



A generic method for projecting and valuing domestic water uses, application to the Mediterranean basin at the 2050 horizon.

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The aim is to be able to assess future domestic water demands in a region with heterogeneous levels of economic development. This work offers an original combination of a quantitative projection of demands (similar to WaterGAP methodology) and an estimation of the marginal benefit of water. This method is applicable to different levels of economic development and usable for large-scale hydroeconomic modelling.

The global method consists in building demand functions taking into account the impact of both the price of water and the level of equipment, proxied by economic development, on domestic water demand.

Our basis is a 3-blocks inverse demand function: the first block consists of essential water requirements for food and hygiene; the second block matches intermediate needs; and the last block corresponds to additional water consumption, such as outdoor uses, which are the least valued.

The volume of the first block is fixed to match recommended basic water requirements from the literature, but we assume that the volume limits of blocks 2 and 3 depend on the level of household equipment and therefore evolve with the level of GDP per capita (structural change), with a saturation.

For blocks 1 and 2 we determine the value of water from elasticity, price and quantity data from the literature, using the point-extension method. For block 3, we use a hypothetical zero-cost demand and maximal demand with actual water costs to linearly interpolate the inverse demand function.

These functions are calibrated on the 24 countries part of the Mediterranean basin using data from SIMEDD, and are used for the projection and valuation of domestic water demands at the 2050 horizon. They enable to project total water demand, and also the respective shares of the different categories of demand (basic demand, intermediate demand and additional uses). These projections are performed under different combined scenarios of population, GDP and water costs.