

# FLOODS, WATER SCARCITY AND EXTREME EVENTS 2023

## Aqua Research Collaboration (ARC)

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LNEC  
LISBON  
CONFERENCE



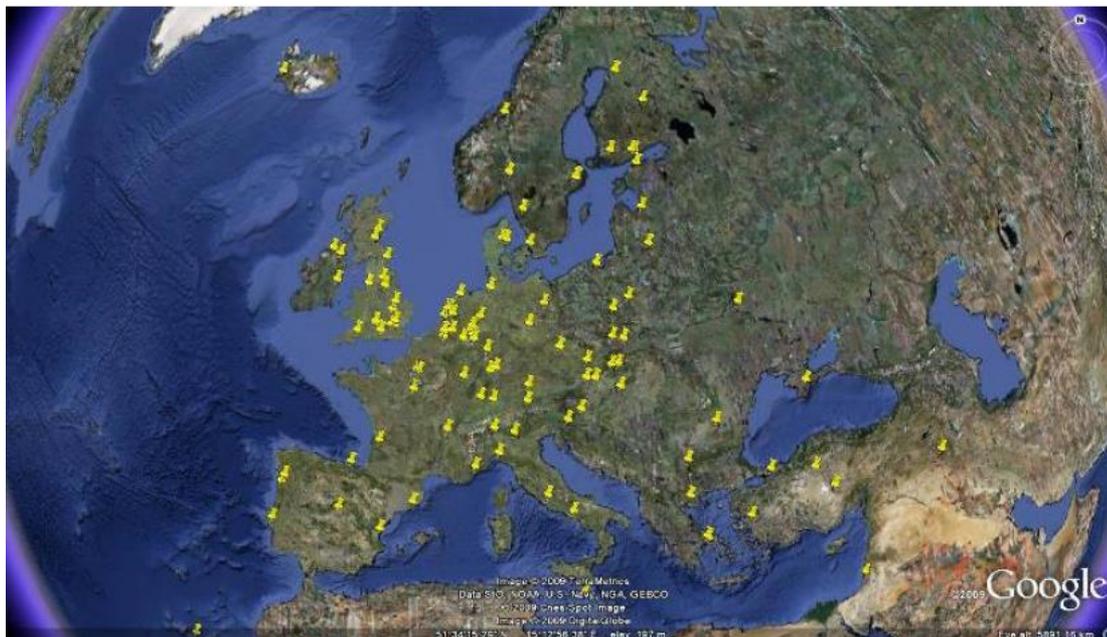
- 1. Introduction to ARC**
- 2. ARC research priorities**
- 3. Project examples**
- 4. Future perspectives**

## Grand Challenges

- Demographic Challenges
- Climate Challenges
- Scarce Resources
- Ageing infrastructure
- Need for more sustainable solutions



## Why ARC?

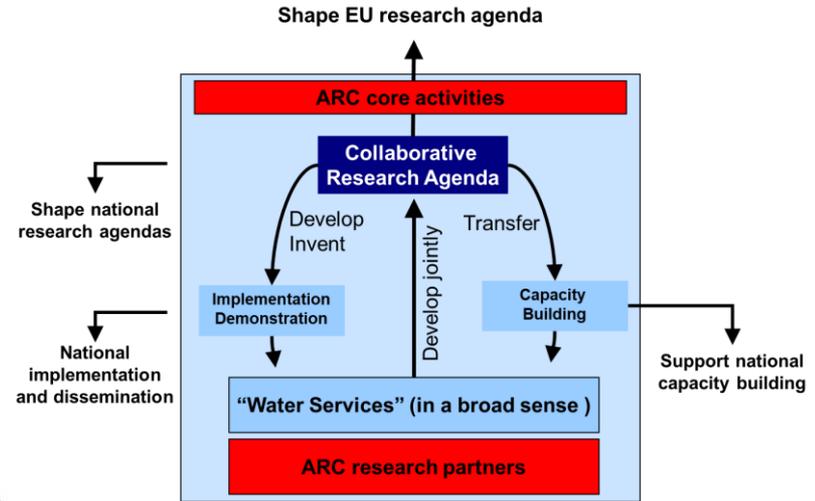


**Scattered EU research infrastructure**

# What is ARC?



The founding ceremony  
(Lisbon 29th of January, 2010)



The idea of the  
Aqua Research Collaboration



# Who is ARC?



**KWR, Netherlands**



**SINTEF, Norway**



**Cetaqua, Spain**



**NTNU, Norway**



**LNEC, Portugal**



**IWW, Germany**



**We know water.**

Water in Circular  
Economy

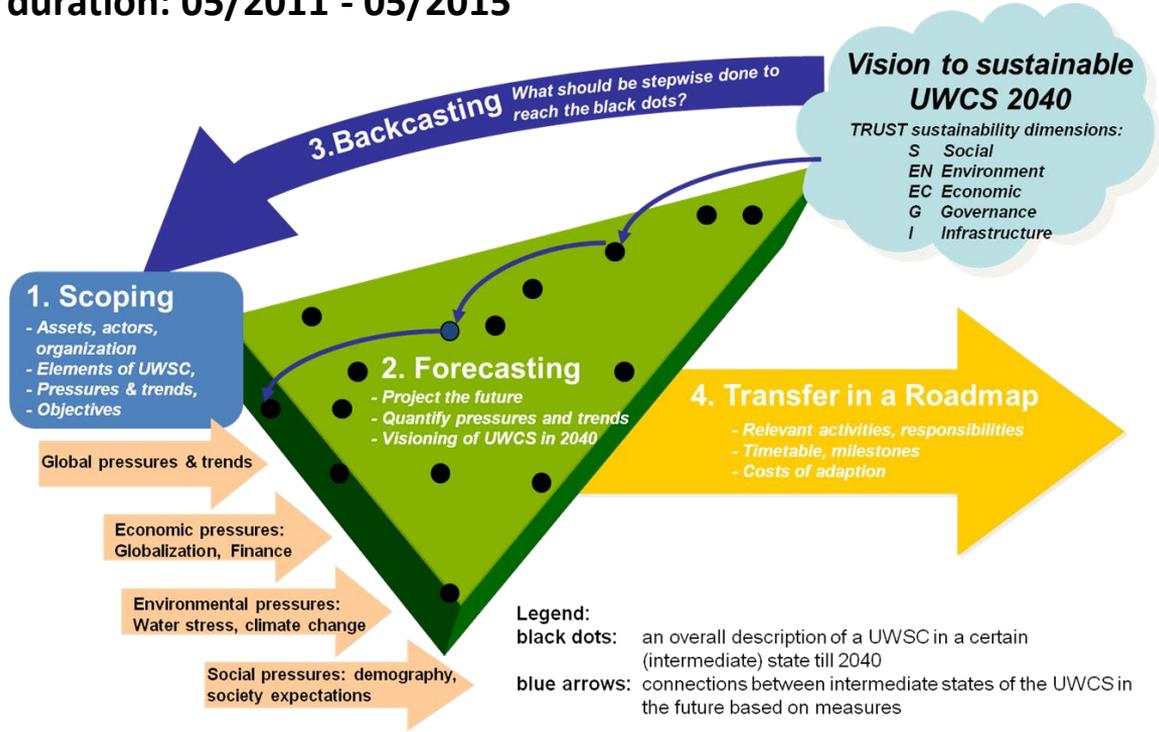
Low impact and  
resilient water  
systems

Serving the society  
and protecting the  
environment

The inspiring box  
(on future trends  
& development)

- New approaches in risk and crisis management within the water sector
- Innovative technologies for stormwater management
- Nature based solutions
- Demand and resources forecasting models/tools
- Decentralised water treatment
- Mitigating impacts of climate change on cities and the environment
- ....

Project duration: 05/2011 - 05/2015



**Project duration:** 01/2014 – 12/2017  
**Website:** <https://dessin-project.eu/>

## Ambition:

Promote and illustrate new technologies and management approaches to overcome water scarcity and water quality problems in urban areas

## Outcomes:

- DESSIN ESS Evaluation Framework
- Monetary evaluation of changes in ecosystem service provision in three different mature case studies
- Sustainability assessment of the technical measures tested in the six different case studies



# EU MARSOL: Demonstrating Managed Aquifer Recharge as a Solution to Water Scarcity and Drought



**Project duration:** 2013-2016

**Website:** [www.marsol.eu/](http://www.marsol.eu/)

## **Ambition:**

Demonstrate that Managed Aquifer Recharge techniques are able to secure 'excess' water and store it in the soil

## **Outcomes:**

- Establishment of a framework for the evaluation of "Managed Aquifer Recharge" as a measure to manage water scarcity and water quality risks
- Financial and economic evaluation of MAR measures at 8 sites across Europe
- Sustainability assessment of Managed Aquifer Recharge measures against conventional solutions



Forested Infiltration Area, Italy, Case Study  
River Brenta Catchment

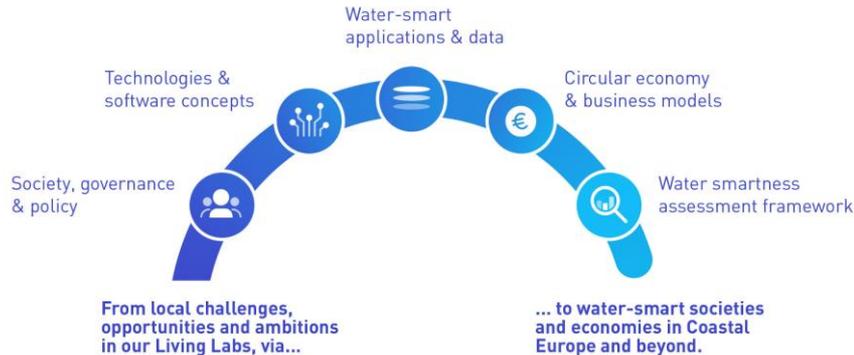
**Project duration:** 09/20 - 08/24  
**Website:** [b-watersmart.eu](http://b-watersmart.eu)

## Ambition:

Enable a water-smart society and economy through new technologies, concepts and digital solutions e.g.

- for water reuse 'fit for purpose'
- intelligent resource storage and allocation
- recovery & use of energy and recyclables

1. Alicante
2. Bodø
3. East Frisia
4. Flanders
5. Lisbon
6. Venice



- Promoting and enabling the use of reclaimed water
  - Paradigm shift to “the new normal”
  - Governance & Finance?
  - Risks & Public perception?
  - Setting up new distribution networks or investing in local closed-loop solutions?
- Harnessing the potential of other (untapped) natural resources
- Considering environmental water demands (water flows needed to maintain ecosystems)
- Identifying the case specific optimum between centralized and decentralized solutions
- Investigating benefits and disadvantages of water transfer between regions / river basins



- Investigating extreme short-term events
- Recognizing tipping points for subsequent quick changes
- Preparing our systems for catastrophic events



**Thank you very much for your  
attention!**

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