



Stakeholders' perspectives in the design of robust adaptation strategies in the largest irrigated system in the EU

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With a total irrigated area above 127,000 ha divided in 58 sectors, the Riegos del Alto Aragón (RAA) irrigation district is currently the largest irrigated area in Spain and in the European Union. Also, it is the largest water user within the Gallego-Cinca subsystem within the Ebro River Basin, which also supplies water to 588 livestock operations, 10 industrial polygons, and 110 populated areas. Although there are plans to increase the irrigated area by another additional 47,000 ha, the system is currently close to its resource limit and several supply restrictions took place in the last years with consequent impacts on agricultural productivity. Moreover, this expansion of the irrigated area collides with environmental objectives in the region, mostly due to water quality and nature conservancy aspects.

The forecasted effects of climate change on future water resources produced in the Pyrenees (the major source of water for irrigation in the system), as well as market prices, national and international trade and agricultural policies, among other variables, are surrounded by a high level of uncertainty that difficult investment decision-making. Some of the adaptation measures initially devised for the system require either confronting further environmental conflicts or large energy expenses, when not both. Thus, the identification of robust climate change adaptation measures that consider all these conflicting aspects is currently a primary concern for RAA.

The participation of stakeholders has been fostered by an ongoing climate change adaptation project seeking to implement a robust decision-making framework for this purpose. This communication presents the advances in the identification of adaptation portfolios through stakeholder participation. The composition of these portfolios was achieved through a series of group dynamics, where different adaptation alternatives were identified, ranked and validated with the aid of a multi-model multi-scenario approach. The communication also reflects on the influence of stakeholders in a water resources system where the agricultural sector has an important socio-economic weight.