



## LIFE17 ENV/ES/000434 NANOUBBLES

PROJECT LOCATION	Spain, Italy
PROJECT START DATE	01/07/2018
PROJECT END DATE	31/12/2020
TOTAL BUDGET	634.252 €
EC CONTRIBUTION	380.551 € (60%)
WEBSITE	<a href="http://www.lifenanobubbles.com">www.lifenanobubbles.com</a>

### Project Coordinator



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**LIFE17 ENV/ES/000434 NANOUBBLES**

**Demonstrating Nanobubbles  
Technology for more Sustainable and  
Efficient Urban Wastewater Treatment**





## Background information

Clean-up of wastewaters is a major problem in all European countries, as the processes that are currently being used have a **high energy demand** and produce a **huge environmental footprint**. In fact, around 1% of the global electricity usage in Europe is due to the wastewater treatment (WWT) plants.

This huge electricity consumption has severe consequences, not only in the environment, but also in the costs of the cleaning up of the wastewater, what limits the installation of new treatment plants and therefore, the volume of wastewater treated, limiting the compliance with the European Directives such as the **Water Framework Directive (2000/60/EC)** and the **“Urban Waste Water Treatment Directive” (91/271/EEC)**.

Taking into account that in a WWT plant between the 50% and 60% of the energy demand is produced by the aeration systems, by means of this project it is intended to contribute to the improvement and optimization of the WWT precisely by means of the improvement of the efficiency of the aeration systems in the secondary stage.

## Objectives

The **main goal** of LIFE NANOUBBLES is to demonstrate in an operational environment the technical, environmental and economic feasibility of the innovative Nanobubbles (NB) Technology as an efficient, environmentally-friendly and low cost alternative to traditional aerators in Wastewater Treatment (WWT) plants. It is foreseen that the implementation of this technology will enable more sustainable, competitive and legally compliant WWT facilities through the reduction of energy consumption and yield cost-effectiveness.

The **specific objectives** of the project are:

- To consolidate the Nanobubbles Technology as an innovative solution in WWT plants.
- To reduce the energy demand of WWT plants,
- Facilitate to WWT plants the compliance with the environmental requirements of the Water Framework Directive (2000/60/EC) and Urban Waste Water Treatment Directive (91/271/EEC)

## Project description and actions

Within the **Preparatory Actions**, a stakeholder’s consultation will be carried out among the main stakeholders of the sector. The results of the consultation will help us to define the requirements and technical specifications of the solution. On the other hand, the assessment of the demonstration site, which will be a WWT plant in San Damaso (Modena, Italy), will also be carried out in order to establish the working conditions for the design of the prototypes. Finally, the prototype will be designed and constructed.

Within the **Implementation Actions**, the prototype will be installed in the San Damaso’s plant, which is a plant of about 7.000 inhabitant’s equivalents. During 9 months, the demonstration of the technology will be carried out, and the results will be continually analysed in order to improve the solution. The aim is to optimize the prototypes with the results obtained from the tests. Then, with the knowledge gained, the definitive technical specifications of the solution and the definition of the protocols for using the Nanobubbles Technology in WWT Plants will be carried out.

## Expected results and impacts



### Technological

- Demonstration of the Nanobubbles technology for the **reduction of energy consumption** in urban WWT plants.
- Improvement of the **WWT performance** in terms of COD and BOD removal, chemical and biological pollutants removal, sludge generation, energy efficiency, etc.



### Environmental

- **Reduction by 70% of the energy consumption** per m<sup>3</sup> of treated water and therefore, the GHG emissions.
- **Reduction by 50% of sludge production** compared to traditional aerobic processes.



### Socio-economic

- Reduction of the **60% of the operational costs (OPEX)**
- Reduction of the **30% of the capital costs (CAPEX)**