



# LIFE PHOENIX PROJECT



With the contribution of the  
European Union LIFE programme LIFE19 ENV/ES/000278

## Innovative cost-effective multibarrier treatments for reusing water for agricultural irrigation

# Phoenix

### Project description

The LIFE PHOENIX project's main objective is to obtain reclaimed water from the secondary effluent of a treatment plant, while eliminating microplastics (MPs) and contaminants of emerging concern (CECs). The project anticipates the new European Directive 2020/741 aiming to meet the new requirements that it establishes, which are more severe than the current national regulations

The general objectives of the project are the following:

- Obtain reclaimed water that meets the strictest requirements of the new European regulations.
- Minimize the possible environmental and health effects of the use of reclaimed water by reducing toxics, emerging pollutants, antibiotic-resistant bacteria and MPs.
- Develop a decision support system to ensure the adaptability of tertiary treatment to each specific case.

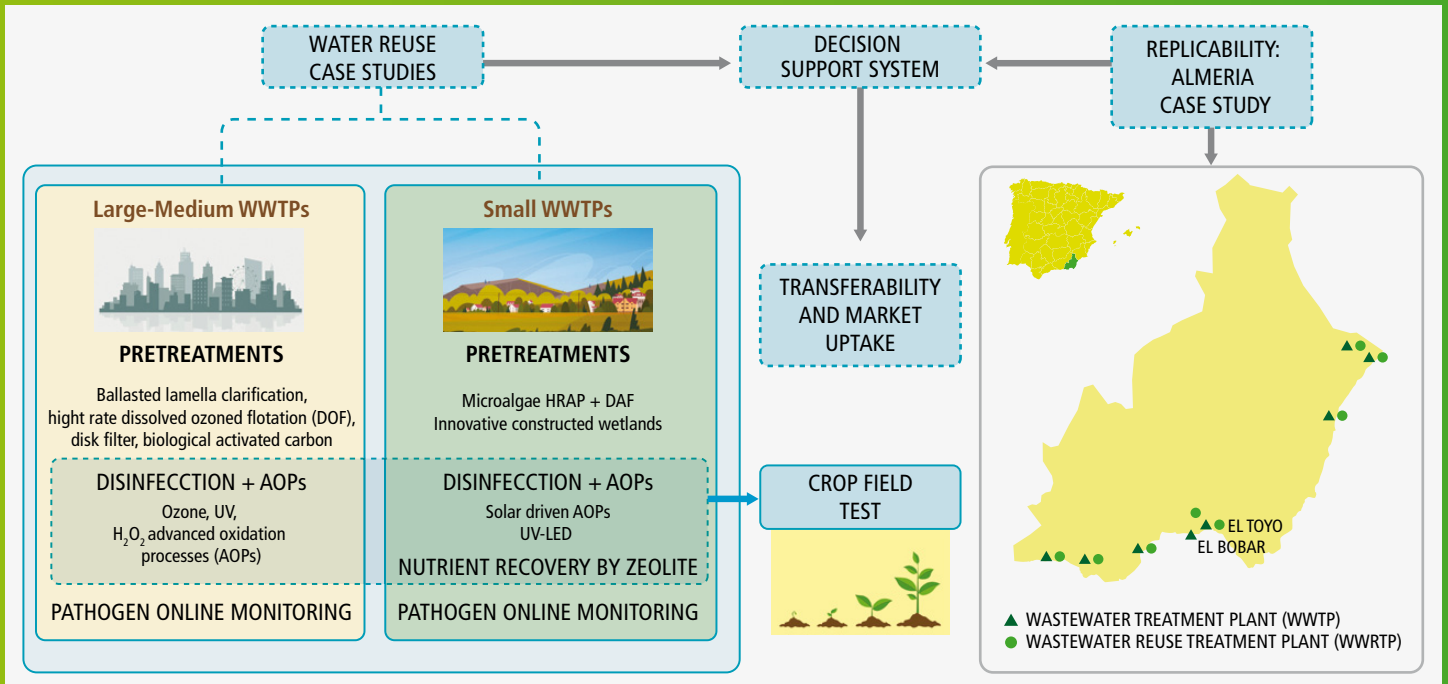
- Ensure water quality through online monitoring of certain parameters as pathogens.
- Recover more than 90% of the nutrients from the wastewater.
- Test reclaimed water and nutrients in field studies.
- Reduce the costs of tertiary treatment to € 0.10-0.15 / m<sup>3</sup>.
- Study compliance with the new European Directive in existing tertiary plants, and, if necessary, propose upgrading solutions.
- Promote the replication, transferability and market launch of technologies.
- Assessment of environmental, social and economic impacts.
- Dissemination of results.



**Location:** El Toyo WWTP (Almeria), Almonte WWTP (Huelva),  
Fonte Quentes WWTP (Abrantes, Portugal), Talavera de la Reina WWTP (Toledo)

**Duration:** From the 1<sup>st</sup> of September 2020 to the 29<sup>th</sup> of February 2024

**Total Budget:** 3,390,078 € **Aqualia:** 1,199,523 €



To achieve the proposed objectives, two flexible pilot plants (FPPs) will be created with the PLUG & PLAY concept, suitable for direct transport and operation. Each of the FPPs includes technologies adapted to the needs of medium-large and small populations, respectively, and will be tested in different locations. In this way, the viability of the PHOENIX concept will be studied for all types of scenarios.

Together, more than 10 different technologies will be tested throughout the life of the project, with advanced disinfection and oxidation processes as well as pretreatments. The performance of the different possible combinations will be evaluated, to optimize tertiary

treatments. Technologies can be classified according to the stage of tertiary treatment and the population size for which they have been designed:

- Ballasted lamella decantation
- High Rate Oxygen/ozone flotation
- Continuous sand filtration
- Disk filters
- Biological Activated Carbon
- Ultrafiltration
- High rate algae pond + dissolved air flotation
- Constructed wetlands
- Solar & LED Photo-Fenton
- Ozone/UV disinfection
- UV AOP



### PROJECT PARTICIPANS

- Aqualia (leader)
- Águas de Portugal (AdP)
- CETIM
- Confederación Hidrográfica del Guadalquivir
- Diputación Provincial de Almería
- Newland
- CIESOL-UAL
- microLAN BV



### DETAILS OF FUNDING

- Funding:** LIFE Environment and Resource Efficiency.
- Organism:** European Commission (EC).
- Project:** LIFE19/ENV/ES/000278.
- Grant:** Subsidy of 55% of budget.

*This publication only reflects the author's view. The European Commission is not responsible for any use that may be made of the information it contains.*

**Funding received**  
**Total:** 1,855,113 €  
**Aqualia:** 659,737 €