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 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

As part of the European **AQUA project**, which brings together partners from the ADRION region with the aim of strengthening the resilience of water resources to climate change, new insights are emerging into the presence of “invisible” pollutants that further hinder water systems in coping with climate impacts. These pollutants include leachate and landfill gas originating from illegal dumpsites, which threaten watercourses and undermine the resilience of aquatic ecosystems.

Within this European initiative, the **City Municipality of Grocka** is channeling its expertise toward the protection and preservation of water resources through direct field activities carried out in its territory, contributing to the project’s overarching goal — safeguarding water quality and enhancing water resilience in the face of climate change.

As a direct response to these challenges, the City Municipality of Grocka has initiated activities within Work Package 1 (WP1) of the AQUA project to implement advanced field monitoring systems. These systems will enable the collection of real-time data on landfill gas emissions and leachate migration. The collected data will serve as the basis for developing predictive models that will simulate the spread of pollution under different climate scenarios, such as floods and prolonged droughts.

The ultimate outcome of these activities will be a detailed analysis of the impact of illegal dumpsites on watercourses. These standards will enable local authorities throughout the region to more efficiently identify, assess, and mitigate the risks that landfills pose to water resources, thereby directly contributing to the preservation of water quality for future generations.

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Press contacts

Co-funding statement

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