

Structural Decomposition Analysis of water uses in Spain

Topic: Applications of water IO

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The structural decomposition analysis (SDA), which was defined by Rose and Chen (1991) as "the analysis of economic change through a set of (static and comparable) changes in key parameters of an input-output table", has been used to study variations in impacts and resource use (see Rose and Casler, 1996, Hoekstra and Van der Berg, 2002, for a review). Behind the variation of water uses in a country, there are components such as intensities, technology, and levels and composition of the demand changes, and thus those are the factors examined, decomposed in more specific ones (i.e., final consumption, net exports, Gross Capital Formation). In the application for Spain, a relatively homogenous series of water uses for 1997-2006 (constructed from the Satellite Water Accounts of the National Statistic Institute) is extended backwards with historical agrarian and water use information, and linked to a time series of input-output tables in constant prices (complying with the EUKLEMS aggregates). The rebound effect in agriculture is tested, i.e. if improvements in water use lead to increasing the surface of crop cultivation, or if they lead to put in production more water intensive crops. In the results, the most important effects are the "final use level", and then the "eco-technological" ones, resulting the "final demand structure" (variations in the composition in demand) negligible in the latter period. The decrease in the participation of the agrarian sector in the economy is well known, and hence decreases in water uses of that activity, the one generating more direct water abstractions could be expected. But interestingly, after 2001 the reductions in water abstractions would not only be explained by the decrease in the participation of the sector in the economy (as % of Added Value), but also by reductions in water withdrawals per euro of Added Value take place.