Abstract

Complex nature of water issues, rapid population growth, the need for water for various purposes and limited water resources require new methods, which consider all aspects of technical, economical, environmental, social and logical issues. There are different models for optimum water resources planning and management at the Basin scales. Among them, WEAP model is recently being used by many researchers a cross the worlds due to its ability to integrate the coupled physical and hydrological processes and water resource management as well as water allocation priorities. The main objective of this study is to determine and investigate the amount of water allocated for industry use from Voshmgir and Golestan dams under normal or water deficit conditions. For this WEAP was used in Gorganroud located in Golestan province. Gorganroud flows in the central part of Gorgan plain and it is the main surface water resource across the region. This region is used due to its specific climate conditions; although it has a significant hydro potential, it is facing a water shortage recently. Thus the Gorganroud basin was first simulated and then model was ran for existing conditions and three different scenarios including hydrological, development and management scenarios. For this "water year method" option in WEAP was used. In this model, sedimentation in dam reservoirs was incorporated by cumulative manner as an inactive volume at the end of each month. The results showed that with the new allocation planning of water resources, Voshmgir dam industry demand would be provided up to 9.5 million cubic meters if a system reliability reduction of 5% is accepted. Moreover the results of this study indicated that in dry condition, the water is allocated by a system reliability reduction of 6% relative to wet condition.

Keywords: Water Resources Allocation, Industry Use, Gorganroud Basin, Golestan Dam, Voshmgir Dam, WEAP

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