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Domestic Water Demand forecasting and management strategies in Haihe River Basin under Future Environmental Changes

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A statistical model has been developed to predicting future domestic water demand in Haihe river basin of China in the context of climate change, population growth and technological development. Historical records of domestic water use, climate, population and available technologies are used to develop the model. The model is then used to project the possible impacts of climate and other changes on domestic water use in Haihe river basin. A suit of seven GCMs models namely, BCC-CSM1-1, BNU-ESM, CNRM-CM5, GISS-E2-R, MIROC-ESM, PI-ESM-LR, MRI-CGCM3 under various Representative Concentration Pathways (RCPs) adopted by Intergovernmental Panel for Climate Change (IPCC) are used for this purpose. Results showed that domestic water demand in different sub-basins of Haihe river basin will continue to increase with time. Under projected climate, population, water saving technological improvement, future domestic water demand in Haihe river basin is projected to reach maximum 136.22×108m3 by BNU-ESM model and minimum 107.25×108m3 by CNRM-CM5 model in 2030. In spite uncertainty in projection, it can be remarked that climate change and population growth will increase water demand and consequently, reduce the gap between water supply and demand in the basin. Water demand management should be emphasized for adaptation to ever increasing water demand and mitigate the impacts of environmental changes.