Cooperation Over Water in the Eastern Nile Basin: Obstacles & Opportunities

by

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To my parents, Fadel and Lubna who collected newspaper articles for me over the course of two years – now that this project is complete, you can have your coffee table back.
Abstract

The Nile River is shared by ten states: Kenya, Rwanda, Tanzania, Uganda, Burundi, the Democratic Republic of Congo, Ethiopia, Eritrea, Sudan, and Egypt. Tension between upstream and downstream states in the Nile Basin has long been a part of the history of their relationship with much of the tension being between Egypt, Sudan, and Ethiopia. In order to encourage cooperation over water resources, Dennis Wichelns and his colleagues proposed an economic framework for cooperation. The framework proposes that Egypt, Sudan, and Ethiopia form an intra-regional trading system that depends on each of their comparative advantages. Egypt would grow high-value export crops, Sudan would grow grain, and Ethiopia would develop its hydropower resources. The proposed system ostensibly seems to be the perfect solution to the tension and hostility that exists between the three countries, however, it disregards the legal obstacles to implementation, in addition to Egypt’s status as the Basin’s hegemon. This project aims to determine if Wichelns et al.’s (2003) framework is feasible given the 1959 Agreement, signed between Egypt and Sudan, the 2010 Cooperative Framework Agreement between Ethiopia, Burundi, Uganda, Rwanda, Tanzania, and Kenya, and Egypt’s status as the Basin’s hegemon.

In order to answer these questions, I resorted to three sources of information: 1) existing literature, 2) interviews with experts in the field of water management, and 3) newspaper articles. Based on the information I collected, and my analysis, I was able to determine that the 1959 Agreement presents an obstacle to implementing the framework because neither Egypt nor Sudan are willing to re-negotiate their water allocations. However, the Cooperative Framework Agreement does not present an obstacle; rather it is an opportunity for Egypt and Sudan to exert their influence over development in the Nile Basin. Additionally, being the Basin’s hegemon
would not hinder the framework for various reasons, including the role of virtual water, and Ethiopia’s counter-hegemonic strategies.

Based on my findings, I conclude that Wichelns et al.’s (2003) framework is not feasible, primarily due to the 1959 Agreement. In light of this, I present three recommendations to promote cooperation between Egypt, Sudan, and Ethiopia. First, Egypt and Sudan should sign the Cooperative Framework Agreement; second, Egypt should improve its irrigation efficiency to reduce its water use; and third, cooperation should take a project-by-project approach.

The paper ends with reflections on the role of a newly independent South Sudan in Nile Basin negotiations, in addition to the implication of a new government in Egypt.
Introduction

The Nile River is 6,700 kilometres long and passes through ten countries: Rwanda, Burundi, Democratic Republic of Congo, Tanzania, Kenya, Uganda, Eritrea, Ethiopia, Sudan, and Egypt, where it flows into the Mediterranean Sea (Figure 1). The White Nile and the Blue Nile are its two main tributaries; the Blue Nile originates in Ethiopia’s highlands and contributes to 86% of the Nile’s flow, while the White Nile originates in Sudan and contributes to 14% of the Nile’s flow. The two tributaries join together in Khartoum, Sudan, to form the Nile River (hereafter referred to as the Nile).

The problem of cooperation along the Nile is one that has been extensively discussed. A majority of the tension in the basin is between Egypt, Sudan, and Ethiopia. Cooperation between these three nations is made difficult by the fact that Egypt relies on the Nile for 96% of its water resources (Hefny and Amer, 2005). Sudan relies less on the Nile because it receives sufficient amounts of precipitation in its southern regions (Hamad and El-Battahani, 2005). Ethiopia is currently reliant on rain-fed agriculture but realizes the potential which the Nile waters offer in terms of hydroelectric power and irrigation development (Arsano and Tamrat, 2005). Amer et al. (2005) present the positions of each of the three countries as follows: “Egypt … would like its upstream neighbours to accept its historic rights to the amount of water it has been using since the Aswan High Dam was built,” “Sudan is interested in an open information policy because it is dependent on water coming from Ethiopia … and upstream projects may affect the flow of water to Sudan,” and “Ethiopia is interested in the waters of the Nile to alleviate poverty and enhance long-term economic development” (8). The conflicting interests of each of the three nations are what hinder cooperation, and a solution which shifts the focus away from supply augmentation seems to be the answer.
This project aims to assess the legal feasibility of an economic framework which proposes that the solution to the lack of cooperation between Egypt, Sudan, and Ethiopia is to restructure each country’s political economy by setting up an intra-regional trading system which focuses on each country’s comparative advantage. While economically sound, the framework, suggested by Wichelns et al. (2003), disregards the legal obstacles to the proposed form of cooperation. Thus the paper analyses the legal framework, namely the 1959 Agreement and the Cooperative Framework Agreement, and Egypt’s status as the Basin’s hegemon to determine if Wichelns et al.’s (2003) proposal is feasible.
At the time of this writing, several events transpired in both sub-Saharan Africa and the Middle East. The referendum to determine the fate of South Sudan took place on January 9, 2011 and protests in Egypt led to the ousting of President Hosni Mubarak on February 11, 2011. For these reasons, I conclude the paper with brief reflections on the implications of each of these events for Nile Basin negotiations.

Methods

In order to answer this question, I conducted a feasibility study. The methodological approach used was a contextual investigation that evaluated the viability of the proposed solution given the current context of the relationship between the three nations (O'Leary, 2005). I sought to evaluate Wichelns et al.’s (2003) framework, to determine if it is suitable. The contextual investigation contains elements of a SWOT analysis (strengths, weaknesses, opportunities, threats), primarily focusing on the threats to Wichelns et al.’s. (2003) proposal and the opportunities for cooperation outside of that proposal.

In order to conduct this feasibility study, I used two methods. First, I conducted eleven semi-structured interviews with experts in the field of water management and water policy to gather their opinions on whether the proposed solution is a viable one. They were asked what they thought of the current situation and whether they can propose alternative solutions. I interviewed Dr. Ana Cascão, Project Manager at the Stockholm International Water Institute; Dr. Alan Nicol, Director of Policy and Programme at the World Water Council; Dr. Aaron Wolf.

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1 Given that a feasibility study is a subset of the evaluation tradition of inquiry, I must be an outsider to the framework being evaluated. While I am an outsider in relation to the solution, I am not an outsider when it comes to assessing if the solution will be possible since I am Egyptian. While I will attempt to analyze whether or not cooperation over water between Egypt, Sudan, and Ethiopia is possible in a manner that accounts for the view points of all three nations, I know that it will be hard not to sympathize with my country of origin. My sympathetic and protective self appears when I am not in Egypt where I find myself defending government policies that I know are ineffective. On the other hand, when I return home I am overly critical of government policies and at times I am skeptical of whether change is possible. However, in answering my research question, I must find a balance between my sympathetic, protective, and critical self; a hybrid self that will appreciate and critique the current situation.
Second, I performed a document analysis of newspaper articles and scientific literature to determine the current situation. I used one state-run Egyptian newspaper (Al-Ahram) and one independent Egyptian newspaper (Al-Masry Al-Youm) to gather information on the current situation. I also read Sudanese and Ethiopian newspapers, but could not find any articles pertaining to the topic in any of them. The scientific literature provided me with information on previous agreements, in addition to supporting my findings as will be discussed later.

**Literature Review**

**Recent Agreements**

In November, 1959, Egypt and Sudan signed an agreement concerning the Nile Basin waters. The conditions of the Nile Waters Treaty stipulated that Egypt receive 55.5 km$^3$ of the Nile’s water, while Sudan would receive 18.5 km$^3$. This allocation was based on there being 84 km$^3$ of water flowing through the Nile at Aswan, Egypt; the remaining 10 km$^3$ are lost to evaporation (El-Fadel et al., 2003). According to the agreement, Sudan was to construct the Roseires Dam on the Blue Nile in order to augment the water supply, and Egypt was to build the
Aswan High Dam which would mitigate the Nile’s annual flood, generate hydroelectric power, and decrease the volume of sediment reaching the Nile’s delta (El-Fadel et al., 2003). The Nile Waters Treaty benefitted both Egypt and Sudan but ignored the needs of all upstream nations, including Ethiopia; Ethiopia has “invalidat[ed] the agreement and request[ed] the renegotiation of its contents to take [its] own interests into account” (El-Fadel et al., 2003, 110). The fact that Ethiopia was not considered in this treaty signifies that there may have been underlying factors which led Egypt and Sudan to ignore its needs. These factors have not been explored, and there is a lack of questioning with regards to why Ethiopia was excluded from the agreement; such an exclusion is significant considering that Ethiopia contributes to 59% of the Nile’s flow.

In July, 1993, an agreement between Egypt and Ethiopia was signed stipulating that neither country would undertake development projects which would affect the other country’s supply of Nile water. Both Egypt and Ethiopia agreed to conform to international water laws, and to “[consult] and [cooperate on] utilization of the Nile water to increase water flows and reduce losses” (Hefny and Amer, 2005, 50). The agreement was expected to strengthen the relationship between Egypt and Ethiopia and contribute to the region’s stability (Hefny and Amer, 2005, 50); however, this seemingly cooperative move has been undermined by Egypt’s ongoing irrigation development schemes. One example is the Toshka Canal project which began in 1997 and is set to be completed in 2017. It aims is to irrigate 400,000 hectares of desert land in south-western Egypt, requiring an additional 5.5 BCM of water per year (Yohannes, 2008, 39-40). The Toshka Canal was implemented without consulting with Ethiopia and does not comply with the conditions put forth in the 1993 agreement because an additional withdrawal of 5.5 km³ will undoubtedly affect the amount of water which Ethiopia can withdraw from the Nile. However, neither quantitative nor qualitative studies have been conducted in order to determine
how Ethiopia will be affected once this canal is completed. It appears that the 1993 agreement is a superficial one designed to falsely assure Ethiopia that it will not be harmed by Egypt’s withdrawal of the Nile’s water. Also, considering that a legally binding agreement exists between Egypt and Sudan, it is unknown how the additional 5.5 BCM withdrawal will impact Sudan’s relations with Egypt.

Since 1997, the ten riparians of the Nile Basin have been negotiating a Cooperative Framework Agreement (CFA) that would allow all riparians to benefit from the Nile’s waters. As of February, 2011, six of the ten riparians signed the final version of the CFA, including Ethiopia. The other five upstream countries that signed this are Burundi, Uganda, Rwanda, Tanzania, and Kenya. The CFA includes the principles of equitable and reasonable use and no significant harm (NBI 2010). In addition to echoing the principles of international water law, the CFA allows the Nile Basin Initiative to be transformed into a permanent Nile River Basin Commission (NRBC) that would have legal status so that it can enter into agreements and oversee the implementation of the CFA (NBI 2010).

Ethiopia, being an upstream country, uses the principle of equitable and reasonable utilization to make an argument for its need to use the Nile’s water. Egypt on the other hand, as the downstream country, uses the principles of no harm and historical use, to argue for the status quo. For Egypt, no harm means that it holds on to its allocation as set out in the 1959 agreement. The contradiction between the principles of equitable and reasonable use and no harm is where the tension is because some harm would have to be done to the flows reaching Egypt – at least during the dam construction phase – for Ethiopia to develop its Nile water resources.
Egypt’s Hegemony and the Improbability of War

The traditional imbalance between upstream and downstream nations in sharing transboundary waters is reversed in the case of the Nile Basin (Stroh, 2003). Because of the continuing intra-national and international political instability in the region, upstream nations have failed to “realize their potential” (Stroh, 2003, 100). Also, due to its superior military, political, and economic power, Egypt – the most downstream nation – has been able to use the Nile’s water as it pleases while disregarding the needs of every other country. This dominance has led Ethiopia to take Egypt’s repeated military threats seriously.

Ethiopia’s worries are not unfounded; Egypt’s attempts to destabilize Ethiopia began during President Abd El-Nasser’s reign (Egypt’s second president, 1956-1970). Efforts were made to weaken Ethiopia through Egypt’s support of the Eritreans in their fight against Ethiopians. This war heavily contributed to the political, economic, and social instability in Ethiopia. By supporting the Eritrean Liberation Front, Egypt was able to force Ethiopia to redirect its financial resources toward defence, and it is this redirection of resources which prevented Ethiopia from developing its own water resources (Kendie, 1999).

Also contributing to Egypt’s political hegemony were its “well-represented … interests” in the World Bank. During a majority of the 1980s and the 1990s, a number of Egyptians were appointed to the environmental and international law departments (Allan, 1999, 3), suggesting that Egypt had the power to direct various development projects to its favour. Neither Sudan nor Ethiopia had any professionals appointed in such positions (Allan, 1999).

Egypt derives its economic power from having the highest GNP among all the Nile Basin states. Sudan and Ethiopia’s weak economic growth and inferior income, relative to Egypt, places them at a disadvantage in terms of financing development projects and obtaining
international loans (Whittington and McClelland, 1992). The weak economy and low GNP contribute to Sudan and Ethiopia’s lack of infrastructural development.

Despite Egypt’s superior military and political strength in the eastern Nile basin, there seems to be a consensus with regards to the likeliness of overt conflict between the three nations. It is highly unlikely that Egypt will follow through with its military threats considering the size of the Nile Basin (three million km$^2$), and the pan-African sentiment which Egypt is excluded from. Further support for the improbability of war is Yohannes’ (2008) belief that Egypt’s military threats are empty ones because its military is funded by “unsustainable American economic largesse and military protection to the tune of $2.1 billion a year” (6). He concludes that Egypt’s reliance on foreign aid undermines its capability to actually attack Ethiopia if it follows through with developing its water resources. Swain (1997) takes another perspective saying that Egypt’s military threats are unlikely to prevent Ethiopia from developing its water resources because Ethiopia is able to control the Nile’s flow since it contributes to 59% of it. While these arguments may be valid, no mention is made of the cost of using military force, both in financial terms and in human lives.

*Why Is Cooperation Difficult?*

**Institutional and Financial Capacity**

In order to cooperate you must be able to trust your neighbours. Ethiopia, referring to the Nile Waters Treaty, insists that it is not legally bound to any agreement signed without its consent or participation (Arsano and Tamrat, 2005). It argues that a new agreement needs to be formulated, one that considers its water use and water development needs, and the use and development needs of other nations (Arsano and Tamrat, 2005). Despite this stance, Arsano and Tamrat (2005) correctly identify Ethiopia’s weak institutional capacity as a barrier to achieving a
“mutually agreed upon, rationally negotiated formula” (25). They make a number of assumptions with regards to what would happen if an agreement is not reached between Egypt, Sudan, and Ethiopia. These assumptions are: (1) Ethiopia will develop its water resources – regardless of the downstream consequences – with financial assistance from individual countries as opposed to international funding agencies; (2) Egypt and Sudan will utilize “economic and political means” to stop Ethiopia from using more water than it currently does (0.5 % of its contribution to the Nile’s flow) (24); and (3) covert actions, rather than overt military action, to destabilize Ethiopia will be taken (Arsano and Tamrat, 2005).

Arsano and Tamrat (2005) do not provide the basis for their assumptions. In addition, there are a number of internal factors, which will be discussed later, that prevent it from developing those water resources. Financial capabilities are also at issue; given Ethiopia’s weak economy, it is unlikely that individual countries will invest in its development and provide it with loans considering the uncertainty of return. Also, the weak institutional capacity could lead to a mismanagement of funds. The second assumption that “economic and political means” (24) will be used to prevent Ethiopia from utilizing its resources is unclear since the terms are not defined. In order for this assumption to be substantiated, a definition of “economic and political means” should be provided. The basis for the third assumption is supported by Egypt’s subtle role in supporting the Eritreans’ struggle against the Ethiopians (Kendie, 1999), although Arsano and Tamrat (2005) do not refer to this.

Ethiopia’s Internal Struggles

The reasons for Ethiopia’s inability to develop its water resources are seldom discussed; occasionally they are mentioned in passing. Some have pointed out that Ethiopia has its own internal problems which prevent it from developing its water resources. Arsano and Tamrat
(2005), for example, make a very brief mention, describing the internal problems as being a “lack of finances and lack of organizational capacity” (18). More generally, they list four main factors which prevent Ethiopia from developing its water resources. These are: (1) Ethiopia’s experience with many civil wars and prolonged periods of political instability, which has led to attention being diverted away from water resource development, towards defence; (2) lack of the necessary financial capabilities to develop its water resources; (3) difficulty of cooperation between riparian countries because of the lack of trust between upstream and downstream nations; and (4) political instability and a weak economy have discouraged foreign investment.

However, by synthesizing the brief discussions pertaining to Ethiopia’s internal problems, it is possible to compile a crude list of why it is unable to develop its water resources. Among the factors is the chronic drought-induced famine which impacts two million people per year (Mason, 2005; El-Fadel et al., 2003), the lack of financial resources (Arsano and Tamrat, 2005; Swain, 1997), and the weak institutional capacity (Amer et al., 2005; Arsano and Tamrat, 2005). Given that these are significant challenges, it is essential that they be addressed in more detail considering that those who do acknowledge Ethiopia’s problems point out that they play a major role in preventing it from developing its water resources.

A weak economy combined with political instability discourages foreign investment because of the uncertainty of return. However, this is not to say that foreign direct investment (FDI) is non-existent in Ethiopia as shown in Table 1. It seems that Ethiopia is caught in a paradox since it is unable to fix its internal problems without external financial assistance, yet it is unable to receive financial aid because of its internal problems. Even if Ethiopia were to receive financial assistance from foreign investors, it would need to feed its population first so that it can draw on a healthy workforce that could contribute to economic growth. With these
challenges in mind, cooperation between Egypt, Sudan, and Ethiopia is a distant possibility because it is unlikely that successful cooperation will occur between the three nations given the mistrust between them, and the instability within Ethiopia.

Table 1: Foreign direct investment in Ethiopia from 2000 to 2009 (World Bank, 2010a).

<table>
<thead>
<tr>
<th>Year</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net FDI (Billion USD)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
<td>0</td>
<td>0.26</td>
<td>0.54</td>
<td>0.22</td>
<td>0.11</td>
<td>0.22</td>
</tr>
</tbody>
</table>

_Intra-Regional Trading_

The approach that has been used in negotiations over water in the Nile Basin has focused on augmenting each country’s water supply (Yohannes, 2008). This focus excludes other solution to the cooperation problem that can promote economic growth for Egypt, Sudan, and Ethiopia. Wichelns et al. (2003) suggest that the way to promote cooperation is to move away from the limited focus on supply augmentation and instead create an intra-regional trading system between Egypt, Sudan, and Ethiopia. They include Eritrea in their study, but because of its relatively minor role in the Nile Basin, it will be excluded from this review.

Common to all three nations is the need to decrease poverty, provide employment, achieve food security, and improve the quality of life. Wichelns et al. (2003) suggest that the way to achieve this is through cooperation that relies on each country’s comparative advantage. Egypt has a fully developed irrigation system (disregarding the current land reclamation projects in the Sinai Peninsula) and its comparative advantage lays in the production of high-value export crops. Sudan has a comparative advantage with regards to the production of food crops (rice, sorghum, and wheat), while Ethiopia has a comparative advantage in its potential to develop hydroelectric power through microdams (Wichelns et al., 2003).
Given these advantages, Egypt should switch from growing grain crops to high-value fruits and vegetables; this would lead to less water being used for agriculture “if a substantial portion of the area planted in rice is converted to fruit and vegetable production” (Wichelns et al., 2003, 547). Sudan should augment its production of rice and sorghum; increasing the production of these two crops will increase Sudan’s agricultural demand for water, but this demand can be met because of Egypt’s decreased water use once it switches to growing fruits and vegetables (Wichelns et al., 2003). Ethiopia’s role in this plan is to produce hydroelectric power while developing its irrigation systems.

This proposed solution will increase the volume of food crops available in Sudan, and will create more revenue from exporting crops to neighbouring countries (mainly Egypt and Ethiopia). The primary advantage for Egypt includes “an affordable source of food … on its southern border” (Wichelns et al., 2003, 547); an indirect advantage to Egypt from Sudan’s increased grain production is that the higher revenues accruing to Sudan from exporting grain will lead to an increased demand for the more expensive fruits and vegetables, which can be bought from Egypt (Wichelns et al., 2003). The excess electricity produced by Ethiopia can be exported to Egypt and Sudan, offering them “a valuable alternative to fossil fuel energy” (Wichelns et al., 2003, 547). Improved irrigation systems in Ethiopia will enhance agricultural and livestock production, in turn increasing income and improving the quality of life. Excess livestock can be exported to Egypt and Sudan, providing them with “a more affordable source of meat products” (Wichelns et al., 2003, 547).

Wichelns et al.’s (2003) proposed intra-regional trading system ostensibly seems to be the perfect solution to the tension and hostility that exists between the three countries. However, they themselves point to the “geopolitical issues that may limit the extent of international co-
operation” (548); in this case they are likely referring to the mistrust between Egypt and Ethiopia.

Perhaps the problem with current initiatives for cooperation among the Nile Basin states, such as the NBI, is the narrow focus of such schemes (Wichelns et al., 2003). The primary focus is to allocate water to each country so that it is able to meet its present and future needs based on the economic activities currently underway. However, it would be more beneficial if such initiatives took a step backward to ask how cooperation can be promoted through other mechanisms. Such a step is demonstrated by Wichelns et al.’s (2003) study where current water needs were not considered; rather, they propose that each country specialize in what it could produce the most of per unit of water used. Hence, Egypt should specialize in fruits and vegetables, Sudan in grain, and Ethiopia in hydroelectric power and livestock. Creating an intra-regional economy based on these products would in turn enhance economic development, promote food security, and improve the citizens’ quality of life.

Wichelns et al.’s (2003) economic framework would provide mutual benefits for each of the three countries. Ethiopia would have the opportunity to develop its hydropower and irrigation as it has been seeking to do so; Sudan would use its potential for agriculture and provide employment for its citizens; and Egypt would reduce its water use by growing fruits and vegetables as opposed to rice.

In order to determine the likelihood of such a plan’s success, it is essential to assess the political factors in the Eastern Nile Basin that would hinder this framework. This first section of this paper discusses whether the 1959 Agreement and the Cooperative Framework Agreement present obstacles to Wichelns et al.’s (2003) framework. The second section provides alternatives to Egypt taking military action against Ethiopia to protect its current water allocation.
The third section considers other obstacles to Wichelns et al.’s (2003) framework. The fourth section provides opportunities for cooperation that take into account the existing political obstacles. Finally, the paper ends with the role of a newly independent South Sudan in Nile Basin negotiations, in addition to a brief reflection on the implications of a new Egyptian government.

**The 1959 Agreement and the Cooperative Framework Agreement**

*The 1959 Agreement*

The Agreement on the Full Utilization of the Nile Waters was signed in November, 1959, and allocated 100% of the Nile’s flow at Aswan between Egypt and Sudan. The motivations behind the 1959 Agreement are explicitly stated in its preamble: “full control” and “complete control” of the River’s waters (GoE and GoS, 1959, 1). It allocated 55.5 km$^3$ to Egypt and 18.5 km$^3$ to Sudan. As part of this agreement, Sudan agreed that Egypt would build the High Aswan Dam for over-year storage, and Sudan would build the Roseires Dam on the Blue Nile.

The second most important aspect of this agreement is the provision that Egypt and Sudan “shall agree on a unified view” if there becomes a need to negotiate with other riparian countries over the Nile’s waters (GoE and GoS, 1959, 3). This provision binds Egypt and Sudan as one. Also, if negotiations stipulate that an allocation of water must be provided to other riparian countries, then that amount would be deducted from Egypt and Sudan’s allocations, equally.

The agreement has been heavily criticized primarily by Ethiopia because it has been excluded. Its bilateral nature presents an obstacle to basin-wide cooperation and has not created an opportunity to build trust between the upstream and downstream countries (Abdo, 2004). In addition, the quantity-based allocation scheme creates a competitive atmosphere (Abdo, 2004).
that views cooperation between Egypt, Sudan, and Ethiopia as a zero-sum game because extractive use for irrigation in Ethiopia would decrease the flow reaching Sudan and Egypt. Therefore, a gain in water use for one country is a loss for the other. Given that the intentions of the agreement are clear, it becomes obvious that it presents a significant obstacle to cooperation between Egypt, Sudan, and Ethiopia.

Waterbury (1997a) concurs with the fact that the 1959 Agreement created a zero-sum game, and proposes three ways to address the problem: first, upstream countries agree to the status quo; second, Egypt and Sudan increase their water use efficiency so that they can survive with smaller allocations; and third, constructing infrastructure projects in upstream countries that could increase the Nile’s annual discharge. At present, Ethiopia is greatly unhappy with the status quo and has been using strategies to counter Egypt’s hegemony (discussed in a later section). Its exclusion from the agreement has, thus far, only been explained by Simon Mason, Senior Researcher at the Center for Security Studies in Zurich. He cites the Cold War as the reason for the exclusion because at the time, Egypt was aligned with the Soviet Union and Ethiopia was aligned with the United States (Mason, 2003); because of this, it would have been impossible for the two countries to reach a consensus (Mason, 2003).

Egypt has consistently made its position clear that it is not willing to give up its allocation as set out in the 1959 Agreement (Waterbury, 1997a). It has staunchly defended its right to that allocation and has consistently said in negotiations that it will only be amenable to sharing water that is “over and above” the shares determined by the 1959 Agreement (Waterbury, 1997a, 294; emphasis in the original). Egypt has also maintained that it will not enter into any new agreements on water sharing unless upstream countries have a “sophisticated grasp” of their hydrological data, including rainfall, runoff, and discharge (Waterbury, 1997a, 294). Its superior
technical capabilities relative to Ethiopia have allowed Egypt to dominate negotiations on water sharing (Brunée and Toope, 2003), in addition to maintaining institutional continuity in its water sector (Waterbury, 1997a).

The 1959 Agreement is based on a self-serving mantra that sought to formalize and legalize historic water use (Brunée and Toope, 2003). It completely ignored Ethiopia’s needs and therefore created a competitive atmosphere that, by definition, has failed to encourage cooperation between the three countries. Also, the fact that the 1959 Agreement did not include a mechanism to re-allocate water resources, even in the case of natural fluctuations, explains why Egypt has maintained that it is only willing to negotiate on quantities that are above its $55.5 \text{ km}^3$ allocation. Renegotiation seems impossible unless Sudan decides to reduce its allocation which is unlikely to be the case.

In looking at the agreement from Egypt, Sudan, and Ethiopia’s perspectives, the following becomes obvious. Egypt cemented its historic rights and ensured that the water it was using was legally its own (Mason, 2003). The second advantage of this agreement from Egypt’s perspective is the previously mentioned stipulation that an upstream country’s demand for water would be dealt with jointly with Sudan. This places less of a burden on Egypt because it could argue that Sudan is not currently using its full allocation and should therefore accommodate the upstream country by giving up what it does not use.

From Sudan’s perspective, the agreement is viewed both favourably and unfavourably. Its advantage is that it stabilized relations between Egypt and Sudan (Mason, 2003). On the other hand, those who criticize the agreement do so because they look ahead to the future when Sudan might need more water than the current allocation for its development (Mason, 2003). Critics see
more benefit in cooperating with Ethiopia since a majority of the flow comes from this upstream country (Mason, 2003).

The 1959 Agreement is an obstacle to establishing a legal agreement between Egypt, Sudan, and Ethiopia. Sudan is legally bound to share the Nile’s water with Egypt, however, it can also benefit from cooperating with Ethiopia (Stroh, 2003). Stroh (2003) maintains that Sudan will be able to benefit from cooperating with Egypt under the 1959 Agreement, and from cooperating with Ethiopia under a legal framework established by the Nile Basin Initiative. But, this position seems to overlook the fact that a legal agreement with Egypt, Sudan, and Ethiopia all agree to will likely entail nullifying the 1959 Agreement because it is currently detrimental to Ethiopia. Therefore, it is unlikely that Sudan will be able to benefit from both the 1959 Agreement and from cooperation with Ethiopia.

Ethiopia is not bound by the 1959 Agreement and it seeks to renegotiate it (Mason, 2003), but has not been able to do so because of Egypt’s insistence on adhering to the status quo. However, what Ethiopia has been able to do is gain access to bilateral funding to develop is water resources on tributaries to the Blue Nile and in watersheds outside the Nile Basin. If it chooses to continue with this unilateral development, then it would be in Egypt’s interest to be a part of that development. The reasons for this are discussed in a later section.

The 1959 Agreement does nothing to alleviate the tension between Egypt, Sudan, and Ethiopia in sharing the Nile’s waters. In order to lift itself out of poverty Ethiopia needs to be given the opportunity to develop its Nile water resources so that it can provide for its population. Extractive use of water will require that the agreement be renegotiated to include Ethiopia, and at present, this seems impossible. Therefore, the 1959 Agreement is a “stumbling block for all cooperation to move forward” (Interview, October 21, 2010).
The Nile River Basin Cooperative Framework Agreement

In an effort to strengthen cooperation between the Nile Basin’s riparian states, the Nile River Basin Cooperative Framework Agreement (CFA) was formulated and signed by six of the ten riparian countries, including Ethiopia. As previously mentioned, the CFA includes the principles of equitable and reasonable use, and no significant harm (NBI, 2010). In addition to echoing the principles of international water law, the CFA allows the Nile Basin Initiative to be transformed into a permanent Nile River Basin Commission (NRBC) that would have legal status so that it can enter into agreements and oversee the implementation of the CFA (NBI, 2010).

Egypt, Sudan, and Ethiopia all agree to the principles outlined in the CFA, however, there is one point of contention that remains unresolved and has been put on the back burner. This is the issue of how upstream use would influence downstream water security. The CFA defines water security as “the right of all Nile Basin States to reliable access to and use of the Nile River system for health, agriculture, livelihoods, production and environment” (NBI, 2010, 4).

Currently, Article 14a of the CFA, states,

“… Nile Basin States recognize the vital importance of water security to each of them. The States also recognize that the cooperation management and development of waters of the Nile River System will facilitate achievement of water security and other benefits. Nile Basin States therefore agree, in a spirit of cooperation: (a) to work together to ensure that all states achieve and sustain water security…” (NBI, 2010, 16).

Article 14b is where the contention lies. It was originally drafted to read “not to significantly affect the water security of any other Nile Basin State” (NBI, 2010, 41; emphasis added). All riparians, excluding Egypt and Sudan, agreed to this language. Egypt then suggested that the article be replaced by the following: “not to adversely affect the water security and current uses and rights of any other Nile Basin State” (NBI, 2010, 41; emphasis added). This
modification is essentially Egypt’s way of securing its rights as determined by the 1959 Agreement without making explicit mention of the agreement itself. In essence, Egypt is not altering its stance to accommodate the needs of other riparians, so the negotiations are back at square one from the perspective of reconciling upstream and downstream interests.

Another fault with the CFA is the ambiguity of the definition of water security. Cascão (2008a) sees this ambiguity as a way to “conciliate the upstream-downstream divergent bargaining positions” (2). But what this has actually done is stall the negotiations because Egypt and Sudan cannot agree with the upstream countries on the use of “significantly” versus “adversely,” let alone the definition of the concept of water security. Despite this, Cascão’s (2008a) point about the ambiguity of the concept is important. She briefly lists the pros and cons of such ambiguity, with the primary pro being that ambiguity creates flexibility in negotiations because the concept is not defined. The downside of this is that it can create differing interpretations of a concept which could lead to legal controversies (Cascão, 2008a). Furthermore, it can increase the difficulty of implementing the agreement, promote noncompliance, and “contribute to the resumption of conflicts between riparian states” (Cascão, 2008a, 2). The consequences of ambiguity in this case are severe and seem to lead to more problems than solutions.

Mekkonen (2010) concurs with the assessment that this ambiguity is detrimental. He says,

“The relatively sluggish negotiations … have taken an unwarranted turn to a virtual blind-alley with the introduction of the non-legal, destructively elastic, and indeterminate concept of ‘water security’ ostensibly to circumvent the ‘thorny issue of the status of existing treaties’ which allegedly constitutes an insurmountable hurdle stifling any headway in the negotiations. This fateful decision has been justified as an impressive feat of creative exercise injecting into the stalled negotiations the magic wand of ‘constructive ambiguity’ which would bring the divergent riparian positions to a compromise” (422).
The ambiguity has not brought any compromise because including water security in the CFA is a way of maintaining the status quo using a “hegemonic compliance-producing mechanism” (Mekonnen, 2010, 423). The situation can then go one of two ways. If the CFA is ratified by the required six countries, then it is highly likely that the original version of Article 14b will be adopted. In this case, the status quo is no longer viable and upstream riparians can cooperatively develop their water resources while ensuring that they do not significantly influence downstream water security. The upstream countries would then determine the definition of “significant.”

However, if the required six countries do not ratify the CFA, which is unlikely, then the status quo remains. Relegating Article 14b to the annex of the CFA and stating that it is to be resolved by the NRBC within six months of its establishment is “utopian” (Mekonnen, 2010, 429) because this is an issue that has not been resolved in over ten years of negotiations. So, to state that it should be resolved within six months is extremely optimistic.

If Egypt and Sudan were to accept the upstream version of Article 14b – a very unlikely outcome – then they would essentially be giving up their allocations as determined by the 1959 Agreement. The more likely outcome is that the CFA will be ratified by the required six countries; this would “inevitably bring the decade-long negotiations to a logical cul-de-sac” (Mekonnen, 2010, 440) because Egypt and Sudan’s positions are entrenched. However, since Article 14b has been relegated to the CFA’s annex, then Egypt and Sudan signing the CFA would not be detrimental to them (Interview, October 21, 2010).

It is possible that having six upstream countries ratify the CFA would lead to increasing tension in the Basin because the CFA would give the NRBC – which would be composed of experts from upstream countries – the right to determine whether or not upstream projects will have significant negative environmental impacts on downstream countries (NBI, 2010). One
could imagine that the outcome of such a decision could be controversial. On the other hand, if Egypt and Sudan were to sign the CFA, it would give them an opportunity to participate in the NRBC and represents one way that they can exert their influence over assessing the impacts of upstream projects. The downside to Egypt and Sudan signing the CFA is that it could be viewed as another method of exerting their hegemony in the Nile Basin. It is a double-edged sword.

*Putting It All Together*

While the CFA attempts to create cooperation and a unified vision for all States in the Basin, there are still realities on the ground that make this difficult. One interviewee cites the Toshka project in Egypt, the Merowe Dam in Sudan, and the Tekezze Dam in Ethiopia as barriers to a cooperative strategy because they are unilateral projects that are “a foil to the success of the CFA” (Interview, October 25, 2010). Despite the fact that the 1959 Agreement is seen as an impediment to the CFA, he maintains that the CFA can continue alongside the 1959 Agreement (Interview, October 25, 2010). He mentions that the World Bank has been hinting that the 1959 Agreement need not be removed as long as upstream developments along the Nile do not seriously impede flows to Egypt. This is consistent with the stipulations of Article 14a of the CFA.

The diverging viewpoints between upstream and downstream riparians have been formalized with the drafting of the CFA. Upstream countries favour the Cooperative Framework Agreement, while downstream countries favour the 1959 Agreement and the status quo, although there could be some benefit for them if they choose to sign the CFA. One interviewee concurred and said that “if all countries subscribe to this [equitable use and no appreciable harm] and sign the CFA it would certainly help future cooperation” (Interview, November 24, 2010). He also makes an excellent point that the status quo is not beneficial because Egypt and Sudan “cannot
possibly monopolize what is not in their control” (Interview, November 24, 2010). In his concluding statement, the interviewee says that ten years from now “Egypt and Sudan will accept the CFA’s principles and they will understand that to keep the unequal status quo will not work” (Interview, November 24, 2010).

Alternatives to Military Action in the Eastern Nile Basin

A Diplomatic Approach

In order to give a general overview of the sentiment toward the possibility of a water war initiated by Egypt against Ethiopia, I resorted to interviews. Each of the eleven interviewees responded that a war over water initiated by Egypt against Ethiopia is a highly unlikely event. One interviewee said, “I wouldn’t be categorical in saying that Egypt wouldn’t use force, but I keep thinking that it’s an impossibility” (Interview, October 21, 2010) Another interviewee provided a different perspective, seeing water as a tool of war rather than the source of war. He said, “If large social violence occurred for other reasons, then it would be easier to see how water could be used in the service of some other reason, but water as the reason, no” (Interview, July 13, 2010) Two other interviewees provided more terse responses, including one who said “No, it’s not logical” (Interview, September 29, 2010), and another who called it “A load of baloney” (Interview, October 25, 2010).

This sentiment is confirmed by Egyptian newspaper articles describing the Egyptian Government’s response to the negotiations leading up to the signing of the Cooperative Framework Agreement in addition to the response after its signing on May 14, 2010. The Government’s tone in responding to the upstream-downstream divide is indicative of the fact that it is not seeking confrontation, but rather wants to craft a solution that protects its interests using diplomacy. For example, in articles published the month before the CFA was signed, the
Egyptian Government explicitly said that it will not use force in dealing with Nile Basin countries (Al-Ahram, 2010a). This was re-affirmed after the CFA was signed when the Egyptian Minister of Foreign Affairs directly stated that “We [the Government] do not want clashes with Nile Basin countries” (Al-Masry Al-Youm, 2010a). Furthermore, the tone which the Egyptian Government takes is diplomatic, emphasizing that differences between the upstream and downstream countries need to be resolved through cooperation (Al-Ahram, 2010b) or arbitration in the International Court of Justice (Al-Masry Al-Youm, 2010b).

**Virtual Water**

Virtual water has long been touted as the solution to water scarcity problems. Deudney (1990) argues that environmental degradation is unlikely to cause interstate war because of world trade. Allan (1998) proposes the same argument with regards to water in the Middle East and says that virtual water has supplemented the region’s water needs so that the water deficit is compensated for by trade. In order to understand the importance of virtual water in the Nile Basin, Zeitoun et al. (2010) calculated virtual water flows between Nile Basin countries, and exchanges with countries outside the basin for the years 1998-2004. Based on these calculations, they speculate on the implications for water security in the basin.

Zeitoun et al. (2010) find that virtual water trade within the basin is outweighed by trade with countries outside the basin. They approximate that crop virtual water trade between Nile Basin countries amounts to 900 Mm$^3$ per year, compared to 39,000 Mm$^3$ per year that is imported by Nile Basin countries from outside the basin. Zeitoun et al. (2010) also calculate virtual water for livestock trade both within the basin, and with countries external to the basin. They again find that trade within the basin is very low relative to trade with countries outside the basin (25 Mm$^3$ per year and 2100 Mm$^3$ per year, respectively). Total virtual water imports from
countries outside the basin thus play a significant role in “reliev[ing] pressure on the water resources of the Nile Basin states” (Zeitoun et al., 2010, 238), considering that an amount equivalent to 74% of the Nile’s flow at Aswan is imported into the basin annually (Zeitoun et al., 2010).

In looking specifically at Egypt’s virtual water imports, it becomes obvious that virtual water “is of the highest possible strategic significance to Egypt” (Zeitoun et al., 2010, 239). Figure 2 shows Egypt’s total crop virtual water imports both from within and outside the Nile Basin. Virtual water trade with countries in the Nile Basin amounts to 371.76 Mm$^3$ per year (a majority of which comes from Kenya), compared to the 30,194.85 Mm$^3$ per year of imports from outside the basin.

The next question to ask is, “What is Egypt importing, and is there potential to reduce its dependency on virtual water imports from outside the basin and increase imports from inside the basin?” Of the approximately 30,000 Mm$^3$ per year of imports from outside the basin, almost 20,000 Mm$^3$ per year are imported soy from Argentina, the U.S., and Brazil. The remaining 10,000 Mm$^3$ per year are wheat imports from the U.S., Australia, France and Russia, and maize from the U.S., Argentina, and Brazil. Imports from within the basin are primarily in the form of coffee and tea from Kenya (Zeitoun et al., 2010). Wichelns et al.’s (2003) proposed solution contains a virtual water component in the form of grain exports from Sudan to Egypt, livestock exports from Ethiopia to Egypt, and high-value crop exports from Egypt to Sudan and Ethiopia. Zeitoun et al. (2010) find that trading crop and livestock between Eastern Nile states (Egypt, Sudan, and Ethiopia) is higher than the trade between Southern Nile states, suggesting that “sub-basin political and economic groupings may be more practical and effective than current basin-wide efforts” (239). This finding is significant because it lends support to Wichelns et al.’s
(2003) proposal and suggests that there are opportunities to increase water security in the region using virtual water.

Figure 2: Egypt’s crop virtual water imports (Zeitoun et al., 2010).

**Tactics**

Egypt has historically been able to use the Nile’s water as it pleases because it possesses the greatest strength with regards to two of the three pillars of hydrohegemony. The three pillars
are: 1) riparian position, 2) power, and 3) exploitation potential, or technical ability (Zeitoun and Warner, 2006). A country’s geographic location in a basin is usually the primary method of exerting power over other riparian countries since upstream countries tend to be more powerful than downstream ones because they are able to control the flow of water. The second pillar, power, involves three dimensions: 1) military and economic power, 2) stalling incentives, and 3) securitization and sanctioned discourse (Zeitoun and Warner, 2006. This pillar is the most important in determining which country becomes a hegemon in the basin. The third pillar, exploitation potential is a measure of a country’s ability to implement technological solutions that would allow it to use the water in the manner that it wants to. One example of this is dams. Figure 3 shows how each of the three pillars are distributed amongst the countries of the Eastern Nile Basin.

Figure 3: Pillars of hydrohegemony for Ethiopia, Sudan, and Egypt (Zeitoun and Warner, 2006).

Although Zeitoun and Warner do not explain what “exploitation potential” means, I think it is safe to assume that it represents the degree to which each country has developed its Nile water resources. Although Egypt is not the upstream country, it is the basin’s hegemon because of its power and exploitation potential. Ethiopia, which contributes to a majority of the Nile’s flow, has not yet been able to take advantage of its upstream location because of its limited power and exploitation potential. However, if both of these pillars are strengthened, the power dynamics in the basin will shift to favour Ethiopia.
Some scholars have argued that the form of hegemony that Egypt exerts in the Nile Basin is a negative type of hydrohegemony (Zeitoun and Warner, 2006). Egypt’s consolidated control means that the status quo is in its favour and in order to maintain that control, it must engage in a number of tactics such as covert action, coercion pressure, treaties, international support, and financial mobilization (Zeitoun and Warner, 2006). Egypt has previously engaged in covert actions to destabilize Ethiopia. Kendie (1999) recounts Egypt’s attempts to destabilize Ethiopia during President Abd El-Nasser’s reign (Egypt second president, 1956-1970) where efforts were made to weaken Ethiopia through Egypt’s support of the Eritrean Liberation Front (ELF) in its fight against Ethiopia. This war heavily contributed to the political, economic, and social instability in Ethiopia, and by supporting the ELF, Egypt was able to force Ethiopia to redirect its financial resources toward defence which prevented Ethiopia from developing its own water resources (Kendie, 1999). Another tactic which hegemons use to maintain the status quo is coercion pressure. This is very evident in Egypt’s case where it has previously threatened military action to ensure that its share of the Nile’s water is maintained. However, as previously described, this tone has shifted toward one that is now more diplomatic.

International support is another way of maintaining the status quo. During the colonial era, Egypt was regarded as a favourite of Britain and certainly benefited from that favouritism in the 1929 Agreement which granted Egypt 48 km$^3$ of the Nile’s flow, while Sudan received 4 km$^3$. The allocation essentially gave Egypt 97% of the Nile’s flow and allowed it to maintain its acquired rights (Waterbury, 2002). International support has also manifested itself via World Bank policies that give veto power to downstream riparians if the riparians feel that an upstream project will affect the downstream flows. This strategy has been used by Egypt in the past to block the implementation of projects in Ethiopia that the Egyptian Government perceived as
being detrimental to its interests. In addition, funding for projects from international donors such as the World Bank is not a neutral process; rather the funding policies and priorities “reflect an unstable balance of the professional preference of the experts who staff them with the national objectives of their member states” (Waterbury, 2002, 26). During the 1980s and 1990s, a number of Egyptians were appointed to the environmental and international law departments of the World Bank (Allan, 1999), suggesting that Egypt had the power to direct various development projects to its favour. Waterbury (2002) also mentions the importance of the presence of Egyptian water experts in key UN agencies, the International Monetary Fund, and the African Development Bank.

Bilateral treaties are a fourth way to exert influence because they exclude other riparians. Zeitoun and Warner (2006) say that bilateral agreements do not serve to resolve differences because they result in “pre-empting the rights of the non-signatory states” (447). Nowhere is this more evident than in the 1959 Agreement as discussed in a previous section.

Because the 1959 Agreement guarantees Egypt a certain allocation of water, Egypt has tightly held on to it and refuses to re-negotiate its terms to account for Ethiopia’s needs. The Agreement acknowledges Egypt’s historic rights to the Nile’s water and has become “…Egypt’s ‘redline’ for … negotiations in the basin” (Cascão, 2009, 245). The Agreement is Egypt’s starting point for negotiations in the Nile Basin (Cascão, 2009) and serves as a security blanket because it guarantees a certain quantity of water for the country.

Ethiopia’s Counter-Hegemonic Strategies

Cascão (2009) identifies two major trends in the Nile Basin that have led to changes in the political dynamics. The first is the increased economic and political stability in upstream riparians relative to the previous ten years. This has led to a desire to develop water resources.
The second trend is that upstream countries are now able to fund development projects without resorting to international donor agencies, such as the World Bank.

The increased political stability in Ethiopia has allowed it to concentrate its financial resources in areas other than defence. This includes its desire to develop its hydropower and irrigation needs in order to meet its development goals and provide for its population. A second consequence of increasing political stability is the increase in gross domestic product (GDP) and foreign direct investment (Table 2). Despite there being a strong asymmetry between Egypt and Ethiopia’s GDP and FDI, Ethiopia has been able to access external funding to develop its water resources, as discussed below.

Table 2: GDP and FDI for Egypt and Ethiopia in 2000 and 2009 (World Bank, 2010a; World Bank, 2010b).

<table>
<thead>
<tr>
<th>Country</th>
<th>2000 GDP (billion USD)</th>
<th>2009 GDP (billion USD)</th>
<th>2000 FDI (billion USD)</th>
<th>2009 FDI (billion USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>8.2</td>
<td>28.5</td>
<td>N/A</td>
<td>0.22</td>
</tr>
<tr>
<td>Egypt</td>
<td>99.8</td>
<td>188.3</td>
<td>1.1</td>
<td>6.1</td>
</tr>
</tbody>
</table>

Ethiopia’s ability to access external funding to unilaterally develop its water resources represents a significant change in the dynamics within the Nile Basin. This ability is essentially a way of challenging Egypt’s hegemony. Ethiopia has been able to use Chinese funding to build large-scale dams for hydropower on the Tekezze-Atbara river. Plans also exist to complete the Tana-Beles Irrigation Scheme in the Blue Nile basin, also with Chinese investment (Cascão, 2009). These unilateral development projects send political messages to downstream riparians that the status quo can no longer be accepted (Cascão, 2009). Cascão (2009) describes these unilateral projects with external funding as “the end of the enduring monopoly on Nile water by the downstream riparians and the current regime in the basin” (256). The implications of this unilateral development are that Ethiopia can jump start its water resource development without input from Egypt, and without conducting any studies on the environmental impact of that
development - namely the effect on the flow reaching Egypt – that would be required by multilateral development banks. In this way, Egypt’s interests are not taken into account.

Another strategy that Ethiopia has been engaging in to counter Egypt’s historic hegemony has been to use active diplomacy. In 1991, Ethiopia signed a pact with Sudan which stipulated the two countries would cooperate on the Blue Nile and Atbara Rivers (Cascão, 2008b). This bilateral cooperation has not yet occurred in practice, but if it were, it would represent a threat to Egypt’s flows (Cascão, 2008b). Ethiopia also entered into a bilateral agreement with Egypt in 1993 in order “to consolidate the ties of friendship, … enhance cooperation … and … establish a broad base of common interests” (GoE and GoE, 1993, 1). Egypt and Ethiopia agreed that neither country would engage in activities that would cause appreciable harm and that both countries would cooperate with each other on projects that could increase the Nile’s flow and reduce losses (GoE and GoE, 1993).

Ethiopia has also asserted its position in the Nile Basin by signing the Cooperative Framework Agreement. In so doing, it has aligned itself with the upstream countries and is sending a message that Egypt’s insistence on maintaining the status quo is unacceptable. When asked about how the CFA has changed the power dynamics in the Nile Basin, Mark Zeitoun responded that “Egypt didn’t threaten war when the CFA was signed; there was a little verbal activity but not a lot, so the hegemony is severely challenged.” Also, through this signing, Ethiopia has made its position on international water law known (Cascão, 2008). Since the CFA includes the principles of equitable and reasonable use and no significant harm, Ethiopia has asserted its stance. In addition to echoing the principles of international water law, the NRBC’s legal status presents an opportunity for Ethiopia to serve its interests by pursuing more counter-hegemonic strategies.
Since knowledge increases power, Ethiopia has been developing its expertise and knowledge of water resources in order to counter Egypt’s historic hegemony (Cascão, 2008b). Egypt has a long history of developing its water resource expertise in engineering and irrigation (Cascão, 2008b). It has been acquiring knowledge since the beginning of the colonial period and has managed to prevent the political struggles that came with changing political regimes from disrupting the flow of knowledge (Waterbury, 2002). Ethiopia on the other hand has not had the same opportunities and is “at the very beginning of a Nile learning curve” (Waterbury, 2002, 71).

The Cost of War

War is a very costly option when compared to the alternatives presented above. It is financially costly, results in the loss of human life, and results in the loss of trade relations between countries. For the purposes of this paper, the focus will be on the loss of trade relations between Egypt and Ethiopia, but first, it is important to point out that geographically, it is not possible for Egypt to wage a war on Ethiopia because the two countries do not share a border. In order for Egypt to invade Ethiopia, it would have to go through Sudan. While Sudan is currently tied to Egypt via the 1959 Agreement, it would certainly be in its interest to align itself with Ethiopia because of the potential benefits of having joint projects between the two countries (Waterbury, 2002). A second reason why it is very unlikely that Egypt would wage a war against Ethiopia in the name of water is that Ethiopian territory would have to be annexed over the long-term. Hamad and El-Battahani (2005) echo this argument when they say,

“Water wars do not make any sense strategically. You cannot increase your water resource by going to war with your neighbours unless you are willing to capture the entire watershed, depopulate it and not expect good relations” (37).

Egypt would also be very likely to lose its support from the U.S. if it were to go through with a war since the U.S. also supports Ethiopia as an ally in the Horn of Africa.
Trade relations between Egypt and Ethiopia are stable. In 2009, trade between the two countries amounted to $200 million and is expected to increase to $1 billion over the next three years (Al-Masry Al-Youm, 2010c). Also in 2009, Egyptian investments in Ethiopia amounted to approximately $1 billion, which included projects to manufacture electric cables, irrigation motors, and water pipes (Al-Masry Al-Youm, 2010c). In an interview with Egyptian television, Meles Zenawi, Ethiopia’s Prime Minister, stressed that there are opportunities to increase trade between the two countries, with Egypt producing goods such as pharmaceuticals and chemical products that Ethiopia needs, and Ethiopia producing livestock that Egypt could import more of. During the past year, shortages in meat supplies in the Egyptian market have made it prohibitively expensive to purchase, and in order to mitigate the price increases, the Government imported livestock from Ethiopia (Al-Masry Al-Youm, 2010d). Zenawi also mentions that there are incentives that Ethiopia provides to foreign investors, such as access to land, that are designed to encourage foreign investment in the country.

Water has been elevated on the security agenda and securing sufficient water resources for development and in order to meet a country’s demands is now viewed as a matter of national security (UPI, 2011). Egypt’s repeated threats since the 1970s are indicative of how it perceives water. However, to date, interstate conflict over water has not occurred between Egypt and Ethiopia.

Resource capture has long been a part of the history of water use in the Nile Basin. The 1959 Agreement is the most obvious form of resource capture because it gave Egypt and Sudan exclusive access to the Nile’s water before they had the potential to use the full allocation. In this way, it is a way of foreclosing on the rights of future use for other riparian countries in the Nile Basin (Salman, 2010). Since Egypt has been able to develop its water resources, it has created a
“hydropolitical reality” that the rest of the basin states have to deal with (Zeitoun and Warner, 2006, 445). While Zeitoun and Warner (2006) say that using military force can be an effective resource capture strategy, they also say that it is rarely used because there are other ways that a resource capture strategy could be implemented, including covert operations, coercion pressure, treaties, and international support.

Meles Zenawi sums up the relationship between Egypt and Ethiopia very eloquently. He says, “The relation between Egypt and Ethiopia is like a very old marriage with no possibility of divorce … it has its ups and downs but it is very solid.” For this reason, and because of the arguments presented above, military action cannot really be considered a barrier to Wichelns et al.’s (2003) solution.

**Other Obstacles to Wichelns et al.’s Framework**

In theory, Wichelns et al.’s (2003) framework is sound. However, from the analysis presented on the 1959 Agreement, it becomes evident that Egypt and Sudan are unwilling to renegotiate because any reduction to their allocations is viewed as unacceptable. Based solely on the fact that the 1959 Agreement is still valid, I am of the opinion that Wichelns et al.’s (2003) framework is not feasible. In addition, the framework calls for re-shaping Egypt and Sudan’s political economy (Interview, October 25, 2010). One interviewee said,

“It would be very easy to tell a farmer [in Egypt] to stop growing rice and start growing oranges, however, it needs commitment from the government … Egyptian farmers [have] changed crops throughout history … If you introduce a new crop to a farmer with sustainable markets they will change. The problem is that the Egyptian Government changes their crops every few years … without [a] stable and mature agriculture policy, there is no way they can change because people won’t trust them” (Interview, November 4, 2010).

In theory Egyptian farmers could give up growing rice, wheat, and sugar cane; however there are “a lot of national predicaments that make it difficult to say that they’ll depend on
regional markets for food” (Interview, October 21, 2010). Another point made in the same interview is that Egypt is a society of farmers, so the interviewee asks the question “What are you going to do with all the people that are involved in the agriculture sector? They can’t easily be absorbed into other sectors” (Interview, October 21, 2010). These points merit another master’s project.

Finally, one interviewee points out that “Comparative advantage is not something that one declares and the other accepts. There must be a process of negotiation” (Interview, November 24, 2010). This statement is disconcerting given how negotiations between Egypt, Sudan, and Ethiopia have played out over the past ten years. So, to propose another framework, especially one that would change each country’s political economy, to negotiate over is daunting.

**Opportunities**

Given that Wichelns et al.’s (2003) framework cannot be implemented for the reasons previously discussed, I must now determine whether there are any opportunities for Egypt, Sudan, and Ethiopia to cooperate on other fronts.

Waterbury (1997b) is of the opinion that “Only a preponderance of power at the disposal of one riparian or an environmental crisis facing all or most riparians will drive watercourse states toward formal cooperation. Third-party donors can try to facilitate cooperation when the context is ripe, but they cannot create the context” (285). He also makes the point that cooperation “can begin at home” (286), which is where I see that the most improvements can be made. He maintains that Egypt has not had the incentive to invest in technology which encourages efficient water use because it has legalized its acquired rights (Waterbury, 1997b); if it chooses to improve its water use efficiency, then it can no longer claim that it needs to use its
full allocation, which would undermine its “claims to specific amounts as water as well as the grounds for invoking the principle of appreciable harm” (Waterbury, 1997b).

There is much room for improvement in Egypt’s irrigation system which comprises 85% of Egypt’s total water use. One interviewee says that Egypt’s irrigation system is in need of efficiency improvements (Interview, November 12, 2010). He lists some of the problems: inefficient pumping stations, losses from canals, inadequate drainage, poor cost recovery for irrigation/drainage to support demand management and efficiency, and legal constraints on stakeholder involvement in operation and maintenance. Given these problems, there are a number of projects in Egypt targeted at improving irrigation efficiency, including the World Bank’s Integrated Irrigation Improvement and Management Project and the West Delta Water Conservation Project. There are also a number of government-led programs that aim to rehabilitate pumping stations and improve land drainage (Interview, November 12, 2010). Given Waterbury’s (1997b) statement about making improvements at home, this is a step in the right direction, but the question to then ask is “Will Egypt still hold on to the 1959 Agreement?” I am inclined to say yes, because it will need to provide for a population that is growing at 1.96% (CIA, 2011).

Ethiopia’s primary interest in the water of the Nile is to use it to generate hydroelectric power to decrease poverty and promote long-term economic development (Amer et al., 2005). It already has plans to construct small and large irrigation projects and dams within the basin (Amer et al., 2005). Given that these plans already exist and Ethiopia is acting on them, it would be in Egypt’s interest to be a part of this process. Ethiopia has been able to access bilateral funding from both China and Italy to fund its Gibe III dam on the Omo River in the south-western portion of the country and existing Ethiopian infrastructure on the Blue Nile is miniscule
relative to the its potential (International Rivers, n.d.; Sudan Tribune, 2011; Tafesse, 2001); of a total available 60 billion kWh per year of hydropower potential, most of which is located in the Nile Basin, Ethiopia has only harnessed 120 MW, or less than two percent of the total potential (Tafesse, 2001).

In May 2010, Ethiopia inaugurated the Tana-Beles dam on the Tana River, a tributary to the Blue Nile (Ethiopian-News, 2010). The power plant has the ability to produce 460 MW of electricity, and to irrigate 140,000 hectares of land (Ethiopian-News, 2010). Meles Zenawi has also said that there are additional plans to increase hydropower production (Ethiopian-News, 2010). Given the fact that Ethiopia has already constructed a dam on a tributary to the Blue Nile, and plans on building more, it would definitely be in Egypt’s interest to be a part of that process so that the projects are developed collaboratively as opposed to unilaterally. This project-by-project approach “means that the ‘shift in thinking’ can happen gradually. As soon as people recognize the benefits of ‘win-win’ projects, they are able to acknowledge the benefits of cooperation. No one has to be committed to any legal framework that may have unforeseen implications in the long term” (Amer et al., 2005, 11). Furthermore, there are benefits that would accrue to both Egypt and Sudan if Ethiopia were to only develop hydropower along the Blue Nile. Building hydroelectric dams in Ethiopia has been shown to increase the flow reaching Sudan and Egypt (Guariso and Whittington, 1987). It also has the added benefit of decreasing sedimentation downstream in both Sudan and Egypt (Amer et al., 2005) which would increase the storage capacity of Sudan and Egypt’s dams.

**South Sudan’s Independence**

South Sudan voted to secede from Sudan on January 9, 2011. Once it is recognized by the international community as an independent country on July 9, 2011, the complexity of
negotiations in the Nile Basin will increase because there is now an additional riparian whose interests need to be taken into account. One interviewee eloquently said, “It complicates an already complex system” (Interview, October 22, 2010). The Government of South Sudan has not made clear what its position is toward the Nile Basin. Sudan, prior to the split, was considered a significant oil producer (Guvele, 2003). With the oil being located in South Sudan and the processing infrastructure being located in North Sudan, it becomes vital for South Sudan to maintain good relations with North Sudan if it seeks to strengthen its oil economy. Therefore, from this viewpoint, it would not be beneficial for South Sudan to claim a stake in North Sudan’s Nile water allocation of 18.5 km$^3$. However, since South Sudan will be in control of the White Nile, and because of the potential to reduce evaporative losses in its swamps, “the stakes of Southern Sudan can be classified as very high, almost at par with Egypt, Ethiopia and the Sudan” (Salman, 2011, 158).

Despite the high stakes associated with South Sudan’s involvement in Nile water issues, Salman, a consultant on international water law and policy, attributes the Sudan People’s Liberation Movement/Army’s (SPLM/A) lack of involvement in Nile water management to two reasons. First, he cites the controversies associated with rights to the River’s waters, primarily referring to the 1959 Agreement (Salman, 2011). He says that it is likely that SPLM/A leaders “realized that Southern Sudan’s hard-won right to self-determination could be jeopardized if it became entangled with Nile politics” (Salman, 2011, 160). The second reason for the SPLM/A’s lack of involvement is that irrigation infrastructure in South Sudan is non-functional, and irrigation is heavily rain-dependent (Salman, 2011). So, even if irrigation infrastructure in South Sudan was to be completely rehabilitated, the assumption is that North Sudan’s allocation of water under the 1959 Agreement could accommodate the South’s needs (Salman, 2011).
The primary question that needs to be addressed is whether South Sudan will align itself with the downstream countries, i.e. Egypt and North Sudan, or with the upstream countries, i.e. Ethiopia and the remainder of the East African countries. The decision to do so will largely depend on whether South Sudan decides to continue with the construction of the Jonglei Canal (a part of the 1959 Agreement). Construction of the Jonglei Canal ceased in 1983 when the civil war broke out between North and South Sudan. The aim of this project was to construct a canal which would bypass the Sudd swamps and create water savings of approximately 5 km$^3$. In this manner, more water would be available for Egypt and Sudan to use. However, considering the controversy that this project has generated in terms of the negative impacts it would create for the people of South Sudan who depend on the Sudd swamps for their livelihoods, it is highly unlikely that South Sudan would approve the completion of the project and align itself with Egypt and North Sudan. Furthermore, the SPLM/A has made its stance on Jonglei very clear in saying that it is not a priority and that more studies need to be conducted on its environmental and social effects (Salman, 2011).

Water resource issues have yet to be resolved between North and South Sudan, but the South’s government has demanded an allocation of water under the 1959 Agreement that would come out of North Sudan’s allocation (Salman, 2011). North Sudan uses between 14-15 km$^3$ of its 18.5 km$^3$ allocation, and plans to use more to expand its agriculture to become the Arab world’s breadbasket (Salman, 2011). South Sudan’s claims to an allocation under the 1959 Agreement are needed to meet the demands of a growing agriculture sector, in addition to providing for a returning population of Southern Sudanese (Salman, 2011). Since North and South Sudan both have competing claims to water because of the extractive nature of planned
use, it will be difficult to resolve the discrepancy solely using North Sudan’s allocation of 18.5 km$^3$ (Salman, 2011).

Currently, South Sudan depends on diesel, supplied by trucks from Khartoum, to generate electricity, and its economy is wholly dependent on oil (Granit et al., 2010). In order to reduce this dependence and diversify its economy, it must resort to hydroelectric power (Granit et al., 2010). South Sudan has large potential for hydropower and studies have shown that the region could become a net exporter of hydropower (Granit et al., 2010). Developing this potential holds promise for an economy that needs to grow to provide for its people. If South Sudan is unable to receive an allocation under the 1959 Agreement, then it could align itself with the upstream countries. Aligning with the upstream countries and joining the East African Community (EAC) is likely to generate benefits for South Sudan, including trade, transport, and connections to electricity networks (Granit et al., 2010). However, since Nile Basin issues are not at the top of the agenda in post-referendum negotiations between North and South Sudan, it would be most beneficial for South Sudan not to announce its position on the issue. Rather, it should observe how the Nile Basin negotiations will play out between the existing players and decide whether it will align with the upstream or downstream countries at a later point in time (Granit et al., 2010). South Sudan will eventually need to decide which group to align with because of the vast potential for hydropower and the large amount of irrigable land that it could use for its development and economic growth.

The Implication of Mubarak’s Resignation on Nile Basin Negotiations

On February 11, 2011, Egyptian President Hosni Mubarak resigned from office after 18 days of protests. This event is promising on many fronts because it will hopefully create a more fair and inclusive atmosphere for political participation. Yet, I do not think that it will have any
effect on Egypt’s negotiating position vis-à-vis the Nile Basin. Egypt has maintained the same position since signing the 1959 Agreement and it is highly unlikely that its stance will change since its population will only grow and its water use will only increase as a result of that.

**Conclusion**

In looking at the political obstacles to cooperation in the Nile Basin, it becomes obvious that current circumstances prevent Wichelns et al.’s (2003) framework from being implemented. The 1959 Agreement is the primary source of contention and Egypt and Sudan’s response to Article 14b in the CFA indicate that they are not willing to change their positions. However, this is not to say that there are not any opportunities outside the framework that could promote cooperation between the three countries. Improving irrigation efficiency in Egypt, taking a project-by-project approach to cooperation, and signing the CFA are steps in the right direction.
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