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## Waste stream treatment for obtaining safe reclaimed water and biomethane for transport sector to mitigate GHG emissions; Life Methamorphosis – LIFE14 CCM/ES/00865

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The aim of the Life Methamorphosis project is to recover energy from organic solid waste from both urban and agro-industrial and farming sources to obtain alternative and sustainable fuels. This project wants to demonstrate the feasibility at an industrial scale of two innovative waste treatment systems: UMBRELLA and METHAGRO. The UMBRELLA prototype is installed in the Barcelona metropolitan plant of municipal waste treatment in Montcada i Reixac. It optimizes the energy used to treat waste water from the organic fraction treatment through the introduction of innovative anaerobic and autotrophic processes applied in series: the anaerobic membrane reactor (AnMBR) and the autotrophic nitrogen elimination system anammox ELAN®. It supposes more than 70% reduction in energy demand and up to 80% reduction of $CO_2$ emissions compared to conventional treatments. Finally, the biogas produced is treated with the ABAD® cleaning and refining system so that the resulting biomethane is used for automotive. The METHAGRO prototype has been built in the Porgaporcs slurry treatment plant owned by Ecobiogas and located 35 km from Lleida, in order to mitigate the problems created by the uncontrolled production of pig slurry. It demonstrates the production of biomethane from biogas with a membrane-based upgrading system. This biogas produced can be used either directly in vehicles for transportation, or it can be injected into the natural gas distribution network. To use vehicles powered by biomethane produce 25% less $CO_2$ emissions than those are powered by gasoline, and emit 85% less NOx compared with diesel engines. The project will contribute to the overall objective of moving towards a resource-efficient economy and the protection and improvement of environmental quality. Specifically, it aims to contribute to the development and demonstration of innovative technologies, methods and instruments designed to mitigate climate change, and their scaling, transfer or incorporation into other sectors.


**Figure 1:** Flow chart UMBRELLA prototype

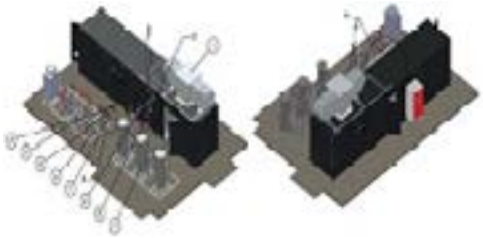

**Figure 2:** Implementation METHAGRO prototype.

### Biography

Gloria Sánchez Santos is a Chemist working in the service of Waste Prevention and Management in Metropolitan Area of Barcelona, local Government. She has 15 years of experience in waste management including mechanical and biological treatment anaerobic digestion and composting. In addition, she has experience working as a Technician, Quality Assessment and Researcher in waste water treatment plants and control of odors with biofilters. She collaborates in the establishment of service indicators and has at her charge the follow up of the yearly environmental and quality audit of the service processes.

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