

# Nile water sharing Ethiopia (north and south) of Sudan and Egypt

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## **Abstract**

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The Nile River is considered the main source of water for the Nile basin countries. The water provided by the Nile does not satisfy the enormous demand of water in the region. In the early of the 21st century, it is expected that at least six out of the ten countries that share the Nile water will face water stress. Nile water for countries like Egypt and Sudan is considered a vital national priority.

Moreover, the stochastic nature of water supply and dynamic nature of water demand imply an allocation model with certain characteristics in order to maximize the overall welfare. Thus, the need for Pareto-optimal model is a prerequisite as the unidirectional of the river, is often considered as a source of tension and conflict between countries that is difficult to solve. Our goal in this paper is to arrive at the Pareto-optimal allocation model that maximizes the welfare of Egypt and Ethiopia without causing any significant harm to any of them. The Model that will be developed in this paper follows the same methodology of D. Marc Kilgour and Ariel Dinar which is based on the idea of utilizing the water of the river by transferring it between countries within the river basin. To state differently, it allows the downstream countries that are in need for water to get it from an upstream country by compensating that country for less water available for usage.

In this paper, the applicant will try to arrive at a solution to the growing demand of water in the Nile region which resulted in tension among the Sub-Saharan African nations.

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