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## The Grand Ethiopian Renaissance Dam: Cooperation and Conflict Resolution

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Infrastructure development is often hailed as a requirement to become a developed nation. Nevertheless, building infrastructure in developing countries frequently comes with a host of health, social, economic, and political issues exacerbated by conflicting superpower and regional power interests. Currently, a major infrastructure project is the Grand Ethiopian Renaissance Dam (GERD), a massive hydroelectric dam under construction on the Blue Nile River in Ethiopia. Upon completion, the GERD is expected to be the largest hydroelectric power plant in Africa and provide much-needed electricity for Ethiopia's rapidly growing economy. However, the construction of the dam has also sparked controversy and a contentious international dispute.<sup>[1]</sup> As such, the GERD presents a unique international cooperation problem in which uncoordinated infrastructure development is harmful, and coordination would be much more beneficial. This paper will begin with an overview of the GERD cooperation problem, prior efforts at reconciliation, undesirable outcomes of non-cooperation, and cooperative recommendations. Overall, this paper will argue that cooperation regarding the GERD would allow Ethiopia, Egypt, and Sudan to avoid war while mutually increasing domestic and regional economic growth.

### The GERD cooperation problem and efforts so far to resolve it

Although dams are often touted as a natural and emissions-free way to produce clean hydroelectric energy within specific countries, dams in certain areas may cause unwanted side effects like droughts in neighbouring countries. In the case of the GERD, the Blue Nile River fits the classical tragedy of the commons perspective.<sup>[2]</sup> While Ethiopia seeks to fill its dam reservoir with Nile water, which it claims will bring massive poverty alleviation and development for the region, Egypt and Sudan are adamant that draining the Nile by 25%<sup>[3]</sup> would cause droughts for millions of people living upstream,<sup>[4]</sup> negatively impacting agriculture—accounting for 23% of Egypt's employment<sup>[5]</sup>—and the overall livelihoods of millions of people. Especially given projected hot and dry years in the near future due to climate change, the issue of water scarcity in the Nile will likely become even more extreme in the near future,<sup>[6]</sup> considering that the Nile provides 97% of Egypt's water needs.<sup>[7]</sup> Besides the fact that both countries are heavily dependent on the Nile River for their water needs, they also have concerns about the safety and stability of the dam itself, as it is being built in a seismically active area, and there have been reports of cracks in the dam's foundations.<sup>[8]</sup> Furthermore, Egypt itself has the Aswan High Dam (AHD), which will likely see declines in hydroelectric power generation following the completion of the GERD, as the GERD's reservoir may hoard water that instead would have gone to the AHD reservoir.<sup>[9]</sup> Thus, especially during the GERD's filling period, which could facilitate less electricity generated by the AHD, Egypt's economy is likely to suffer due to agricultural land loss, decreased food production, and decreased agricultural output overall. Without effective cooperation, Egypt's unemployment rate would likely rise along with a corresponding loss in Gross Domestic Product (GDP) and welfare.<sup>[10]</sup>

Ethiopia, Egypt, and Sudan have been engaging in ongoing negotiations to find a resolution to the dispute. While there has been a Declaration of Principles on the GERD that was signed by all three countries in 2015, calling for more cooperation and trust-building, it was broad and unenforced.<sup>[11]</sup> Further negotiations have been fruitless, with all sides refusing to budge on their positions. Sudan and Egypt have called for the construction of the dam to be halted until a binding agreement can be reached. However, Ethiopia has refused to do so, arguing that the dam is crucial for its economic development and that it has the right to utilize the water resources within its own borders.<sup>[12]</sup> Currently,

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while a bilateral water-sharing agreement between Egypt and Sudan exists regarding the Nile,<sup>[13]</sup> none exists with Ethiopia, causing conflicting rational choice models<sup>[14]</sup> to emerge between Ethiopia, Egypt, and Sudan. Furthermore, Ethiopia has no legal obligation to be bound by Nile water-sharing agreements between Egypt and Sudan.

Given the complete lack of Coase theorem<sup>[15]</sup> requirement fulfillment in the Ethiopian dam situation—as property rights are not delineated, information is lacking from all sides, and the transaction fees from the dam's completion would be steep—third-party intervention would be instrumental. However, while the US previously withheld aid to Ethiopia over a lack of negotiation progress with Egypt, the impact on negotiations was mostly ineffective.<sup>[16]</sup> Additionally, the US and World Bank set forth a Washington draft proposal along with Ethiopia, Egypt, and Sudan to mitigate potential drought caused by the GERD. However, Addis Ababa rejected the proposal on the grounds that the proposal clearly favoured Egypt and Sudan, obligating Ethiopia to mitigate downstream shortages without any obligation on the part of the other Nile-river bordering countries.<sup>[17]</sup> As such, the Washington draft proposal was a stark failure on level one of Putnam's two-level games,<sup>[18]</sup> during which negotiators decide the terms of a specific international agreement. Similarly, China has attempted to mediate the situation, but its broad loan and construction contributions to the GERD have made its position as a mediator untenable,<sup>[19]</sup> given that five Chinese companies are currently working on the GERD, China as a mediator may bring in massive conflicts of interest.<sup>[20]</sup> Furthermore, Egypt raised the GERD issue with the United Nations Security Council, which deferred the issue to the African Union to negotiate a binding agreement.<sup>[21]</sup> Ultimately, however, the African Union was unable to help Ethiopia, Egypt, and Sudan reach a satisfactory compromise.<sup>[22]</sup>

## Undesirable outcomes if Ethiopia, Egypt, and Sudan fail to cooperate

As a balanced multipolar situation with potential regional hegemonies, the GERD cooperation problem remains unresolved and likely very dangerous.<sup>[23]</sup> The impasse in the negotiations has led to growing tensions and the potential for further conflict between the three countries. Already, the GERD has become a nationalistic rallying point for Ethiopia and Egypt, especially in the cyber space, making compromise harder to achieve. Youth in Ethiopia have used TikTok as a means to promote the GERD and taunt Egypt, and Addis Ababa has officially encouraged Ethiopians to post about the GERD with the hashtag #ItsMyDam. On the other hand, Egypt-based hackers have infiltrated Ethiopian government websites and replaced them with Egyptian skeleton pharaohs as a warning and intimidation tactic, and Egyptian civilians have also used hashtags like #Nile4All and #EgyptNileRights to advocate against the GERD. In fact, both governments have consistently engaged in computational propaganda and trolling, weaponizing social media platforms like TikTok, Twitter, Facebook, and even Google Maps to promote their respective stances on the GERD.<sup>[24]</sup>

In order to avoid a hot war, it is crucial for all parties to come to a mutually acceptable solution. Worryingly, Egypt has emphasized that it may resort to military solutions, given how the GERD represents a domestic national security issue. Egypt signed a joint military training and border security agreement with Sudan in March 2021 and commenced joint military ground and air exercises in May 2021. Furthermore, Egyptian President Sisi has emphasized that “No one can take a drop of Egypt's water and if it happens there will be inconceivable instability in the region,”<sup>[25]</sup> insinuating that he may launch an air strike to destroy the GERD. Not surprisingly, Ethiopia sees these treaties, military exercises, and statements as indirect warnings of potential military conflict over the GERD.<sup>[26]</sup> Even more concerning, however, Sudan and Ethiopia have already had border skirmishes, and many refugees are already streaming out of the border regions because of the devastating Tigray civil war within northern Ethiopia. Furthermore, if a potential conflict spills into Eritrea, the globally significant Suez Canal shipping lane going through the Bab al-Mandab Strait, which 30% of the world's container ships traverse and over \$1 trillion USD worth of goods pass through annually,<sup>[27]</sup> could be put at risk. Given that there already is a civil war in Yemen, the entire Suez Canal route could be shut down by another conflict on the opposite side of the Bab al-Mandab Strait, devastating world trade.<sup>[28]</sup>

Overall, there are a few rational causes of war present in the GERD conflict,<sup>[29]</sup> including issue indivisibility in the case of the Nile River's water, private information with progress on the GERD from Ethiopia along with incentives to bluff consequences if Ethiopia continues construction, and commitment problems considering that Ethiopia sees the GERD as almost completed. Thus, Ethiopia has the upper hand in negotiations, and Egypt and Sudan have less

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leverage in negotiations now than they had when the Declaration of Principles was initially signed in 2015, during which the GERD was still being constructed. To mitigate these rational causes of war, both established international organizations and international institutions created by all three countries must promote compromise and cooperation regarding the GERD while encouraging electricity sale agreements and regional economic development to prevent war through complex interdependence<sup>[30]</sup> (Keohane 1977), alleviating concerns and tensions for all parties involved. A failure to ensure that war is avoided will likely precipitate a massive refugee crisis and increased instability in a critical global shipping lane.

## Recommendations

To produce optimal outcomes for all parties involved, the GERD should be promoted under the shared lens of furthering almost all of the 17 United Nations Sustainable Development Goals (UN SDGs) for the region<sup>[31]</sup>, establishing an element of trust needed for effective cooperation. Especially since economic growth and the demand for both water and electricity are co-dependent, cooperative measures to oversee the GERD would be highly effective in boosting regional economic growth, and the lack of cooperation would likely cause a recession. Specifically for Egypt and Sudan, the coordinated operation of the GERD would improve irrigation water supply by increasing summer flows and reducing floods, boosting regional investment, exports, imports, industrial development, and government savings in the long term. Furthermore, Ethiopia would be able to generate 16 TWh per year of hydroelectric power, allowing Ethiopia to start exporting electricity.<sup>[32]</sup> Notably, based on the purported economic and available irrigation metrics for all conditions, reaching a cooperative agreement presents a classic Prisoner's Dilemma:<sup>[33]</sup> cooperation would be beneficial for all sides, one side defecting from an agreement would be more beneficial for that side while hurting the other side, and both sides not reaching an agreement would hurt both sides. Ultimately, reaching a compromise and not defecting would be the optimal rational choice model in which all actors make rational decisions to optimize complete and well-ordered preferences while maximizing their own utility.

In reaching a positive-sum cooperative compromise for all parties, Ethiopia, Egypt, and Sudan should establish a tripartite commission with representatives from each country to jointly manage the GERD and its downstream effects. Based on the failures of the Washington draft proposal, which limited the GERD's storage and subsequently hydroelectric power production in the long term, two separate agreements should be reached regarding filling in the short term and operation of the GERD in the long term, acceding to Ethiopia's key demands and fulfilling the best alternative to a negotiated agreement (BATNA).<sup>[34]</sup> In turn, for Egypt and Sudan to waive their claimed Nile River water rights, which are not recognized by Ethiopia and which contribute to the problem of parallel and conflicting laws,<sup>[35]</sup> Ethiopia can commit to a plan of action in the case of a drought, fulfilling another BATNA. Thus, while the filling of the GERD can be left to Ethiopia, the operation of the GERD should be overseen by all parties, providing a Coase element of perfect information, which could ensure that the water flow downstream is managed in a sustainable and equitable manner. Furthermore, the commission should also be delegated the responsibility of developing an electricity sale agreement along with monitoring the safety and stability of the dam, addressing any issues that may arise among the three partners. Additionally, Ethiopia, Egypt, and Sudan should be in constant contact to mitigate droughts early, and Ethiopia should potentially release some of the GERD reservoir's water if Nile River water levels become dangerously low. Moreover, the agreement would also need to specify Nile River water sharing rights and power generation when both the GERD and the AHD's reservoirs are depleted, along with the speed and sequence of refilling following the drought. Overall, while property rights are clearly defined, and transaction fees are removed in such an agreement, the finalized implementation would need to be regularly shared with the media and public to maintain perfect information and prevent widespread water panic from future basin-wide droughts.<sup>[36]</sup> Thus, with a more precise Pareto-optimizing agreement,<sup>[37]</sup> all the Coase conditions would be satisfied to mitigate the need for third-party mediation.

For enforcement, future issues regarding the GERD should be delegated to the International Court of Justice (ICJ). By hearing arguments from the parties involved and issuing an advisory opinion or a binding judgment on the matter as an impartial body,<sup>[38]</sup> the ICJ could more equitably split control of the Nile River's downstream water flow. However, the ICJ can only hear cases that are brought before it by states, and it is up to Ethiopia, Egypt, and Sudan to risk agency slack and decide whether or not to bring the case before the court. Alternatively, the three countries could sign a more binding agreement that would defer conflict resolution to the ICJ, but more stringent agreements

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have been blocked in the past due to Ethiopian opposition. Furthermore, although Egypt and Sudan automatically recognize the ICJ's jurisdiction through the blanket "optional clause," Ethiopia does not. As such, applying international pressure on Ethiopia to jointly bring the GERD issue to the ICJ along with Egypt or Sudan could be effective. Ultimately, if the losing country is non-compliant following an ICJ decision, it would likely face reputational consequences, potential barring of World Bank grants and loans,<sup>[39]</sup> possible concrete Security Council action, and other forms of international pressure.

The broader international community should also play a role in facilitating the resolution of the GERD dispute, monitor all parties' depth of cooperation,<sup>[40]</sup> and act as an intermediary should future conflicts arise, given that Ethiopia insists on deflecting the obligation aspect of legalization by setting non-binding guidelines for settling future disputes<sup>[41]</sup> (Saied 2022). International organizations such as the United Nations and the African Union should not only provide mediation and support during the negotiations and help all three parties to find a mutually acceptable solution, but also be delegated authority for dispute resolution complementary or in place of the ICJ. With all three dimensions of legalization<sup>[42]</sup> fulfilled and correspondingly clearly defined groundwork for the agreement, Coase conditions would be significantly enhanced. Supplementing China's Belt and Road Initiative funding for the GERD, international financial institutions like the World Bank's International Bank for Reconstruction and Development and International Development Association could also provide more transparent funding and technical assistance for the construction and operation of the dam, ensuring that private information is not withheld from downstream countries. If Ethiopia refuses to participate in cooperative measures with Egypt and Sudan, the World Bank could temporarily withhold funding and push all three parties toward seeking a mutually beneficial positive-sum agreement.

## Conclusion

Overall, the dispute over the GERD is a complex and challenging issue that will require a great deal of cooperation and compromise in order to resolve. However, with the right Pareto-optimizing approach aiming to satisfy all Coase conditions, and with the involvement of the international community, it is possible for Ethiopia, Egypt, and Sudan to find a solution that benefits all parties involved and avoids further conflict. By cooperating, all three nations can ultimately reach a positive-sum agreement increasing regional economic growth, irrigation availability, electricity generation, and industrial development, dramatically raising GDP per capita and economic well-being for all.

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