

## Document Control Sheet

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18. abstract  Chapter 2.8 investigates scenario-based future water withdrawals of the public water supply sector in the German part of the Elbe River basin. The public water supply sector in Germany is responsible for meeting municipal water demand. Spatio-temporal modelling of domestic water demand as the main water use sector is based on an econometric micro model. Since it is not possible to represent and estimate each consumer's unique water demand function, the use of the correct determinants of residential water demand, as well as careful aggregation of detailed data, demand by type can provide a unique perspective on residential water demand. Therefore, the aim of this paper is to identify statistically significant household characteristics that are factors of demand for water, and then to simulate water demand by incorporating these characteristics into the model. This allows to segment consumer types by the most important independent variables within the model that determine the overall need for water. Further municipal water use sectors such as small trade or manufacturing are computed as mark ups. The results of our scenario analysis show that the driving forces of domestic water demand, household size, house type (one-family vs. multi-family), water price, household income, technological und climate change cause a steady moderate decrease of water withdrawals of the public water supply sector in the German part of the Elbe River basin until 2020.  This paper investigates the effects of socio-economic and climate change on surface water availability from an economic point of view. A scenario analysis is undertaken to assess the vulnerability of water dependent sectors as a result of potential changes in future water availability. Furthermore, the aim is to analyse how long-term water management strategies help to ameliorate water scarcity problems, and to design policy recommendations. The results show that losses caused by water scarcity will increase among water users in the next 40 years. Agricultural irrigation and hydro power generation will be the most affected sectors. The Spree/Schwarze Elster	

area is particularly vulnerable due to the lignite mining activities in the area. A cost-benefit comparison of five water management strategies shows that the costs of these strategies are far higher than the benefits (reduced loss within the sectors) they generate. Ecological benefits need to be integrated in the analysis before a definite policy recommendation can be made.

19. keywords

Micro data based approach, Water users, vulnerability, economic analysis, water management strategy, scenario analysis

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