

Executive Summary:

Water and Energy Report

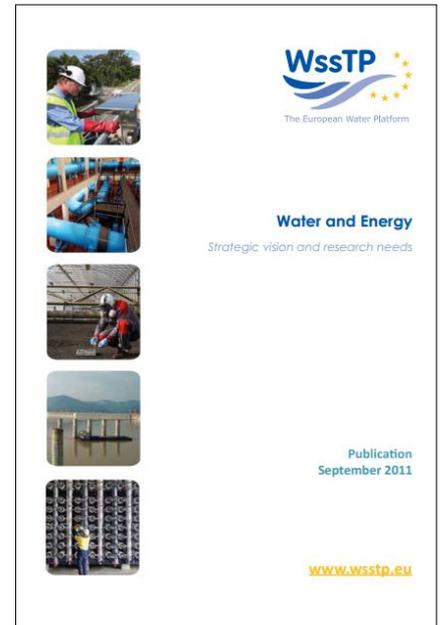


BACKGROUND TO THE WATER AND ENERGY REPORT

WssTP's report on Water and Energy was published in September 2011, and involved 7 contributors from 4 countries.

Integrated research of the interaction between water and energy is becoming increasingly important, as these two key components of life are being placed under evermore stress. Through growing populations and economies, the demand for water for food production and energy production (bio-energy and hydropower), and water for industrial and domestic use is steeply increasing at the local, national and international level.

This report explains the interaction of water and energy, and their reliance on one another to be converted into forms which are fit-for-purpose. The Economics and EU legislation is explored in light of the looming energy crisis, whilst recognising that there is significant opportunity for further RDI in this area, which will ultimately improve jobs and wealth creation throughout Europe. A high-level technology roadmap is presented as a vision for water and wastewater treatment and supply, water and energy efficient buildings, and water and energy in industry towards 2050. Key R&D priorities and recommendations are given for those work areas that will have the biggest impact in achieving roadmap targets.



CHALLENGES AND RESEARCH AGENDA

Existing systems and processes will not be able to meet many of the coming challenges, and a paradigm shift is required across society and industry. This requires swift innovations, and end user and public behavioural changes.

Integration water and energy planning models and approaches are required to coordinate across the sectoral boundaries. The US and Singapore have already made efforts towards an integrated approach to policy and investment decisions at the water-energy nexus. Europe needs to follow suit, and undertake an analysis of the water implications of energy and climate change proposals, and vice-versa. Thus, it can move towards developing an enabling policy and regulatory framework, which will ensure sustainable growth in both sectors.

Benchmarking tools need to be designed to allow easy access and understanding for stakeholders to make informed decisions around water and energy consumption, and carbon emissions for products and services.

Industrial collaboration is necessary to drive innovations, such as the recovery of heat energy from cooling waters and reducing the amount of water used in cooling. Research into heat exchanges between industrial processes, and the combined water and energy savings of technologies, are required to understand how they can best be developed.

Water and wastewater treatments and supply research should be integrated with domestic, industrial and manufacturing involvement, to ensure the most effective use of energy and water resources. This is also important in making buildings and homes increasingly more self-sufficient. Further innovation is required to utilise effective incentive mechanisms, and appropriate taxes.

Implementation of the research agenda will lead to an integrated approach to water and energy use between industry, home, and water and wastewater treatment.