LIFE Waste2Coag: Press Release #5, August 2022, updated September 2022

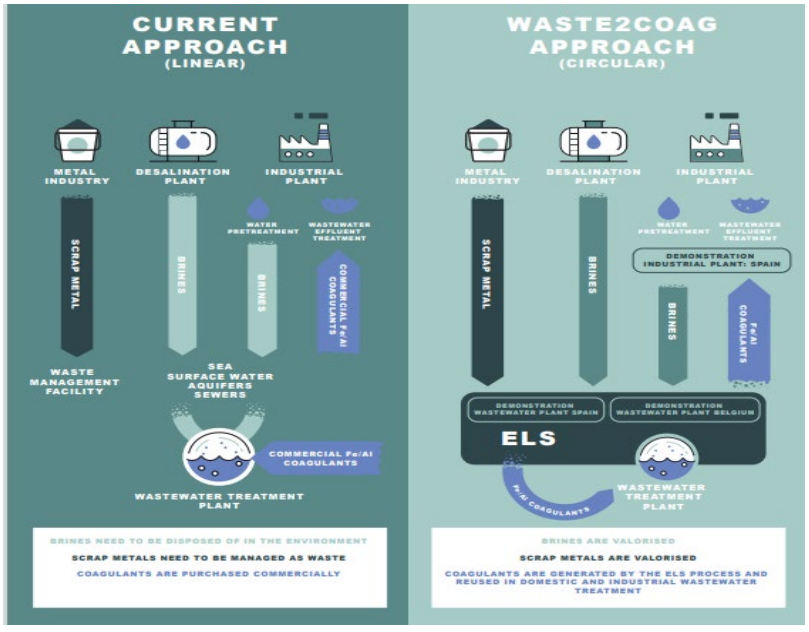
LIFE Waste2Coag aims to take a linear process for treating wastewater and make it circular, contributing to a resource efficient low carbon model. The project will use brines and scrap metal waste, valorising them to create coagulants for treating wastewater on site.

We recently celebrated our 2nd coordination meeting at month 8 of the project, following the initial kick off meeting in December 2021 and the 1st monitor meeting in May 2022. This was a chance to hear from the five partners how the work on the project action they lead is going, to share understanding of the project and ensure we are all on track.

The project has three main drivers:

- **Firstly, as a way to manage brines.** These are highly salted waters generated during the production of drinking water, as well as quality process water in several industrial sectors. Water treatment worldwide generates an increasingly large amount of brines that are mostly untreated and are pumped into the environment. This causes increased salinity in the soil with a negative impact on crops as well as damage to ocean life and marine ecosystems.
- **Secondly, there is a scarcity of metal resources which are used to make coagulants**. Due to the increasing demand for metals, there are less resources and prices are rising. There are also negative environmental impacts from the way scrap metals are managed.
- **And thirdly, the need for coagulants**. Coagulants are chemicals widely used in urban and industrial wastewater treatment plants (WWTPs) to remove pollutants and pathogens from wastewater. Both urban and industrial wastewater treatment plants consume a lot of these. The prices of coagulants rise continuously, and these prices are also dependent on foreign trade.

In the existing linear model of wastewater treatment, there is a lot of waste and environmental damage. Brines from desalination and wastewater treatment are pumped into the sea, surface water, aquifers and sewers causing damage to the soil and marine ecosystems. **LIFEWaste2Coag takes this linear model and makes it circular as brines and metal waste are used to produce coagulants to treat wastewater.** The technology uses an Electrolysis Pilot System (ELS) to produce the coagulants. The coagulants produced can then be used in situ at urban and industrial wastewater treatment plants. The difference between the linear and circular models are shown in the diagram below:

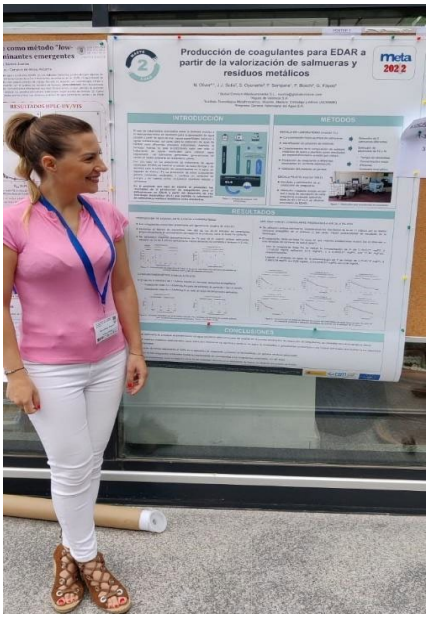


Waste2Coag will therefore valorise the brines produced in desalination and industrial plants, valorise industrial scrap metallic waste generated by the metal industry and thirdly will generate coagulants using the ELS technology which can be implemented in urban and industrial wastewater treatment plants.

ELS is based on an electrolytic technology that applies continuous electrical current to two metal electrodes immersed in the brines to cause a non-spontaneous chemical change. The technology will be tested at three WWTPs in Spain & Belgium: two urban wastewater treatment plants and one industrial wastewater treatment plant to optimise its operation and prove its replicability and transferability among different sectors. **Permits have been granted for the implementation of the ELS pilot system in the WWTP in Gandia (Spain) and the system is currently under construction.**

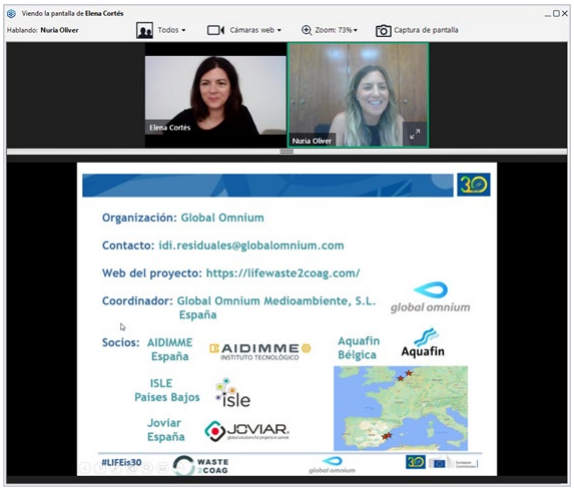
Laboratory tests are being carried out to assess what strength of coagulants can be achieved. In November last year, JOVIAR began the sampling process on industrial brines to collect data on the conductivity and quality of brines. The sampling and characterisation of industrial brines developed by JOVIAR, AIDIMME, AQUAFIN and GOMSL together with efficiency tests, were used to design and select power supplies for the ELS pilot plant, as well as verifying the quality of the brines in the process.

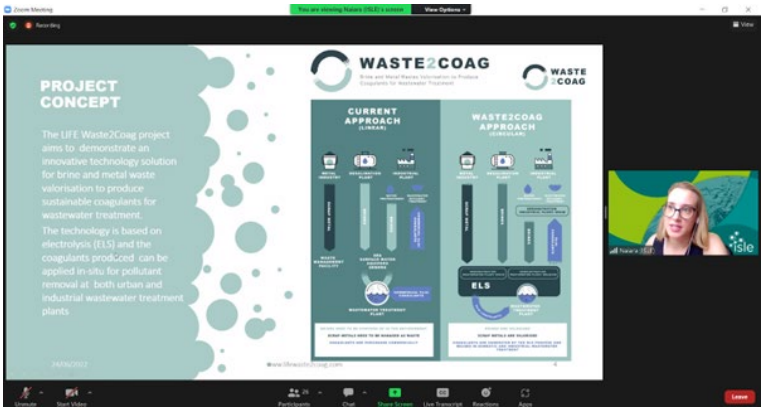
The exploitation and communications strategies are underway and working concurrently. The project website has been created and updated to include downloadable resources such as the project brochure in English and Spanish as well as the project noticeboard. The project has been presented at 3 events in June this year.



Firstly, Dr. Nuria Oliver, presented a poster available to download from the LIFE Waste2Coag website at the XIV Spanish Congress of Water Treatment(Meta 2022) held in Sevilla.

Dr. Oliver also presented the project at a LIFE projects networking day run by the Valencia regional government, which was a chance for those interested in applying to the scheme to find out more information from existing participants.





Dr. Naiara Fonseca, Senior Consultant with ISLE presented the project at the Water Europe Working Groups sessions on resource recovery in June this year.

Tatianya Montoya, of GOMSL and the project coordinator for LIFEWaste2Coag said: "It was great to meet with the project partners at our second coordination meeting and share the progress that has been made on the project. The project meeting was a chance to stand back and appreciate the progress that has been made in working towards the project aim to produce coagulants for wastewater treatment on site, using brines and scrap metal waste. The driver for LIFE Waste2Coag is to boost the circular economy in WWTPs, and it is excellent to be working towards this together with the project partners, creating resources from waste. We hope the ELS technology will create a sustainable, autonomous and decentralised technology, that can be replicated in sectors where wastewater purification and treatment are required."

For more information, see our project video on our YouTube channel: https://bit.ly/3DYrIYu

Background:

Expected project outputs:

- Design, build and operate an electrolytic pilot system, using wastes to produce coagulants,
- Create coagulants with an adjustable metal concentration
- Valorise up to 5,000 m^3 brines during the project
- Achieve a 50% decrease in current coagulant treatment costs per m^3 of treated wastewater
- Achieve an energy consumption of around 9 kWh per kg of metal in the coagulants that are produced
- An 80% reduction of CO_2 emissions by using scrap metal as a raw material
- Demonstrate that the technology is applicable to wastewater treatment plants in the EU where over 4 million tonnes per year of coagulant are consumed

Project Partners:

Global Omnium (GOMSL) lead the management and monitoring of the project, as well as the part related to the permits for the electrolytic technology prototype, and also validating the technology in urban WWTPs. **AIDIMME Technology Institute** lead the designing of the electrolytic prototype technology used in the project and the optimisation of the technology, as well as the environmental and socio-economic study. **ISLE** lead the market access & exploitation of the results as well as the dissemination & communication activities. **AQUAFIN** lead the work related to replicability in urban wastewater treatment plants, and **JOVIAR** lead the part related to transferability in industrial wastewater treatment plants.

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