European Commission

# Hydrogen - A Competitive Energy Storage Medium To Enable the Large Scale Integration of Renewable Energies

*Seville, 15-16 November 2012*

## stoRE Facilitating energy storage to allow high penetration of Renewable Energy

## Overall Objectives and Budget

Project aim: facilitating high penetration of intermittent renewable energies in the European grid by unblocking the potential for energy storage infrastructure.
Overall objective: help creating the regulatory and market conditions that will give incentives for development of the necessary storage infrastructure.
Budget: 1,643,642 €

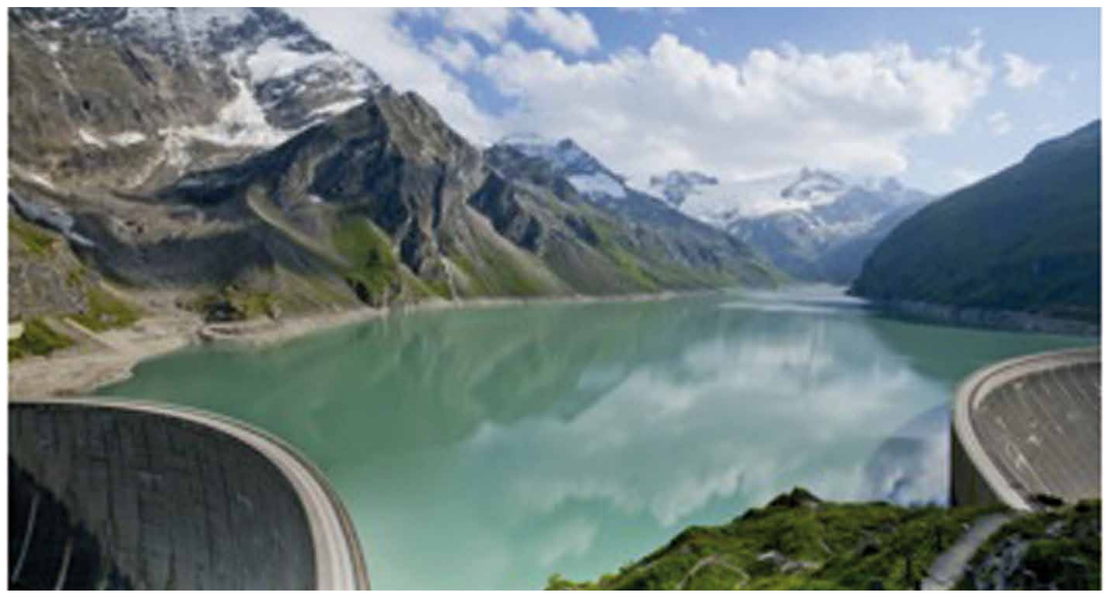
**creating the right framework conditions for energy storage development**

## Technical Barriers and Targets

Energy storage, as part of an integrated approach including grid reinforcement and demand management, helps accommodate higher percentages of renewables. stoRE deals with non-technological barriers to energy storage, supporting changes that will allow decision makers to ensure developments that will be in the best interest of society.

## Technical Accomplishments / Progress / Results

Technology overview: The status of the bulk storage technologies has been documented and the potential and the requirements for storage in future energy systems have been assessed.
Environmental issues: Recommendations for policies and practices in pumped hydro and compressed air storage that do not impose barriers but still protect the environment have been developed based on



*Pumped Hydro Storage is a proven technology for bulk energy storage that has been used for many decades (source: Verbund)*

*Off-shore wind is expected to grow fast and will be one of the main drivers for bulk energy storage (source: DONG)*

a wide stakeholders consultation.
Regulatory analysis in Europe: Key elements in the European regulatory and market frameworks that could affect the development and operation of storage infrastructure have been identified; recommendations are under development based on stakeholders consultation.

## Future Work

A guide for pumped hydro project development in environmentally sensitive areas is currently under development.
An analysis in the target countries (Ireland, Denmark, Germany Spain, Greece and Austria) will be conducted to identify key elements in the regulatory and market frameworks that affect the storage infrastructure. Recommendations will be developed based on stakeholders' consultations.
Events and meetings will be organised to promote the uptake of our results.

## Conclusions and Major Findings

Energy storage is attracting increasing interest. Several issues need to be addressed in the regulatory and market environment, but the framework conditions are rapidly changing and decision makers have an open mind about the approach to follow.

## Project Overview


- Michael Papapetrou, WIP Sylvensteinstr. 2, 81369 Munich, Germany, +49-89-720 12 712, pmp@wip-munich.de, www.wip-munich.de
- WIP-Renewable Energies, European Small Hydropower Association, National Technical University of Athens, University College Cork, Helmut-Schmidt-Universität, National Renewable Energy Centre (CENER), EMD, Energy Economics Group (TU Wien), Malachy Walsh and Partners

- From 05/11 to 04/13
- www.store-project.eu


Supported by INTELLIGENT ENERGY EUROPE

stoRE www.store-project.eu