

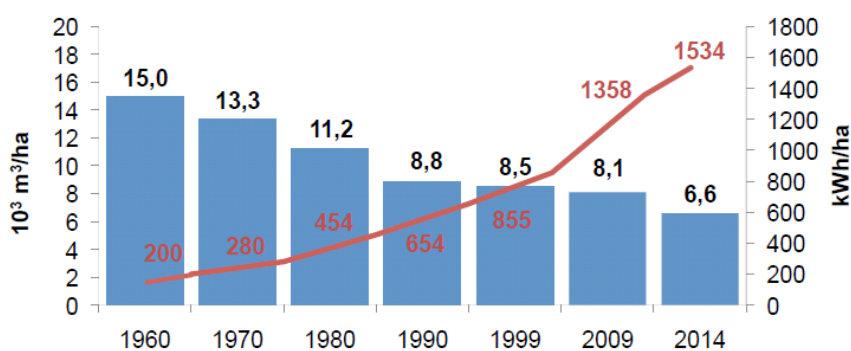
Water – Energy Nexus

Water and energy are very much interrelated. In many EUWMA member states it is not so much the costs for water that is the biggest problem, it is the costs of energy. In water scarce countries, where water needs to be pumped deep from the groundwater levels, it is very expensive to do so. In many countries, a large part costs for water management consist of costs for energy. Therefore, cost reductions in the energy sector do go hand in hand with cost reductions in the water sector.

The **water-energy nexus** is the relationship between how much water is evaporated to generate and transmit energy, and how much energy it takes to collect, clean, move, store, and dispose of water.

In Portugal, for example, while the water consumption is going down, the costs for energy are rising excessively (see below):

Water & Energy. Unitary consumption



Data: DGADR

Gain of 46% in water use efficiency
Energy consumption increased 580%

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In Spain, energy cost for farmers and Irrigators Communities have increased over 1.000% in the last 7 years. The electricity bill has doubled. All together, energy represents 40% of total water costs. Irrigation is the second largest consumer at the Spanish electricity market.

EUWMA members have therefore worked hard on innovative solutions on this topic to:

- Combine water safety with energy from water technologies such as blue energy and tidal current, integrated in dikes, dams and barriers;
- Setting up of IT systems to manage energy for irrigation as well as other sectors to minimize and manage the energy use;



EIP on Water:

EUWMA members have also, since the beginning, been active in the EIP on water. One of the action groups that they are active in is the **WIRE** action group: WIRE - Water & Irrigated agriculture Resilient Europe.

Climate change effects can result in increasing farmers' need to irrigate, not only in the southern and central part of Europe, but also in Northern Europe. Therefore, sustainable adaptation strategies in new and mature markets need innovation and well-targeted investments.

Three priorities have been identified and will be primarily addressed:

- efficient water reuse in irrigation
- energy saving in irrigation
- integrated agricultural water management under drought.

WIRE helps customizing existing or upcoming innovation to the farmers' and growers' needs, and to facilitate innovation uptake in the complex, multi-faceted irrigated agriculture reality and market.

Another EIP action group that EUWMA members are active in is **PVAIZEC** - Large PV Pumping Systems for zero energy irrigation. This action group develops a number of activities to integrate recent developments in irrigation technology at a real scale test facility (TRL9). This leads to the first application of a zero energy consumption PV pumping systems for productive irrigation in agriculture. After the demonstration phase market replication will be the focus of further activities.

So far, the results showed great technical reliability (solving the problem of the variability and intermittency of solar energy), matching the IC irrigation needs just with the solar electricity (thanks to sun-tracking systems) and reducing dramatically the cost of energy (56% regarding the conventional grid consumption).

Lastly, EUWMA members are involved in the Water and Energy advanced management for irrigation project (**WEAM4i**). This project is running and will be finalised in April 2017. The main aim of this project is to lower the energy in the system of pumping water for irrigation. There is a focus on regional applications.

EUWMA position on the water – energy nexus:

Energy policy is often one of the biggest challenges for governments. As regional water managers are confronted with the effects of the global climate change in their daily work, they often have ambitious policies on energy. They aim to be energy neutral in 2025, or experience with solar energy in canals or wind energy on dikes. This way, they can contribute to achieving these goals.



In order to do so, EUWMA asks for:

- EU funding (for example from the Horizon 2020 research programme) should be available for the water- energy nexus;
- EU funding should also be available to Local and Regional Water Managers – these funds should not necessarily be available only for partners in multiple Member States.

EUWMA, the European Union of Water Management Associations, represents public local and regional water management organizations from nine EU member states, covering a surface of at least 50 million hectares.

EUWMA members: Belgium/ Belgique - Vereniging van Vlaamse Polders en Wateringen (VVPW); France – wateringues & Association Syndicales Autorisées (ASA); Germany - Deutscher Bund der Verbandlichen Wasserwirtschaft (DBVW); Hungary - Vízgazdálkodási Társulatok Országos Szövetsége (VTOSZ); Italy - Associazione Nazionale Bonifiche, Irrigazioni e Miglioramenti Fondiari (ANBI); Portugal – Federação Nacional de Regantes de Portugal (FENAREG); Spain - Federación Nacional de Comunidades de Regantes de España (FENACORE); The Netherlands – Unie van Waterschappen (UvW); United Kingdom - Association of Drainage Authorities (ADA).