Water Scarcity in Southern Europe: Taking Advantage of Synergies and Interactions between Economic Policy Instruments to Build Water Security

Carlos Mario Gómez [1], Gonzalo Delacámara [1], Carlos Dionisio Pérez [1]

[1]Madrid Institute For Advanced Studies in Water Technologies (IMDEA-Water), Madrid, Spain

Contact: mario.gomez@uah.es

Freshwater is a finite and vulnerable resource that is essential for sustaining life, development and the environment (ICWE 1992). However, population growth and the improvement of living standards brought about by development have generated during the last decades an unprecedented increase in water demand, exceeding the limits of water supply for the first time in history in many regions worldwide. The response to this challenge has mostly consisted in expanding water works to make an even larger amount of resources available, thus ignoring water supply constraints. In addition, this water demand crisis has been followed by a supply-driven one (a decline in the quality and quantity of available freshwater), which is perceived by many experts as one of the top five global risks (OECD, 2013).

Water authorities have tried to address this two-fold challenge through the control of water demand. Accordingly, the very simple rules used to manage water in times of abundance have also been improved and finally morphed into increasingly complex water management plans (EC, 2008). However, water demand cannot be as easily harnessed as water supply can. Economic incentives have recurrently proved their capacity to exploit loopholes in the system. As a result, the effectiveness of command-and-control tools is often threatened by non-compliance of water users, hence demanding a high level of (expensive) enforcement.

Noteworthy, command-and-control policies are applied through legislation and do not use economic incentives. Actually, economics has been largely ignored in water policy until very recently. Therefore, with the exception of (often dogmatic) water markets, there are not many examples on how economic instruments may perform in combination with conventional supply and command-and-control policies, let alone on the performance of several economic instruments at the same time. However, a comprehensive assessment framework is needed indeed to detect the relevant synergies that may exist among the different economic instruments that are demanded to address the (polycentric and multi-level) perverse economic incentives in place.

Following this need we have developed an assessment framework to measure the potential of three particular economic instruments (namely, water use right markets, drought insurance for irrigated agriculture and water pricing) to address the problem of recurrent scarcity and droughts in Southern Europe. We have found that although one particular instrument might seem to be better suited for a particular objective, if properly designed, each instrument can generate positive spillover (e.g., drought insurance directly reduces agricultural overexploitation during drought events, but it may also help stabilize agricultural income and to regain control over groundwater bodies on which urban users also rely). In addition, these synergies are too often two-way ones (e.g., water pricing would allow better functioning water markets, while water trading would reduce the cost of water security – and thus water prices). These ideas are illustrated with evidence drawn from the case study on designing economic policy instruments to cope with water scarcity and droughts in the Segura river Basin in Southeastern Spain.

The basic lesson to be drawn from our analysis is that rather than being panaceas to solve the problems of water management, economic instruments are integral parts of adaptation strategies that need to be designed and implemented in combination with others so as to exploit their self-reinforcing advantage.