The Water JPI

Joint Programming Initiative
Water Challenges for a Changing World

One Health Initiatives and Funding Opportunities

Lisa Sheils
Environmental Protection Agency (EPA)

What is all about ?

- The overall aim of the Joint Programming process is to pool national research efforts in order to make better use of Europe's public R&D resources and to tackle common European challenges more effectively in a few key areas.

- It is an initiative of European Member States and the European Commission that dates from 2008.

10 JPIs since 2008

Water Challenges for a Changing World

Healthy and Productive Seas and Oceans

More Years, Better Lives - The Potential and Challenges of Demographic Change

Antimicrobial Resistance- The Microbial Challenge - An Emerging Threat to Human Health

Connecting Climate Knowledge for Europe

Global Urban Challenges, Joint European Solutions

Agriculture, Food Security and Climate Change

Cultural Heritage and Global Change: A New Challenge for Europe

A Healthy Diet for a Healthy Life

Alzheimer and other Neurodegenerative Diseases

Joint Programming

- The ten JPIs were established with the aims to:
  - **Respond to societal challenges through joint and targeted research and innovation strategies, programmes and activities on a transnational level**
  - **Better coordinate and integrate national research and innovation planning, policies, strategies and programmes for selected challenges**

10 years of JPIs

- https://www.youtube.com/watch?v=9KQ0Sd6AVQ8&feature=youtu.be

Joint Programming

- The attractiveness of Joint Programming lies in its structured and strategic process, whereby
  - Member States voluntarily agree to work in partnership towards common visions that are
  - encapsulated in Strategic Research and Innovation Agendas (SRIAs) and
  - implemented through joint actions.


Water
JPI

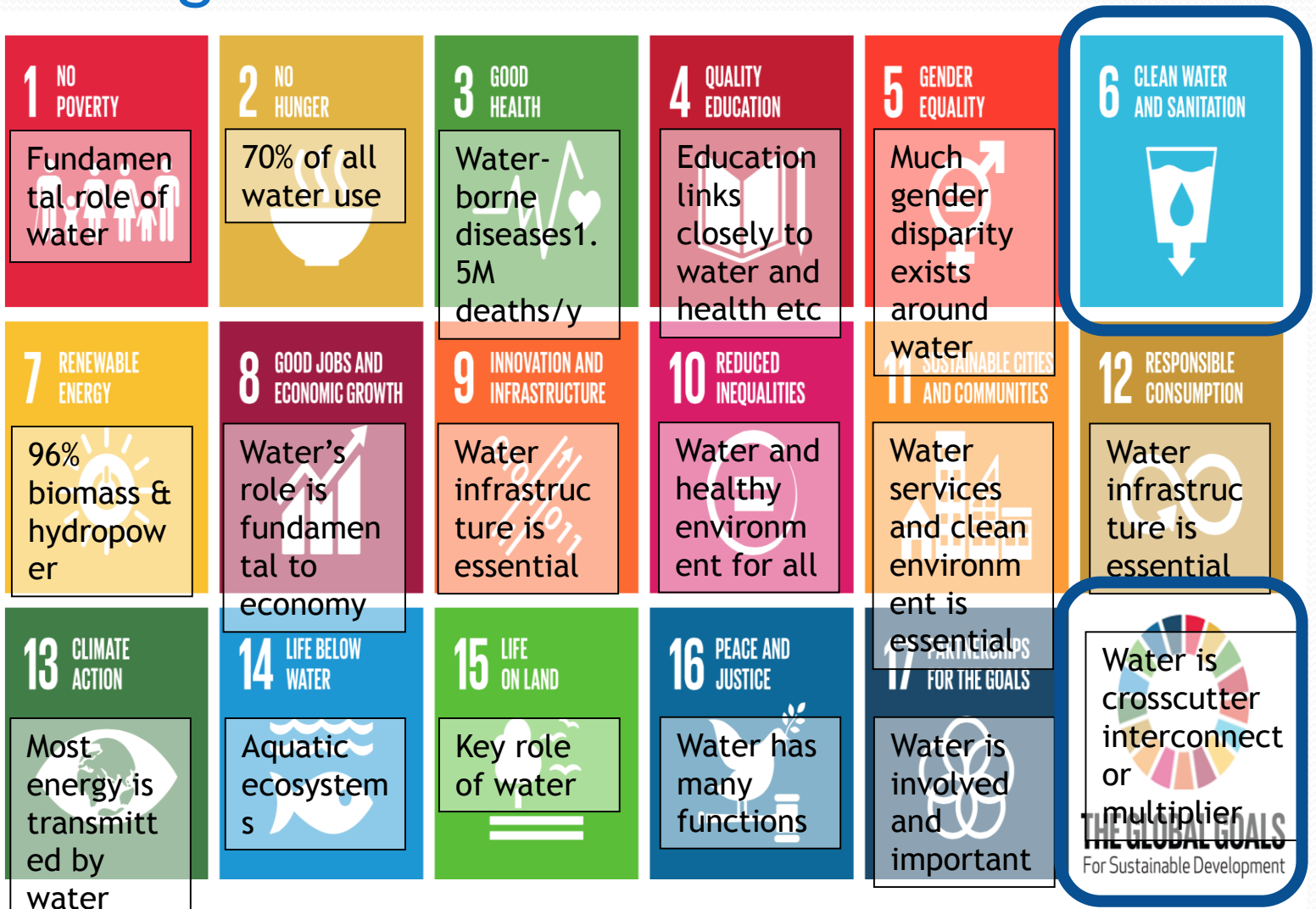
Water Challenges Keywords:

Scarcity, stress, pollution, management, reuse.

Water, the first mineral resource to be exhausted on the blue planet

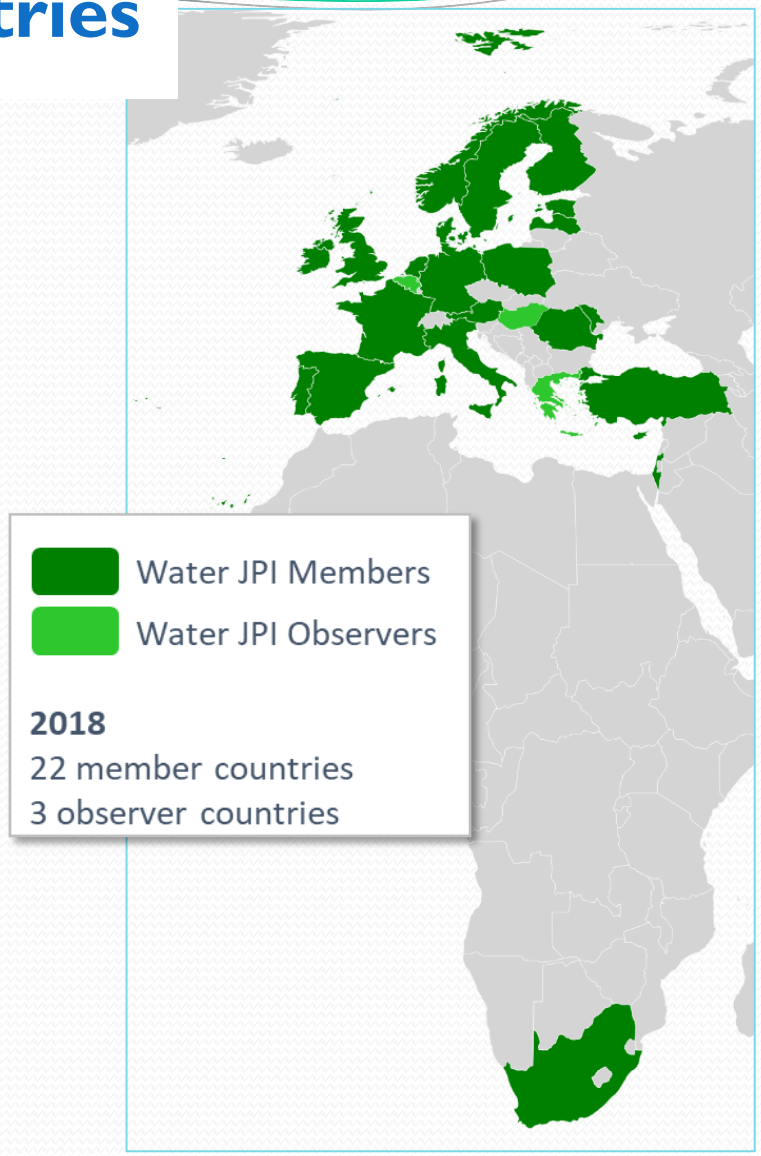
Water JPI

Sustainable Development Goals(SDGs) *Water is cross cutting*



Water JPI Member Countries

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



Coordination, Secretarial and Chairing

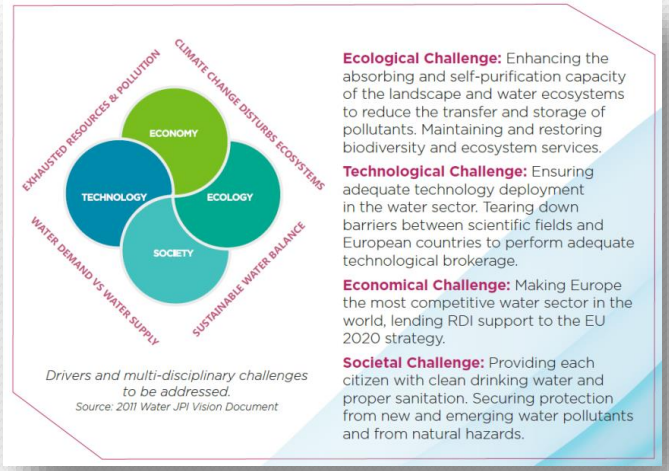
MINECO (ES)	2011-2014
ANR (FR)	2015-2018

Ireland (IE) Dr Padraic Larkin Co-Chair


Joint Actions
Implementation Plan (3-year Work Plan)
Strategic Research & Innovation Agenda (5-year Roadmap)
Vision: Global Challenge & Strategic Research Areas (10-Year Forward Looking)

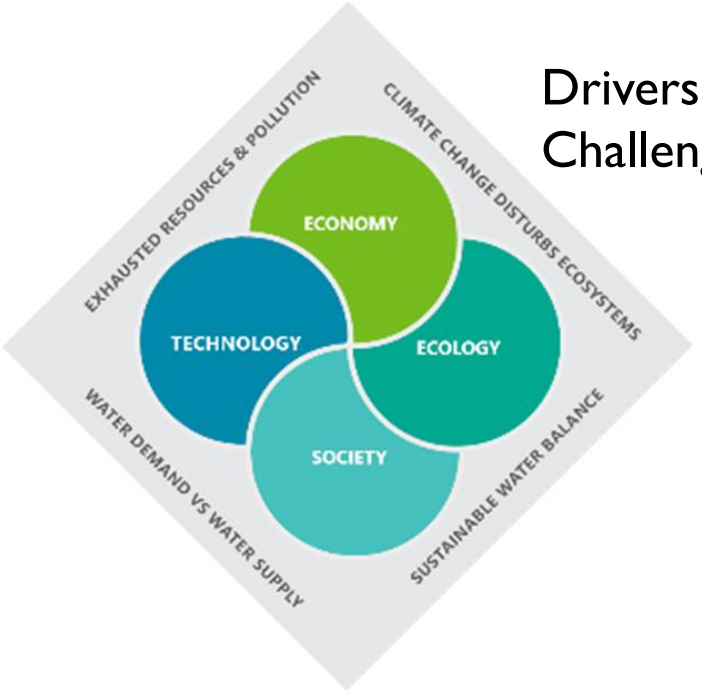
What is the Vision?

- **Context (trends, drivers and challenges)** - Outlines **the JPI objectives and research questions** responding to the issues and challenges facing the European water sector.
- **Overarching roadmap** that outlines what needs to be achieved and sets the context for all other Water JPI activities.



Water JPI Vision 2020

Achieving Sustainable Water Systems for a Sustainable Economy in Europe and Abroad



Drivers and Multidisciplinary Challenges

Water JPI

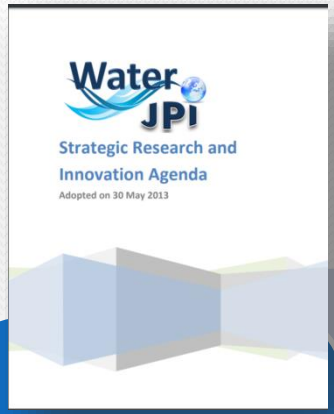
JPI Objectives & Indicators

- Involving water end-users for effective RDI results uptake
- Attaining critical mass of research programmes
- Reaching effective, sustainable coordination of European water RDI
- Harmonising National water RDI agendas in Partner Countries
- Harmonising National water RDI activities in Partner Countries
- Supporting European leadership in science and technology

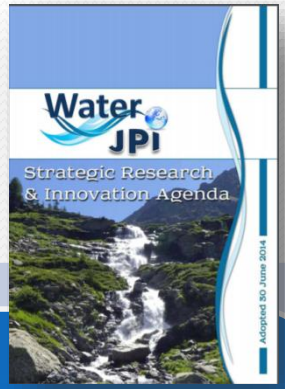
What is the SRIA?

- **Presents and prioritises RDI needs**
- Lays down **guiding principles and identify the policy-relevant research priorities** for the future, while making them openly accessible to the various stakeholder groups

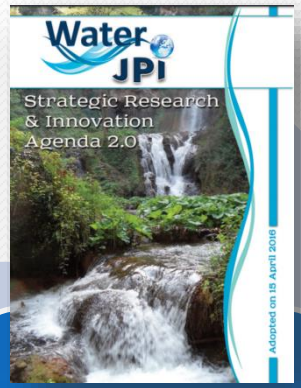
- **Roadmap for future water-related RDI actions in Europe** including, but not only limited to, the Water JPI actions. Water JPI covers the full range of RDI including the broad range of activities **from academic research to innovation**.



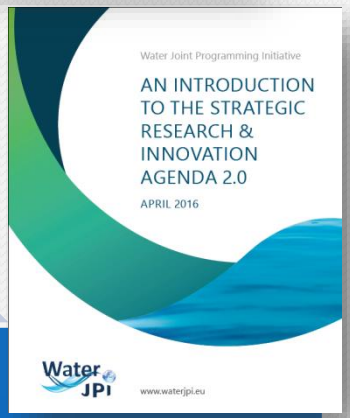
2013



2014



2016



2016

Water JPI

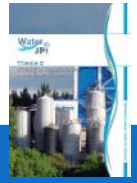
SRIA Structure

Vision Document
(5 themes)

Theme 1
Improving Ecosystem Sustainability and Human Well-being

Theme 2
Developing Safe Water Systems for Citizens

Theme 3
Promoting Competitiveness in the Water Industry

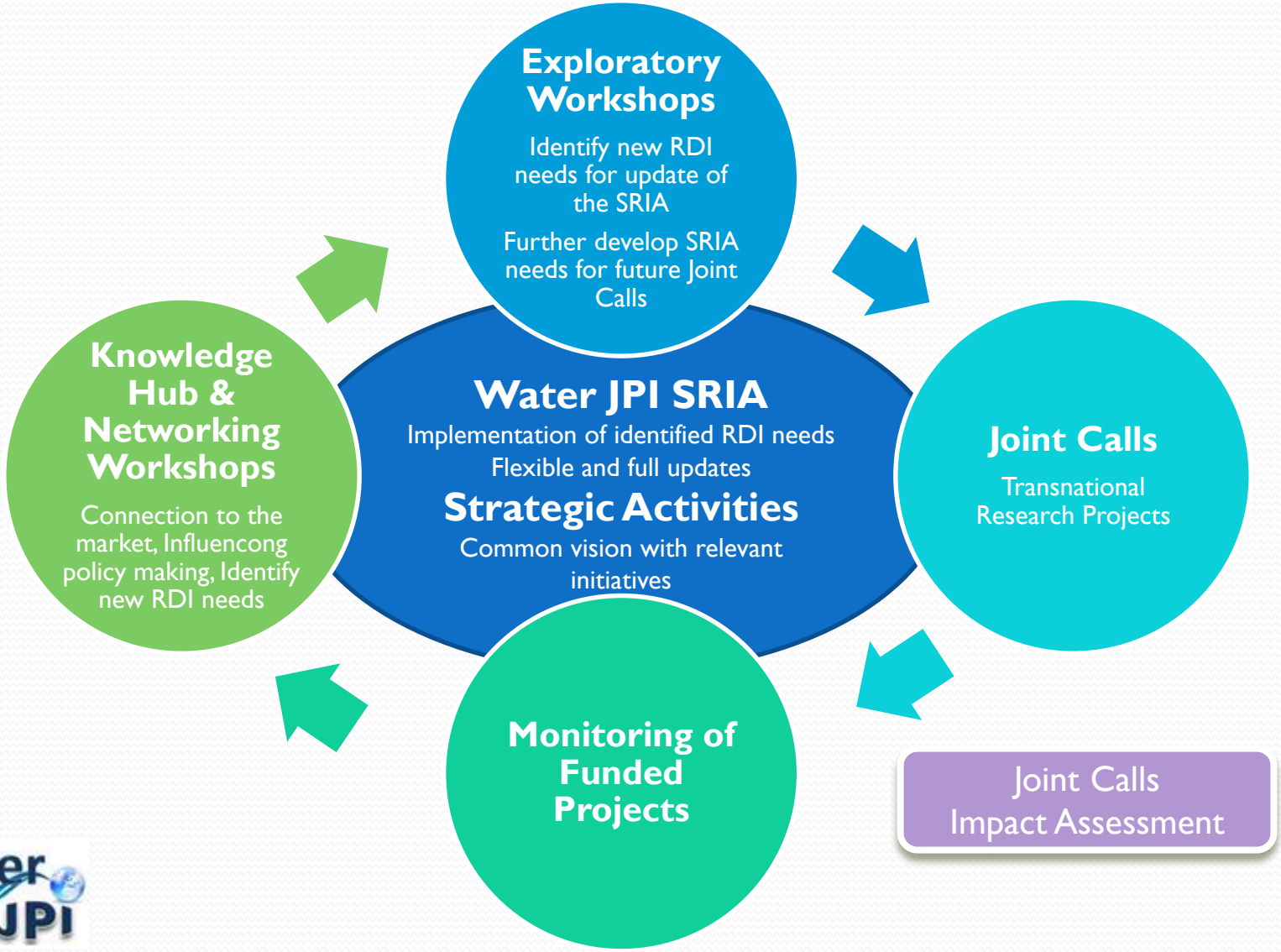


Theme 4
Implementing a Water-wise Bio-based Economy

Theme 5
Closing the Water Cycle Gap
Improving Sustainable Water Resources Management

SRIA 2.0
(5 themes and 11 sub-themes)

Water JPI Thematic Activities

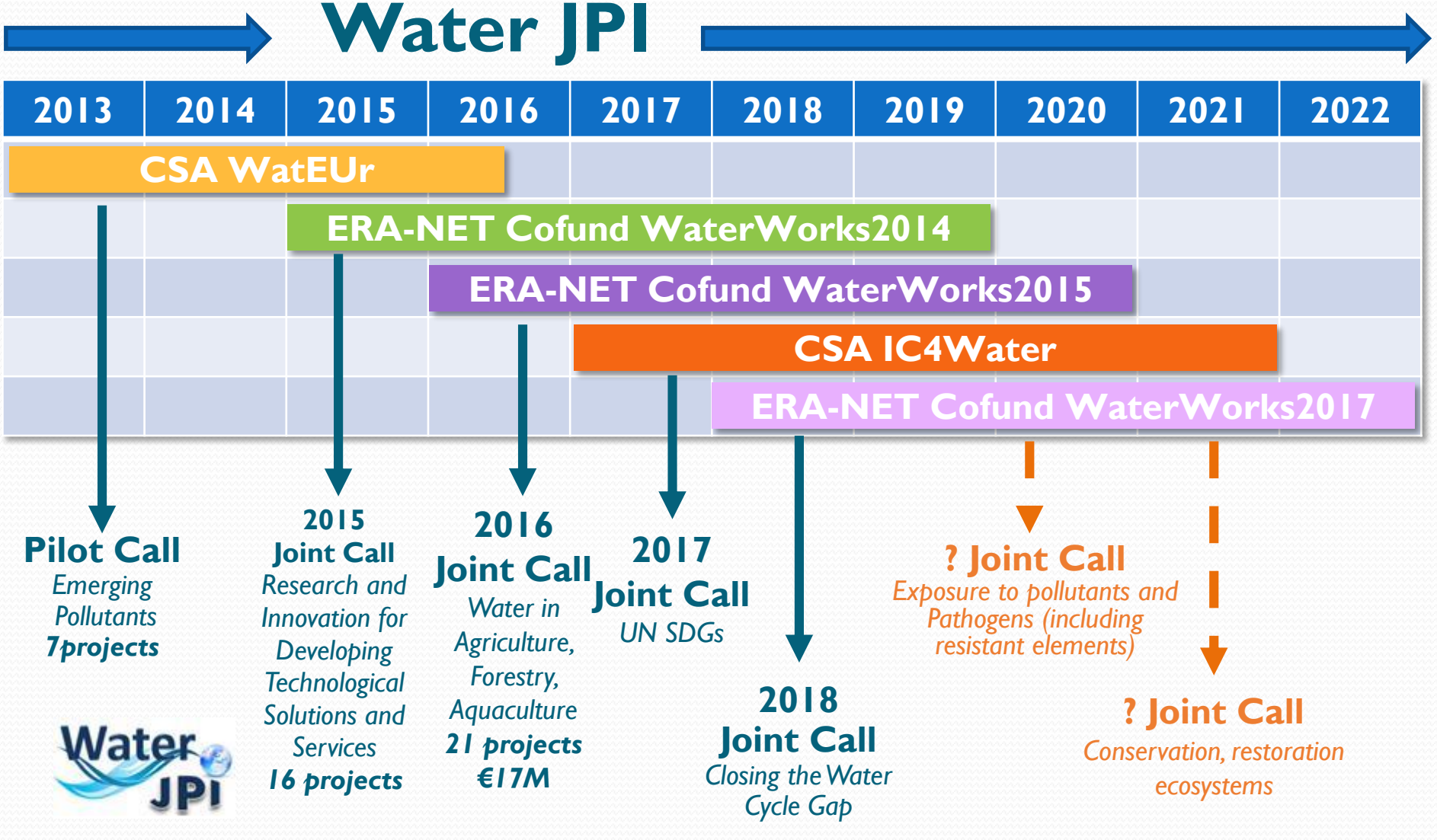


Knowledge Hub	TAP	Workshops - Exploratory & Networking
Existing Projects Water JPI Projects National Experts EU Projects	**National Projects** New (& Existing)	**Water JPI/ EU / National Projects** New (& Existing)

Clustering of Projects/Researchers - Network of Excellence within a specific RDI area identified in the Water JPI SRIA

Mobility & Infrastructure Interactive Platform to facilitate Access /Sharing

Timeline of Water JPI Joint Calls



Water JPI Funding

- 2013 Pilot Call: Emerging Water Contaminants *(budget: €9.7 million; 7 projects funded)*
- 2015 Joint Call: Developing technological solutions for services for water distribution and measurement, wastewater treatment and reuse, desalination, floods and droughts *(budget: €15.2 million, 16 projects funded)*
- 2016 Joint Call with the FACCE JPI: Improving water use efficiency and reducing soil and water pollution for a sustainable agriculture *(budget €18 million, 21 projects funded)*
- 2017 Joint Call : Water resource management in support of the United Nations Sustainable Development Goals (SDGs) – budget: €8.55 million; *proposals under evaluation*

Water JPI Funding

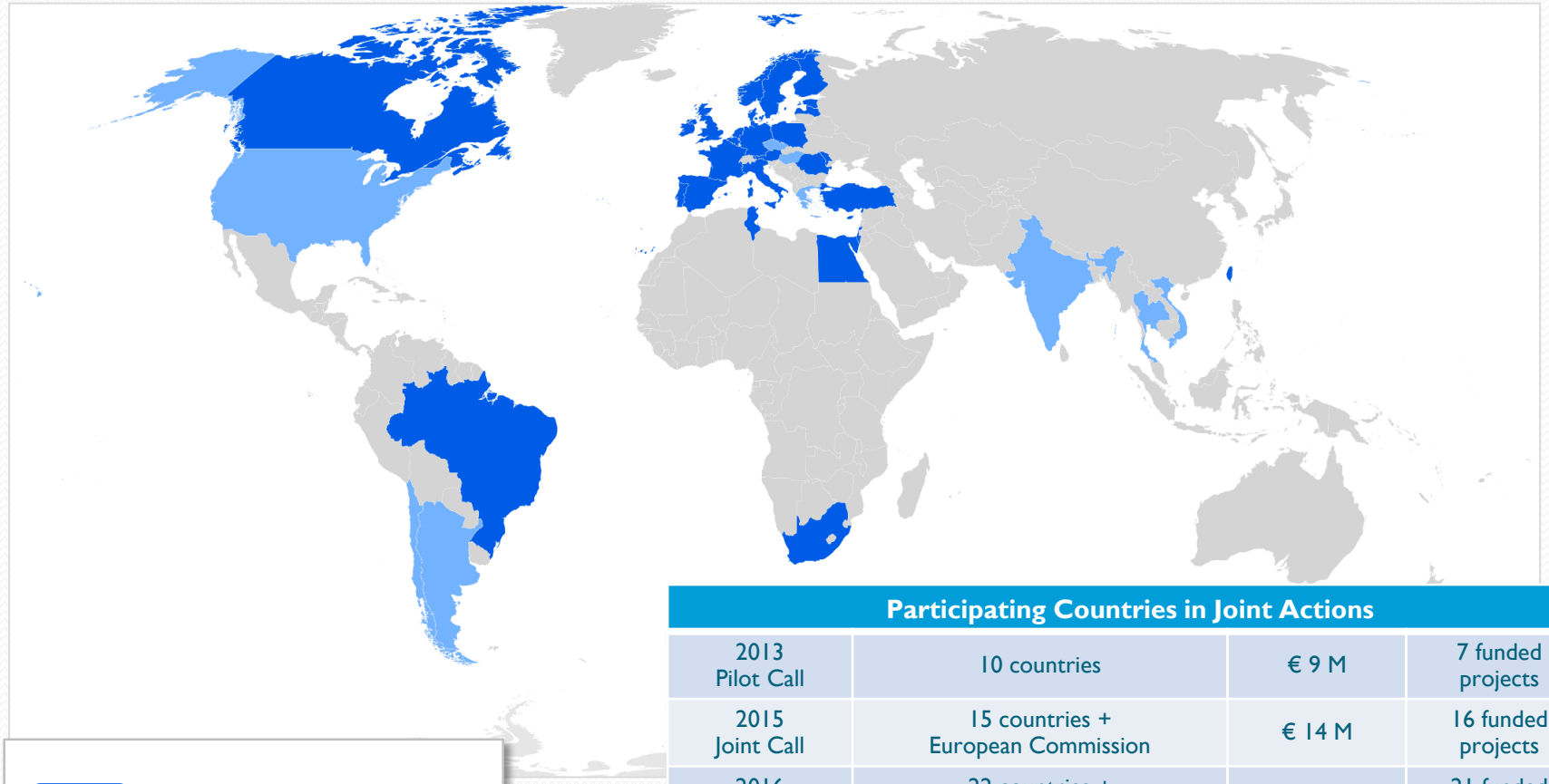
Closing the Water Cycle Gap

Sustainable Management of Water Resource

- **Theme1** - Enabling sustainable management of wa resources
- **Theme 2** - Strengthening socio-economic approaches to water management
- **Theme 3** - Supporting tools for sustainable integrative management of water sources.
  - €19M; 18 countries, 20 funders
  - Proposals @ Step 2 Evaluation stage

2018 JOINT CALL

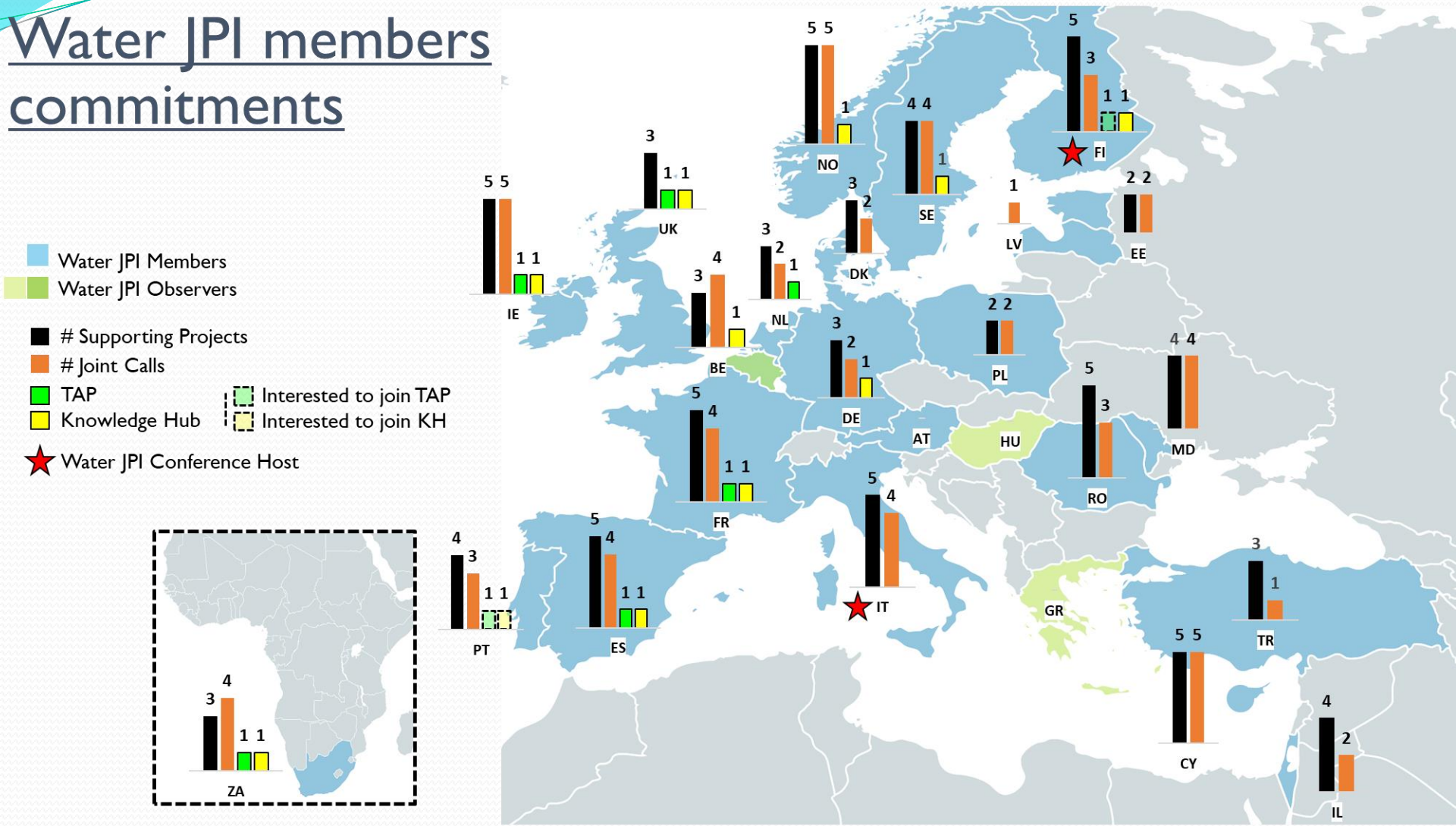
Water JPI Partnership



Water JPI Partners
Water JPI Contacts

Participating Countries in Joint Actions			
2013 Pilot Call	10 countries	€ 9 M	7 funded projects
2015 Joint Call	15 countries + European Commission	€ 14 M	16 funded projects
2016 Joint Call	22 countries + European Commission	€ 18 M	21 funded projects
2017 Joint Call	12 countries	€ 8,55 M estimated	*evaluation step 2*
2018 Joint Call	18 countries + European Commission	€ 19,3 M estimated	*submission Step 2*

Water JPI members commitments



Alignment JPI / National Activities

- SRIA: 5 Main Themes
- Water JPI: Alignment @ EU Level
- Alignment of

- Water Research Priorities of EPA Research Programme
- Water Research Coordination Group (Alignment @ National Level)
- Participation in Joint Calls
- Timing of National Calls Vs. JPI Calls
- Participation in Knowledge Hubs
- Participation in Thematic Annual Programming Actions

Irish Researchers and Water JPI

Project Title	Project coordinator
Water JPI Project - Stopping Antibiotic Resistance Evolution in the Environment (StARE)	Fiona Walsh NUIM
Water JPI Project - Tracking & assessing the Risk from Antibiotic Resistant genes using Chip technology in surface water (TRACE)	Enda Cummins UCD
Advanced Biotechnology for Intensive Freshwater Aquaculture Wastewater reuse (ABAWARE)	Fiona Walsh NUIM
Water JPI Project - Predicting in-lake responses to change using real time models (PROGNOS)	Eleanor Jennings DKiT
Eutro-SED: Eutrophication hotspots resulting from biogeochemical transformations and bioavailability of phosphorus in the fluvial suspended sediment of geologically contrasting agricultural catchments	David O Connor TCD

Water JPI 2016 Joint Call:

Sustainable management of water resources in agriculture, forestry & freshwater aquaculture sectors: increasing the efficiency and resilience of water uses; monitoring and reducing soil and water pollution; and integrating social and economic dimensions into the sustainable management and governance of water resources

ABAWARE: Advanced Biotechnology for Intensive Freshwater Aquaculture Wastewater Reuse

Project Description

Aquaculture is estimated to be the fastest-growing area of food production in the world and must be developed in a responsible and sustainable way. The rapid growth of intensive aquaculture systems has already caused damage affecting both the environment and human health. This water pollution in some cases can prove deadly for certain aquatic species and indirectly constitute a danger to human population via contaminated fishes and water. Members of this consortium have identified the role of aquaculture as reservoirs of antibiotic resistance of importance to human health. ABAWARE's main objectives are to develop and implement innovative technologies for the monitoring of surface and groundwater bodies for effective integrated water and waste management in freshwater aquaculture sectors by developing an advanced biotechnology for intensive recirculated aquaculture systems with minimum costs and footprint. In order to measure the effects of such an innovative system we will assess, understand and decrease the environmental risks from freshwater aquaculture to human health and reduce these risks by the implementation of the technology. Thus, providing ways to avoid the risks of eutrophication of rivers and lakes, and propose management approaches for reducing impacts on ecosystem biodiversity and economic sectors. Since these environmental problems and potential solutions concern aspects of human, environmental and animal health, consortium members will implement a multi-channel communication with a wide range of stakeholders and the general public.

"Dr Fiona Walsh leads a team identifying how novel technology will reduce or remove microbial and antimicrobial resistance pollution while using water as part of the circular economy within sustainable aquaculture. This will reduce or avoid the risks to ecosystem biodiversity and provide increased economic benefit."
- Fiona Walsh,
Maynooth University

Irish Contribution

The Irish project will contribute to the characterisation of microbiomes and resistomes, leading to an understanding and minimisation of the environmental risks from freshwater aquaculture to human health via water uses and food.

a. Evaluation of the diversity of the microbiomes and antibiotic resistance genes in freshwater aquaculture systems (pre-intervention) and the impact of the intervention on the microbiome diversity and antibiotic resistance genes present in freshwater aquaculture systems (post-intervention).

b. Identification of the impact of a developed advanced biotechnology for intensive recirculating aquaculture system on reduction of the detrimental risk of freshwater aquaculture to environmental and human health.

Project Details

Research area: Safe Water
Start date: 20/02/2017
Duration: 24 months
End date: 19/02/2019
Water JPI Funding Organisations:

- Norway (RCN - Research Council of Norway)
- Ireland (EPA - Environmental Protection Agency)
- Finland (AKA - Academy of Finland)
- Germany (BMEL - Federal Ministry of Agriculture and Food)
- Romania (UEFISCDI)
- Sweden (FORMAS - Swedish Research Council)
- European Commission

Water JPI funding: €1.072 million
Coordinator: Norway

Project Partners

- ✓ Norwegian University of Life Sciences (Norway)
- ➪ Maynooth University (Ireland)
- University of Helsinki (Finland)
- Technische Universität Dresden (Germany)
- DFR Systems SLR (Romania)
- Romanian Academy (Romania)
- University of Bucharest (Romania)
- Swedish University of Agricultural Sciences (Sweden)

Irish Contact:

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The Water JPI

...ssfully tackled through the isolated effort of individual national ...es. A significant share (more than 70%) of public spending in water ...ent is programmed, executed and evaluated at national level. The ... aims at developing a coordinated and strategic approach to public ...innovation funding in Europe.

www.waterjpi.eu

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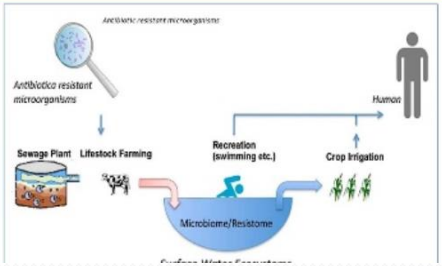
Water JPI 2013 Joint Pilot Call:
Emerging Water Contaminants – Anthropogenic Pollutants and Pathogens

TRACE Tracking & assessing the Risk from Antibiotic Resistant genes using Chip technology in surface water

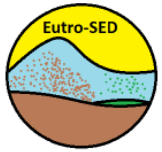
"The TRACE project calls on an EU multidisciplinary collaborative approach, ensuring a convergence of key knowledge competencies, to address the serious global health issue of ARO in the aquatic environment."



Water & FACCE JPI 2016 Joint Call:

Sustainable management of water resources in agriculture, forestry & freshwater aquaculture sectors: increasing the efficiency and resilience of water uses; monitoring and reducing soil and water pollution; and integrating social and economic dimensions into the sustainable management and governance of water resources

Eutro-SED: Eutrophication hotspots resulting from biogeochemical transformations and bioavailability of phosphorus in the fluvial suspended sediment of geologically contrasting agricultural catchments

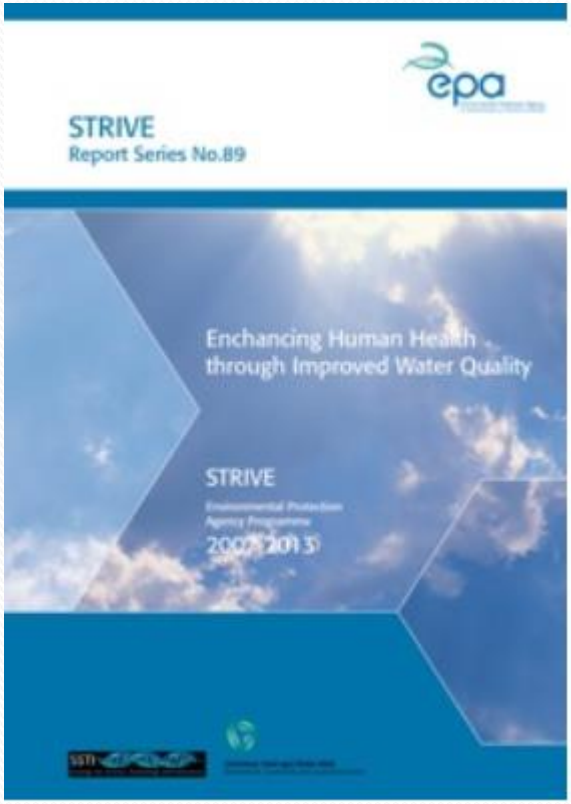


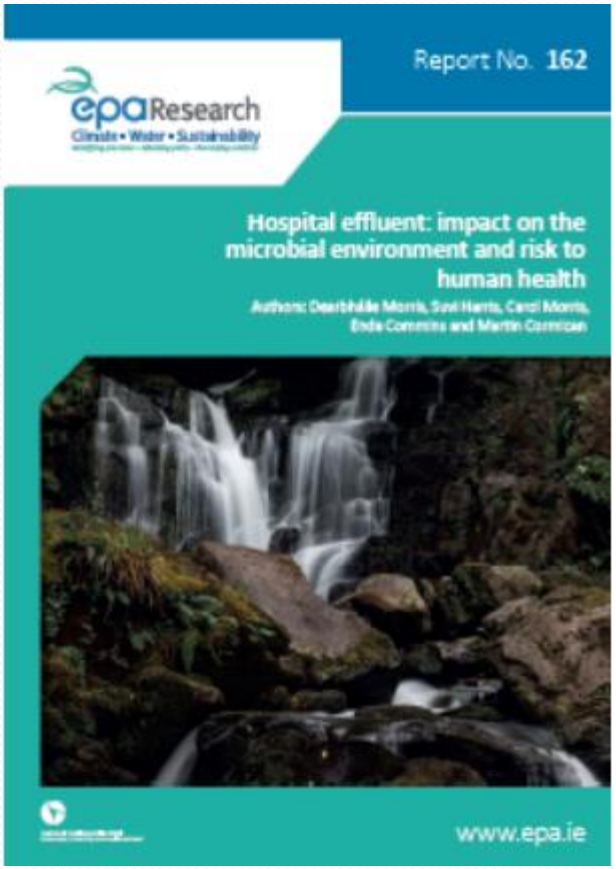
"Fluvial suspended sediments represent a major mode of phosphorus transport from agricultural catchments with many remaining research gaps relating to the sources, mechanisms of transport, transformation and bioavailability. Eutro-SED endeavours to investigate these issues to enable more informed policy decisions relating to catchment scale phosphorus dynamics for improved freshwater quality."
- Dr David O'Connell,
Trinity College Dublin

Project Description

This project endeavours to address the current lack of understanding of which P fractions on fluvial and stream bed sediments are more bioavailable and degrade water quality, specifically relating to the effect of organic P and humic-metal P complex pools from fluvial sediments. Concurrently, a predictive understanding of biogeochemical transformations and fluxes of fluvial and streambed sediment bound P will be developed and feed into current predictive biogeochemical hydro-sedimentary models for catchment water quality. This lack of data currently represents a major obstacle to the design and implementation of integrated water resource management of agricultural river catchments. The proposal addresses the impact of fluvial and stream bed sediments in agricultural catchment streams on surface water quality as up to 90% of P from agricultural catchments may be in the form of particulate phosphorus on suspended sediments. In addition, the proposal will develop predictive models to simulate potential P loss or the impacts of climate change, land-use and land management practices on fluvial sediment P export. Predictive models appeal to policy makers and water managers as these models can provide solutions to problems under various scenarios quickly.

EPA funded Health research





Antimicrobial Resistance and the Environment – Sources, persistence, Transmission and risk management (AREST)
Dearbhaile Morris NUIG
Largest single EPA research award of €650,000

To know more about the Water JPI…

www.waterjpi.eu

- A website : www.waterjpi.eu
- A Newsletter – Subscribe on line!

- Social Media
- LinkedIn - Water JPI researcher forum group (1340 members) https://www.linkedin.com/groups/8455262
  - Joint Calls announcements & Networking
  - Announcement of events and activities

- A unique contact point
  - waterjpisecretariat@agencerecherche.fr
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Irish Contact for Water JPI

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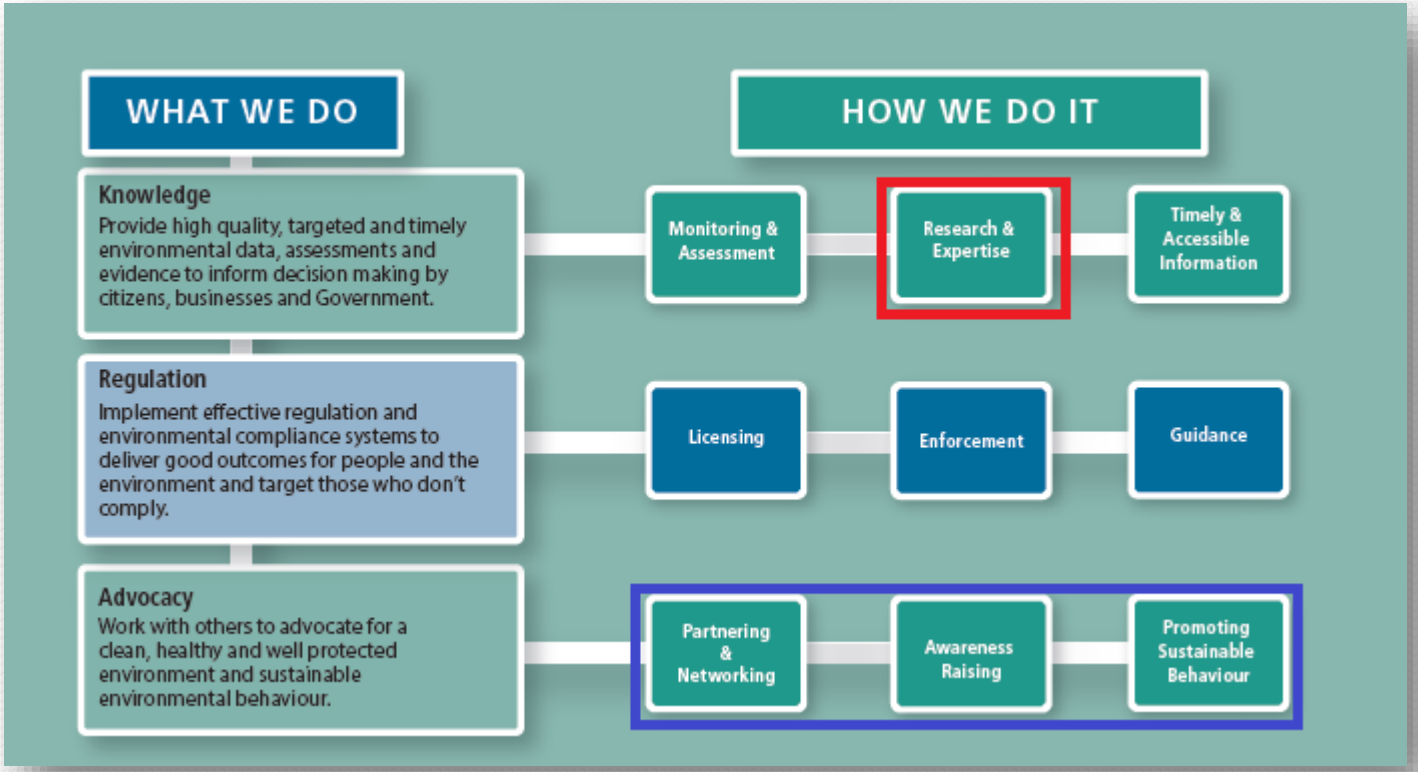
Identifying pressures • Informing policy • Developing solutions

EPA Research



A research programme that addresses knowledge gaps and helps identify solutions to emerging and complex environmental problems

Funding Research

The EPA is responsible for the development, co-ordination & management of environmental research in Ireland (Section 71 of EPA Act)

R&D 94-99 (€7m)	ERTDI 2000-06 (€55.6m)	STRIVE 2007-13 (€74.3m)	EPA Research 2014-20 (€44.4m *to-date*)

c. €10.9m / yr In 2018

Research for…

epa Research
Climate - Water - Sustainability
Identifying pressures • Informing policy • Developing solutions

Identifying Pressures

Informing Policy

Developing Solutions

EPA Research 2014-2020

Sustainability Pillar

Water Pillar

Climate Pillar

epaResearch

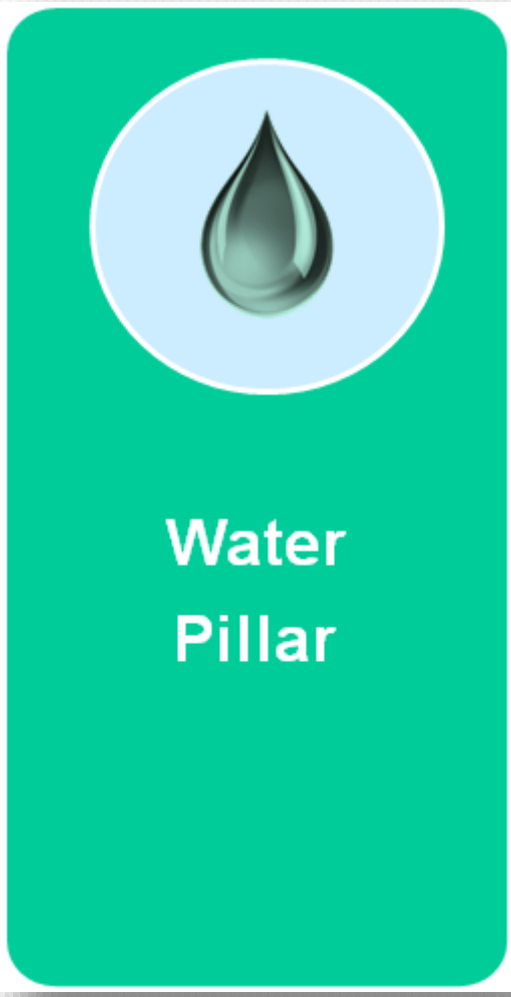
Climate - Water - Sustainability

Identifying pressures • Informing policy • Developing solutions

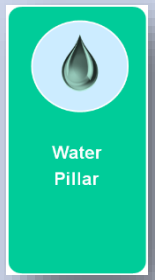
Water

Research Themes 2014-2020:

- Safe Water
- Ecosystem Services and Sustainability
- Innovative Water Technologies
- Understanding, Managing and Conserving our Water Resources
- Emerging and Cross-cutting Issues



Informing Policy

Research Area	Informing Policy / Pressure	Recent Awards
Water 	• Water Framework Directive, • Marine Strategy Framework Directive, • Strategic Environmental Assessment • Unconventional Gas Exploration & Exploitation Compliance & Implementation (e.g. PATHWAYS, Ocean Noise, Eutrophication, UGEE Joint Research Programme)	• Microplastics • Antimicrobial Resistance • Co-funding with DAFM

Emerging Issues

Pillar	
Water	River Basin Plan 2017-2021 and WFD compliance Anti-Microbial Resistance Sustainable wastewater treatment - Compliance with UWWT Directive
Climate	Supporting national mitigation and adaptation plans Supporting new clean air package Policy synergies and trade-offs Climate Services
Sustainability	Sustainable Development Goals Circular Economy Health and Well-Being Natural Capital
Others	Earth Observation opportunities

Strategic & Funding Partnerships

National Level

- Irish Research Council (PhD Scholarships)
- Science Foundation Ireland (Investigator Programme)
- Co-funding (as part of EPA's or other funders' calls)
- Environmental Sciences Association of Ireland (ESAI) / EPA Grassroots Workshop Support
- ESRI / EPA Research Framework

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Strategic & Funding Partnerships

International Level

- Horizon 2020
- Climate Joint Programming Initiative (Chair since 2017)
- Water Joint Programming Initiative (Co-Chair since 2014)
- BiodivERsA Network
- Share5 Agencies
- EnvHealth
- Fulbright Awards

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