

The European SEMPRE-BIO project will demonstrate new cost-effective ways to produce biomethane

- *The SEMPRE-BIO project, co-funded by the European Commission's Horizon Europe program, will test new cost-effective biomethane production solutions that facilitate compliance with the European Green Deal.*
- *Cetaqua, water technology center, leads this initiative, in which Aigües de Barcelona, the Metropolitan Area of Barcelona and thirteen other partners from six different European countries also participate.*

Barcelona, November 24, 2022 - The drastic rise in global temperatures must be tackled imminently to avoid fatal consequences for ecosystems and humanity. To achieve this goal, the European Union has set out to reduce net greenhouse gas emissions by at least 55% by 2030 and to become a climate-neutral continent by 2050. In this context, Europe must reduce its dependence on fossil fuel imports and **biomethane** will play a crucial role in achieving this. However, this sustainable fuel has certain limitations, such as its high production cost, the viability of small farms, or the difficulty of treating non-fermentable waste.

To address this situation, the European research project **SEMPRE-BIO**, led by [Cetaqua, water technology center](#), has recently been launched to demonstrate **new cost-effective biomethane production solutions**. This initiative will seek to reduce the investment and operating costs of biomethane production plants and extend the biomethane production potential through new waste valorization routes. Likewise, SEMPRE-BIO will also propose **alternative monetization sources**, such as the valorization of biogenic CO₂ or the commercialization of biochar.

The implementation of the solutions proposed in the project is expected to promote **circular economy projects at the local level** and reduce dependence on imports of natural gas and liquefied natural gas (LNG). On a large scale, SEMPRE-BIO aims to promote the use of biomethane as a substitute for fossil fuels used in transportation and the natural gas grid, with **an estimated reduction in CO₂ emissions of 213 million tons per year by 2050**.

Three innovation ecosystems to test biomethane production technologies in Europe

To achieve its objective, SEMPRE-BIO will create three innovation ecosystems in which, through co-creation processes, **specific solutions will be proposed for each of the scenarios**, representatives of the different situations existing in Europe regarding biomethane production. In particular, **five innovative technologies will be tested**, which will contribute to diversifying the conversion technology base for biomethane production, and their replication in other plants will be encouraged. On the other hand, a **comprehensive technological and economic assessment** will be carried out to show the benefits of these solutions compared to fossil gas and conventional biogas upgrading technologies, overcoming existing barriers to their mass adoption. Such assessment will mainly focus on aspects related to the improvement of biomethane production efficiency and cost reduction, but will also have a strong focus on the minimization of greenhouse gas emissions, aiming at **increasing sustainability and fostering circular economy models**.

SEMPRE-BIO will be tested in three plants throughout Europe. In **Spain**, the Baix Llobregat ecofactory, managed by Aigües de Barcelona, will be the site where biomethane production technologies that will allow the valorization of currently untapped biogas streams will be demonstrated. The biogas will be converted into compressed natural gas (CNG) through a **power-to-gas** hydrogen methanation process, for use in Barcelona's public transport. The Bourges green waste treatment plant in **France** will produce biomethane from non-digestible urban green waste for injection into the grid. Finally, in Adinkerke, **Belgium**, De Zwaenepoel, a farm with no connection to the natural gas grid and low biogas production, will be the scenario where SEMPRE-BIO will demonstrate solutions for biogas purification and production of liquid biomethane, a renewable fuel ideal for heavy transport, such as trucks or ships. The biomethane generated here will be stored locally in liquefied form and distributed by road transport, while the CO₂ will be commercialized and its conversion to polymers and proteins will be studied.

A consortium formed by 16 entities with experience in the field of research and technological development in Europe

This initiative is part of the Horizon Europe funding program of the European Commission. Under the leadership of **Cetaqua, Centro Tecnológico del Agua**, the SEMPRE-BIO project consortium is formed by the Spanish companies [Aigües de Barcelona](#), [Naturgy](#), [Cryo Inox](#) and [Inveniam](#), [Propuls](#) from Germany, [TerraWatt](#) from France, [Innolab](#) and NV De Zwanebloem from Belgium; the [Metropolitan Area of Barcelona](#) as a public entity; the research centers [DBFZ](#) from Germany, [SINTEF](#) from Norway, and [Biogas-E](#), from Belgium. From academia, the [Technical University of Denmark](#), the [University of Ghent](#) in Belgium, and the [BETA Technological Center of the UVic-UCC](#) in Spain will participate.

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