



**Spanish Water Technology Platform**  
[secretariatecnica@plataformaagua.org](mailto:secretariatecnica@plataformaagua.org)  
[www.plataformaagua.org](http://www.plataformaagua.org)



# 1. ORGANISATION DESCRIPTION

## Objectives and Activities

The Spanish Water Technology Platform (SWTP) was created to serve as a national forum for cooperation among all technological and scientific agents in the promotion of R&D and the continuous improvement of technology applicable to the management of water resources. It also aims to promote the leading role of Spanish technology in this field throughout the world.

## Members/Stakeholders

The Spanish Water Technology Platform is currently a network made up of more than 170 entities that develop their activities in from the main water sectors.

- Research: 35%
- Industry (mainly SMEs): 51%
- Associations: 8%
- Government (not in the Board): 5%
- NGOs: 0,5%
- RTD management and support: 0,5%

Government presence in the Board of Directors: 10%

Several of the Associations represented in the SWP have a national scope and so we have access to a wider group of stakeholders.

## 2. RELEVANT EXPERTISE

### I. Previous experience of members in FP7, LIFE+, CIP, Regional funds, Int. Cooperation, etc.:

Some projects catalogue related with agriculture and IWRM (a complete catalogue of member's projects is in production):

- |               |             |
|---------------|-------------|
| – REWARD      | LIFE+ 2008  |
| – SIRRIMED    | KBBE 2009-3 |
| – DRIPCONTROL | SME 2008-2  |
| – WATERERP    | AVANZA      |
| – RISUB       | INNPACTO    |
| – ....        |             |

Additional SWTP organisation and members participation in:

Coordination of international Missions (e.g. India)

B2B events (eg. Holland)

**Members catalogue downloadable** from:

<http://www.plataformaagua.org/index.php?id=1090>

### II. Activity/assets in relation to Water Sector Innovation

- Definition of a national water innovation and research strategy.
- Participation in policy actions at the national and international level.
- Support participation and leadership of associates in European initiatives.
- Coordinate joint or complementary strategies with other sectors.
- Design and development of task forces.
- Competitive intelligence and technology transfer.

### III. Strategic collaborations

- 14 national associations covering different water sectors are SWTP members
- Relationships with other sectorial technology platforms established to cross-feed projects and expertise.
- Relationship with European Water Partnership and the main EU National Water Platforms (NWP)



### 3. FUTURE INTEREST / PROPOSALS

#### INTEGRATED WATER RESOURCES MANAGEMENT



1. **FOCUS AREA:** Development of decision support systems.
2. **PROJECT DESCRIPTION:** Design, development and implementation of a IWRM (Integrated Water Resources Management )system at the river basin level. The system will be used to support decisions to be taken by the hydrological Administration to fulfill its duty to achieve the sustainable management of water resources according to the Water Framework Directive 2000/60/EU.
3. **RESEARCH CHALLENGES:** Devise, develop and tune a multilevel governance instrument, with capabilities to manage highly complex systems in near real-time, with learning capabilities and that includes methodologies or models that guarantee adequate public governance.

### 3. FUTURE INTEREST / PROPOSALS

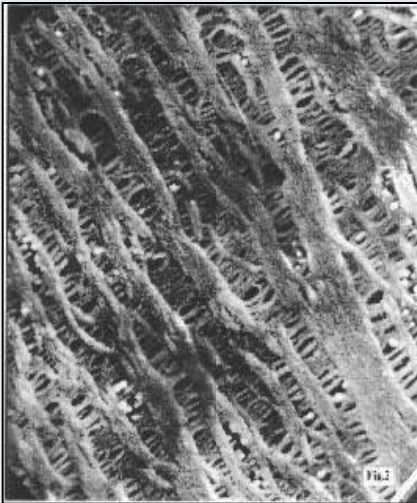
#### RENEWABLE ENERGIES APPLIED TO WATER TREATMENT



1. **FOCUS AREA:** Applying renewable energies (wind, solar, ocean, geothermics, microturbines...) to water treatment processes to minimize carbon foot print. Water and Renewable Energies Hybridization (WATERGY).
2. **PROJECT DESCRIPTION:** Define most suitable water treatment technology and renewable energy combinations from the technical, environmental and economic point of view. EU leading on water sustainable solutions
3. **RESEARCH CHALLENGES:** To develop water treatment solutions powered by renewable energy
4. **EXPECTED IMPACT:** Design advanced water treatment with renewable energy solutions and demonstrate viability at pre-industrial scale.

### 3. FUTURE INTEREST / PROPOSALS

#### ADVANCED AND NEW WATER TREATMENT TECHNIQUES - I



1. **FOCUS AREA:** Nanomaterials and advanced technologies applied to water treatment processes to improve efficiency in terms of water quality and energy consumption.
2. **PROJECT DESCRIPTION:** Nanomaterials to improve performance of water filtration, membrane technologies, water disinfection, elimination of emerging pollutants, water quality monitoring. EU leading on water technology.
3. **RESEARCH CHALLENGES:** To develop advanced water treatment solutions based on nanomaterials, reducing carbon foot print. To tune up the capacitive deionization technology in order to treat sea, brackish or black waters, with different purposes (drinking water, urban, agricultural or recreational irrigation, industrial supply, etc.) based on energy efficiency principles.
4. **EXPECTED IMPACT:** Design more efficient water treatment solutions and demonstrate viability at pre-industrial scale.





### 3. FUTURE INTEREST / PROPOSALS

#### ADVANCED AND NEW WATER TREATMENT TECHNIQUES - II



1. **FOCUS AREA:** Persistent pollutants and bioterrorism fighting.
2. **PROJECT DESCRIPTION:** Development of miniaturized devices for “in situ” monitoring of chemical pollution parameters (heavy metals, persistent organic pollutants and biohazards) in urban and agricultural water systems. Development of communication and decision support systems to assure real time monitoring, assessment and decision making.
3. **RESEARCH CHALLENGES:** To develop advanced sensors and systems that will improve real time detection of hazardous substances. Design of decision support systems and methodologies to provide fast response to alerts.
4. **EXPECTED IMPACT:** Better information about the presence and concentration of pollutants and biohazard substances in the water systems. Development of methods, measures and instruments to improve the security against bioterrorism.



### 3. FUTURE INTEREST / PROPOSALS

#### OPTIMIZATION AND VALORIZATION OF SLUDGE - I



1. **FOCUS AREA:** Transformation of sludge in a sustainable way into energy in any usable form (gas, liquid fuels, thermal,...).
2. **PROJECT DESCRIPTION:**
  - Supercritical oxidation to transform sludge into water (reuse quality) and inert solid salts (recycle), generating power from the organic material content in the sludge.
  - Application of pyrolysis/gasification technologies to sludge to generate oils and gases that could be used as turbines and diesel engines fuel and an inert residue that could be used as an additive to improve the physical-chemical properties of soils.
3. **RESEARCH CHALLENGES:** To eliminate sludge allowing a sustainable solution to sludge treatment generating energy.
4. **EXPECTED IMPACT:** Design more efficient water treatment solutions and demonstrate viability at pre-industrial scale. New waste water treatment plant concept.

### 3. FUTURE INTEREST / PROPOSALS

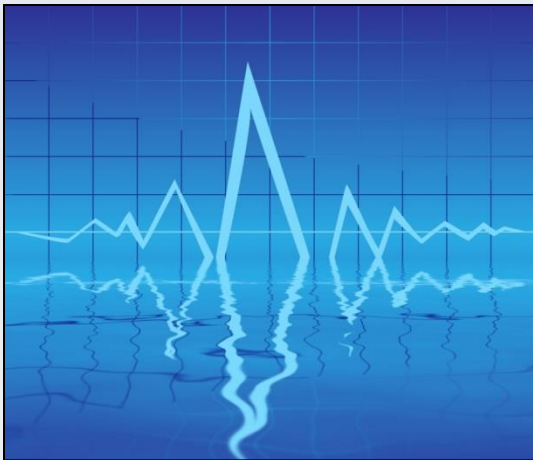
#### OPTIMIZATION AND VALORIZATION OF SLUDGE - II

1. **FOCUS AREA:** Energy production from advanced integrated wastewater treatment systems and from effluent reuse systems.
2. **PROJECT DESCRIPTION:**
  - New sludge biodigestion technology making use of microorganisms (fungus and yeast) obtained by genetic engineering, to generate biodiesel, biogas and electric supply.
  - Micro- and macroalgae based wastewater treatment systems to produce oil-accumulating biomass for biodiesel and anaerobic digestion. Effluent reclamation technologies based on fotobioreactors and soil based systems with energetic plant production. Microbial fuel cells.
3. **RESEARCH CHALLENGES:** Develop wastewater treatment systems able to produce energy. Develop reuse strategies for feedstock production of fuels.
4. **EXPECTED IMPACT:** Design wastewater treatment solutions and effluent reclamation systems and demonstrate their viability at pre-industrial scale.



### 3. FUTURE INTEREST / PROPOSALS

#### ADVANCED IRRIGATION AND AGRICULTURAL PRODUCTION TECHNIQUES



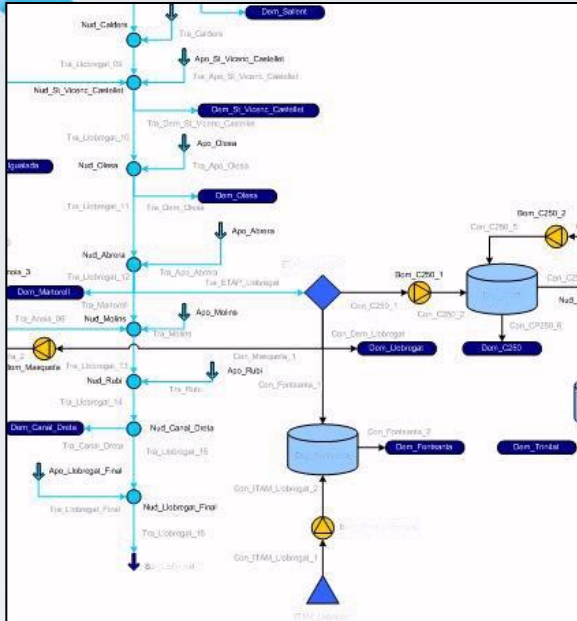
1. **FOCUS AREA:** Improve irrigation water use efficiency and agricultural yield reducing water footprint.
2. **PROJECT DESCRIPTION:** Development and transference of new irrigation strategies and technologies in order to save water. Combine these strategies with the application of biotechnology to achieve an improve in the productivity and resilience of crops' varieties.
3. **RESEARCH CHALLENGES:** Precision irrigation, new plant-soil sensors, remote sensing, DSSs, new crops, biofertilizers, use of non-conventional water sources (treated wastewater and saline groundwater) in order to increase the water use efficiency in the agriculture. Development of water stress resilient crops varieties with the capacity to produce better yields.
4. **EXPECTED IMPACT:** Development of new sustainable agricultural practices devoted to improve the socio-economical and environmental conditions in these semiarid regions.





### 3. FUTURE INTEREST / PROPOSALS

#### ICT SOLUTIONS TO INCREASE THE EFFICIENCY OF LARGE WATER INFRASTRUCTURES



1. **FOCUS AREA:** Development of an ICT based optimization tool for Integrated Water Resources Management

2. **PROJECT DESCRIPTION:** Design, development and implementation of a DSS for optimal operational management of large water infrastructures, including water+energy combined management and water quality issues.

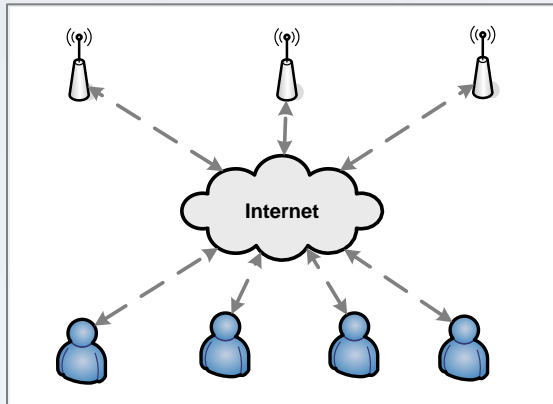
3. **RESEARCH CHALLENGES:** Design robust optimization algorithms capable for running in operational mode, solving the cost function defined for complex water systems. Define properly the cost function to be minimized. Interoperability with real time platforms belonging to different water authorities and utilities.

4. **EXPECTED IMPACT:** Overall operation cost reduction, including energy and water treatment costs, while respecting physical restrictions, service quality and ecological flows. Better operational management of water infrastructures during droughts or degraded situations due to infrastructure maintenance or flood events. Easy off-line testing of decision-making scenarios for infrastructure planning, drought management, etc. Standardization of data exchanges between water monitoring and control systems.



### 3. FUTURE INTEREST / PROPOSALS

#### WATER MANAGEMENT INFORMATION TECHNOLOGIES



1. **FOCUS AREA:** Application of new and emerging Information and Communication Technologies to water management, data collection and public dissemination of information.
2. **PROJECT DESCRIPTION:** Application of new technologies and means available like **IPv6**, **Galileo** or **GMES** for data collection, management and services development. Proposal of standard data exchange formats like OGC's or WaterML. Implementation of mechanisms like web services and pages for data collection and dissemination.
3. **RESEARCH CHALLENGES:** Application of emerging technologies not fully defined yet. Change from sensor-network protocol-centric communications to standard protocols and formats designed for interoperability applied to individual sensors. Resolution of security, scalability and software issues in a distributed environment.
4. **EXPECTED IMPACT:** Commoditization of communication protocols and data formats. Cost reduction in deployment and maintenance of sensor networks. Easier access to geolocalized water data and information for organizations and people. Increase in awareness of water issues and governance. Establishment of a “mash-up culture” to implement innovative and unexpected uses for water data.



# PLATAFORMA TECNOLOGICA ESPAÑOLA DEL AGUA

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