Pan-European household and industrial water demand: regional relevant estimations

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Sustainable water management is of high importance to provide adequate quality and quantity of water to European households, industries and agriculture. Especially since demographic, economic and climate changes are expected to increase competition for water between these sectors in the future. A shortage of water implies a reduction in welfare of households or damage to economic sectors. This socio-economic component should be incorporated into the decision-making process when developing water allocation schemes, requiring detailed water use information and cost/benefit functions.

We now present the results of our study which is focused at providing regionally relevant pan-European water demand and cost-benefit estimations for the household and industry sector. We gathered consistent data on water consumption, water prices and other relevant variables at the highest spatial detail available from national statistical offices and other organizational bodies. This database provides the most detailed up to date picture of present water use and water prices across Europe. The use of homogeneous data allowed us to compare regions and analyze spatial patterns. We applied econometric methods to determine the main determinants of water demand and make a monetary valuation of water for both the domestic and industry sector. This monetary valuation is important to allow water allocation based on economic damage estimates.

We also attempted to estimate how population growth, as well as socio-economic and climatic changes impact future water demand up to 2050 using a homogeneous method for all countries. European projections for the identified major drivers of water demand were used to simulate future conditions. Subsequently, water demand functions were applied to estimate future water use and potential economic damage caused by water shortages. We present our results while also providing some estimation of the uncertainty of our predictions.