

Estimation of Alternative Water Supply Volume for Ensuring Water Supply Stability in the Han River Basin, Korea

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ABSTRACT

Increasing water demand and climate change have worsened the water supply ability in the Han River Basin, Korea. Due to the worries of possible environmental impact, dam construction has been an unattainable goal in Korea. Instead, various alternative water resources are being considered, which include underground dam, wastewater reuse and seawater desalination. If considering the required water supply volume and stability, seawater desalination could be the best option. In this study, two different analyses are done to finally determine the volume of additional water supply in the Han River Basin. The first part is to evaluate how the water supply has become unstable. Frequency analysis of non-stationary water supply data is conducted to show that the water shortage problem occurs more frequently and severely recently. The second part is to determine the required volume of additional water supply. Reservoir operation is repeated with assumed volume of additional water resource. Ability of steady water supply independent of any climate condition is a very different characteristic to be considered in the simulation of dam operation. As a final result, this study is going to present the required volume of additional water supply for the given safety level of water supply.

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