## Researcher Infobox

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# APPLYING PARTICIPATORY SCIENCE IN MONITORING THE RIA FORMOSA

**Cristina Veiga-Pires** works at the University of Algarve's Centre for Marine and Environmental Research (CIMA) and coordinates the **TOSCI | LOVRia** project, which aims to create a Ria Formosa Virtual Observation Laboratory for the purpose of science tourism.

This project is being carried out in partnership with two Algarve-based digital technology companies and consists of monitoring the Ria Formosa environment with a particular focus on the landscape, sediment accumulation or erosion, vegetation cover and distribution of plastic waste. The intention is that the population at large participate in this environmental monitoring, therefore harnessing the interest and curiosity of the people who pass through the Ria as a basis for data collection. The project thus encompasses three pillars of regional development: research, technological development and tourism.

***Knowing and understanding the way in which this system evolves is of paramount importance to ensuring the sustainable development of this ecosystem, which provides services that include provision (through fishing and nurseries), regulation (such as seagrass capturing carbon dioxide), support (as a nursery for many marine species) and leisure (with tourism, or water sports).***

"Such a vast, diverse and dynamic environment has to be monitored regularly and simultaneously, in different locations, in order to capture all temporal and spatial scales," says the researcher. "The scientific teams do not currently have the physical or monetary capacity necessary to do this. Under normal conditions, however, the Ria Formosa welcomes thousands of visitors on a daily basis, who move through its ecosystem either by boat, car or on foot, covering every nook and cranny, at all times of the day and night," explains Cristina Veiga-Pires. "If these people start to collect data that can be processed by the research teams, we will have access to suitable monitoring data to study the evolution of this environment, using participatory science, citizen science, or science tourism," she adds.

This project therefore aims to develop the digital technology necessary for citizens to participate by contributing a simple photograph.

***The internet of things and artificial intelligence are two of the methodologies used to process photos, pinpointing when and where they were taken by automatically recognising the project's targeted plants or the presence of macroplastics in the environment and comparing the information gathered at different times or in other locations.***

Finally, collecting and processing all the information gathered in a single visually appealing digital environment that makes use of virtual reality, for example, will provide participating citizens and tourists with a global view of the results achieved.

In contributing to improving the knowledge and understanding of the Ria Formosa system, this project works towards the targets established by several Sustainable Development Goals, specifically combatting climate change by allowing for the evolution of ecosystems in various environmental conditions to be evaluated and, consequently, proposing possible adaptation measures. It also contributes to fostering innovation, conserving and using marine environments sustainably, and preventing and reducing plastic waste pollution.