南部區域於極端事件下水資源韌性評估

Assessment of Water Resources Resilience under Extreme Events in Southern Taiwan

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摘　要

面對極端事件之潛在威脅，韌性概念逐漸受到重視與推廣，故本研究嘗試導入水資源韌性概念，採用韌性角度評估水資源策略之韌性效益。為此，以豐枯懸殊之南部區域(嘉義、臺南、高雄以及屏東)作為分析對象，評估嚴重乾旱事件對於其可能造成之供需影響，並配合水資源韌性參數(無因次穩健力與無因次快速力)量化水資源系統面對嚴重乾旱事件之韌性特徵，進一步藉由探討不同供需條件與韌性特徵之關係，提供未來水資源策略推動作為參考。南部區域水資源韌性分析結果指出：受益於水資源經理計畫推動，目標年條件下各縣市韌性參數相較於現況皆有所改善或者持平；若考慮目標年條件再額外搭配不同備援能力設定，各個縣市韌性參數則皆能進一步改善。

關鍵詞：極端事件，水資源韌性，備援能力

Abstract

In order to ensure resilience in water resources to extreme events, this study evaluated various water resources strategies in terms of resilience. The study area is located in southern Taiwan (including Chiayi, Tainan, Kaohsiung and Pingtung) with distinct dry and wet seasons. The impact of extreme events on the water supply systems in southern Taiwan was assessed, and resilience characteristics of the systems during extreme events were also investigated by using dimensionless robustness and dimensionless rapidity as resilience indices. The study examined the relationship between various supply-and-demand conditions and resilience characteristics. The results of resilience analysis suggest: the water resources management master plan can effectively boost the resilience in water resources for southern Taiwan in terms of resilience characteristics. Furthermore, with additional backup capacity was introduced to the system, the resilience in water resources can be further improved.

Keywords: extreme events, resilience in water resources, backup capacity