

Sören Bauer of EIP Water details the activities of the European innovation partnership and explores obstacles to further RDI and the action taken to overcome such barriers

Innovating water

Innovation is central to economic growth and business competitiveness, as well as being at the heart of the EU's Europe 2020 strategy. Since its launch in 2012, the European Innovation Partnership on Water (EIP Water) has worked to address European and global water challenges and to support implementation of the EU Water Framework Directive (WFD). An initiative within the European Union's 2020 Innovation Union, EIP Water's three key objectives are to facilitate development of innovative solutions to deal with European water challenges; to create demand and market opportunities for these innovations; and to support implementation of European water policy through innovative approaches.

"Innovation and water cannot be separated," says Marianne Wenning, director for 'Quality of Life, Water & Air' in DG Environment of the European Commission. "Improving water efficiency in light of increasing scarcity will require innovative solutions, as will emerging pollutants, reducing leakage and water reuse. Water governance will also be positively influenced by innovative methods and approaches. Water innovation contributes to tackling the societal challenges of the future while at the same time creating sustainable growth and employment."

EIP Water has eight priority areas selected to address challenges and opportunities in the water sector and promote innovation-driven actions that will deliver the highest impact. They include five thematic priorities, namely water reuse and recycling, water and wastewater treatment and recovery of resources, the water-energy nexus, flood and drought risk management, and ecosystem services. There are also three cross-

cutting priorities: water governance, decision support systems and monitoring, and financing for innovation.

Through its Online Marketplace, EIP Water also matches up stakeholders across the entire innovation chain, with a particular focus on linking innovators with potential users. It promotes collaboration among the public and private sectors, non-governmental organisations and the general public to promote change and innovation in the water sector. It accomplishes this primarily through its 25 action groups (AG) and other working groups.

Action groups

At the core of EIP Water are its 25 voluntary multistakeholder AGs, which are the central element of EIP Water's implementation phase. The current AG partners develop, test, scale up, disseminate and stimulate the uptake of innovations by the market and society for major water-related challenges. An EIP Water action group is formalised via calls for expression of commitment and a short evaluation phase of proposals considering EIP Water's eight priority areas. EIP Water's third call for action groups closed earlier this year, and 13 proposals are currently being evaluated. The existing AGs are composed of a large variety of research institutions, SMEs, public institutions and other stakeholders.

The City Blueprint AG, for instance, facilitates sharing of best practices in urban water management and governance between cities in Europe and beyond, organising a bottom-up response to overcome barriers in the water-related governance systems. City Blueprints engages citizens in water-related questions and provides them with insights into how their city compares with other leading cities from around the globe; it also applies a transparent assessment of the sustainability of water management in a city.

EIP Water supports the implementation of the EU Water Framework Directive, which aims to ensure the 'good status' of all water bodies by 2015



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The AG has published its 'proof of concept', followed by various interim reports on urban water management in 11 cities. A City Blueprint atlas covering a representative sample of the more than 40 cities that have been assessed so far is currently under preparation in co-operation with the Joint Research Centre. A major review of the City Blueprint assessment framework will also be finalised based on feedback from municipalities and regions. These have expressed the need to include solid waste collection and recycling in the assessment framework, as solid waste may end up in surface waters. City Blueprints considers that sharing, disseminating and applying best practices in urban water cycle services will be of great benefit to municipalities and regions in Europe and places special emphasis on increased involvement of eastern European municipalities.

Other AGs

The European Benchmark Co-operation Foundation AG addresses benchmarking as a crucial element in the water sector to boost innovation by increasing transparency. It works as a catalyst for higher performance standards, not only in incremental efficiency

One of the thematic priorities of EIP Water is to address and manage the risk of flooding

gains but also by introducing breakthrough solutions. The AG has been formalised as a legal entity and has developed a new ICT infrastructure for its benchmarking method. A significant launching customer group has committed to initiating a large rollout in the Danube region in eastern Europe.

The Renewable Energy Desalination AG operates at the water-energy nexus by combining renewable energy as a power source with desalination technology for clean water production. It addresses three core challenges: systems optimisation of the technical combination, investment and operational costs optimisation, and regulatory challenges between the energy and water domains. Three AG partners have recently installed a prototype re-desalination plant, and another pilot plant for solar membrane distillation was installed to analyse the long term operations in atypical circumstances. Collaboration with a European electricity company has been initiated to analyse various new technologies, and commercial prototypes of membrane distillations have been evaluated, in addition to on-going research and development.

The WaterReg AG works towards new governance models for water management by developing various concrete activities for capacity building, networking and dialogue mechanisms on key topics such as tariffs, benchmarking, infrastructure maintenance and asset management. Beginning with a European multisector conference on water, energy, transport and communication regulation, this was followed by contributions to the European Commission and policy centres regarding guidelines. The AG has published a manifesto to help shape the Commission's regulatory agenda.



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Innovation bottlenecks

In 2013, EIP Water launched a taskforce to assess the non-technical challenges to achieving the objectives for each of its priority areas. Gernot Klotz, executive director of research and innovation at the European Chemical Industry Council and member of the taskforce, summarised the main bottlenecks and barriers to innovation during a panel discussion at the second annual EIP Water conference in November 2014 in Barcelona, Spain.

Speaking to delegates, Klotz said: “The first issue is financial instruments. There are insufficient financial flows into the water sector, inadequate cost recovery and risk aversion, a lack of resources for SMEs to respond to market opportunities and access to sources of funding, and a lack of combined funding models.

“A second issue is public procurement. Public procurement has great potential to stimulate innovation in the value chain, but procurement rules need to be interpreted and adapted in a way that promotes innovation.

“Another area for consideration is public private (PPP) or public-public (PuP) partnerships. The water market is fragmented, there is low co-operation among the actors in the water-related value chain, and water management at the national, regional or local level does not facilitate the implementation of innovative solutions. Partnership approaches that ensure co-operation and finance, like PPPs, need to be explored.

“Next is regulation. Although they can be restrictive, regulations are essential to innovation in the water sector. They should be evaluated based on their effects on placing innovation in the global water market.

“The final issue is showcases and demonstration sites. There are good examples of co-operation in a variety of areas that should be identified, disseminated, and developed into regional showcases.”

Innovative finance

The European Investment Bank (EIB) serves as the ‘EU water bank’ and is possibly the largest lender to the water sector, with over €18bn in water sector loans in 2009-2013; 99% of that funding goes to water projects in the EU. On average, EIB loans cover 30% of the investment cost of water projects, meaning that the bank has supported investment in the sector of almost €55bn in the last five years.

EIP Water’s City Blueprints Action Group includes the participation of a number of cities across Europe, including the Swedish capital Stockholm

The EIB has some flexibility in terms of how it provides funding: its financing instruments go beyond loans, and the bank can work directly with either public or private entities, or through intermediaries. It can blend its funding with grants from the European Commission or other sources, and it provides advisory services to its clients on both technical and financial matters.

According to the EIB’s Monica Scatista, deputy economic advisor in the Water and Waste Management Division, one obstacle to accessing finance for innovation in the water sector is the maturity of the domain. She says that it is consequently “difficult to find solutions that adapt existing systems and existing technologies”. Furthermore, particularly in western Europe: “The flip side of this is the large number of opportunities for renovation of existing infrastructure. In terms of timing, it would be a good time to start thinking of another good solution, not only in terms of technology but in terms of financial structures, as well.”

Market fragmentation also makes it difficult for innovative technology suppliers to provide a solution and increase scale. Scatista comments: “A company has to deal with procurement processes, public procurement rules, and fragmentation of demand ... the uptake of innovation can often be relatively slow.” New regulations can encourage innovation, but regulation of the sector also means that the “potential for failure can have grave consequences, further slowing the adoption of innovative solutions”.

There is also a growing social component that makes water different from other sectors. The EIB advisor adds: “The lack of incentives for water users, specifically for innovations that are linked with increased efficiency in the use of water resources, is also due to the fact that the price of water is often at a level that does not include scarcity values.” Water-intensive industries are already aware of scarcity values and increasingly include them in their risk assessments.

Private sector role

In November 2014, Scatista addressed delegates at the EIP Water conference and offered further insight into business thinking, providing additional funding for water stewardship and improving the management of water resources.

“Companies are increasingly looking beyond the immediate boundaries of their plants; they are looking much more broadly at their value chain and at the risks that are water-related for their inputs as well as their outputs. By taking the systemic view, in terms of water stewardship ... [they] move beyond the plant to look at ways in which the whole activity is impacted, to find solutions that are sometimes not even technical or [related to] physical infrastructure but have to do with better planning or better partnering with other entities, suppliers or others. It could or should be possible to harness the interest of water-intensive private businesses in identifying new financing solutions.”

Based on these reflections, Scatasta has indicated that water professionals need to improve their capacity to “speak to the voter and consumer, to create an understanding for the value of water, voters’ demand for improved water resources management, consumers’ demand for goods and services with a lower water footprint, and therefore ultimately demand for innovation”.

Prompted by EIP Water’s work identifying barriers to financing for innovation, the EIB has commissioned a report on the issue from the international consultancy Ernst & Young, as Scatasta highlighted.

“One of the first points that emerged when discussing the options put on the table by the Ernst & Young report was that, in fact, financial instruments for innovation already exist, and that maybe one of the first barriers that needs to be torn down is the barrier related to awareness.”

Water in Horizon 2020

Water and innovation is a focus area of Horizon 2020 for 2014 and 2015. It has been included under the ‘Climate action, environment,

The second annual EIP Water conference took place in November 2014 in Barcelona, Spain



EU Water Framework Directive

Adopted in 2000, the EU WFD is the operational tool that sets the EU’s objectives for water protection for the future. It commits EU member states to achieve a ‘good status’ for all water bodies (surface water bodies, groundwater and transitional and coastal waters) by 2015. This ‘good status’ has qualitative and quantitative aspects related to biological quality, physical-chemical quality, and chemical quality, including concentrations of specific water pollutants as well as hydrological regime and morphological conditions.

The WFD also requires EU member states to establish river basin districts, each with a river basin management plan that is prepared, implemented and reviewed every six years. The plans include assessment of the impacts of river basin districts, environmental monitoring, establishment of environmental objectives, and designing and implementing programmes needed to achieve those objectives.

With the WFD 2015 deadline looming, the European Water Alliance, a coalition of European water-related umbrella organisations, has asked the new European Commission, led by Jean-Claude Juncker, to prioritise water because of its importance to the economy, environment and quality of life in the EU.

resource efficiency and raw materials’ Societal Challenge, with direct links to EIP Water. For the first time, the European Commission has indicated funding priorities over two years, providing researchers and businesses with more certainty than ever before on the direction of EU research policy. A number of calls have already been launched, and some demonstration projects have already become operational.

In the Horizon 2020 calls, the €21m sub-call ‘Water Innovation: Boosting its value for Europe’ offers a number of open research topics that may help us to tackle the current and future challenges in relation to water. Divided between ‘one stage’ and ‘two stage’, they include the development of water supply and sanitation technology, systems and tools and/or methodologies, and water management solutions for the agricultural sector, amongst others.

During 2015, more projects will start from previous calls and further calls will open. In addition, it is currently under discussion to maintain water as a focus area for the 2016-2017 programming period.

HORIZON 2020



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