



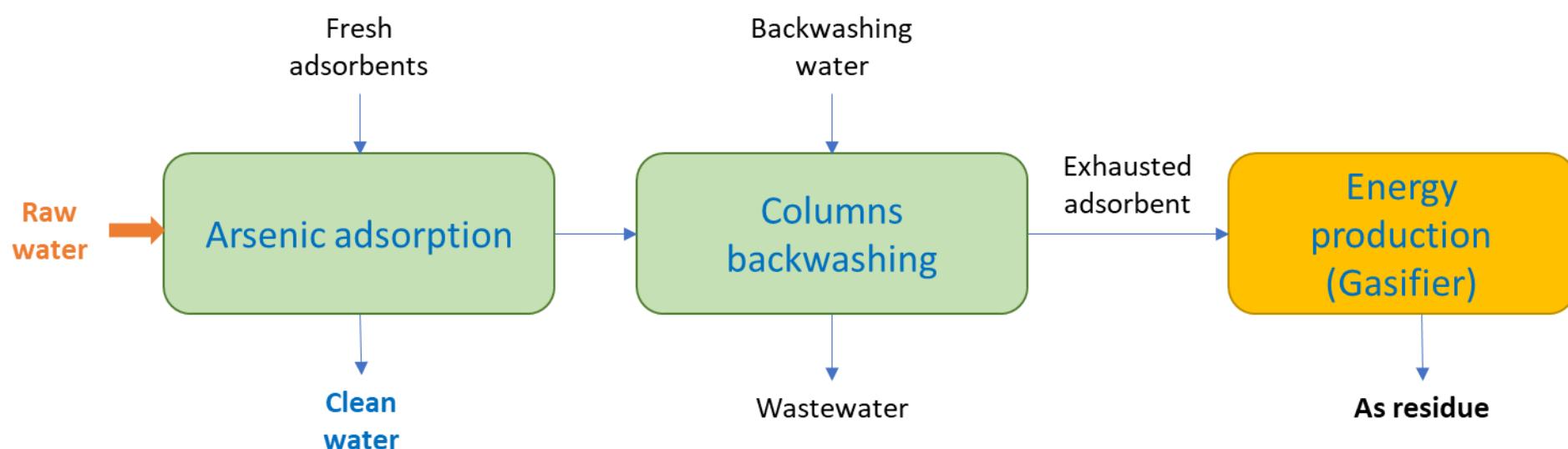
The LIFE BIOAs project has received funding from the LIFE Programme of the European Union

Newsletter N° 2 - Construction of pilot plants for water treatment

The demonstration activity of the LIFE BIOAs project includes the use of the bio-adsorbent produced for the removal of arsenic (As) from water intended for potable use that have concentrations beyond the legal limits of this element.

PROCESS BLOCK DIAGRAM

The following figure shows the simplified block diagram of the water treatment process through the use of innovative bio-adsorbents, produced from olive pomace, for the arsenic removal:



The three main operations of the process are:

- Adsorption operation;
- Backwash operation;
- Energy production (evaluation).

The process developed for surface water treatment is aimed at the complete removal of arsenic. This removal takes place through the use of innovative bio-adsorbents produced within the LIFE BIOAs project, functionalized to be highly selective towards arsenic. These adsorbents are placed inside a fixed bed filtration system, consisting of an adsorption column and a backwash column, in which the water containing arsenic is percolated. The water fed to the filtration system by means of special nozzles passes through the filter bed on which the arsenic is completely adsorbed. The water leaving the filtration system is analyzed and sent to storage. The filtration operation continues until the analyzed water is free of arsenic. When the concentration of arsenic leaving the column is greater than the limit allowed by European regulations, the filter bed is replaced, because it's saturated with arsenic.

The exhausted adsorbents will be sent to a gasifier (external consultancy) to evaluate, through the production of combustible gases (hydrogen and carbon monoxide), the amount of energy, in the form of heat or electricity, that can be recovered from the adsorbents at the end of their life. The filtration operation will be periodically interrupted to allow the reclassification of the adsorbent bed through a backwash operation with water.

The LIFE BIOAs project has received funding from the LIFE Programme of the European Union

Newsletter N° 2 - Construction of pilot plants for water treatment

CONSTRUCTION OF THE PILOT PLANTS

Two distinct prototypes were created within the project:

- **Fixed:** this plant has a capacity of 60 L / h and was located at the industrial site of Talete in the province of Viterbo, where it will be used to carry out the demonstration campaign.



Compressor Pumps Reagent dosing station

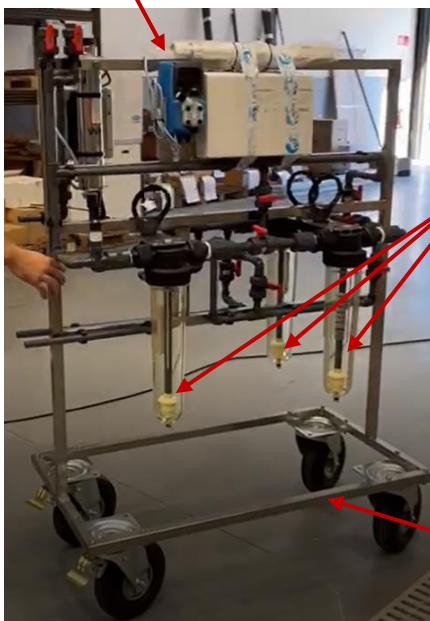


Columns Storage tank

Electrical and control panel

Prototype for water treatment (60 L/h)

Reagent dosing pump



Columns

- **Mobile:** this plant has a capacity of 4 L / h and was built on skid in such a way as to carry out the demonstration campaign in various sites in Portugal such as Vila Flor, Fundão and Ponte de Sor.

Skid

Prototype for water treatment (4 L/h)