# Long-term water security: an approach for systemic analysis of urban water supply

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Over the 21st century, climate change will most likely impact hydrological drought trends around the world. The temporary reduction in water availability triggers public pressure for action, which in the short-term can then result in the expansion of reservoirs to increase water availability. However, the problem becomes more challenging if the long-term socioeconomic vulnerability and damage to ecosystems are taken into account. This paper presents the development of a generic system dynamic model for the analyses of interactions between reservoir operational policies and water supply systems in metropolitan regions. The developed reservoir system dynamics approach is applied to the Cantareira system, which supplies approximately 9 million inhabitants in the metropolitan region of São Paulo, Brazil. The results suggest that the developed model is capable to provide a practical means for identifying plausible long-term trends for water supply systems in metropolitan regions and under the effects of external drivers such as changing climatic and demand.