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Inter-Basin Water Transfer Projects and Climate Change: The Role of Allocation Protocols in Economic Efficiency of the Project. Case Study: Dez to Qomrood Inter-Basin Water Transmission Project (Iran)

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ABSTRACT

Nowadays, there is a growing emphasis on Inter-basin water transfer projects as costly activities with ambiguous effects on environment, society and economy. Since the concept of climate change was in its embryonic phase before 1990's, the majority of these projects planned before that period have not considered the effect of long term variation of water resources. In all of these numerous operational and under-construction projects, an intelligent selection of the best water transmission protocol, can help the governments to optimize their expenditures on these projects ,and also can help water resources managers to face climate change effects wisely. In this paper as a case study, Dez to Qomrood inter-basin water transfer project is considered to evaluate the efficiency of three different protocols in long term. The effect of climate change has been forecasted via a wide range of GCMs (Global Circulation Model) in order to calculate the change of flow in the basin's area with different climate scenarios. After these calculation, a water allocation model has been used to evaluate which of these three water transmission protocols (Proportional Allocation (PA), Fix Upstream allocation (FU), and Fix Downstream allocation (FD)) is the most efficient logic switch economically in a framework including both upstream and downstream stakeholders. As the final result, it can be inferred that Fix Downstream allocation (FD) protocol can supply more population especially with urban water for a fix expense and also is the most adapted protocol with future global change, at least in the first round of sustainability assessment.

KEYWORDS

Water Transfer; Economic Efficiency; Climate Change; Water Transmission Protocols

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