

Researchers to develop an urban wastewater treatment plant that can generate energy

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Julian Carrera (center), Maria Eugenia Suárez-Ojeda and Julio Pérez at UAB facilities

Researchers from the Universitat Autònoma de Barcelona (UAB), headed by Julián Carrera, Maria Eugenia Suárez-Ojeda and Julio Pérez, will coordinate a project within the European Union's LIFE programme to explore the feasibility of treating urban wastewater and generating energy at the same time. This is the first project in this programme to be coordinated by the UAB.

The aim is to radically re-design WWTPs so that they can produce energy with no loss – or even with a gain – in performance. Present-day WWTPs require a minimum energy consumption of 8-15 kWh/inhabitant/year to meet the legal requirements on effluent discharge in terms of organic matter, nitrogen and phosphorus. This means considerable greenhouse gas emissions and high costs. Eliminating these costs would mean a saving of 500 to 1000 million Euros per year in EU countries.

SAVING-E aims to demonstrate, at pilot scale and with real urban wastewater, that the energetic balance of an urban WWTP can be improved at both high and low temperatures, down to the 10°C that would be needed to implement the process in northern Europe, while achieving an annual energy production of 9 kWh per inhabitant.

This new WWTP will use all organic matter in the wastewater to produce biogas, a combustible gas made up principally of methane, which can be used to obtain heat and electricity. In addition, the nitrogen in the wastewater will be eliminated autotrophically, i.e. without the

need for [organic matter](#), by means of a [new technology](#) based on two biological stages: an aerobic partial-nitrification reactor and an anammox reactor. The scientists expect this new technology to significantly lower the costs of aeration in comparison with present-day urban WWTPs.

"The technological challenge posed by treating urban wastewater while simultaneously generating clean [energy](#) is an exciting one. With the LIFE-SAVING-E project we have a chance to do just that. We hope to be in a position to implement this novel technology at real scale in three or four years," explains UAB lecturer Julián Carrera.

Provided by Universitat Autònoma de Barcelona

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