AQUA: Europe united to strengthen water resilience against the climate crisis

The project, based on digital twins, leverages pilot experiences in Italy, Slovenia, Greece, Albania, Montenegro and Serbia to strengthen the resilience of water systems against drought and extreme events.

AQUA project progress

Bari, XX August 2025 – The international AQUA project, aimed at improving the resilience of water systems through the development and enhancement of an integrated suite of tools (monitoring, modeling, decision support), which form the backbone of what are now commonly referred to as digital twins. In the face of increasingly pressing climate change challenges, the project continues its path within a mixed partnership that brings together water and environmental utilities with research institutions and local government bodies from Italy, Slovenia, Greece, Albania and Serbia. The goal of AQUA, co-financed by the European Union through the Interreg IPA ADRION 2021–2027 Programme, is to develop advanced digital tools and a shared roadmap over two years for increasingly sustainable water resource management. In this framework, the heart of the project is then expected to address specific needs across different pilot areas. The added value of the AQUA Project is to optimize and strengthen the links between these components (needs and digital tools) including for instance: monitoring to initialize modeling; leveraging IoT-based sensors to support local and regional decision-makers based on scenario narratives. The project will help each partners to build specific components to implement a future application of a digital twin—true “virtual replicas” of water systems—platforms capable of merging real-world data (hydrological, climatic and environmental) with predictive models. These tools can monitor water flows and provide dynamic simulations, supporting more effective and timely strategic decisions. A true revolution that transforms water management from reactive to predictive.

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ENHANCING WATER MANAGEMENT FOR CLIMATE CHANGE RESILIENCE IN ADRIATIC-IONIAN AREA

Project budget in EUR

1.671.999,60

INTERREG funding in EUR

1.421.199,65

Project duration

36 months

In the first months of work, project partners developed an integrated approach combining top-down contributions (institutions, policies, European best practices) with bottom-up inputs (local challenges analysis and community engagement). The main activities carried out included a desk review of the best European experiences on digital twins, with a special focus on the countries directly involved in the project. In parallel, a review of scientific articles and international projects was conducted to outline the state of the art of digital technologies applied to water management These activities were complemented by the collection of needs and criticalities identified in the national pilot sites. The joint work of the partners also led to the drafting of a transnational action plan, which represents the first shared roadmap for resilient water management in the ADRION area.

In the next phases, the project will support each partners to develop specific tools based on the specific issues encountered, within the Pilot area identified where the digital twin framework could work well.

At the same time, meetings with local stakeholders will continue to ensure that the solutions adopted are in line with community needs and shared with the competent authorities.

Pilot area AND WP1 ACTIVITIES description

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Bolje Sestre Spring – The Heart of Montenegro's Water Supply!

The Bolje Sestre spring, located at the foot of Mount Garač in Montenegro, is one of the most important and abundant sources of drinking water in the region. As part of the AQUA project, this site plays a key role in the protection and sustainable management of water resources.

🔹 The spring has a capacity of up to 1,500 l/s, making it a pillar of regional water supply.

🔹 The surrounding area is designated as a sanitary protection zone to preserve water quality.

🔹 Water from the Bolje Sestre spring, the system's main source, is of such natural purity that no treatment is required except for legally mandated disinfection.

🔹 Pilot activities include monitoring water quality parameters, environmental pressures, and climate-related risks.

🌊 The Bolje Sestre spring continues to provide water that meets stringent standards for drinking water and represents a reliable, sustainable source for Montenegro's coast.
Let's protect our water sources today—for safe supply and a healthy future!

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Co-funding statement

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Disclaimer

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