

## PROGRESS ON WATER JPI

### **WATER JPI WORKSHOP ON “VALORIZATION OF WATER RESEARCH AND INNOVATION OUTSIDE EUROPE”**

The Water JPI, as part of the [CSA IC4Water](#), is looking at opportunities to develop the valorization of water research and innovation outside Europe. To progress this work, the Water JPI in cooperation with the [WssTP](#), are inviting you to participate in the Water JPI Workshop on “Valorization of water research and innovation outside Europe”, which will be held on Tuesday 19th March 2019 in Brussels, back-to-back with the WssTP Water Market Europe event, and in the same premises. One of the objectives of the workshop is to present examples of projects, platforms, networks, and other initiatives which, through RDI partnerships often in cooperation with other stakeholders, can serve as inspiration for others who would like to enter into such initiatives with a dual purpose to promote business development and valorization of the European water sector and to support initiatives in the beneficiary countries. For more information, please see the [programme](#) of the event. [Registration](#) is free but compulsory, and upon acceptance of the led organizer due to the limited capacity in the venue.

### **2017 JOINT CALL KICK-OFF MEETING OF FUNDED PROJECTS PARIS 6<sup>TH</sup> FEBRUARY, 2019**

In the framework of the Water [CSA IC4WATER](#), launched in 2017 for developing International Cooperation, eight transnational projects have been recommended for funding, focused on the achievement of the [UN Sustainable Development Goals](#) (UN SDGs). Ivar Berthling, RCN, and the Water JPI coordinator Dominique Darmendrail held a short presentation on the IC4Water call and Water JPI in general. Following the projects presentations, more information around Water JPI and open data/open access was provided by Alessandra Casali, ISPRA, and project participants had a chance to talk to Funding Partner Organisations (FPO) representatives present. The main challenges and focus of the funded projects are: a) multiple pressure effects on ecosystems and ecosystem services as well as effective mitigation and developing accessible solutions for clean water management b) new governance and knowledge management approaches by new tools for water management aimed at setting up innovative alternatives suitable for decision-making; c) education and communication initiatives to raise social awareness of consumption habits and water scarcity and to increase the levels of social acceptance and use of recycled water.

The research coordinators presented their successful activities, and they have been interviewed about the main scientific gaps and the challenges and to reach the targets set out:

**UBWAT** - Designing, implementing, monitoring and understanding a grey water drainage and partial treatment system within an urban informal settlement – Coordinator: Craig Sheridan (South Africa) – The main scientific gap is the detailed understanding of how the grey water drainage works. Bureaucratic, legislative, socio economic and political challenges are the main issues to be faced.

**SMART Control** - Smart framework for real-time monitoring and control of subsurface processes in managed aquifer recharge applications – Coordinator: Catalin Stefan (Germany) - The main scientific gap is to increase the understanding of the risks associated with managed aquifer recharge. The main challenges are to find solutions suitable for the different regions where partners are located and their corresponding different climate conditions and hydro-geological conditions.

**NANO-CARRIERS**- Micro- and nanoplastics as carriers for the spread of chemicals and antibiotic resistance in the aquatic environment: Ian Allen (Norway) - The main scientific gap is the understanding of the micro and nano plastic as carriers of chemicals into the environment through water and as carriers of anti-bacterial resistant chains. The main challenge is to develop the tools for the quantification and characterization of these particles at nano scale.

**MadMacs** - Mass development of aquatic macrophytes – causes and consequences of macrophytes removal for ecosystem structure, function, and services: Susanne Schneider – (Norway) – The main scientific gap is to understand the mass development of macrophytes occurring all over the world and the consequence of their removal from the ecosystem. The main challenge of the project is making studies carried out in different places comparable, so that we can predict what is going to happen in different conditions.

**Io.T.H2O** - IoT for Supervision and Control of Water Systems - Harold Roclawski (Germany). The main scientific gap is the improvement of management and control of water systems by introducing local technologies. The main challenge is to use sensors including communication technology to make them ready for the internet of things approach; once we reach this, to then use data for implementing models based on artificial intelligence.

**GlobalHydroPressure** - Model-based global assessment of hydrological pressure - Cintia Bertacchi Uvo (Sweden) - main scientific gap the connection of different scales: space scales ( global, local and regional) and time scales ( things that can happen in few hours, like a big flood, or in many years, like glaciers retreat ). The main challenge is to study what happens with the water physically within these different space and time scales.

**Control4Reuse** - Process Control Technologies for Water Reuse - Eva Thorin (Sweden). This will address the problem of adapting both the quantity and the quality of treated wastewater for non conventional reuse in agriculture. To do so, control theory will be used: models of treatment plants and agronomic models will be coupled in order to provide the users with a simulation platform and optimal control strategies. The main challenge is to provide new technological solutions to minimize external inputs while optimizing water reuse management under both environmental and sanitary constraints.

**IDOUM** - intends to promote low-cost, low-energy, and low chemical usage technologies capable of emerging contaminants removal from contaminated source water. The main challenge is to merge scientific and technological skills from South African, Brazilian, German and French labs to propose hybrid technologies based on bio-augmented constructed wetlands with endophytic microorganisms in combination with tailored nano and micro-structured catalytic materials for heterogeneous Fenton processes.

#### **WATER JPI INTERNATIONAL KNOWLEDGE HUB WORKSHOP**

As part of the [CSA IC4Water](#), a [Water JPI workshop](#) on “Knowledge Hub UN SDGs” was held in Paris on February 7<sup>th</sup>, 2019. Starting from the lessons learnt within the first Water JPI knowledge Hub on Emerging Pollutants and followed by the group designing the upcoming Knowledge Hub of the Water JPI, its topic and composition. There were representatives from other International initiatives who presented experiences from similar initiatives. The workshop facilitated identifying opportunities and existing gaps, taking into account the internationalisation of the Initiative, and highlighted the importance of the knowledge transfer and the possible implementation models for the maximization of outputs.

#### **Submission of the ERA-NET Cofund Proposal Aquatic Pollutants in support of the Water JPI, JPI Oceans and JPI AMR**

One of the most serious risks for our water bodies and oceans and consequently human health derives from the occurrence of emerging pollutants and pathogens, especially antimicrobial resistant bacteria, in the environment. To face this challenge in a comprehensive way and to provide multidisciplinary solutions for a safe and healthy aquatic environment, a collaboration of the three JPIs on [Water](#), [Oceans](#) and [Antimicrobial Resistance](#) (AMR) will be carried out.

32 partner institutions from the three JPIs and from 26 countries in total have joined forces to address the topic risk management of emerging pollutants and pathogens. The consortium, under the leadership of Germany (JÜLICH on behalf of the [Federal Ministry of Education and Research](#), BMBF) submitted a proposal to the Horizon 2020 (H2020) call SC5-21-2019-2020: *Risks posed to human health and the environment by pollutants and pathogens present in water resources*. Germany will also be responsible for the call secretariat and therefore manage the joint transnational call for proposals, which is planned to be announced at the beginning of 2020.

The partnership in the proposed Aquatic Pollutants project is widely spread across EU geographic regions. This ensures coverage of a wide range of the aquatic ecosystems and related industries necessary to address European freshwater, marine and health challenges. The consortium consists of 17 EU member states, four associated countries and five third countries beyond Europe. A further strengthened link to the European and global community is visualized for the future generated.

#### **Irish National Public Consultation Workshop (14/02/2019) – Have your say on EU Research priorities for the future (i.e. Vision 2030 and SRIA 3.0)**

As part of the public consultation process for the review/update of the SRIA and Vision 2030, the EPA hosted a successful national public consultation workshop on Thursday 14<sup>th</sup> February in Dublin. It was a full day event, attended by a wide range of stakeholders. The proceedings were opened by Alice Wemaere and the event was Chaired by Padraic Larkin. Dominique Darmendrail presented an overview of the Water JPI and four Irish researchers (Principal Investigators), who are working on projects funded under Water JPI, presented a summary of their projects/findings:

- Dr Eleanor Jennings, Dundalk Institute of Technology (DkIT) – **PROGNOS** - Predicting In-Lake Responses to Change Using Near Real Time Models
- Professor Laurence Gill & Dr David O’Connell, Trinity College Dublin (TCD) – **Eutro-SED** - Eutrophication hotspots resulting from biogeochemical transformations and bioavailability of phosphorus in the fluvial suspended sediment of geologically contrasting agricultural catchments
- Dr Fiona Walsh, National University of Ireland Maynooth (NUIM) – **StARE** - Stopping Antibiotic Resistance Evolution

Padraic Larkin provided a summary of the evolution of the SRIA up to the current version (i.e. SRIA 2.0) and the rationale for the need for the current review/update of SRIA 3.0 and Vision2030. This was followed by a series of facilitated breakout discussion groups. During the facilitated breakout groups the attendees discussed a series of questions to help identify the future EU water Research priorities & challenges (i.e. SRIA 3.0) and new Vision 2030. Also, they discussed the role of Research Infrastructure and identified gaps and barriers to access. The latter feeds into the work by the RI Taskforce on Research Infrastructure that is being led by JUELICH (Germany).

#### **CONTRIBUTION TO THE H2020 5TOI FINAL CONFERENCE DEDICATED TO WATER – FOOD – ENERGY NEXUS**

The Water JPI coordinator, Dominique DARMENDRAIL, participated in the Policy and Scientific Conference held in Tunisia, 13 February 2019, which was part of the EU – MED events aiming at connecting Mediterranean Nexus communities. Chaired by Refaat CHAABOUNI, Professor Emeritus and former Minister of Higher Education and Scientific Research, the panel discussions allowed representatives of the European Commission, the PRIMA Foundation, the Water JPI and the KIC InnoEnergy to exchange with the audience on what are the NEXUS challenges in the region, how the Joint Action Plan

recommendations proposed by 5TOI consortium could be integrated in the implementation plans of the existing initiatives and therefore proposing innovative solutions to the challenges faced. Check out the 5TOI project website, for more updates.

## **DROPLETS**

### **EEA: MORE ACTION NEEDED TO TACKLE MIXTURES OF CHEMICALS IN EUROPE'S WATERS**

Europe-wide action to prevent and reduce some of the most hazardous chemicals from making their way into Europe's many fresh water bodies has been successful over past decades, thanks in most part to EU rules, according to the EEA report '[Chemicals in European waters](#).' However, challenges remain in effectively dealing with mercury and brominated flame retardants, and with many harmful chemicals which have not been prioritised for monitoring under the [EU Water Framework Directive](#).

### **CLIMATE CHANGE AND LAND USE CHANGE: A MULTI-RISK ASSESSMENT OF FRESHWATER ECOSYSTEM SERVICES**

[In a study recently published on Science of the Total Environment](#) by CMCC researchers [Vuong Pham](#) (lead author of the study), [Silvia Torresan](#), [Andrea Critto](#) and [Antonio Marcomini](#), the impacts of climate change and human activities on freshwater services have been assessed. Researchers proposed a conceptual framework and a set of indicators for assessing the above-mentioned impacts while checking their applicability to the provisioning services of two well-known case studies, namely the Po River basin (Italy) and the Red River basin (Vietnam).

More in detail, these tools provide the basic instruments to identify and classify the main stressors and impacts of global drivers (e.g. climate change and human activities) on freshwater ecosystem services, while conducting a risk assessment.

### **AQUACROSS - FINAL RESULTS - ECOSYSTEM-BASED MANAGEMENT FOR AQUATIC BIODIVERSITY**

The key innovation of the project has been the interdisciplinary work across aquatic realms and it concludes with the launch of the [AQUACROSS Ecosystem-Based Management Cookbook](#)– a practical guide to ecosystem-based management for protecting aquatic biodiversity and a summary of the key results of the project. Based on 3.5 years of interdisciplinary research and practical case studies in Europe's lakes, rivers, coasts, and oceans on protecting aquatic biodiversity to improve social welfare. Made up of 38 interlinked and dynamic short thematic briefs, and all available online [here](#).

## **OPPORTUNITIES**

### **GLOBAQUA E-LEARNING COURSE**

The [course](#) is designed to give a general overview of the [GLOBAQUA](#) project outcomes, and to provide a number of key messages, insights, recommendations, and results for improving policy making and implementation and for sustainable freshwater management. In particular it aims to improve the professional competences, knowledge and information of those working in water management and water protection.

## **EVENTS**

### **9-12 SEPTEMBER 2019, GQ 2019, LIÈGE (BELGIUM)**

The 10th International Groundwater Quality Conference ([GQ 2019](#)) will focus on the need to protect, manage, repair and sustain groundwater quality in growing urbanized environments. The conference will bring together around 250 researchers, industry, regulators, contractors, consultants, planners and water supply agencies to address the important issues related to groundwater quality in this context.

It is possible to [send one-page abstracts](#) until 1 March 2019.

### **28-29 NOVEMBER 2019, ICRAPHE CONFERENCE, BARCELONA, SPAIN**

The Second International Conference on Risk Assessment of Pharmaceuticals in the Environment ([ICRAPHE](#)) aims to capture outstanding examples of active research in this field and to draw the attention to future research needs.

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