

## WHAT IS R<sub>3</sub>WATER

By improved resource efficiency in wastewater treatments plants, combined with the implementation of new technologies and business models, wastewater treatment plants can be converted and upgraded into production units to provide energy, nutrients, water for reuse and possibly other valuables.

The main objective of the R<sub>3</sub>Water project is to demonstrate solutions that support this transition from a treatment plant for urban wastewater to a production unit of different valuables.

Furthermore the project aims to facilitate the market uptake of the innovative technologies for the European and global market by demonstrating the solutions in different geographical context and reaching relevant stakeholders.



Demonstration site in Sweden (Photo: IVL)

## CONSORTIUM

	<b>ADASA S.A.U.</b> , Spain ( <a href="http://www.adasasistemas.com">www.adasasistemas.com</a> )
	<b>Aquafin N.V.</b> , Belgium ( <a href="http://www.aquafin.be">www.aquafin.be</a> )
	<b>Aqua-Q AB</b> , Sweden ( <a href="http://www.aqua-q.se">www.aqua-q.se</a> )
	<b>AVA-CO<sub>2</sub>-Forschung GmbH</b> , Germany ( <a href="http://www.ava-co2.com">www.ava-co2.com</a> )
	<b>DECHEMA Gesellschaft für Chemische Technik und Biotechnologie e.V.</b> , Germany ( <a href="http://www.dechema.de">www.dechema.de</a> )
	<b>Ekolite OY</b> , Finland ( <a href="http://www.ekolite.fi">www.ekolite.fi</a> )
	<b>ICRA Catalan Institute for Water Research</b> , Spain ( <a href="http://www.icra.cat">www.icra.cat</a> )
	<b>IVL Swedish Environmental Research Institute</b> , Sweden ( <a href="http://www.ivl.se">www.ivl.se</a> )
	<b>Perlemax Ltd</b> , UK ( <a href="http://www.perlemax.com">www.perlemax.com</a> )
	<b>Prediktor AS</b> , Norway ( <a href="http://www.prediktor.no">www.prediktor.no</a> )
	<b>Teqma Tecnologías y equipos para el medio ambiente S.L.</b> , Spain( <a href="http://teqma.com/">http://teqma.com/</a> )
	<b>VTT Technical Research Centre of Finland</b> , Finland ( <a href="http://www.vtt.fi">www.vtt.fi</a> )

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Demonstration of innovative solutions for urban wastewater treatment:

**Reuse of water**  
**Recovery of valuables**  
**Resource efficiency**



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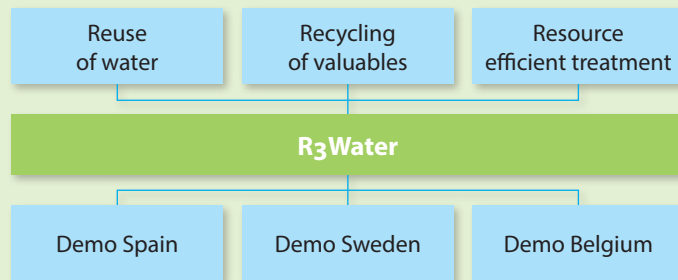
[www.r3water.eu](http://www.r3water.eu)

## CONCEPT

### R3Water: Reuse – Recovery – Resource efficiency

R3Water aims to support the transition from an urban wastewater treatment plant to a production unit of different valuables.

Different types of technologies and innovative solutions will be further developed and tested at the demonstration sites that are located in Belgium, Spain and Sweden.



## OUTREACH

### R3Water: Reviewed – Referenced – Recognized

The R3Water project will not only demonstrate “R3” technologies but also show an innovative “R3 demonstration concept”: Reviewed – Referenced – Recognized.

Compared to conventional projects **this concept secures a more parallel and direct market acceptance in European countries.** The concept of Environmental Technology Verification (ETV) is directly integrated in the demonstration of the technologies in the project, reducing the need for extra testing.



Small scale wastewater treatment plant in Belgium (Photo: Aquafin)

## TECHNOLOGIES

### REUSE OF WATER

In order to facilitate water reuse R3Water will demonstrate several technologies in Spain/Sweden:

- » Dosification concept for the control of reclaimed water disinfection (Spain)
- » AquaBio online measurement of Escherichia coli and total coliforms (Spain/Sweden)
- » AQUATRACK™, real-time monitoring and auto sampler for pathogen bacteria and parasites like Cryptosporidium and Giardia (Spain/Sweden)

AQUATRACK™  
(Photo: Aqua-Q)



AquaBio – online detection device  
(Photo: ADASA)

### RESOURCE RECOVERY

The valorization of sludge and incinerated sludge residuals will be demonstrated (in Belgium/Germany) with these resource recovery technologies and concepts:

- » Hydrothermal carbonisation – HTC (Belgium/Germany)
- » Product processing concept for incinerated sludge ash valorization including its high value use as construction material and fertilisers (Belgium/Germany).

### RESOURCE EFFICIENCY

R3Water covers the following resource efficient technologies to be demonstrated at the sites in Sweden and Belgium:

- » Perlemax aeration system (Sweden/Belgium)
- » Perlemax system for biogas optimization (Sweden/Belgium)
- » Improved Anammox control system (Sweden/Belgium)
- » Model based predictive control (Sweden)
- » OptimEDAR for aeration optimization (Spain/Belgium)

## SITES

### DEMONSTRATION SPAIN – Consorci Costa Brava

Demonstration will be performed in the Consorci Costa Brava facilities, a water agency in Spain that is in charge of 20 regional wastewater treatment plants, operated by the Empresa Mixta d'Aigües Costa Brava.

Innovative solutions for water reuse and resource efficiency will be demonstrated at two full scale wastewater treatment plants in Spain.

### DEMONSTRATION BELGIUM – Aquafin

Aquafin owns and operates 281 wastewater plants in Belgium, varying in size and composition. Therefore, each technique can be demonstrated in an appropriate setup. Conceptually, all demonstrations will follow a logical order of site selection and preparation, installation, operation and evaluation. The objective is to demonstrate 7 innovative solutions for reuse of water, recovery of valuable substances and resource efficiency either at full scale on one of the 281 wastewater treatment plants, and/or in their test facility near Antwerp.

### DEMONSTRATION SWEDEN – Hammarby Sjöstadsværk

The R&D facility Hammarby Sjöstadsværk in Stockholm is a platform for development and exchange of knowledge and technologies in water treatment and related environmental technology. It offers the possibility for testing, demonstration and analysis and it is used for collaboration with national and international organisations. The activities at Hammarby Sjöstadsværk contribute to the development of more efficient technologies, including the implementation and demonstration of these, which is in line with the R3 water aims.

The facility is owned and operated in cooperation by the Royal Institute of Technology (KTH) and IVL Swedish Environmental Research Institute.