The Water JPI: getting involved

Enrique Playán, Water JPI Coordinator, Tallinn
April 18 2013
Highlights on the Vision Document

Distilled information obtained through consensus
The vision document

The grand challenge:
“Achieving Sustainable Water Systems for a Sustainable Economy in Europe and Abroad”
JPI Objectives

- Involving water end-users for effective RDI results uptake.
- Attaining critical mass of research programmes.
  - Involve at least two-thirds of the public National water RDI investment in Europe.
- Reaching effective, sustainable coordination of European water RDI.
- Harmonising National water RDI agendas in Partner Countries.
- Harmonising National water RDI activities in Partner Countries.
  - Develop a catalogue of jointly programmed activities whose global budget amounts to at least 20% of the total water RDI budget of partner Programmes.
- Supporting European leadership in science and technology.
Developing a Strategic Agenda

- **Research Questions:**
  - Maintaining Ecosystem Sustainability
  - Developing safe water systems for the citizens
  - Promoting competitiveness in the water industry
  - Implementing a water-wise bio-based economy
  - Closing the water cycle gap

- Work in progress... currently in the hands of Partners
1. Ecosystem Sustainability

- Respond to pressures leading to:
  - overexploitation and depletion of water resources,
  - pollution,
  - sea water intrusion in groundwater,
  - morphological changes/infrastructures and works

- Risk-management of water-related extreme events, (floods and droughts), critical to climate change adaptation

- Develop indicators, models and innovative methods to deal with uncertainties for the monitoring of threats, risk assessment and early warning
1. Ecosystem Sustainability

- Enabling role of hydrological sciences and related technologies, including ecosystem management, characterization, monitoring or regulations on environmental standards

- Ecosystem services
  - Part of a management strategy in new multidisciplinary approaches.
  - Opportunities to enhance the sustainability and adaptability of the natural environment and biodiversity
  - The capacity to perform ecosystem services should be quantified and valued.

- Ecological engineering approaches
  - Proven capacity to contribute to ecosystem sustainability.
1. Ecosystem Sustainability

**Ecosystem Services**
- Climate Change
- Pressure-Impact
- Groundwater
- Water Resources
- Agricultural pressure
- Ecohydrology
- People-Centered Monitoring
- Planning Risk Management
- Cyanobacterial blooms
- Acidification

**Economic Valuation**
- Bioassessment Tools
- Sediment Transport
- River Continuity
- Drought and Floods
- Fish Migration
- Policies on Chemicals
- Scenario Analysis
- Environmental Quality Standards
- Pressures

**Ecological Engineering**
- Catchment Management
- Pollutants
- Bottlenecks
- Mapping Risks
- Monitoring
- Mapping Risks
- Rising Groundwater
- Urbanization
- Bronwnification
- Economic Valuation

**People-Centered Monitoring**
- Risk Indicators
- Holistic
- Resilience
- Bronwnification
- Economic Valuation

**Water JPI**
- Heavily Modified Bodies
- Extreme Events
- Risks
- Ecosystem Services
- Drought and Floods
- People-Centered Monitoring
- Planning Risk Management
- Catchment Management
- Pollutants
- Bottlenecks
- Mapping Risks
- Monitoring
- Rising Groundwater
- Urbanization
- Bronwnification
- Economic Valuation

**Under Construction**
2. Safe Water Systems for Citizens

- Current threats by emerging pollutants including:
  - Pathogens (including antibiotic resistant bacteria and viruses),
  - Cyanotoxins,
  - Nanomaterials.

- Knowledge gaps remain concerning:
  - Environmental behaviour (surface water, treated water, groundwater)
  - Impact on human health: direct consumption, crops, water supply and storage in rural and urban environments.
2. Safe Water Systems for Citizens

- Best practices for minimizing risks associated with water distribution and storage facilities, or natural hazards
  - Need for innovative practices minimizing risks associated with:
    - Water distribution and storage facilities in urban areas
    - Natural hazards (floods and associated risks for citizens’ life)
  - For example: improve performance of storm water retention ponds (managing the contaminants) and advanced wastewater treatment (managing the overflows during floods).
- Climate change may locally increase the frequency and intensity of floods and droughts, requiring further efforts on water resources, hydrodynamics, social sciences and geography...
2. Safe Water Systems for Citizens

- **Natural Hazards**
  - Cyanotoxins
  - Pathogens

- **Ageing Urban Systems**
  - Trace Organics
  - Urban Floods

- **Antibiotic Resistance**
  - Cosmetics
  - Endocrine disruptors

- **Emerging Pollutants**
  - Nanoparticles
  - Perfluorinated Compounds

- **Storage Facilities Risks**
  - Bio-indicators
  - Organosilicon compounds

- **Water Distribution Risks**
  - Monitoring and Control Systems
  - Bio-assays

- **System Rehabilitation Planning**

- **Water JPI**
3. Competitiveness in Water Industry

- Market-oriented technological solutions
  - Robust, smart and cost-effective technological solutions
  - Designing for different water uses
  - Water distribution and measurement
  - Advanced water treatment for all types of users
  - Making water reuse real, safe and cost-effective
  - Desalination
  - Recovery and revalorization of wastewater sewage and desalination by-products
3. Competitiveness in Water Industry

- Regulatory, governance and management frameworks
- Water management as part of a green economy
- Contribute to the sustainability of other sectors: land use, energy and transport.
- Accommodate policies to new concepts (such as green infrastructure and natural water retention measures...)
- Multidisciplinary and integrated approaches, through participative, economic approaches coupled with hydrological modelling
3. Competitiveness in Water Industry

- Biofouling
- Low-energy
- Governance
  - Hybrid Membrane Systems
- Market-Oriented
- Reuse
- Technological Solutions
  - Sifting Paradigm
  - Regulation
- Coating
- Desalination
- Distribution
- Process Intensification
- Bottleneck
- Eco-Efficiency
- Real-Time Information
- Treatment
- Storage
- Irrigation
- Separation
- Regulatory
- Mineral Recovery
- Renewable Energy
- Smart Water Technologies
- Brine
- Purification
- Oxidation
- Conveyance
- Leakage
- Measurement
- Water JPI
- Policy
- Sensor Networks
- Smart Water Technologies
- Process Intensification
- Governance
4. A Water-Wise Bio-Economy

- Bio-economy: “use of renewable resources from land and sea, and the use of waste to make value added products, such as food, feed, bio-based products and bioenergy”
- Leading to the intensification of agriculture
- More pressure on natural resources to increase the production of food and biomass, more water and more agrochemicals
- Water depletion and pollution applies to both rainfed and irrigated systems
4. A Water-Wise Bio-Economy

- Resource efficiency
  - Less water consuming crops, Water conservation techniques,
  - Irrigation scheduling and technologies
  - Advances in hydrological modelling

- Reduction of soil and water pollution
  - On-farm measures... efficient use of inorganic and organic fertilizers
  - Modifying crop rotations and sowing dates,
  - Selecting more pest-resistant crop varieties,
  - Designating buffer strips along water courses.
  - Sustainable chemical consumption patterns through a mix of policy responses
  - Need for better understanding of contaminants transfer within soils and water systems.
4. A Water-Wise Bio-Economy

Resource Efficiency

- Water pricing
- Agrochemicals
- Climate Change
- Nitrogen
- Organic
- Salinity
- Water Reuse
- Agronomy
- Regulations
- Modeling
- Irrigation Efficiency
- Crop Water Requirements
- Evaporation
- Bio-fuels
- Hydrology
- Rainfed Systems
- Biomass
- Pesticides
- Farmers’ Incentives
- Policy Response
- Groundwater Protection
- Bioenergy
- Awareness
- Irrigation
- Water Framework Directive
- Soil and Water Pollution
- Pharming
- Phosphorous
- Fertilizers
- Micro Irrigation
- Micro Irrigation
5. Closing the Water Cycle Gap

- Reconciling water supply and demand
- Scarcity may be related to quantity and to quality too!
- New integrated concepts related to:
  - Integrated water management
  - Water re-use, energy,
  - Recovery of valuable substances,
  - Monitoring and control,
  - Decentralized systems,
  - Interaction with natural resources.
- Combination of
  - Technological and environmental research
  - Socio-economic research
- Costs and benefits of the different solutions must be systematically assessed.
- Water foot-printing: deepened, practical methods and certifiable systems.
5. Closing the Water Cycle Gap

- Concepts and solutions for drought sensitive areas, such as:
  - Such as Management of Aquifer Recharge
  - Soil-Aquifer Treatment, as part of an integrated strategy

- Socio-economic approaches
  - Participatory approaches bring together different stakeholders, users and water authorities and provide a forum or platform for discussion.
  - Conceived to facilitate dialogue and to identify problems and best alternatives for decision making.
  - Further develop decision support systems (DSS)
  - Water users’ behavior (users’ acceptance of innovations) water economics and water governance, regarding frameworks, instruments and integrated models.
5. Closing the Water Cycle Gap

- Governance
- Groundwater Resources
- Sustainability
- Stakeholders

Reconcile Supply and Demand

- Natural Resources
- Decision Making
- Technology
- Participation
- Market instruments

Hydrological Scales

- Decentralized Systems
- Transparent, acceptable policies

Socio-Economy

- Good Ecological Status
- Foot-Printing
- Water Reuse
- Good Practice
- Certification

Integrated Water Resources Management

- Management of Aquifer Recharge
- Soil-Aquifer Treatment
- Participation

Transparency
- Water JPI
A group of committed and motivated research managers
JPI Partners: the Programme Logo Gallery

Cyprus

Denmark

Finland

Germany
JPI Partners: the Programme Logo Gallery

**Italy**

- PRIN
- MIUR
- PONREC
- MINISTERO DELLE POLITICHE AGRICOLE ALIMENTARI E FORESTALI
- ISPRA
- MINISTERO DELL'AGRICOLTURA, L'ALIMENTAZIONE E LA PRODUZIONE ANIMALI

**The Netherlands**

- NW
- NWO
- WETSUS
- STW
- Technologiestichting STW

**Norway**

- The Research Council of Norway
- NORWEGIAN DIRECTORATE FOR NATURE MANAGEMENT
JPI Partners: the Programme Logo Gallery

Poland

Portugal

Romania

Spain

Turkey

United Kingdom
Funding European Water research and innovation

A few maps to identify a niche for the Water JPI
Who is involved in European Water Research and Innovation funding?

- National and Regional Programmes
- Horizon 2020 (FP7)
- Acqueau (Eureka cluster for water)
- European Innovation Partnership on Water
- COST
- ... and the Water JPI
- A few maps will help understand the scene
A map of European research and innovation funding organizations
A map of European research and innovation funding organizations.

- **Public** Funding
- **Private** Funding

**JPI**

**Research** to **Innovation**

**FOCUS**

**HORIZON 2020**

**COST**
Projects, Mobility, Results, Coord.

Research

JPI

Infrastr.

THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION

FOCUS

Horizon 2020

Innovation
EIP on Water is not a funding organization.

From 0 M€ in 2012 to 70 M€ in 2020
Yearly increment: 9 M€

National Programmes

130 M€ / yr in FP7

370 M€ / yr

Small Water Programme Size

Large Water Programme Size

Research

FOCUS

Innovation
The Water JPI as a funder

- From research to innovation, representing the interests of partner countries
- Finds a specific niche in the transnational funding of research-oriented projects
- This niche is gaining importance with Horizon 2020 increasingly targeting innovation and financing companies
- Will attain a relevant funding size in the coming years, boosted by
  - Cost effectiveness to partner countries
  - Support from H2020 in areas of overlap
- Effective use of variable geometry, capacity to address sub-European water challenges
- In addition to funding, coordination of national/regional agendas
Funding the Water JPI

- Till 2012, organizational costs have been covered by in-kind contributions from partner countries.
- No fees have been collected or are foreseen.
- Since January 2013, executing WatEur, an FP7 CSA covering organization costs for three years.
- Participation in activities is always based on variable geometry.
Getting quite busy in 2013 and beyond…
2013: Pilot call for proposals

- Will be published in September 2013
- Preliminary discussions permit to advance that this will be an energetic, mobilizing activity.
- Collaborative projects are foreseen
- Governing Board approval in May
- Stay tuned to the Water JPI web site for more information on the Call Topic(s), deadlines and procedures.
- The call will cover the funding expectations (progress towards 2020)
2014: Joint Activities

- Will be published by September 2014
- Will include
  - A call for proposals on collaborative projects for selected topic(s)
  - Additional instruments for specific topics
- Wider mobilization and Scope
Other on-going activities

- Interaction with Horizon 2020:
  - Societal challenges, mobility, infrastructure
- Refine Mapping of R&I activities
- Progress towards a Strategic Research and Innovation Agenda
  - First agenda document released in May
  - SRIA 1.0 released in June 2014
- Definition and planning of additional instruments
- Search for strategic Alliances outside Europe
- Strengthen external communication
Thanks!