

MILANO 2015

# The Water JPI

Joint Programming Initiative  
Water Challenges for a Changing World



MILANO 2015

17 June 2015



MILANO 2015

# Agenda – 17 June 2015

- Introduction – Maria UCCELLATORE, Italian Ministry for University, Education and Research
- The Strategic Research and Innovation Agenda – Dominique DARMENDRAIL, Water JPI Coordinator
- Roundtable on Drinkable water and water-food nexus
- The 7 pilot call funded projects on water quality – Lourdes ARMESTO LOPEZ, MINECO
- Next steps in the implementation of the Water JPI – Alice WEMAERE, Irish Environmental Protection Agency





# ***“THE WATER JPI ON WATER CHALLENGES”***

at

## **EXPO MILANO 2015**

**Maria Uccellatore**  
**Head Office VI - Dissemination of Scientific Culture**  
**DGCPVR - MIUR**



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**Milan 17<sup>th</sup> June 2015**



**Welcome to EXPO of Milan 2015, welcome to Water JPI Event!**

By Maria Uccellatore, **Head Office VI for Dissemination of Scientific Culture** of Italian Ministry of Education, University and Research (MIUR)

Participation in **Governing Boards of many European Joint Programme Initiatives (JPIs)**, like Water JPI, as representative of MIUR.

**MIUR** is the **main Italian Actor** having the **coordination role in JPIs**. Currently MIUR participates in **10 JPIs**



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**Milan 17<sup>th</sup> June 2015**



## What is JPI?

It is an **intergovernmental instrument born in 2008** on input of European Commission to gather resources, in Europe and beyond Europe, to:

- **Strengthen scientific and technological bases, competitiveness and capacity**
- **Promote and foster research and innovation** to jointly face the relevant societal challenges
- **Optimize the impact** of European joint programming
- **Avoiding duplicates**

In this landscape, the **EXPO 2015** is an **extraordinary opportunity for the «Joint Programming Initiative on water challenges» (Water JPI)** to raise awareness on the essential role of water in our every day's life.



Milan 17<sup>th</sup> June 2015



## What is Water JPI?

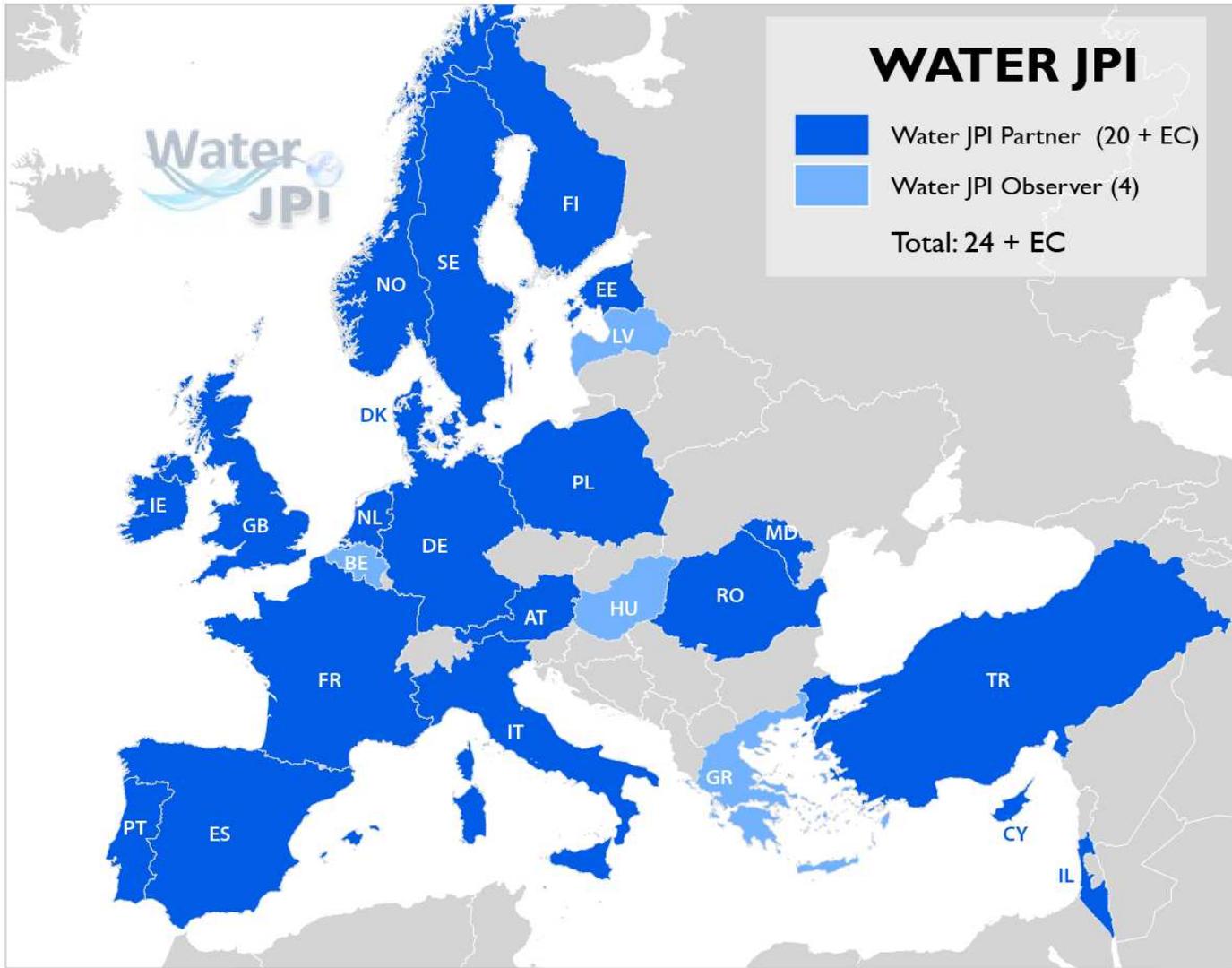
The **Joint Programming Initiative “Water challenges for a changing world”** is a relevant programme in this EU strategy for research and innovation, supported by the **European Commission, 20 Members** and by **4 Observers from EU Member States and Associated Countries** to the European Union in the developing of the EU research and innovation programme Horizon 2020.

It was approved by the Competitiveness Council **6 December 2011** with the aim of **reducing the fragmentation of the efforts made by the Member States** of the European Union **in the protection and management of water resources.**

Water JPI **responds to the challenge of "delivering sustainable water systems for a sustainable economy in and out of Europe."**



Milan 17<sup>th</sup> June 2015



Water JPI partners currently represent **88 %** of the European National Public RDI investment on water.





## Objectives of Water JPI

There is **great concern** about the availability of water in the future:

- **The world population has tripled** over the last century and is expected to reach 9 billions by 2050.
- **Only 0.7% of the global water resource is readily available** as freshwater, and it is very unevenly distributed across the planet
- **780 million people still lack access to safe water** and 2.5 billion people are without adequate sanitation.



Milan 17<sup>th</sup> June 2015



## Objectives of Water JPI

### Main aims:

- strengthen **European leadership and competitiveness in the field of water** whilst **protecting water resources and achieving sustainable water systems** for the citizens in Europe and abroad.
- **achieve the alignment** of the national agendas and related programmes in the field of water research, innovation and development, **thus jointly contributing to the European Research Area**



Milan 17<sup>th</sup> June 2015



## Water JPI and EXPO 2015

The Water JPI team has organized this event at EXPO 2015 because water **is essential to the production of food and fundamental for drinking and sanitation**. Access to sufficient, safe and affordable water is considered a human right.

**Lack of safe drinking water and sanitation impact negatively on access to proper nutrition and food security** because healthy nutrition is not possible without enough water of good quality able to ensure the hygiene and the irrigation of fields.



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Milan 17<sup>th</sup> June 2015



## What we will do together today

- **Activities performed by Water JPI will be presented** with special focus on the **Strategic Research and Innovation Agenda (SRIA)** and the **joint calls** launched to fund innovative and collaborative projects on this issue
- **Round table animated by water experts and representatives of different water** related private and public sectors will focus on the water-food nexus and propose solutions



Milan 17<sup>th</sup> June 2015



**Thank you for the kind attention**

**Enjoy this Water JPI event and the EXPO 2015!**

**Maria Uccellatore**  
**maria.uccellatore@miur.it**  
**Tel. +3906-58497760**



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**Milan 17<sup>th</sup> June 2015**



# The Strategic Research and Innovation Agenda (SRIA)

Dominique  
DARMENDRAIL

Water JPI Coordinator

# Main Objectives of Water JPI and Activities to Realise

## OBJECTIVES

- Involving water end-users for effective RDI results uptake
- Reaching effective, sustainable coordination of European water RDI
- Harmonising National water RDI agendas in Partner Countries.
- Supporting European leadership in science and technology.

## TOOLS

- Joint Call Management
- Mapping RDI activities (Questionnaire, Interview, Desk Research)
- Alignment of Research Agendas (SRIA Document and Implementation Plan)
- International Cooperation (MoUs, Call Partnerships...)

# What is a SRIA?

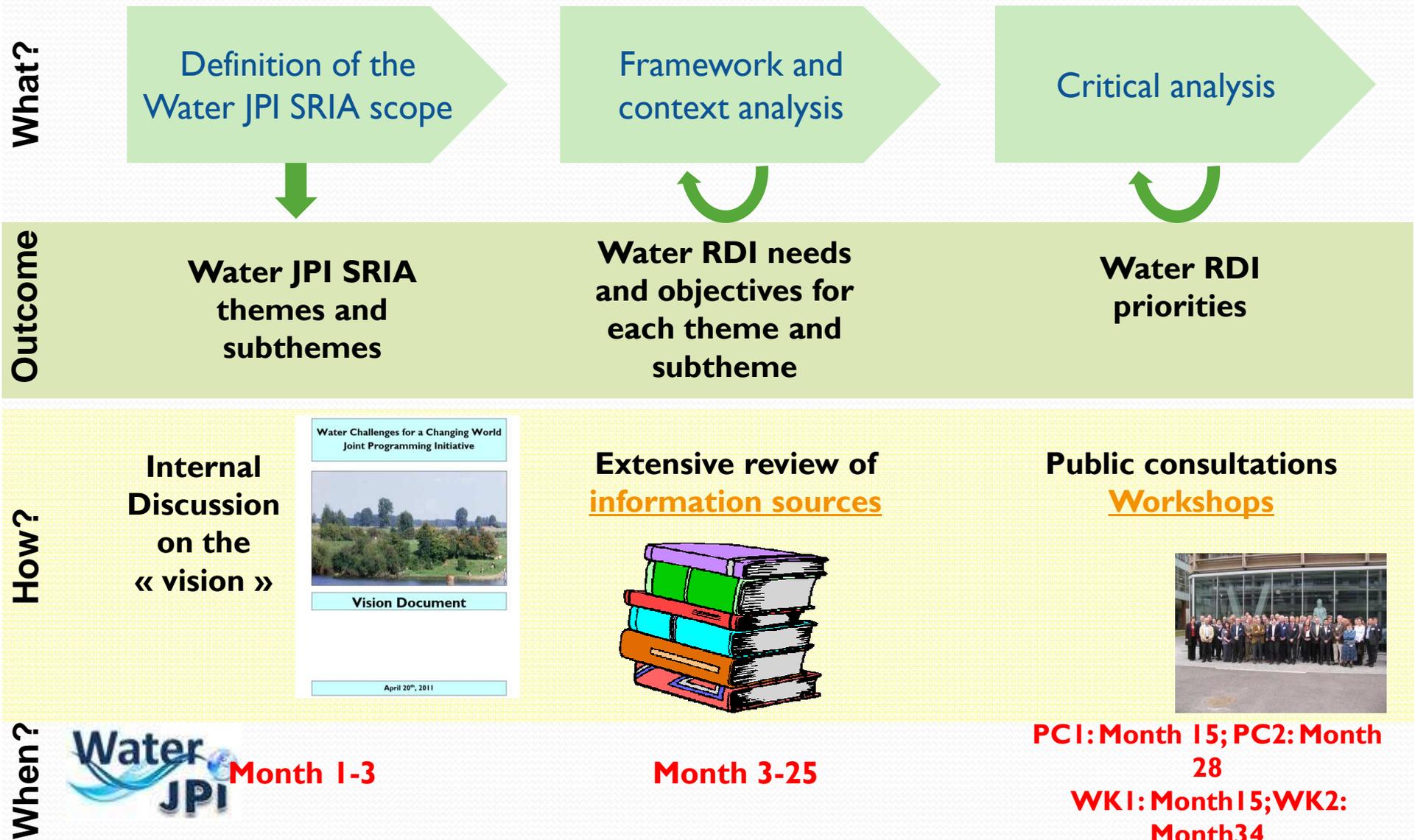
**SRIA stands for**

**«Strategic Research and Innovation Agenda»**

It is a strategic document that lays out and prioritises Research, Development and Innovation (**RDI**) **needs**

The SRIA is meant to guide future European RDI policy directions (e.g. Horizon 2020's work programmes)

# SRIA process

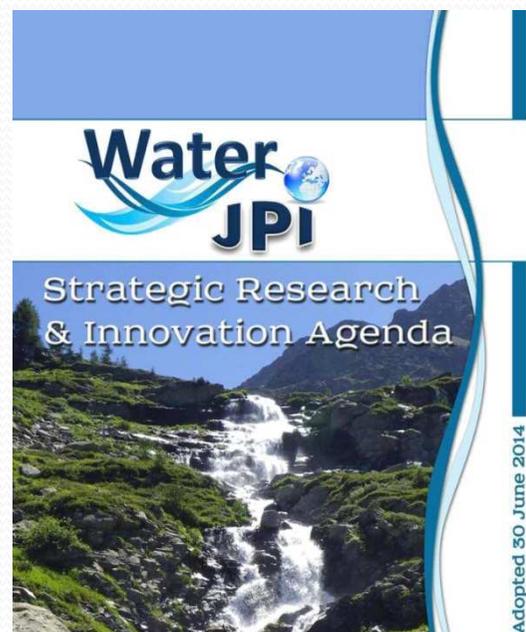


# Water JPI SRIAs

- Within the framework of the WatEUr Project, two versions already available and one in the pipeline



 **SRIA 0.5: May 2013**



**SRIA 1.0: June 2014**

**SRIA 2.0:  
due June 2016**



# 5 themes

Maintaining ecosystem sustainability



Developing safe water systems for the citizens



Promoting competitiveness in the water industry



Implementing a water-wise bioeconomy



Closing the water cycle gap

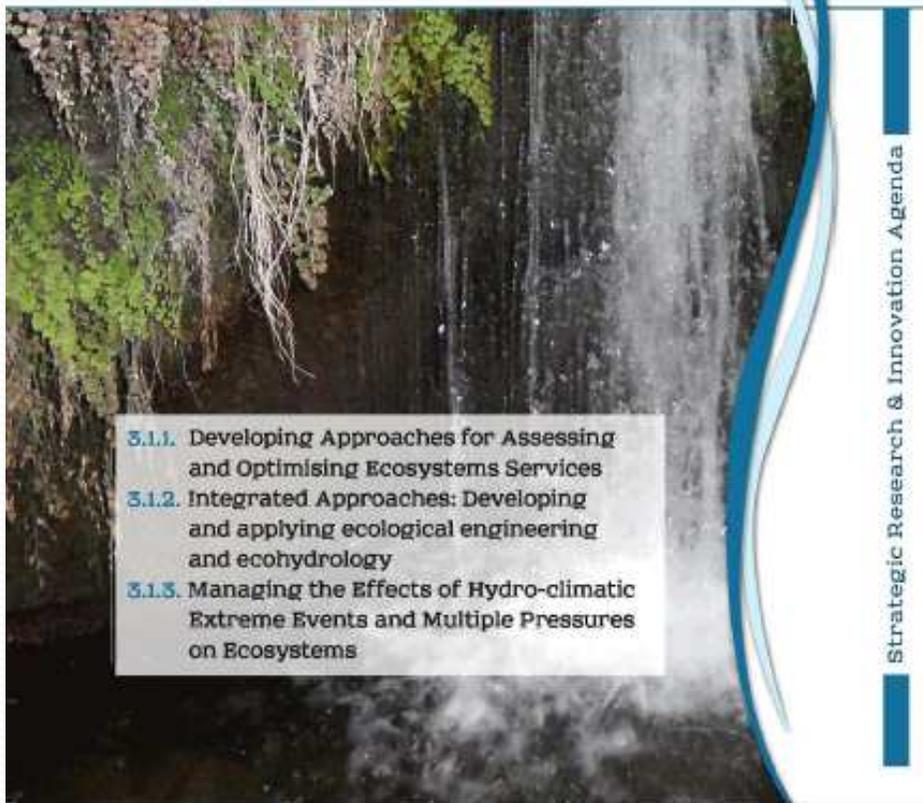


*For each theme, analysis of socioeconomic, environmental and policy impact*

# Elaboration of SRIA : 5 Themes and 11 Sub-themes (V0.5 => V 1.0)



## 3.1. Maintaining Ecosystem Sustainability



- 3.1.1. Developing Approaches for Assessing and Optimising Ecosystems Services
- 3.1.2. Integrated Approaches: Developing and applying ecological engineering and ecohydrology
- 3.1.3. Managing the Effects of Hydro-climatic Extreme Events and Multiple Pressures on Ecosystems

Strategic Research & Innovation Agenda

### 3.1.3 Managing the Effects of Hydro-climatic Extreme Events and Multiple Pressures on Ecosystems

Integrated systems for collecting, analysing, interpreting, and communicating data can be used to make decisions early enough to protect public health and the environment from the effects of extreme weather events, and to minimise unnecessary concerns and inconveniences to the population. The primary objectives of forecasting tools (including EWS) are to improve prediction of catastrophic events (floods, droughts) and to minimise the impacts on human lives, natural ecosystems, cultural heritage and food cycles.

#### Currently Identified Needs

RDI needs and related objectives	Time frame
<p><b>1.3.1. Setting the causes of drought/scarcity; predicting drought events and water scarcity</b></p> <ul style="list-style-type: none"> <li>- Diagnosing the causes of water scarcity in Europe, and forecasting the incidence of drought events under climate change scenarios. Studies at the regional scale will be favoured.</li> <li>- Developing management strategies focusing on cost-benefit analyses of agricultural evapotranspiration vs. water conservation for alternative hydrological uses.</li> </ul>	Short
<p><b>1.3.2. Developing innovative (or improved) tools for the protection and prevention of hydro-climatic extreme events</b></p> <ul style="list-style-type: none"> <li>- Developing innovative tools (such as EWS) for prevention and protection of extreme events, including sensor technology and monitoring networks.</li> <li>- Improving EWS for the forecasting of flooding and the assessment of associated risks.</li> </ul>	Short





### 3.2. Developing Sustainable Water Systems for the Future



3.2.1. Emerging Pollutants: effects on nature and behaviour and treatment  
 3.2.2. Minimising Risks Associated with Water Infrastructures and Natural Hazards



#### 3.2.2 Minimising Risks Associated with Water Infrastructures and Natural Hazards

Current global changes (such as climate change and urban sprawl) demand innovative practices to minimise the risks associated with: (i) water distribution and storage facilities in urban areas; and (ii) natural hazards (floods and water scarcity as well as associated risks for citizens' life and assets). Protecting the capacity of urban water networks to deliver water to citizens with target quality standards is a major goal for both European and non-European countries. Urban water networks concentrate large public investments, guarantee the right to water access and represent a very important niche for multinational European companies of all sizes. Research can protect citizens, investments and businesses by supporting innovative management and decision-making. Urban water natural hazards can be exemplified by urban floods and water scarcity. Their devastating power will be limited through multidisciplinary research exploring the areas of risk prevention and management. A variety of scientific and technological areas will be explored to put research results at the service of citizens' life and assets. The two aspects of this subtheme (infrastructure and natural hazards) may be combined in specific topics. For instance, the performance of storm water retention ponds could be improved, including the management of contaminants, and overflows in advanced wastewater treatment facilities could be managed when affected by floods.

##### Currently Identified Needs

RDI needs and related objectives	Time frame
<p><b>2.2.1. Exploiting ageing urban water systems for dependable and cost-effective service</b></p> <p>Developing methodologies and technologies for the effective monitoring and control of urban water networks and storm water systems.            Enhancing the resilience of urban water systems (i.e. pipeline networks, drinking-water reservoirs, pumping stations and large water treatment plants).            Improving the efficient use of state-of-the-art monitoring and control systems.            Developing decision-support systems (DSS) for long-term rehabilitation decisions based on the time evolution of system conditions.            Improving data-management routines. <a href="#">Link with 3.1.1.</a></p>	Long
<p><b>2.2.2. Progressing towards urban flood-proof cities. <a href="#">Link with 1.3.2 and 1.3.3.</a></b></p> <p>Developing and setting up technological and managerial solutions to urban floods.            Producing integrated systems for the prediction and risk management of urban floods (overflows in advanced wastewater treatment facilities, urban hydrology, surrounding river flow, hydrodynamics, internet of things, drainage design, social sciences and climate change analysis).            Developing a smart city approach to integrate sensors and public information services designed for all event phases. <a href="#">Link with 3.1.1.</a></p>	Short

Current version...

47 RDI needs

51 RDI objectives TH1

35 RDI objectives TH2

53 RDI objectives TH3

23 RDI objectives TH4

48 RDI objectives TH5



# Consultative workshop on SRIA 1.0

## Lyon (France), 3-4 April 2014

- Objective : to present the critical analysis (from various information sources) and feed discussions on SRIA 1.0
  - Any other gap? any cross-cutting issues?
  - Priorities for the short/ medium and long term
- Members of the Advisory Boards, external experts and stakeholders (chosen by the partners countries)

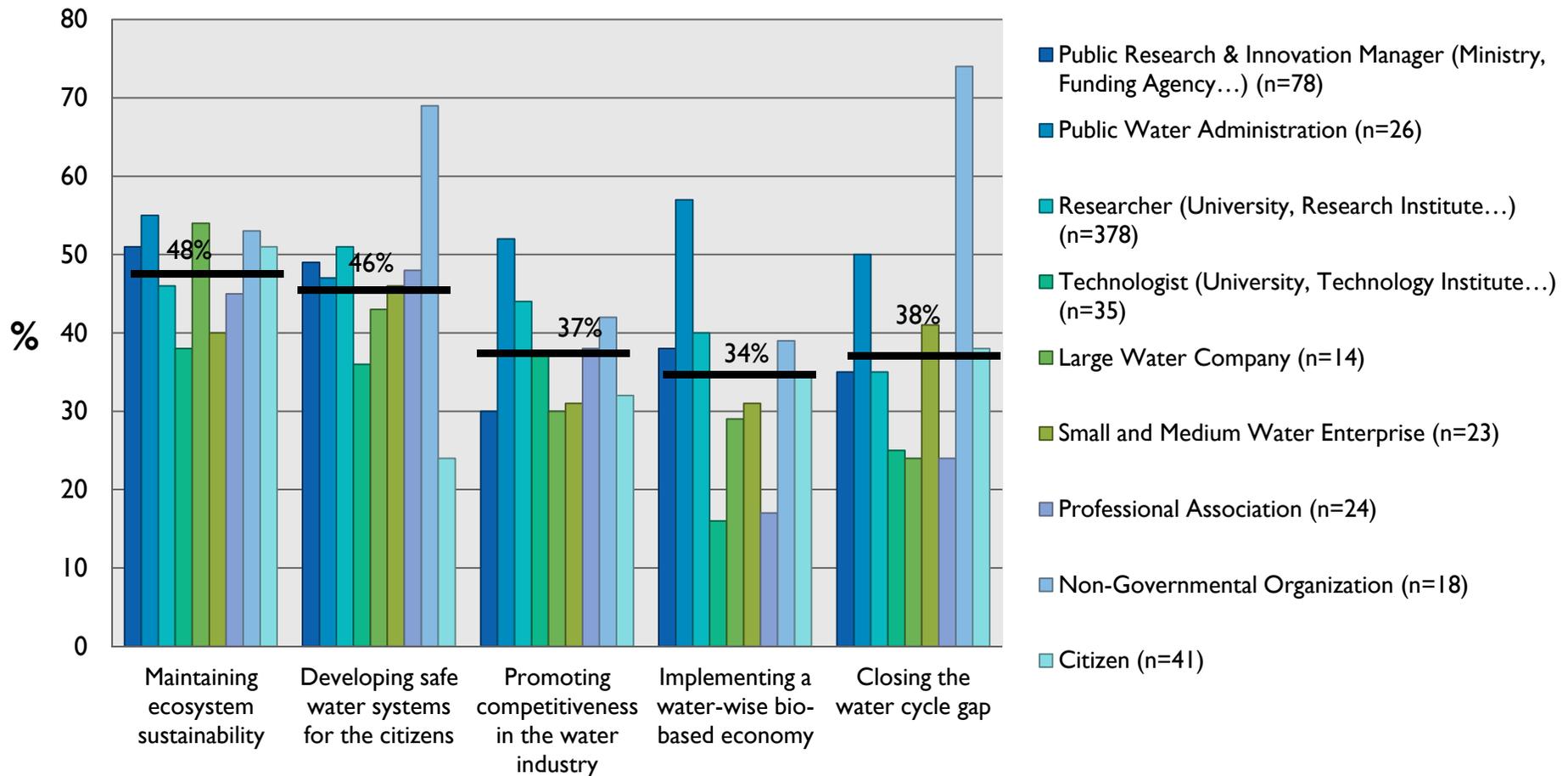
	STB & SAG	Experts	Total
Confirmed	20	9	29 (+7 VWP3)



# First Public Consultation - 2014

## SRIA THEMES / High importance by occupation

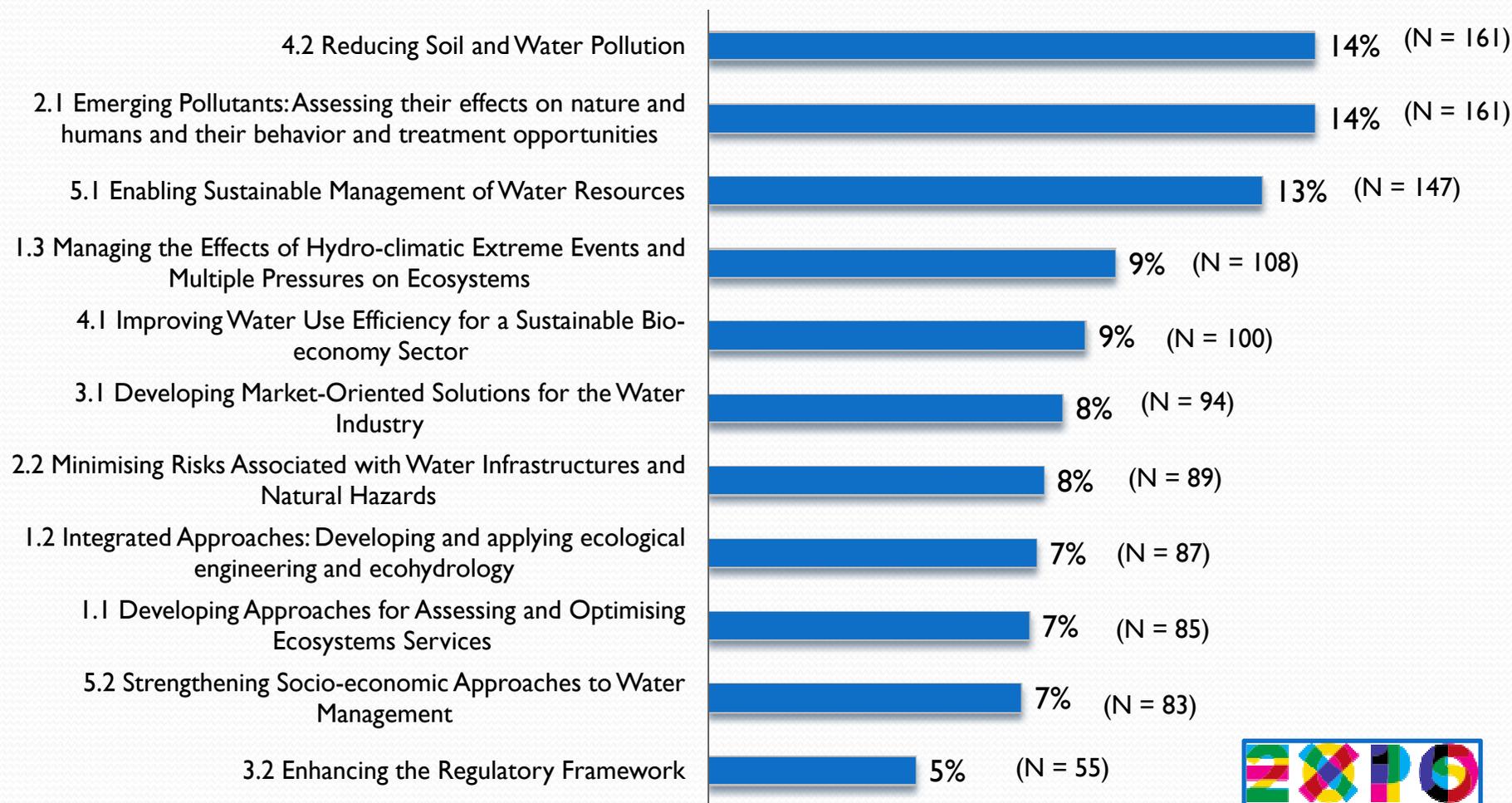
### High importance by occupation



# Second Public Consultation May 2015

## Three most important sub-themes of the SRIA

(N = 1170)



# Where are we now in the preparation of SRIA 2.0?

- Improvement of other chapters of the SRIA
- Organisation of the second consultative workshop
  - Date: 8th - 9th October 2015
  - Venue: BRGM Scientific Centre, Orléans (France)
  - Objective of the workshop
    - To feed discussions on SRIA 2.0 on new items, to improve RDI prioritisation
  - Participants (40-50 max)
    - ABs, external experts, industries, water utilities/ users, clusters, EU commission, NGOs, European Environmental Bureau, European Committee for Standardisation

# Thank you for your attention

[http://www.waterjpi.eu/images/SRIA/WATER%20JPI%20%20SRIA%201.0\\_2014.pdf](http://www.waterjpi.eu/images/SRIA/WATER%20JPI%20%20SRIA%201.0_2014.pdf)



# Roundtable on drinkable water and water – food nexus



# ROUNDTABLE moderated by Rossella MONTI, fondazione A.Volta

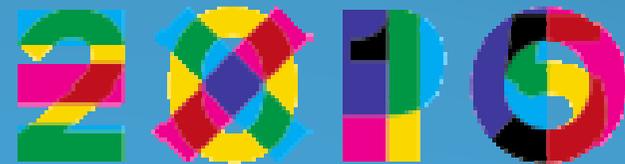
- **Enrique PLAYAN**, Research Professor at CSIC, former Water JPI coordinator
- **Davide VIAGGI**, associated Professor at Bologna University, EIP Water / action group WIRE
- **Michele FALCONE**, Director General of CAP Holding Spa
- **Luisa PRISTA**, Head of the Environmental Technologies Unit, DG Research and Innovation, European Commission
- **Xiaoming LI**, Professor at Hunan University, EIP Water Steering group
- **Stefano CETTI**, Director General of MM SpA



# Water JPI Pilot Call: Presentation of the seven funded projects



Lourdes Armesto López  
MINECO

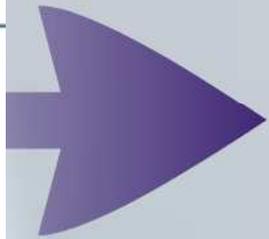


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## 3.2. Developing Safe Water Systems for the Citizens

- 3.2.1. Emerging Pollutants: Assessing their effects on nature and humans and their behaviour and treatment opportunities
- 3.2.2. Minimising Risks Associated with Water Infrastructures and Natural Hazards



For each sub theme, RDI needs and specific objectives:



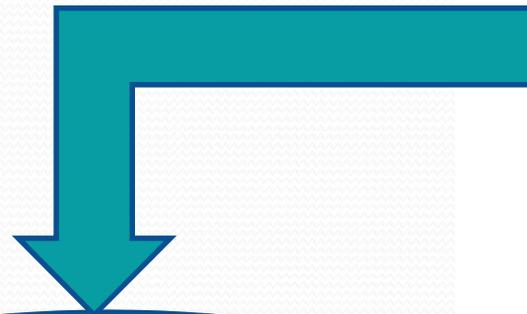
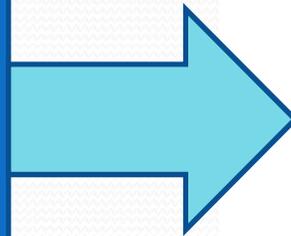
### 3.2.2 Minimising Risks Associated with Water Infrastructures and Natural Hazards

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#### Currently Identified Needs

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<p><b>2.2.2. Progressing towards urban flood-proof cities.</b> <a href="#">Link with 1.3.2 and 1.3.3.</a></p> <p>Developing and setting up technological and managerial solutions to urban floods. Producing integrated systems for the prediction and risk management of urban floods (overflows in advanced wastewater treatment facilities, urban hydrology, surrounding river flow, hydrodynamics, internet of things, drainage design, social sciences and climate change analysis). Developing a smart city approach to integrate sensors and public information services designed for all event phases. <a href="#">Link with 3.1.1.</a></p>	Short

**Emerging Pollutants:  
Assessing their effects on  
nature and humans and  
their behaviour and  
treatment opportunities**



**"Emerging water contaminants -  
anthropogenic pollutants and  
pathogens"**

*Currently Identified Needs*

RDI needs and related objectives	Time frame
<p><b>2.1.1. Developing analytical techniques for groups of substances</b> Improving methodologies for the detection, quantification and monitoring of emerging substances, DBPs, their metabolites and degradation products in different compartments of the environment. The development of real-time, warning systems and online technologies is of special interest. Developing new approaches to analyse the combined effects of chemicals (i.e., chemical mixtures), integrative bio-assessment tools and new biomarkers and bioassays.</p>	Short
<p><b>2.1.2. Controlling disinfection by-products, emerging pollutants and pathogens, including their environmental effects</b> Understanding and predicting the environmental behaviour of emerging pollutants in surface water, sediments, soil and groundwater. Assessing the transfer time of different pollutants as well as understanding the processes during transfer. Expanding the knowledge base on antibiotic resistance in aquatic environments: developing comparable and validated data sets on the prevalence and spread of major bacteria in the aquatic environment with clinically and epidemiologically relevant antimicrobial resistance in Europe. Developing integrated risk-assessment procedures, including the effect of long-term exposure, for antibiotics and other emerging pollutants acting at sub-lethal levels. Modelling transport, growth and degradation of emerging pollutants and pathogens. Assessing and implementing management measures and technologies to reduce the impact of emerging pollutants and pathogens on water quality. Specific focus on wastewater reuse is required. Developing a better understanding of the extent to which emerging pollutants are removed or modified by water treatment plants/natural processes in soil and water. Understanding the factors that control the bioavailability and fate of emerging pollutants in organisms. Characterising the effects of emerging pollutants and their metabolites, on human health and on ecosystems. Assessing both the occurrence and toxicity of regulated and emerging disinfection by-products. Developing strategies to reduce emerging pollutants at source (e.g. airports, golf courses, rail tracks, highways, hotels, pharmaceutical sources). Improving technologies for the specific removal of natural organic matter from surface water so as to avoid the formation of DBPs during the chemical disinfection process (with chlorine, chloramine, and ozone). <a href="#">Link with 3.1.2.</a></p>	Short

# Water JPI Pilot Call

**11** funding organisations from **10 countries:**

- RPF (Cyprus);
- DSF (Denmark);
- AKA (Finland);
- ONEMA (France);
- BMBF (Germany);
- EPA (Ireland);
- MIUR (Italy);
- RCN (Norway);
- FCT (Portugal);
- MINECO and CDTI (Spain)



**Water JPI projects: 9 M €**  
**Public funding for transnational collaborative research**

# Call Objectives

- ✓ to enable multi-national, collaborative research, development and innovation projects addressing questions relating to the water challenges faced by the European society
- ✓ to promote multi-disciplinary work
- ✓ to encourage proposals with fundamental and/or applied approaches
- ✓ to stimulate mobility of researchers within the Consortium

*Tackling societal challenges always requires a multidisciplinary approach. Therefore, all proposals should emphasize participation of stakeholders, and dissemination and exploitation of results.*

# Call Themes

**Theme 1: Identification and prevention of emerging freshwater contaminants**

**Theme 2: Control, mitigation and methods for treatment and removal**

**Theme 3: Impact on ecosystems services and human health**

# Call Statistics II: Funding organizations (eligible applicants)

Total amount of applications 595 (366 eligible), total applied funding 117 M € (all).

	Number of applications	Funded applications	Total applied sum	Total funded sum
<b>BMBF (Germany)</b>	79	13	25 100 753	3 080 000
<b>MINECO (Spain)</b>	74	9	12 276 227	1 399 000
<b>MIUR (Italy)</b>	45	4	5 627 509	299 641
<b>FCT (Portugal)</b>	37	3	3 750 513	299 544
<b>DSF (Denmark)</b>	26	1	6 885 642	481 952
<b>AKA (Finland)</b>	26	2	6 869 052	517 902
<b>ONEMA (France)</b>	19	4	5 453 242	600 432
<b>RCN (Norway)</b>	18	3	3 317 448	591 700
<b>RPF (Cyprus)</b>	16	2	1 398 910	199 998
<b>EPA (Ireland)</b>	14	2	1 326 946	263 898
<b>CDTI (Spain)</b>	12	1	2 791 480	141 795

# Call Decisions

**64 consortium proposals** were evaluated and ranked during March – May 2014.

As a result of work done by Evaluation Committee (EC), CSC gave recommendation to fund 7 Water JPI Pilot Call Consortia (including 44 subprojects):

## **7 Consortia (53 partners of whom 44 was eligible)**

- ✓ Eligible partners from all 10 countries (all 11 funding organisations involved)
- ✓ Coordinators from DE, FR, ES, PT
- ✓ 3 female and 4 male coordinators
- ✓ 13 female (30 %) and 31 male partners (70 %)

# Call Consortiums - FRAME

A novel Framework to Assess and manage  
contaminants of Emerging concern in  
indirect potable reuse



**Coordinator: Thomas Ternes (Germany)**

Participating countries: France, Italy, Norway



# Objectives - FRAME

**Development of an evaluation scheme for INPR to provide national & EU authorities with a reliable decision support tool for future implementations**

**Theme 1:** Identification and prevention of emerging freshwater contaminants

**Theme 2:** Control, mitigation and methods for treatment and removal

Water Reuse



Water Quality



Attenuation



Mitigation





# Consortiums - METAWATER

New METAgenomics and molecular based tools for European scale identification and control of emergent microbial contaminants in irrigation WATER



Dos campus d'excel·lència internacional  
**B:KC** Barcelona Knowledge Campus **HUB** Health University of Barcelona Campus



Instituto de Ingeniería del Agua y Medio Ambiente



**Coordinator: Rosina Girones (Spain)**

Participating countries: Cyprus, Denmark, Germany





# Objectives: METAWATER

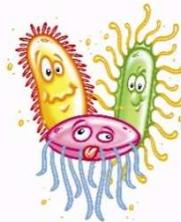
The final objective is to prevent epidemics and to produce the scientific bases to support the development of European/national regulation for water use for irrigation.

**Theme I:** Identification and prevention of emerging freshwater contaminants

Irrigation



Pathogens



Antibiotic resistance



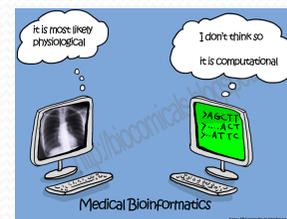
Regulation



Water use

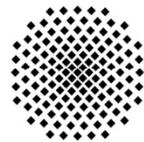


Bioinformatics

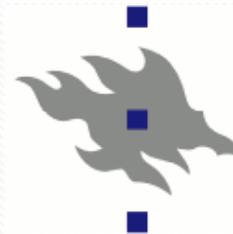


# Call Consortiums - MOTREM

Integrated processes for MOnitoring and  
Treatment of Emerging contaminants for water  
reuse



**University of Stuttgart**  
Germany



UNIVERSITY OF HELSINKI



UNIVERSITA  
DEGLI STUDI  
DI TORINO



**Coordinator: Javier Marugan (Spain)**



Participating countries: Finland, France, Germany, Italy

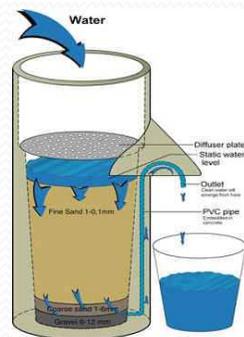
# Objectives - MOTREM

- **Develop new processes or modifications of the current biological and disinfection technologies in WWTPs by advanced oxidation and biooxidation processes to achieve the removal of ECs before water reuse or the discharge of the effluents to the environment.**
- **Develop new technologies for the monitoring of the wastewater treatment plant operation regarding the removal of ECs, including analytical procedures and ecotoxicology assessment.**
- **Bring together the technologies developed in steps a) and b) to be tested in an urban wastewater treatment plant.**

**Theme 1:** Identification and prevention of emerging freshwater contaminants

**Theme 2:** Control, mitigation and methods for treatment and removal

Biotreatment



Water reuse



# Call Consortiums - PERSIST

Persistence and fate of emerging contaminants and multi-resistant bacteria in a continuum of surface water groundwater from the laboratory scale to the regional scale



**HelmholtzZentrum münchen**  
Deutsches Forschungszentrum für Gesundheit und Umwelt



**Coordinator: Corinne Le Gal La Salle (France)**

Participating countries: Germany, Spain

# Call Consortiums - PERSIST

**Gain fundamental information on the behavior of EOCs, Targeting pharmaceuticals and resistant microbial communities In both surface water and groundwater**

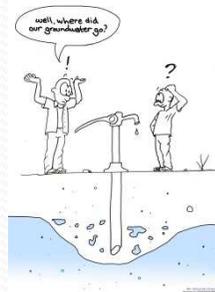
**Theme 1:** Identification and prevention of emerging freshwater contaminants

**Theme 3:** Impact on ecosystems services and human health

Surface water



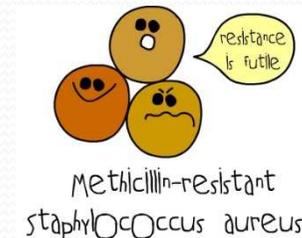
Groundwater



Mathematical Modelling

$$\begin{aligned} \dot{\psi}_s &= \alpha_1 \cdot d_s \cdot [(C_s - 1) \cdot \psi_s + C_s \cdot \psi_{ss} + C_{ss} \cdot \psi_{ss}] + U_s \cdot \cos(\omega_s t) - \Delta U_s; \\ \dot{\psi}_{ss} &= \alpha_2 \cdot d_s \cdot [C_s \cdot \psi_s + (C_{ss} - 1) \cdot \psi_{ss} + C_{ss} \cdot \psi_{ss}] - \phi_1 \cdot \psi_{ss} \cdot \beta; \\ \dot{\psi}_{ss} &= \alpha_3 \cdot d_s \cdot [C_s \cdot \psi_{ss} + C_{ss} \cdot \psi_{ss} + (C_{ss} - 1) \cdot \psi_{ss}] - \phi_1 \cdot \psi_{ss} \cdot \beta; \\ \dot{\psi}_{ss} &= \alpha_4 \cdot d_s \cdot [C_s \cdot (1 - \psi_{ss}) + C_{ss} \cdot \psi_{ss} + C_{ss} \cdot \psi_{ss}] + U_s \cdot \sin(\omega_s t) - \Delta U_s; \\ \dot{\psi}_{ss} &= \alpha_5 \cdot d_s \cdot [C_s \cdot \psi_{ss} + (C_{ss} - 1) \cdot \psi_{ss} + C_{ss} \cdot \psi_{ss}] + \phi_1 \cdot \psi_{ss} \cdot \beta; \\ \dot{\psi}_{ss} &= \alpha_6 \cdot d_s \cdot [C_s \cdot \psi_{ss} + C_{ss} \cdot \psi_{ss} + (C_{ss} - 1) \cdot \psi_{ss}] + \phi_1 \cdot \psi_{ss} \cdot \beta; \\ I_s \cdot \phi_1 + \beta_2 \cdot (\phi_1 - \phi_2) + \frac{1}{\epsilon_{12}} \cdot (\phi_1 - \phi_2) &= M_s; \\ I_s \cdot \phi_2 - \beta_2 \cdot (\phi_1 - \phi_2) - \frac{1}{\epsilon_{12}} \cdot (\phi_1 - \phi_2) &= -M_s + \beta_2 \cdot \phi_2; \\ M_s &= \frac{3\alpha_1 P}{2X_s} [\psi_s (C_s \psi_{ss} + C_{ss} \psi_{ss}) + \psi_{ss} (C_s \psi_{ss} + C_{ss} \psi_{ss} + C_{ss} \psi_{ss})]. \end{aligned}$$

Resistant microbial communities



# Call Consortiums - PROMOTE

## PROtecting water resources from MOBILE TracE chemicals



UNIVERSITEIT VAN AMSTERDAM

**Coordinator: Thorsten Reemtsma (Germany)**

Participating countries: France, Norway, Spain



# Objectives - PROMOTE

**PROMOTE** focuses its activities on persistent mobile organic contaminants (PMOC), based on the analysis that (a) for this kind of contaminants an analytical gap yet exists for their determination from water and that (b) therefore little is known about the occurrence of PMOC in aquatic compartment and, more critically in source waters used for drinking water production. At the same time the occurrence of PMOC in such waters is very likely, because they are mobile and persistent.

**Theme I:** Identification and prevention of emerging freshwater contaminants

River Basins



Drinking Water  
Quality



Mitigation



Analytical  
methods



# Call Consortiums - StARE

## Stopping antibiotic Resistance Evolution



**Coordinator: Célia M. Manaia (Portugal)**

Participating countries: Cyprus, Finland, Germany, Ireland, Norway,



# Objectives - StARE

- Formulate harmonized protocols to measure AR in aquatic environments (sample size, collection procedure, sample processing, indicators, metadata).
- Assess the occurrence of antibiotic residues and ARB&G and potentially interacting emerging chemical pollutants in the final effluent of urban wastewater treatment plants (UWTP) in countries with different patterns of antibiotic consumption and with different prevalence of clinical AR; Identify critical factors (e.g. antimicrobial residues, heavy metals, temperature, organic matter) coinciding with the highest AR prevalence;
- Develop and improve advanced WW treatment technologies and/or their combination with biological processes to be implemented in critical points (e.g., UWTP, hospital effluents), which will minimize mutation rates, horizontal gene transfer, and AR selection.

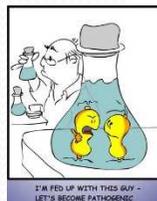
## Theme I: Identification and prevention of emerging freshwater contaminants

Wastewater  
Treatment

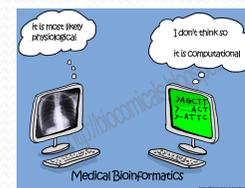


Microbiology

Antibiotic  
resistant



Analytical  
Chemistry



Bioinformatics

# Call Consortiums - TRACE

Tracking and assessing the Risk from Antibiotic Resistant genes using Chip technology in surface water ecosystems



UNIVERSIDADE NOVA DE LISBOA



**Coordinator: Wolfgang Fritzsche (Germany)**

Participating countries: Ireland, Italy, Portugal, Spain

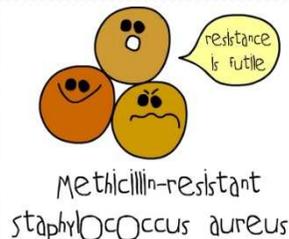
# Objectives - TRACE

- develop an **on-site detection technology** in a **chipbased solution** to detect a panel of antibiotic resistance genes for waterborne microorganisms, allowing **timeand cost-efficient evaluation of AR patterns** and the associated risk for human health.
- understand the **sources and behavior of antibiotic resistance** in natural waters and infection routes

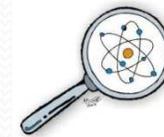
**Theme 1: Identification and prevention of emerging freshwater contaminants**

**Theme 3: Impact on ecosystems services and human health**

antimicrobial  
resistance



nanotechnology



human health



on-site detection

# Next FUTURE



WaterWorks2014 responds to the Horizon 2020 (H2020) Societal Challenge 5 2014 Call topic Water-3 [2014]: *Stepping up EU research and innovation cooperation in the water area*. WW2014, which is based on the model of pooling funding from 15 countries, is an ERA-NET Cofund.

## The WaterWorks 2014 Cofunded Call

The topic: **Research and Innovation for Developing Technological Solutions and Services:**

- for Water Treatment, Reuse, Recycling and Desalination
- for Water Resources Management;
- to Mitigate Impacts of Extreme Events (Floods and



Droughts) at Catchment Scale.

*Thank you!*



# The Water JPI Implementation Plan 2014-2016

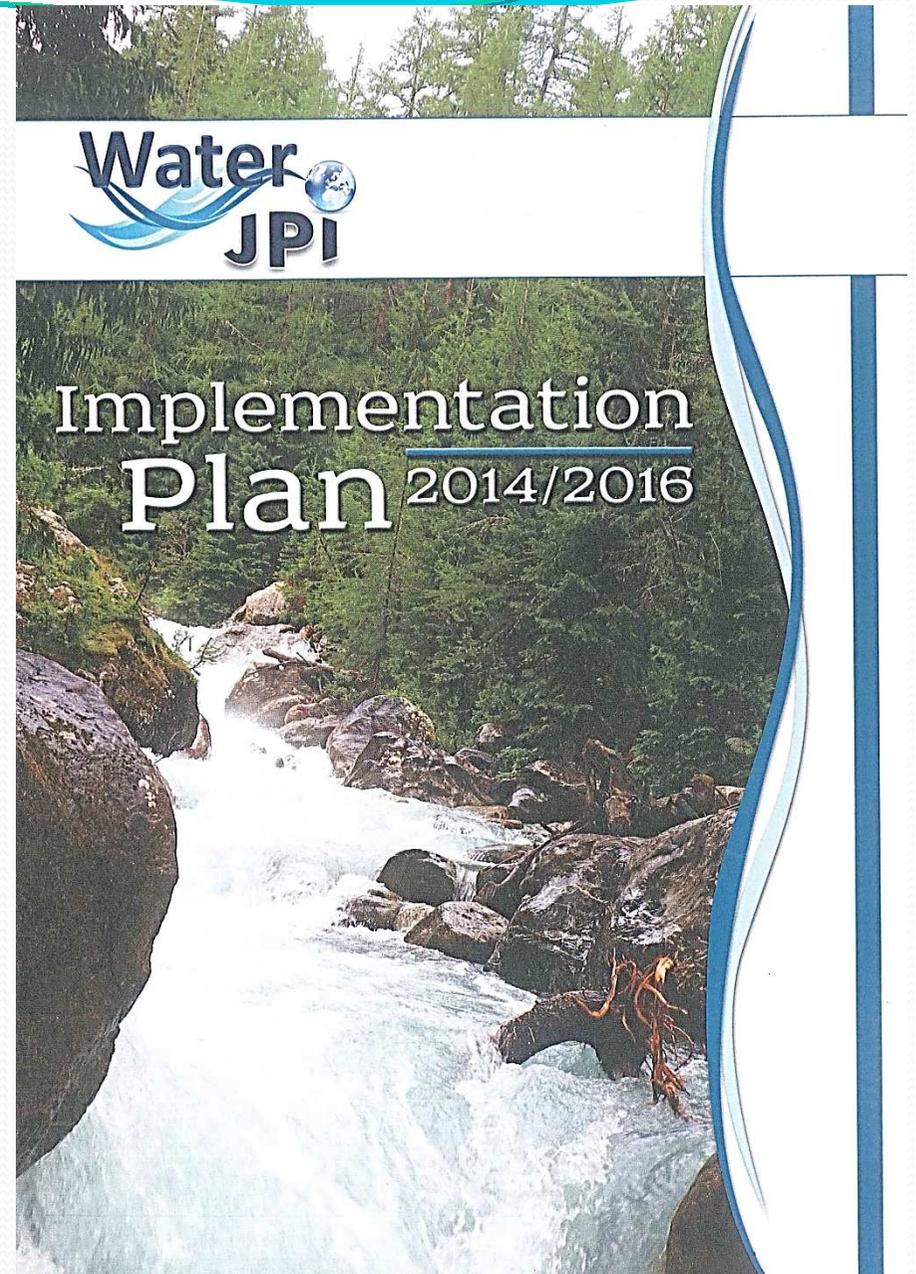


By Alice WEMAERE,  
Irish Environmental  
Protection Agency



# Implementation Plan

- The Water JPI Implementation Plan 2014-2016
- A planning based on a wide consensus
- Expressing determination and commitment to deliver the SRIA



# Implementation Plan: where are we?

- The Water JPI Implementation Plan 2014-2016
- Launched in Brussels, in October 2014



# Progress in the Implementation Plan

- Three **Types of Activities**
  - Empowering Research, Development and Innovation actors
  - Interfacing with society
  - Improving the efficiency of RDI programmes
- Major **Groups of Activities** Composing the Water JPI Implementation Plan:
  - Water JPI (own activities)
  - DG Research and Innovation, towards:
    - Collaborative projects on Horizon 2020, and
    - Actions (CSA, ERANET) towards Water JPI
  - DG Environment (regarding EIP on Water, and Water Framework)



# Progress on the Implementation Plan

Major Groups of Activities **Owned** and **Performed** by the Water JPI

Major Group of Activities	Specific Activity	Type of Activity	Water JPI Instrument	Timing									
				2014	2015				2016				
				Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1. Pilot Call for Proposals	1.1. Adoption of funding decisions	Empowering RDI Actors	Collaborative Projects	✓									
	1.2. Projects Kick off Workshop		Strategic Workshops		✓								
	1.3. Mid-term review		Collaborative Projects								★		
2. Second Call for Proposals	2.1. Infoday and partnering event	Empowering RDI Actors	Strategic Workshops		✓								
	2.2. Call publication		Collaborative Projects		✓								
	2.3. Adoption of funding decisions								★				
	2.4. Projects kick off workshop								★				
3. Third Call for Proposals	3.1. Submission of an ERA-NET proposal to Call Water 3 2015	Empowering RDI Actors	ERA-NET Cofund			✓							
	3.2. Infoday and partnering event		Strategic Workshops						★				
	3.3. Call publication		Collaborative Projects						★				

# Progress

## Major Groups of Activities **Owned** and **Performed** by the Water JPI

cont.												
Major Group of Activities	Specific Activity	Type of Activity	Water JPI Instrument	Timing								
				2014	2015				2016			
				Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
4. Programme Alignment	4.1. Continued activities	Improving efficiency RDI programmes	Programme Alignment	✓	✓	✓	★	★	★	★	★	★
	4.2. 1 <sup>st</sup> workshop for sharing good practices in Programme management		Strategic Workshops		★	→		✓				
	4.3. 2 <sup>nd</sup> workshop for sharing good practices in Programme management		Strategic Workshops						★	→		★
5. SRIA development	5.1. Consultation for SRIA 2.0	Interfacing with society	Strategic Workshops			✓						
	5.2. Exploratory Workshop						★					
6. Outreach	6.1. Launching SRIA 1.0 and the Implementation Plan	Interfacing with society	Strategic Workshops	✓								
	6.2. Participation at the World Water Forum					✓						
	6.3. Final Conference of FP7 WatEUr project							★	→		★	
	6.4. EIP Water 2014 Conference			✓								
	6.5. Launching SRIA 2.0 and the update of the Implementation Plan									★		---

# Future Activities

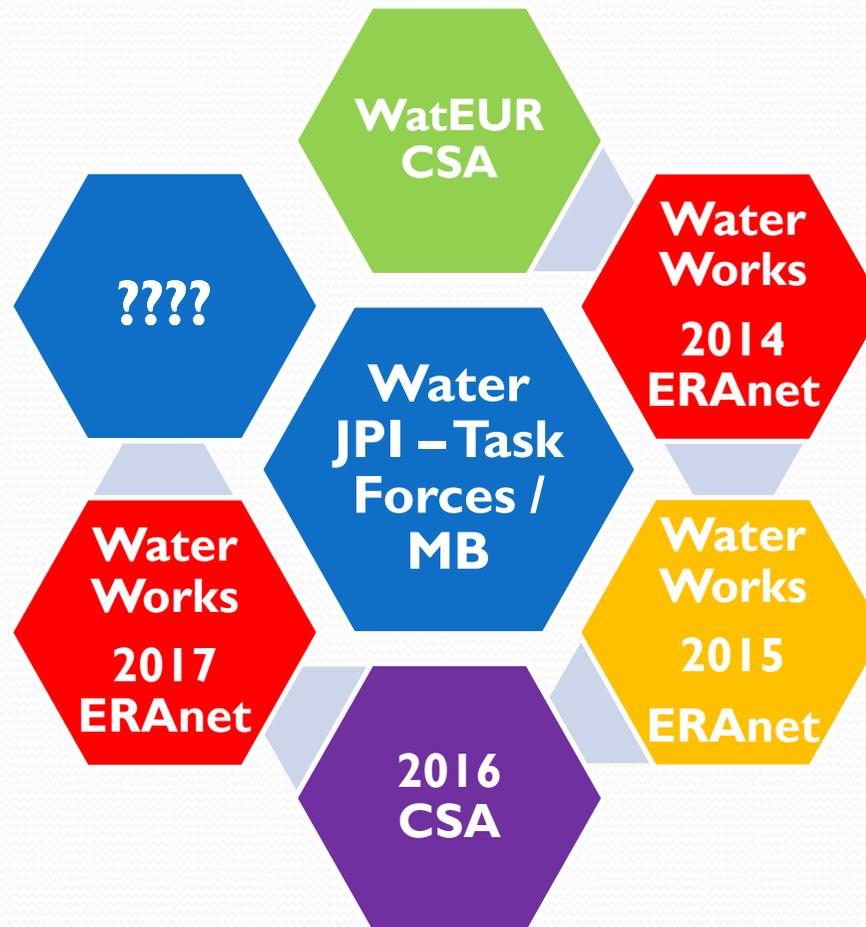


# Future Activities

- Alignment
- Interactions with H2020, EC-Projects & EU-Initiatives
- International Cooperation
- Updating the SRIA
- Updating the Implementation Plan
- Dissemination
- Joint Activities:
  - Joint Calls
  - Knowledge Hub
  - Mobility & Infrastructure



# Future Activities – How?



# Water JPI – On-going and Possible EC-funded Projects

- In support of the Water JPI Implementation

2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>CSA WatEUr</b>								
		<b>ERA-NET Cofund WaterWorks2014</b>						
			<b>ERA-NET Cofund WaterWorks2015</b>					
				<b>CSA WatEUr2 ?</b>				
					<b>ERA-NET Cofund WaterWorks2017 ?</b>			



# Main Objectives & Activities to Realise

## OBJECTIVES

- Involving water end-users for effective RDI results uptake
- Reaching effective, sustainable coordination of European water RDI
- Harmonising National water RDI agendas in Partner Countries.
- Supporting European leadership in science and technology.

## TOOLS

- Joint Call Management
- Mapping RDI activities (Questionnaire, Interview, Desk Research)
- Alignment of Research Agendas (SRIA Document and Implementation Plan)
- International Cooperation (MoUs, Call Partnerships...)

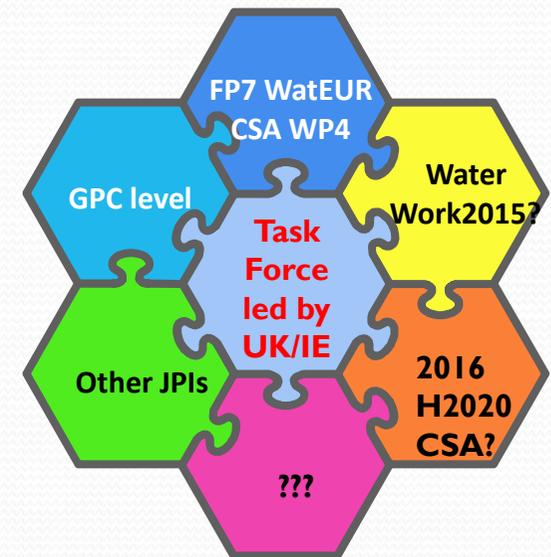
# Alignment

- Joint calls have been a major activity for most of the ten JPIs, but activities should go far beyond joint calls

- *“By aligning and coordinating the institutional and competitive funding committed under national research programmes, which accounts for 88% of the public research in Europe, we can better exploit our resources for maximal societal impact”*

## 4 types of Alignment:

- Joint calls
- Sharing of work
- Sharing of resources
- areas where no one country can do the work alone



# Interactions with H2020



## Objectives

- a) Interactions with the EC - Overall JPI Water Strategy
- b) Provide a Platform to React and Gather GB's Feedback
- c) Collate Information on and Link with Water-related RDI EU Funded Projects
- d) Linkages with other Initiatives
- e) Integrating all the Water JPI relevant activities & Communicating to the wider Water JPI Community

# International Cooperation



Activities since the beginning and conducted under:

- **WatEUr:**
  - 7 targeted countries: BR, CA, CN, IN, US, VT, ZA
- **WaterWorks2014:** Integration of 4 countries in the Joint call
- **WaterWorks2015:** Integration of 8 countries in the Joint call and dedicated Additional Activities
- Future **CSA 2016** on “**Support International Cooperation Activities on Water**”

# Updating the SRIA

- ✓ 2013 SRIA v0.5
- ✓ 2014 SRIA v1.0
- ✓ 2015 SRIA v2.0



- Review of the updating process, Review of other initiatives processes, Input from the new Water JPI Advisory Boards
- Flexible SRIA updating process allowing for
  - dealing with Emerging Research Issues,
  - developing Research needs on common interest with other JPIs or countries

# Updating the Implementation Plan

- New planning period: 2016-2018
- Greater contributions from the Advisory Boards ⇨  
Identify (new) SRIA elements to be prioritised in the next Implementation Plan:
  - As activities of the Water JPI
  - As possible items for Horizon 2020



# Updating the Mapping Report



Mapping Water RDI  
in Europe

December, 2014

- ✓ Better understanding of the European water-related RDI activities
- ✓ Inventory of national & regional research strategies, policies and programs
- ✓ Funding of research projects, infrastructures & mobility schemes in Water RDI
- ✓ Multi-national coordination activities taking place in Europe



# Joint Activities - Calls

- 2013 Pilot Call on Emerging Contaminants
- 2015 Cofunded Call on Water Treatment  
(WaterWorks2014)
- ? 2016 Cofunded Call on Water Quality & Agriculture (with  
FACCE JPI) – WaterWorks2015
- ? 2018 Cofunded Call on Closing the Water Cycle Gap



# Joint Activities

- Knowledge Hub
- Mobility
- Infrastructure
- Etc...



# Dissemination



Thanks to All!

See you very soon!

