

Research on Water Safety Security for City Clusters in Central Yunnan

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Objectives

City Clusters in Central Yunnan ("CCCY") is the support platform given the highest strategic priority in national plans for development and opening up, and it is also the most challenging part in Yunnan Province in terms of ensuring water security. This article provides a detailed analysis of the water security status and existing issues of CCCY, with consideration of the regional economic and social development and the ecological protection goals of rivers and lakes. On these grounds, the overall tactic and solution for water security in regular and emergency scenarios of two stages (before and after the functioning of Central Yunnan Water Diversion Project) are studied in this article.

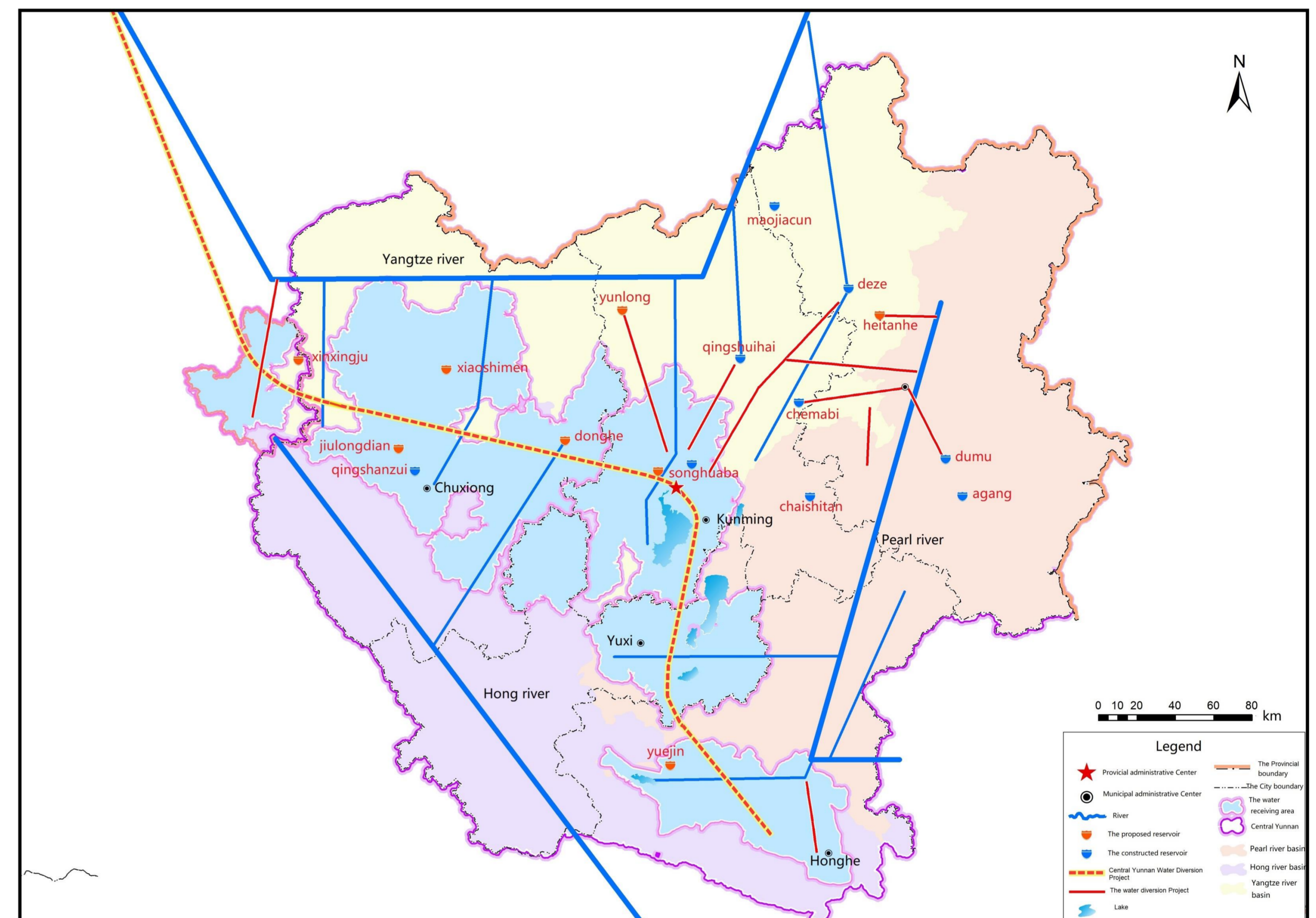


Figure 1 Water Security assurance strategy Generalized diagram in CCCY

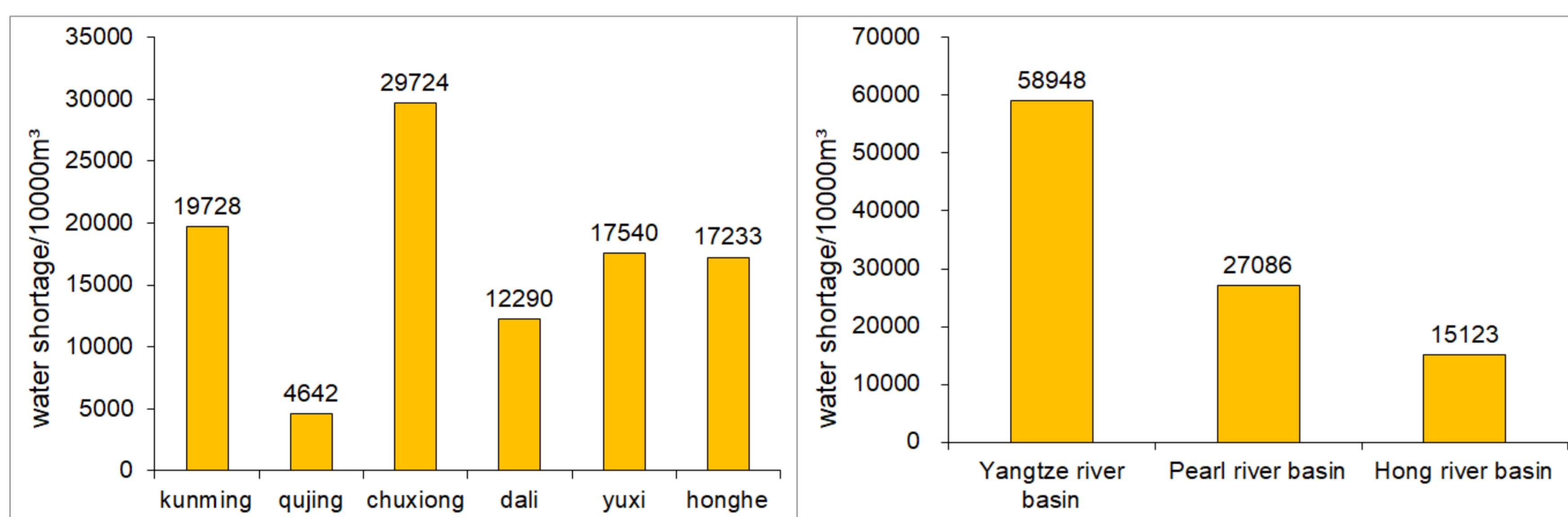


Figure 2 Water shortage before the functioning of Central Yunnan Water Diversion Project

Results2

Under normal circumstances, most of the regional water supply can be secured after the Project is completed. However, the development of some regions has exceeded expectations. The Project cannot meet the water needs, and there is still a shortage of 3.57 billion m³ of water. In the light of the Project's general tactic of "securing water supply efficiently and flexibly", it is proposed to secure water supply for CCCY by building four regulation and storage reservoirs along the Project, optimizing the dispatch of local water sources and external water sources in a coordinated way, increasing the water-drawing amount of the Project, and using the Ludila Hydropower Station Comprehensive Water Utilization Project as a supplementary water source. In emergency scenarios, urban water supply can be secured by building new backup water sources for emergency use and drawing part of agricultural water.

Results1

Under normal conditions, the regional water supply before the functioning of the Project still faces great challenges. According to the overall tactic of "securing key points, organizing work in a coordinated way, fully tapping potential, adding new water sources, and using recycled water", water supply for urban life and industries can be basically secured by building new water source projects and drawing part of agricultural irrigation water and ecological water, but agricultural irrigation is still short of 1.01 billion m³ of water. In emergency scenarios, the urban water supply can be basically secured by drawing agricultural and ecological water.

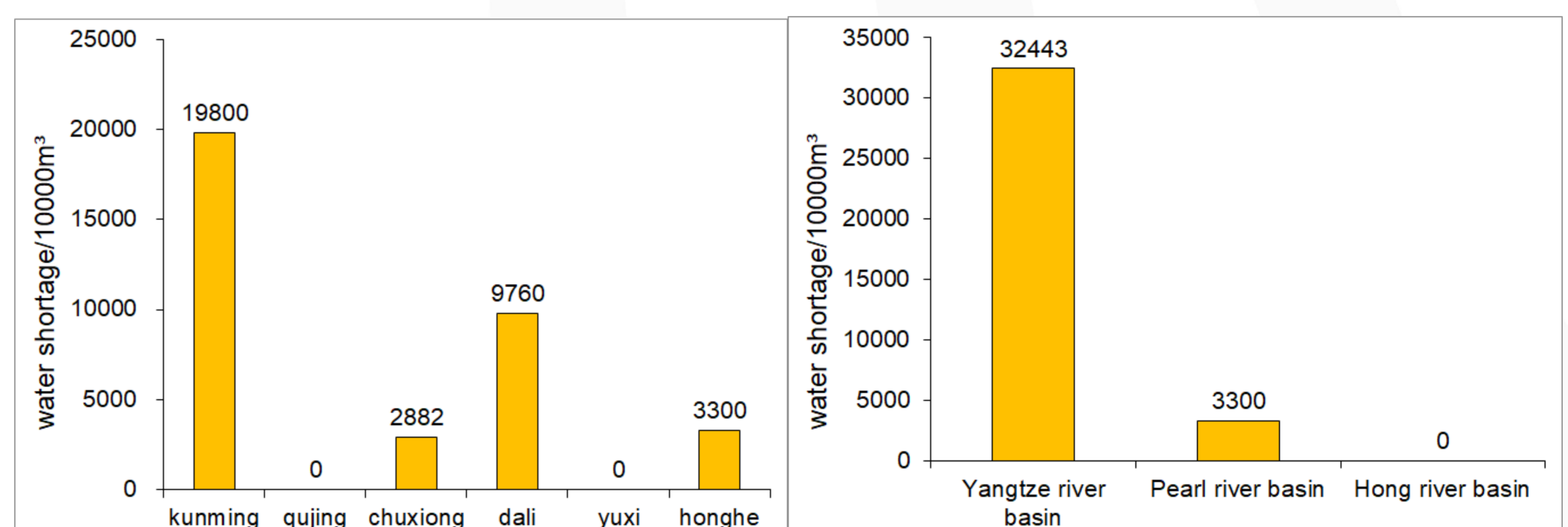


Figure 3 Water shortage after the functioning of Central Yunnan Water Diversion Project