## PARTNERS

National Technical University of Athens

Autonomous University of Barcelona

Brunel University

Unisensor Sensorsysteme GmbH

Aeris Tecnologias Ambientales S.L.

The University of Queensland

Cobalt Water LLC

DRH2O LLC

Green Tech Fund California I PBC

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# C - FOOT - CTRL

## DEVELOPING ON LINE TOOLS TO MONITOR, CONTROL AND MITIGATE GHG EMISSIONS IN WWTPS

## Introduction

The project with title "Developing on line tools to monitor, control and mitigate GHG emissions in WWTPs C-FOOT-CTRL" is a Horizon2020 Marie Curie Research and Innovation Staff Exchange project which aims to develop, test and validate a new software tool for the monitoring, control and mitigation of the carbon footprint of wastewater treatment plants (WWTPs). Greenhouse gaseous (GHG) emissions are emitted from various stages of treatment in a WWTP. Currently, in developed countries the energy required for wastewater treatment accounts for approximately 3% of the total electricity load. Also, WWTPs are the biggest single energy consumers of municipalities with a share of 20% of the total energy consumption. Strategies to decrease the required amount of energy may in fact cause greater harm due to the increase of GHG emissions. Various GHG emissions are associated with the construction and operation of WWTPs. These include carbon dioxide, methane and nitrous oxide. The development of a tool that will be able to accurately record and predict the various GHG emissions in the different treatment processes of WWTPs is important in order to (i) track the emissions (ii) apply measures to reduce GHG contaminants and to (iii) link the GHG emission with a particular activity in the plant. The envisaged tool will be an innovative, low cost and flexible system that will constitute of a database for the storing and recording of data, a model for the estimation of direct and indirect GHG emissions and online sensors for recording GHG emissions in WWTPs. The project is implemented through secondment of researchers and other staff between the participators.

The coordinator of the project is the National Technical University of Athens (Greece) and other participants include Brunel University (UK), Autonomous University of Barcelona (Spain), Unisensor Sensorsysteme GmbH (Germany), Aeris Tecnologías Ambientales S.L (Spain), DRH2O (US), University of Queensland (Australia), Green Tech Fund California I PBC (US), and Cobalt Water (US).

Start date: 01/04/2015
End date: 31/03/2019
Total budget: 711,000 €

## Implementation

C-FOOT-CTRL will be implemented in 9 WPs. Six WPs (WP2-WP7) are technical involving research and innovation, WP1 is the project management, WP8 is the development of the business plant and market perspectives and WP9 is the dissemination and training. WP2-5 involve the development and integration of the various components of the carbon footprint tool which include the design of its architecture (WP2), the development of the databases (WP2), the development of the dynamic model for GHG determination (WP3), the testing of commercial sensors and the development of novel ones (WP4) and the integration of all components (WP5). Subsequently, expensive testing of the software tool will take place for several (12 months) allowing the application of the developed software tool in different real case studies (WP6). Finally, based on the findings/data from the application of the tool appropriate mitigation measures will be defined. The end result is a roadmap for minimizing GHG emissions within the normal operation of WWTPs without any other adverse consequences. A large number of secondments will be carried out through which the activities will be implemented.