



## At a glance

Title: Meso-level eco-efficiency indicators to assess technologies and their uptake in water use sectors

Instrument: Collaborative Project, FP7

Total Cost: € 3,038,575.00

EC Contribution: € 2,499,489.00

Duration: 36 months

Start Date: 01/09/2011

Consortium: 10 partners from 9 countries

Project Coordinator: National Technical University of Athens (Greece)

Project Web Site: Operational from October 2011

Key Words: meso-level eco-efficiency metrics, technology assessment, water systems, water use sectors

## Environmental Technologies

### EcoWater

#### The challenge

Eco-efficiency indicators at the micro-level (i.e. for single units, businesses, installations) are at a very advanced stage of development and documentation, and can be developed with a variety of methods. However, the information necessary to support policies for technology uptake cannot be obtained through the simple aggregation or extrapolation of micro-level data, due to the inherent difficulty in describing and predicting system-wide impacts from technology innovations and the barriers to their implementation. Furthermore, the diversity in indicators and assessment methods often renders relevant data non-comparable. Recent efforts have attempted to address standardization requirements; however, the gap in meso-level eco-efficiency assessments has not been yet adequately addressed.

#### Project Objectives

EcoWater will address the existing gap in eco-efficiency metrics by adopting a **systems' approach** to develop meso-level eco-efficiency indicators, using **water service systems as case application examples (Case Studies)**. By studying the corresponding value chains, as well as the (economic) actors involved and their interactions, the project will further seek to understand how technological changes in water systems interrelate, and influence the economic and environmental profile of water use in different sectors.

The specific objectives of EcoWater concern the: (i) selection of eco-efficiency indicators, suitable for assessing the system-wide eco-efficiency improvements (or deteriorations) from innovative technologies; (ii) integration of existing tools and assessment methods in

a coherent modelling environment, allowing for system-wide environmental and economic benchmarks of innovations; (iii) elaboration of exemplary Case Studies in different systems and sectors to assess innovative technologies and practices; (iv) analysis and characterisation of existing structures and policy instruments for technology uptake, through the development and testing of different scenarios on relevant policy and management factors.

## Methodology

The EcoWater methodology is based on three research components. The **first component** will concern the elaboration of an analytical framework for quantitative meso-level eco-efficiency assessment. The **second component** will concern the development of the Project's Case Studies (CS), each with its own thematic and regional focus:

- Two CSs will address **agricultural water systems**, focusing on shifts from rainfed to irrigated agriculture and innovations that can reduce the relevant water and energy footprints and production inputs.
- Two CSs will deal with **urban water systems**, addressing issues and technologies associated with more sustainable and economically efficient water supply and wastewater management.
- Four CSs will address **water use in industrial sectors**, focusing on: (i) the textile industry, (ii) water use for energy production, (iii) dairy production, and (iv) the automotive industry. CSs will assess eco-efficiency improvements from innovative technologies towards closed-loop systems, recovery of resources, and advanced treatment processes.

A **third component** will deal with the integration and synthesis of the project's results, producing step-wise methodological guidelines, a toolbox for meso-level eco-efficiency assessment of technologies, and policy recommendations, identifying those factors that are most pertinent to technology uptake in different water systems.

## Expected Results

The main outputs from the implementation of EcoWater include:

- A coherent, validated and tested, methodological framework for assessing technology impacts on the eco-efficiency of water systems, including relevant eco-efficiency indicators, assessment methods and tools;
- A toolbox, providing a platform which could be used by actors for the analysis of the eco-efficiency of their system;
- An improved understanding of the socio-technical dynamics that influence technology uptake and implementation, and insight on policies to foster eco-efficiency improvements, focusing on different sectors of water use.

Results will be widely disseminated through communication activities, events and targeted material, addressed to **local societies and private actors**, the **water industry and economic sectors** that constitute the focus of the Project Case Studies, and the **policy sphere**, providing recommendations particularly related to the Sustainable Consumption and Production Action Plan, the Water Framework Directive, and the Environmental Technologies Action Plan.

## Project Partners

National Technical University of Athens	GR
Centro Internazionale di Alti Studi Agronomici Mediterranei - Istituto Agronomico Mediterraneo di Bari	IT
Stichting Deltares	NL
Fachhochschule Nordwestschweiz	(Switzerland) CH
Universidade do Porto	PT
University of Architecture, Civil Engineering and Geodesy	BG
The Open University	UK
DHI	DK
IVL Svenska Miljoeinstitutet AB	SE
MITA SAS di Spagarino Michele e Co	IT