



## MOBILTOX

### **AN INNOVATIVE BIOSENSOR SOLUTION TO ANALYSE THE OVERALL TOXICITY LEVELS OF AQUEOUS EFFLUENT IN REAL TIME**

**The European Union has committed to protect our seas and oceans, as set out in the Marine Strategy Framework Directive and the Ocean Mission. MOBILTOX will play its part by delivering mobile equipment to evaluate water toxicity in situ, providing an early warning system.**

This platform combines a biosensor-based analysis unit and a sampler drone, with data sent to the user via a specific communications interface such as a smartphone application. The analysis unit has two complementary modules:

- The overall toxicity of the sample is analysed using whole microbial cells (with a method involving the inhibition of respiratory activity and the use of fluorescent sensors). The choice of biological indicator is crucial, hence the cells are isolated from the target environments (coastal areas, harbours and river mouths such as the Danube in Romania and the Loire in France) to ensure that the data collected under this initial approach are properly representative.
- The second module detects specific effects caused by certain herbicides and metals such as lead and mercury (being the most prevalent pollutants carried from the land to the sea) through photosynthesis inhibition. The sampling device will utilise an existing Heliceo drone adapted for use in coastal locations (with enhanced wind and wave resistance) and equipped with a set of sensors to measure pH, temperature, etc. The drone will carry a sampling module and will be remotely controlled from shore.

The prototype mobile platform will be tested in port and coastal locations close to areas of agricultural and river discharge into the North Sea and the Atlantic, and the results will be compared with those of standard chemical and ecotoxicity tests. A set of robust microbial strains isolated from marine environments, along with PSII complexes that are sensitive to marine phototrophic microorganisms, are key outcomes for this project to develop MOBILTOX as a commercial product

#### Partners

##### Companies

GEPEA, La Roche sur Yon [Project Developer]  
BIODYN Bucarest (Roumanie)  
HELICEO, Nantes  
IBIOL, Bucarest (Roumanie)

#### Funder

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689 k€