

Water challenges for a changing world

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EDITORIAL

Happy New Year greetings for 2016! The coming months will be very active for the Water JPI team and we hope you will stay tuned with our main communication tools: the website and the monthly newsletter. The new ERANET Co-fund WaterWorks 2015 supporting the implementation of the Water JPI activities for the years 2016-2020 starts this month and a new joint call will be launched soon together with the FACCE Joint Programming Initiative on Agriculture, Food security and Climate Change. The new updated version of our Strategic Research and Innovation Agenda is being finalized for approval by the Water JPI Governing Board and will be officially presented in Rome on next 19 May at the final conference of the Coordination and Support Action WatEUr. We will be very happy to welcome you all on that occasion. The first draft of the programme of this Water JPI international conference will be circulated next month.



PROGRESS ON WATER JPI ACTIVITIES

The kick-off meeting of the ERANET Co-fund Waterworks 2015 will be held in Paris on 27 January 2016 followed by the works of the Water JPI Management Board.

The next meeting of the Water JPI Advisory Boards (the Scientific and Technical Board and the Stakeholder Advisory Board) will take place in Dublin on Monday 21st March 2016. The works will focus on the prioritisation of the Strategic Research and Innovation Agenda needs and objectives, the review of its first achievements and its implementation within the frame of the EU programme Horizon 2020.

A meeting among the representatives of the organisations partners of the ERANET Co-fund WaterWorks 2014 is also scheduled in Dublin on 22 March 2016.

WaterWorks2015 – 2016 Joint call

The 2016 joint call for transnational collaborative projects on "research and innovation to support the implementation of water policies" will focus on **"Sustainable management of water resources in agriculture, forestry and freshwater aquaculture sectors"**, in order to increase water use efficiency and to reduce soil and water pollution". More information (sub-topics, deadlines) can be found in the call pre-announcement published on the Water JPI website.

CSA on international cooperation

The Water JPI is preparing an answer to apply to this part of the H2020 work programme related to international cooperation development in the water area. This answer based on the Water JPI strategy document will involve a number of Water JPI partners (15 expressed interested) and some beyond EU countries with whom we have ongoing actions or contacts for future actions. The Water JPI will also need to engage with other International institutions as previously imagined (UN institutions, water economic sector, etc.).



FOCUS ON WATER RESEARCH AND INNOVATION IN ISRAEL



The Ministry for Energy (MoE) is responsible for the supply and management of energy and the natural resources of the State of Israel: electricity, fuels, natural gas, energy conservation, water, sewage, oil & gas exploration, minerals and ores excavation. The Chief Scientist Office in the Ministry is responsible for providing scientific and technological support to policy makers. It encourages the development of know-how and expertise in relevant fields by promoting R&D activities in Israeli academia and industry and through international cooperation. For these purposes, the Ministry operates the following R&D support programs:

Basic research in the academia: once a year the ministry publishes a call for paper that is open to approved academic institutions, for R&D proposals of new concepts and ideas with applicable horizon. The average yearly budget for this program was 2.6 M€;

STARTERGY- start-up fund: supports entrepreneurs, and assists them in reaching the proof of concept/prototype stage, so that they can raise private funding. The fund grants up to 62.5% of a project budget, with support of maximum 125K€. Over the last 7 years the STARTERGY fund invested about 700 k€ per year;

Pilot and Demonstration Fund: supports companies in scaling their innovative products to full production deployment. The fund grants up to 50% of a project budget, with support of maximum 300K€. Since initiated in 2011, the Pilot and Demonstration Fund has invested a total of 5.4 M€;

Water and Environmental Technologies: a joint initiative of the Israel Water Authority, the MoE, the Ministry of Environmental Protection, the Ministry

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of Economy, the Ministry Science, Technology and Space and the Ministry of Finance, with the aim of supporting larger R&D projects including collaboration within the academia or with the industry. The total one time budget is 1M€, for 3-5 research studies only.

Overall, the annual R&D budget of the MoE IL is about 8.7 M€, of which water R&D proposals account for 20-30%.

The **Water Authority** supports research programs at the academia and students scholarships with yearly budget of 1 M€.

The **Ministry of Economy** has a variety of R&D support frameworks to companies at different stages. Overall, the ministry has supported 172 water R&D projects with total investment of 40 M€, between the years 2007-2013.

The **Ministry of Agriculture and Rural Development** has supported, between the years 2007 and 2012, about 100 water R&D projects, with a total budget of 9 M€.

The **Ministry of Science, Technology and Space** operates a long term cooperation with Germany (BMBF) and supports joint water R&D researches, with total budget of 1M€ a year. In addition, the ministry holds long-term cooperation with France and Italy for joint research programs, the research topics changes from time to time. The ministry supports R&D projects by 100K€ per country.

The **Ministry of Environmental Protection** published calls for paper for the academia and supported 6 Water R&D projects with a total budget of 280 K€, between the years 2010 and 2013.

INTERVIEW WITH THOMAS TERNES



Researcher at BfG in Koblenz, Germany and coordinator of the Water JPI Pilot Call project FRAME (A novel FRamework to Assess and Manage contaminants of Emerging concern in indirect potable reuse).

Homepage: www.frame-project.eu, partners: Germany: BfG – Federal Institute of Hydrology, TUM – Technische Universität München; France: BRGM – Bureau de Recherches Géologiques et Minières, Géo-Hyd; Italy: IRSA – Istituto di Ricerca sulle Acque, ISS – Istituto Superiore di Sanità, Norway: NIVA – Norsk institutt for vannforskning.

Professor Ternes has a long experience in the analytical evaluation of water and wastewater treatment processes. He is head of a research group at the Federal Institute of Hydrology dealing with analysis and fate of inorganic and organic contaminants in all kinds of environmental matrices as well as in processes used in municipal wastewater treatment as well in waterworks. Already from 2001-2004 he coordinated the EU-FP 5 Poseidon project which studied the removal of pharmaceuticals and personal care products for indirect non-potable reuse. Currently he received the prestigious advanced ERC grant ATHENE in which he investigates together with Adriano Joss (Eawag) and Jörg Oehlmann (Uni Frankfurt) the removal and fate of emerging contaminants by a combination of aerobic and anaerobic wastewater treatment processes.

What is indirect potable reuse?

The practice of the purposeful addition of highly treated wastewater to drinking water supply after passage through an environmental buffer that is subsequently used to augment a natural drinking water supply is referred to as planned or intentional indirect potable reuse (IPR).

Which are the new strategies proposed by the FRAME project to reduce the impacts of water contaminants?

The interdisciplinary project aims to develop an overall evaluation procedure enabling a comprehensive assessment of efficient and cost-effective options to minimize the risks associated with emerging chemical and microbial contaminants while augmenting natural water resources.

What about the main outcomes expected by the activities carried out by the FRAME consortium?

FRAME will support decisions on how IPR practices can be embedded in the EU legislative framework. FRAME will go beyond the state-of-the-art in several fields: i) identification of new compounds of emerging concerns (CECs) and transformation products (TPs), and tailored monitoring strategies ii) development of highly efficient hybrid processes for CECs mitigation, iii) hazard characterization, iv) performance of CEC modelling and transport prediction, v) guidance for regulation and compliance as well as prioritization of abatement options.

International cooperation in the water sector is crucial. How could it be improved concretely?

International cooperation can be improved by common research projects dealing with current challenges occurring world-wide with regard to water quality and water quantity. The research should be directly linked to wastewater treatment facilities and waterworks. To enable a more sustainable collaboration, common research projects should be envisaged with longer periods than 3 years and which enable the inclusion of new partners if new fields emerge during the project duration that were not foreseen in the proposal preparation.

Are joint calls funded by funding agencies in different countries an efficient instrument to tackle water challenges with a global vision?

In my opinion joint calls funded by funding agencies in different countries are very efficient instruments to tackle water challenges with a global vision. However, sound research, e.g. to find solutions for complex problems is often very time-consuming. Longer project durations and higher budgets or the possibility to apply for a prolonged funding period at the end of the project are essential. Furthermore, a higher flexibility for the selection of project partners is needed. Certain institutes, organizations, or companies, which are experts in their field, are not always eligible to be funded by the respective national agency. Such restrictions may hinder top-level research.

Which is your opinion on the alignment of a Strategic Research and Innovation Agenda for water?

We have to come to common criteria to evaluate the quality of water with regard to the efficiency of treatment processes, but also with regard to environmental water bodies. The WFD provides a frame that has to be extended and developed in much more detail. We need multi-disciplinary approaches to simultaneously consider inorganic and organic contaminants including transformation products as well as pathogens, antibiotic resistant bacteria and (eco)toxicological assessments.

RESEARCH HIGHLIGHTS

NASA balances water budget

Rodell et al. (2015) combined data from 10 sources that made use of observations from more than 25 satellites to describe different aspects of the water cycle: precipitation and evaporation over land and oceans, atmospheric water vapour and its movement, river runoff, and water storage including groundwater, soil moisture and snow pack. The goal was to balance the amount of water that went into each "compartment" of the water cycle, such as the ocean, a continent or a lake, with what came out.

Earth is a closed system, which means that any water that evaporates from the surface must be accounted for the atmospheric water vapour, which must then be included in condensed rain or snow, and so on. Each of these stages was described by a different dataset. To resolve the differences between datasets, in their study Rodell's team came up with a new mathematical technique to get the best estimate.

The water cycle estimates were calculated in tandem with estimates made for the energy budget (L'Ecuyer et al., 2015). "The estimates of the various water balance components cannot be done without looking at the energetic components", so stated L'Ecuyer, adding that there is still room for improvement regarding the estimates for certain parts of the water and energy cycles, such as evapotranspiration, the estimates of how much water evaporates from soils and plants.



Rodell is looking forward to incorporating data sets from satellites launched since 2010, such as the Soil Moisture Active Passive mission, launched in 2014, that may help refine those estimates. These datasets are made possible by NASA's fleet of Earth-observing satellites, which see all parts of the planet, including the oceans, remote areas and developing countries where it is difficult or impossible for scientists to obtain "on the ground" measurements. The next generation of satellites launched since 2010 will eventually allow estimates of water movement to be produced for the current decade with even higher accuracy.

To know more

journals.ametsoc.org phys.org

DROPLETS

The Water-DROP project

Population growth, rapid urbanization and industrialization, the expansion of agriculture and tourism, and climate change are all factors which put water under increasing stress. The scarcity of this vital resource for human and social development has placed water at the top of the agenda of many Mediterranean countries. Most of the water problems are due to the mismanagement of water resources and to the incoherency among different policies impacting water conservation. In addition, the dialogue between water stakeholders, users and central governments shall be fostered in order to ensure more integrated approaches to developing and managing water resources. To address these challenges, the Water-DROP project "WATER Development Resources Opportunity Policies for the water management in semi-arid areas" (water-drop.enea.it) has been designed on the assumption that the main issues to be tackled for efficient water management concern technical-methodological, capacity-building, and normative aspects. Water-DROP partnership operating for the promotion of cultural dialogue and local governance in the framework of ENPI CBC MED programme, involves countries of the Mediterranean basin such as Italy, Cyprus, Jordan, Lebanon, Palestine, Spain.

The international benchmarking network for water and sanitation utilities

IBNET is an initiative to encourage water and sanitation utilities to compile and share a set of core cost and performance indicators, and thus meet the needs of the various stakeholders. The objective of this international benchmarking network is to support access to comparative information that will help to promote best practice among water supply and sanitation providers worldwide and eventually will provide consumers with access to high quality, and affordable water supply and sanitation services. IBNET sets forth a common set of [data definitions](#); a minimum set of core [indicators](#), and provides [software](#) to allow easy data collection and calculation of the indicators, while it also provides resources to analyze data and present results. Sharing of results is critical to successful performance comparisons, i.e. benchmarking. More information is available [here](#).

The role of public-public partnerships in reducing water-related risks

The recently adopted Sustainable Development Goals (SDGs) confirmed multi-stakeholder partnerships as a fundamental tool in mobilizing and sharing knowledge, expertise, technology and financial resources to support SDGs achievement worldwide. A reflection made by two researchers of ICCG (International Center for Climate Governance) explores the scope and characteristics of a particular kind of decentralized, voluntary multi-stakeholder partnership, drawing the attention to Public – Public Partnerships (PuPs), i.e. those cooperative initiatives tying public authorities and agencies and/or public authorities and civil society. In many respects PuPs became known as a counterpart of public – private partnerships (PPPs) and quickly spread in public water and health service provision developing their potential for disaster risk reduction, with special emphasis on droughts and coastal floods.

Public Authorities investigate innovation procurement in the water sector

Four public authorities from Finland and Italy have set out on a journey to explore the opportunities of (joint and collaborative) innovation procurement to address some of the procurement challenges they have been grappling with in the past few years after having been selected within the frame of the Water PiPP Call of Interest on the 'Assistance for Preparing Innovation Procurement in the Water Sector'. This FP 7 project is focused on water public innovation procurement policies. More information is available [here](#).

Water Deeply

An innovative news site is dedicated to water sustainability and the California drought. This portal gives the drought more background and context than people often get in a news story and tackles the deep-seated problems contributing to the California drought as well as how they relate to the rest of the world's water scarcity issues. [To know more](#)

Antibiotic drugs and antibiotic-resistant bacteria in sewerage systems

The Irish EPA has published the report "[Hospital effluent: impact on the microbial environment and risk to human health](#)" which demonstrates that there are high levels of antibiotic-resistant E.coli in urban wastewater, and dealing with hospital effluent in isolation will not substantially address the overall issue of antibiotic-resistant bacteria in urban wastewater. The report identifies that, at best, wastewater treatment plants (WWTPs) do not remove or inactivate all antibiotic-resistant bacteria and that further research is required to understand the processes underlying this and identify risk management strategies. This research also reveals that some antibiotics may persist in the environment for extended periods after discharge and that the predicted levels of antibiotics in the environment are such that they may plausibly contribute to the development and maintenance of antibiotic resistance.

OPPORTUNITIES

BioE SHO Panel-Call for expression of interest



The Call for expression of interest for the selection of stakeholders as members of the European Bioeconomy Panel is open till 5 February 2016. The Bioeconomy Panel is composed of up to 30 members with experience from different bioeconomy related areas who are nominated by the European Commission for a mandate of up to 4 years following its Communication "Innovating for Sustainable Growth: A Bioeconomy for Europe" (COM(2012) 60 final). More information is provided [here](#).

EU-China research and innovation cooperation

The Chinese Ministry of Science and Technology (MOST) has published the first call for proposals under the EU-China Co-Funding Mechanisms (CFM) for Research and Innovation with a budget of 200 million RMB or 28 million euro for 2016 to support mainland China-based research and innovation organisations participating in joint EU-China projects under Horizon 2020. Two deadlines for presenting proposals are foreseen for 2016: 31 March and 31 July 2016. Among the Horizon 2020 topics flagged for targeted cooperation with China the call SC 5-11-2016 "Supporting international cooperation activities on water" reserved to the Water JPI is included. For more information see [here](#).

Call for proposals in the field of civil protection

The objective of this call, with deadline on 14 March 2016, is to select projects which support and complement the efforts of participating states and eligible third countries in prevention and preparedness in civil protection and marine pollution.

[To know more](#)



UPCOMING EVENTS



EP session on water in the circular economy

The chair of the European Parliament Water Group, Esther de Lange, will host a plenary session on the theme 'Water in the Circular Economy' on 27 January 2016. After the adoption of the new Circular economy package by the European Commission on 2 December 2015, the EP Water Group will discuss the role of water in this new action plan, the aim of which is to stimulate Europe's transition towards a circular economy. Registration to the meeting is available [here](#).



World Water_Tech Investment summit

This international conference will be held in London on 22-24 February 2016 and focus on international cooperation to enhance future water security. [To know more](#)

CALL FOR PAPERS



World Water Week 2016

The theme of this annual international event to be held in Stockholm next August will be "Water for sustainable growth". A call for abstracts and proposals for side events is now open.

[To know more](#)



39th WEDC International conference

The event of the Water, Engineering and Development Centre will take place in Kumasi, Ghana on 11-15 July 2016. A call for papers on the theme "Ensuring availability and sustainable management of water and sanitation for all" has been launched to prepare the conference.

[To know more](#)