WATINTECH

Smart Decentralized Water Management through a dynamic integration of technologies

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Water JPI
WaterWorks2014 Cofunded Call
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CONSORTIUM

ACRONYM	TOPIC	Coordination	Partners
WATINTECH	**I**		
Smart Decentralized Water Management through a dynamic integration of technologies		**sewer mining, urban run-off, integration of technologies, water reuse, energy recovery, valuable chemicals production, mathematical modelling, smart water cities**	

PRINCIPAL INVESTIGATOR	INSTITUTION	COUNTRY
Ignasi Rodriguez-Roda Layret	**Catalan Insitute for Water Research**	**Spain**
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Giuseppe Luigi Cirelli	Universita di Catania	Italy
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Adrian Oehmen	Universidade Nova de Lisboa	Portugal

Water JPI

ICRA Catalan Institute for Water Research

acciona Agua

Università degli Studi di Catania

Di3A Dipartimento di Agricoltura, Alimentazione e Ambiente

DTU

FCT FACULDADE DE CIÊNCIAS E TECNOLOGIA UNIVERSIDADE NOVA DE LISBOA

CONSORTIUM

Kick off meeting, Girona, April 27th

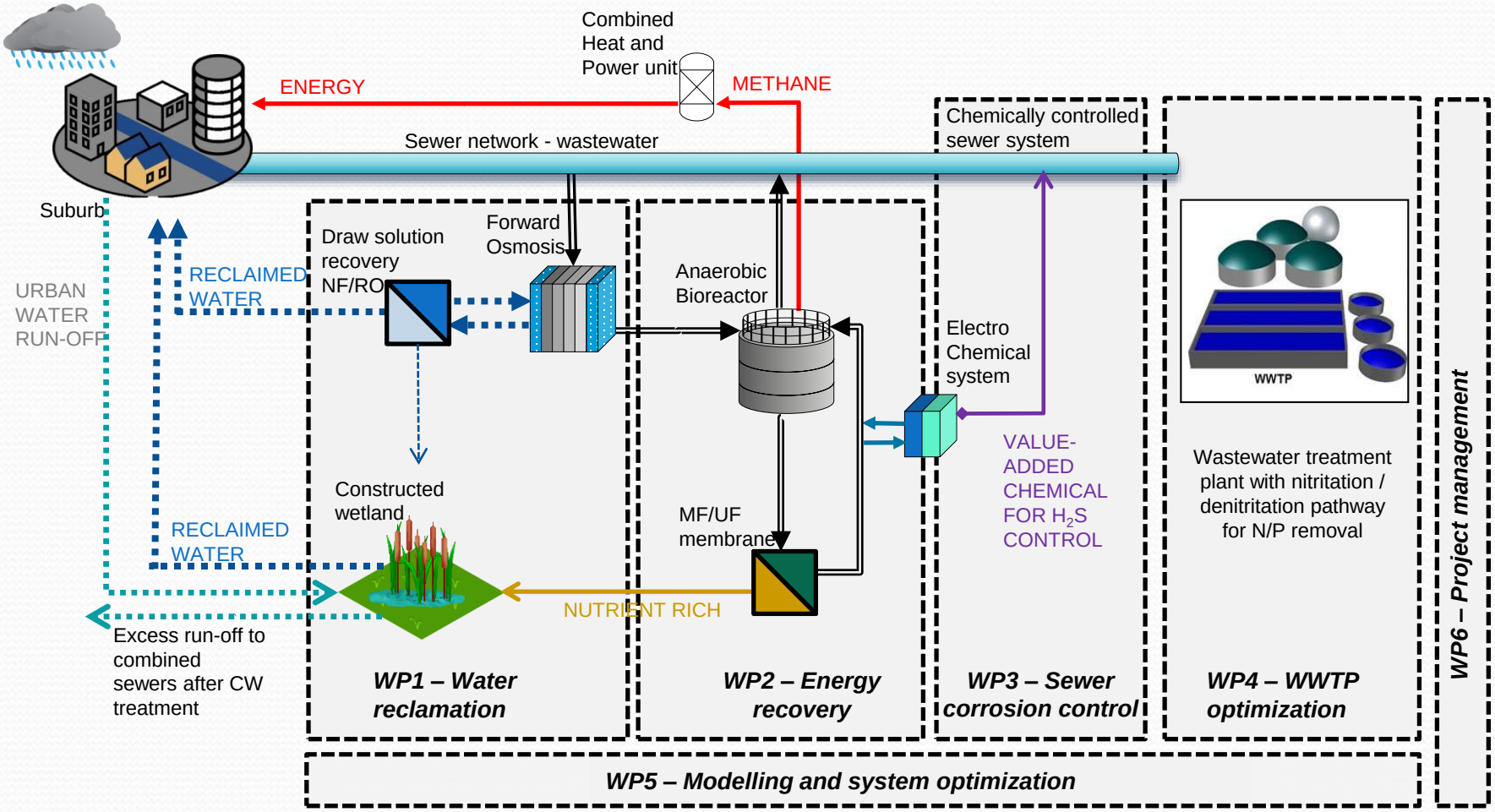
GENERAL AIM AND INNOVATIVE ASPECTS

WATINTECH will develop effective **decentralized** treatment concepts for sewage and urban run-off to recover:

- Water
- Energy (methane)
- Value-added products (caustic, oxygen)

A key innovation of WATINTECH will be the smart integration of different water sources and decentralized and centralized infrastructure creating novel synergies.

GENERAL AIM AND INNOVATIVE ASPECTS



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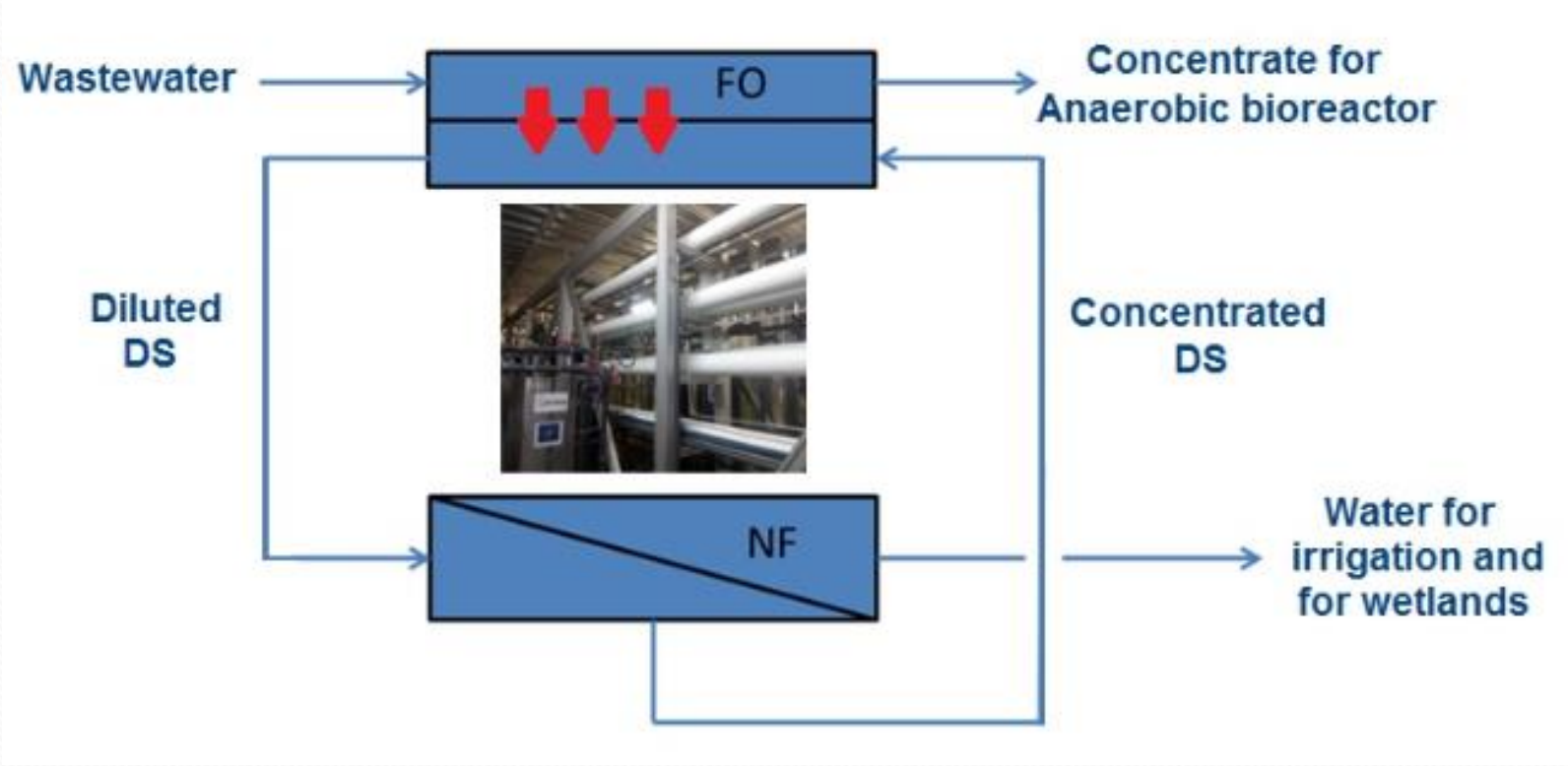
GENERAL AIM AND INNOVATIVE ASPECTS

This approach will allow a better control of **wastewater infrastructures** under **variable weather events**, easing the pressure on the **centralised** systems, thus expanding their asset life-time and reducing the treatment costs.

A key strength of the **integrated solution** lies in the **dynamic interaction** among the different technologies, flexibly adjusting their operations to the requirements

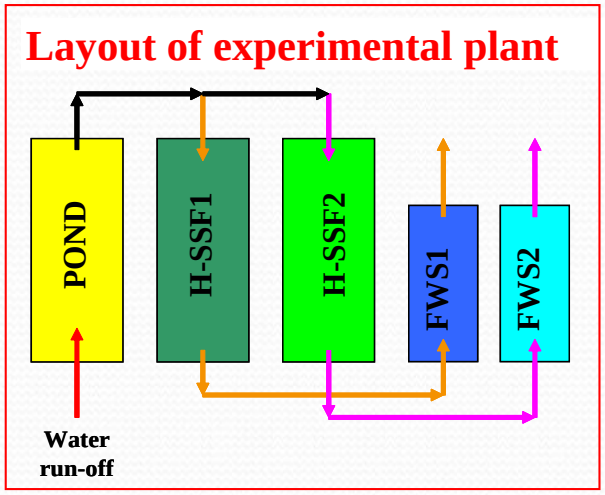
WP1a

Technical and economic evaluation of long-term FO filtration of real WW.
Select a specific draw solution for the FO+AnMBR process.



WP1b

Evaluate the viability of using a CW for alternative treatment of urban run-off and reclaimed water and the impact of evapotranspiration rates, salinity and nutrient-rich effluents.



Water run-off

POND

Horizontal Sub-Surface Flow Constructed Wetland (H-SSF)

Free Water Surface Constructed Wetland (FWS)

Toilet Flushing

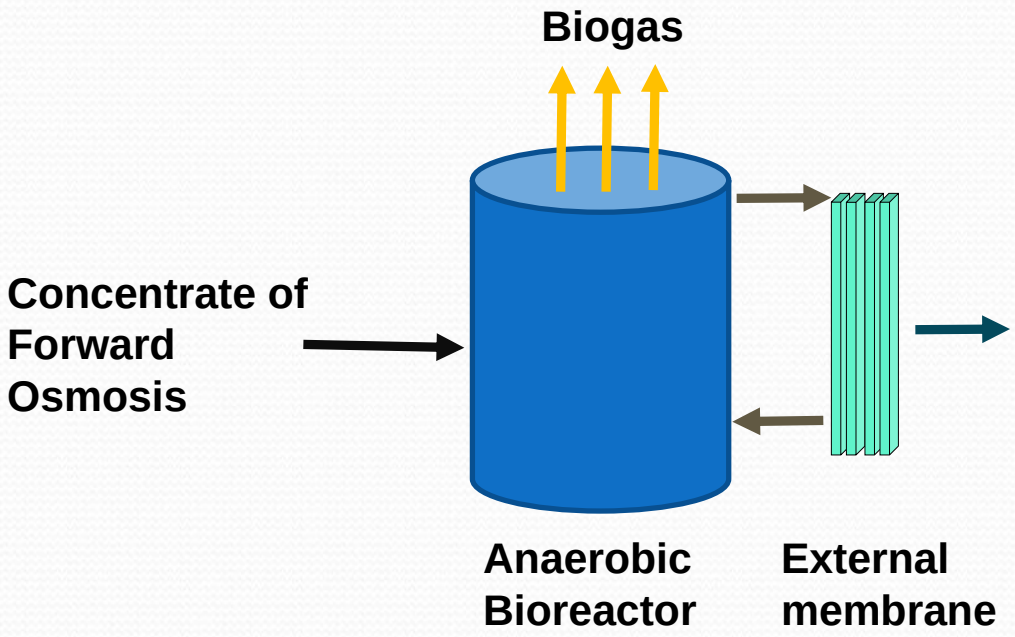
Green Areas Irrigation

REUSE

Disposal

WP2

Optimize energy recovery of an AnMBR treating wastewater concentrated with FO. Effect of treatment temperature, HRT and membrane fouling.

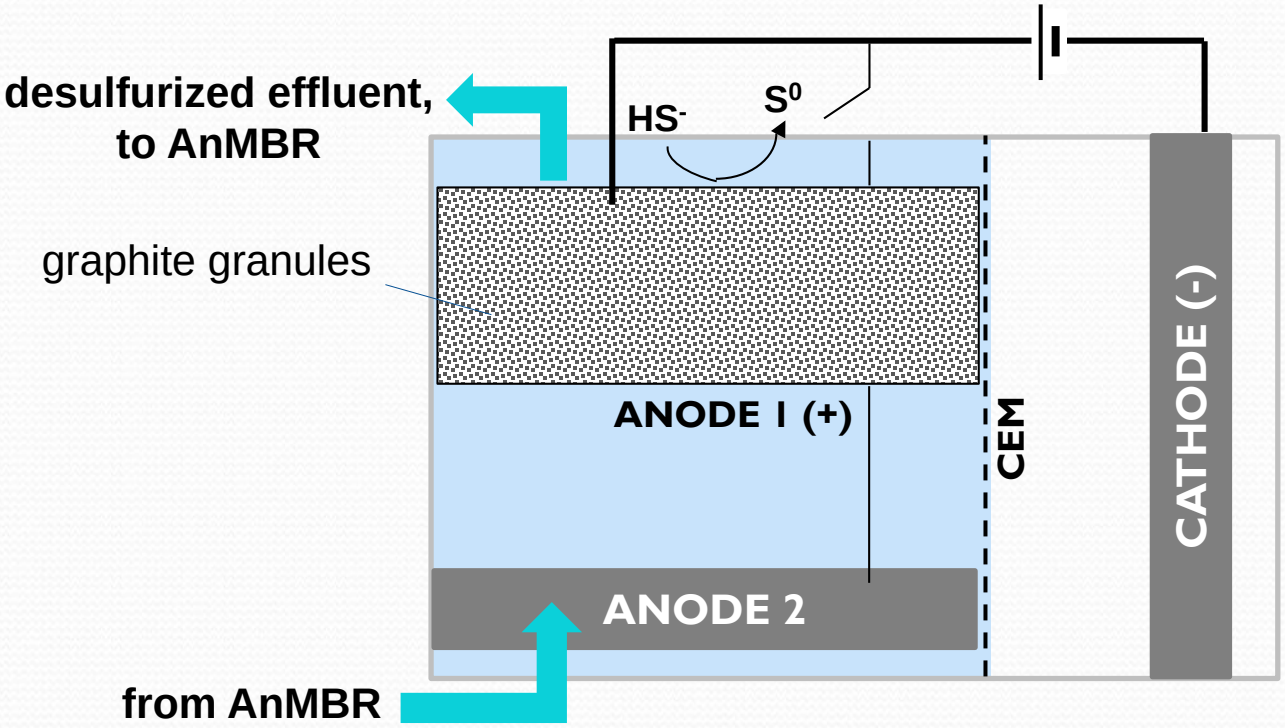


Challenges:

- *Overcoming the long start up phase for anaerobic reactors*
- *To identify optimum HRT for 3 temperature ranges (mimicking the seasonal temperature fluctuation of the wastewater)*
- *Improving methanogenic performance and biogas quality by removing H_2S (coupling with electrochemical system)*

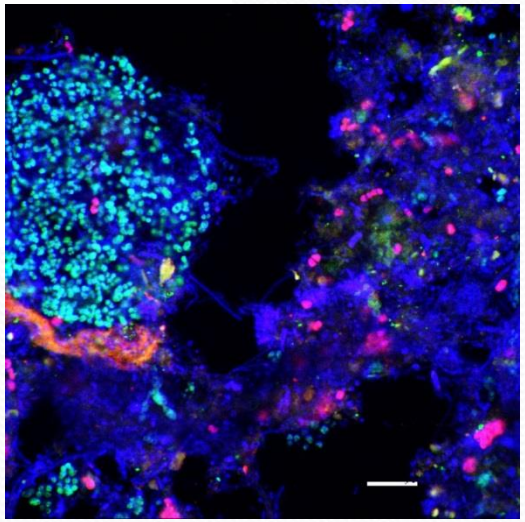
WP3

Study the application of an electrochemical unit coupled to the AnMBR to minimize sulphide inhibition of methanogenesis and generate value-added chemicals used to control sulphide formation in sewers.



WP4

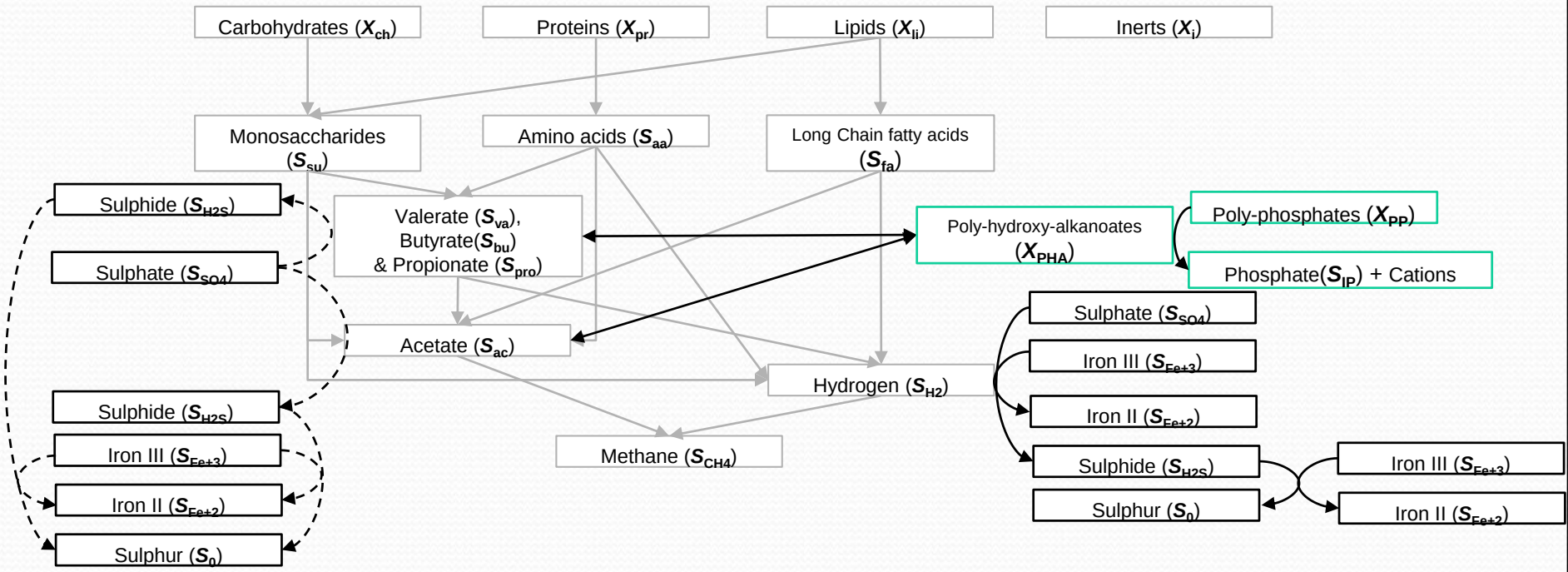
Optimize the nitritation/ denitritation pathway in the WWTP downstream to remove nitrogen and phosphorus in the presence of wastewater with a low chemical oxygen demand (COD) content. Minimize N_2O production.



WP5

Develop a set of mathematical models describing some of the innovative processes to foster their integrated optimization.

Develop a multi-criteria DSS based on the developed models and knowledge acquired for planning of integrated centralised/decentralised UWS.



RELATION to the WORK PROGRAMME

WaterWork 2014 call

1 Water treatment, Reuse, Recycling and Desalination

2 Developing Smart Water Technologies

3 Urban flood mitigation

EIP's water's priorities

- Focus on decentralized water reclamation
- Resilience to draught and floods

BENEFITS of the COLLABORATIVE APPROACH

Support for the implementation of EU environmental policies
Promoting green jobs
Transfer of results to society, administration and industry
Transnational collaboration between partners (before/after)

Environmental and social impacts:
- Climate change mitigation solutions
- Impact on public health
- Improved ecosystem services
- Reduce capital and O&M costs

MANAGEMENT STRUCTURE

Project coordinator

Scientific Board

Advisory and stakeholders board

Innovation manager (research-oriented but European water market uptake)

OPEN FOR COLLABORATION and EXCHANGE of STUDENTS, RESEARCHERS, KNOWLEDGE, IDEAS, CLIENTS, STAKEHOLDERS, POLICY MAKERS, PAPERS, NEWS …

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Thanks for your attention
Questions?

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www.icra.cat (specific watintech web page soon)