

**Project information:**

<b>Project acronym</b>	<b>SMART-Plant</b>
<b>Title</b>	<b>Scale-up of low-carbon footprint MAterial Recovery Techniques for upgrading existing wastewater treatment Plants (SMART-Plant)</b>
<b>Call</b>	<b>H2020-WATER-2014-2015, H2020-WATER-2015-two-stage, WATER-1b-2015</b>
<b>Grant agreement no</b>	<b>690323</b>
<b>Starting Date</b>	<b>1/6/2016</b>
<b>Duration</b>	<b>48 Months</b>

**Project abstract:**

SMART-Plant will scale-up in real environment eco-innovative and energy-efficient solutions to renovate existing wastewater treatment plants and close the circular value chain by applying low-carbon techniques to recover materials that are otherwise lost. 7+2 pilot systems will be optimized for > 2 years in real environment in 5 municipal water treatment plants, including also 2 post-processing facilities. The systems will be automatized with the aim of optimizing wastewater treatment, resource recovery, energy-efficiency and reduction of greenhouse emissions. A comprehensive SMART portfolio comprising biopolymers, cellulose, fertilizers and intermediates will be recovered and processed up to the final commercialisable end products. The integration of resource recovery assets to system-wide asset management programs will be evaluated in each site following the resource recovery paradigm for the wastewater treatment plant of the future, enabled through SMART-Plant solutions. The project will prove the feasibility of circular management of urban wastewater and environmental sustainability of the systems, to be demonstrated through Life Cycle Assessment and Life Cycle Costing approaches to prove the global benefit of the scaled-up water solutions. Dynamic modeling and superstructure framework for decision support will be developed and validated to identify the optimum SMART-Plant system integration options for recovered resources and technologies. Global market deployment will be achieved as right fit solution for water utilities and relevant industrial stakeholders, considering the strategic implications of the resource recovery paradigm in case of both public and private water management. New public-private partnership models will be explored connecting the water sector to the chemical industry and its downstream segments such as the construction and agricultural sector, thus generating new opportunities for funding, as well as potential public-private competition.

**Activities of EYDAP in the project:**

**Research and innovation Activities**

Development, monitoring and optimization of a side- and down-stream SMARTechnologies - Sidestream CAMBI\_ pilot scale system that will treat the reject water produced after the enhanced biogas recovery accomplished by thermal sludge hydrolysis of the CAMBI process followed by anaerobic digestion. The SCENA (Short-Cut Enhanced Nutrients Abatement) process will be installed at the Psyttalia WWTP in Greece which existing full scale plant currently treats approximately 750,000 m<sup>3</sup>/d of municipal wastewater from the Greater Region of Athens. The Psyttalia WWTP is owned by the EYDAP Water Authority and is managed by Aktor – Athena JV (also a partners at the SMART-Plant project).

**Exploitation Barriers and opportunities for the SMARTechnologies**

Valorising EYDAP expertise in business management and administration on: public/private water utility management perspectives, SMART-product portfolio development for the recovered resources, end application development for SMART-product portfolio, business plan and market deployment strategy commercialization roadmap and go-to-market guidelines.

### *Benefits of EYDAP from the project:*

SMART-Plant project will develop an innovative biological nitrogen and phosphorus removal system from wastewater. This innovative system will be implemented and optimized on a pilot scale in Psyttalia WWTP.

EYDAP will be able to participate with NTUA and the other partners of the consortium in the development and operation of the innovative unit. This innovative unit can be successfully applied for the treatment of leachate in WWTP Psyttalia, reducing the energy costs of installation due to lower requirements in oxygen and organic carbon by this system. EYDAP will gain multiple benefits from its participation in the program. EYDAP will acquire expertise and know-how in advanced methods of removing nutrients from wastewater and leachate. Moreover, application of such a system for the treatment of leachate of WWTP of Psyttalia can solve the problem of leachate management. So far, the leachate of Psyttalia WWTP is recirculated to the entrance of the facility significantly increasing the nitrogen and phosphorus load that enters the biological stage. Their separate treatment with the novel method developed will significantly reduce the load of nutrients received by the main biological unit.

Additionally through this project EYDAP is gaining recognition on a research and development level and is building strong collaborations sharing expertise and know-how with prominent stakeholders in the water industry.

### *List of Participants:*

<i>No</i>	<i>Name</i>	<i>Short name</i>	<i>Country</i>
1	Università degli Studi di Verona	UNIVR	Italy
2	Università di Roma La Sapienza	UR	Italy
3	Brunel University London	UBRUN	UK
4	Cranfield University	CU	UK
5	Universitat Autònoma de Barcelona	UAB	Spain
6	Fundacio Universitaria Balmes	UVIC	Spain
7	National Technical University of Athens	NTUA	Greece
8	KWB Kompententzzentrum Wasser Berlin Gemeinnutzige Gmbh	KWB	Germany
9	Biotrend - Inovacao e Engenharia em Biotecnologia SA	BIOTREND	Portugal
10	SOCAMEX S.A.U.	SOC	Spain
11	BYK Additives Ltd	BYK	Germany
12	SCAE Srl	SCAE	Italy
13	Agrobics Ltd	AGRB	Israel
14	Salsnes Filter AS	SALSNES	Norway
15	Instituto de Biologia Experimental e Tecnológica	IBET	Portugal
<b>16</b>	<b>Etairia Ydreuseos Kai Apochetefseos Proteyousis Anonimi Etairia</b>	<b>EYDAP</b>	<b>Greece</b>
17	Alto Trevigiano Servizi S.r.l.	ATS	Italy
18	Mekorot Water Company Ltd	MEKOROT	Israel
19	Aguas de Manresa S.A.	AdM	Spain
20	BWA BV	BWA	Netherlands
21	InnoEXC Gmbh	IEXC	Switzerland
22	Senern Trent Water Ltd	STW	UK
23	Aktor Technical Ae	AKTOR	Greece
24	Specialist Building Products Ltd	SBPL	UK
25	Wellness Smart Cities Slu	WSC	Spain