

Matching Demand to Supply – Water Challenges of four EU Member States



Concepcion Marcuello, General Directorate for Water, Ministry for Agriculture, Food and the Environment of Spain.

Spain has been innovating for years. In the 1920s, the country formed the world's first water basin management authority. Its main water management goal is to meet demand by guaranteeing a good quality and quantity of water and ecosystem sustainability nationwide. This is accomplished mainly by making use of river basin plans.

The country has adopted technical innovations including use of Earth Observation systems to provide detailed information on river basins and regulate agricultural water use, as well as innovations aimed at modernizing irrigated agricultural areas such as drip irrigation systems and farmer advisory services. It has also developed early warning systems to control flood damage.

Now, to meet requirements of the WFD, Spain needs more innovative solutions to address drought. The impacts of drought are amplified

given the fact that the country already faces water scarcity. It needs solutions that will provide as much data as possible, secure water infrastructure, reinforce alternative water sources, make wider use of economic policy instruments, and move the country toward a hydro-economic water accounting system.

Marcuello highlighted the need for *“methods for using reliable and available bulk data and converting them into useful information; innovative practices for operation and management of water and sediments in reservoirs; [and] joint management of traditional and alternative water resources with a low energy requirement.”*

“Innovative practices can also be explored in the processes of participation and in the role of the socioeconomics have in both the decision-making process” and the way information is provided to other institutions and organizations and the wider public, she said.



Jan Busstra, Head of Unit, Water Quality Division, Ministry of Infrastructure and Environment of the Netherlands: The Netherlands is the world's second-largest exporter of agricultural products, and its biggest water challenges are related to agricultural water management.

The country is still struggling to meet WFD requirements due to the high density of waterways and high pressure from agriculture. It also needs to strike a “sophisticated” balance between the “carrot and stick” for agricultural water regulations, and to be able to make a better business case for innovation to farmers. This last challenge he called $E=mc^2$ – new measures for farmers, creating urgency for implementation by communication, making sure farmer see the effects of efforts.

“Financing for innovation is certainly extremely important to achieve optimal coordination among government, knowledge institutes and the private sector,” according to Busstra.

“It also stimulates development of knowledge and innovation, in synergy, where knowledge gaps are experienced. Creating stimulating financial incentives will accelerate knowledge development, partnerships and technical solutions. Concepts like ‘Building with Nature’ support an adaptive approach, creating a more natural and robust system. The ecosystem approach, including ecosystem services, could trigger new approaches and innovations and delay the need for expensive infrastructure.”, explains Busstra.

“Global water problems can only be addressed if the government allows an increasing role of the private sector. This calls for more creativity in shifting responsibilities from the government towards the private sector. Using this approach, there is a more competitive market, resulting in lower costs, more creativity and boosting innovation ... By changing the ‘rules of the game,’ a new dynamic will develop, stimulating innovation, acceleration and more cost-effective solutions.”



Darja Stanic Racman, Secretary in the Water Department, Government of the Republic of Slovenia: Slovenia's main issue with regard to the WFD is water monitoring, from the perspective of river basin authorities.

“Even though Slovenia is relatively rich in water, we are far from reaching the Water Directive goals.” The main challenges in Slovenia are “hydromorphological pressure and agriculture [in terms of] pollution ... On top of that, [we have] capacity problems ... It is really difficult to manage all these big challenges with sub-optimal structure.”

“One of the issues that water managers are struggling with is the limited resources to set up an optimal monitoring system,” she explained. She was looking for solutions that address the need for monitoring as a vital element of water management; that provide monitoring data whose precision managers can trust; that address technical challenges to monitoring, such as methodology, equipment, cost reduction, and efficiency; and that help with data management.

Slovenia has to deal with multiple stressors with regard to water management. “Extreme flood events have really increased over the past five years now. That amounts to about 200-250 million euros in damage per year, which is a relatively big number for the GDP of Slovenia.”

At the same time – thanks to climate change – “for six of the last ten years, we have experienced agricultural drought.”



Sonia Phippard, Director of Water, Flood Risk Management for the United Kingdom Department of Food and Rural Affairs: Wastewater “has some quite big challenges, and it does tend to be the ‘Cinderella’ of the water sector. We are very stuck in old technology, and in many cases old mentality, about wastewater ... That does seem to be something where we could usefully do a bit of thinking.”

She was looking for solutions to address difficult-to-treat chemical micropollutants; sewage utilities' dependence on old technology; a need for affordable, energy-efficient, sewage treatment methods that minimize hazardous waste streams and treat micropollutants; and, potentially, the need for treatment systems to address the threat of antibiotic resistance due to pharmaceutical residue in wastewater.

On the last point, *“I think it is a bigger issue than simply one for innovation,”* Phippard noted. *“Fundamentally, it’s probably a joined up research issue, which Europe might want to step up to, because there is some evidence and certainly some concern that wastewater may be contributing to microbial resistance.”*

If this is the case, *“then we need to understand the problem, we need to understand why, and then be able to look at where the innovative solutions are to resolve it, fast, given the wider health-related concerns about microbial resistance.”*

Technological innovations must also be accompanied by management and behavioral changes. *“I think one of the absolutely key bits of learning about innovation, and it is what separates it from research”* is that *“innovation has got to make that link to real people, and allow greater commercial success or change behaviors, or whatever you’re trying to do.”*

An area where she sees unmet demand for innovation is ecosystem services. *“There’s a lot of interconnectedness, and there’s no point in solving our water problems at the expense of biodiversity or air quality or economic success or anything else,”* she said.

“ There is a gap between plans or ideas, and doing something. ”

Harry van Dorenmalen, IBM Europe



The Solutions – how Action Groups could help address the challenges

Innovations ultimately are only valuable if they can be implemented. Or, as Country General Manager for [IBM Netherlands](#) and Chairman of IBM Europe Harry van Dorenmalen put it: *“There is a gap between plans or ideas, and doing something.”*

“That is the EIP motivation,” he added. When it comes to implementing change *“do not hide behind perceived obstacles. The worst thing to do is to wait.”* Instead, *“keep going and get better.”*

Van Dorenmalen acted as session chair and *“auctioneer”* at the conference’s Water Auction, which gave EIP Water’s Action Groups an opportunity to showcase the tools and mechanisms they have developed to promote innovations in water policies and technologies.

At the *“auction,”* various Action Groups *“bid”* their solutions to the problems faced by four EU member countries – Spain, the Netherlands, Slovenia and the United Kingdom – in implementing the WFD.

Spain: The EIP Action Group *“bidders”* came up with solutions that addressed Spain’s water challenges from two different angles. On the water demand side, Marcuello saw a good fit in the solution provided by Action Group SPADIS – Smart Prices and Insurance, because of the range of economic incentives it offered. On the supply side, Action Group RE-Desalination offered a mixture of water supply options for drinking water in cities, including desalination using renewable energy and reclamation of low quality water sources, such as brackish water and wastewater, for irrigation.

Netherlands: There was more than one winner from among the *“bids”* here as well. As a short-term solution, Busstra saw promise in a proposal from the Action Group InduRe – Industrial Water Re-use and Recycling, which proposed controlled release of recovered nutrients to prevent pollution from agricultural run-off. For a longer-term solution, he selected a proposal from Action Group WIRE – Water & Irrigated agriculture Resilient Europe that would integrate renewable energy technology in horticultural greenhouses, to close the water cycle.

Slovenia: The Action Group City Blueprints’ proposal was best-suited to address Slovenia’s water challenges *“because it presents a holistic view with technology and stakeholders,”* said Stanic Racman.

The group proposed a model that gives data on individual municipalities to provide clear objectives for policymakers and other stakeholders.

“We need people to move from specific problems to holistic solutions,” Stavic Racman said. *“This is the way we need water managers to connect the specific dots, and data, and stakeholders, and goals, and measures, and money. It’s a negotiating process ... it’s also the tools.”*

United Kingdom: The innovation that best matched the wastewater needs in the United Kingdom again came from Action Group InduRe – Industrial Water Re-use and Recycling. The group offered an opportunity to treat wastewater at its source, where pollutants are at their highest concentrations. In addition to being most cost-effective, this solution would *“close the cycle,”* Phippard said.

