



NET4MPLASTIC

New Technologies for macro and Microplastic Detection and Analysis in the Adriatic Basin

START DATE

01.01.2019

END DATE

30.06.2022

TOTAL BUDGET

€ 2.478.640,00

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of the project



During these 3.5 years, multiple competencies, mutual knowledge sharing and collaboration allowed the project to progress, despite the difficulties related to the Covid-19 pandemic.

The **University of Ferrara**, with the contribution of three Departments, as LP of NET4mPLASTIC Project, guaranteed the management and connection between PPs involved, but also internal and external communication and dissemination. UniFE contributed also with:

- Sediment and sea water samples and data collection in 2 Italian pilot sites;
- Testing and implementation of new technologies for the coastal and marine environment monitoring (unmanned autonomous vehicles – aerial and marine drones, sampling and lab activities);
- Development of new links between presence of contaminants in the environment (e.g. microplastic) and human health.

The **University of Trieste** carried out laboratory analysis consisting of separation and identification of plastic components in water, sediment and biota in order to develop plastic distribution maps useful for the final integrated platform (microscopy, Raman microspectroscopy, thermal analysis and imaging). The main project target was to develop a patented method for the recycling of microplastics, completely green, which enabled the production of prototype samples of thermal and acoustic insulation material for use in the civil/naval/automotive sectors. The research results are collected in many scientific journals. The Institute of Marine Sciences of the CNR in Venice carried out a series of simulations of dispersion and accumulation of microplastics for 4 pilot sites on behalf of the **Marche Region**: Po Delta, Pescara, Split, entire Adriatic basin. The simulations are based on the ROMS (Regional Ocean Modelling System) oceanographic model for the hydrodynamic component and on the

Lagrangian model ICHTHYOP for the simulation of the dispersion and potential accumulation of microplastics of fluvial origin in the coastal waters of each pilot site.

In the latest months **Hydra Solutions** was involved mainly in the finalization of the software functionalities for data loading and visualization with the implementation of the hazard level periodical bulletin and the generation of the micro-litter size distributions related to the campaigns carried out in Autumn 2021. Moreover at the beginning of May 2022 it is planned the execution of additional measurement campaigns in Italy and Croatia.

For **ProSoft** the NET4mPLASTIC project was an opportunity to step out of the ICT world into an unknown field where science, ecology and innovation intertwine and their synergy creates new values. ProSoft biggest contribution was in helping to establish a common platform that facilitates interaction between partners, in developing an EWS system and a database in which project results are collected. It be part of a field team that tested the use of an innovative marine drone equipped with sensors and communication devices that enable the delivery of collected data in real time.

The **IZSAM** Teramo was involved in microplastics monitoring in mussels in Sacca di Goro and Pescara areas, and laboratory uptake and clearance experiment of mussels from microplastics. Analysis's results suggest that MPs frequency of occurrence was 53%; the revealing type of MPs were fibers; the prevailing size range were greater than 500 micrometers and the prevailing color was black. Clearance experiment showed both 2 and 7 days of mussels purification allow a statistically significant decrease in the presence of the number of MPs particles found per gram of soft tissue of the analyzed mussels (Group T0: 2.17 MPs/g; Group T2: 0.49 MPs/g; Group T7: 0.27 MPs/g).

Teaching institute of public health of Rijeka participated in field activities, in obtaining physical and environmental data and data about plastics in the environment. Tiph also did analysis of collected samples of sea water, beach sediments and mussels. The main goal for Tiph was to assess risks for human health regarding microplastics in the environment..

RERAs' project activity issues mainly was focused on the sampling and analysis of plastics and MP in sediment, water column and in mussels and shellfish activities – that were taken on 4 pilot sites in the middle and southern part of Adriatic on the Croatian side. These project activities of the sampling and analysis were performed by IOF – Institute of Oceanography and Fisheries from Split (Croatia), with who RERA has long-term cooperation in various international projects dealing with marine litter issues as well as plastic and microplastic and climate changes.

The **UNIST-FGAG** participated in sampling activities on the Croatian side, preparing and analyzing all necessary input data for NET4mPLASTIC modeling task including the bathymetry of the modeling domain, Data on physical and chemical parameters for two major submarine wastewater discharge points, analysis of meteorological data with estimates of discharges and source data from 11 waste water treatment plants within the modeled domain on the Croatian side.

The next commitments that will see the project as a protagonist will be: the participation in the **EMD2022 event, scheduled on 19 and 20 June in Ravenna** with the workshop "A holistic circular economy approach: how could local, business and scientific communities address marine litter best together?" and the **final project meeting, scheduled on 28 and 29 June in Ferrara**.

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