A European project to improve the resilience of critical infrastructures to extreme weather events

- *The ICARIA project, co-funded by the European Commission's Horizon Europe program within the scope of the European Climate Change Adaptation Mission, will propose a modeling framework for strategic infrastructures to increase their resilience to extreme climate events.*

- *Cetaqua, Water Technology Center, is leading this initiative together with Aquatec, a company of the Agbar group. Aigües de Barcelona, the Metropolitan Area of Barcelona and 11 other partners from 5 different European countries are also participating.*

Barcelona, January 26, 2023 - In the recent years, the number of disasters caused by climate hazards has increased considerably. According to recent studies by the United Nations, between the years 2000 and 2019, more than 7,000 disasters caused by the climate crisis were recorded, affecting more than 4 billion people and causing an economic loss of nearly $3 trillion worldwide. This increase in damages is mainly due to **a significant increase in extreme weather events**, such as heat waves, droughts or floods. Looking ahead, if the increase in global temperature remains on the current trajectory and net-zero emissions targets are not met by 2050, the frequency of these catastrophes will continue to increase and around 10% of the world's economic value could be lost.

In this context, **ICARIA**, a European project that aims to **increase knowledge of the impacts of natural disasters on strategic infrastructures** in different sectors such as water, energy and transport, has recently been launched. This initiative also seeks to understand how these events could affect the life-cycle costs of these infrastructures in the coming decades and to ensure that investments are made in adaptation measures to cope with these changes.

Specifically, ICARIA will propose a comprehensive framework for climate resilience and assessment of economic and social impacts. This includes the **development and validation of state-of-the-art models capable of simulating risks arising from extreme climate events**, as well as the analysis of related climate hazards. The impact assessment will focus on critical and vulnerable assets. On the other hand, cascading effects will focus on strategic services and public and private infrastructures related to the water, transport, energy, housing and environment sectors.

ICARIA will test its solutions in Spain, Greece and Austria

To carry out the research, ICARIA will work on **three case studies across Europe**. Two of them, the Barcelona Metropolitan Area in **Spain** and the South Aegean Archipelago in **Greece**, are located in coastal areas of the Mediterranean, considered a hotspot for receiving more severe extreme weather impacts than the global average and for concentrating more than half of the continent's population Salzburg, the third region, is located in **Austria**, an area heavily affected by the climate crisis, with melting glaciers and heat waves directly impacting assets related to energy production and other strategic sectors.

The project will also **assess the replicability of the proposed solutions**, first among the different case studies and then in five other regions already selected: the Vega Baja region in the Valencian Community in Spain; the South Aegean region and Crete in Greece; the Campania region and the Metropolitan Area of Naples in Italy and the region of Upper Austria. At the end of

the project, **the territories analyzed will have regional-scale adaptation scenarios with climate and socioeconomic projections** to understand the short and long-term impact of the measures they take.

15 entities with experience in the field of research in Europe will collaborate in this initiative

ICARIA is part of the European Commission's **Horizon Europe** funding program and its consortium members have extensive experience in European research projects in the field of urban resilience and critical infrastructure management. Under the leadership of **Cetaqua, Water Technology Center**, and **Aquatec**, a company of the **Agbar** group, the project consortium is formed by the companies **Aigües de Barcelona**, **Draxis Environmental** of Greece, and **Verbund** of Austria; the **Metropolitan Area of Barcelona** and the **South Aegean Region** of Greece as public entities; the **Foundation for Climate Research (FIC)** and the **Catalonia Institute for Energy Research (IREC)**, Spanish research centers, the **Demokritos National Center for Scientific Research** of Greece, the **Centre for Research and Technology Hellas - Information Technologies Institute** of Greece, the **National Laboratory of Civil Engineering of Portugal**, and the **Austrian Institute of Technology**. From academia, the **University of Naples Federico II** and the **University of Exeter** in England are participating.

ICARIA follows in the footsteps of previous initiatives such as **RESCCUE**, a European research project led by Aquatec and completed in 2020. Unlike its predecessor, ICARIA focuses more specifically on modeling and assessing climate impacts on critical infrastructure and their cascading effects on a regional scale, including simultaneous climate hazards such as the occurrence of rainfall and coastal flooding events at the same time or droughts and heat waves coupled with wildfires.

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