Pollutant Photo-NF remediation of Agro-Water
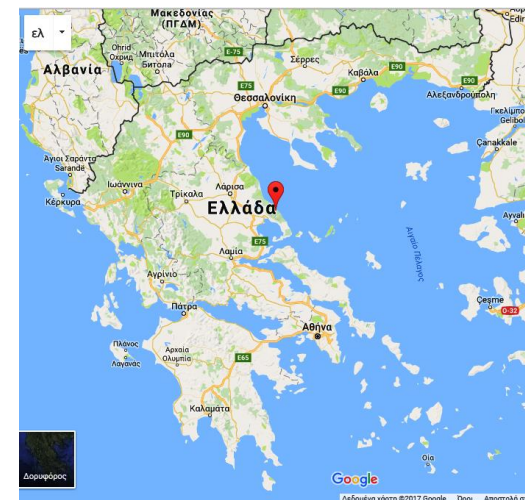
« LIFE PureAgroH2O »

LIFE17 ENV/GR/000387 LIFE PureAgroH2O

PROJECT LOCATION: Zagora (Greece)
Almeria (Spain)

BUDGET INFO:

Total amount: 2,163,728€

% EC Co-funding: 1,290,177€

DURATION: Start: 02/07/2018 - **Expected End Date:** 31/12/2024

PROJECT'S IMPLEMENTORS:

Coordinating Beneficiary: Benaki Phytopathological Institute (BPI)

Associated Beneficiaries:

❖ Institute of Nanoscience and Nanotechnology «Demokritos» of the National Center for Sciencific Research (Greece)

❖ University of Almería (CIESOL)

❖ ZAGORIN-Agricultural Cooperative of Zagora-Pilion

❖ Cítricos del Andarax SA. Gador (Almería)

THE AGRO-FOOD INDUSTRY

❖ **Main manufacturing industry in Europe** (14% of total turnover).

❖ Comprised of more than **30,000 companies** within the European Union.

❖ Most processing operations in agro-industry **require the use of water**.

❖ The food and beverage processing industry accounts for approx. **1.8% of total water use in Europe** and ranks third in water consumption rates.

❖ **Absence of wastewater management** in agro-industry.

❖ **Effluents**: high BOD/COD levels, suspended dissolved solids, excessive nutrient load, presence of dangerous pathogens (*Escherichia coli, Enterococci and Salmonella*) or organic pollutants (pesticides).

❖ The direct environmental discharge of these effluents without prior purification entails a constant **risk** for the environment.

❖ **Solution**: regeneration and reuse of water.

THE PROJECT OBJECTIVES

The main objective of the **LIFE PureAgroH2O Project** is the implementation at **demonstration-scale** of the **Photocatalytic Nanofiltration technology** for the treatment of wastewater produced in the agro-food industry, in order to eliminate contaminants and allow its reuse.

Demonstration-scale: Installation of Photo-NF reactor (PNFR) at **Zagora Agricultural Cooperative**, Greece.

Pilot Scale: at CIESOL/Citricos del Andarax (Almeria)

1 **Evaluation of common routines in wastewater management in the agri-food industry**
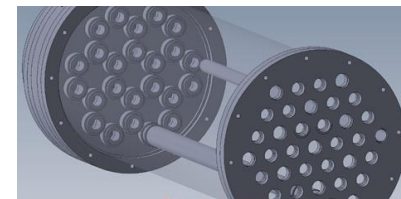
2 **Scale-up and construction of the PNFR reactor at the Zagorin Plant**

3 **Characterization of the waters of the two industries involved in the Project through chemical analysis (pesticides, metabolites, heavy metals) and microbiological analysis**
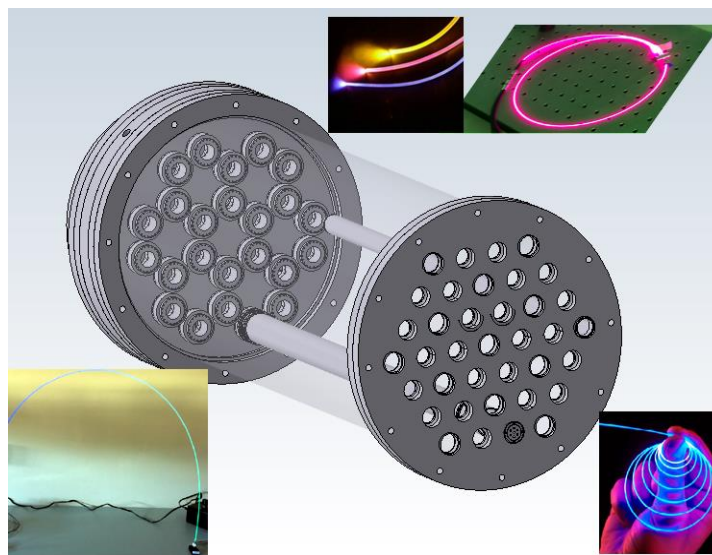
4 **Evaluation and economic analysis of the PNFR treatment system**

DESCRIPTION OF THE TECHNOLOGY

The PNFR technology/reactor, integrates synergistically the most effective, currently existing, micropollutant abatement technologies such as photocatalysis (P) and nanofiltration (NF), in one smartly designed membrane reactor (R) module-PNFR.

Replicability

Replicability will be tested with different effluents (pome in Greece and citrus in Spain)

Transferability

Real testing and evaluation of the PNFR process in several commercial sectors

- **Grey water from hotels**
- **Biological treatment plants**
- **Taste and odor in drinking water**
- **Pharmaceutical Products**
- **Anaerobic digestion (biogas)**
- **Textiles Industry**

Market
The W & WWT industry Continuation of the PNFR prototype testing in ZAGORIN-verification of the benefits and more accurate benchmarking

Competitive Technologies/Advantages of PNFR
- **Granular Activated Carbon**/No regeneration
- **Nanofiltration (NF)**/No fouling-No toxic condensates
- **NF-RO**/Energy efficiency
- **Ozonation**/No influence by Natural Organic Matter (NOM)
- **Slurry photocatalysis/**Simpler

https://www.lifepureagroh2o.com/es/home-2/