



Water evaluation and planning (WEAP) model application for exploring the water deficit at catchment level in Beijing

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ABSTRACT

Water scarcity and water quality are becoming increasingly serious global issues, especially in China. Collecting accurate, scientific data about water-scarce areas is a critical first step for water resources management. Beijing is one of the cities in China that faces severe water scarcity issues, impeding economic and social development. This study assesses the water deficit in Beijing at the catchment level using the Water Evaluation and Planning (WEAP) model to provide insights for water assignment and to explore the advantages of WEAP applications in water resources management. Results show that (1) Beijing had a water shortage of 560.24 million cubic meters in 2010 with agricultural water facing the most severe shortage; (2) Catchment Yongdinghe faces the most severe water shortage challenge with demand site reliability of 45.83%, followed by Daqinghe, Jiyunhe, and Beiyunhe (64.17%–67.92%), and Chaobaihe (80.83%); and (3) the most sensitive water scarcity months are November, December, and February, characterized by the mean water demand coverage of 44.37% in all catchment areas. This study provides insights for water allocation and future research by serving as an important basis for water balance and for sustaining economic–social–environmental development in China.

Keywords: Water deficit; WEAP; Catchment; Management policy; Beijing

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