

The SDGs as a Framework for Transboundary Water Conflict Resolution: A Case Study of the Eastern Nile River Basin

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When the Grand Ethiopian Renaissance Dam (GERD) is constructed, it will join Egypt's High Aswan Dam (HAD) in the world's only river basin with two megadams but no coordination among multiple countries. The dam's fill rate once completed is a prime area where coordination could prove invaluable, but where divergent interests challenge that prospect. For example, Ethiopia could benefit from a rapid fill of the GERD reservoir, upholding its right to equal access to the shared water resource, generating electricity and boosting its economy.

However, Egypt fears an expedited fill, arguing its right not to be significantly harmed by its riparian neighbor's use of the same river. I hypothesize that these opposing interests can be minimized to the point of mutual benefit by employing and collecting certain data systems. Thus, to gauge what impacts different fill rates would have on development in the basin across the water-food-energy nexus, I consider that (a) the United Nations 2030 Agenda for Sustainable Development could be used as an analytical lens to assess the intersecting economic, social, and environmental impacts that the GERD could cause each nation. Secondly, once these impacts are recognized, the Agenda's three Sustainable Development Goals (SDGs) most pertaining to the water-food-energy nexus can be modeled with Mike Hydro Basin paired with a combination of data from historically wet and dry decades using relative irrigation deficit, HAD release amounts, and hydroelectricity generation as respective proxies to simulate the range of possible outcomes across five fill scenarios (unconstrained, three years, five years, ten years, and no GERD).

Lastly, I hypothesize that the Water Diplomacy Framework (WDF) could then be used to facilitate a mutually agreeable solution by treating these multidimensional costs and benefits as fluid currencies within a shared river basin, in contrast to the current zero-sum paradigm over the singular resource of water. Ultimately, I made three conclusions. First, that the 2030 Agenda acts as a powerful lens through which integration of development priorities could be understood but that national strategy plays an equally important role in customizing those goals. Second, that Mike Hydro Basin models suggested filling strategy is minimally impactful compared to possible climate-based fluctuation. Third, I conclude that the significant basin-wide water shortage during dry years demands that the WDF be used to harmonize national priorities between basin-states to enable the GERD's developmental potential without significant harm downstream that would occur absent of coordination.