

# **EU project DEMEAU (2012-2015)**

## **Demonstration of promising technologies to address emerging pollutants in water and wastewater**

**Work area 5: Fostering the uptake of novel  
technologies in the water sector**

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*LCA workshop, 06.02.2014, Leoben*

- **Motivation:** a wide range of **anthropogenic organic micropollutants** are present in the water cycle in very low concentrations [ng/L- µg/L] (e.g. pharmaceuticals, hormones, industry chemicals, ...) which may pose a **potential risk to humans or the environment**
- **Innovative technologies** have been developed and are available to deal with these substances, but are **not yet taken up widely** in the water sector
- DEMEAU targets at **promoting the uptake of knowledge, prototypes and practices** from previous EU research enabling the water and wastewater sector to face emerging pollutants

Total costs: 4.6 M€

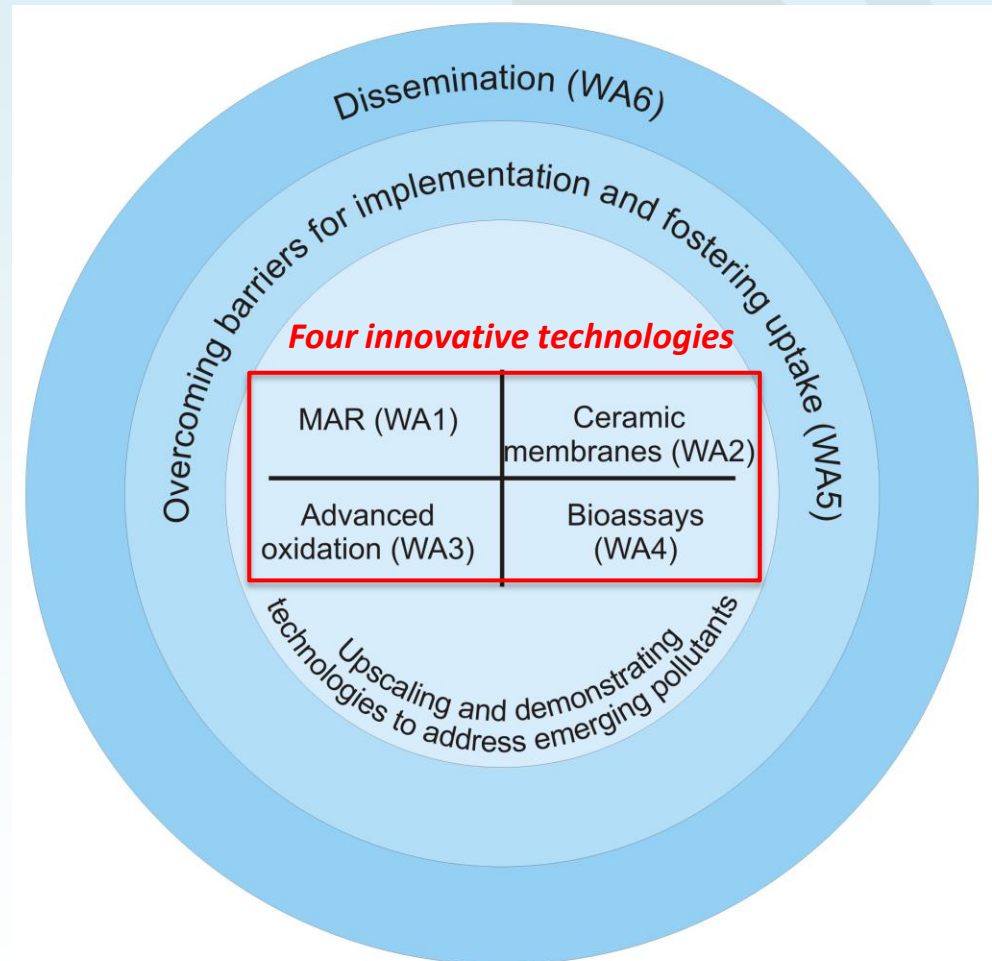
EC contribution: 3.0 M€

Duration: 36 months

Coordinator: KWR (NL)

Consortium: 17 partners from  
5 countries (NL, DE, CH, FR, ES)

Website: [www.demeau-fp7.eu](http://www.demeau-fp7.eu)



- **Analysis of drivers and barriers for market uptake of innovative technologies (lead: FHNW)**
  - Life Cycle Assessment (KWB, Quantis, Veolia)
  - Life Cycle Costing (IWW)
  - Stakeholder survey and workshops to identify drivers and barriers (KWR)
- Innovative technologies will be **compared to available reference technology** to formulate unique selling propositions
- Assessment will be based on **collaboration with project partners and local utilities** for exchange of data and experience



- **Analyse selected case studies with LCA** (KWB, Quantis)
  - Based on full-scale or pilot data from project partners
  - Comparing with reference technology as “benchmark”
- **Complement impact assessment** for micropollutants (Quantis)
  - Calculate new characterization factors for toxicity evaluation of 10 micropollutants
  - Based on USEtox<sup>®</sup> methodology
- **Development of LCA guidelines for the water sector** (KWB, Quantis, Veolia)
  - Define best practice for goal & scope definition, setup of inventory, impact assessment, and interpretation
  - Based on experience from DEMEAU and previous LCA projects

- **Goal and scope:**

- Assessment of full-scale systems for managing emerging micropollutants
- Comparison to reference technology as benchmark

- **Inventory:**

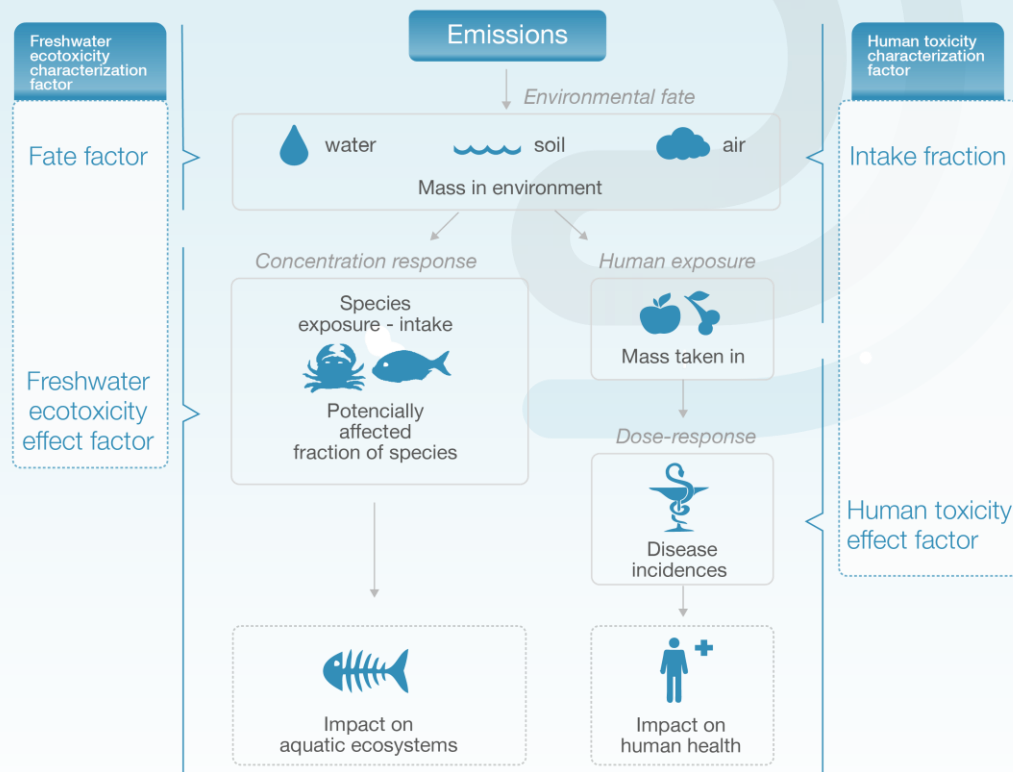
- Data collection from full-scale sites for process performance and process inputs (electricity, chemicals, infrastructure)
- LCA software: Umberto NXT LCA, Quantis Suite, SimaPro
- LCI databases: ecoinvent v3, Water Database (Quantis)

- **Impact assessment:**

- Midpoint indicators (ReCiPe) incl. water use, probably endpoint indicators
- Compare additional impacts of treatment (e.g. energy demand, GWP) with avoided burden (reduction in micropollutants → new CFs)

- **New human toxicity and ecotoxicity CF calculated for 9 priority compounds in USEtox<sup>®</sup>**

- Benzotriazole
- Bezafibrate
- Carbamazepine
- Diclofenac
- Iopromide
- Metoprolol
- Phenazone (Antipyrine)
- Sulfamethoxazole
- Trimethoprim



- **Data collection**

- Physico-chemical parameters based on EPI Suite v4.1
- Ecotoxicity parameters (EC50) based on data from EAWAG
- Human toxicity parameters (ED50) from literature review

# **DEMEAU WA 5:**

## **Fostering the uptake of novel technologies in the water sector**

**Thank you for your attention!**

For questions and further information:

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