

PROJECT PARTNERS



Eco Recycling srl is an Italian spin-off aiming at technology transfer in the field of innovative processes for treatment and recycling of e-wastes. The main activities on LIFE BIOAs project are: request of authorization, construction of the prototypes (bio-adsorbent production and water treatment), demonstration activity on the prototype for the bio-adsorbent production and efficiency tests, monitoring and environmental and socio-economic impact actions, dissemination actions and management of the project.



Technosind srl is an R&D Italian company specialized in the field of treatments and recovery of raw and innovative materials and in the field of renewable energy. The main activities on LIFE BIOAs project are: prototypes design (bio-adsorbent production and water treatment) economic feasibility assessment.



Universidade de Évora is a Portuguese University with large experience on Green and Sustainable Chemistry by the use of clean technologies and valorisation processes. The main activities on LIFE BIOAs project are: support Technosind in the design of granulation and activation steps and replicability action.



ALFO ENERGIA srl unipersonale works in the field of energy production and biomasses management. It has an industrial for the treatment of olive pomace and olive biomasses. The main activity on LIFE BIOAs project is collection and pre-treatment of the olive pomace.



TALETE SpA is a public company owned by Local Authorities, responsible for the management of public services for the collection, supply and distribution of water for civil uses, sewerage and water purification waste. The main activities on LIFE BIOAs project are: demonstration activity on the prototype for water treatment.



High Tech Recycling (HTR) is an interuniversity research center with researchers from different Italian Universities. It has a long experience in the development of innovative processes for new adsorbent materials production from biomass feedstocks. The main activities on LIFE BIOAs project are: process design, characterization of recovered products and wastes and transferability action.

CONTACTS

Eco Recycling srl

Email: amministrazione@ecorecycling.eu
francesca.pagnanelli@uniroma1.it

Tel.: (+39) 06 96039819

Technosind srl

Email: emanuela.moscardini@technosind.it

Universidade de Évora

Email: pamm@uevora.pt

High Tech Recycling (HTR)

Email: pietro.altimari@uniroma1.it

ALFO ENERGIA unipersonale srl

Email: frantoilazio@inwind.it

TALETE SpA

Email: alessandro.fraschetti@taletespa.eu



Removal of As from water using innovative BIO-adsorbents produced from by-products of the agro-industrial sector

Start date: 01/09/2020

End date: 31/03/2024

**EU co-funded project LIFE+ 2019
Environment and Resource Efficiency**

Total budget: € 1.807.952

EU Contribution: € 990.215

www.lifebioas.eu

ENVIRONMENTAL PROBLEM TARGETED

Contamination of groundwater by arsenic takes place over extended geographic areas and it represents an environmental issue of global concern due to the severe threats to human health. The risk to human health and the widespread occurrence of arsenic contamination have led to impose severe limits of arsenic concentration in drinking water. Since 1998, EU has fixed these limits to 10 µg/L (Directive 98/83/CE). However, there are several EU areas (IT, GR, HR, DE, PT and other countries) where groundwater arsenic concentrations are exceeding such limits (10-1500 µg/L).

PROJECT OBJECTIVES AND ACTIONS

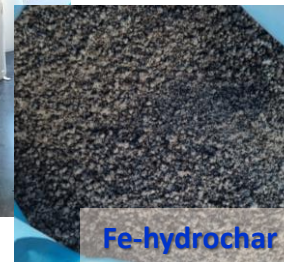
Demonstration of the environmental and economic feasibility of a process to produce an innovative bio-adsorbent by the hydrothermal carbonization of the olive pomace (a byproduct of the olive oil production industry) and, simultaneously, its use for the purification in line with the EU Directive of drinking water from arsenic.

- ❖ Processes and prototypes design
- ❖ Prototypes construction

- ❖ **Demonstration activity and products characterization:**
 - *Bio-adsorbent production*
 - *Water treatment*
- ❖ **Replicability and transferability:**
 - *Water treatment in Portugal*
 - *Demonstration organic pollutants*
- ❖ **Technical- economic feasibility analysis**
- ❖ **Environmental and socio-economic impacts analysis**

PROJECT RESULTS

Plant for bio-adsorbent production (27,1 kg/d)



- 2,6 ton of wet (5% humidity content) olive pomace treated to produce 1,5 ton of bio-adsorbents.
- Max arsenic absorption capacity greater than 3 mg/g.
- Cost reduction of 68% to produce the innovative Fe-hydrochar with respect to the traditional granulated ferric hydroxide.
- 89,4% reduction of iron salts used to produce the innovative Fe-hydrochar with respect to the traditional one.
- Treatment of 5500 m³ of arsenic contaminated groundwater in the Viterbo area (Italy).
- Replicability actions for demonstrating the developed bio-adsorbent in outdoor conditions in Portugal (Zêzere, Douro, and Ponte de Sor).
- Demonstration of the transferability of the proposed technology by treating 15 L of water contaminated with emerging organic pollutants (Sulfadiazine) and by assessing the performance of 5 kg of Fe-hydrochar bio-adsorbent produced from different biomass feedstock.

Plant for water treatment (2 - 4 m³/h)



Mobile plant for water treatment (4 L/h)

