

Enumerating the Principle of Equitable and Reasonable Water Utilization of International Rivers: Application to the Nile River Basin

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Abstract

The Nile riparian countries have debated over sharing the water for centuries. To define an equitable and reasonable allocation of water to each country, the United Nations' watercourse convention could be a key legal instrument. However, to quantify states water quota, the applicability of the convention has been questioned given its overly generalized guidance and non-quantifiable factors. This study identifies appropriate indicators that best describe factors detailed under Article 6 of the convention and quantify fair apportionment of watercourse states from Nile River. Potential indicators (n = 75) are defined based on multiple sources that can address conflicting interests specific to this basin context. Two questionnaires were developed based on these indicators and distributed to 215 prominent experts from five professional groups on five continents. To analyze the presence of agreements or disagreements within and outside of the basin, as well as differences across expert groups, clustering analysis and statistical tests were employed. Moreover, by determining weight of factors and indicators using expert's judgment and equal weighting approach respectively, a water quota for individual states from the four Nile sub-basins has been quantified. The results implied that there is agreement on 75% of the proposed indicators by all experts across all continents. However, a significant difference in responses between experts from Egypt and other countries is evident. Using priorities assigned to factors and 65 indicators on which high and moderate consensus was reached, Ethiopia, Egypt and Sudan entitled to 43.00%, 29.50% and 27.50% from annual flow of Blue Nile sub-basin respectively, and 38.60%, 32.50% and 28.80% from Tekeze sub-basin, respectively. In addition, Ethiopia, the two Sudans, and Egypt got 36.00%, 34.20% and 29.80% from Baro-Akobo sub-basin. Equatorial countries, Sudans and Egypt's share was found 38.80%, 32.80% and 28.50% from White Nile annual flow respectively. Therefore, as compared to the 66% and 22% share of Egypt and Sudan enshrined under colonial treaty respectively, Egypt's quota drops by more than half, and the implementation of equitable share model significantly increased the percentage water share of upstream countries Ethiopia and Equatorial states from nothing. Likewise, Sudan's water quota also increased from all major tributaries by more than 5%. This

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study thus demonstrates how the UN watercourse convention principles can be quantified and applied to transboundary water allocation, and ideally lead to informed discourse between basin countries to revisit colonial treaty.

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