector has been slow to take up innovations. The European Innovation Partnership on Water (EIP Water) identified several barriers and bottlenecks for innovation in the water sector including lack of funds for SMEs; general risk aversion; a lack of demonstration sites; inconsistency and fragmentation in policies and regulations; fragmentation in water authorities and water sector; and conservative procurement.

The workshop further mapped these bottlenecks and shared ideas for tools, processes and practices to accelerate innovation in the sector.

The workshop process

Leaders of the two leading water organisations. European and International Water Associations outlined the need and ambitions of their membership. Four academic and industry experts talked about the lessons learnt during uptake of innovations by water utilities – outlining bottlenecks; paths to overcome challenges; and motivating utilities for faster uptake.



This was followed by a moderated, digital brainstorming session with all workshop attendees. The brainstorming session asked participants to identify bottlenecks in innovation uptake and successful tools, incentives, processes and practices. Participants individually listed their ideas, which were then collaboratively grouped into common themes. Each participant was then given five votes, with multiple votes allowed per idea.

Top bottlenecks hindering innovation uptake

Policy and regulatory barriers within the sector

Policies and regulations are, at times, cumbersome, inconsistent and fragmented. There is a lot of red tape leading to long approval times for new projects. Examples include strict regulations due to health risks, data/cyber security risks, and competition laws which hinder sharing of best practice between companies.

Poor business investment case

Much water infrastructure is long lasting (100+ years) and has high investment costs. This makes it difficult to build the business case, with companies operating on short term business cycles and seeking acceptable returns on investment. To make the business case positive often requires a large-scale roll-out. Changing long lasting existing infrastructure that is already in place is both unsustainable

and expensive. In addition to this the low cost/value of water affects the business case.

Lack of funding mechanisms

Given the risks of new technologies and the high Technology Readiness Levels needed in the sector, there is little encouragement to take on these risks, with no structural risk funding available. Financial support is needed from the initial idea through to full scale operations.

Expectation mismatch

There is often a mismatch in expectations between the business' needs and the researchers' innovation offering. Many researchers lack industrial exposure and are unfamiliar with the challenges of water services. There is a lack of understanding across the sector, including researchers, buyers and regulators, on how to encourage innovation development and uptake.

Industry conservatism

The water industry is generally conservative and risk averse with a business-as-usual approach, focussed on operations. Key Performance Indicators are linked to operations not innovation. In this context innovation is seen as a threat or a risk. Procurement is normally conventional and linear and tends to pre-describe solutions rather than seek new ways of doing things.

Lack of human capital – resources, knowledge and skills

End users lack time to explore innovations and often don't know about them. They are focussed on daily operations. Businesses have low scientific knowledge and researchers have low business and management skills.

Other issues identified also included:

- A lack of demonstration projects and sites
- Publishing language barriers.

Key messages

Improve industry-university collaboration

The key message was that solutions must be co-designed with end users, with all stakeholders engaged throughout the R&D process, using a cross-disciplinary approach. Some ideas to encourage this collaboration included: developing joint organisations between universities and industry; research students being given industrial exposure to familiarise them with the challenges faced by industry e.g., through industrial internships; joint PhD projects between industry and universities.

- **Funding** – regional and national funding is needed to support innovation from the initial idea right through to full scale operations. Funding needs include for research in the digitalisation sector; project development and structural risk funding/ investment.

Example of focus areas for action

- Infrastructure material choices
- Green blue infrastructure
- Focus on data science
- New processes for N and P recovery
- Decentralised concepts with resource recovery at the source
- Energy efficiency
- Reduce leakages and transport costs
- Virtual tax model

- **Operational testing and demonstrations** – any solution must be resilient, robust and reliable with testimonials being very important. Demonstration sites such as at the water and wastewater utilities are critical.
- **Make data accessible** – consider ways to allow for sharing of information and improved data accessibility across the sector, maintaining GDPR and data safety
- **Improved procurement processes** – procurement needs to move away from pre-defining the solution, focussing instead on identifying the specific challenge or problem to allow bidding for innovative solutions. The R&D for these solutions could then be supported if necessary. Innovation should be a key criteria and procurement policy needs to be based on circular economy principles and full product life cycle analysis. This includes requiring information about the carbon footprint of products, upstream suppliers, contractors and partners.

- **Human capital** – researchers need to receive more industrial exposure allowing them to better understand the challenges faced by users in the field. Operators/end users need to know about innovations and have opportunities to explore them. There should be more development opportunities for end users to increase their skills e.g. in programming and handling large data sets. Research project development should be undertaken jointly between universities and industry, drawing on the different and complementary knowledge and skillsets. The water sector needs to ensure that they employ people with the necessary skills and knowledge to deliver outcomes.

The speakers and the panel:

- Johannes Lohaus, General Secretary, EWA,
- Kala Vairavamoorthy. Executive Director, IWA,
- Harsha Ratnaweera, Professor, Norwegian University of Life Sciences/EWA/IWA,
- Wendy Franken, CEO, VLARIO, Belgium/EWA;
- Sudhir Murthy, CEO NewHUB, USA;
- Ashish K Sahu, Marketing Manager, Cambi Group, Norway
- Thomas Wintgens, Professor, RWTH Aachen University, Germany
- Zakhar Maletskyi, Associate Professor, Norwegian University of Life Sciences

- **Move from value chains to value networks** – by including utilities, engaging all stakeholders, collaboratively creating the revenue model, and employing a cross-disciplinary approach to project development.
- **Increase the marginal cost of water** – this will make business cases for innovative technologies more competitive, shortening the time to achieve a return on investment.



Johannes Lohaus, EWA – Harsha Ratnaweera, Norwegian University of Life Sciences – Ashish K Sahu – Cambi Group, Wendy Francken VLARIO – Thomas Wintgens, RWTH Aachen University – SUDHIR MURTHY NEWhub Corp ©EWA

17th Brussels Conference Blue Initiatives in the Green Deal



On November 8th 2022, the European Water Association organized the 17th EWA Brussels Conference focused on the Blue initiatives in the Green Deal at the headquarters of Vivaqua in the center of Brussels. For this conference, speakers and participants from all over Europe came to talk about the **Blue initiatives in the Green Deal**. Five sponsors supported the conference: The Environmental and Public Health International, PIPELIFE, WILO, HUBER and Zahnen Technik. We would like once again to thank them for their contribution in making the Brussels Conference a success.

“Climate change is already affecting Europe in various forms, depending on the region. It can lead to biodiversity loss, forest fires, decreasing crop yields and higher temperatures. It can also affect people’s health.”[i]

It has been seen in the recent past that floods and droughts are more and more affecting European Union Members States and impacting all citizens and all economic sectors. The **17th EWA Brussels Conference** focused on the **Blue initiatives in the Green Deal** and highlighted the importance of transdisciplinary cooperation to guarantee a reliable and high quality access to water for all across the European Union.

To open the annual hybrid conference, Veronica Manfredi, Director, Zero Pollution, DG Environment, European Commission made an introduction about the ongoing and new EU Water Initiatives at the European level. Following her speech, Peter Gammeltoft mo-

derator of the first session on Water and Soil protection presented the first speaker Dr. Riyong King from the European Environment Agency. She participated online with a presentation on the Condition of the European Water Bodies: what must happen to achieve good status?

Following her presentation, Andrea Vettori, Deputy Head of Unit Land use and management, DG Environment, European Commission talked about the EU Soil Strategy 2030 and its impact on the water sector. Speakers and participants took a quick break to network before the first session continued with three-impulse talks:

- Evaluation of the Sewage Sludge Directive – Keir McAndrew, WSP
- (Good) examples from different countries – Christian Minelli, WAREG
- EU Taxonomy for sustainable activities: Milestone for Water & Soil Protection? – Juan Bofill, Senior Water Engineer, European Investment Bank

All the speakers were then invited for a panel discussion and answered questions from the audience.



Veronica Manfredi, Director, Zero Pollution, DG Environment, European Commission giving her speech © EWA



Discussion round at the end of the first session. © EWA

After a lunch break, we started the afternoon with the second session about the Floods and Droughts in Europe moderated by Dr. Károly Kovacs past president of EWA. Our first speaker Prof. Patrick Willems from KU Leuven highlighted in his presentation the consequences of extreme weather events for cities in Europe. Prof. Dr.-Ing Holger Schüttrumpf from RWTH Aachen followed him. He presented the consequences from the July 2021 flooding on flood risk management.

For the last half of the session, we invited again three speakers at the stage:

- Pavel Misiga, Head of Unit Circular economy & biobased System, DG Research & Innovation, European Commission, Brussels : “Droughts in Europe – prevention research”
- Julio Berbel, University of Cordoba : “Water efficiency in agriculture”
- Prof. Dr. Thomas Wintgens, RWTH Aachen : “Wastewater Reuse”

Following their short presentation, the speakers discussed together and replied the questions from the audience both in the room and online.

Wendy Francken EWA Vice-president and Raymond Erpelding, EWA President concluded the day with a speech and announced the EWA/VLARIO Spring Conference in Antwerp on May 11th.



Speaker and moderator of the 17th EWA Brussels Conference © EWA

Conference report

7th JSWA/EWA/WEF Specialty Conference “Resilience of Water Service”

Nora Pankow¹), Andre Niemann²), Torsten Frehmann³), Fabio Tatàno⁴),

Abstract

For the 7th time, the Joint Conference, organized by the Japan Sewage Works Association (JSWA), the U.S. Water Environment Federation (WEF) and the European Water Association (EWA) was held on November 15-17, 2022, in Sendai, Japan. The core of the conference was the resilience of the overall water sector. Tohoku earthquake severely damaged the city of Sendai eleven years ago, and the conference provided an occasion of a commemoration of this disaster. The conference enabled a vital exchange between the three associations again. Practical problems from different countries and diversified perspectives and approaches, with related options for solution, were presented and discussed.

As the representative delegation of the EWA, Raymond Erpelding (ALUSEAU, Luxembourg), Fabio Tatàno (University of Urbino “Carlo Bo”, Italy), Harsha Ratnaweera (Norwegian University of Natural Sciences, Norway) as well as Andre Niemann (University of Duisburg-Essen, Germany), Torsten Frehmann (Emscherogenos-

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- 2) Universität Duisburg-Essen, Institut für Wasserbau und Wasserwirtschaft, Universitätsstraße 15, 45141 Essen, Germany,
- 3) Emscherogenossenschaft / Lippeverband (EGLV), Kronprinzenstraße 24, 45128 Essen, Germany,
- 4) University of Urbino “Carlo Bo”, Department of Pure and Applied Sciences (DiSPeA), Campus Scientifico “E. Mattei”, 61029 Urbino, Italy,



Figure 1: The President of the European Water Association (EWA), Raymond Erpelding, at the opening and welcome address of the 7th JSWA/EWA/WEF Specialty Conference.

schaft / Lippeverband, Germany) and Nora Pankow (University of the Federal Armed Forces Munich, Germany) participated as speakers in presence at the conference. Additionally, Karoly Kovacs (Hungarian Water Association, Hungary) and Bjørn Kaare Jensen (Geological Survey of Denmark and Greenland, Denmark) contributed to the conference with on-video presentations.

Introduction

Typically, the Joint Conference Series of the Japan Sewage Works Association (JSWA), the U.S. Water Environment Federation (WEF) and the European Water Association (EWA) is held every three years, alternating the conference location between Japan, the United States and Europe. Most recently, the previous 2018 edition was held in Munich, Germany, during the environmental trade fair IFAT 2018. Due to the Covid-19 pandemic, the further conference originally scheduled for 2021 could not take place and was finally postponed to 2022 in Sendai, Japan.

The Tohoku earthquake that occurred on the March 11th 2011, with a magnitude of 9.1 M_w , is considered one of the strongest earthquakes in the history of Japan (USGS 2016). With the triggered tsunami and the resulting nuclear disaster at the Fukushima Daiichi nuclear power plant, this is known as a triple disaster worldwide. In total, over 20,000 people lost their lives and people are still considered missing to this day (Ritsema et al. 2012; USGS 2016). The economic loss is estimated to be around \$300 billion U.S. (Ritsema et al. 2012). Along the coastline, the tsunami that followed the quake, wreaked havoc. The city area of Sendai was also severely damaged due to its proximity to the epicenter. The impact and reconstruction were a major theme during these two days of the conference and highlighted the urgency for increasing resilience in the overall water environment sector for all participants.

The conference, perfectly and logistically organized by the Director of the International Division at the JSWA, Yosuke Matsumiya, and the related staff including Yuka Okabe, was officially opened by the Sendai Mayor, Kazuko Kohri, with a presentation on recovery and

rehabilitation after the Tohoku earthquake. Although this disaster now occurred over 10 years ago, the crises of recent years highlighted the timeliness and need to address past disasters.

The complementary opening speeches were given by official representatives of the three associations. As the Scientific Chairperson at the JSWA, Masahiro Takahashi (*Hokkaido University, Japan*) gave an overview on the history of the previous conferences. He emphasized the importance of this format for implementing sustainable and forward-looking water management and improving resilience in water management. As the EWA President, Raymond Erpelding (Figure 1) highlighted the problem areas for the water sector in the future, while also emphasizing that in the areas of energy and resource recovery, for example, water management can provide important solutions. As the WEF Past President, Jamie Eichenberger also emphasized the importance of knowledge exchange, as this is how innovative solutions can be found. In his view, innovations must be stepped up to achieve the goals of the UN Sustainable Development Goals (SDGs) and give everyone access to clean water.

A total of 29 speakers contributed, in-person or on-video, to the interesting two-day conference, including 14 from the USA and Europe. Thematically, the conference was divided into six blocks: Resilience to Climate Change and Other Issues, Innovative Solutions for Clean Water and Sanitation, Transformation and Enhanced Recovery, Smart Water Strategies, Lessons from Real-world Disruptions, and Innovative Analysis and Tools.

Across the thematic blocks, the aspects of digitalization, energy and water reuse, and resilience were found in almost all presentations.

Increasing resilience to various risks

Against the backdrop of the triple disaster in Japan in 2011, special attention was paid to various natural disasters, also with regard to anthropogenic climate change and adaptation and mitigation measures. In the first session, **Resilience to Climate Change and Other Problems**, practical examples of individual cities and measures to deal with natural disasters and extreme weather were presented. These included a 100-year plan for the City of Austin, Texas by Rajendra P. Bhattarai to deal with increasing water demand as well as frequent drought, and the City of Fukuoka's resilience plan to reduce water loss (*Hironori Yashima, Road & Sewerage Bureau Fukuoka, Japan*). Both presentations clearly showed that to increase resilience, it is necessary to think over a longer period and take various measures to achieve the goal. In addition, specific problems such as flooding and possible countermeasures were also presented by Kengo Hashi (*Japan Institute of Wastewater Engineering and Technology, Japan*) and Toshiaki Yoshida (*National Institute for Land and Infrastructure Management, Japan*).

In the session **Lessons learned from real life disruptions**, the topic of resilience was approached from a different point of view. In this session, the presentation by Tetsuya Mizutani (*Sendai City, Japan*) illustrated the consequences of the Tohoku earthquake on wastewater treatment with vivid images and described the reconstruction with flood preparedness adaptations of the destroyed Minami-Gamo wastewater treatment plant. Samendra Sherchan (*Tulane University, U.S.A*) presented another concrete example with the 2015 Nepal earthquake. Typhoon and other natural disaster damage to WWTPs and contingency plans based on them were presented by Manabu Matsuhashi (*National Institute for Land and Infrastructure*



Management, Japan). Nora Pankow (*University of the Armed Forces Munich, Germany*) presented a possible approach on risk analysis adapted to wastewater treatment. David Goldbloom-Helzner (*U.S. Environmental Protection Agency, U.S.A*) followed up on this theme in a later presentation by introducing the Vulnerability Assessment Tool for examining risks to the drinking water and wastewater sectors. In both presentations, it was also clear that communication between critical infrastructure and the public is important for a resilient society. A practical approach to communicating with the public was presented by Yuji Koizumi (*Yokohama City, Japan*) for emergency toilets and raising public awareness for use in a crisis.

In addition to the consideration of acute hazards, longer-term hazards were also considered. For this purpose, the view on risk analysis in the overall water related sector included the presentation by Fabio Tatàno (*University of Urbino "Carlo Bo", Italy*) dealing with a procedure for comparative risk assessment of potentially

contaminated sites (impacted soil and groundwater). Indeed, the fundamental topic of groundwater protection and restoration was properly completed with the on-video presentation by Bjørn Kaare Jensen (*Geological Survey of Denmark and Greenland, Denmark*) on possible management tools and technologies against the diffuse contamination. In both presentations, it was pointed out the unavoidable connection of the groundwater environment with the soil and the air environments.

Evidently, to increase the resilience to various risks in the overall water sector, investment needs are expected in the coming years. In this respect, the on-video presentation by Karoly Kovacs (*Hungarian Water Association, Hungary*) gave an interesting view on the possible combination of water economics, cost recovery and solidarity.

Digitalization

The increasing implementation of intelligent solution approaches in the water sector was demonstrated by several presentations dealing with different process engineering, climatic or ecological problems. For example, the second session **Innovative Solutions for Clean Water and Sanitation** was started with a presentation by Harsha Ratnaweera (*Norwegian University of Natural Sciences, Norway*) on hybrid sensors to identify process interruptions. The hybrid sensors can be used as a wastewater quality prediction and early warning system.

The first conference day was concluded with the Session **Intelligent Water Strategies** with contributions given by Akahiro Yamamoto (*JSWA, Japan*) and Andre Niemann (*University of Duisburg-Essen, Germany*). Here, Akihiro Yamamoto presented efficient management and control of wastewater treatment plants using

artificial intelligence to compensate for the loss of technical skills when staff shortages occur. Andre Niemann outlined in his presentation current developments in the rapidly changing digital water management. It became clear which potentials can be found in different technologies and how they can be used and combined for environmental monitoring beyond wastewater treatment: for example, different platforms and protocols can be used to share environmental information. Through the exchange, applications can be used for areas such as clustered sensors or smart city and monitoring.

A complementary view was given in the thematic area of flood management in the case of increasing heavy rainfall events by Hayato Mori from the Tokyo Municipal Government (*Japan*). This involved modeling and visualizing the possible effects of heavy rainfall on Tokyo's sewer network in order to raise awareness for all residents in the individual districts affected by possible flooding.

An approach for an innovative corona warning system was also presented. Tatsuo Omura (*Tohoku University, Japan*) has been working on other infectious diseases in the sewer network prior to the Covid-19 pandemic and showed how norovirus modeling and monitoring could be applied and adapted to a corona virus.

Energy and water reclamation

The session **Transform and built back better** highlighted aspects in the planning and reconstruction of wastewater treatment plants based on practical examples. In the session, which was spread over two days, concrete wastewater treatment plants and their concepts for reconstruction were presented. The focus was on strategic and problem-oriented reorientation of plants that also take into

account sustainable development, climate resilience and energy generation. Koichi Teshima (*Osaka City, Japan*) presented an asset management concept to replace aging plant components without loss of performance. Other practical examples from Japan were provided by Hiroaki Kuroki (*Nagoya City, Japan*) and Chikashi Nakaza (*Yokohama City, Japan*). Here, particular attention is being paid to possible savings in CO₂ emissions, for example through waste heat recovery from wastewater and reuse of water. Torsten Frehmann (*Emschergenossenschaft / Lippeverband, Germany*) used the conversion of the Bottrop wastewater treatment plant as an example to illustrate the focus on energy and the transformation to energy self-sufficient plants, which is currently very much in the spotlight in Germany. The measures implemented at the plant attracted great interest during the conference and were intensively discussed afterwards.

However, Manel Garrido-Baserba (*inCTRL, U.S.A.*) also showed in his presentation that current and future problems can benefit from new ideas and breaking away from conventional technologies. Particularly, he presented a concept for modular wastewater treatment in urban areas.

Technical excursion at the post-conference tour

On November 17, conference attendees had the possibility to visit the restoration of facilities destroyed by the tsunami near Sendai in a technical excursion. The first stop was at the Arahama Elementary School. The damage from the tsunami was preserved there and today the school is used as a memorial and museum. Because of its proximity to the coast, the severity of the natural disaster is still clearly visible not only in building damage but also in changes to the landscape. The school was the highest building in the coastal

area of Arahama. As a positive result, more than 300 students and residents found shelter there during the tsunami until evacuation (Visit Miyagi 2022).



Figure 2: On the left side: Front view of the damaged Arahama Elementary School which saved 320 students and residents. On the right side: A close-up from the damages on the school.

The second site visited was the reconstruction of the Minami-Gamo Wastewater Treatment Plant. More than 1 million inhabitants live in the city of Sendai. The wastewater generated is treated in five wastewater treatment plants. The largest treatment plant is the mentioned Minami-Gamo with a daily wastewater flow of 300,000 m³/d (Mizutani 2022). During the tsunami, this WWTP was flooded and severely damaged. Figure 3 shows the situation when the Tsunami entered the WWTP. This is also contrasted with Figure 4, which shows instead the reconstructed plant in its current state and normal sea water level. In particular, the bridge permits to identify the plant location before and after.



Figure 3: Flooding and evacuation of Minami-Gamo Wastewater Treatment Plant after the tsunami on March 11, 2011 (Sendai City Construction Bureau 2013).

Damage included piping, buildings, wastewater basins and engineering (Figure 5). In addition, there were fuel shortages that made emergency startup difficult. Reconstruction of the Minami-Gamo WWTP took about 5 years and amounted to about \$575 million (Mizutani 2022). Protective measures were expanded during the reconstruction for increased resilience. The evacuation tower shown in Figure 6 is designed to provide protection and evacuation for employees during flood events. In addition to personnel protection, coastal protection was increased throughout the area with line armoring. The highway running along the coast has been elevated so that it can act as a kind of dam to hold back the water masses in the event of a flood.



Figure 4: View on the Minami-Gamo Wastewater Treatment Plant after reconstruction



Figure 5: View of damaged parts of buildings and sections, at the Minami-Gamo Wastewater Treatment Plant, after the tsunami



Figure 6: Conference attendees in front of the evacuation tower of the Minami-Gamo Wastewater Treatment Plant.

Conclusion

All over the world, authorities and water and wastewater treatment plant operators are facing new challenges such as the consequences of anthropogenic climate change, natural disasters, or the shortage of skilled workers. Even, these impacts concern with the water environment also in the interconnection with the soil and the air. The problem areas vary from country to country. With the common goal of increasing the resilience and sustainability of the overall water sector, the Joint Conference Series of the water environment associations JSWA, EWA and WEF contributes to the exchange of knowledge and brings together stakeholders with different approaches and perspectives. In a time of polycrises, this international way of cooperation seems more important to adapt to changing circumstances.

Indeed, increasing resilience and related measures to build and rebuild plants and implement innovative tools and approaches are always in tension with the costs and economics.

As announced by the WEF Past President, Jamie Eichenberger, at the closing of the 2022 conference in Sendai (Figure 7), the next edition of the WEF/JSWA/EWA Joint Conference Series will be expected in the US in the coming 2025.

For the successful 2022 edition of the JSWA/WEF/EWA Joint Conference in Sendai, Japan, Hirofumi Okahisa, Director General of JSWA, and Yoshinari Nakajima, Deputy Director General in charge of engineering of JSWA, are finally and properly mentioned.

Documentation for the conference including proceedings, presentations and videos can be found on the pertaining JSWA (), the EWA website and on the WEF Learning Center () websites.



Figure 7: Presenters and organizers of the 7th JSWA/EWA/WEF Specialty Conference at the Closing Ceremony

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Revision of the Urban Waste Water Treatment Directive Webinar

On February 7th 2023, the European Water Association invited Michel Sponar **Deputy Head of Unit at the European Commission, Directorate General for the Environment** to talk about the Revision of the Urban Waste Water Treatment Directive.

On October 26th, the European Commission released the **Proposal for a revised Urban Wastewater Treatment Directive**. In order to understand more the proposal and its potential implication, we have decided to invite participants for a free webinar.

During this 1,5 hour webinar, Michel Sponar gave us a general introduction of the directive and also presented the last revision with its

new impacts, new criteria/obligation for all concerned water actors and to exchange on the ideas and concepts behind this proposal.

More than 500 participants from all over the world have registered for this webinar and have submitted hundreds of questions. For more than half an hour, Michel Sponar answered questions from the participants.

The full webinar is recorded and available on the European Water Association Youtube Channel.

→



Johannes Lohaus, EWA Secretary General; Arthur Guischet, EWA Water Policy Officer and Michel Sponar, Deputy Head of Unit at the European Commission during the webinar. ©EWA

| Upcoming Activities

Tallinn – The Green Capital of Europe – from Water Perspective



22.03.2023, Online Webinar

This free online event is a cooperation between the European Green Capital 2023, Tallinn and the European Water Association. It aims to highlight Tallinn from a Water Perspective and will be a platform to share the current activities and projects going on in the city of Tallinn regarding Water challenges in the city. It will also provide a platform for exchange between water professionals in Estonia and particularly Tallinn, scholars training the next generation of water experts and the private sector currently working in Tallinn.

It will also be an opportunity for the city to present itself under all the activities and innovative ideas that led to the designation of Tallinn and The Green Capital of Europe 2023.

The presentations will be followed by a discussion open to the public and will be concluded by a take home message from the Green Capital Tallinn.

Link to page:



Introduction course to EU Water Policy and Legislation

25-26.04.2023, Online Webinar

This online course in two sessions, introduces you to the EU water politics and legislation. You will be made familiar with development and principles of EU water policy, the decision-taking and implementation/scrutiny process, governance at EU level (openness, transparency, citizens' right on access to documents; rights of complaint and petition), as well as the key legislative elements of EU water policy and their implementation.

The online course will be conducted by Dr. Helmut Blöch, Political Consultant of the EWA and former Head of the Water Sector at the EU Commission, Brussels, BE. A EWA certificate will be issued to participants completing the course. You need a tailored course on the European Water Policy and Legislation? Do not hesitate to contact us so we can adapt the course to your needs.

Link to page:

ÖWAV/EWA Joint Conference: Water Resources under Climate Change – Challenges in managing extremes

19-20.10.2023, Vienna, Austria

The topic of climate change and the interest in the associated effects on water management have continued to increase in recent years. As part of the working committee "Forum Climate Change", the Austrian Water and Waste Management Association (ÖWAV) has observed current developments both in climate research and in the planning and implementation of adaptation measures and has presented them since 2010 in a series of 5 ÖWAV seminars on climate change and its influence on hydrology, water and energy as well as their management.

In addition to the current findings of climate research, the joint ÖWAV/ EWA conference will now focus on recognizable effects and needs for action, which will be analyzed in the form of a workshop by the numerous actors in the water industry and implementation possibilities for adaptation in water management will be identified. With the presentation of concrete adaptation measures and projects from Europe, particular account will be taken of the two extreme challenges posed by heavy rainfall events and droughts..

Link to page:



EWA/VLARIO Spring Conference: Urban Water Management: Challenges, Innovation and EU Requirement versus local needs and possibilities

11.05.2023, Antwerp, Belgium

"Urban wastewater is one of the main sources of water pollution if it is not collected and treated properly"* The European Commission published on 25.10.2022 the Proposal for a revised Urban Wastewater Treatment Directive. This proposal is setting up new objectives in term of energy efficiency, water quality and monitoring but not only.

The EWA/VLARIO Spring conference 2023 will focus on Urban Water Management. What are the challenges, innovation and EU requirement versus the local needs and possibilities. The first session of the conference will focus on the potential implementation of the UWWTD proposal: what are the challenges and instruments? We will hear the point of view of different European Institutions, among others, about what does this mean for the European Water Management authorities, the regional and sub-regional territorial authorities but also for the water utilities and other water users. During the second session, we will focus on how innovation can be stimulated by this proposal with comments and reactions from professionals and researchers.

Link to page:



Water reuse regulation: impact on the water sector

26.06.2023, 10.00am CET – 11.30am CET online webinar

The Regulation on minimum requirements for water reuse for agricultural irrigation entered into force in June 2020. The new rules will apply from 26 June 2023 and are expected to encourage and facilitate water reuse in the EU. This text covers not only the water reuse in agriculture, but allows EU member states to use reclaimed water for further uses such as industrial water reuse and amenity-related and environmental purposes.

On this occasion, the European Water Association is organising a Webinar on Water Reuse that will provide the participants with a “general introduction on Water Reuse and overview of the current legislation in Europe”. It will also be platform to exchange on the impact of this regulation on the water actors. The speakers will present “the view of the academic community” on that topic and present a “General approach for the implementation of water reuse”. All presentations will be followed by a discussion open to the participants.

Link to page:

The European Water Association will be offering a series of Webinar in 2023 to participate to the democratisation of the water sector. These webinars will be focusing on several topics in link with the actually and interest of the water sector. The first one will take place on the 26th of June and will focus on Water reuse as the Regulation on minimum requirements for water reuse for agricultural irrigation entered into force in June 2020. The new rules will apply from 26 June 2023 and are expected to encourage and facilitate water reuse in the EU.

During the second part of the year, two more webinars will be organised and will focus on Race to 0 – CO₂ Neutrality in the water sector and Digitalisation in the Water Sector. They will both look at trends, current technologies available and the future of the sector. All webinars aim to be a platform for exchange and debate between various water actors either public or private, the research communities and interested citizens. Join us to learn more!

You can find more information about all of our upcoming events on our website:
<https://www.ewa-online.eu/events.html>



European Highlights

| Pernille Weiss, "Reflections about the upcoming Water Challenges in Europe"

First of all, a big thank you to the European Water Association for yet again publishing this Yearbook. In a time where the news stream is becoming increasingly stronger and carrying away with it even more topics, in what sometimes is most reminiscent of muddy waste water, it is essential that a counter wave – in the form of thorough articles, which in a precise way gives the reader insight, overview and perspective – exists.

More water again, please!

Again, it is lucky that 2022 is the publication year for this biennial tradition. 2022 is currently moving Europe into a post-pandemic phase, where we will let go of our mask misted-up glasses and the all-important focus on COVID-19. Therefore, we can again take better charge of the other issues in our world and everyday lives, which call for action. Action, which insures that we can address the many environmental challenges, in order to handle them in ways that are both climate-secure and cost efficient. Because the threat scenario of today is unfortunately about more than these two areas of concern. Unfortunately.

As chair of the MEP Water Group, and as a Member of the European Parliament's Committee on Environment and Public Health, I would like to emphasise the following challenges of European water. Those that are not mentioned, are not neglected due to lack of relevance. Instead, it is because of my effort to highlight only a few issues, and not everything at once, thereby making myself guilty of both dystopian and superficial recitals, without any room for solutions.



Pernille Weiss is a Member of the European Parliament and the EPP Group as well as Chair of the MEP Water Group. She is a member of the Committee on the Environment, Public Health and Food Safety as well as the Committee on Industry, Research and Energy. She is a trained nurse, holds a Cand.scient. in Health Sciences and a Master of Innovation and Leadership (LAICS) and is a certified sexologist. Prior to entering the European Parliament, Pernille Weiss ran her own company for 12 years.

Quality, quantity, energy and climate change adoption

The MEP Water Group is actually well into the process of a broad-spectered and structured working process, where we arrange events for stakeholders, experts, citizens, and media (at least!) 6-7 times a year. Events, which all address the three main implications of water: Quality, quantity – in terms of environmental aspects and infrastructure. Energy – with regard to the energy-related eco-system of our different water installations. And finally: Climate consequences – meaning how inevitable climate impacts affect water, expressed by never before seen crises or even big and small catastrophes. Climate consequences are challenging us especially, because they demand pre-emptive arrangements, which in many cases turn urban- and regional development upside down. The MEP Water Group tries its best to address all three categories in ongoing debates, and likewise keep an eye on the files in our daily political work, where we must not miss any opportunity to advocate for water.



I would like to highlight three challenges, in the perspective of this yearbook, of which the managing by the EU should be considered essential, if we want to avoid making the amount and scale of issues bigger for future generations.

Implementation trouble

This year as well as in 2023, we will see that the revised Urban Wastewater Directive sets up new requirements on a number of subjects, among these resources, energy and climate. Member States, who historically and technically have extensive experience and modern technologies in their water sector, will be able to handle most of them. However, there are also countries, who will be challenged by the new requirements: Notably, the Member States that already today lack sufficient water treatment plants, and which, because of i.a. their pay structure for water treatment, does not hold great prospects of investments in this

Energy efficiency improvement

EU Green Deal – the pact from 2019 – and the European Climate Law from 2021 are by now known as ambitious strategies. The first mentioned as the growth strategy, which shall make the EU economy

and resilience grow through the way we solve climate challenges, and remedy the crisis which biodiversity in many areas is heading into. The latter is the law, which sets the goals to obtain a CO₂ reduction of at least 55 % by 2030 and to become climate neutral by 2050.

Currently, we are in the process of revising (nearly) all relevant directives, and inventing the ones that are missing, in order to actually achieve the abovementioned. All this is going on under the umbrella of ‘Fit for 55’ that will be underway this year and well into 2023, before the new directives are ready to be applied. This then leaves us with 6-7 years to deliver on the 2030 goal – thus, all directives simply must be ‘spot on’ and operate in harmony with each other. If not, we will not reach the goals, and the economy and competitiveness of the EU will be destroyed along the way.

I am among the shadow rapporteurs of the Energy Efficiency Directive, in which it is obvious to include the water sector in the national targets, so that each Member State may also activate the big contribution of the water sector to the climate battle. Because measured roughly 20 million tonnes of CO₂ can be saved, if the existing EU water sector enhanced its energy efficiency via the well known potential of existing technologies.



The expectations of some actors in the European water sector are that the sector will be climate neutral in 2050 and energy neutral in 2030. Therefore, we must incorporate all proposals for tools, incentives and a strengthened effort in research and innovation into the revision. This is why I would like to urge everyone to bring their input to either the European Parliament or your respective national governments.

The CER Directive

As the third targeted issue on the list of European water challenges, I will mention the draft on the resilience of critical entities (CER directive). The LIBE Committee (Committee on Civil Liberties, Justice and Home Affairs) has begun its consideration of directives

covering water – and wastewater treatment facilities. This implies that requirements will be set for the preparation of national strategies on infrastructure and the appointment of critical entities, based on a risk assessment.

This does not mean that “EU must decide more”, because the leading principle is fortunately still respect for the subsidiary principle, which guarantees that all solutions must be found and suit the individual Member States in order to respect that not all Member States are alike. This also applies to the technologies, organisation and infrastructure of the water sector.

For the so-called ‘critical entities’, it is alpha and omega that unnecessary economic burdens are not imposed on the actors, and that proportionality between costs and surplus value is secured.

In this regard, it is good that colleges in the LIBE Committee are aware of the financing aspects – including how Member States can use state aid to support the entities in being able to deliver the legally required value to its citizens. In this regard it is important to remember that in principle the European water- and wastewater sector is owned by its consumers, but also that in some Member States prices are artificially low due to state subsidies. This results in an uneven burden sharing between consumers, when the realization of the CER directive must be implemented. On top of this, the same consumers will most likely witness their utilities having to take extraordinary measures because of the upcoming NIS2 Directive (cyber security). State aid is therefore both fair and advisable – and should of course be practised fairly across all EU Member States.

| Prof. Jiri Wanner, „Water Reuse in Europe“

Definition of water reuse

Water reclamation is a separate discipline of water management. The effort to use water from sewage is known already from ancient times of Greek and Roman towns and then from the 19th century when the population concentrated again in big towns. Modern water reclamation was developed and applied in the second half of the 20th century in countries with lack of natural water resources. Water reclamation can be defined as the process of converting wastewater into water that can be reused for a variety of purposes. The reclaimed water can be generated from sewage, grey water, industrial wastewater or municipal wastewater (urban wastewater). In the more specific terms of the Regulation 2020/741 of The European Parliament and of The Council of 25 May 2020 on minimum requirements for water reuse, the reclaimed water means municipal (urban) wastewater that has been treated in compliance with the requirements set out in Directive 91/271/EEC and which results from further treatment in a reclamation facility in accordance with Section 2 of Annex I to the Regulation. The production of water for reuse must meet two basic rules:

- the reclaimed water quality is tailored according to the purpose of its use (in order to avoid unnecessary expenses)
- water reuse must be safe for human health and for the environment.



Jiri Wanner is a full professor of the University of Chemistry and Technology in Prague, Czech Republic, where he leads research group on wastewater treatment and reuse. He has been active in different positions in IWA and in EWA. He chairs the group of specialists on Wastewater Treatment and Reuse of the Czech Water Association. He was involved as consultant in the process of approval procedure of EU water reuse regulation.

To fulfill those two basic rules, the quality of reclaimed water must meet certain standards. In the EU countries we can see three types of standards: i) national standards for water reuse (countries like Cyprus, France, Greece, Italy, Portugal, and Spain); ii) the above-mentioned EU Regulation No. 2020/741; iii) international ISO standards.

Two types of water reuse are distinguished: i) Direct: reclaimed water flows via pipelines, storage tanks, etc. directly from reclamation facility to a distribution system. ii) Indirect: reclaimed water is placed into a water supply source, e.g., lake, river, or aquifer and then retrieved to be used again.

Drivers and barriers for water reuse

There are many drivers for water reuse in EU member states. Two of them, which are also mutually linked, are:

- water shortages and droughts have increased dramatically in recent decades (Figure 1) and this trend will continue (Figure 2);
- ever increasing price of water (both water resources and drinking water).

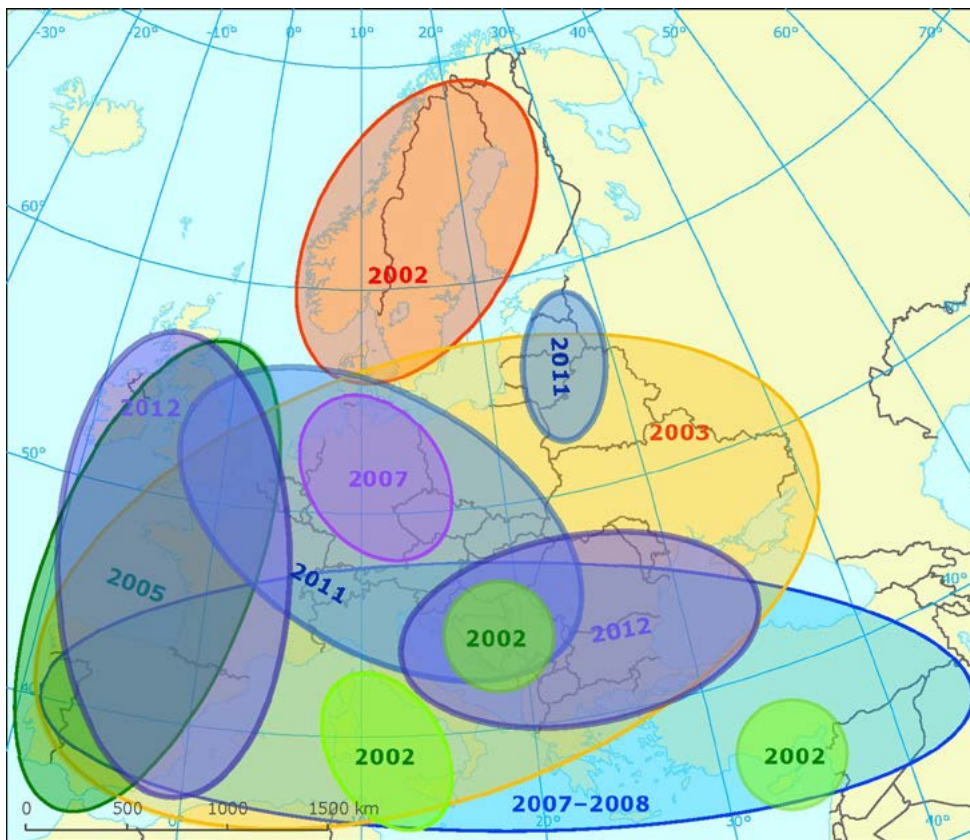


Figure 1. Droughts in Europe. 1st decade of the 21. Century

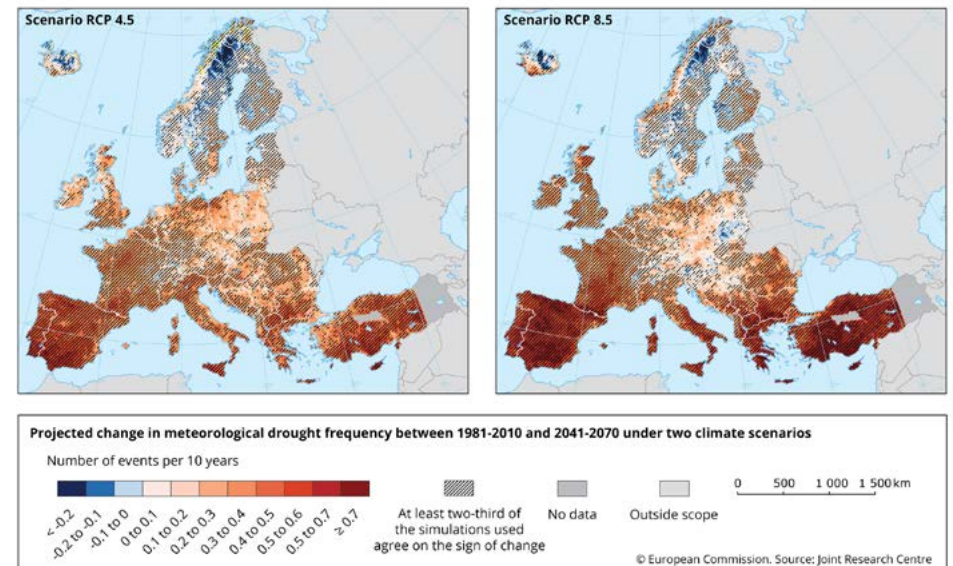


Figure 2. Drought frequency prognosis for 2041-2070

The extent of water shortage is measured by WEI – water exploitation index. The WEI is defined as the mean annual total abstraction of fresh water divided by the long-term average freshwater resources. It describes how the total water abstraction puts pressure on water resources. According to the literature, the warning threshold can be 20 %, which distinguishes a non-stressed region from a stressed one. Severe water stress can occur for WEI > 40 %, which indicates strong competition for water. Water scarcity affects at least 11 % of the European population and 17 % of the EU territory. Around the Mediterranean region, some 20 % of the population lives under constant water stress and in summer, over 50 % of the population is affected by water stress.

There are several types of barriers for water reuse in Europe. The first group is related to rather low experience with water reuse in the EU:

- Inconsistent or inadequate water reuse regulations/guidelines, which lead to delays and misjudgments; this barrier was partially removed in the European Union by issuing the water reuse regulation No. 2020/741;
- Inconsistent and unreliable methods for identifying and optimizing appropriate wastewater treatment technologies;
- Poorly developed business models for water reuse schemes;
- However, the main two barriers are connected with:
- Safety of reused water in respect to human health and environment.
- Economy of water reuse.

The state of water reuse sector in the EU

Total amount of more than 40,000 million m³ of wastewater is treated in the EU every year. However only about 1,100 million m³/year of this treated wastewater is reused. Most of this amount is reused in countries of the Mediterranean region. The volume of reclaimed water indicates that the theoretical potential of producing

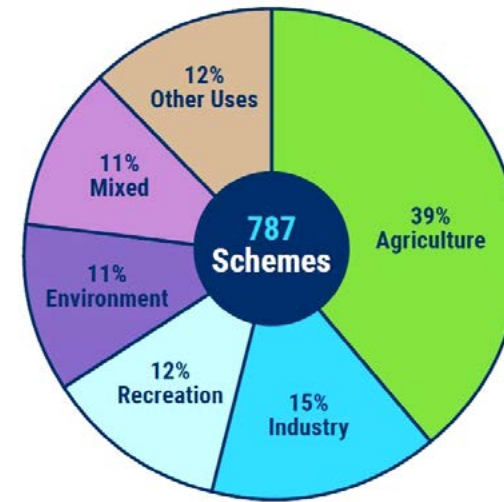


Figure 3. Types of water reuse

the water for reuse from municipal wastewater is used from only 2.5 % while in the Mediterranean countries ranges between 12 % in Italy and Spain up to 60 % in Malta or even 90 % in Cyprus. The estimates of the European Commission speak about 14 % on the Union average in the future. According to the figures of the Water Reuse Europe Association, the daily amount of reused water in Europe can increase up to 30 million m³/d in this decade. This professional association registered in 2020 almost 800 large scale water reuse projects in 16 different EU countries from the Mediterranean countries up to Scandinavia.

Different areas of water reuse are summarized in Figure 3. Overall, agricultural reuse remains the most common water reuse application in Europe, mainly because of the southern countries (39 % of the schemes). However, industrial reuse (15 %) and reuse for recreational purposes (11 %) are becoming more common, especially for

new water reuse schemes. The majority of the schemes classified as industrial (68 %) are located in northern Europe. Indirect potable uses of reclaimed water are not so common as in overseas but some examples can be found already in the EU. The most rapidly growing area of water reuse is today in urbanized areas, e.g. for irrigation of urban greenery, street and vehicles cleaning, firefighting, etc. The amount of used for those purposes reaches 37 % of reclaimed water in southern Europe.

Examples of successful water reuse projects in Europe

The limited extent of this article allows us to mention only few of numerous successful case studies across the European Union. The reader can learn about more projects from the videos recording the lectures from EWA Web-Seminar on Water Reuse from 16 September 2020 which can be found on Youtube. The links are available in the annex at the end of the article.

From the agricultural use of reclaimed water at least the example of extended agriculture irrigation system in Lombardy, Italy, can be mentioned. It is supplied by treated effluents of two Milan wastewater treatment plants San Rocco and Nosedo. The San Rocco plant can supply 4 -12 m³/s of effluent disinfected by UV light and the Nosedo plant 5 -15 m³/s disinfected by peracetic acid. The reclaimed water is used for irrigation of corn, rice and other products in the area of 100 km².

Barcelona produces in the Baix Llobregat Water Reclamation Plant approx. 4 m³/s of reclaimed water which can be used after different levels of treatment for the following purposes:

- Irrigation water for urban greenery, agriculture and local wetlands.
- Improving the flow in the river by pumping back into the mountains.
- Hydraulic barrier against the penetration of salt water into groundwater.

As an example of non-agricultural reclaimed water use the irrigation of golf courses in Catalonian region Costa Brava can be mentioned where the effluent from 14 local WWTPs with the total amount of about 3 m³/s is used. The Queen Elisabeth II Olympic Park in London is supplied by reclaimed water from local Old Ford WWTP (574 m³/d) which is used for greenery irrigation and toilet flushing.

The city of Lisbon in Portugal uses the reclaimed water from two municipal WWTPs for irrigation of two popular parks Parque das Nações and Alcântara Valley.



Figure 4. One of irrigation units for demonstration of safe water reuse (Photo: Dr. Martin Srb, PVK a.s.)



Figure 5. Beautiful garden flowers irrigated with recycled water (Photo: Dr. Martin Srb, PVK a.s.)

EU water reuse demonstration projects

The water reuse and its benefits were demonstrated in several research projects. One of the projects which significantly contributed to the development and extension of water reuse idea in Europe was the project DEMOWARE (www.demoware.eu). The project resulted also in establishing the European water reuse association (www.water-reuse.eu). Currently, an EU Horizon 2020 demonstration project called “Wider uptake of water-smart solutions” is being solved by researchers from several European countries and

Ghana. The project (2020-2024) is focused not only at water reuse but also at recovery of nutrients and production of new bio-composite materials from wastewater. The researchers from two Prague universities in cooperation with Prague water companies PVS a.s. and PVK a.s. demonstrate safe use of reclaimed water for irrigation of urban greenery (Figures 4 and 5).

[Click here to access the annex](#)

| Karoly Kovacs, „Water aspects in the EU Taxonomy regulation“

A general appreciation of the importance and value of water is expected to grow. The careful use of water as a resource, to build and sustain systems for water supply and sanitation, is the basement to reduce the crisis that magnifies water inequalities.

Whilst water is one of the 17 UNO Sustainable Development Goals, the “sustainable use and protection of aquatic and marine resources” is one of the 6 environmental objectives of the EU framework for the promotion of sustainable investment. The REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL (English: [europa.eu](https://eur-lex.europa.eu/eli/reg/2020/852/oj)) on the establishment of a framework to facilitate sustainable investment is adopted by the EU Parliament and the Council. It focuses to lay the foundation of how to redirect money towards sustainable projects to make our economies, businesses and societies – in particular health systems, more resilient against climate and environmental shocks.

What is this EU framework that promotes sustainable investments? It is the [EU taxonomy, a classification system](#), a list of environmentally sustainable economic activities. It can play an important role in helping the EU to increase sustainable investment and implement the European Green Deal. The EU taxonomy provides companies, investors and policy makers with appropriate definitions of those economic activities that are considered to be environmentally sustainable. In doing so, [it provides certainty for shareholders, protects private investors, helps companies become more climate-friendly, reduces market fragmentation and helps direct investment where it is most needed.](#)



Mr. **Károly Kovacs** with strong background in civil engineering and economics of water is an ambassador of the value of WATER and related services. He regularly consults with professionals and representatives of corporate, scientific, social, and governmental sectors, participating on 20- 30 international forums annually as speaker, moderator, or trainer. His special fields of expertise: Water and sanitation infrastructure development (design, finance, construction, asset evaluation, operation), Option analysis using life cycle cost (LCC) based Dynamic Cost Comparison (DCC) and Water and wastewater regulatory issues. Among many leadership roles, Mr. Kovacs is the Chairman of the Hungarian Water Association and past president of the EWA.

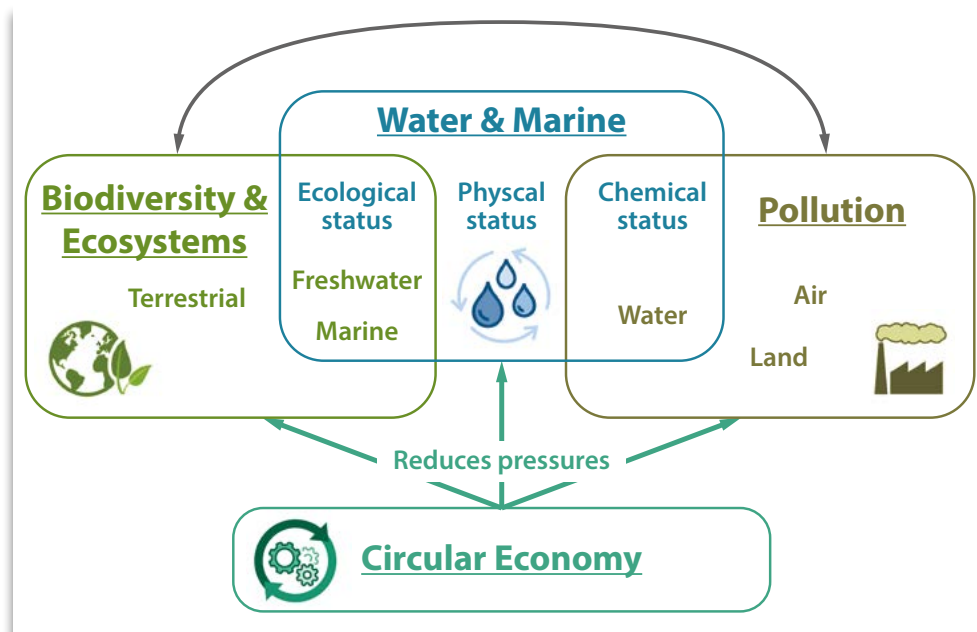
The six environmental objectives quoted above of REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL (English: [europa.eu](https://eur-lex.europa.eu/eli/reg/2020/852/oj)) are:

- (a) mitigation of climate change;
- (b) adaptation to climate change;
- (c) sustainable use and protection of aquatic and marine resources;
- (d) transition to a circular economy;
- (e) pollution prevention and reduction;
- (f) protection and restoration of biodiversity and ecosystems.

The criteria for the two climate objectives (a) and b) were developed by the Technical expert group on sustainable finance (TEG) | European Commission ([europa.eu](https://eur-lex.europa.eu/)).

Sectors with the highest impact potentials were identified (agriculture, mining, manufacturing, energy, construction, transport, restoration, water supply, sewerage and waste management) with altogether 103 activities listed to the 6 objectives.

We can state that water is present in all the environmental objectives. If there is no water, there is no objectives and activities.



But we also can state that despite its importance, **the water issue is not being properly addressed**. If the 6 objectives and the 103 sub-activities were evenly distributed, we could identify more activities as ones that have substantial contribution to sustainable use and protection of water and marine resources (objective c). In reality this number is only 8 (8 from 103!).



In 2020, the EU Commission set up the Platform on Sustainable finance to develop the details for the objectives c-f). The Platform on Sustainable finance , where Károly Kovács, former president of the European Water Association (EWA) and chair of EWA’s working group on economics participates as a delegate, is an advisory body, subject to the Commission's horizontal rules on expert groups. Its main objective is to advise the European Commission on a wide range of tasks and issues related to the further development of the EU taxonomy and to assist the Commission in the technical preparation of delegated acts for the implementation of the EU taxonomy.

As a member of the platform the **Water Management Sector Team** is working to have water issues addressed properly, to result in proposals on water resource management, sustainable urban storm-water management, regulation of construction activities, achieving sustainable urban water management, among others.

The European Water Association has an expectation towards the taxonomy to ease its climate requirements when assessing the water sector, arguing that water services cannot be compared to other – economically profitable – activities, where investments are covered by incomes. The infrastructure investment needs of the sector are hardly covered by tariffs, thus, to promote financial flows to the otherwise not cost covering investments is key for the sector. EWA is convinced that treating water to remove pollutants is already helping the aims of the Green Deal.

“We would wish for the screening criteria to recognize that the water supply and water treatment are per se contributing to the [taxonomy] objectives, the water sector is not a profit-making activity, and the taxonomy should consider being more flexible.”¹⁾

1) The EU’s next green finance battle – POLITICO Pro

Next steps in the taxonomy regulation

The revision of screening criteria on the environmental objectives 3-6 based on the feedbacks from the Member State Expert Groups, public consultation, Commission DG Feedback (pre/post), Internal Consistency check, Additional feedback through TWG is coming to an end.

We are convinced that sustainability is not only a watchword for EU practitioners. They can bring investment and finance sustainability that helps to solve water challenges and build up a water-smart society.

[Click here to access the Annex.](#)



| Prof. Harsha Rathnaweera, „Digitalization in the education of water professionals – project Digiwater”

DIGIWATER – an Erasmus+ Capacity building in higher education project with EWA

The European Commission works towards linking the physical and digital world for water solutions, tackling the societal challenges of water availability, quality, and climate-change-related impacts, while the water industry goes through a digital revolution.

"Digital water" is an important concept that underlies the vision of Water Europe, based on the projected development of a world in which networks that interconnect control and monitoring systems of processes related to water, sensors, transducers, generate large amounts of data. These data, when used by innovative artificial intelligence systems, can help make decisions that could have a significant impact at all levels of government, from the level of control of simple processes to the level of governance at the European level. Thus, "digital water" is now seen not as an "option", but as an "imperative".

Knowledge Alliances of the Erasmus+ program focuses on transnational, structured and result-driven collaborative initiatives, notably between higher education and business. Six universities and



Harsha Rathnaweera is a Professor in Water and Wastewater Technology at the Faculty of Sciences and Technology, Norwegian University of Life Sciences. He was employed as the Director of International Projects and Innovation at the Norwegian Institute for Water Research (NIVA), where he initiated and led NIVA's commercialization of research results. He has a Dr. Ing. degree in Civil Engineering from the Norwegian University of Science and Technology NTNU, and a MSc (Hons) Chemical Engineering from the National Technical University of Ukraine KPI, Ukraine. He is also the Norwegian representative in the Council of the EWA and a member of the Management Committee (MC). He is also a Director of the Board of IWA- International Water Association.

six SMEs from Norway, Germany, Belgium, Romania, Cyprus and Turkey, jointly with EWA have seen the need and the potential for strengthening the European water sector through better preparation of the decision-makers, the innovators and engineers of tomorrow by utilising the collaboration between universities and SMEs. A consortium was established to share common goals and work towards mutually beneficial results and outcomes. Our project proposal on the Digitalisation of water industry by innovative graduate water education (DIGIWATER) was among the 30 projects selected for funding after considering 217 applications by Erasmus+.

The project is progressing well and in 2022 we have conducted an innovation camp with students and resource persons at KU Leven. And in 2023 we will hold the second innovation camp in Istanbul and intend to complete the project by the end of 2023.



DIGIWATER

DIGIWATER project aims to develop new, innovative, and multidisciplinary approaches to teaching and learning by using multidisciplinary curricula integrated with digital learning tools and virtual facilities like sharing labs/software with access to cloud systems and Problem Based Learning. Better graduate training will stimulate entrepreneurship and entrepreneurial skills of higher education teaching staff and company staff using Innovation Camps and will facilitate the exchange, flow, and co-creation of knowledge by creating inter-stakeholder courses, integrating academic, corporate learning, and professional development for external specialists.

Digitalisation of water industry by innovative graduate water education (DIGIWATER)

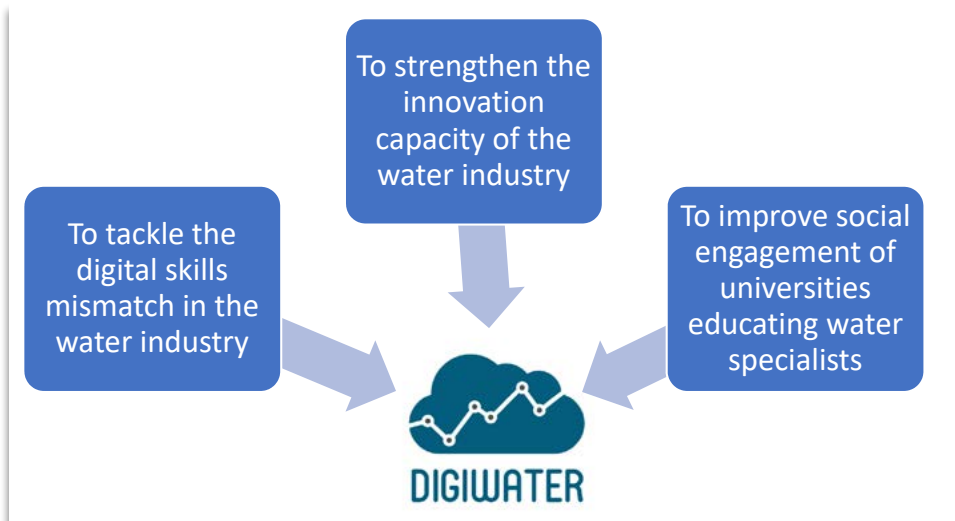
Ambition:

to foster digital innovation in the water sector by showcasing in water and parallel sectors (e.g. energy), building IT skillsets to water professionals, mainstreaming technology entrepreneurs into the water sector, connecting the water sector with related industries and resource issues, such as energy, health and agricultural production and ecosystems and changing conservative, cautious perceptions and shift future water leaders from late to early adopters of innovations and ideas.

Objectives:

- (1) to develop new, innovative, and multidisciplinary approaches to teaching and learning by using multidisciplinary curricula integrated with digital learning tools and virtual facilities like sharing of labs/software with access in cloud systems and Problem Based Learning
- (2) to stimulate entrepreneurship and entrepreneurial skills of higher education teaching staff and company staff using Innovation Camps and
- (3) to facilitate the exchange, flow and co-creation of knowledge by creating inter-stakeholder courses integrating academic, corporate learning and professional development for external specialists.





Partners found that the current digital water transformation status of academia, the government, and the private sector, is considered to be at a moderate level. The level of training of the personnel in supporting the digital water transformation, in general, seems to be higher in academia and the private sector. Geographic Information Systems (GIS), simulations tools and sensors are the most widely used tools, in contrast to virtual reality technologies and Artificial Intelligence, which are almost not used.

It was also confirmed that considering the level of interdependency and the cooperation between the various sectors, there is consent as it being moderate to low, and it is believed that the government and the technology providers have the most crucial role in achieving the digital water transformation process.



DIGIWATER 1st physical meeting in November 2021, Norway © Digiwater

The lack of funding is the most important barrier for all the sectors, followed by the lack of specialised human resources in the Academic sector, the current management policies in the government sector, and the hardware/software and network deficiencies and data limitations in the private sector.

A survey among several stakeholders has highlighted the need for better preparing the newly recruited water specialists for entering the water industry, as well as the need for an accessible and user-friendly database. Advanced monitoring technologies and intelligent equipment are mostly needed by the Academic sector. Each sector believes it will benefit from the digitalisation in a different way, and the fact that the academics are interested in upgrading their current curricula, which will lead to better preparing the future water specialists for entering the water industry, is also an important factor towards a successful digital transformation, which is an ambition of the DIGIWATER project.



DIGIWATER Facts:

Period: 2021-2023
Grant: 1 million €
web: <http://waterharmony.net/digiwater/>

Universities:

Norwegian University of Life Sciences, Norway (Coordinator)
University of Applied Sciences Ostwestfalen Lippe, Germany
Katholieke Universiteit Leuven, Belgium
University of Galati, Romania
University of Cyprus, Cyprus
Istanbul Technical University, Turkey

SMEs:

DOSCON, Norway
Stadtentwaesserungsbetrieb, Germany
SumAqua, Belgium
Smartech Automation SRL, Romania
I.A.CO Environmental And Water Consultants Ltd
Memsis Environmental Technology R & D Co.Lt, Turkey

Umbrella organisation:

European Water Association EWA



Fanny Frick-Trzebitzky, „Groundwater in distal relations: visible and invisible in multiple ways”

Globally, groundwater is the most important source for drinking water and a key resource in agriculture. It is home to a unique biodiversity and provides essential ecosystem services, such as contaminant degradation, water storage and energy provision. Simultaneously, groundwater bodies are threatened by massive overexploitation and pollution. Significant gaps persist in the scientific understanding of the interaction between quality and quantity under conditions of climate change. The impacts from diffuse pollution, pharmaceuticals and hygiene products, the response of endemic invertebrate groundwater species to anthropogenic pressures, and future developments of societal groundwater demands are further fields afflicted with uncertainties. And yet, the conservation of this valuable resource is often neglected both locally and globally.

The European Water Framework Directive (WFD) and the Groundwater Directive are comprehensive legal frameworks compared to groundwater legislation in other parts of the world, but member states are unlikely to achieve the 2027 objectives of ‘good chemical’ and ‘good quantitative’ status across the board. Limitations in sustainable groundwater governance are however, not only linked to knowledge gaps in the physical aspects of groundwater use. In countries such as Ireland and Spain, hydro-social relations have



Fanny Frick-Trzebitzky is a research fellow at ISOE in the research unit Water Resources and Land Use, which she joined in January 2018 and lecturer at Trier University. She is co-lead of the junior research group regulate since 2020. In her PhD thesis and as a research assistant at the Institute of Geography at Humboldt-Universität zu Berlin, she investigated institutions and social inequalities in access to water and adaptation to flooding using the example of Accra (Ghana). Prior to this, she worked at the Ecologic Institute in Berlin. www.isoe.de

shaped governance settings that consider groundwater a common good available for unlimited use. In addition, in the Anthropocene epoch, multiple social-ecological processes that easily transgress hydrological boundaries challenge the basin-scale perspective. Even groundwater, a thoroughly localized resource, is increasingly subject to new supra-regional social-ecological dynamics, such as inter-basin water transfers, migration and virtual water trade. Resulting groundwater impacts elude an explanation that attempts to consider the local situation only. Likewise, temporality plays a role in time lags between management shifts and their effects on groundwater quality and quantity.

The fact that the resource body as well as infrastructure is in large parts hidden furthermore facilitates legally un-regulated groundwater abstraction. Even though limits of groundwater availability



Visualizing causal relations in groundwater management in so-called perception graphs is part of the participatory modelling approach © Kristiane Fehrs / regulate

are acknowledged in policies and programs, their management on the ground entails constant contestation over definitions of availability, needs and rights to groundwater use. However, even though groundwater is often claimed as the “invisible resource”, its’ utilization and human impacts are in fact widely visible. Think for instance of wells, often ancient beautifully decorated constructions, or simple hand pumps in gardens. Think of water bills and permits that depict volumes of groundwater use in numbers. In the dry summers of 2017, 2018 and 2019, groundwater become visible in its absence, in deterioration of ecosystems and immense harvest losses. The list goes on. It allows for studying groundwater from multiple ends, disciplines and perspectives.



In the junior research group “**REGULATE – Regulation of Groundwater in Telecoupled Social-Ecological Systems**” we set out to close knowledge gaps on the social-ecological dynamics of groundwater and its governance. The overall aim is to identify distal relations affecting groundwater quality and quantity, and to develop a governance frame for sustainable management of groundwater in Europe. In a two-level approach, local effects of telecouplings on groundwater quality and quantity are analyzed in four case, while this bottom-up knowledge is up-scaled and extrapolated to the European level together with stakeholders to address key challenges in the European regulatory framework for groundwater. Our transdisciplinary research design involving social and natural sciences as well as practitioners enables understanding the social-ecological complexity of groundwater and developing a governance frame based on both expert knowledge and societal needs.

One example explored is the town of Sangerhausen in Germany. Here groundwater pollution and drought-induced water stress have increased the pressure on the regional drinking water supplier to satisfy consumers’ demands. Anthropogenic activities (agriculture-induced nitrate concentrations) and (mining-induced) geogenic contamination (uranium), as well as recent water quan-

tity constraints have led to debates about reliability of the local drinking water supply. As a result of the qualitative impairments of local groundwater resources around the town and the quantitative constraints during the recent drought period, local drinking water provision has been connected to a remote water supply network that taps into a reservoir in the Harz Mountains. Here, defining sustainable groundwater management from a telecoupling perspective substantially widens the lens to relevant processes. In this sense, we study the water supplied via the remote water network as the flow coupling the receiving system of the county to the sending system of the Harz Mountains.

Here we explore and integrate multiple ways in which groundwater becomes visible in order to address groundwater governance in distal relations. In a series of workshops with stakeholders from the water, agriculture, nature conservation and forestry sectors, we define goals and roadmaps towards sustainable groundwater management in the region. Integrating multiple ways of seeing groundwater in administrative procedures, in hydrological models, in water supply infrastructure, in groundwater monitoring wells and invertebrates inhabiting aquifers, as well as in media and policy documents allows addressing sustainable groundwater management in a novel way. Specifically, the workshops serve to bring together insights from interviews, modelling, ecological sampling, document analyses and the working contexts of the stakeholders involved. Based on scenarios we explore multiple ways in which climate change, remote water supply and other telecoupling effects affect the sustainability of groundwater management, and outline solutions that speak to these interactions.



*Ancient groundwater well in the entrance of a bank on Krk, Croatia.
Tourism plays an important role in groundwater management on the island.
© Dženeta Hodžić / regulate*

We furthermore reflect our results of this and further case studies in Germany, Croatia, Bosnia and Herzegovina, and Spain with stakeholders at EU level (among them EWA) in order to facilitate consideration of distal and cross-sectoral effects in the design of the EU Groundwater Policies beyond the phasing out of the EU Water Framework Directive in 2027.

Regulate

Regulate is a junior research group exploring current challenges in management of the ‘hidden resource’ groundwater in Europe, against the background of long-distance environmental and societal feedbacks (telecouplings). The group addresses dynamics in groundwater quantity and quality that lead to environmental risks, such as droughts and pollution, associated societal conflicts and institutional settings with perspectives from natural and social sciences as well as from stakeholders at the European and local levels. Four doctoral and two post-doctoral research projects are integrated under the overall research topic of ‘Telecoupled Social-Ecological Systems’. All members of the group are working on

joint research questions regarding the social-ecological regulation of groundwater in Europe in interdisciplinary teams and in transdisciplinary collaboration with stakeholders. The research group is based at ISOE in Frankfurt, with Dr. Robert Lütkemeier and Dr. Fanny Frick-Trzebitzky as co-leaders. Goethe University Frankfurt and the University of Koblenz-Landau are partnering institutions. It is funded by the German Federal Ministry of Education and Research (BMBF) as part of the Social-Ecological Research Framework of FONA. In FONA, ‘regulate’ belongs to the funding concept ‘SOEF – Social-Ecological Research’ within the funding measure ‘Junior research groups social-ecological research’. The funding period is September 2020 to August 2025.

www.regulate-project.eu



Hendrik Schurig, „Phosphorus Recovery from sewage sludge ash – as a part of circular economy“

Phosphoric Acid Production at the new Phosphorus Recovery Plant, WWTP Hamburg, Germany

Introduction

Until now, Germany depends on phosphate fertilizer imports by 100 %. At the same time, phosphorus is a finite resource. This is the reason, why the German sewage sludge directive was revised in 2017. The recovery of phosphorus from sewage sludge is mandatory for every Wastewater Treatment Plant (WWTP) larger than 100,000 population equivalent (PE) starting in 2029. At least 80 % of the phosphorus contained in the sewage sludge has to be recovered and fed into recycling.

Wastewater treatment develops from a place where pollutants are concentrated in sewage sludge to a place generating surplus energy and at the same time recovering nutrients such as. If all German WWTPs recovered the required amount of phosphorus, up to 60 % of the imported rock-phosphate based fertilizer in Germany could be replaced.



Hendrik Schurig works as a process engineer at the Hamburg wastewater treatment plant for the municipal supply and disposal company HAMBURG WASSER. His focus is on residual materials and energy. Since 2015, he has been involved in projects including phosphorus recovery from sewage sludge ash.

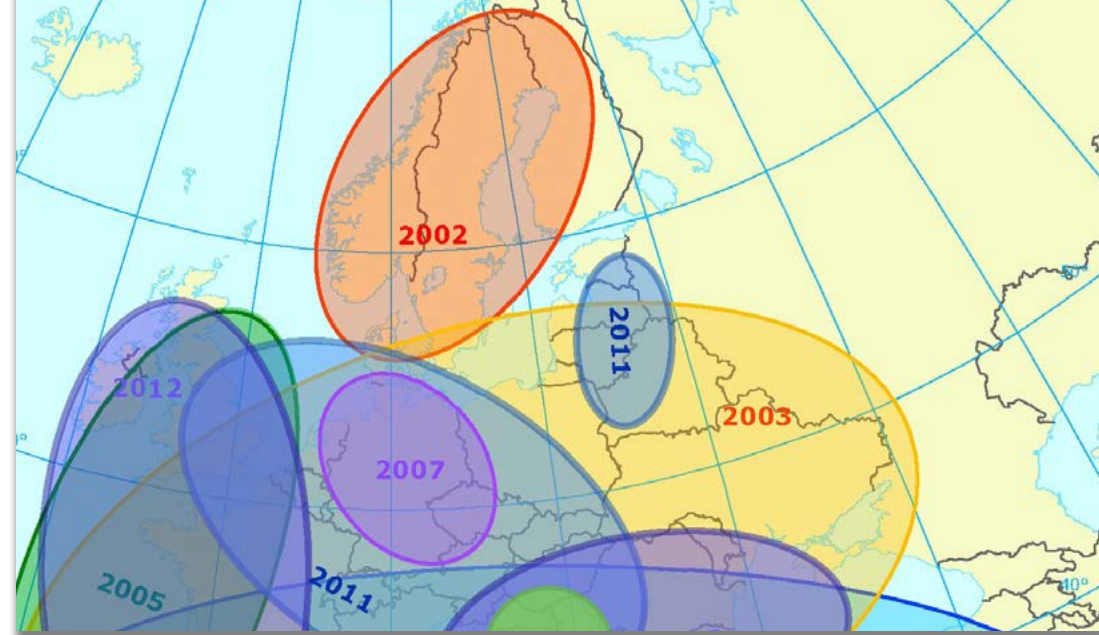
Already in 2015, HAMBURG WASSER, together with the company REMONDIS Aqua, started up a pilot plant for extracting phosphoric acid from sewage sludge ash in order to test the Tetra-Phos® process developed by REMONDIS. Tests have been successfully completed and both companies decided to go for a large-scale plant at the WWTP Hamburg, built and operated by a joint venture of both companies.

The first large scale P-recovery plant from sewage sludge ash worldwide started its operation in 2021. It is located next to the existing sewage-sludge incineration plant at the WWTP Hamburg. The throughput is 20,000 metric tons (Mg) of ash with an output of 7,000 Mg of high purity phosphoric acid.

The WWTP Hamburg as resource of circular economy

The WWTP Hamburg treats all of Hamburg's wastewater, as well as the wastewater from various surrounding communities resulting in a total size of 2.5 million PE. HAMBURG WASSER's ambitious environmental goals are closely connected to the wastewater and sludge treatment process since a long time. The transition to an energy self-sufficient process has been completed since 2011 and is still continued. Digester gas is transferred into electricity and heat. Wind turbines add to the surplus of electricity. In 2021, HAMBURG WASSER fed 68 GWh of biomethane upgraded from digester gas into the public gas grid by operating two biogas upgrading plants.

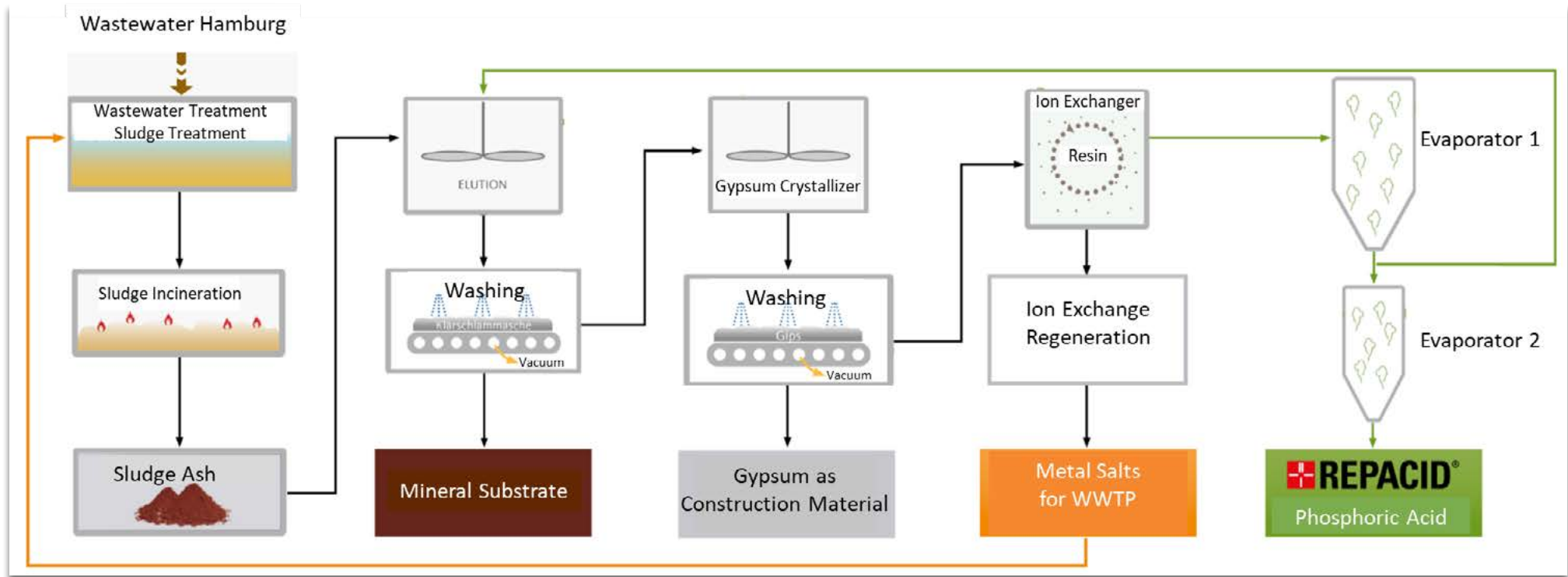
The next environmental goal at the WWTP Hamburg is to close the nutrient loop by recycling phosphorus. The average load of phosphorus in the wastewater is around 1,300 Mg/a. In addition, there is about 700 Mg/a phosphorus by receiving external sludges from other WWTPs. Phosphorus elimination in Hamburg is done chemically by adding iron sulphate.



The WWTP Hamburg, located in the centre of the harbour with egg-shaped digesters, wind turbine and sludge incineration © HAMBURG WASSER/Kristina Steiner

Sludge treatment in Hamburg includes mechanical dewatering with centrifuges, partial drying with process steam and incineration of the sewage sludge in a fluidized-bed incineration. About 20,000 Mg of dry ash remain as residue, with a phosphorus content of 10%.

The boundary conditions at the Hamburg sewage treatment plant speak in favour of recovering the phosphorus from sewage sludge ash instead of wastewater or sewage sludge. These findings were the result of a study carried out by HAMBURG WASSER in 2015 and the operation of a pilot plant in 2015 and 2016 with Remondis Aqua, using the REMONDIS TetraPhos® process.

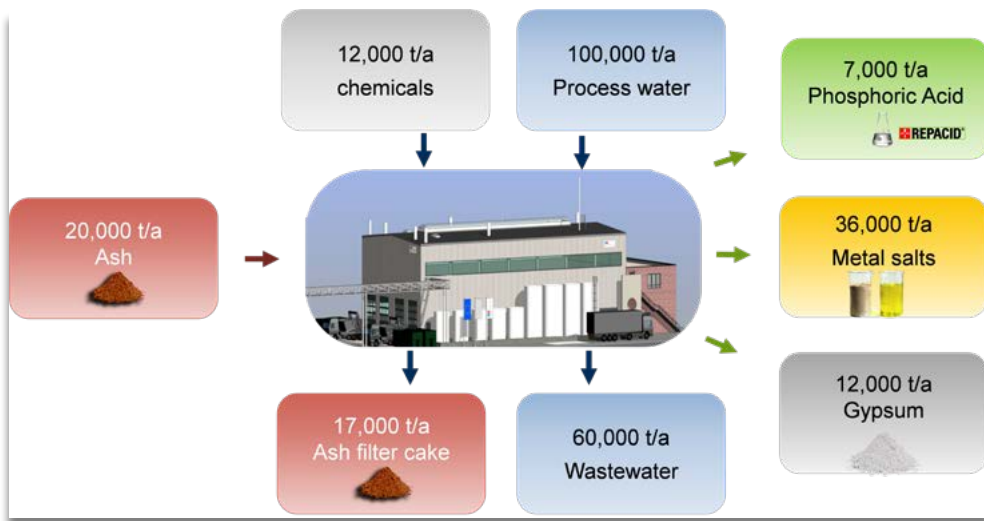


Flow scheme of phosphorus recovery in Hamburg (REMONDIS TetraPhos®) © HAMBURG WASSER

The phosphorus recovery process

The REMONDIS TetraPhos® recovery process is a wet-chemically process. The ash is dissolved in diluted phosphoric acid. The phosphorus content in the solution is enriched by eluting the phosphate from the ash. During multiple steps the acid is cleaned and concentrated to the final product, phosphoric acid of a high quality. The marketing of such a product is relatively easy. Phosphoric acid is the key raw material for the fertilizer industry and meets all fertilizer regulations. Last but not least, this recycling process is ideal to start the circular aspect in fertilizer production.

Besides phosphoric acid as the main product there are two by-products obtained in this process. The first is gypsum that is generated by precipitating dissolved Calcium by adding sulphuric acid. It can be used as construction material. The second is a metal salt solution that remains after the cleaning process of the phosphoric acid by ion exchangers. The main content is aluminium and iron and can replace iron sulphate in the wastewater treatment process as a P-precipitation agent.



Mass balance the phosphorus recovery plant from sewage sludge ash at WWTP Hamburg © HAMBURG WASSER

The challenge of building and operating a first large scale phosphorus recovery plant

When deciding to build a large-scale plant, it was sure that both companies, HAMBURG WASSER and Remondis Aqua, were not only willing to spend a lot of money way before the legal deadline of 2029 but also taking a high risk being the first to implement a new technology.

The German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection was approving this pioneer role by funding the plant in Hamburg within the environmental innovation programme.



The construction started in the beginning of 2019 and was completed in late 2020. The first results during the commissioning of the plant in 2021 are promising. The engineering of the process could be approved, resulting in the expected phosphoric acid quality and recovery ratio.



Technical facilities, first floor of the recovery plant © HAMBURG WASSER/Julia Unkel



Outside view of the recovery plant with ash transfer piping (pneumatic, left), chemical tanks and control room (right) © HAMBURG WASSER/Hendrik Schurig

It is no surprise that after commissioning, there is a lot of optimization and basic work to do in 2022, before a stable, continuous and respectively full-scale operation is achieved. Nevertheless, the WWTP Hamburg is still ahead of other treatment plants in Germany

to meet the requirements of the sewage sludge directive. It seems like Germany needs a lot more dynamic to reach the ambitious recycling goal of the government by 2029.

Vincenzo Naddeo, What is the impact of watching your favorite TV series on the environment?

Water, energy and waste: The great European deal for the environment

What is the impact of watching your favorite TV series on the environment? Almost everyone understands that watching television requires energy consumption, but few realize that large amounts of water are required to produce that energy. Many people are unaware that the energy used in alternative sources was most likely produced from our waste or from the same corn that produced the popcorn that accompanies our vision.

A growing awareness of public health issues, concerns about reducing resources and climate change, as well as concerns about land use, have led to an increased interest in genuinely sustainable management strategies in recent years.

Modern society faces a multitude of challenges related to the wise use of various resources such as water, energy, and our by-products, notably wastes. Developing countries have experienced an increased emphasis on the availability of clean water resources and their use of energy in recent years as critical issues in the debate on environmental protection.



Prof. Naddeo Vincenzo is director of the Sanitary Environmental Engineering Division (SEED) at the University of Salerno in Italy. The Sanitary Environmental Engineering Division (SEED) of Department of Civil Engineering develops, since 1992 at University of Salerno, its research, teaching and consulting activities in the field of Environmental Engineering. In the National ranking made by AN-VUR (Italian National Agency for the Evaluation of the University and Research System) SEED meets the highest standards according to the quality of the research in the field of Environmental and Sanitary Engineering.

Climate change and pollution affect the qualitative and quantitative characteristics of the environment, specifically the water resource; while population expansion, lifestyle changes caused by a steady improvement in well-being, the expansion of urban areas, and the transformation of economic activities increase water and energy consumption (IRENA, 2015) and waste production. The United Nations Department of Economic and Social Affairs estimates that, by 2050, the world's population will reach 9.6 billion people, and natural resources equivalent to three of our planets will have to be provided to maintain current lifestyles.

A substantial amount of greenhouse gas emissions and over 90% of water stress are caused by the extraction and transformation of resources (European Commission, 2019). The European Commission has committed to the goal of achieving climate neutrality by 2050 through issuance of the "Green Deal" (European Green Deal), which is necessary to improve resource efficiency and limit climate



change. The main objectives of the European Green Deal are the efficient use of resources through the transition to a clean and circular economy, the restoration of biodiversity and the reduction of pollution (European Commission, 2019).

In order to reach the European Green Deal's goals, it is necessary to review policies concerning resource management, including energy and water, in all sectors of the economy, including industry, production and consumption, major infrastructure, transport, food and agriculture, and waste management. At the same time, it is crucial to recover resources from our waste.

Getting back to our TV series, a large amount of water and energy is used for the cultivation of fields, for the production of corn, for its

transformation into popcorn, for marketing, etc. However, many natural resources, such as polymers found in corn, can be used for the production of biofuels and bio-plastics and thus be recovered from our waste or wastewater. Water treatment and composting plants will soon be used as biorefineries to produce goods and energy.

Currently, water and energy policies still tend to have a sectoral approach (de Kleijne, 2020) that cannot anticipate the impact of the connections between different environmental aspects, which causes undesirable consequences. For example, production of biofuels from energy crops, used to increase the production of renewable energy, involves the use of a greater amount of water and soil, thus increasing competition in the exploitation of these resources (de Kleijne, 2020). In this perspective, anaerobic degradation of sustainable raw materials such as crop residues, animal manure, solid urban waste and wastewater would allow to overcome these limits and at the same time to promote a better valorisation of waste, in line with the principles of the circular economy.

To promote and accelerate the transition to climate neutrality, the European Green Deal introduces the need of reducing greenhouse gas emissions by at least 50–55%, by 2030, compared to 1990 levels (European Commission, 2019). In this context, biomethane produced from biodegradable urban and industrial waste can contribute to the decarbonization of the public and private transport sector in urban areas (Lombardi and Francini, 2020). This will be done by inducing the transition from the conventional energy system towards a green energy system capable of reducing the amount of water required by fossil fuel power plants (Scannapieco et al., 2014; IRENA, 2015).



The concept of the water/energy nexus allows us to understand that the different sectors are intrinsically interconnected and must be studied and governed in an integrated and holistic way that improves resource efficiency and thus ensures sustainable management of scarce resources (Murena et al., 2019). This approach ultimately optimizes waste management for recover value and eliminates or minimizes environmental impact and climate change (European Commission, 2019; de Kleijne, 2020).

To be truly effective, the implementation of these concepts must be accompanied by the right technological development capable of supporting new models of sustainable development. To date, technologies to support water and energy savings such as advanced cooling systems in nuclear and fossil fuel power plants, technologies for upgrading biogas to biomethane and smart meters are still expensive and underused. To make these technologies feasible both economically and technologically, further efforts are needed in the area of research and development.

In a decision-making process such as that of the Green Deal, the combination of the core principles of the water/energy nexus and emerging technological approaches are fundamental for identifying and proposing solutions in the field of resource management for environmental protection, their socially conscious use and the encouragement of investments in various sectors with the certainty that these investments have the consent of the community and through links with the climate, infrastructure, digitalisation, biodiversity, food, transport, trade, energy can act as a stimulus for economic recovery after the damage of the COVID19 pandemic (Naddeo et al., 2013; Corpuz et al., 2020; Naddeo and Haizhou, 2020).

This is a complex but highly realistic scenario that calls for immediate action. Yet we do not mind taking a break to watch your favorite TV series albeit without forgetting that even this small gesture of ours has effects on the environment and the future of our children.

You can find all the references under this link:

Directory of Members



| National Members

Albania

Water Supply and Sewerage Association of Albania (SHUKALB)

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SHUKALB is a professional, not-for-profit Association of water supply and sewerage professionals, who wish to improve the management of the water sector in Albania, making it efficient, sustainable and effective in accordance with the current laws and regulations in Albania.



SHUKALB vision is “Acknowledged leader in advancing quality performance and sustainability in the water sector“.

The four main mission objectives:

- To advocate the collective interests of professionals in the water sector in Albania.
- To serve as a leading resource for knowledge, professional development and networking.
- To invest time and resources to build awareness and attract future generations to seek a career in the water sector.
- To be a positive force for mutual understanding, collaboration and regional partnerships in the Western Balkans.

Social Media

| National Members

Austria

Österreichischer Wasser- und Abfallwirtschaftsverband (ÖWAV)
Austrian Water and Waste Management Association

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Since 1909 the Austrian Water and Waste Management Association (ÖWAV) represents the entire spectrum of water and waste management in Austria. As a non-profit organization the ÖWAV is committed to achieve the goals of sustainable water, wastewater and waste management at national and international level.

The ÖWAV provides its over 2.000 members a sector network and a neutral and independent platform for all specialized experts and involved professional groups as well as up-to-date information and a balance of interests in the national water, wastewater and waste management.

The tasks of the association include the elaboration of ÖWAV-regulations provided by working groups within the association's departments, the organization of education and training offerings related to practical needs along with information and communication.

| National Members

Belgium

VLARIO

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VLARIO is an independent non-governmental and non-profit organization in Flanders (Belgium). VLARIO is the consulting platform and information and knowledge centre for Flemish sewerage professionals and has the following targets:



VLARIO is willing to participate and to cooperate in a European network based on the principles of supporting the making of the European water policy (especially as we are living in Flanders and are at home in Brussels).

VLARIO offers an independent platform for experts of rainwater, wastewater and integral water management;

VLARIO collects knowledge through continuous consultation and exchange of experience with all market players, national and international;

VLARIO supports the ambition of Flemish towns and cities in pursuing quality and applying the ‘Principles of integrated sewerage management’

Social Media

| National Members



Bulgarian Water Association (BWA)

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BWA is a non-governmental organization which members are corporate and individual ones who are involved in the water supply and sewerage (WSS) field, including the quality and treatment of drinking-, industrial-, agricultural- and waste water as well as management, preservation and utilization of water resources. The core of the Association are the regional and local companies dealing with water supply and wastewater disposal as well as designers' bureaus, construction/assembly-, manufacturing-, export-, import- and other companies as well as scientific, managerial and technical staff working in the water sector; therefore, it can be fairly called "The Bulgarian Water Voice".

Social Media

| National Members

Croatia

Croatian Water Pollution Control Society (CWPCS)

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CWPCS is a voluntary, non-profit association of citizens and legal entities joined together to promote water protection and other water related issues. Established in 1979 as the first environmental organization in this part of Europe, today the CWPCS has an important role in the education of new generations of water professionals in different fields of water management.

CWPCS has always had close cooperation with other national organisations, working towards improving relations, exchange of experience and solving neighbourhood problems.

Our vision is to become a recognized national and European organisation in the field of water protection by bringing together members and participating in different national and international projects, programmes and events in the field of water management, all based on a long term engagement and rich history.

| National Members



Czech Republic – CzWA

Asociace pro vodu ČR – The Czech Water Association (CzWA)

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The Czech Water Association (CzWA) associates experts, companies and institutions wishing to contribute to the effective and sustainable development in the field of water management and water environment protection. CzWA came into being in 2009 by transformation of the Association of Wastewater Treatment Experts (AČE ČR) established in 1992.

Whereas the activities of AČE ČR focused mainly on the field of collection and treatment of municipal and industrial wastewaters and sludge and wastes treatment, the scope of CzWA is much broader covering all areas of water management targeting at the improvement of the surface and ground waters quality.

Social Media

| National Members

Denmark

Danish Water Forum (DWF)

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Danish Water Forum, established in 2002, is a network organisation with a focus to promote knowledge sharing and cooperation across the Danish water sector, including government agencies, universities, vocational training institutes, sector institutes, consultants, water and wastewater utilities, business companies and individual water sector stakeholders.

Our members cover all aspects of the hydrological cycle from water resources management through water supply and wastewater treatment to protection of water resources and water-based ecosystems.

We aim at disseminating Danish water solutions globally to help in climate adaptation and fulfilling the SDG 6.

Social Media

| National Members



Finland

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The Water Association Finland is a non-governmental body with the aim to improve and distribute knowledge and promote professional networking in Finland and abroad. The purpose of the association is to improve and disseminate knowledge and promote professional networking in Finland and abroad on hydrology, limnology, water ecology, fisheries, water supply, hydraulic engineering, water pollution control and water legislation.

Social Media

| National Members

France

Association Scientifique et Technique pour l'Eau et l'Environnement (ASTEE)
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Created in 1905, ASTEE is a French scientific and technical association working on public services issues specific to the environmental field. It brings together key experts, researchers, scientists, practitioners, and representatives of public and private institutions working in different sectors of the environmental field. The association carries-out in-depth reflections on various methodological, technical, and regulatory aspects linked to the management of drinking water, waste, sanitation, and aquatic environments in France. Its mission is to build consensus, develop common references and recommendations, as well as produce and disseminate technical information. ASTEE has more than 3,800 members and has a network of 13 regional units located throughout the French territory to ensure the true consideration of local specificities and the dissemination of information.

Social Media

| National Members

Germany

Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall
German Association for Water, Wastewater and Waste (DWA)

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Clear Concepts. Clean Environment.

The DWA – German Association for Water, Wastewater and Waste is the technical-scientific professional association which brings together the specialists and managers of the water and waste management sector from municipalities, universities, engineering firms, government agencies and companies under one roof. The DWA formulates technical standards, contributes to standardization work, supports research, promotes training and further training, and advises politics, science and the economy. The DWA was established in 1948. It is nationally and internationally active.

Social Media

| National Members

Hungary

Magyar Víz- és Szennyvíztechnikai Szövetség (MaSzeSz)
Hungarian Water Association

Secretary General

Bálint Rózsa

EWA Council Representative

Dr. Károly Kovács PhD (oec)

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The HWA is representing around 300 members of the Hungarian water-industry, utilities and research/education institutions.

We promote sustainability, cost recovery, “The Value of Water” by professional training, knowledge sharing and connecting stakeholders in the field of municipal water and river basin management.

Our main areas of activity is represented in workgroups as Education, Juniors, Value of Water (PR), Digital Water, Professional coordination.

We strive to find professional, innovative and dynamic ways to support our workgroups in their activities.



| National Members

Luxembourg

Association Luxembourgeoise des Services d'Eau (ALUSEAU)

President

Georges Kraus

EWA Council Representative

Raymond Erpelding

Contact Details

Marc Steichen

Secretary of ALUSEAU

P.A. SIDEN

Blesbrück

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ALUSEAU

association luxembourgeoise
des services d'eaux

ALUSEAU is the national association of water services in the Grand-Duchy of Luxembourg, regrouping members of the drinking-water sector, the wastewater sector and other public actors active in water management. ALUSEAU is a politically independent and non-profit making association.

Challenging topics

1. Transposition of the new drinking water directive in national law
2. Following the ongoing discussions regarding the amendment / renewing of different water relevant EU-directives

Social Media

| National Members

Netherlands

Stichting RIONED

Executive director

Hilde Niezen

EWA Council Representative

Hilde Niezen

Contact Details

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Stichting RIONED was founded in 1986 as a non-profit organization that provides knowledge, does research and defines standards and data dictionaries for municipalities, companies and other specialists working in the field of urban water management.

Besides being a knowledge institute we also facilitate exchange and education. With inspiring sample projects and enthusiastic people we demonstrate the impact of our work for the society.

We inform the general public about the benefits of good sanitation and climate adaptivity, and the role they can have themselves.

We follow the development of new national or European policies and we provide the decisionmakers with advice. We cooperate with many scientific and governmental partners. In 2022 we have joined EWA.

Social Media

| National Members

North Macedonia

Association for Treatment of Water and Wastewater – ATW MK

President

Prof. Dr. Petko Pelivanoski

EWA Council Representative

Prof. Dr. Petko Pelivanoski

Contact Details

Faculty of Civil Engineering

Association for Treatment of Water and Wastewater ATW MK

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Republic of North Macedonia

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Web: <http://www.atw.org.mk/>



The Water and Wastewater Treatment Association (ATW MK) is a non-governmental and non-profit association whose goals and tasks derive from the needs of its members and are in function of the development and advancement of practice and science in the area of the water and wastewater treatment.

ATW MK stimulates the monitoring of the modern development of science and practice in the field of water treatment; encourages the exchange of professional, engineering, and scientific ideas; encourages various forms of professional workshops, seminars, conferences; cooperates with international and domestic associations for the purpose of information exchange; organizes cooperation with competent state institutions on matters of interest for water treatment. ATW MK is a member of European Water Association (EWA) since 2020.

| National Members



Norway

Norsk vannforening – Norwegian Water Association (NWA)

Chair

Elisabeth Elgsæter

EWA Council Representative

Harsha Ratnaweera

Contact Details

Fredrik Stray

TEKNA

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The Norwegian Water Association (NWA) is an independent non-governmental and non-profit organisation dealing with the management and improvement of the water environment. The NWA provides a forum for discussion of key technical, scientific and policy issues on water covering both water resources and water quality. The object of the Norwegian Water Association is to promote good protection and a balanced use of water resources by disseminating information and promoting knowledge and debate on water-related issues. The activities of the Norwegian Water Association shall be characterized by a high level of expertise and commitment. The association shall be visible and recognized by all professional water-related communities, relevant authorities, and among the members of the association.

Social Media

| National Members

Portugal

Associação Portuguesa de Engenharia Sanitária e Ambiental (APESB)

President

Prof. Lígia Costa Pinto

EWA Council Representative

Prof. José Saldanha Matos

Contact Details

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The Portuguese Association for Sanitary and Environmental Engineering (APESB) is a non-profit, scientific and technical association. APESB is a national body aiming, among others, to study, analyze and discuss aspects related with water supply, drainage, treatment and final disposal of wastewater and the collection, treatment and final disposal of solid waste, in order to contribute to the implementation of better, feasible and sustainable solutions. It provides up to date information on relevant topics to its members and actively promotes discussion forums via the regular edition of a peer-reviewed technical and scientific journal, in its annual events, and regular online seminar series.

Social Media

| National Members

Romania

Romanian Water Association (RWA)

President

Dr. Ilie Vlaicu

EWA Council Representative

Dr. Monica Isacu

Contact Details

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The Romanian Water Association (RWA) is a professional, non-profit and an employers' association that facilitates and promotes collaboration between its members in order to identify new sustainable and cost-effective approaches and solutions to improve the quality of water resource management, water supply and sewage treatment services, while aiming a holistic approach, integrating all water-related activities into broader concepts of sustainability, development and environmental protection.

RWA is important for connecting the vast community of water professionals, nationally and internationally – integrating the latest finds in the field of research and practice.

Thanks to its network of experts in research, practice, regulation, consulting, and production, RWA can address the unique expressions of global challenges within the country's communities, thus leading to the sustainability of the field.

Social Media

| National Members

Serbian Water Pollution Control Society (SWPCS)

SRPSKO DRUŠTVO ZA ZAŠTITU VODA

Executive Secretary

Dr. Aleksandar Djukić

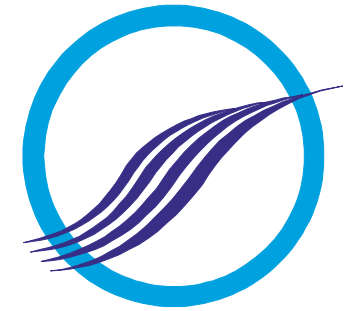
EWA Council Representative

Dr. Aleksandar Djukić

Contact Details

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Serbian Water Pollution Control Society (SWPCS) is a non-profit independent organisation of experts in water sector which was established in 1966. The main objective of the Society is to create and foster the network of leading water professionals through the provision of services and products to the members, including conferences, publications and support for member groups. In addition, to represent the views of members in the national and international forums aimed at advancing best practice in the sustainable water management.



| National Members



**ASOCIÁCIA
ČISTIARENSKÝCH
EXPERTOV SR**

Slovak Republic

Asociácia čistiarenských expertov SR (AČE SR)

Association of the Wastewater Treatment Experts of the Slovak Republic

President

prof. Igor Bodík

Secretary

Dr. Peter Ševčík

EWA Council Representative

Dr. Zuzana Matulová

Contact Details

ACE SR

Prof. Ing. Igor Bodík, PhD.

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The AČE SR is a non-profit association that englobes professionals and companies focused on wastewater treatment, sludge management and water protection. The association actively promotes the exchange and development of knowledge, professional networking and transmission of knowledge, through scientific conferences, publications, workshops, online meetings, academic lectures, expert services and other professional activities. AČE SR is firmly committed to continuously improve water quality standards and treatment processes towards a more sustainable common future.

Social Media

| National Members

Slovenia

SLOVENSKO DRUŠTVO ZA ZAŠČITO VODA (SDZV)
Slovenian Association for Water Protection

President

Dr. Marjetka Levstek

Vice President

Prof. Dr. Mihael J. Toman

EWA Council Representative

Dr. Marjetka Levstek

Contact Details

SDZV

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SLOVENSKO DRUŠTVO ZA ZAŠČITO VODA

The Slovenian Association for Water Protection (SDZV) was founded in 1991 as a voluntary, independent and non-profit association. Its primary purpose is to develop awareness for the importance of water protection.

The association is a recognized and active partner for local communities and the state in the field of water protection. Its advantage is interdisciplinary knowledge, linking different sciences and objectivity of opinions.

The Association operates in the territory of the Republic of Slovenia and is connected with related societies and associations at home and abroad.

Social Media

| National Members



Spain

Asociación para la defensa de la calidad de las aguas (ADECAGUA)

EWA Council Representatives

Maria Auset Vallejo, PhD

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The Asociación para la Defensa de la Calidad de las Aguas (ADECAGUA) started its activity in 1967 with the aim of being a reference framework and meeting point for all those interested in aspects related to the knowledge and improvement of water quality. Today it has more than 200 members and is the main Spanish association related to water quality management.

Social Media



| National Members

Switzerland

Verband Schweizer Abwasser- und Gewässerschutzfachleute (VSA)
Association Suisse des professionnels de la protection des eaux
Associazione svizzera dei professionisti della protezione delle
acque Swiss Water Association

Executive Director

Stefan Hasler

President

Heinz Habegger

EWA Council Representative

Heinz Habegger

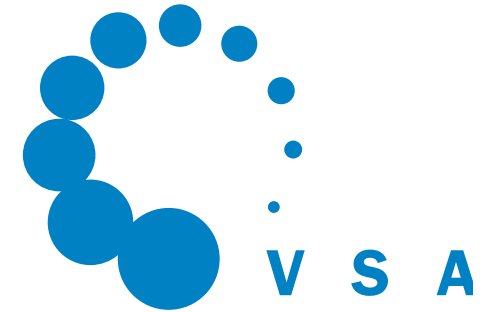
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The VSA is the association representing Swiss specialists working in the fields of wastewater treatment, urban drainage, sewerage, treatment of industrial and commercial wastewater and water pollution control management. For this area, the association defines the state of the technology and is the reference point for water protection.

The association enables experts to exchange technical know-how. Another task is the professional training of members and staffs of sewage treatment plants. The VSA is anchored in all three of Switzerland's linguistic regions – with offices in Zurich, Lausanne and Bellinzona.

Social Media

| Sponsor Members

IFAT Munich

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Description

The European Water Association is one of the official partner of IFAT Munich. IFAT is the world's largest environmental technology trade fair: here, more than 3,300 exhibitors from all over the globe present their solutions for water, sewage, waste and raw materials management to around 150,000 international trade visitors. And with 48 percent of exhibitors and 49 percent of visitors coming from abroad, IFAT is also the most international trade event in the field of environmental technologies.

Spanning 270,000 square meters and thus occupying all 18 halls plus an extensive outdoor area of the Messe München trade fair center, half of the event is dedicated to the water and sewage sector and covers the whole spectrum from supply and recycling to disposal.



IFAT hence not only offers the ideal setting for top market players to find out about latest trends and challenges in the various markets, but also to discuss strategies for making the best possible and sustainable use of the 'blue gold'. Strengthening the circular economy plays an essential role here. It is about keeping resources circulating as well as using them sustainably and repeatedly. Circular economy ultimately means a raw material shift. And in view of the increasing water shortage worldwide – partly caused by climate change – it is more important than ever to make maximum use of this resource.

The next IFAT will take place from May 30 to June 3, 2022 in Munich, Germany.

Further information is available at www.ifat.de

Social Media

| Sponsor Members

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VTA – the No. 1 for innovative environmental Engineering

Since more than 30 years, the VTA group is known as a pioneer in wastewater technology. The company is active in more than 60 countries around the world. The scope of the VTA group is centered at wastewater treatment plants – maximum efficiency combined with minimum ecological burden. This is our aspiration, this is our driving force. With two decades of gained experience, research work and partnerships, our company holds more than 110 patents on high-tech products for wastewater treatment! 320 employees in Austria and on the international level are currently taking care of our partnerships, technological maintenance and the success of our company. VTA products are used in a wide variety of sectors, ranging from municipal wastewater plants up to paper, food, textile, drilling, disposal and automotive industry. Our unique charac-



we clean water

teristic is based on our long-standing experience, which allows us to offer customer – oriented solutions with sustainability and integrity. The VTA Nanofloc® – one of our flagship products, is based on nanotechnology and opened the door to a new dimension of wastewater technology. The use of nanoparticles ensures rapid flocculation, sedimentation and stable operation of sewage plants. Another business area of VTA is developing innovative water engineering technology. For example sludge disintegration, microturbines or dosing systems. Our technology division provides solutions for all kind of waste water treatment. Profound expertise, sustainability, innovation and flexibility combined with full-service support for our customers – this is VTA!

Social Media

| Sponsor Members

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About Xylem

Xylem (XYL) is a leading global water technology company committed to solving critical water and infrastructure challenges with innovation. Our more than 17,000 diverse employees delivered revenue of \$5.2 billion in 2021. 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.



Our approach and vision centers on our belief that by providing innovative and reliable technology, solutions, services and expertise, we can help our customers achieve their sustainability goals and advance sustainability in communities across the globe. By deploying our innovative technologies and solutions, our customers mitigate water scarcity, reduce water losses and optimize water system assets to improve water affordability. Other solutions prevent stormwater pollution, predict and protect against flooding, and lower greenhouse gas emissions to help communities and their water systems become more resilient to the impacts of climate change and other challenges. We are a leader in the digital transformation of water, enabling our customers to leverage data, analytics and decision intelligence to optimize the way they manage water and realize bold water, energy and cost savings for the communities they serve.

Social Media

| Corporate Members



Aquademica Foundation

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Aquademica is a non-profit organization in Romania active in the environmental, water and waste water sector. Being an information and knowledge center, the Foundation promotes professional development in the environmental field and offers itself as a networking platform supporting specialists, professional organizations and companies.

Social Media



Emschergenossenschaft / Lippeverband (EGLV)

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Emschergenossenschaft / Lippeverband (EGLV) is the largest water association in Germany. In a catchment area of around 4,100 km² with a population of around 3.6 million, EGLV is responsible for wastewater treatment, watercourse maintenance, flood protection and polder management. Together with its municipal and industrial members and the mining industry, the Emschergenossenschaft has implemented the generation project Emscher Reconstruction at a cost of around 5.5 billion euros and freed the Emscher from wastewater after 170 years.

Social Media

| Corporate Members



Endress+Hauser Group Services AG

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Web: www.endress.com

Endress+Hauser is a global leader in measurement and automation technology for process and laboratory applications. The family company, headquartered in Reinach, Switzerland, achieved net sales of approximately 2.9 billion euros in 2021 with a total workforce of more than 15,000.

Our devices, solutions and services are at home in many industries. Customers thus use them to gain valuable knowledge from their applications.

Social Media

Environmental & Public Health International



Protect People. Protect The Environment

Environmental and Public Health International

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Environmental and Public Health International (EPHI) provides premium advisory services to clients throughout the world to help them resolve critical drinking water challenges. Our premium advisory services include:

Webinars on the Flint, Michigan Lead in Drinking Water Crisis. A crisis that has impacted many lives and has resulted in billions of dollars in lawsuits.

Critical Drinking Water Problem-Solving Service and emergency response assistance.

| Corporate Members

ERFTVERBAND

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The Erftverband is a non-profit organization under public law, with a focus on a healthy environment and the common good. The organization is financed through the

fees paid by its approximately 250 members. The Erftverband and its more than 500 employees reconcile the

different water-related interests of the regional players in a responsible and sustainable manner and with a sense of proportion.

Social Media

Gesellschaft zur Förderung der Abwassertechnik e. V. (GFA) (Organisation for the Advancement of Wastewater Technology)



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Web: www.gfa-news.de | www.dwa.de

GFA is a service company for the German Association for Water Management, Wastewater and Waste (DWA). It publishes the journals of DWA: monthly KA – Abwasser, Abfall (KA – Wastewater, Waste), KW – Wasserwirtschaft (KW – Water Management) and every three months KA-Betriebs-Info (KA – Info for Operators). In addition, GFA publishes the DWA – Industry Guide (DWA-Branchenführer), a directory of companies in the environmental industries, focussing on water and waste. GFA cooperates, on behalf of DWA, with important trade exhibitions concerning water and waste.

| Corporate Members

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HACH is part of the Danaher Corporation, an US based company with its headquarters in Washington, D.C.

Our Mission: Ensuring water quality for people around the world.

Our Vision: We make water analysis better – faster, simpler, greener and more informative – via unsurpassed customer partnerships, the most knowledgeable experts, and reliable, easy-to-use solutions.

Social Media

HUBER SE

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Web: www.huber.de



HUBER SE is a worldwide active company in the field of water, wastewater and sludge treatment.

At our headquarters in Berching, Germany, 900 employees develop and manufacture products, manage projects and develop system solutions for municipalities and industries. With more than 55,000 installations worldwide HUBER is one of the internationally leading companies in this field. HUBER's adapted treatment processes contribute to the solution of the global water problems.

Social Media

| Corporate Members



Hungarian Water Partnership Nonprofit Kft.

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Phone: +36-20-261-1646

E-mail: info@waterpartnership.hu

Web: www.hungarianwaterpartnership.com

Being a non-profit professional organisation, Hungarian Water Partnership serves as first point of contact for foreign partners interested in doing business with Hungarian companies. It's members are Hungarian owned, export oriented water industry SMEs as well as enterprises with connections to the field. Together they embody the Hungarian professional water knowledge and experience recognized world-wide.

Social Media



Hungarian Association of Environmental Enterprises

Gary Hanko

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Phone: +36-1 350-7274 | Fax: +36-1 3363

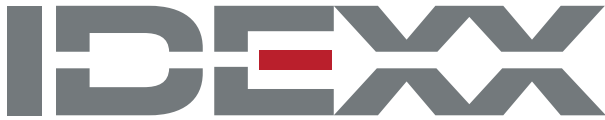
E-mail: kszgysz@kszgysz.hu | Web: www.kszgysz.hu/en

The Hungarian Association of Environmental Enterprises is a non-profit advocacy organization, established 30 years ago. The 250 members are key economic operators of the Hungarian green industry with high expertise in a wide range of activities.

They are companies providing environmental services, manufacturers, academic institutes and green NGOs, who work to observe and enforce the local, regional and global goals and priorities of environment and nature protection.

Social Media

| Corporate Members



IDEXX Laboratories Inc

Water Division
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IDEXX Water is a global expert in water microbiology testing, providing innovative solutions that ensure the safety of drinking water and other water supplies for over 2 billion people in more than 175 countries around the world. Our water testing technologies are in use on all seven continents and on the International Space Station.

Social Media:



KOCKS CONSULT GMBH

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Web: www.kocks-ing.de

Comprehensive Engineering Solutions worldwide since 1946. Consulting, Planning and Project Management in the sectors Water, Environment, Civil Engineering and Transport.

| Corporate Members

LUXEMBOURG
INSTITUTE OF SCIENCE
AND TECHNOLOGY



Luxembourg Institute of Science and Technology

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Web: <https://www.list.lu/en/institute/>

The Luxembourg Institute of Science and Technology (LIST) is a mission-driven Research and Technology Organisation (RTO) that develops advanced technologies and delivers innovative products and services to industry and society. These innovations can also be used to solve a number of societal challenges, particularly in the areas of the environment, security, education and culture, sustainable development, as well as the efficient use of resources.

Social Media:

MedEcoTest SIA

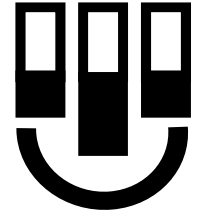
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MedEcoTest



SIA MedEcoTest develops, produces and customizes test kits – simple tools for on-site express chemical analysis of water and soils samples for professional and personal use.

MedEcoTest kits can be used for:

- Natural and drinking water analysis;
- Environmental samples and wastewater analysis;
- Agriculture, farming, or hydroponics related analysis;
- Educational and citizen science projects.

| Corporate Members

SIEMENS

SIEMENS AG

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Siemens AG is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for more than 170 years. For the water and waste water industry Siemens provides comprehensive solutions from a single source: from process instrumentation, industrial communication, and power supply systems to drive and protection technology as well as automation and process control technology.

Social Media



Société Publique de la Gestion de l'Eau (SPGE)

SPGE s.a. Société Publique
de Gestion de l'Eau
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E-mail: info@spge.be
Web: <http://www.spge.be/en>

The Société Publique de Gestion de l'Eau (SPGE, Public Water Management Company) is a public limited company set up by the Walloon Region in 1999. Its main mission is to take care of the coordination and the financing of the water sector in Wallonia. Together with the other water collaborators, it primarily deals with wastewater sanitation (from the sewer to the water treatment plant) and catchment protection.

| Corporate Members

Stadtentwässerungs- betriebe Köln, AöR

Ostmerheimer Straße 555
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Web: <https://www.steb-koeln.de/>

We see ourselves as a service provider in the water industry and form an essential component of public services.

Our main tasks are wastewater disposal, flood prevention and the management of flowing waters and park ponds in the Cologne urban area – we shape the water cycles in the city. Sustainability, quality, reliability and economic efficiency determine our actions.

Social Media:



STEINZEUG-KERAMO

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Web: <https://www.steinzeug-keramo.com/en-gb/>

Steinzeug-Keramo NV is an internationally oriented company, which together with Pipelife is part of the Wienerberger Piping Systems branch of the Wienerberger group, and specializes in the development, production and sale of environmentally friendly vitrified clay products for water and wastewater systems.

In addition, Steinzeug-Keramo offers various modular and sustainable system solutions for the rehabilitation of manholes and inspection chambers. By using ecologically sound raw materials, our products contribute to the transition to a climate-neutral and circular economy. Our company has been Cradle-to-Cradle certified since 2012.

Social Media:

| Corporate Members



Teknodepurazioni Aquae s.r.l.

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E-mail: info@teknodepurazioni.it
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Teknodepurazioni Aquae has been working for more than 30 years in the field of purification and water treatment, bringing in dowry a long and solid experience in the field.



TIROLER ROHRE

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Tiroler Rohre develops, manufactures and markets high-grade systems made from ductile cast iron for the transport of water. Furthermore, we manufacture general-purpose pile systems for deep-foundation engineering. We are making a major and lasting contribution to the construction and operation of high quality, water supply and wastewater-disposal infrastructures.

Social Media:

| Corporate Members

UNIE VAN WATERSCHAPPEN

Unie van Waterschappen Dutch Water Authorities (eng)

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2596 AA The Hague
The Netherlands

Phone: +31-70 351 97 51
E-mail: info@dutchwaterauthorities.com | info@uvw.nl
Web: www.dutchwaterauthorities.com | www.uvw.nl

Dutch Water Authorities represents the interests of 23 water authorities (Waterschappen in Dutch). The water authorities are decentralised functional governments, responsible for regional water management (quantitative and qualitative), flood defence and waste water treatment.

Social Media:



Association of Dutch Water Companies (Vewin)

P.O. Box 90611
NL 2509 LP Den Haag

Phone: +31 70 3490 850
Mobile: +31 6 53 41 00 85
E-mail: frentz@vewin.nl | info@vewin.nl
Web: www.vewin.nl

Vewin is the national association representing Dutch water supply companies. Back in 1952 it was founded; more than 200 water supply companies were active in the Netherlands. Today there are about 10, which is a change that has altered the association's essential task.

Social Media:

| Corporate Members



WILO SE

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44263 Dortmund
Germany

Phone: +49 (0)9281 974125
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Web: www.wilo.com

Wilo Group is one of the world's leading premium providers of pumps and pump systems for the building services, water management and industrial sectors. Wilo has around 8,000 employees worldwide. Our innovative solutions, smart products and individual services move water in an intelligent, efficient and climate-friendly manner. We are making an important contribution to climate protection with our sustainability strategy and in conjunction with our partners.

Social Media



WTE Wassertechnik GmbH

Ruhrallee 185
45136 Essen
Germany

Phone: +49 (0)201 8968 571
E-mail: info@wte.de
Web: <https://www.wte.de/>

WTE Wassertechnik is one of the leading German suppliers for municipal and industrial water management. For more than 30 years, more than 20 million people in 18 countries have relied on our sustainable knowledge for wastewater disposal, water supply and sewage sludge treatment.

| Corporate Members

Wupperverband

Untere Lichtenplatzer Straße 100
42289 Wuppertal

Phone: +49 (0)202 583-0
E-mail: info@wupperverband.de
Web: www.wupperverband.de



Wupperverband is a public body responsible for water volume management and water quality within the Wupper catchment area. Wupperverband members are town councils, local and district authorities, municipal water suppliers, effluent disposal businesses and trade and industrial organisations in the Wupper area. Wupperverband operates 14 reservoirs, 11 wastewater treatment plants, numerous storm water tanks and flood control reservoirs and manages around 2,000 kilometres of streams and rivers.

Social Media

Zahnen Technik GmbH

Bahnhofstraße 24
54687 Arzfeld
Germany



Phone: +49 (0)6550 9290-0
E-mail: info@zahnen-technik.de
Web: www.zahnen-technik.de

„zahnen water engineering performance“

We combine our know-how in electrical – mechanical and process engineering, standardisation and digitalisation.

We support our customers worldwide in optimisation and modernisation of existing water and wastewater treatment plants as well as with the construction of new ones.

Thanks to decades of experience, we have developed into a competent solution provider for innovative processes and products in the (waste)water sector.

Social Media

| Research Members



Aalto University

School of Engineering
Department of Built Environment
Water and Environmental Engineering Research Group

Anna Mikola, Assistant Professor, D Sc (Tech)

P.O.Box 15200

FI-00076 Aalto | Finland

(Visiting address Tietotie 1E, Espoo)

Phone: +358 40 7176552 | E-mail: anna.mikola@aalto.fi

Web: http://builtenv.aalto.fi/en/research/water_and_environmental_engineering/

Aalto University is where science and art meet technology and business. Our campus is located in Espoo, Greater Helsinki, Finland. Aalto University's purpose is to shape a sustainable future. We spark the game changers of tomorrow, and renew society with research-based knowledge, creativity and an entrepreneurial mindset. All our work is guided by the values of the university: responsibility, courage, and collaboration. The Aalto University community is made up of 12 000 students, 400 professors and close to 4 000 other faculty and staff.

Social Media



Aarhus University – Department of Environmental Science

Carsten Suhr Jacobsen | Professor and Head of Department
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The Department of Environmental Science at Aarhus University focuses on multidisciplinary research supporting high quality scientific advice for policy and sustainable development. Our expertise spans water-related issues such as contamination and treatment, especially as part of the university's Centre for Water Technology, WATEC. We work with groundwater, wastewater, glaciers, marine and freshwater, with research covering environmental chemistry, microbiology, cutting edge non-target screening, and socioeconomic analyses.

Social Media

| Research Members



Aarhus University, HydroGeophysics Group, Geoscience

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Web: <https://hgg.au.dk/>

Based at Department of Geoscience, Aarhus University, the Hydro-Geophysics Group does research on the highest level with the overall aim to develop methods for knowledge-based mapping and modelling of water resources for the benefit of society.

HGG combines geophysical instrument development with advanced data processing and inversion algorithms and hydrological modelling.

Social Media



Universität der Bundeswehr München

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E-mail: swa@unibw.de
web: www.unibw.de/wasserwesen-en/swa

Teaching and research activities of the chair of sanitary engineering and waste management are focused on protection of health, water and other resources. The chair's mission is knowledge development in the field of sanitary engineering with a wide range of research interests from drinking water supply to wastewater and sludge treatment.

| Research Members

Center for Water and Environmental Research (ZWU)



Dr. Michael Eisinger, Managing Director
Universitätsstr. 2
45141 Essen, Germany

phone: +49 201 102 183 3890
E-mail: Michael.Eisinger@uni-due.de
web: www.uni-due.de/zwu

The Center for Water and Environmental Research (ZWU) at the University of Duisburg-Essen (UDE) is an interfaculty research center with more than 250 members of the UDE from natural sciences, engineering, economics, medicine and social sciences (34 chairs from 5 faculties) and other research institutions in the region, but also practical partners such as the large regional water associations and water suppliers.

Social Media

IKT – Institute for Underground Infrastructure gGmbH



Professor Bosseler
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E-mail: info@ikt.de
Web: www.ikt.de

IKT – Institute for Underground Infrastructure is a neutral, independent non-profit institute, and works on solving practical and operational issues concerning underground sewers, pipes and other conduit engineering, its primary focus being on sewer systems. The institute conducts research projects, material testing, CIPP liner testing, consultations and seminars on the construction, operation and renovation of underground infrastructures.

Social Media

| Research Members

Institute of Environmental Engineering– Institut für Siedlungswasserwirtschaft (ISA) / RWTH Aachen University

Prof. Dr-Ing. Thomas Wintgens
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D-52074 Aachen
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Phone: +49 (0)241-8025207
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Web: <https://www.isa.rwth-aachen.de/>

ISA is part of RWTH's Faculty of Civil Engineering and has been focusing on the field of environmental and water protection for many years now. About 25 academic staff members work on diverse research and development activities in interdisciplinary cooperation. Their work focuses on the areas of wastewater discharge, wastewater treatment and waste management, particularly resource recovery from sludge. Water reuse is an emerging research area.

INSTITUTO DE HIDRÁULICA AMBIENTAL DE CANTABRIA (IHCantabria)

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Joint research centre created in 2007, currently employs 180 experts specialized in basic and applied research based on scientific excellence, training and technology transfer focused on the sustainable management of the water cycle: integrated management of river, coastal and marine systems, hydraulic engineering, climate change, numerical and physical modelling of water-related processes, water quality, and coastal and freshwater ecosystems.

Social Media

| Research Members

IVL Svenska Miljöinstitutet – IVL Swedish Environmental Research Institute

Claudia Cascone
Box 21060
100 31 Stockholm



Phone: +46 73 0389 878
E-mail: claudia.cascone@ivl.se
Web: <https://www.ivl.se/english/ivl/our-offer/our-focus-areas/water.html>

IVL is an independent, non-profit research organisation founded in 1966 by the Swedish government and industry to develop solutions to environmental problems at national and international level. With around 400 employees, it is a leading institute for applied environmental research and consultancy services. IVL has a strong water expertise including drinking and wastewater data analysis, process-modeling and optimization, and wastewater pilot tests.

Social Media

JOANNEUM RESEARCH Forschungsgesellschaft mbH LIFE – Institute for Climate, Energy and Society

Waagner-Biro-Strasse 100/10
8020 Graz
Austria



Dr. Franz Prettenthaler
Director
Phone: +43 316 876 7601
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Web: www.joanneum.at/life

The LIFE – Institute is one of the leading research institutes for key issues relating to climate change, climate risks and transformation research towards a climate-neutral and climate-resilient society. Its more than 40 researchers have a comprehensive overall system understanding of the complex correlations in the fields of climate, energy and society in economic, technological, ecological, social and political terms.

Social Media

| Research Members

KU Leuven

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Web: <https://www.kuleuven.be/english/kuleuven/index.html>
https://bwk.kuleuven.be/hydr/index_html

KU Leuven is one of Europe's eldest, highest-ranked and most renowned universities. According to Thomson Reuters, it is the most innovative university in Europe, and the 7th most innovative university worldwide. KU Leuven has different research groups performing fundamental and applied research in different aspects of water-related process knowledge, management and technology.

Social Media KU Leuven:

The logo for KU Leuven, featuring the text "KU LEUVEN" in white capital letters on a dark blue rectangular background.

Patrick Willems:

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Phone: +48 695 922 722

E-mail: smol@meeri.pl

Web: min-pan.krakow.pl/psb

Research and development center dealing with mineral and energy management. The special interest of Division of Biogenic Raw Materials are topics related to water and sewage in circular economy, incl. water reuse, recovery of nutrients from waste, policy recommendations, material flow analysis, life cycle assessment, monitoring framework and environmental education.

Social Media



| Research Members

Norwegian University of Life Sciences

Faculty of Science and Technology
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NMBU is the leading producer of graduates in Water and Waste-water Technologies in Norway. It has 6400 master and PhD students and 1900 staff members and modern technical, analytical and teaching facilities. NMBU's Smart Water Group specializes in process surveillance and advanced water treatment. The group leads a Global Educational and Research Network "Water Harmony", which at presents have 82 universities from 51 countries.



Politecnico di Torino, Department of Environmental, Land and Infrastructure Engineering (DIATI)

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First Italian School for Engineers, from 1859 Politecnico di Torino has been training engineers, and architects involved in all societal changes and innovations. Nowadays ever-changing global scenario, Universities need to evolve in order to produce their tangible impact. PoliTO thus evolved into an inclusive University playing a key role in innovation and lifelong learning.



Social Media

| Research Members

University of Jan Evangelista Purkyne/Institute for Water Diplomacy and Hydropolitics (Rivalis)

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Rivalis is designed as an interdisciplinary research institute analyzing non-traditional water challenges in Eurasian region. Currently, our team is focusing on the EU water diplomacy and political impact assessment of the controversial water project. Our goal is to provide feasible conflict resolutions for the international water disputes, facilitate water citizen science and build foundation for water diplomacy in Middle-Eastern Europe.

Social Media

Universität Luxemburg

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The group on 'Urban water management' of the University of Luxembourg gives special emphasis on the optimization of treatment processes in wastewater treatment plants – especially regarding Micropollutants, the increase of energy efficiency of wastewater treatment processes and the valorization of wastewater ingredients. Within the last years, numerous interdisciplinary projects were carried out in these topics together with national and international partners.

Social Media



| Research Members

University of Salerno Sanitary Environmental Engineering Division (SEED)

Department of Civil Engineering
Professor Vincenzo Naddei, Ph.D
Director of the Sanitary Environmental Engineering
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Sanitary Environmental Engineering Division (SEED) of Department of Civil Engineering develops, since 1992 at University of Salerno, its research, teaching and consulting activities in the field of Environmental Engineering, nowadays directed by professor Vincenzo Naddeo.

In the National ranking made by ANVUR (Italian National Agency for the Evaluation of the University and Research System) SEED meets the highest standards according to the quality of the research in the field of Environmental and Sanitary Engineering.

Social Media:



University of the Aegean

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The University of the Aegean was founded in 1984. The, then-called, Department of “Natural Environmental Sciences” was one of the University’s first departments. In 1989, the Department was renamed into “Department of Environment” and in January 2004 it joined, alongside the Department of Marine Sciences, the University’s newly established School of Environment. The main objectives of the Department of Environment main mission is educate and carry out research into a wide range of environment-related topics such as Ecology, Economics, Education, Politics, Engineering and Pollution.

Social Media:



| Research Members

University of Urbino „Carlo Bo“

Prof.-Dr.-Eng. Fabio Tatàno
Sanitary-Environmental Engineering
Department of Pure and Applied Sciences (DiSPeA)
– Environmental Section
Campus Scientifico „E. Mattei“
I-61029 Urbino (IT)



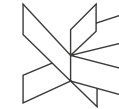
E-mail: fabio.tatano@uniurb.it
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The University of Urbino dates back to 1506 and is located in a magnificent Renaissance city, in the Unesco World Heritage, offering students and scholars a wide range of courses and research opportunities. Specifically, the teaching and research activity in the water related environment is promoted at the DiSPeA Department as a multidisciplinary approach in the key areas of Chemistry, Physics, Geology, and Environmental Engineering.

Social Media

VIA University College

Research Centre for Built Environment,
Energy, Water and Climate
Torben Lund Skovhus
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DENMARK



VIA University
College

Phone: +45 87 55 42 96
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Web: <https://en.via.dk/research/built-environment-energy-water-and-climate>

We carry out applied research within sustainable construction, energy, water and intelligent digitalization. We are a proud partner within the EU research framework and contribute as a UNESCO institution for sustainable development.

Our research focuses on developing sustainable solutions to environmental and climate challenges. We work to ensure that our knowledge is made available to public and private partners as well as to our students.

Social Media:

Cooperation Organisations

ASEM

Water Resources Research and Development Center (ASEMWater)

Chairperson

Mr Liu Yanhua; CN

Vice Chair among others:

Károly Kovács, HU

Secretariat of the association

No. 233 Yuelu Avenue

Hunan Science and Technology building

Changsha City, Hunan Province

P.R. China

Web: <http://www.asemwater.org/>

Founded in China, ASEMWater is a permanent research and development organization in water science and technology cooperation under the framework of ASEM mechanism. Being a regional and a public non-profit international organization specializing in S&T cooperation, ASEMWater expects to unite related governments, universities, institutions and high-tech enterprises to promote sustainable development in Asia and Europe through S&T collaboration and capacity improvement in water resources management.



IWA

International Water Association

Export Building, First Floor

1 Clove Crescent

London E14 2BA | United Kingdom



International
Water Association

Phone: +44 207 654 5500 | Fax: +44 207 654 5555

E-mail: water@iwahq.org | Web: <https://iwa-network.org/>

The International Water Association is the network of water professionals striving for a world in which water is wisely, sustainably and equitably managed.

Drawing exceptional professionals from over 140 countries, the membership of the International Water Association (IWA) brings together scientists, researchers, technology companies, and water and wastewater utilities.”

Social Media

| Cooperation Organisations

JSWA

Japan Sewage Works Association

Suisui Building
2-19-12 Uchikanda
Chiyoda-ku
Tokyo 101-0047
Japan



E-mail: s.maeda_010@ngsk.or.jp
Web: www.jswa.jp/en/jswa-en

JSWA started its operation in 1964 to represent wastewater utilities in Japan. Currently, around 1400 municipal utilities provide wastewater service to their citizens and businesses while some 40 prefectural authorities provide regional services to their municipal satellite utilities. JSWA acts to have dialogues with regulators and politicians, publish standards and guidelines, publicize wastewater services to citizens and professionals locally and internationally.

WEF

Water Environment Federation



601 Wythe Street | Alexandria, VA 22314 | USA

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E-mail: csc@wef.org
Web: <https://www.wef.org> | <https://www.weftec.org>

The Water Environment Federation (WEF) is a not-for-profit technical and educational organization of more than 30,000 individual members and 75 affiliated Member Associations representing water quality professionals around the world. Since 1928, WEF and its members have protected public health and the environment. As a global water sector leader, our mission is to connect water professionals; enrich the expertise of water professionals; increase the awareness of the impact and value of water; and provide a platform for water sector innovation.

Social Media

Membership



| Value of membership

Become part of the network!

EWA's members reflect the professional and European geographic diversity of the Association. EWA consists of 26 European leading professional organisations in their respective countries, each representing professionals and technicians for wastewater and water utilities, academics, consultants and contractors as well as a growing number of corporate member firms and enterprises. EWA thus represents about 50,000 professional individuals working in the broad field of water and environmental management.

The EWA offers different type of membership: [National Membership](#), [Sponsor Membership](#), [Corporate Membership](#) and [Research Membership](#). Become part of the network now!

As a [National Member](#), you will receive the latest information and technical papers from the European Commission, information on the preparatory work for European standards from the CEN Technical Committees, technical information about the EWA member's countries and their national associations, assistance and support in the organization of conferences as well as their promotion. Members will also benefit from co-operation with other international associations such IWA (International Water Association), WEF (Water Environment Federation), EUREAU (European Union of National Associations of Water Suppliers and Waste Water Services) and



JSWA (Japan Sewage Works Association). Our members can also participate and contribute to the technical and scientific work and other activities organized by the different Committees and Task Groups. The membership always evolve and we look forward to your contribution.

The advantage to become a **Corporate Member** is a more evident exposure of your membership and the opportunity to participate in the governance of the EWA. You will receive information about European legislation and standardisation in the water sector. Participate in interesting, up-to-date and high- focused conferences and workshops about European water issues. Get in contact with water professionals from various fields and countries, including the Central and Eastern European Countries, at conferences, workshops, and EWA's Annual Meetings. You can also develop contacts with the European Commission and the European Environment Agency. By being a member, you can work together with other experts to influence the European water agenda, legislation and standardization in EWA's European Technical and Scientific Committee (ETSC) and its Working Groups.

Make yourself known and join the EWA.

The EWA invites research institutions to join the organisation as a **Research Member**. By being a member, you, as an institution are given a platform for research and innovation in the water sector. You will have access to information from Brussels; you expand your network with the help of the EWA! Knowledge transfer will enhance all stakeholders in the water cycle.

The relationship with EWA's scientific basis has always been strong. The EWA working groups and scientific committees connect science with technology. But we would like to strengthen this relationship by giving the researchers a voice within the organisation to show their scientific research and transfer their findings and apply the outcomes of the research to the European water sector. Research Membership of the EWA is open to any non-profit making research unit, such as university, research institution, department, laboratory, or any another appropriate unit, in the field of water. We look forward to meeting you.

You can find more information on all of our membership offer and price on our website:

<https://www.ewa-online.eu/membership.html>



| Membership registration



EWA | 
EUROPEAN WATER ASSOCIATION

| Imprint

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The information in this guide has been provided by the EWA members and edited by the EWA Secretariat.

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