



HORIZON 2020

"The water challenge in EU Research and Innovation policy"

European water policy: challenges for Hydrogeologists, 22 November 2013



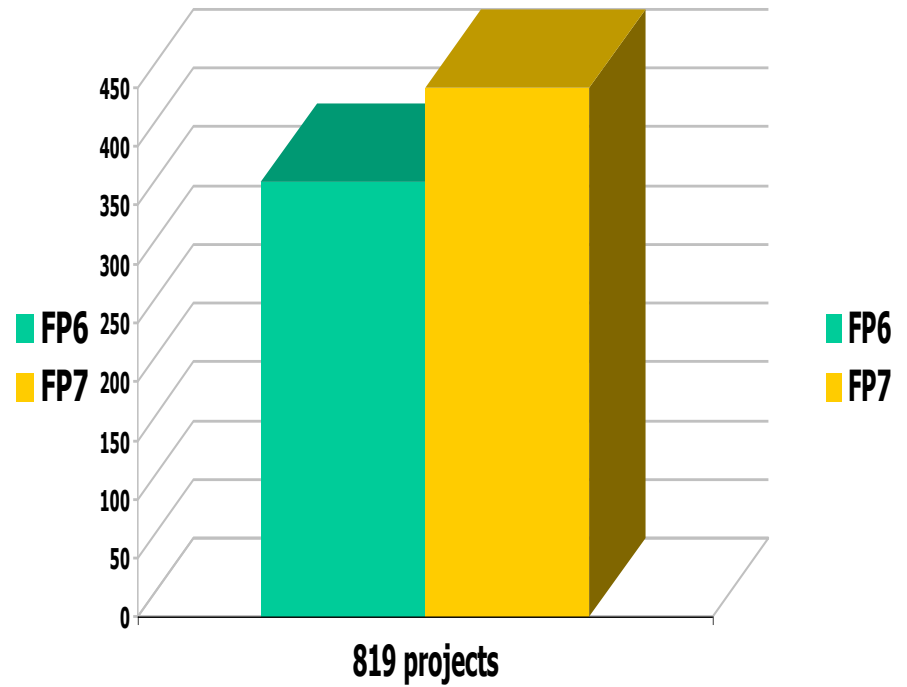
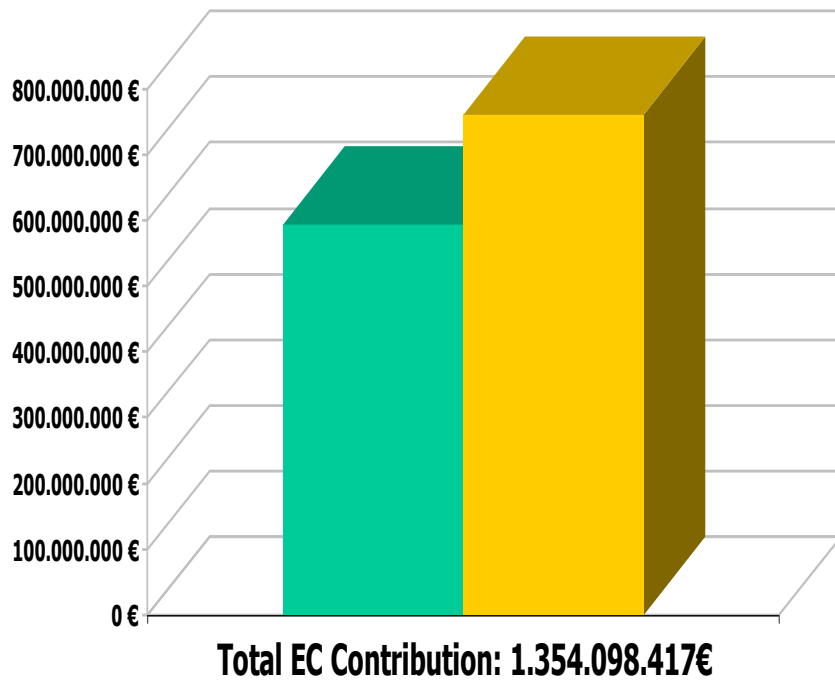
2014-2020

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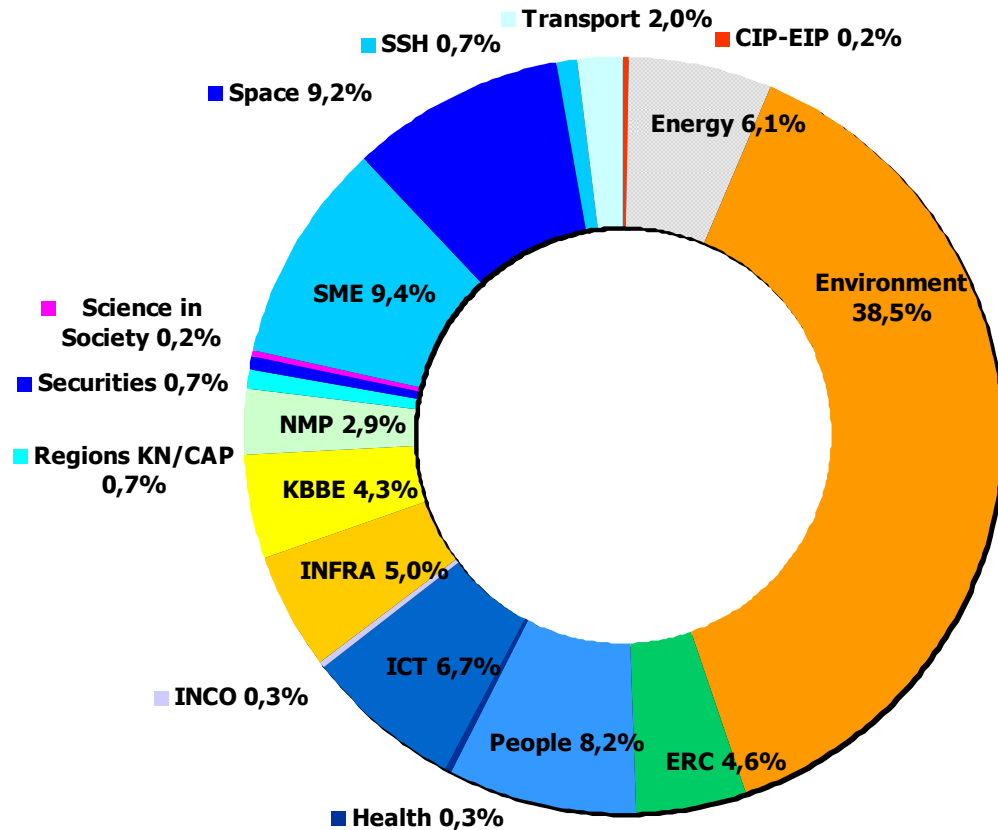
Outline

- 1. EU Water research in FP6 and FP7 RTD&I Framework Programmes;**
- 2. Water research in MS;**
- 3. Overview of Horizon 2020;**
- 4. Water research in Horizon 2020: Possible areas under WP 2014 (?);**
- 5. Geoscience proposal – Commission's current position;**

FP6 & FP7 WATER projects 2002-2011

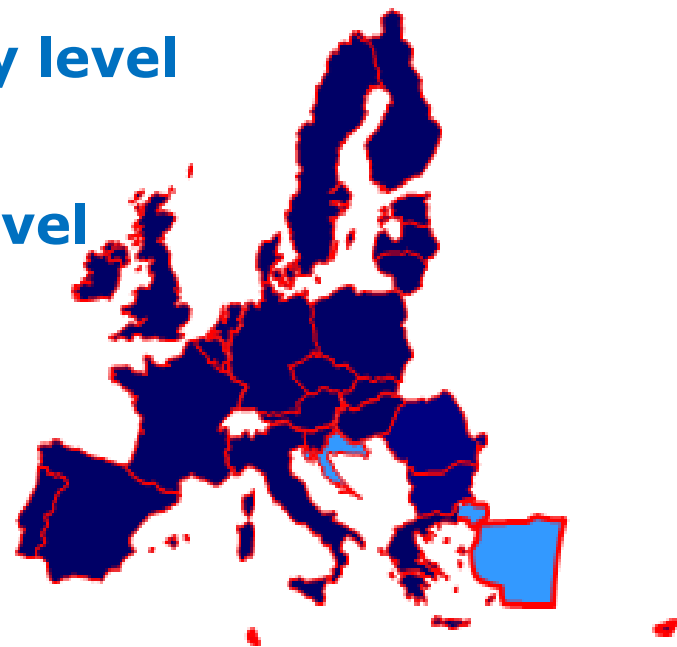


FP7 WATER Sectorial repartition



WATER RESEARCH in EUROPE - Public investment

- ✓ **€130 million** per year at **Community level**
- ✓ **€370 million** per year at **National level**
- ✓ **€500 million** per year in **Europe**



The need for a large coordinated European effort on public-funded water research is recognised

European Landscape for WATER R&I

**EIP
Water**



CIS -SPI



**PPP SPIRE
SUSTAINABLE
PROCESS
INDUSTRY**

**Water JPI
Joint
Programming
Initiative**



**National
programmes**



Others...

Water ERA-NETs

Water Challenges

- ✓ **Global** (economic, ecological, societal, technological);
- ✓ **European**: wide diversity among MS (context, institutional, cultural etc.);
- ✓ **European Industry**: Enhance competitiveness to maintain world leadership; create NEW JOBS!
- ✓ **"Cross-cutting" by nature**, with **multiple uses, conflicting interests** and subject to **multiple pressures and drivers**;

Answers

- ✓ **Individual SECTORS /COMMUNITIES** cannot cope alone;
- ✓ **Systemic, integrated multi-disciplinary solutions**, including social sciences & humanities, are needed that need to be **tested, demonstrated and scaled up**;
- ✓ **RTD is not enough -> Need for INNOVATION**
- ✓ **Pooling Resources** through effective **PARTNERING**;
- > **Horizon 2020 allows for a "new way" of doing and programming RTDI in EU**

The Multiannual Financial Framework 2014-2020: European Council conclusions, 8 February 2013

- ✓ **Key challenge:** stabilise the financial and economic system while taking measures to create economic opportunities
- ✓ **Fiscal consolidation and structural reform** are necessary but **not sufficient** to secure Europe's global **competitiveness**
- ✓ Past experience shows **economic performance** is strongly correlated to the **level of R&D investments**
- ✓ Europe 2020 strategy identifies investment in **education, research and innovation** as a **centrepiece** for achieving **smart, sustainable and inclusive growth**

What is Horizon 2020

- ✓ **A core part of Europe 2020 strategy to:**
 - Facilitate the implementation of “**Innovation Union**” and “**Resource-efficient Europe**” flagship initiatives;
 - Strengthen the **European Research Area** (increase spending level on R&I to 3% of GDP);
 - **Strengthen the EU’s global position** in research, innovation and technology
- ✓ **Initial Commission proposal for a €80 billion research and innovation funding programme (2014-2020); now just over €70 billion**

Warning: The presentation reflects the current status. Neither the Horizon 2020 legislative package, nor any of the implementing guidelines have been finally adopted!

Horizon 2020: A break from the past (1)

A single programme geared to underpin **growth, jobs** and provide **solutions** to challenges:

- ✓ **Bringing together** three separate programmes/initiatives*
- ✓ **Coupling research to innovation** – from lab to market; **all forms of innovation** including innovation in public sector and social innovation
- ✓ **Focussing on societal challenges** (e.g. CC, health, clean energy and transport)
- ✓ Stronger support to activities **closer to end-users and markets**
- ✓ **More partnering** for greater impact (PPPs, P2Ps, EIT-KIC)

* *7th Research Framework Programme, Competitiveness and Innovation Framework Programme, European Institute of Innovation and Technology*

Horizon 2020: A break from the past (2)

- ✓ A **strong challenge-based approach**, with **broader, less prescriptive topics** and strong **emphasis on expected impact**, allowing **applicants** to have considerable freedom **to come up with innovative solutions**;
- ✓ **Promoting innovation, market uptake** and **demand-driven innovation** through piloting, demonstrations, market replication, support to pre-commercial procurement, inducement prizes, fast track to innovation;
- ✓ **Simplified list** of possible **types of action** (e.g. research and innovation -100%; innovation actions - 70%,...)
- ✓ **Simplified rules for participation** and **Bi-annual Work Programmes**
- ✓ **Cross-cutting issues** mainstreamed (e.g. social sciences, gender, international...)

Horizon 2020: A break from the past (3)

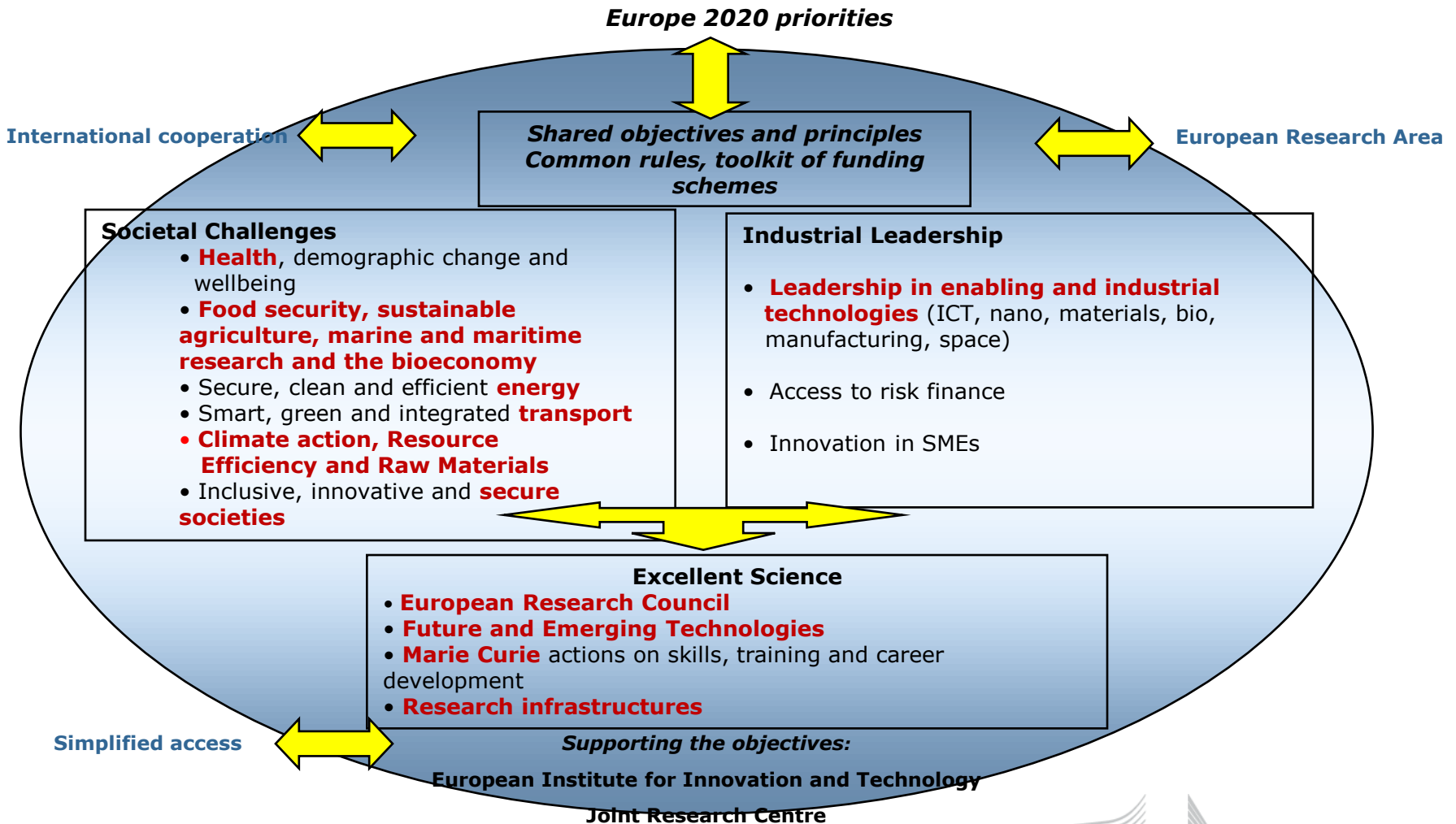
- ✓ **Promoting SMEs participation** across all societal challenges and LEIT (20% of budget to SMEs) through a **new instrument** (based on SBIR model) and **dedicated activity** for research intensive SMEs
- ✓ **Improving access to risk capital** (equity and debt facility) and loans for **innovative companies and SMEs**;
- ✓ **Mainstreaming Climate Change and Sustainable Development objectives** across the whole of Horizon 2020:
 - ✓ at least **60%** of overall Horizon 2020 budget should be related to **sustainable development**;
 - ✓ **35% to Climate-related** expenditure;

Economic crisis and the path to sustainable growth remains the leitmotif

Three pillars



WATER in HORIZON 2020



Pillar 3: Proposed funding (€ million, 2014-2020)

Health, demographic change and wellbeing	7 472
Food security, sustainable agriculture, marine and maritime and inland water research & the Bioeconomy	3 851
Secure, clean and efficient energy *	5 931
Smart, green and integrated transport	6 339
Climate action, environment, resource efficiency and raw materials	3 081
Europe in a changing world-inclusive, innovative and reflective societies	1 309
Secure societies-protecting freedom and security of Europe and its citizens	1 695
<i>Science with and for society</i>	462
<i>Spreading excellence and widening participation</i>	816

* Additional funding for nuclear safety and security from the Euratom Treaty activities (2014-2018)

Strategic programming in H2020

- ✓ To **increase impact of the funding** and a more **integrated approach**, strategic programming identified **12 Focus Areas (FA)** each covered by a **specific call**, that:
 - Bring together **activities from often different challenges and enabling technologies**;
 - Provide **support across the innovation chain** from research, to development, to proof of concept, piloting, demonstration projects, and to **setting standards and policy frameworks**;
 - Make use of the **full spectrum of funding schemes and types of action** e.g. research and innovation actions, innovation actions, ERA-Nets, SME instrument
 - **Integrate different perspectives**, including from the **social sciences and humanities**, **gender** perspectives, and **international strategy**

Focus Area: "Water innovation: Boosting its value for Europe"

Rationale:

- ✓ Reinforce **water innovation capacity** and **market uptake** of successful **research results**
- ✓ Boost the **competitiveness and growth** of the European water sector and position **Europe as a global market leader** in water related **innovative solutions**
- ✓ Create **leadership** in **water resources management**
- ✓ **Support the needs** of **relevant EU water**, innovation and resource efficient **policies, international commitments** and related **initiatives**: EIP Water, EIP Agriculture, JPI on Water, SPIRE PPP, IPCC, Rio+20, etc.

Water innovation: Boosting its value for Europe

Areas covered in WP 2014:

- ✓ Bridging the gap: from innovative water solutions to market replication
- ✓ Integrated approaches to water and climate change
- ✓ Stepping up EU research and innovation cooperation in the water area
- ✓ Harnessing EU water research and innovation results for industry, policy makers and citizens
- ✓ Strengthening international R&I cooperation in the field of water

Bridging the gap: from innovative water solutions to market replication

- ✓ **Accelerate commercialisation** of eco-innovative water **solutions** (technologies, process, products, services, etc.)
- ✓ **Stimulate** sustainable economic **growth, business and job creation** in the water sector

Proposals should:

- ✓ Support **first application** and **market replication** of **near-market** water **solutions**
- ✓ Address the **5 thematic priorities** identified in the SIP of the EIP on Water
- ✓ Address issues affecting **rapid uptake** and **market deployment** of innovative solutions
- ✓ Include **participation of SMEs**
- ✓ **Appropriate EU contribution:** EUR 2-4 million
- ✓ **Type of action:** Innovation actions

Topic relevant also for process industries (SPIRE PPP) and advanced ICT solutions (data interoperability and harmonisation with INSPIRE)

Integrated approaches to water and climate change

Specific challenge:

- ✓ Improved understanding of the **impacts of climate change** on the **hydrological cycle** for **sustainable management** of water systems in EU

Proposals should:

- ✓ Maximise reliability of **projections of precipitation** at **various** spatial and time **scales**;
- ✓ Improve the **short-to-medium term forecasting** of related **extreme events**;
- ✓ Assess the **impacts of weather extremes** and **climate change** on **water cycle** in terms of both **quantity** and **quality (Blueprint)**;
- ✓ Develop **risk management** strategies and **adaptation** options at the **appropriate scales**, involving **all relevant stakeholders**;

Appropriate EU contribution: EUR 6-8 million

Type of action: Research and innovation actions

Stepping up EU research and innovation cooperation in the water area

Specific challenge:

- ✓ Support to **JPI on water** to implement its common vision and Strategic Research Agenda (SRA) to **reduce fragmentation** of **nationally funded** water-related R & I activities and **enhance synergy, co-ordination and coherence** between national and EU funding

Proposals should:

- ✓ **Pool resources** from **national/regional** research programmes to **implement a joint call** with **EU co-funding**
- ✓ Support the **priorities identified** in the SRA of the Water JPI related to the **development of technological solutions and services for water distribution and measurement, waste water treatment and reuse, desalination, floods and droughts**, etc.

Type of action: ERA-NET Cofund

Harnessing EU water research and innovation results for industry, agriculture, policy makers and citizens (1/2)

Specific challenge:

- ✓ Ensure more **effective use and exploitation of research results** and good **water management practices** to enhance **decision making** in the field of water

Proposals should address **one** of:

- ✓ Promote **dissemination and exploitation of EU funder activities** (including relevant ICT-based tools and platforms) and foster **knowledge sharing, awareness** and **continuous benchmarking** across EU and Associated Countries, including the **WFD network of River Basin Districts**; OR
- ✓ **Take stock** of existing **knowledge**, research **activities** and the implementation **needs of WFD**, and identify **research gaps**; OR

Harnessing EU water research and innovation results for industry, agriculture, policy makers and citizens (2/2)

- ✓ Promote **water-related innovation** and **business development, cluster eco-innovative companies**, develop **innovative financial instruments**; OR
- ✓ Develop a **coordinated approach** to the **integration of the water and waste sectors in the EIP "Smart Cities and Communities"**, identifying **research and innovation needs** which could lead to future actions

Appropriate EU contribution: EUR 1 million

Type of action: Coordination and support action

Strengthening international R&I cooperation in the field of water

Specific challenge:

- ✓ Strengthen **international cooperation** in the field of water
- ✓ Promote **market opportunities** for innovative water solutions **outside Europe** and **share experiences** in water **policy** and river **management**

Proposals should:

- ✓ Help creating **strategic cooperation partnerships** for water research and innovation between **Europe and the rest of the world**, promoting the creation of **networks of companies** (including SMEs), **entrepreneurs, no-profit organisations, policy makers, regulators** and **funding bodies** to create business and social opportunities. Priority will be given to proposals contributing to **implementation of on-going international activities and partnerships** where EU MS are jointly committed for a more coherent approach to R&I that aim at establishing a shared strategic R&I agenda e.g.
 - **EU/Member States–India** research and innovation partnership in water
 - **China-Europe** Water Platform

Type of action: Coordination and Support Action

Appropriate EU contribution: EUR 1 million

Societal Challenge 5: Climate action, environment, resource efficiency and raw materials

Objective:

*"to achieve a resource – **and water** – efficient and climate change resilient economy and society, the protection and sustainable management of natural resources and ecosystems, and a sustainable supply and use of raw materials, in order to meet the needs of a growing global population within the sustainable limits of the planet's natural resources and eco-systems."*

Societal Challenge 5: Climate action, environment, resource efficiency and raw materials

Broad lines of activities:

- ✓ Fighting and adapting to **climate change**;
- ✓ **Sustainably managing natural resources and ecosystems**
 - *Developing integrated approaches to address **water-related challenges** and the **transition to sustainable management and use of water resources and services** (Presidency text on the Horizon 2020 Specific Programme)*
- ✓ Sustainable **supply** of non-energy and non-agricultural **raw materials**;
- ✓ Transition **towards a green economy** through **eco-innovation**;
- ✓ Global environmental **observation and information systems**;
- ✓ **Cultural heritage**;

Other possible water relevant topics in WP 2014 under Societal Challenge 5

- ✓ **Biodiversity and ecosystem services: drivers of change and causalities** (including freshwater ecosystems);
- ✓ **Making Earth Observation and Monitoring Data usable for ecosystem modelling and services** (including freshwater ecosystems)

Biodiversity and ecosystem services: drivers of change and causalities

Proposals should cover **all** of the following aspects:

- ✓ **assess causalities** between biodiversity and ecosystem functions and services;
- ✓ **assess and predict the impacts** of direct, indirect and emerging drivers on **status and trends** of biodiversity and ecosystem function and service provision (at **all relevant scales**);
- ✓ develop sound and cost-effective **indicators** for biodiversity, ecosystem function/resilience and ecosystem service for **monitoring**;
- ✓ develop **innovative** ecosystem service oriented **management concepts, common frameworks** and **tools** for conservation and sustainable management of biodiversity and ecosystem services

Type of action: Research and innovation actions

Appropriate EU contribution: EUR 5 - 10 million

Making Earth Observation and Monitoring Data usable for ecosystem modelling and services

To provide a full picture of **state and temporal evolution** of ecosystems in **existing internationally recognised protected areas**, proposals should focus on:

- ✓ **Recovering existing data**, supporting **new measurements and observations, synthesis and interpretation of data** and **make it available** to scientists, policy makers, citizens and other concerned stakeholders
- ✓ Undertake **pilot actions** to **further develop** the Global Earth Observation System of Systems (**GEOSS**) in this area and **foster** the **knowledge base** on ecosystem observations for **Copernicus** (Global Monitoring for Environment and Security);
- ✓ Include, as far as possible, **participation of pan-European organisations** active on Earth Observation (e.g. ESA)

Type of action: Research and innovation actions

Appropriate EU contribution: EUR 8-15 million

Water partnering in Horizon 2020

- ❑ **Public - public partnerships** - support to actions at regional, national or international level jointly implemented within the Union through:
 - ✓ Trough “**ERA-Nets**” for topping up joint calls/actions;
 - ✓ Supporting agendas of **Joint Programming Initiative (JPI)** on Water;
 - ✓ Supporting activities of **European Innovation Partnership** on Water and its 5 thematic and 3 cross-cutting **priorities**;

- ❑ **Public – private partnerships**
 - ✓ Sustainable Process Industries (SPIRE PPP)

- ❑ **Technology Platform on Water (WSSTP)**

Better access to scientific information

- ✓ **Commission Communication: "Towards better access to scientific information: Boosting the benefits of public investments in research"** recommends actions for the Member States on access to and preservation of scientific information
- ✓ **Open access to publications** is the **general principle for all projects** in Horizon 2020;
- ✓ Under Societal Challenge "**Climate action, environment, resource efficiency and raw materials**", open access to publications **within 6 months** from publication;
- ✓ Beneficiaries will be encouraged to **provide open access also to research data** collected during the project **taking into account IPR and commercial interests** - not compulsory, possibilities for opt-in/opt-out;
- ✓ Beneficiaries participating in the Pilot on Open Research Data shall adhere to the **GEOSS Data Sharing Principles** and undertake to **register in GEOSS** all geospatial data, metadata and information generated as foreground of the project.

Geoscience proposal – Commission's current position (1/2)

Commission's position communicated by **Mr. R-J Smits** to **Mrs Sartori (EP)**:

- Expresses his "**support towards their objective** of a more **integrated Geological survey for Europe** which may ultimately provide **fully integrated geological data across the EU**";
- Acknowledges that "There is **still work needed to focus the ESG proposals** and to establish the **best fit within the content of the challenges and instruments of Horizon 2020**";
- Following **contacts** between **Mr Demicheli** and **DG RTD services** for "**jointly clarifying the focus, its fit within the Horizon 2020 challenges** and **identify any research content** which would be **suitable for an ERANET joint call**", it was concluded that "proposals were **not sufficiently mature** for inclusion within the first Horizon 2020 call and, consequently, the **topic was not included in the draft work programme**";

Geoscience proposal – Commission's current position; (2/2)

- In the context of Work Programmes development, Commission "will **consult MS to clarify the exact nature of action that they envisage**";
- Commission "will **analyse and report back to the Member States and propose an approach** that presents the **highest added value possible, for EuroGeoSurveys and for addressing Horizon 2020's societal challenges**";

Next steps

- **Formal political decisions on Horizon 2020** **Autumn 2013**
- **Formal political decision on**
Multi-annual financial framework (2014-2020) **Autumn 2013**
- **Adoption of work programme**
and publication of first calls for proposals **11 Dec 2013**



HORIZON 2020

**Thank you
for your attention!**

Find out more:
www.ec.europa/research/horizon2020