

## Abstract

MORE4WATER project aims at developing a novel technology that uses efficient real-time monitoring for improving the forecast of water availability and, consequently, the management and governance strategies of water distribution and transmission networks (WNs) and irrigation systems (ISs). The proposed technology will allow drastically reduce the impact of water drought and prepare for the next generation of WNs and ISs which must be more monitored, more controlled, more efficient, sustainable, and “smart”. The natural recipients of such innovation activities are the stakeholders. Accordingly, the MORE4WATER project derives from four concerns. The first one is that a large part of freshwater is contained in groundwater and a much smaller part in freshwater lakes, with most of the freshwater (approximately 70%) used in irrigation systems. The second concern is that approximately half of the world’s population is currently subject to severe water scarcity for at least some part of the year. The third one is that meteorological droughts (periods of persistent low precipitation) – one of the effects of climate change – exasperate deficits in the water supply. This leads to social tensions among potential users and calls upon public authorities and service operators to adopt delicate decisions concerning the allocation of resources involving both knowledge of highly complex technical data and socio-economic assessments. The fourth concern is the heterogeneity of the physical, political, and socio-economic contexts of the transboundary water resources which makes hard their management.

The strategy of the project to counter the above concerns is divided into four actions.

The first action is to tune “user-friendly” models for simulating and forecasting the water elevation in aquifers and lakes based on the combined use of global atmospheric datasets (reanalysis) and ground measurements executed by smart and distributed sensors. Such a model, called AQUILA, simulates the water table elevation of AQUifers and the level of Lakes, focusing on the key regulating mechanisms: groundwater recharge for the former, and precipitation and evaporation for the latter. At the same time, a wireless sensor network capable of acquiring local ground measurements and monitoring WNs and ISs is developed.

The second action is to define innovative criteria for managing both WNs and ISs to ensure increasing available water in the long term. Such criteria, in the framework of the digital transition of such systems, address leakage reduction, pressure control, and energy efficiency within a comprehensive methodology. In particular, attention is focused on an appropriate leakage reduction strategy – and then the refinement of more efficient technologies – which is the most environmentally-friendly and cost-effective method for acquiring “new” water resources (or better not to waste a large part of the existing freshwater!).

Within the third action, applying the model for the monitoring and timely adaptation to drought may strongly enhance the implementation of the existing legal frameworks for the management and equitable sharing of transboundary water resources, including aquifers.

The fourth action includes proactive dissemination, communication, inter-sectorial collaboration, and exploitation of the project result. Accordingly, the proposal relates to Topics 1, 2, and 3.

All the consortium partners (University of Perugia, UNIPG, in Italy, Instituto de Telecomunicações, IT in Portugal, Universidade do Vale do Itajai, UNIVALI, in Brazil, ACEGASAPSAMGA, AAA, and TUCEP in Italy) have previous experience in projects linked to MORE4WATER project. Moreover, several activities demonstrate the consolidated academic and scientific collaboration between consortium partners.



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### ► Project partners

- ACEGASAPSAMGA - ITALY
- FUNDACAO UNIVERSIDADE DO VALE DO ITAJAI - BRAZIL
- INSTITUTO DE TELECOMUNICAÇÕES - PORTUGAL
- TUCEP – TIBER UMBRIA COMETT EDUCATION PROGRAMME - ITALY

### ► Funding organisations

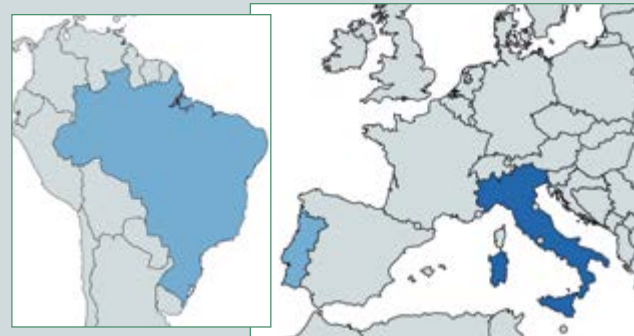
MUR (ITALY) / FAPESC (BRAZIL) / FCT (PORTUGAL)

### ► Duration

3 years

### ► Contact

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Water distribution,  
Irrigation management,  
Water-climate interactions,  
Global and transnational governance,  
international law, human rights,  
In-Situ Instruments / sensors

## KEYWORDS