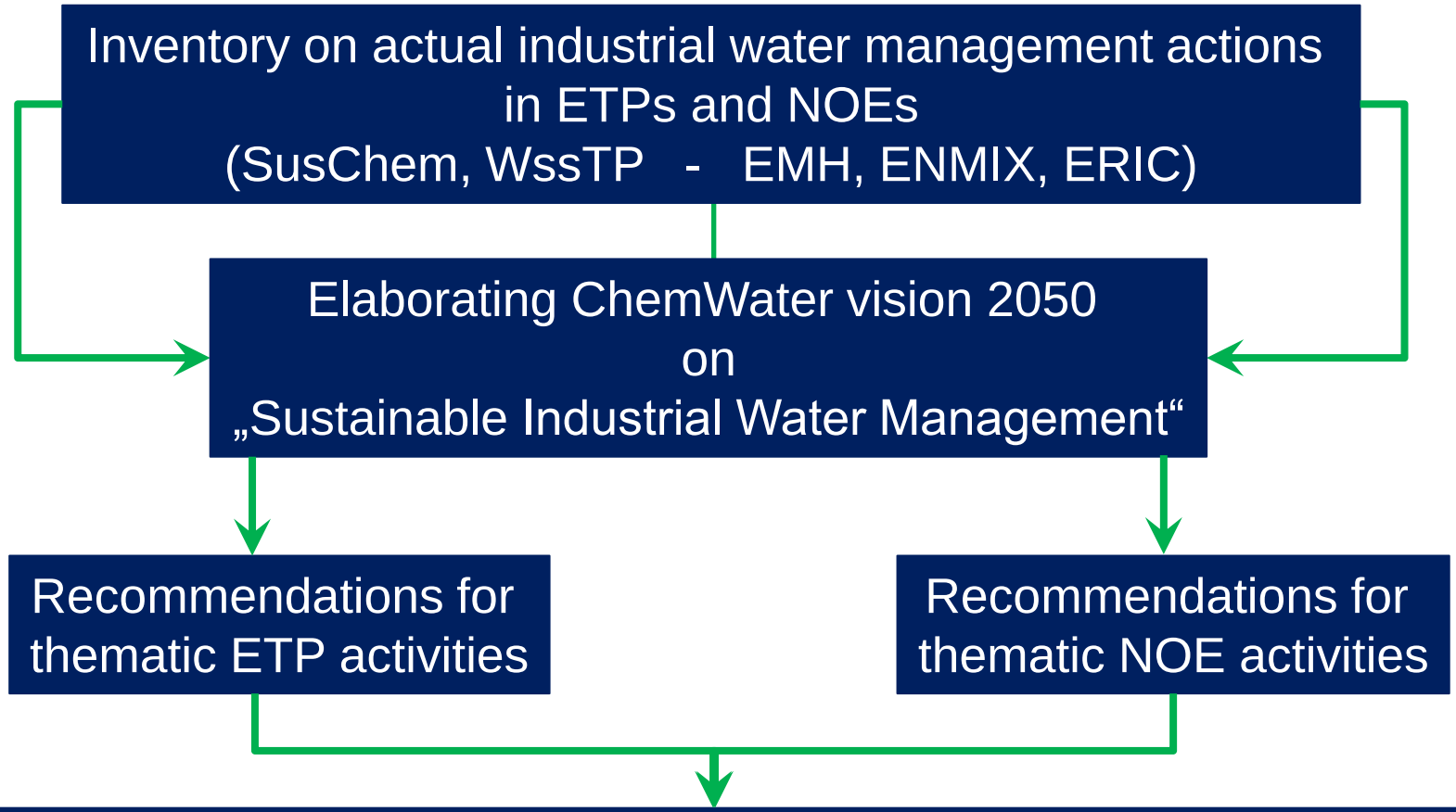
„Industrial Water Management on the edge to HORIZON 2020“

07 March 2013
Brussels, Belgium

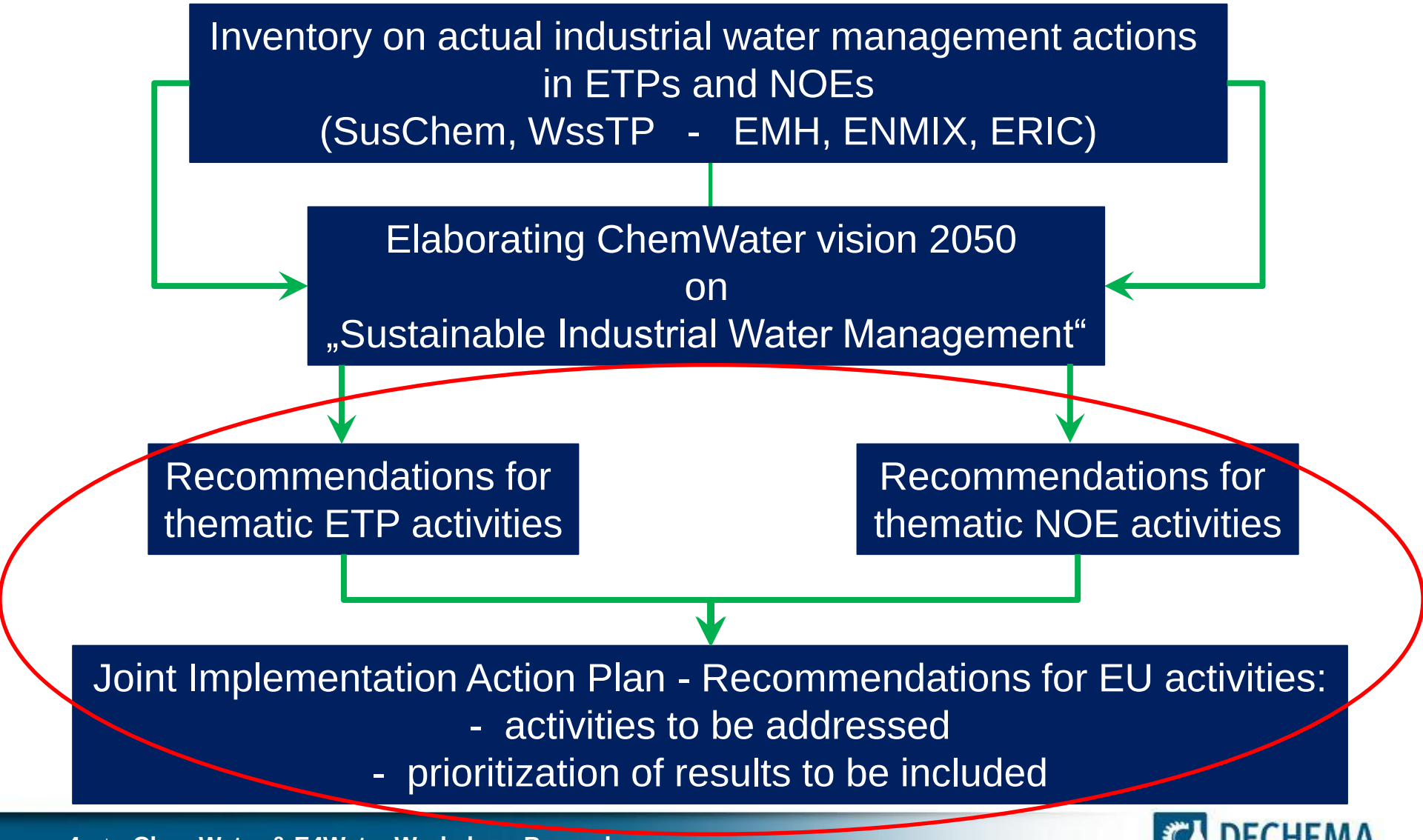
Workshop Agenda

10:00	Welcome and Introduction (Thomas Track, DECHEMA e.V.)
10:15	Introduction of the Industrial Water Vision 2050 (Albert Jansen, TNO)
10:30	1st Discussion - Actions to address Research and Technology development *Introduction: Joint research and development roadmap across Networks of excellence (Michael Stoecker, ENMIX)* **First discussion:** Water Quality / Water Quantity / Water- Energy Nexus
12:30	Lunch break
13:15	2nd Discussion - Innovation and demonstration actions *Introductions: Horizon 2020 (Germán Esteban Muniz, EC)* *Joint research and development roadmap across European Technology Platforms (Thomas Track, DECHEMA e.V.)* **Second discussion:** Industrial Leadership - Key Enabling Technologies / Societal challenges
14:45	Coffee break
15:15	Results of round table discussions (Rapporteurs)
15:45	Turning results into recommendations for EU activities: Discussion on: What activities to address? Which results to include – which priority?
16:30	End of workshop

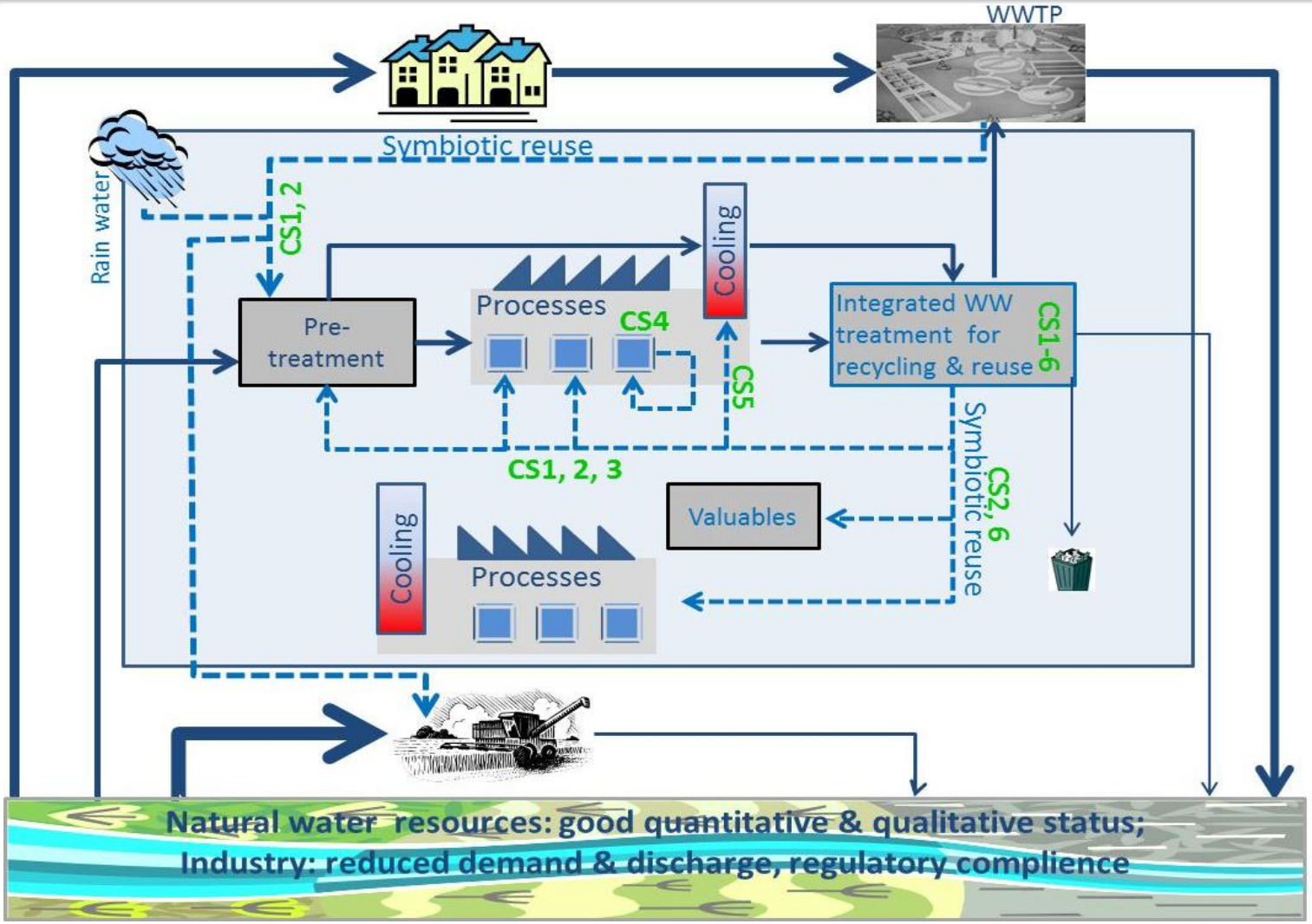
ChemWater Strategy



ChemWater Strategy

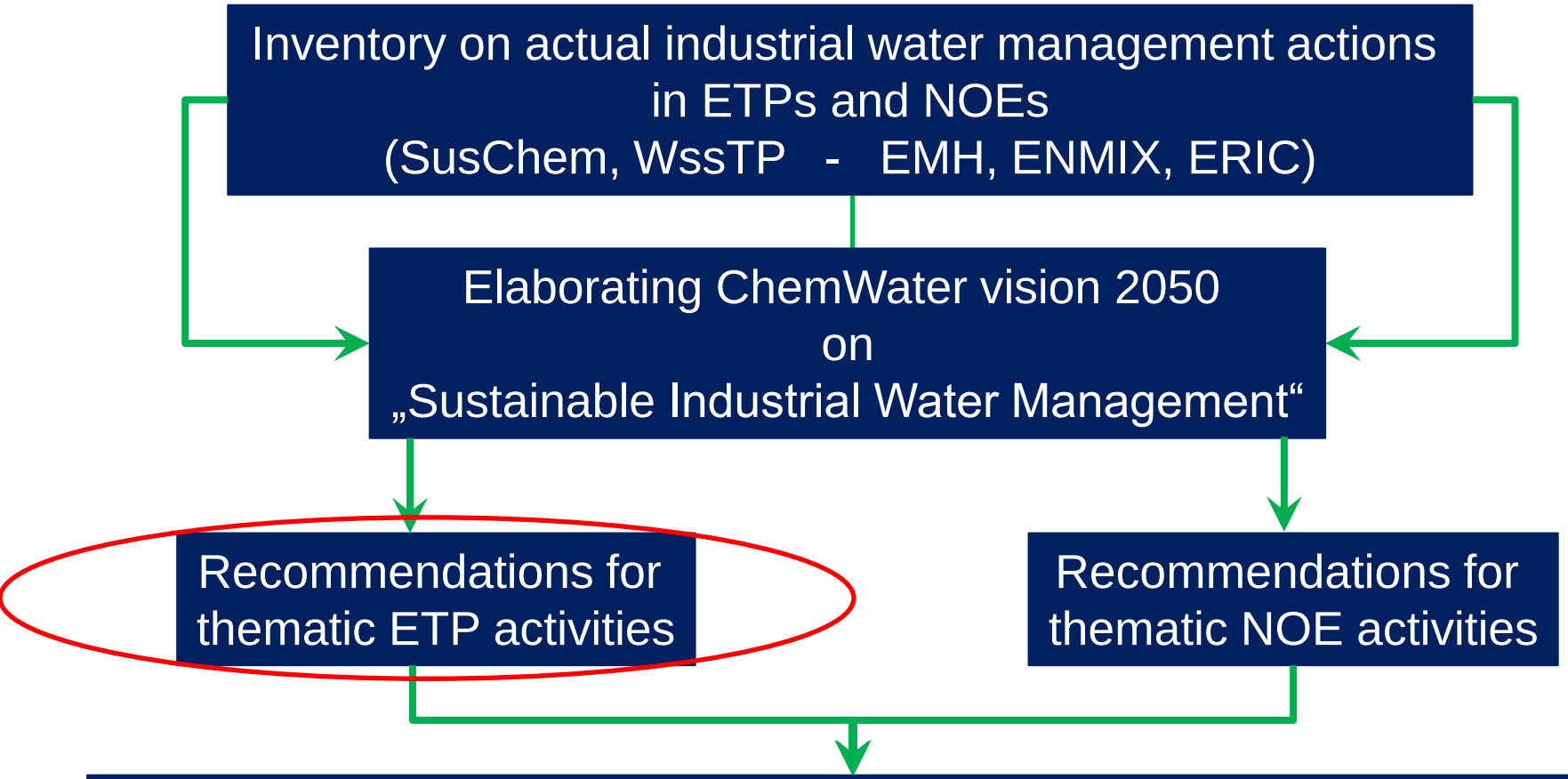


E4Water Strategy



→ Contribute to demand driven developments and early relation to potential exploitation areas

ChemWater Strategy



Recommendations for thematic ETP activities

- How to address “Joint research and development roadmap (JR&DR) across ETPs”?
  - → Recommendations for thematic ETP activities
  - → Considering Horizon 2020 structures

Structure

- ChemWater vision for 2050 for the European Chemical Industry and aligned sectors
  - → Summary from WP 3
- Joint research and development needs to address the ChemWater vision 2050
  1. Industrial Leadership - Key enabling technologies
     - → water quality – water quantity – water energy nexus
  2. Actions needed to address societal challenges
     - → non technical/societal perspectives
  - → Feed in of first E4Water experiences

Considering Horizon 2020 structures

1. Industrial Leadership - Key enabling technologies
   → water quality – water quantity – water energy nexus
   - ICT
   - Nanotechnologies
   - Advanced Materials
   - Biotechnology
   - Advanced Manufacturing and Processing

2. Actions needed to address societal challenges
   → non technical/societal perspectives
   - Sustainable and competitive bio-based industries
   - Reducing energy consumption and carbon footprint through smart and sustainable use
     - Unlock the potential of efficient and renewable heating-cooling systems
   - New Knowledge and technologies
   - Climate action, resource efficiency and raw materials
     - Promote the sustainable supply and use of raw materials, covering exploration, extraction, processing, recycling and recovery
     - Strengthen eco-innovative technologies, processes, services and products and boost their market uptake

Key enabling technologies – water quantitiy

1. ICT
   - Systems and tools to control water quantity
   - Online monitoring to support recycling, reuse and water loop closure

2. Nanotechnologies
   - Enable the use of alternative resources: e.g. brakish water, water symbiosis
   - Improve internal water recycling and reuse

3. Advanced Materials
   - Materials to enable the new design of processes: Processes using less water - Sustainable use of water in process.
   - Coatings/ sealants that repair and renew water distribution systems to reduce water loss; new materials for pipes.

4. Biotechnology
   - New design of processes: Processes using less water - Sustainable use of water in process. → Industrial Biotechnology

5. Advanced Manufacturing and Processing
   - New design of processes: Processes using less water - Sustainable use of water in process. → Chemistry and related process industries

Key enabling technologies – water qualitiy

1. Nanotechnologies
   - Enable the use of alternative resources: symbiotic water use
   - Internal recycling and reuse, focusing on Sustainable/Advanced reuse and water loop closure
   - Fit for purpose innovative treatment and process solutions (e.g. catalysts, membranes)
   - Sustainable treatment of brines
   - Waste streams valorisation: valuables recovery, selective separation of pollutants

2. Advanced Materials
   - In-process optimisation in material and product usage, maintenance, etc.
   - Fit for purpose innovative treatment and process solutions (e.g. catalysts, membranes)
   - Sustainable treatment of brines
   - Product design of chemical and biotech solutions/products for WT and WWT
   - Waste streams valorisation: valuables recovery, selective separation of pollutants
   - Materials to ensure sustainable WWT during (e.g. self cleaning functions).

Key enabling technologies – water qualitiy

3. Biotechnology
   - Design of the industrial processes towards sustainable Water and Waste Water Treatment → Industrial Biotechnology
   - In-process optimisation in material and product usage, maintenance, etc (e.g. fouling)
   - Development and efficient use of technologies for WT and WWT
   - Waste streams valorisation: valuables recovery, selective separation of pollutants

4. Advanced Manufacturing and Processing
   - New design of processes: Processes using less water - Sustainable use of water in process. (e.g. recation & process design)
   - Towards more innovative treatment and process solutions. (e.g. concentrate treatment)
   - Sustainable treatment of brines (e.g. energy, fouling)
   - Development and efficient use of technologies for WT and WWT

   - → Chemistry and related process industries

Key enabling technologies – water energy nexus

1. Nanotechnologies
   - Reduce scaling corrosion (e.g. for heat exchange)
   - Lower energy levels of process reactions

2. Advanced Materials
   - Materials for energy efficient water treatment technologies (e.g. membranes)
   - Scaling corrosion resistant materials
   - Materials for low pressure processes

3. Biotechnology
   - Reduce bio-fouling
   - Improve energy recovery in anaerobic treatment

4. Advanced Manufacturing and Processing
   - Energetic conversion/valorisation of by-products / compounds within wastewater (e.g. energy recovery from salt gradients)

Societal challenges

1. Sustainable and competitive bio-based industries
   - New design of processes: Processes using less water - Sustainable use of water in process.
   - In-process optimisation of materials and production processes, maintenance, … (e.g. for water and energy efficient production of bio-based platform chemicals)

2. Reducing energy consumption and carbon footprint through smart and sustainable use
   Unlock the potential of efficient and renewable heating-cooling systems
   - Sustainable cooling & heating
   - Efficient heat exchange / thermal storage

3. New Knowledge and technologies
   - Sustainable cooling & heating
   - Realize water qualities “fit-for-use”
   - Water treatment technologies (e.g. alternative membrane technologies)

Societal challenges

4. Climate action, resource efficiency and raw materials
   - Internal recycling and reuse, focusing on sustainable water loop closure.

   Promote the sustainable supply and use of raw materials, covering exploration, extraction, processing, recycling and recovery
   - Alternative water sources
   - Symbiotic water use
   - Treatment of highly loaded liquid streams
   - Wastewater valorisation

   Strengthen eco-innovative technologies, processes, services and products and boost their market uptake
   - Energy efficient treatment technologies
   - Wastewater valorisation
   - Proof of technology performance

Considering Horizon 2020 structures

- Sustainable and competitive bio-based industries
  - Contribute to resource efficiency for full biomass valorisation (biorefineries)
  - Sustainable water use a key sector to promote industrial biotechnology
  - manage high loaded ww out of BT processes to have efficient and competitive bio-based industries
  - Bio based wastewater valorisation (e.g. algae, microorganisms)

- Reducing energy consumption and carbon footprint through smart and sustainable use
  - *Unlock the potential of efficient and renewable heating-cooling systems*
  - Using salt gradients for electricity production
  - Advanced sensing systems at the spot to manage energy consumption
  - Valorization of low energy waste heat (in water) - e.g. uses and technologies: (green house heating; membrane distillation, vacuum distillation…)
  - Taylor made energy recovery solutions

Considering Horizon 2020 structures

- New Knowledge and technologies
  - Treatment technologies for processed water in shale gas production
    put shale gas production in the water – energy nexus
  - Develop green new technologies (e.g LCA of membranes – integrating toxic compounds in mixed matrix membranes).
  - Develop new technologies in a green way (water/carbon foot print of technology production)
  - Down grading of used technologies (membranes)
  - Self maintaining technologies
  - Better valorization of visible light in water treatment processes
  - Better integration of reaction and separation (better water treatment possibilities)
  - Converting substances (to valuables) from high concentrated streams instead of just concentrate them

Considering Horizon 2020 structures

- Climate action, resource efficiency and raw materials
- *Promote the sustainable supply and use of raw materials, covering exploration, extraction, processing, recycling and recovery*
  - improve classical technologies for raw material processing → cross sectoral transfer of industrial treatment technologies
  - biotechnological processes for rm recovery and processing (geobiotechnology)
  - Contribute to resource efficency for full biomass valorisation (biorefineries)

- *Strengthen eco-innovative technologies, processes, services and products and boost their market uptake*
  - Valorization of low energy waste heat → cost efficiency
  - New business models to foster market uptake

Turning results into recommendations for EU activities

Final aim: Programme of Joint Implementation Activities

Which European Programmes can be addressed?

- Horizon2020
- PPP SPIRE → link with road map
- PPP Biobased Industries
- Platform Manufuture
- EIP on Water: Pillars and horizontal issues of the SIP
- EIP on Raw Materials….
- EIT-KIC (Knowledge and Innovation Communities) non climate change


ChemH2O2013
Leading-Edge Conference on Sustainable Water Management: Chemical Industry setting the pace
ANQUE
DECHEMA
October 1st-2nd 2013 Madrid, Spain
HOME
PROGRAMME
ABSTRACTS
REGISTRATION
SPONSORSHIP
SOCIAL EVENTS
VENUE
Home
A A A