

**QUANTIFYING THE ECONOMIC IMPACT OF THE GRAND ETHIOPIAN
RENAISSANCE DAM ON THE NILE RIVER BASIN**

**SOCIOPOLITICAL IMPLICATIONS OF THE GRAND ETHIOPIAN RENAISSANCE
DAM IN THE NILE RIVER BASIN**

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By

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SOCIOTECHNICAL SYNTHESIS

The countries of Ethiopia, Egypt, and Sudan depend on the waters of the Nile River as it is used to produce electricity, sustains the agriculture industry, and provides the largest source of freshwater for the individual residing in the region. Now, with the introduction of the Grand Ethiopian Renaissance Dam (GERD), controversy has grown and the future of the region is uncertain. Through the technical research, the GERD is investigated to identify how the dam will influence the economies which rely on the Nile. While the GERD will have profound impacts on the economy through agriculture and electrification, there are also sociopolitical implications which will alter the region. Therefore, the science, technology, and society (STS) research focuses on identifying actors and motivations within the region to determine these potential sociopolitical implications. The combination of the tightly coupled technical report and STS research provides an understanding of the GERD and how it will influence the Nile River basin by quantifying its economic impact while also describing its potential sociopolitical impacts.

The technical report investigates the sensitivity of the Nile River basin to change in the form of the GERD. The reliance on the Nile River exposes countries to risks associated with having a shared resource and as water security becomes an issue in times of drought uncertainty surrounding the dam causes uncertainty with regards to the livelihood of downstream countries. Therefore, to assess how sensitive the economies of Egypt, Ethiopia, and Sudan are, historical analysis was conducted in five sections: water security, land use, agriculture, hydropower, and the broader economy.

After analysis was completed, conclusions were drawn for each section. Beginning with water security, there has been a dramatic increase in the water stress levels as time has progressed. Meanwhile, land use, in particular agricultural land, has not significantly change

over the same period of time despite the agricultural output of the countries increasing. In terms of agriculture, there was no significant difference in crop production in drought conditions for any of the countries. Finally, the hydropower production was projected to generate \$800 million over a 12-year filling period. Applying this to the broader economy, this additional output could lead to Ethiopia becoming a net exporter of energy similar to Egypt and Sudan.

While the technical report investigates the implications of the GERD on the economies of the region, the STS research addresses the question of how the GERD will fit into the network of actors present in the region and who will be affected. Law and Callon's Actor Network Theory (ANT) was used to analyze the introduction of the GERD in both a regional and Ethiopian context. This analysis allows for greater understanding of what relationships and actors are most impacted by the GERD.

The ANT analysis demonstrated that the GERD will impact nearly every individual in the region. Regardless of motivation, the actors present in the region will either directly or indirectly feel the impact of the GERD. Building off of this analysis, ethical considerations of the dam were investigated for the countries of Egypt, Ethiopia, and Sudan. The combination of these analyses allows for a more informed prediction of future potentialities caused by the GERD. While this research did not culminate in a definitive prediction of how the region will change following the GERD's construction, the analysis which took place provides greater clarity will regards to what may happen and who will be affected.

The GERD project will have complex implications which will not be realized for years to come. For some the GERD is an opportunity, for others the GERD is a risk. The true impact of the GERD is unknown not only because the future is unknown but also because its impact depends on whose perspective is considered.

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PROSPECTUS

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