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**NAVAL
POSTGRADUATE
SCHOOL**

MONTEREY, CALIFORNIA

THESIS

**CONTROL OVER THE NILE: IMPLICATIONS ACROSS
NATIONS**

by

David K. Chesire

June 2010

Thesis Advisor:
Second Reader:

Douglas A. Borer
Anna Simons

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CONTROL OVER THE NILE: IMPLICATIONS ACROSS NATIONS

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Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

Worldwide, shared water resources continue to attract attention owing to the nature of utilization, which often leads to either conflict or co-operation among and between countries. This study evaluates the issues of water scarcity among the Nile basin countries, the legitimacy of contested water agreements, and their impact on interstate relations.

Among the major findings of the study are; several agreements entered between Egypt, Sudan, and Britain as a colonial power in the region have served as sources of conflict over the use of the Nile waters, and Egypt continues to monopolize utilization of the Nile waters despite increasing efforts by other riparian states towards a cooperative framework for equitable utilization. Moreover, water scarcity in the region results from over-consumption of Nile water by Egypt and Sudan, rising populations, and environmental changes. Further, the international community, notably the African Union and the United Nations have not played significant roles in resolving water disputes in the Nile basin.

Recommendations include, that, alongside pursuing renegotiation of Nile water agreements, riparian states need to consider exploring alternative water sources, and address rising populations. In addition, the international community needs to take a more proactive role in resolving the Nile water dispute.

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LIST OF ACRONYMS AND ABBREVIATIONS

ADP	African Development Bank
AU	African Union
BCM	Billion Cubic Meters
CIDA	Canadian International Development Agency
COMESA	Common Market for Eastern and Southern Africa
DRC	Democratic Republic of Congo
EAC	East African Community
ELF	Eritrean Liberation Front
ENSAP	Eastern Nile Subsidiary Action Program
HYDROMET	Hydro-Meteorological Survey of the Equatorial Lakes
IMF	International Monetary Fund
NBI	Nile Basin Initiative
NELSAP	Nile Equatorial Lakes Subsidiary Action Plan
NRBAP	Nile River Basin Action Plan
OLF	Oromo Liberation Front
ONLF	Ogaden National Liberation Front
OPEC	Organization of Petroleum Exporting Countries
PJTC	Permanent Joint Technical Commission
PSC	Peace and Security Council
SPLA	Sudan People's Liberation Army
TECCONILE	Technical Cooperation Commission for the Promotion and Development of the Nile
UN	United Nations

UNAMID	African Union/United Nations Hybrid Operation in Darfur
UNDP	United Nations Development Program
UNEP	United Nations Environmental Program
UNMIS	United Nations Mission in Sudan
WMO	World Meteorological Organization

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I. INTRODUCTION

A. BACKGROUND

History is replete with cases of conflicts over water, from Old Testament times when the Israelites occupied the fertile valleys of the Jordan River basin, to the present. In the Cold War period, the Arab-Israeli war of 1967 occurred in part due to a dispute over control of the tributaries of the Jordan River, and in 1975, Iraq and Syria almost went to war over the flow of the Euphrates River. In 1990, Turkey caused a major crisis by blocking the flow of the Euphrates River. These conflicts over water have occurred in cases where two or more countries share the resource, and as water scarcity worsens due to environmental changes, economic development and rising populations, disputes over access to contested water resources will become increasingly acute due to how essential water is to human health and survival.¹ The Nile River is one such a case.

Since ancient times, the Nile River has provided nearly all of Egypt's fresh water for agriculture, industry and human consumption. All this water comes from nine upstream countries: The Democratic Republic of Congo, Rwanda, Burundi, Tanzania, Kenya, Uganda, Ethiopia, Eritrea, and the Sudan (Figure 1). Yet, Egypt's overwhelming economic and military might compared to the upstream countries' lack of capital, limited capacity to build dams and waterworks, and internal strife, allows it to wield enormous control over how they use the Nile's water resources.² The combination of ever-increasing populations, with a rise in the standards of living, economic development and climate change, promise to exacerbate the water scarcity in the region, and possibly shift the dynamics of power in the Nile basin.

While the Nile River remains the main source of water for the ten nations that make up the Nile basin, its water is barely adequate to satisfy the rising water demands of the region. The use of the Nile waters for development is in contention among these

¹ Michael T. Klare, *Resource Wars: The New Landscape of Global Conflict* (Henry Holt & Company: New York, 2001), 138–139.

² *Ibid.*, 148.

countries, due in large part to two agreements signed during the colonial era: the *1929 Nile Water Agreement* and the *1959 Agreement for the Full Utilization of the Nile*³ that gave Egypt and the Sudan extensive rights over the use of the river. With respect to their sovereign territory, the upstream riparian countries have renounced the 1929 agreement between Egypt and Great Britain. Further complicating matters, the 1959 bilateral agreement made between Egypt and the Sudan to replace the 1929 agreement is flawed by allocating the Nile Water to Egypt and Sudan exclusively.⁴ The upstream countries, including Kenya, Uganda and Tanzania, have expressed concern over these agreements, arguing that they have served to give Egypt unfair control over the use of the river's waters.

While the upstream countries are urging an equitable allocation in the use of the Nile waters, Egypt has declared access to the Nile waters a national security priority over which it is prepared to go to war. After signing a peace treaty with Israel in 1973, for instance, President Anwar Sadat declared, “The only matter that could take Egypt to war again is water.”⁵ Similarly, Former Egyptian Minister of State for Foreign Affairs (later United Nations secretary-general), Boutros Boutros-Ghali in 1980 commented, “The next war in our region [North-East Africa] will be over the waters of the Nile, not politics.”⁶ This thesis, therefore, will explore the issues of water scarcity to determine whether water is likely to lead to inter-state conflict in the region.

³ Roberts O. Collins, *The Waters of the Nile: Hydro politics and the Jonglei canal, 1900 – 1988* (Princeton: Markus Weiner Publishers, 1996), 156, 407.

⁴ Michael T. Klare, *Resource Wars: The New Landscape of Global Conflict* (Henry Holt & Company: New York, 2001), 152–153.

⁵ *Ibid.*, 153.

⁶ Stephen D. Kiser, “Water: The Hydraulic Parameter of Conflict in the Middle East & North Africa,” INSS occasional paper 35, (USAF Institute for National Security Studies USAF Academy: Colorado, Sep 2000), 45.



Figure 1. The Nile basin countries

From: <http://www.nilebasin.org> (accessed Aug 28, 2009).

B. SCOPE AND PURPOSE

As noted, the purpose of this thesis is to study control of the Nile River based on the existing contested colonial era agreements in order to determine whether water scarcity in the Nile River basin countries is likely to lead to inter-state conflict. The scope of the study is to evaluate the water scarcity in the riparian countries, and to examine the details of the contested water agreements vis-à-vis the provisions of Article 5 of the United Nations Convention on the non-navigational use of watercourses. Consequently, the study will provide recommendations to renegotiate the agreements, and suggest strategies to mitigate the effects of water scarcity.

C. RESEARCH QUESTIONS

In analyzing the likelihood of actual inter-state combat among the Nile basin countries, the thesis answers the following question: Under what conditions are water scarcity and contested water agreements likely to lead to interstate conflict? The nested questions are:

1. What is the extent of water scarcity among the Nile basin countries?
2. What is the legitimacy of the current Nile Water Agreements?
3. Moreover, what are the implications of the current state of affairs for the upstream riparian countries and Egypt?

D. RESEARCH DESIGN AND EVIDENCE

This study will employ qualitative research and process tracing to demonstrate the likelihood of interstate conflict among the Nile basin countries due to water scarcity and illegitimate agreements, and suggest possible ways that the upstream riparian states could break Egyptian hegemony over the Nile waters.

To establish the extent of water scarcity, demand- induced and supply-induced scarcity have to be evaluated to determine the amount of water available per person. According to Peter H. Gleick (1993) quoted in Michael T. Klare (2001), and Yohannes Okbazghi (2008), annual per capita water availability in selected states would

significantly drop due to population growth as shown by comparing 1990 amounts to amounts projected for 2025 (in cubic meters). In Burundi, the drop will be from 660 to 280, in Egypt 1070 to 620, Ethiopia 2360 to 900, Tanzania 2780 to 900, Kenya 590 to 190⁷, and Rwanda from 880 to 350.⁸

Moreover, according to World Resources Institute (1998) the anticipated population growth in selected countries in millions between 1998 and 2025 is: Egypt 65.7 to 95.8, Ethiopia 62.1 to 136.3, Kenya 29.0 to 50.2, the Sudan 28.5 to 46.9, and Uganda 21.3 to 45.0.⁹ Increasing the likelihood of violent conflict is the Nile's critical importance to Egypt “. . . [Egypt] gets no usable rain and has no other water but a few rapidly diminishing aquifers under the desert. Only 2% of Egypt is not desert, and water stress is rising every month. Egypt's 65 million people, climbing to 75 million by 2010, are entirely dependent on the river [Nile]. . . . Egypt would experience a 16 to 30 percent water deficit by the end of the century.”¹⁰ The above scenario illustrates how important the Nile waters are to Egypt and further demonstrates how population growth is likely to exert pressure on available water resources from the Nile.

In Chapter II, the concept of “The Rule of Equitable Utilization”¹¹ will be introduced to explain the structural scarcity of water created by Egyptian hegemony. Article 5 of the United Nations convention on the non-navigational uses of international watercourses provides a solution to the contradictory doctrines of absolute territorial sovereignty, which favors the upstream riparian states' “natural rights”, and the absolute integrity of the river, which favors the downstream riparian states' “acquired rights.”¹²

⁷ Yohannes Okbazghi, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Integrative Discourse* (State University of New York: Albany, 2008), 5.

⁸ Michael T. Klare, *Resource Wars: The New Landscape of Global Conflict* (Henry Holt & Company: New York, 2001), 147.

⁹ *Ibid.*, 157.

¹⁰ Marq De Villiers, *Water: The Fate of Our Most Precious Resource* (New York: Houghton Mifflin Company, 2000), 219–220.

¹¹ FAO-UN, “Sources of International water law” (Rome: Development Law Service, 1998), 29. <ftp://ftp.fao.org/docrep/fao/005/w9549e/w954900.pdf> (accessed Sep 03, 2009).

¹² *Ibid.*, 29–31.

These ‘acquired rights’ are what the upper riparian states object to since, “To accept Egypt’s historic rights [is] to admit to the primacy of Egypt’s future needs . . .”¹³

The current structural scarcity of water imposed by Egypt on the upper riparian states is evident in the 1959 Full Utilization of the Nile Waters Agreement between Egypt and the Sudan. Of the Nile’s annual average water yield of 84 milliards, the Sudan and Egypt allocated themselves 18.5 milliards and 55.5 milliards respectively.¹⁴ It was estimated that the balance of 10 milliards would be lost through seepage and evaporation along the course of the Nile’s flow. While disregarding the upper riparian states in the water allocation, Egypt and Sudan established a Technical Commission to undertake any negotiations concerning the Nile waters with any riparian state outside the boundaries of the two republics.

Further, the two countries agreed that their two governments would sanction any redistribution of water and the accepted amount to be allotted to any other riparian state would be deducted from the shares of the two republics in equal parts. While this agreement unified Egypt and the Sudan against other riparian states on the issue of Nile water control, it revealed Egypt’s dependence on the Nile with a special provision for water loans from the Sudan to enable it to proceed with its agricultural expansion.

An analysis of possible strategies to break Egyptian hegemony over the Nile waters will be presented in Chapter V. To address structural scarcity, possible recommendations for the upstream states include pressure on Egypt through regional and international organizations to renegotiate the agreements, such as bringing the case to the International Court of Justice for arbitration as a human rights issue or for compensation, as happened in the Danube river case between Hungary and Slovakia over the Gabčíkovo dam in 1997.¹⁵

As for strategies to address supply- and demand-induced scarcities, these include the need to address rising populations and reduce the poverty levels that contribute to

¹³ Roberts O. Collins, *The Waters of the Nile: Hydro politics and the Jonglei canal, 1900 – 1988* (Princeton: Markus Weiner Publishers, 1996), 157.

¹⁴ Ibid., 407.

¹⁵ FAO-UN, “Sources of International water law” (Rome: Development Law Service, 1998), 32. <http://ftp.fao.org/docrep/fao/005/w9549e/w954900.pdf> (accessed Sep 03, 2009).

destruction of water catchment areas as people look for sources of livelihood. Other possible strategies include the implementation of laws to regulate/prohibit water pollution and degradation, joint conservation policies by all riparian states, as well as address the development of means to any conflicts on shared resources from a human rights perspective.

E. LITERATURE REVIEW

1. Conceptual Literature

Historically, water has been used for development, as a source of conflict or for defense purposes. Nebuchadnessar of Babylon used a system of canals in the defense of the city whereas Sennacherib of Assyria destroyed Babylon in 689 BC as retribution for the death of his son by destroying the water supply canals to the city. In South Africa in 1990, a pro-apartheid council cut off water to the Wesselton Township of 50,000 blacks following their protest over miserable sanitation and living conditions.¹⁶ Some scholars argue that scarcity under certain conditions could lead to conflict while others say that scarcity will be resolved through compromise. According to A. T. Wolf (2002), water resource inequities between states could lead to conflicts and more poverty, and shortened lives, while the increase in the likelihood of international disputes, could create more refugees who cross borders and decrease the ability of a country to resist economic and military activities by neighboring countries.¹⁷

Klare (2002) and Kiser (2000) argue that water scarcity, together with other variables, such as rapid population growth, affluence, economic expansion, ill-defined water laws, and previously existing tensions, are especially likely to generate conflict between / among nations over a shared water resource.¹⁸ Kiser's analysis of the Jordan water basin reveals that the potential for conflict is partly due to a power differential

¹⁶ Wolf, A.T., *Conflict Prevention & Resolution in Water Systems*, (Massachusetts: Edward Elger Publishers, 2002).156.

¹⁷ *Ibid.*, 161–162.

¹⁸ Stephen D. Kiser, "Water: The Hydraulic parameter of Conflict in the Middle East & North Africa," INSS occasional paper 35, (USAF Institute for National Security Studies USAF Academy: Colorado, Sep 2000), 6.

between the upstream countries and the downstream countries where the downstream countries are more powerful than the upstream countries and perceive their access to water as jeopardized by the activities of the upstream countries.¹⁹ This camp of scholars who argue that water scarcity is likely to lead to conflict among co-riparian states do not consider the situation in which states are bound by water treaties which favor one group to the detriment of others.

In contrast, Aaron Wolf (2002) argues that water scarcity is likely to lead to compromise and cooperation rather than conflict. His view is that since water is so essential to life, hostile co-riparian countries have historically sought compromise rather than war over water.²⁰ Peter Gleick also argues that water scarcity acts as a catalyst for cooperation rather than conflict as it drives the need for joint management of shared water resources. Mostafa Dolatyar and Tim S Gray further argue that a single riparian state cannot monopolize or subject a water resource to its control. In fact, they assert that states have realized that cooperation over water sharing is not a zero-sum game, but could be a win-win situation.²¹ According to Wolf, most societies have sought to evolve subtle, often unwritten rules for collaboratively managing shared water resources for the common good.²² What these pro-cooperation or compromise scholars fail to address, however, is situations in which riparian states are faced with contentious treaties.

2. Empirical Literature

In attempting to find out who is right between the conflict and compromise theorists, this thesis will examine empirical data related to the typology presented in Table 1 to evaluate the claims of each side. The Nile River presents a case of high scarcity and low legitimacy of existing agreements. Arguably, water scarcity due to

¹⁹ Stephen D. Kiser, "Water: The Hydraulic parameter of Conflict in the Middle East & North Africa," INSS occasional paper 35, (USAF Institute for National Security Studies USAF Academy: Colorado, Sep 2000), 30.

²⁰ Aaron Wolf, "Development and Transboundary Waters: Obstacles and Opportunities." [http://www.dams.org]. December 2002.

²¹ Mostafa Dolatyar & Tim. S. Gray, *Water Politics in the Middle East: A context for conflict or cooperation?* (New York: St. Martin's Press, 2000), 117, 156.

²² Aaron Wolf, "Indigenous Approaches to Water Conflict Negotiations and Implications for International Waters." [http://www.transboundarywaters.orst.edu.documents/indigenous]. December 2002.

increasing populations, growing economic development, and worsening drought conditions, combined with pre-existing tensions that have at times led to proxy wars, point to an increasing potential for interstate conflict among the Nile basin countries. Moreover, the ill-defined international water laws that have sustained the controversy over the contested Nile water agreements make the possibility of conflict even more likely. Aside from the contested 1929 water agreement between Egypt and Britain, which practically speaking worked solely for the benefit of Egypt,²³ the 1959 Full utilization of the Nile Waters Agreement between the Sudan and Egypt is being overtaken by both countries indicating their need for greater amounts of water to continue economic development and feed their ever-increasing populations.²⁴ In the Nile basin case, this thesis will argue that inter-state conflict will result from supply-and demand-induced scarcities catalyzed by structurally induced scarcity as illustrated in Figure 2.

While non-integration via international organizations increases the probability of countries engaging in inter-state conflict due to a lack of sufficiently effective arbitration mechanisms, this factor may not play a significant role in the Nile basin since all the riparian countries subscribe to the United Nations and the African Union.

Again, the Nile control debate has not been a priority for Nile basin countries with internal conflicts. But as these countries emerge from political instability, their re-focus on economic development will bring to the fore the need for water as they embark on suspended hydroelectricity projects and irrigation schemes. Ethiopia and Uganda, for instance, are considering new agricultural developments and new hydroelectric projects respectively.²⁵ The political stability in these countries will also mean that they could initiate coalitions to counter Egypt's threats and intimidation.

²³ Roberts O. Collins, *The Waters of the Nile: Hydro politics and the Jonglei canal, 1900 – 1988* (Princeton: Markus Weiner Publishers, 1996), 156.

²⁴ Stephen D. Kiser, "Water: The Hydraulic parameter of Conflict in the Middle East & North Africa," INSS occasional paper 35, (USAF Institute for National Security Studies USAF Academy: Colorado, Sep 2000), 43.

²⁵ Michael T. Klare, *Resource Wars: The New Landscape of Global Conflict* (Henry Holt & Company: New York, 2001), 154–155.

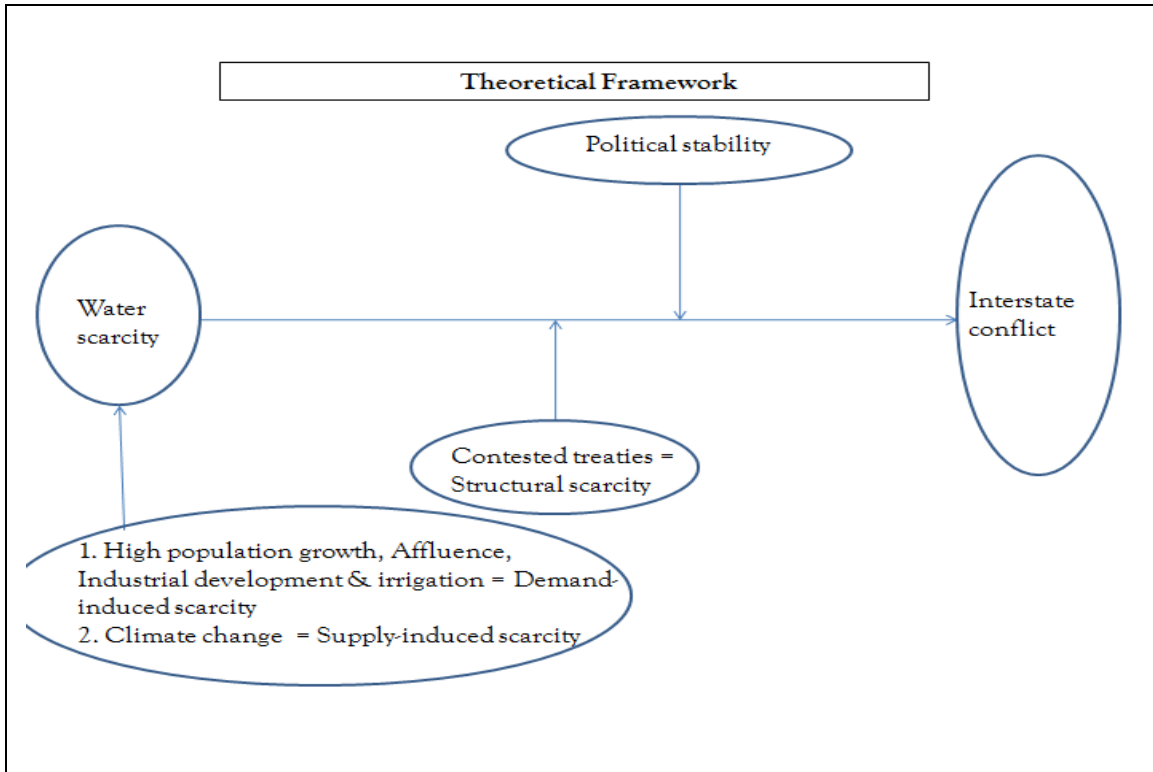


Figure 2. Theoretical Framework

		Legitimacy of agreements	
		High	Low
Water Scarcity	Low	1. Low probability of conflict	2. Medium probability of conflict
	High	3. Medium probability of conflict	4. High probability of conflict

Table 1. Model

F. PROBLEMS AND HYPOTHESIS

The 1959 Nile water agreement between Sudan and Egypt did not put an end to the dispute over the rights to the Nile waters, and strong tensions exist between the Nile

basin countries over any proposal for the utilization of Nile river water. In view of the development plans in each of the riparian countries, especially Ethiopia and Sudan, the scarcity of water is clear. The World Water Development Report outlines water scarcity in the region as follows, “Of 180 countries listed for water availability per person per year . . . , Kenya is ranked 154th, Uganda 115th and Ethiopia 137th. The upstream countries of Egypt and Sudan are ranked 156th and 129th, respectively.”²⁶ In addition, Egypt, as the country most in danger of losing access to the Nile waters by development projects in other countries, remains willing and able to intervene militarily to maintain the status quo.

The goal of this study is to assess the likelihood of conflict in the light of increasing water scarcity and existing illegitimate water agreements. One conclusion it will draw is that water scarcity is likely to lead to interstate conflict between the riparian countries. High population growth coupled with improved standards of living in the region will lead to the need for increased water withdrawal from the Nile. Other factors that will contribute to scarcity include regional drought, climate change, and accelerated economic development. The population growth rates per year in some of the countries are: Ethiopia 3.2 percent, Uganda 2.6 percent, Kenya and Sudan 2.2 percent. At the same time, estimates suggest Egypt’s population will grow by 30 million people between 1998 and 2025.²⁷

This thesis will also assess the likelihood of inter-state conflict if the upstream countries renounce the existing Nile water agreements. The usage of the Nile River has been associated with Horn of Africa politics for many decades. Kenya, Uganda and Tanzania have voiced concern over the legitimacy of the colonial-era agreements arguing that Egypt has been able to industrialize by using the Nile water to generate electricity and undertake irrigation while preventing usage by the upstream countries through

²⁶ United Nations World Water Development Report (March 16, 2009) <http://www.unesco.org/water/wwap/wwdr> (accessed July 17, 2009).

²⁷ Michael T. Klare, *Resource Wars: The New Landscape of Global Conflict* (Henry Holt & Company: New York, 2001), 156.

military threat and intimidation. Uganda in 2002, for instance, advanced a claim for an annual compensation of U.S. \$1.2 million from Egypt.²⁸

G. ORGANIZATION OF THE STUDY

The present chapter represents my introduction to the problem; it sets out the broad issues of control over the Nile, and brings into focus the likelihood of inter-state conflict due to water scarcity in the region and the contested water agreements. Chapter II highlights the nature of the area under study—geography and climate—in respective sections of the Nile River. It also analyzes the water contributions to the Nile by respective states against their allocation/needs. Chapter III presents the history of control over the Nile in the pre-colonial period, describes the colonial treaties on utilization of Nile water, and discusses their impact on inter-state relations. This chapter also looks at the existing international water laws and their controversies. Chapter IV explains Egyptian hegemony over the Nile and analyzes past attempts by the upstream states to jointly manage and equitably utilize the Nile waters. Chapter V addresses the present situation with a focus on the Nile Basin Initiative (NBI), which seeks to achieve management and utilization of the Nile waters. Chapter VI summarizes the key issues discussed in the study, and offers recommendations to mitigate water scarcity across the riparian states.

²⁸ Science in Africa, “The Nile: Water Conflicts” (May 2003), <http://www.scienceinfrica.co.za/2003/may/nile.htm> (accessed July 17, 2009).

II. DESCRIPTION OF AREA OF STUDY

A. INTRODUCTION

The Nile basin, an area extending from the “Greater Horn of Africa” to the Great Lakes region, is ecologically vulnerable to recurrent drought and famine. It is also an area prone to internal and inter-state conflicts. Although most countries in the region have historically viewed water as a low policy priority, the rising demand for freshwater coupled with its shrinking supply is increasingly pushing the importance of water resources to the top of national policy priorities.²⁹

Demand-induced scarcity, caused by either population growth or an increase in per capita consumption, is worsening. Population growth, for example, requires not only an increase in the supply of potable water, but also accelerated agricultural and industrial development, in proportion to the rising demands of the expanding population. Estimates point to the fact that per capita water availability (in cubic meters) in the Nile basin countries will significantly fall between 1990 and 2025 due to rising populations: Egypt from 1,070 to 620, Ethiopia from 2,360 to 900, Tanzania from 2,780 to 900, Kenya from 590 to 190, Rwanda from 880 to 350, and Burundi from 660 to 280³⁰. Moreover, apart from supply-induced and demand-induced scarcities, the geopolitical description of Nile water resources by Egypt has created structural scarcity thanks to its use of relative superior military capability to deter other riparian states from utilizing Nile waters, as well as influencing the allocation of water in its favor. Thomas Homer-Dixon and Jessica Blitt aptly describe these scarcities using a “pie” metaphor.

Supply-induced scarcity, arising from a reduction in the quality and quantity of the resource, shrinks the size of the resource pie as a whole; demand-induced scarcity arising, for example, from growth in the number of people competing for the resource pie, causes the average size of each

²⁹ Okbazaghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile basin: The Search for an Integrative Discourse*, (Albany: State University of New York Press, 2008), 5.

³⁰ *Ibid.*, 5–6.

person's slice of the pie to shrink; and structural scarcity, arising from unequal distribution puts large slices in the hands of a few, thus diminishing the amount available to the rest.³¹

The Great Lakes region and Ethiopian highlands are sources of the White Nile and Blue Nile tributaries respectively, which together form the Nile River. The water of the Blue Nile originates from Ethiopia and Eritrea and makes up approximately 85 percent of the Nile water. The water of the White Nile, on the other hand, originates from the Great Lakes countries of the Democratic Republic of Congo (DRC), Rwanda, Burundi, Tanzania, Uganda, and Kenya, and makes up approximately 15 percent of the total volume of the Nile waters. Notwithstanding these contributions, Sudan and Egypt, by a bilateral agreement signed in 1959, exclusively utilize the Nile water. The existing Nile water treaties do not allocate any water to the upstream states in spite of the fact that these countries are the sources and major contributors to the Nile's waters. Figure 3 depicts this interaction.

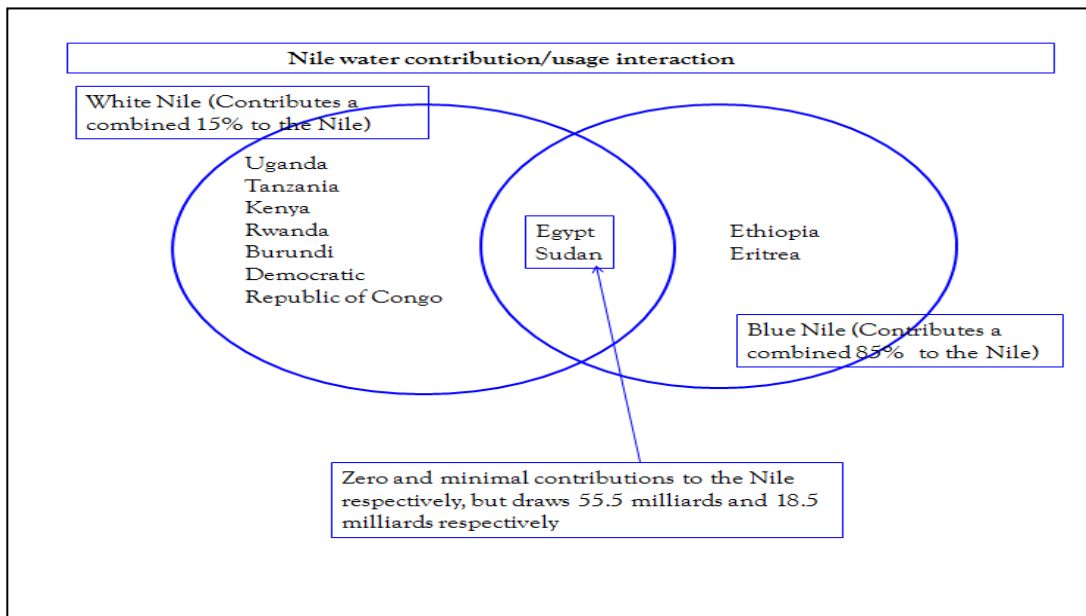


Figure 3. Nile water contribution/use interaction

³¹ Thomas Homer-Dixon and Jessica Blitt, *Ecoviolence: Links Among Environment, Population, and Security* (New York: Rowman & Littlefield Publishers, 1998), 6.

B. WATER SITUATION IN THE REGION

In 1996, United Nations Environmental Program (UNEP) assessed that, in the future, disputes over water supplies would be a cause of conflict among nations, especially in the Middle East and North Africa, where the available water per capita averages 1247 cubic meters per year, compared to 18742 cubic meters in North America and 23103 cubic meters in Latin America. Most of the Nile basin countries are known for their arid and semi-arid conditions—Egypt (98 per cent desert), Ethiopia, Sudan, and Kenya, receiving between 200 and 800 mm/year of variable rainfall. Precipitation in the region varies from zero in the Horn of Africa to more than 4000 mm/year in the Sudan’s Western Equatorial region.³² To illustrate the future water situation in Africa, Figure 4 illustrates UNEP’s prediction of water stress. According to UNEP, Egypt, Ethiopia, Kenya, Rwanda, and Burundi will experience water scarcity by 2025, while Uganda, Tanzania, and Eritrea will be under water stress.

Apart from low precipitation in the region, the mean annual flow of the Nile waters is steadily decreasing: Between 1870 and 1899 – 110 billion cubic meters (bcm), between 1900 and 1959 – 84 bcm, between 1977 and 1978 – 72 bcm. Although the 1959 Sudan-Egypt bilateral agreement on the full utilization of the Nile based its water allocation on the 1959 mean annual flow, the flow has significantly diminished since then.³³ Even in 1959, Egypt had to loan 1.5 milliards of water from the Sudan for it to proceed with agricultural expansion.³⁴ The Nile basin countries’ water budget is rapidly decreasing with the rise in population, with Egypt worst hit. In 1960, with a population of 30 million, the per capita annual water availability was 2100 cubic meters, dropping to 792 cubic meters in 2003 with a population that had risen to 72 million. The projection is that by 2025, the per capita annual water available will be 337 cubic meters for a

³² Diana Rizzolio Karyabwite, “Water Scarcity in the Nile River Valley” (UNEP/DEWA/GRID – Geneva, 2000), 6–7.

³³ Okbazaghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile basin: The Search for an Integrative Discourse*, (Albany: State University of New York Press, 2008), 42.

³⁴ Roberts O. Collins, *The Waters of the Nile: Hydro politics and the Jonglei canal, 1900 – 1988* (Princeton: Markus Weiner Publishers, 1996), 412–413.

population of 90 million.³⁵ The United Nations Development Program (UNDP) definition of water scarcity is a situation of less than 1000 cubic meters of water per capita per year, and water stress is a situation in which the per capita water availability per year is between 1000 and 1700 cubic meters.

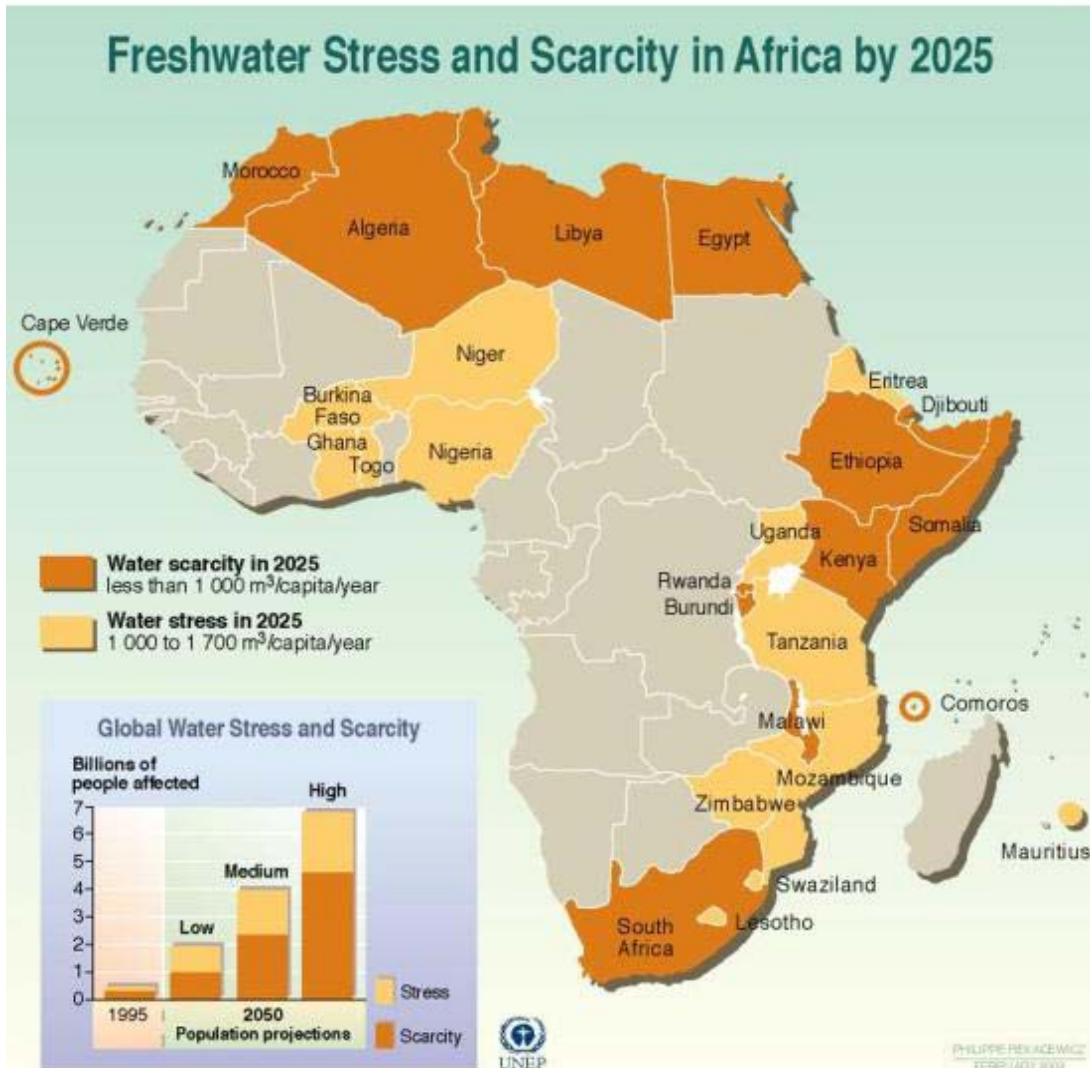


Figure 4. Water stress and scarcity in the Nile basin

From <http://www.grid.unep.ch/activities/sustainable/nile/nilereport.pdf> (accessed Sep 21, 2009).

³⁵ Okbazaghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile basin: The Search for an Integrative Discourse*, (Albany: State University of New York Press, 2008), 41.

A similar situation afflicts the other Nile basin riparian states, which have faced worsening drought conditions and famine. For instance, between 1965 and 2006 Ethiopia has experienced six major droughts with the worst droughts being those of 1983–1984 and the 2002–2003. The cycles of drought and famine have made Ethiopia dependent on international food aid, yet it is the source of 85 per cent of the Nile’s water. In Kenya, due to irregular rainfall, food production—especially of the staple grain, maize—has been falling. Kenya saw a 22 per cent decrease in 2000 from the 1998 harvest and a 36 per cent decrease from the 1999 harvest—leading to imports and appeals for international food aid.³⁶

Against the emergence of water stress and scarcity in the Nile basin countries, Egypt’s and Sudan’s attempt to increase the White Nile flow by about 2.5 billion cubic meters through construction of the Jonglei Canal to drain the Sudd swamp³⁷ in southern Sudan is unlikely to succeed. The Jonglei Canal Project was conceived by Egypt and Sudan as part of the 1959 bilateral Nile Water Utilization agreement with the aim of increasing flow, producing hydroelectric power, mitigating flood effects, and permitting controlled irrigation.³⁸ Although the project started in 1978, the Sudanese People’s Liberation Army (SPLA), acting on southern Sudanese objections to the project, attacked the construction workers in 1983, bringing the project to a halt. Southern Sudanese, led by the late Colonel John Garang, had argued that draining the swamp would accelerate the southward expansion of the Sahara Desert, and destabilize the livelihoods of the indigenous communities by altering the ecological balance of the area. According to the International Crisis Group, “Multiple ethnic communities migrate seasonally [to the Sudd swamp to access water and grazing areas] to sustain cattle and preserve their pastoralist

³⁶ Okbazaghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile basin: The Search for an Integrative Discourse*, (Albany: State University of New York Press, 2008), 103.

³⁷ Marq De Villiers, *Water: The Fate of Our Most Precious Resource* (New York: Houghton Mifflin Company, 2000), 220.

³⁸ Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace, 1999), 72.

way of life.”³⁹ The Southern Sudanese also feared that the Muslim North and Egypt intended to displace the nomadic communities of the south and instead bring-in Muslim Egyptians to settle in the Sudd region.⁴⁰

The SPLA’s concerns are now shared by the international community, not least the upper riparian states, which fear that draining the swamp would result in changes in weather and rainfall patterns in the region, and flooding in the Sobat Valley in Ethiopia. Resumption of the project is contingent upon the territorial integrity of Sudan and, even more importantly, the goodwill of southern Sudanese because what helped heighten Southern Sudanese resentment of the project was that the “. . . Sudanese government in Khartoum, long accustomed to treating the south as a virtual colony, paid no attention to the fears and concerns of the southerners, and it proceeded to construct the project with the help of the French Consortium.”⁴¹ Other riparian states are also unlikely to agree to the canal’s construction due to the likely environmental effects to the region.

C. WHAT ARE THE PROSPECTS IN INTERSTATE RELATIONS?

As the contentiousness over development of the Jonglei Canal suggests, each of the riparian countries, especially Ethiopia and Sudan, are already experiencing water scarcity. In 1997, the World Bank assessed that:

the waters of the Nile probably constitute Ethiopia’s greatest natural asset for development. . . . The development of the River Nile in Ethiopia has the potential to contribute significantly to poverty reduction, meet domestic power and food demands, and become a cornerstone of a future Ethiopian export strategy.⁴²

³⁹ International Crisis Group, “Jonglei’s Tribal Conflicts: Countering Insecurity in South Sudan” (Africa Report No 154, December 23, 2009), 1 <http://www.crisisgroup.org> (accessed Feb 09, 2010).

⁴⁰ Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace, 1999), 73.

⁴¹ *Ibid.*, 73–74.

⁴² Haggai Erlich, *The Cross and the River: Ethiopia, Egypt, and the Nile* (London: Lynne Rienner Publishers, 2002), 7.

The World Bank's assessment reflects the importance with which Ethiopia, and most other upstream states, view the Nile waters, and begs the question whether any state is willing to give up what it should be *its* Nile waters to Egypt in the face of poverty, hunger, and underdevelopment.

The ratification of Articles 5 and 7 of the United Nations Convention on the Non-Navigational Uses of International Watercourses, and the development of a mechanism to enforce it may lead to a compromise situation. The Articles describe countries' rights to equitable utilization, duty to cooperate in watercourse protection and development, appropriate measures to prevent significant harm to other nations along the watercourse, and direct that, if harm is caused, there be consultation with regard to compensation. In effect, the convention offers a bridge between the divergent water law principles of absolute territorial integrity, or the principle of prior appropriation ("acquired rights") which favors the downstream states, and the principle of absolute territorial sovereignty ("natural rights") which favors the upstream states, by offering limited territorial integrity and limited territorial sovereignty to address the common good.⁴³

On the one hand, the principle of absolute territorial integrity favors the downstream states because it allows them to accuse or censure the upstream states for any measures they take whose effect is disadvantageous to the downstream states' territories. The principle of absolute territorial sovereignty, on the other hand, is advantageous to the upstream states since it holds water bodies as integral parts of a state's territory. The "prior appropriation" principle, although favoring neither the upstream states nor the downstream states, protects the rights of use for any state which first utilized the water. In the case of the Nile basin countries, Egypt and Sudan defend their position with regard to the utilization of the Nile water citing the principles of "prior appropriation" and absolute territorial integrity. Although the upstream states could base their rights to Nile water use

⁴³ FAO-UN, "Sources of International water law" (Rome: Development Law Service, 1998), 29 – 31. <ftp://ftp.fao.org/docrep/fao/005/w9549e/w954900.pdf> (accessed Sep 03, 2009).

on the principle of absolute territorial sovereignty, they have chosen to pursue cooperative negotiation for equitable utilization.⁴⁴

D. HYDROLOGIC DATA

Up till the 20th century, the periodic rise of Nile water levels was not well understood. The only means of data collection was ancient Egyptian nilometres, described as “gauges formed by graduated scales cut in natural rocks or in stone walls”⁴⁵ on the banks of the Nile. In 1993, the Technical Cooperation Commission for the Promotion and Development of the Nile (TECCONILE) was established with the support of the Canadian International Development Agency (CIDA) to promote inter-state cooperation. It also sought to address the scarcity of hydrological data on the Nile, as well as updating what there was and developing an Atlas of the Nile basin, which would focus on water resources and their use.

Negotiations between TECCONILE and the World Meteorological Organization (WMO) for a Nile Hydrological Cycle Observation System for the Nile basin led to the availability of the data we have today, which consists of information about climate, precipitation, solar radiation, soil properties, vegetation, and socio-economic factors such as population, agriculture, industries, and land use. Most Nile basin countries consider the TECCONILE-initiated data to be credible compared to data generated in the past by Egypt through readings done at the Aswan High Dam, and at Owen Falls Dam, Uganda. Since the 1929 Nile treaty, Egyptian engineers and hydrologists have remained stationed at Jinja hydroelectric plant with the principal aim of ensuring that Uganda’s use of Lake Victoria’s waters is non- consumptive.⁴⁶

⁴⁴ Peter Kagwanja, “Calming the Waters: The East African Community and Conflict over the Nile Resources” (Pretoria: Journal of Eastern African Studies, 1; 3, 321 – 337, Nov 2007), 331 <http://dx.doi.org> (accessed Nov 12, 2009).

⁴⁵ FAO-UN, “Sources of International water law” (Rome: Development Law Service, 1998), 26 <ftp://ftp.fao.org/docrep/fao/005/w9549e/w954900.pdf> (accessed Sep 03, 2009).

⁴⁶ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile basin: The Search for an Integrative Discourse*, (Albany: State University of New York Press, 2008), 121.

E. IMPORTANCE OF THE NILE WATER AND INDIVIDUAL COUNTRY CONTRIBUTION VIS-À-VIS NEEDS

1. Egypt

Agriculture consumes approximately 80 per cent of the water in developing countries, most of it through irrigation. Presently, Egypt has a cultivable land area of 3.4 million hectares and plans to increase this to 4.6 million hectares by 2017 with the completion of two irrigation projects—the Southern Valley and the North Sinai Development projects.⁴⁷ The Nile River enables Egypt to irrigate 99.8 per cent of its cropland, assuring self-sufficiency in agricultural commodities less cereals, oil, and sugar.⁴⁸ Apart from agricultural production, the Nile supports Egyptian transportation, industry, energy production, and employment, with over 40 percent of its work force engaged in farming.⁴⁹ Egypt’s total dependence on the Nile is evident by the congregation of its entire population along the Nile Valley and in the Delta area, which represents only four percent of the country’s land area.

In defense of its claim of historical rights over the Nile’s water, Egypt not only maintains the sanctity of the colonial treaties and continues to be reluctant to accept the upstream states’ water allocation claims, but also continues to engage in desert-land reclamation policy for irrigation. Egypt’s reclamation policy is likely to complicate future allocation negotiations since it entrenches Egypt’s prior use rights. Moreover, the desert irrigation plan, “would increase Egyptian dependency on the Nile and intensify Egypt’s commitment to exploit its ‘historic rights’ to the fullest.”⁵⁰ Worth bearing in mind again, is that 97 percent of Egypt’s water resources originate from upstream countries, a

⁴⁷ Okbazaghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile basin: The Search for an Integrative Discourse*, (Albany: State University of New York Press, 2008), 38.

⁴⁸ Aquasat Survey, “Irrigation in Africa in figures – Egypt” (2005), 2 <http://www.fao.org/nr/water/aquastat/countries/egypt/egypt.pdf> (accessed Oct 18, 2009).

⁴⁹ “Ethiopia and Egypt dispute the Nile” (BBC News, Feb 24, 2005), 1 and 2, <http://news.bbc.co.uk/go/pr-2/hi/science/nature/4274757.stm> (accessed Oct 15, 2009).

⁵⁰ Haggai Erlich, *The Cross and the River: Ethiopia, Egypt, and the Nile* (London: Lynne Rienner Publishers, 2002), 214.

situation which also holds true for Sudan, with 77 percent of Sudan’s water resources originating outside its borders,⁵¹ as depicted in Tables 2–4.

Table 2. Contribution and consumption of Nile water by states

Country or region	Water contribution	Water use
Egypt	0	55.5 billion cubic meters
Sudan	Minimal	18.5 billion cubic meters
Ethiopian sources		
Blue Nile	59%	
Sobat	14%	
Atbara	13%	1.0 billion cubic meters
Great Lakes States	14%	1.7 billion cubic meters

Source: Country paper, VIIth Nile 2002 conference.

Table 3. Hydropower potential in the Nile Countries in megawatts (MW)

Country	Existing hydropower	Potential hydropower
Burundi	40 MW	120 MW
DRC	21 MW	2600 MW
Egypt	2845 MW
Ethiopia	1000 MW	6000 MW
Eritrea
Kenya	2 MW	355 MW
Rwanda	34 MW	121 MW
Sudan	238 MW	1380 MW
Tanzania	377 MW	4500 MW
Uganda	180 MW	1532 MW

Source: Country paper, VIIIth Nile conference 2002 Addis Ababa, Ethiopia.

⁵¹ Debay Tadesse, “The Nile: Is it a curse or a blessing” (Institute for Security Studies paper 174, Nov 2008), 2.

Table 4. Irrigation potentiality in the Nile basin countries

Country	Irrigation potential (ha)	Area already under irrigation (ha)
Burundi	80.00	0
Egypt	4 420.000	3 078.000
Eritrea	150.000	15 124
Ethiopia	2 220.000	23 160
Kenya	180.000	6.000
Rwanda	150.000	2.000
Sudan	2 750.000	1 935200
Tanzania	30.000	10.000
Uganda	202.000	9120
DRC	10.000	0
Total	10 192.000	5 078604

Source: Irrigation potential in Africa, FAO 1997.

2. Sudan

Sudan's Gezira irrigation scheme, which accounts for 60 per cent of the country's foreign earnings, draws its water supply from the Nile. The scheme's inception was motivated by the British colonial desire to enable Sudan to sustain its colonial administration through the development of an exportable commodity—cotton, which supplied British textile mills and generated revenue for Sudan. Sudan's arable potential is estimated at 84 million hectares, of which 60.5 million are in the Nile basin. Hydroelectric power for Sudan is drawn from the Nile at Roseires dam.

Sudan receives water from the Blue and White Nile, and Atbara river, and serves as a transitional storage for Egypt. However, in the South, the Sudd swamp retains about 14 billion cubic meters of the White Nile flow, which disappears via evaporation and seepage. Sudan's use of the Nile River is the second heaviest after Egypt, amounting to 16.12 billion cubic meters of Nile waters, which irrigate approximately 2.95 million acres

of cultivable agricultural land annually.⁵² Holding onto its “prior appropriation” rights, and water allocation as per the 1959 bilateral treaty with Egypt, Sudan intends to expand its irrigation projects while opposed to any water allocation claims by the upstream states.

3. Kenya, Uganda, and Tanzania

The British regarded the East African countries of Kenya, Uganda, and Tanzania as “century storage” for Egypt and Sudan, owing to their proximity to the equator, which ensured them a stable annual rainfall as well as lower evaporation rates. Rain-fed agriculture and pastoralism in the region protected the Rift Valley lakes from human encroachment for irrigation purposes, although local indigenous communities accessed the rivers and lakes for fisheries and transportation—activities that did not threaten the natural flow of the Nile.

Uganda utilizes the Nile waters for hydroelectric power at Owen Falls based on a colonial-era accord of 1953, under which Egyptian technicians continue to control the flow of the White Nile at the dam. All three East African countries also practice lakeside agriculture around Lake Victoria. Moreover, fishing is an important economic activity in Lake Victoria with the Nile Perch alone earning over \$250 million annually for the three East African states in foreign exchange. According to Okbazghi Yohannes, “. . . 350,000 directly employed and 1.2 million indirectly employed Ugandan fishermen produce an average of 220,000 tonnes of fish annually. Likewise, Kenyan and Tanzanian fishermen together produce approximately 350,000 tonnes of fish per year.”⁵³

Since all three East African countries depend on agricultural commodity exports for foreign exchange, they are likely to look to Lake Victoria to provide water for irrigation and hydropower generation as their populations increase and ecological degradation worsens. This increasing demand for water for irrigation and power is

⁵² Debay Tadesse, “The Nile: Is it a curse or a blessing” (Institute for Security Studies paper 174, Nov 2008), 14.

⁵³ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile basin: The Search for an Integrative Discourse*, (Albany: State University of New York Press, 2008), 127.

occurring as Uganda contributes over 50 percent of Lake Victoria's water, and Kenya and Tanzania contribute 30 and 18 percent of the Lake's waters, respectively, to downstream countries' benefit.⁵⁴

4. Ethiopia and Eritrea

Ethiopia is hydrologically the wealthiest of the Nile basin countries, contributing 85 percent of the Nile's waters, yet it only utilizes one percent of its water resources for irrigation and hydropower generation. Ethiopia's ambition is to utilize the Nile waters for domestic food production and transform the country into a major producer and exporter of hydroelectric power. Ethiopia has about 5.7 million hectares of potentially irrigable land and an untapped electricity generation capacity of 60 billion kWh per annum. A Growing food deficit, rising population, and worsening drought conditions, necessitate Ethiopia's development of about 2.4 million hectares of its irrigable land and 103,680 GWh per year of hydroelectric power potential in the Nile basin.⁵⁵

Eritrea's annual water contribution to the Nile system through the Gash, Barka, and Setit rivers is estimated at 1.7 billion cubic meters. Eritrea has a cultivable area of about 1.6 million hectares, of which 187,000 hectares may be put under irrigation, and its rivers have a hydropower generation potential of about 16,890 Gwh.⁵⁶ If Eritrea decides to harness its hydropower potential in the Gash River, this could trigger tension with the Sudan, which depends on the Gash river flow for irrigation in its eastern region. At the same time, Eritrea's move would breach an existing treaty signed between Italy (on behalf of Eritrea) and Britain (on behalf of the Sudan) in 1925, which stipulates that Eritrea not undertake any works on the Gash river that would obstruct its flow. In return, Sudan is supposed to share the benefits from the cultivation in the Gash Delta by paying Eritrea 20 percent of the sale of crops. At some future point, Eritrea could decide to

⁵⁴ Okbazaghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile basin: The Search for an Integrative Discourse*, (Albany: State University of New York Press, 2008), 103.

⁵⁵ Debay Tadesse, "The Nile: Is it a curse or a blessing" (Institute for Security Studies paper 174, Nov 2008), 4.

⁵⁶ Okbazaghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile basin: The Search for an Integrative Discourse*, (Albany: State University of New York Press, 2008), 94.

exploit the rivers in its territory due to periodic droughts and erratic rainfall that have led to persistent crop failures, livestock losses, water shortages, and a dependence on foreign food aid. The location of Eritrea in the Sahel rainfall zone leaves 90 percent of the country with an annual rainfall of about 450 mm, and high evaporation rates of between 1700 and 2000 mm, occasioning water scarcity. The worsening food situation in Eritrea, brought about by the water situation, limits Eritrea's food productivity to between 50 and 60 percent of its food requirements even in years with good harvests. The food deficit situation has led the Eritrean government to construct microdams and diversion canals for irrigation in the Setit-Gash-Barka triangle—a move that could affect Sudanese-Eritrean relations.

5. The Democratic Republic of Congo, Rwanda, and Burundi

The significance of the Democratic Republic of Congo (DRC) in the Nile Basin is its contribution of water thanks to precipitation in its tropical rainforest, and via the Semleki River which flows into Lake Albert – shared with Uganda – and provides up to 5 bcm of water into the Nile annually.⁵⁷ Fishing in Lake Albert is an economic activity that provides food for the local community, and income for education, consumer goods, healthcare, and taxes.

Rwanda and Burundi contribute about 8 bcm annual water flow into Lake Victoria through the Kagera River. The Kagera supports cultivation in both Rwanda and Burundi. The tropical rainforests in the Congo River basin are important for sustaining the regeneration of the Nile, and the pollution and contamination from these uppermost Nile states could result into the degradation of water quality downstream.⁵⁸

F. CONCLUSION

The Nile basin and its water resources are central to the survival of the riparian states, as they protect themselves against the vagaries of nature, enhance their food

⁵⁷ Okbazaghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile basin: The Search for an Integrative Discourse*, (Albany: State University of New York Press, 2008), 145.

⁵⁸ *Ibid.*, 147.

security, develop cash-generating crops, and develop energy for economic development. As the upper riparian states pursue the utilization of the Nile against the “acquired appropriative rights” of the downstream states, the likely result is overexploitation of the water resources, degradation of the water quality, and conflict following the depletion of natural resources. The uppermost riparian states of DRC, Rwanda, and Burundi, though not directly interested in the Nile, could pose a danger to the conservation and protection of the sources of the Nile, if not incorporated in a Nile water resource-sharing regime.

The potential for Nile basin conflict or cooperation revolves around, first, the gap between water availability and the demand by individual countries for development projects. Egypt’s growing need for more water to expand its irrigation projects, Sudan’s plan to increase its investment in irrigation and hydropower—with a water demand beyond its annual allocation under the 1959 treaty—and the upstream states’ water needs for irrigation as well mean that, “. . . the annual water deficit in the Nile basin would probably exceed 50 billion cubic meters.”⁵⁹ Second, the downstream countries depend heavily on the Nile water, yet their contribution to the flow is minimal. This brings to the fore the disparity between the contribution to and utilization of water among the riparian states. For instance, Egypt contributes nothing, but it depends on the Nile for 97 percent of its water supply, and actually consumes more than 80 percent of the Nile’s water. In contrast, Ethiopia contributes 85 percent of the Nile flow and uses none of it for irrigation. Nor do other upstream states.⁶⁰ The dilemma generated by these characteristics puts national sovereignty against international water law, since countries in a shared water basin cannot withdraw water, dam a river, or emit pollution, without affecting other riparian countries. Similarly, it is only through coordinated action that water development can be undertaken efficiently in a shared basin.

⁵⁹ Xun Wu and Dale Whittington, “Incentive Compatibility and Conflict Resolution in International River Basins: A Case Study of the Nile Basin” (Water Resource Research, Feb 2006), 2. <http://www.efdinitiative.org/research/publications/publications-repository/incentive> (accessed Oct 30, 2009).

⁶⁰ *Ibid.*, 3.

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III. HISTORY OF CONTROL OVER THE NILE, THE WATER AGREEMENTS AND THEIR EFFECT ON INTERSTATE RELATIONS

A. THE NILE CONTROL DURING THE PRE-COLONIAL PERIOD

In the 4th century B.C., the Greek historian Herodotus described “Egypt as a gift of the Nile”⁶¹, an observation that has remained true to this day since Egypt’s prosperity and existence is dependent on the Nile flow. Because of this dependence, Egypt embarked on a strategy to develop hegemony over the Nile millennia ago. As ancient Egyptians realized, the Emperor of Ethiopia could shut off the life-giving waters. Egypt’s strategy thus entailed efforts to prevent upstream economic development along the banks of the Nile that could either divert the flow of the water, or decrease it. Egypt subsequently sought to expand its influence over the sources of the Nile.

In the period 1314–1344, Egyptian persecution of the Copts of Egypt and destruction of churches attracted a response from the monarch of Ethiopia who threatened to carry out reprisals against Muslims in his territory, and starve the people of Egypt by diverting Nile waters. Between 1769 and 1849, Egypt invaded the Sudan in an effort to control the entire Nile. This conquest was a stepping-stone to the occupation of the western frontiers of Ethiopia from 1834 to 1875 and subsequent invasion of Ethiopia. Egypt’s motive was to, “. . . make the Nile an Egyptian river by annexing to Egypt all the geographical areas of the basin,”⁶² based on the analysis that Ethiopia’s disciplined administration and army, and its friendship with European powers, could be a danger for Egypt. It became imperative for Egypt, “either to take over Ethiopia and Islamize it, or retain it in anarchy and misery”⁶³ – a paranoia that was to come into conflict with the nationalism of the upstream states. Egypt undertook further military raids in Ethiopia

⁶¹ Daniel Kendie, “Egypt and the Hydro-Politics of the Blue Nile River”(Henderson State University: Northeast African Studies, Vol.6, No. 1–2, 1999), 141.

⁶² Ibid., 145.

⁶³ Ibid.

from 1875 and, although unsuccessful, sustained them until 1882, when the British occupied Egypt and made Egypt's interests their own, claiming that he who controls the Nile controls Egypt.

B. THE TREATY PROVISIONS

The 1929 treaty between Egypt and Britain (as the colonial power in the region) solely worked to the benefit of Egypt—Sudan only getting a water allotment of 4 billion cubic meters per year for the Gezira irrigation scheme. The treaty stipulated that no works that would alter the flow of the Nile were to be constructed on the Nile, its tributaries, or equatorial lakes without Egypt's consent. In essence, the treaty guaranteed Egypt's political stability, water security, and ability to supply the global market with cotton, by putting the entire Nile basin at Egypt's disposal. The treaty also relieved Britain's concern over water for the Gezira irrigation scheme in Sudan, and gave veto powers to Egypt over any Nile-related water projects in upstream states. The 1929 treaty provided Egypt with acquired rights which the 1959 Egypt-Sudan bilateral treaty later drew on.

Today's structural scarcity of water imposed by Egypt on the upper riparian states is evident in the 1959 Full Utilization of the Nile Waters Agreement between Egypt and the Sudan according to which, the Sudan and Egypt allocated themselves 18.5 milliards and 55.5 milliards of the Nile's annual average water yield of 84 milliards (respectively).⁶⁴ While disregarding the upper riparian states in this water allocation, Egypt and Sudan established a Technical Commission to undertake any Nile water negotiations with any riparian state outside the boundaries of the two republics. While this agreement united Egypt and the Sudan against other riparian states in the matter of Nile water control, it revealed Egypt's dependence on the Nile, especially after a special provision had to be made for a water loan from the Sudan to enable Egypt to proceed

⁶⁴ Roberts O. Collins, *The Waters of the Nile: Hydro politics and the Jonglei canal, 1900 – 1988* (Princeton: Markus Weiner Publishers, 1996), 157.

with agricultural expansion. The 1959 Nile water agreement between Sudan and Egypt did not put an end to the dispute over rights to the Nile waters, and strong tensions remain.

C. INTERSTATE RELATIONS TO DATE

The limitations of the 1929 and the 1959 Nile water treaties continue to negatively affect interstate relations among the Nile basin countries. On the one hand, Egypt maintains its 1973 geopolitical definition of water resources and willingness to employ military power to defend its water security, and advances a legal argument in defense of the status quo by maintaining that the colonial-era treaties are sacrosanct. Further, Egypt uses economic and diplomatic pressure to deny upstream states access to international financial and technical resources, and engages in destabilization campaigns in upstream states by supporting insurgencies. On the other hand, the upstream states have voiced concern over the legitimacy of the colonial-era agreements, arguing that Egypt has been able to industrialize by using Nile water to generate electricity and undertake irrigation while preventing similar usage by the upstream countries through military threat and intimidation. Egypt's current irrigation projects—North Sinai Development and the Southern Valley projects—due to be completed by 2017, and which are expected to increase Egypt's cultivable land from 3.4 million hectares to 4.6 million hectares⁶⁵, are seen by the upstream states as proof of Egypt's determination to continue overexploiting the Nile waters.

It is worth noting, however, that Egypt and Sudan have never really realized political and economic unity in the exploitation of the Nile. Past agreements, like the 1959 bilateral treaty, were imposed by Egypt, whose justification for the low water allocation to Sudan was that it had alternative water resource of rainfall that enabled rain-fed agriculture as opposed to Egypt's total dependence on the Nile for its water needs.

⁶⁵ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Intergrative Discourse* (Albany: State University of New York, 2008), 38.

Sudan's defeated argument had been that the availability of high potential agricultural land should be the criterion for Nile water allocation, based on which it claimed 44 billion cubic meters allocation.⁶⁶

Both countries acted in concert in 1976 to develop the Jonglei Canal scheme with the purpose of increasing the White Nile flow with a bypass of the Sudd swamp. However, the Sudan People's Liberation Army (SPLA) disrupted the project in 1983 arguing that canalization would have negative ecological ramifications on the climate, vegetation, and the hydrologic regime of the region, with an adverse social impact on the livelihood of the indigenous communities.⁶⁷

The 1959 Egypt-Sudan bilateral treaty is an evident commitment by both countries to act together to counter claims for water allocation by other riparian states. Due to its total dependence on the Nile, Egypt continues to try to form a federation with Sudan, and even Libya and Syria, on the grounds of a shared economic, strategic, and pan-Arab ideology. The attempt to realize a federation between Sudan and Egypt is, however, not feasible with the potential split of north and south Sudan as a consequence of the 2011 referendum mandated by the 2005 Comprehensive Peace Agreement. The anticipated split will compound the regional Nile water dispute, with south Sudan unlikely to respect the existing water treaty.⁶⁸

1. Contest Over Legality of Treaties

Egypt claims that the British-Egyptian water treaty of 1929, supported by the 1889 British protocols with the Congo Free State (today's Democratic Republic of Congo), and agreements with Italy and Ethiopia in 1902, affirm its appropriative rights to the Nile waters. Egypt further argues that under the principles of *uti possidetis*⁶⁹ and state succession, former British colonies are obliged to uphold all international obligations

⁶⁶ Debay Tadesse, "The Nile: Is it a curse or a blessing" (Institute for Security Studies paper 174, Nov 2008), 14.

⁶⁷ Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace, 1999), 73.

⁶⁸ Reuters, "War alert Over South Sudan Vote" (Daily Nation Newspaper, January 05, 2010), 2 <http://www.nation.co.ke/news/africa> (accessed Jan 05, 2010).

⁶⁹ *uti possidetis* is a Latin doctrine meaning "boundaries shall stay as they are."

assumed by the colonial power prior to independence.⁷⁰ It is against this claim that the former East African colonies—Kenya, Uganda and Tanzania—denounce the 1929 treaty arguing that African independence was a repudiation of colonialism, including all its legacies. In 1962, for example, then-Tanzanian president Julius Nyerere announced, “the provisions of the 1929 agreement, purporting to apply to the countries under British Administration, are not binding to Tanganyika.”⁷¹ Questioning the legality of the treaties and the morality of the present inequitable distribution of the Nile waters, Tanzania’s water resources Minister, Edward Lowassa, in 2004 said, “We do not recognize what happened in the past. We want equitable and reasonable use of the Nile waters for mutual benefits in all the riparian states.”⁷² In addition, then-Kenyan Vice President Moody Awori said, “The Nile is the most important single asset that is shared by all the ten countries that lie within its basin. As such, the Nile River is not the property of any one state.”⁷³

Egypt backs up its rights to the Nile waters based on the existing treaties by advancing a moral claim. It argues that there is no significant rainfall in its territory and so it does not have any other option by which to survive, and that the upstream states have long survived without the use of the Nile waters and, as such, can live in this same way to the future.⁷⁴ Egypt’s argument that the upstream states have—indeed—survived without the Nile water, seems to support Tony Allen’s proposition that “virtual water” has helped prevent conflict over water in the Middle East and North Africa. However, virtual water, defined as water contained in imported food,⁷⁵ has mostly been received by the Nile upstream states in the form of food aid from the international community. Food

⁷⁰ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Intergrative Discourse* (Albany: State University of New York, 2008), 102.

⁷¹ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Intergrative Discourse* (Albany: State University of New York, 2008), 102.

⁷² Ibid.

⁷³ Ibid.

⁷⁴ Haggai Erlich, *The Cross and the River: Ethiopia, Egypt, and the Nile* (London: Lynne Rienner Publishers, 2002), 6.

⁷⁵ Jason J. Morrisette & Douglas A. Borer, “Where Oil and Water do mix: Environmental Scarcity and Future Conflict in the Middle East and North Africa” (Government Industry: Parameters, Winter 2004), http://findarticles.com/p/articles/mi_m0IBR (accessed Feb 08, 2010).

aid dependency in some upstream states is a direct consequence of their lack of economic ability to purchase food. Ironically, without agriculture, they cannot generate the capital required.

The upstream states, however, oppose Egypt's argument, noting that the principle of "equitable shares" in a shared international river is defined in the Helsinki Accords, and its application is evident in other parts of the world, such as China and India. As Ethiopia puts it, "It was the imperialist British . . . who legally established Egypt's "historic rights," but they were never recognized by the independent African states. It is an unjust principle, the legacy of foreign intervention, long dead, like Emperor Menelik and British colonialism."⁷⁶

2. Militant Rhetoric

The rhetorical militancy from the upstream countries against Egypt's hegemony over the Nile's water is evident in the denunciation of the 1929 treaty by a former Kenyan minister for culture and sports, Alicen Chelaite, during a land policy and management conference in 2005 at which she characterized the treaty as:

repressive, obsolete, and unrealistic It is a shame that almost all catchment areas of Lake Victoria are managed and sustained by governments and citizens of Kenya, Uganda, and Tanzania, yet they are barred by the treaty from using its waters for irrigation purposes, a move that has locked out a huge agricultural potential in the region. Downstream Egyptians who have nothing to contribute in managing the lake's catchment are busy tapping River Nile waters for commercial activities.⁷⁷

3. Military Threats and Intimidation

Tanzania's announcement that it would utilize Lake Victoria's water for irrigation in 2004 prompted Egypt's threat of airstrikes, as did Sudan's 1995 announcement of a plan for more water projects and a suggestion it might review the 1959 agreement. To that Egypt's current president, Hosni Mubarak responded, "Any step to this end will

⁷⁶ Haggai Erlich, *The Cross and the River: Ethiopia, Egypt, and the Nile* (London: Lynne Rienner Publishers, 2002), 7.

⁷⁷ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Intergrative Discourse* (Albany: State University of New York, 2008), 114–115.

force us into confrontation to defend our rights and life. Our response will be beyond anything they can imagine.”⁷⁸ Egypt’s concern about Tanzania’s unilateral decision to draw Nile water is more about the precedent being set than the quantity of water it might take, since Kenya too has plans to use Lake Victoria waters to bolster its country’s food security.

Egypt’s threat is not dissimilar from the United States’ Carter Doctrine of 1980, which was a response to the Soviet Union invasion / occupation of Afghanistan. The United States viewed the Soviet occupation as a move to establish hegemony in the region, which would then constitute a threat to transit of Middle East oil. This situation represented a Cold War-era clash between the Soviet Union’s ability to project military power, and the United States’ dependence on Middle East.⁷⁹ President Carter therefore declared that, “an attempt by any outside force [Soviet Union] to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America and such an assault will be repelled by any means necessary, including military force.”⁸⁰ This same motivation was again, used to secure oil supplies from Saudi Arabia when Ronald Reagan, Jimmy Carter’s successor, declared in 1981 that the United States would intervene to protect Saudi Arabia from the destabilizing threat of the Iran – Iraq war.⁸¹ According to Bruce R. Kuniholm, since World War II the United States had proclaimed the Persian Gulf [and Arabian Peninsula] as one of its national interests.

These scenarios suggest that powerful states do threaten and intimidate other states all the time to safeguard their national interests.

⁷⁸ Michael T. Klare, *Resource Wars: The New Landscape of Global Conflict* (Henry Holt & Company: New York, 2001), 158.

⁷⁹ Melvyn P Leffler, “From the Truman Doctrine to the Carter Doctrine: Lessons and Dilemmas of the Cold War” (*Diplomatic History*, Vol 7 No 4, 1983), 245–266 <http://dx.doi.org/10.1111/j.1467-7709.1983.tb00394.x> (accessed Feb 06, 2010), 261.

⁸⁰ Bruce R. Kuniholm, “The Carter Doctrine, the Reagan Corollary, and Prospects for United States Policy in Southwest Asia” (*International Journal*, Vol 41, No 2, Southwest Asia Spring 1986), 342–361 <http://www.jstor.org/stable/402202373> (accessed Feb 09, 2010), 343.

⁸¹ *Ibid.*, 345–346.

4. Egypt's Diplomatic and Economic Pressure

Other than the threat of force, Egypt has also relied on diplomacy and economic pressure to maintain its hegemony over the Nile. For instance, Egypt blocked financial approval of Ethiopia's loan for irrigation and hydroelectric projects from the African Development Bank in the 1970s.⁸² Other international donors, ". . . such as the World Bank, are reluctant to advance funds [to upstream states] for major river projects that will upset Egypt, a key Arab ally of the U.S. in the Middle East."⁸³ Moreover, Egypt continues to prevent project funding to upstream states by world financial institutions and donor countries, particularly in the Arab-speaking world. As Okbazghi notes:

Egypt has successfully denied upstream states access to donor agencies and countries. Egypt's pivotal role in Middle East politics, its dependence on American patronage, and the support it gets from oil-rich Arab states have proved effective weapons for quashing demands from upstream states for international help to develop their water resources.⁸⁴

Since the overthrow of the communist Mengistu regime in 1991 and its conflict with Eritrea, Ethiopia has focused on water distribution, irrigation, and hydroelectric projects as national priorities. Consequently, it has increasingly opposed the water use of neighboring Egypt, claiming the present allocation – regulated by a 1959 agreement—is extremely unfair and is too one-sided in favor of Egypt and Sudan. Ethiopia threatens the unilateral exercise of sovereignty over its Nile water, or a military confrontation with Egypt.⁸⁵

⁸² Roberts O. Collins, *The Waters of the Nile: Hydro politics and the Jonglei canal, 1900 – 1988* (Princeton: Markus Weiner Publishers, 1996), 225.

⁸³ Mayton Joseph, "Nile Water dispute starting to boil over" (Almasry Alyoum, July 27, 2009), 2. <http://jupiter.almasryonline.com> (accessed Oct 15, 2009).

⁸⁴ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Intergrative Discourse* (Albany: State University of New York, 2008), 53.

⁸⁵ Berman Ilan & Wihbey M. Paul, "The New Water Politics of the Middle East" (Institute for Advanced Strategic and Political Studies: Strategic Review, Summer 1999) <http://www.israeleconomy.org/strategic/water.htm> (accessed Nov 13, 2009).

5. Competitive Exploitation of the Nile

In the context of the 1959 Egypt-Sudan Nile treaty—and its determination to compete with the downstream states over utilization of the Nile waters—Ethiopia sought assistance from the United States Bureau of Reclamation to develop a master plan for irrigation and hydroelectric projects on the Blue Nile. The study proposed construction of four major dams on the Blue Nile with a combined storage capacity of 51 billion cubic meters, and twenty-nine irrigation and hydroelectric projects.⁸⁶ Ethiopia was unable to undertake these projects due to a lack of means. But it is unlikely that Egypt would have tolerated a water reduction of such quantity.

Egypt, for its part, has long asserted aggressive control over Nile water, defining access to the Nile waters as a national security issue over which it is prepared to go to war. Egypt's dependency on the Nile motivated its efforts to create the capacity to trap and store water, including the construction of the Aswan High Dam with a storage capacity of 164 billion cubic meters – an equivalent of two years flow of the Nile. Despite these attempts, however, Egypt has become increasingly vulnerable on the water issue owing to environmental effects that have reduced the available water flowing to Egypt via the Nile, making Egypt increasingly dependent upon and enmeshed in the politics and interstate dynamics in the region.

This growing vulnerability is likely to become a major source of political tension in the Nile basin. Since Egypt retains an aggressive military stance in relation to water, Ethiopia's domestic development efforts (such as growing attempts to dam the Blue Nile) and Uganda's need to undertake hydroelectric projects, for instance, are likely to result in increasing regional tensions.⁸⁷ Egypt has also historically been wary of splitting up Sudan for fear that it will affect its share of the Nile waters, which it considers its lifeline.⁸⁸

⁸⁶ Roberts O. Collins, *The Waters of the Nile: Hydro politics and the Jonglei canal, 1900 – 1988* (Princeton: Markus Weiner Publishers, 1996), 279.

⁸⁷ Michael T. Klare, *Resource Wars: The New Landscape of Global Conflict* (Henry Holt & Company: New York, 2001), 155.

⁸⁸ Wolfgang H. Thome, "Debate over a new Nile Treaty rages on" (ETN Africa, Aug 18, 2009). <http://www.eturbonews.com/11134/debate-over-new-nile-treaty-rages> (accessed Nov 08, 2009).

6. Political Instability and Support for Insurgencies

Although political instability in most upstream states has helped maintain the status quo regarding the Nile water dispute, the end of these conflicts—especially the Ethiopian-Eritrean dispute and Sudan’s North-South conflict—may be an indicator that the upstream states now have room to pursue what they consider to be their critical national interests. Due to the limitations of the Nile treaties, interstate relations among the Nile basin countries, on some occasions have been marked by proxy wars. Klare aptly summarizes Egypt’s interference in the upstream states:

Apparently sensing advantage in this state of affairs [conflicts in the upstream states], Egypt sought to perpetuate its privileged position on the Nile by aiding anti-government forces in neighboring countries. This entailed support for Somali irredentists in the Ogaden region of Ethiopia, and the rebel Sudanese People’s Liberation Army (SPLA) in southern Sudan.⁸⁹

Egypt’s involvement in the conflict between Somali and Ethiopia, for example, is motivated by its policy to prevent upstream use of the waters of the Blue Nile by engaging Somalia in a war against Ethiopia, which keeps Ethiopia’s focus on protecting its territorial integrity, diverting its scarce resources from development to security and defense. In May 1978, the Kenyan Air Force forced Egyptian warplanes carrying weapons for the Somali army to land at Nairobi International Airport.⁹⁰ Egypt’s foreign policy of destabilization is also evident in its encouragement of Ethiopian Muslims to secede, and in its provision of military training to Eritreans beginning in 1958, “. . . to undermine Haile Selassie’s Government [Ethiopia] and urging Eritreans to take arms and to struggle for their independence.”⁹¹

⁸⁹ Michael T. Klare, *Resource Wars: The New Landscape of Global Conflict* (Henry Holt & Company: New York, 2001), 154.

⁹⁰ Daniel Kendie, “Egypt and the Hydro-Politics of the Blue Nile River” (Henderson State University: Northeast African Studies Vol. 6, No. 1-2, 1999), 160.

⁹¹ *Ibid.*, 154.

7. Conflicting Water Laws

The contentious relations among the Nile basin countries over the existing water agreements is defined by Egypt's position of holding onto the international law principle of absolute territorial integrity or the principle of prior appropriation ("acquired rights") while the upstream countries hold onto the principle of absolute territorial sovereignty ("natural rights"). The principle of "absolute territorial integrity" provides for the downstream states to accuse or censure any of the upstream state(s) for illegally taking measures disadvantageous to the former's interests. The "prior appropriation" principle protects the rights of use for the country that puts the water into use first, while the principle of "absolute territorial sovereignty" regards water bodies as an integral part of a state's national territory.⁹²

These conflicting positions are further manifested in the current stalemate in the Nile Basin Initiative (NBI) cooperative framework. Egypt and Sudan continue to object to upstream states' attempts to secure equitable allocation of the Nile waters by advancing Article 4 of the NBI. According to Article 4, "Nile basin states agree in a spirit of cooperation, not to significantly affect the water security of any other Nile basin state." Egypt and Sudan, on the other hand, want it amended to reflect their historic rights, "Nile basin states agree, in a spirit of cooperation, not to adversely affect the water security and current uses and rights of any other Nile basin States."⁹³ It is Egypt's and Sudan's desire that a clause guaranteeing their water security is inserted to the NBI Article, which would mean their continued intensive and extensive use of the Nile water resource. In contrast, the upstream states object to Egypt's demand since, "To accept Egypt's historic rights [is] to admit to the primacy of Egypt's future needs."⁹⁴

The Nile Basin Initiative is an effort to thwart states taking a state-centric view of the Nile. Funded by the United Nations Development Program (UNDP), United Nations

⁹² Salah El-Din Amer, "The Law of Water – Historical Record" (International Law Department: Cairo, Egypt) <http://ressources.cheam/om/pdf/a31/c1971551.pdf> (accessed July 16, 2009).

⁹³ "Kenya says Sudan and Egypt want to monopolize Nile water," (Sudan Tribune, November 09, 2008). <http://www.sudantribune.com> (accessed Oct 13, 2009).

⁹⁴ Roberts O. Collins, *The Waters of the Nile: Hydro politics and the Jonglei canal, 1900 – 1988* (Princeton: Markus Weiner Publishers, 1996), 157.

Environmental Program (UNEP), and member Countries – Burundi, Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda—it aims to unite all the riparian countries in a shared vision to pursue sustainable development and management of the Nile waters.⁹⁵ Although this vision recognizes that unilateral utilization of the water is unsustainable as well as conflict-inducing, Egypt and Sudan continue grand agricultural extension and industrial expansion plans.⁹⁶

8. Is There a Possible Compromise?

Recently, Egypt has not only pursued a policy of economic engagement with the source countries of the water to promote alternative sources of water (we can call this the carrot), but it has also resorted to diplomatic pressure and thinly concealed threats to defend its priority veto status over the use of Nile waters (the stick). Egypt's softened stance is evident in its response to an African Development Bank (ADB) loan notification of \$50 million to Ethiopia in 2003 for the Koga hydroelectric and irrigation project. Egypt's conciliatory position is due in part to an international shift in attitude as signaled by a World Bank water resource adviser's opinion, "There is no precedent for a country developing without harnessing its rivers and utilizing its water resources."⁹⁷ Consequently, it appears Egypt would rather monitor and control Ethiopia's water resources development through cooperation rather than by seeming offensive. Another motivating factor for Egyptian moderation is Ethiopia's plan to undertake micro-dam projects that would not only compromise Egyptian water security, but would also be immune to Egyptian military targeting due to their numbers and size.

To date, interstate relations among the Nile basin states have been marked by rising tension characterized by mistrust, militant rhetoric, threats to undertake unilateral projects, military threats and intimidation, and proxy wars and support of insurgencies.

⁹⁵ Diana Rizzolio Karyabwite, "Water Scarcity in the Nile River Valley" (UNEP/DEWA/GRID – Geneva, 2000), 40.

⁹⁶ Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace, 1999), 61.

⁹⁷ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Integrative Discourse* (Albany: State University of New York, 2008), 87.

The overexploitation of the Nile by Egypt, which has been challenged by the upstream states coupled with Egypt's ongoing diplomatic and economic pressure help define interstate relations in the Nile basin.

D. THE EFFECT OF THE LIMITATIONS IN THE WATER AGREEMENTS ON DEVELOPMENT IN UPSTREAM COUNTRIES—ETHIOPIA, KENYA, AND TANZANIA

The effect of the Nile water treaties on development in the upstream states creates a condition of “poverty in the midst of biotic plenty and thirst in the midst of hydrological abundance,”⁹⁸ especially in Ethiopia and Kenya. In part, due to the Nile treaties' limitations, Ethiopia utilizes only 1 percent of its surface water resources for hydroelectric power and irrigation purposes, enabling it to irrigate only 160,000 hectares of land and generate only 2 percent of its 60 billion kWh hydropower potential annually.⁹⁹

Ethiopia's vision of developing hydroelectricity and irrigation is evident in its 1958 master plan for four major dams on the Blue Nile and 29 other projects on tributaries in the basin. The anticipated potential power generation in these projects would have far exceeded what “Ethiopia could use in this century or the next, but could be of immense value to its neighbors . . . by the construction of an integrated grid.”¹⁰⁰ However, Ethiopia could not proceed with these projects because of their effect on the natural flow of the Nile and, of course, because of their effect on irrigation in Egypt and the Sudan. The limitations of the treaties have left Ethiopia over- dependent on rain-fed agriculture which is vulnerable to dry spells of delayed or interrupted rain and drought, leaving Ethiopia in a chronic situation of food insecurity, and therefore a continuous recipient of international food aid donations.

Blaming Ethiopia's underdevelopment on Egypt's monopoly of the Nile, Ethiopia's minister for trade and industry, Girma Birru, in 2003 said that Ethiopia was

⁹⁸ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Intergrative Discourse* (Albany: State University of New York, 2008), 79.

⁹⁹ *Ibid.*, 79.

¹⁰⁰ Roberts O. Collins, *The Waters of the Nile: Hydro politics and the Jonglei canal, 1900 – 1988* (Princeton: Markus Weiner Publishers, 1996), 279.

unable to harness its natural wealth to alleviate poverty and promote growth since, “Egypt has been pressuring international institutions to desist from assisting Ethiopia in carrying out development projects in the Nile basin. It has used its influence to persuade the Arab world not to provide Ethiopia with any loans or grants for Nile water development.”¹⁰¹

In Kenya, apart from cases of food insecurity due to shortfalls in precipitation, only 10 percent of Kenyans can access electricity, while 98 percent of Egyptians have access to electricity generated by the Nile. Kenya contributes 18 percent of Lake Victoria’s waters that feed into the Nile, while Uganda contributes 30 percent and Tanzania 50 percent. Kenya’s position is reflected in a 2002 statement by Raila Odinga (then a presidential candidate), “[The 1929 treaty] was signed on behalf of governments that were not in existence . . . this is an unfair agreement that we should negotiate afresh. If you want to use that water for food production, why should you be prevented from doing so, and you are conserving it for Egypt to go and use it for production, we think it is not fair.”¹⁰²

In Tanzania, agriculture accounts for 50 percent of the country’s GDP, and employs two-thirds of the population. With potential irrigable land of 94.3 million hectares, Tanzania had only 190,000 hectares under irrigation by 1997, yet it contributes 50 percent of the Lake Victoria waters to the White Nile.¹⁰³

E. CONCLUSION

The unresolved water dispute about use of the Nile water continues to slow economic development in the Nile basin. It is only by recognizing the primacy of factor endowments for economic development that the Nile basin countries can overcome the national interests of sovereign state in favor of multinational rights in owning and controlling transnational river basins. A revisit of the 1920-Century Storage Scheme,

¹⁰¹ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Intergrative Discourse* (Albany: State University of New York, 2008), 114.

¹⁰² *Ibid.*, 86.

¹⁰³ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Intergrative Discourse* (Albany: State University of New York, 2008), 118.

proposed by Murdoch Macdonald to realize the establishment of a series of dams at suitable confluences in upstream states¹⁰⁴, would reduce water loss by evaporation, provide storage for the irrigation needs of downstream states, as well as generate electricity at points with the greatest potential. Tanzania and Uganda are identified as countries with a huge hydroelectric potential on the White Nile, thanks to a drop in the river elevation of about half a mile. Lake Tana, source of the Blue Nile, is at an elevation of about 1.1 mile above sea level and the elevation drops to less than one-third of a mile above sea level at Khartoum. This drop in elevation creates high potential for hydropower generation in Ethiopia.¹⁰⁵

A compromise over the situation would facilitate means to avert water loss through evaporation if water was stored in upstream states, and hydropower was developed to benefit the whole basin. Upstream countries that have this potential, like Ethiopia and Uganda, could help provide this energy to downstream states, which could then expand their agricultural production and provide foreign exchange to upstream energy producers. Such a trade, in turn, could reduce the upstream states' need for water for irrigation.

¹⁰⁴ Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace, 1999), 70–71.

¹⁰⁵ *Ibid.*, 56.

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IV. EGYPTIAN HEGEMONY AND PAST ATTEMPTS TOWARDS A COOPERATIVE FRAMEWORK

A. WHY HAS EGYPT MANAGED TO MAINTAIN HEGEMONY OVER THE NILE?

Egypt's determination to monopolize utilization of the Nile's water revolves around its historic claim of prior appropriation and total dependence on the Nile given that it is 98 percent desert. Egypt's hegemony has resulted from both its military and economic strength, and also thanks to the lack of capital, as well as instability in the upstream states. To the extent that upstream states remain wracked by conflicts and underdevelopment, Egypt will maintain its hegemony over the Nile. This trend has continued since the opening of the Suez Canal in 1869, which then attracted British colonization at the source of the Nile. All subsequent Nile treaties sought to preserve the British position in Egypt, and secure the Suez Canal, as well as the sea route to India. Until today, Egypt maintains that "Cairo controls the Suez and the Nile waters control Cairo,"¹⁰⁶ and so, therefore, its determination to control the Nile.

Sharing the same goal of securing their water supplies in the face of increasing pressure for equitable distribution by the upstream states, and given their geopolitical alignment in the Nile basin, Egypt and Sudan maintain a partial coalition. Neither of these two countries contributes much to the flow of the Nile—Egypt's contribution is zero and Sudan's minimal¹⁰⁷—yet their dependence on the Nile is 97 per cent and 77 per cent respectively.¹⁰⁸ Both countries perceive mutual advantages in this coalition, with Egypt assisting Sudan by providing for poor households in Sudan, thus addressing the international community's goal of poverty alleviation. Sudan, for its part, views Egypt's political, economic, and military position as a deterrent to upstream states, thus assuring

¹⁰⁶ Robert O Collins, *The Waters of the Nile: Hydropolitics and the Jonglei Canal, 1900 – 1988*, (Princeton: Marcus Weiner Publishers, 1996), 32.

¹⁰⁷ Debay Tadesse, "The Nile: Is it a curse or a blessing?" (Institute for Security Studies Paper 174, Nov 2008), 19.

¹⁰⁸ *Ibid.*, 2.

continued water supplies. It is no wonder that Sudan, rather than take an adversarial view, has always chosen to remain silent on the Nile water issue and on regional conflicts in the Nile basin countries where Egypt is involved.

Egypt's hegemony over the use of the Nile is evident in its military strength in the region. Egypt developed a strong military to be able to engage in the Israeli-Arab conflict, and after the Camp David accord in 1979, developed friendly relations with the West. That has made it a big recipient of both financial and military aid. Debay Tadesse, for instance, reports that Egypt receives \$2 billion in financial aid per year from the United States, and in 2001 received \$400 million worth of arms from the Bush administration. This arms deal saw Egypt acquire highly accurate surface-to-surface missiles, satellite-guided anti-ship missiles, F-16 fighter planes, M1A1 Abrams tanks, and Patriot anti-missile systems, among other state of the art American weaponry.¹⁰⁹ In 1995, of a total expenditure of \$6 billion on military equipment by the Nile basin countries, Egypt's portion was \$4 billion.¹¹⁰ It is this massive military power which Egypt has continued to use to threaten and intimidate other riparian states.

As an ally of the West, Egypt is able to access development funds from world lending bodies—e.g., the International Monetary Fund (IMF) and World Bank – that are unwilling to support any projects in the upstream states that might disrupt the Nile flow to Egypt and cause instability. The West's interest in Egypt is not only because of the Arab-Israeli conflict, but also thanks to its geopolitical importance in terms of the Suez Canal, especially after the 1956 Suez Crisis. The crisis followed the United States withdrawal of its pledge to fund construction of Egypt's Aswan High Dam when the latter refused to join the United States-sponsored Baghdad Pact that aimed to prevent the Soviet expansion into the Middle East. Instead, Egypt sought Soviet support to crush Israel. The United States' move prompted Egypt to nationalize the canal in order to raise revenue to construct the dam.¹¹¹

¹⁰⁹ Debay Tadesse, "The Nile: Is it a curse or a blessing?" (Institute for Security Studies Paper 174, Nov 2008), 10.

¹¹⁰ Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace Press, 1999), 59–60.

¹¹¹ Ronald E. Powaski, *The Cold War: The United States and the Soviet Union, 1919 – 1991* (New York: Oxford University Press, 1998), 117–118.

The industrialized countries' interest in Egypt during the Cold War period involved each superpower trying to win Egypt to its side by providing economic and military grants.¹¹² As a result of Egypt's political and economic leverage with the World Bank and IMF, the upstream states never received the capital to develop irrigation and hydropower projects on the Nile that could have helped alleviate poverty and improve their food security. In the past, Egypt blocked World Bank financial aid to Ethiopia for the development of the Finchaa hydropower project, and in the early 1990s it prevented Ethiopia's loan application from the African Development Bank for water projects that Egypt feared would reduce the Nile's flow.¹¹³

However, while Egypt is able to undertake unilateral water projects due to external aid, it is also hugely indebted to its international creditors. For example, despite being the largest recipient of United States aid in Africa, it had a \$31 billion external debt in 1996. This debt factor and reliance on external aid leaves Egypt vulnerable to the international community, which could use its economic advantage to compel Egypt into cooperation—a “debt-for-cooperation” swap.¹¹⁴

What is uncertain is whether Egyptian professionals holding senior positions in world institutions in the past have defended Egyptian interests regarding the Nile water control. Influence at key institutions could have enhanced Egypt's defiant position on the Nile water-sharing agreements. Senior Egyptian personalities who have held key positions in world institutions include the former United Nations Secretary-General, a former vice president of the World Bank, and a former head of the United Nations Environmental Program. Egypt's position in respect to the Nile has therefore continued to revolve around natural, acquired, and historical rights governed by the hydro-political doctrines of “prior use”, “primary need”, and “acquired rights”.¹¹⁵

¹¹² Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace Press, 1999), 65.

¹¹³ Debay Tadesse, “The Nile: Is it a curse or a blessing?” (Institute for Security Studies Paper 174, Nov 2008), 10.

¹¹⁴ Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace Press, 1999), 60, 45.

¹¹⁵ *Ibid.*, 69.

To enhance and protect its monopoly over the Nile, Egypt entered into close political and economic relations with the oil-rich Arab countries of the Middle East in 2004.¹¹⁶ Through this integration, Egypt is at the center of electricity for nine Arab countries. The Organization of Petroleum Exporting Countries (OPEC) Fund for International Development pledged an easy-term loan to fund increased capacity for hydropower generation at the North Cairo Electricity Grid, thanks to what they refer to as its centrality that reduces transmission costs, close proximity to fuel sources, and ample water for cooling. Yet, none of these Arab countries contributes water to the Nile's flow. But due to Egypt's influence in the Arab world, it is able to prevent the upstream states from receiving any aid or loans from the Arab nations.

Political instability in the upstream states has also helped to perpetuate Egyptian hegemony over the Nile's use. From Ethiopia's unresolved border dispute with Eritrea and insurgencies in her southern regions and Somalia's instability to ethnic conflicts in the Great Lakes region, Egypt has not faced any political and economic challenge from among the Nile basin countries. It has also exploited these instabilities by reinforcing them through the supply of arms to Somalia and to Eritrea against Ethiopia.¹¹⁷ Egypt also secured the oil-rich Arab countries' support for the Eritrean fighters, and financed the establishment of an Eritrean Liberation Front (ELF) office in Cairo as early as 1962. Egypt's covert destabilization policy in the unstable Horn of Africa grew out of President Anwar Sadat's warning that, "Any action [from the upstream states] that would endanger the waters of the Nile will be faced with a firm reaction on the part of Egypt, even if that action should lead to war."¹¹⁸ Instability in the Nile basin also includes the civil war between North and South Sudan, the war in Darfur, and Sudan's periodic clashes with neighboring Chad. To illustrate further the absence of any formidable challenge to Egypt's control over the Nile, Ethiopia continues to experience insurgent activities from

¹¹⁶ Debay Tadesse, "The Nile: Is it a curse or a blessing?" (Institute for Security Studies Paper 174, Nov 2008), 9.

¹¹⁷ Daniel Kendie, "Egypt and the Hydro-Politics of the Blue Nile River" (Henderson State University: Northeast African Studies, Vol. 6, No. 1-2, 1999), 153-155.

¹¹⁸ Peter Kagwanja, "Calming the Waters: The East African Community and Conflict over the Nile Resources" (Pretoria: Journal of Eastern African Studies, 1; 3, 321 - 337, Nov 2007), 322 <http://dx.doi.org> (accessed Nov 12, 2009).

the Oromo Liberation Front (OLF) and the Ogaden National Liberation Front (ONLF), which are seeking independence or greater autonomy. Apart from Eritrea's border dispute with Ethiopia and their proxy war in Somalia, Eritrea has a border dispute with Djibouti as well.

The status quo when it comes to Nile basin water allocation could also be explained by Tony Allen's "virtual water" argument. He contends that, "more water flows into the countries of the Middle East and North Africa as virtual water each year than flows down the Nile for Egypt's agriculture."¹¹⁹ Although this virtual water is in the form of emergency food aid, it has reduced the tension that would otherwise have been created between Egypt and the upstream states had they embarked on unilateral irrigation projects to combat their chronic food insecurity. To avert potential starvation in 2004, for instance, Kenya appealed for 15,600 tons of food aid from the international community and, in 2006 again, asked for \$263 million in emergency donor aid for food.¹²⁰ Ethiopia remains chronically food insecure, with six-month emergency food aid needed for 6.2 million people in 2009 and costing \$285 million.¹²¹ Again, this is despite the fact that Ethiopia is the source of about 85 percent of the Nile water.

The absence of a serious challenge to Egypt's monopoly over the Nile waters has enabled it to continue to deploy human, material, and technological resources and put in place legal and institutional frameworks that could best be described as "zero sum." Against the arguments of the upstream states that the 1929 Nile water agreement is an outdated colonial relic because foreign rulers negotiated it without regard for these countries' best interests, Egypt maintains that this agreement together with the 1959 bilateral treaty with Sudan, gives it legally valid water rights. This claim has formed a benchmark in Egypt's foreign policy to safeguard the uninterrupted flow of the Nile. The

¹¹⁹ Jason J. Morrisette & Douglas A. Borer, "Where Oil and Water do mix: Environmental Scarcity and Future Conflict in the Middle East and North Africa" (Government Industry: Parameters, Winter 2004), http://findarticles.com/p/articles/mi_m0IBR (accessed Feb 08, 2010).

¹²⁰ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Intergrative Discourse* (Albany: State University of New York, 2008), 103–104.

¹²¹ BBC News, "Ethiopia asks for urgent food aid" (BBC MMIX, Oct 22, 2009) <http://news.bbc.co.uk> (accessed Oct 23, 2009), 1–2.

upstream states, for their part, have not yet adopted the weak-nation strategy of collective action and internationalization of these contentious issues.

B. ATTEMPTS TOWARDS COOPERATIVE FRAMEWORK

1. Organization for the Management and Development of Kagera River Basin

At independence in 1960, Tanzania's first president, Julius Nyerere, proclaimed that Tanzania did not recognize the colonial-era Nile water treaties, and to demonstrate his determination to harness the Nile waters, he initiated the Rusumu Agreement in 1977, which brought together Tanzania, Burundi, and Rwanda under the Organization for the Management and Development of the Kagera River Basin. Uganda joined later in 1981.¹²² The Kagera River is Lake Victoria's single largest source of inflow. Initially established in 1969 as the Kagera Organization, its objective was to organize the management and development of the Kagera River basin for hydroelectric power generation and promote regional development in agriculture, transportation, and communication. However, political instability, ideological differences, and the failure by the member states to meet their financial pledges marred the project, thus postponing any possibility of success. Although the organization did not achieve its objective, it, combined with Ethiopia's reassertion of its rights to the Nile waters in the same year, posed a wake-up call for Egypt. In 1980, Ethiopia claimed that Egypt planned to divert the Nile illegally to Sinai, a charge that catalyzed more declarations by the upstream states.

2. The Badolite Declaration

In 1981, in another attempt to create a cooperative framework that would break Egypt's hegemony, Uganda, Zaire (now DRC), and Sudan issued the Badolite Declaration, calling for creation of an agency to coordinate and develop the Nile

¹²² Robert O. Collins, *The Waters of the Nile: Hydro Politics and the Jonglei Canal, 1900 – 1988* (Princeton: Markus Weiner Publishers, 1996), 290.

basin.¹²³ Egypt denounced the declaration and sought to promote the Permanent Joint Technical Commission (PJTC), established in 1959 between Egypt and Sudan to lead regional development in interstate projects. Egypt's proposal sought to play down the centrality of water supply among the upstream states, while playing up the common benefits to be realized from integrated development throughout the basin in fields that had little to do with water or water supply, such as, tourism, trade, transport and communication, mineral exploitation and exploration, etc. The upstream states saw the PJTC as Egypt's move to promote its interests in the Nile by bringing all the co-riparian states under its influence. This led to the collapse of the declaration.

3. The Hydro-Meteorological Survey of the Equatorial Lakes (HYDROMET)

Led by Egypt, the Nile basin countries of Kenya, Uganda, Tanzania, and Sudan, launched the Hydromet project in 1967, with the assistance of the United Nations Development Program (UNDP) and the World Meteorological Organization (WMO) to evaluate/survey the catchments and water balance of Lakes Victoria, Kyoga, and Albert, as well as the flow of the Nile. The collected data was meant to assist the riparian countries in water conservation planning, socio-economic development, and provide groundwork for intergovernmental cooperation for storage, regulation, and use of the Nile. Rwanda, DRC, and Burundi later joined the organization, while Ethiopia only joined as an observer.¹²⁴ Owing to Egyptian dominance of the Hydromet initiative, however, the upstream states remained suspicious of the motives behind the project, viewing it as an Egypto-Sudanese scheme to tap into the water data for their planning purposes, as neither country's territory fell within the survey area. As Arthur M. Ortegon observes, Egypt's scheme was to promote development of "alternative water resources

¹²³ Robert O. Collins, *The Waters of the Nile: Hydro Politics and the Jonglei Canal, 1900 – 1988* (Princeton: Markus Weiner Publishers, 1996), 281.

¹²⁴ Ashok Swain, "The Nile River Basin Initiative: Too Many Cooks, Too Little Broth" (The John Hopkins University Press: SAIS Review 22.2, 2002), 293–308
http://muse.jhu.edu/journals/sais_review/v022/22.2swain.html (accessed Dec 11, 2009).

for the upstream states as the key to a cooperative framework.”¹²⁵ Egypt offered to assist the upstream states in developing the technology and processes to exploit these alternatives. The project lasted until 1992, when the Technical Cooperation Commission for the Promotion and Development of the Nile (TECCONILE) succeeded it.

4. The Technical Cooperation Commission for the Promotion and Development of the Nile (TECCONILE)

TECCONILE came into operation in 1993 motivated by the need for inter-state cooperation in the use of the Nile water resources in the hopes of thwarting the conflict between downstream and upstream states. The member countries of TECCONILE were Egypt, Sudan, Rwanda, Tanzania, Uganda, and DRC, while Kenya, Burundi, Ethiopia, and Eritrea were observers. The organization identified its short-term objectives as the development of infrastructure, capacity building and management of water resources, and formulation of national master plans and their integration into a Nile Basin Action Plan. Its long-term objectives were the development of integrated and sustainable basin-wide cooperation and the determination of equitable sharing of its waters.¹²⁶

The upstream states’ support for TECCONILE followed their realization that rescinding the colonial-era water treaties would only result in likely international sanctions on water projects in their respective countries. TECCONILE mooted projects such as the Nile River Basin Action Plan (NRBAP), which included 22 technical assistance and capacity building projects worth over \$100 million. The second project was the development of a cooperative framework for the management of the Nile with the support of the World Bank, which would lead and coordinate donor support.¹²⁷ This cooperative framework led to the creation of the Nile Basin Initiative (NBI) in 1999.

¹²⁵ Arthur Michael Ortegon, “Capitalization of the Nile: How the Nile Basin Initiative can provide the institutional framework needed for capitalization of the Nile River’s water resources” (Water Law, summer, 2007), 14–15. <http://www.works.bepress.com/cgi> (accessed Feb 18, 2010).

¹²⁶ Diana Rizzolio Karyabwite, “Water Sharing in the Nile River Valley” (UNEP/DEWA/GRID–Geneva, Jan–Jun 2000), 39.

¹²⁷ Ibid.

C. CONCLUSION

As we have seen, resolving questions about Nile water control and utilization entails breaking Egypt's hegemony to allow for negotiations on equitable redistribution and utilization. A number of challenges hinder this: Egypt's military and economic power, Egypt's support from the international community given its political and strategic significance, and political instability and economic underdevelopment among the upstream states. On the one hand, the upstream states' efforts towards a cooperative framework have, in the past, been hampered by ideological differences among member states, financial constraints, and political instability. On the other hand, Egypt's disruptive efforts have seen the diversion of agendas to cooperation in projects only remotely connected to water, while its military and economic strength assures that via its intimidation and international influence it can neuter challenges to its monopoly over the Nile's waters.

Although the prospect for a cooperative framework on the Nile remains weak, Egyptian hegemony is unlikely to survive worsening climate change and environmental degradation, population growth, food insecurity, urbanization, and underemployment in the region. These trends combine to threaten security in the Nile basin countries. Increased competition for the shared scarce water resource has the potential to raise the risk of inter-state conflict. Egypt's latest attempt to encourage and finance alternative water sources—such as borehole drilling—in upstream states helps it to sustain its control over the Nile flow, but only temporarily. It, therefore, remains a challenge to find an equitable way to share the Nile's water.

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V. THE PRESENT SITUATION IN THE NILE BASIN

A. INTRODUCTION

The present situation in the Nile basin reflects a blend, with a cooperative framework to utilize the Nile water represented by the Nile Basin Initiative (NBI), the evolution of regionalism represented by the East African Community (EAC), and unilateralism in water projects as exhibited by such countries as Egypt, Uganda, and Ethiopia. While NBI's basin-wide cooperative framework aims to realize a shared vision of "sustainable socioeconomic development through the equitable utilization of, and benefit from, the common Nile basin water resources,"¹²⁸ the EAC's emergence, which brings together the countries of Uganda, Kenya, Tanzania, Burundi, and Rwanda, has the Nile as one of its central development concerns in recognition of the fact that existing tensions over Nile water use could worsen if countries pursue unilateral projects. The unilateral undertaking of water projects by Egypt and Ethiopia, for instance, could be attributed to their plans to secure a "prior use" advantage in the face of NBI deliberations.

B. THE NILE BASIN INITIATIVE (NBI)

Launched in 1999, the NBI seeks equitable use of Nile waters based on the provisions of Article 5 of the United Nations Convention on the Non-Navigational Uses of International Watercourses. Associated with the NBI negotiations is the expectation countries will embrace the theory of restricted sovereignty by each state in recognition of the rights of other co-riparian states, as well as adoption of joint management of the basin. The member countries are Egypt, Sudan, Ethiopia, Uganda, Kenya, Tanzania, Rwanda, Burundi, and the Democratic Republic of Congo, with Eritrea as an observer.

¹²⁸ Diana Rizzolio Karyabwite, "Water Scarcity in the Nile River Valley" (UNEP/DEWA/GRID – Geneva, 2000), 40.

According to Peter Kagwanja, “The Nile Basin Initiative has thus emerged as a meeting point between regionalism and internationalism”¹²⁹ on Nile water use. The World Bank, the United Nations Development Program (UNDP), and Canadian International Development Agency (CIDA) are NBI development partners, with the World Bank responsible for coordination of donor support. The international community recognizes the Nile basin as a potential flashpoint in international politics. The engagement of world development organizations is envisaged to promote NBI objectives of realizing economic cooperation among the riparian states, with the implication that the NBI would contribute to stability and conflict prevention in the region.¹³⁰ The international community’s support could help forestall the likely refugee problems occasioned by hunger, poverty, or conflict over the shared resource, as well as save on the cost of peacekeeping operations if the water dispute degenerates to war among the riparian states.

The obstacle to the realization of NBI basin-wide cooperation is the conflicting positions between upstream and downstream states as regards the legality of colonial-era Nile treaties, and participants’ commitment to NBI objectives. Egypt and Sudan are advocating for recognition of their historic rights in the NBI articles, a position that the upstream states oppose with their call for equitable water allocation. This suggests that until the Nile basin states see incentives for common basin-wide development projects, the proclivity to avoid joint project initiatives will prevail. It was with this realization that the NBI adopted a sub-basin approach to resolving the Nile basin question, taking cues from the Lower Mekong Basin initiative.

1. The Lower Mekong Basin Initiative

The members of the Lower Mekong Basin Initiative are the downstream states of Vietnam, Laos, Thailand, and Cambodia. Formed in 1995, this Initiative excluded the

¹²⁹ Peter Kagwanja, “Calming the Waters: The East African Community and Conflict over the Nile Resources” (Pretoria: *Journal of Eastern African Studies*, 1; 3, 321 – 337, Nov 2007), 333 <http://dx.doi.org> (accessed Nov 12, 2009).

¹³⁰ *Ibid.*, 333.

upstream states of China and Burma (Myanmar), which held observer status,¹³¹ because of their lack of interest in a cooperative framework. China pursued development of alternative river basins in its territory, for example, the Three Gorges Dam, while Burma for its part had no incentive to join the Initiative because the catchment area within its territory was under rebel (Karen National Union) control.¹³² This initiative, did, however, make a provision for other riparian states to join it if they agreed to abide by the rights and obligations of the initiative, since at the time of its formation, not all the riparian states shared a common vision of economic development and peace in the region.

2. The NBI Subsidiary Programs

Due to the differences between the upstream states and the downstream states, in a basin-wide cooperative framework the NBI realized that a sub-basin approach like that of the Mekong Initiative might be best since the importance of the Nile is not uniform across the riparian states. The NBI has therefore unveiled two sub-basin programs to pursue hydroelectric projects – the Eastern Nile Subsidiary Action Program (ENSAP) and the Nile Equatorial Lakes Subsidiary Action program (NELSAP). The NELSAP brings together Uganda, Tanzania, Kenya, Rwanda, DRC, and Burundi in a power generation and trade plan. The Rusumo Falls hydropower project on the Kagera river in Rwanda, is one of the projects planned under NELSAP.¹³³ Countries in the NELSAP sub-basin are presumed to be more concerned with the preservation of the rivers and lakes in their region. The hyacinth weed, for example, threatens the existence of in Lake Victoria, as do the deforestation activities in the water catchment areas in these upstream states. To this end, Egypt has entered a bilateral agreement with Uganda to eradicate the water hyacinth weed in Lakes Victoria, Kyoga, and Albert.

¹³¹ Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace, 1999), 219.

¹³² Ashok Swain, “The Nile River Basin Initiative: Too Many Cooks, Too Little Broth” (The Johns Hopkins University Press, SAIS Review 22.2, (2002) 293 – 308) http://muse.jhu.edu/journals/sais_review/v022/22.2swain.html (accessed Nov 12, 2009), 304.

¹³³ Peter Kagwanja, “Calming the Waters: The East African Community and Conflict over the Nile Resources” (Pretoria: Journal of Eastern African Studies, 1; 3, 321 – 337, Nov 2007), 332 <http://dx.doi.org> (accessed Nov 12, 2009).

ENSAP for its part, brings together Egypt, Sudan, and Ethiopia (and Eritrea at a later date). The NBI sub-basin approach foreshadows the upstream states' demand for renegotiation of the treaties for water sharing, and targets achieving consensus on the less controversial issue of hydropower generation and trade with the aim of achieving power sector integration. As for ENSAP, the NBI advocates the construction of dams in Sudan and Ethiopia because of their hydropower potential and lower evaporation rates, and to prevent silt concentration in Lake Nasser. Better water storage dams in Ethiopia and Sudan could increase the water availability for Egypt by up to 15 million cubic meters per year.¹³⁴

Some of the NBI member countries view the NBI approach of postponing the renegotiation of the Nile treaties and pursuit of superficial cooperation in sub-basin projects as likely to fail. Ethiopia has warned that, "In fact, the failure of NBI would mean more mistrust and suspicion among the riparian states, frustration on the part of the facilitators, and a full-fledged unilateralism, which would be a recipe for a conflict over the utilization of the Nile waters."¹³⁵

C. THE EAST AFRICAN COMMUNITY (EAC)

The East African countries of Kenya, Uganda, and Tanzania have had the issue of fair sharing of the Nile waters as one of their central themes since the creation of a customs union in 1967, which became defunct in 1977 due to ideological differences as Kenya pursued state capitalism, Uganda had a 'socialist charter', and Tanzania pursued *Ujamaa*.¹³⁶ The revival of the EAC in 2001 signaled a re-emergence of regionalism in the Nile basin, particularly as Rwanda and Burundi also joined as members. The goals of the EAC include regional development and conflict resolution.

¹³⁴ Ashok Swain, "The Nile River Basin Initiative: Too Many Cooks, Too Little Broth" (The Johns Hopkins University Press, SAIS Review 22.2, (2002) 293–308) http://muse.jhu.edu/journals/sais_review/v022/22.2swain.html (accessed Nov 12, 2009), 306.

¹³⁵ Ibid., 306.

¹³⁶ *Ujamaa* was a form of African socialism initiated by Tanzania's first president, Julius Nyerere, in 1967. The Arusha Declaration had the aim of encouraging self-sacrifice and community spirit through creation of village cooperatives (collectivization). It was a social and economic model that adapted the principles of socialism to the conditions of Tanzania. It managed to achieve greater equality of income, but failed to increase agricultural production due to lack of personal incentives to increase yields.

In addressing the development challenge, the EAC has focused on the use of Lake Victoria and its catchment areas for food and hydroelectricity in a “peaceful and secure environment.”¹³⁷ The EAC established the Lake Victoria Environmental Management Project to coordinate the activities of its member countries so as to avoid unilateral projects that could create tensions.¹³⁸ The EAC is expected to end internal divisions among the member states and strengthen their bargaining power against Egyptian and Sudanese monopoly of Nile waters.

The EAC countries have raised their concerns regarding the Nile in both their rhetoric and by unilateral action. In the past, Kenya and Tanzania have renounced the 1929 Nile treaty and, in response, Egypt has threatened war and economic sanctions. In 2004, Tanzania unilaterally undertook a \$27.6 million water project in Lake Victoria and, in the same year, Uganda questioned Egypt’s monopoly.¹³⁹ Water stress in the region has led to devastating droughts and lower electricity productivity. Environmental concerns, including deforestation of catchment areas such as the Mau complex in Kenya and the degradation of Lake Victoria due to the water hyacinth, have also made water a top priority policy issue for the EAC, which makes the claim for equitable utilization of the Nile’s waters an inevitable political concern.¹⁴⁰

D. UNILATERALISM

Although the NBI represents a move towards a cooperative framework among the Nile basin countries, and the EAC reflects a regional approach to the Nile question, some countries have sometimes resorted to unilateral action in the face of Egypt’s clinging to the contentious Nile treaties. As a member of NBI, Egypt has accepted most of the decisions in the framework, but insists that the water agreements in existence are as fixed

¹³⁷ Peter Kagwanja, “Calming the Waters: The East African Community and Conflict over the Nile Resources” (Pretoria: *Journal of Eastern African Studies*, 1; 3, 321–337, Nov 2007), 326 <http://dx.doi.org> (accessed Nov 12, 2009).

¹³⁸ World Bank, “Lake Victoria Environmental Management Project Phase II” <http://web.worldbank.org/external/projects/> (accessed Feb 11, 2010).

¹³⁹ Peter Kagwanja, “Calming the Waters: The East African Community and Conflict over the Nile Resources” (Pretoria: *Journal of Eastern African Studies*, 1; 3, 321–337, Nov 2007), 327 <http://dx.doi.org> (accessed Nov 12, 2009).

¹⁴⁰ *Ibid.*, 327.

as border agreements. Egypt has, therefore, continued to expand its irrigation schemes with the recent ones being the Southern Valley and the North Sinai Development Projects, which will draw an additional 20 billion cubic meters of water annually. Opposing Egypt's position, Uganda and Ethiopia have demanded 18 billion cubic meters of the Nile water from Egyptian and Sudanese allotments.¹⁴¹

Frustrated by Egypt's unrelenting stance, Tanzania embarked on a \$27.6 million water project in 2004 to draw water from Lake Victoria, asserting that the existing treaties are illegal and immoral in the face of water stress in the upstream states, where the sources of the Nile water originate. In 2006, following Tanzania's precedent, Kenya declared its intention to utilize Lake Victoria waters or control the flow of its rivers that feed the lake in order to feed its rising population—32 million in 2008, expected to reach 45 million by 2015—amidst worsening cycles of drought.¹⁴²

Uganda has also decided to undertake a 250MW hydroelectric project at Bujagali,¹⁴³ in contravention of the Nile treaties. The electricity to be produced is expected to augment the current supply of 180MW from Owen Falls and 120MW from the Kiira hydroelectric projects, and supply both Uganda and Kenya. Although Uganda's move and intended supply to Kenya may suggest power sector integration in East Africa, this is not being undertaken under the NBI but rather unilaterally. As Uganda continues with the Bujagali project, politicians across East Africa are calling out for more sharing, with an option whereby Egypt would compensate the upstream states for its water supplies.¹⁴⁴

Aware of Egypt's threat of war and its strategy to keep Ethiopia in a weakened position through destabilization, Ethiopia decided to undertake numerous micro-dam projects that would not only compromise Egyptian water security, but would also be immune to Egyptian military targeting. Egypt's concern is that Ethiopia's water projects

¹⁴¹ Okbazaghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile basin: The Search for an Integrative Discourse*, (Albany: State University of New York Press, 2008), 40–41.

¹⁴² *Ibid.*, 116.

¹⁴³ "Facing Up to the Challenges of the Nile," *International Water Power and Dam Construction* 59, No. 9 (September 2007), 12–14.

¹⁴⁴ *Ibid.*, 13.

could reduce downstream flow as much as 15 percent, a level completely unacceptable to Egypt.¹⁴⁵ Individually, each state considers its survival the overarching objective. One significant fact arising from Egypt's support of Eritrea's secession from Ethiopia in 1993 is that Ethiopia is now landlocked and has to depend on Eritrea (not yet possible), Djibouti, or Somalia for overland access to the sea.¹⁴⁶ Ethiopia is negotiating from a position of disadvantage as Eritrea is allied with Egypt, and Somalia remains embroiled in civil war. Also important are the international politics involved regarding the Red Sea's strategic value as a sea route. For example, a key concern that led to United States support to Ethiopia versus Eritrea was that Muslim Eritrea would join the Arab countries and could (as Nasser did with the Suez Canal in 1956) use it as a weapon, by shutting off access to it, with the result that Israel would be held hostage.¹⁴⁷ It is such strategic leverage that Egypt uses by proxy through Eritrea to weaken Ethiopia. But nonetheless, lately Ethiopia has unilaterally engaged in hydro-dam projects including Tekeze (300MW), Gilgel Gibe II (420MW), Beles (460MW), and Gilgel Gibe III (1870MW).¹⁴⁸ Ethiopia expects to sell about 40 per cent of its surplus power to Kenya, Sudan, and Djibouti by 2012, and anticipates earning over \$30 million annually from Sudan alone.

Pursuing unilateral projects on the Nile by the various states would, as Winston Churchill predicted, lead the Nile to “. . . perish gloriously and never reach the sea.”¹⁴⁹ Individual state survival thus far has trumped collective action in the Nile River Basin. However, it appears Egypt and Sudan have too short-sighted a view. Without a resolution through the NBI, upper riparian states are reaching a point where, in order to preserve their survival, they see no other choice but to irrigate and dam up tributaries, regardless of actions threatened by Egypt. For the past ten years, the upper riparian states

¹⁴⁵ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Integrative Discourse* (Albany: State University of New York, 2008), 22.

¹⁴⁶ Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace, 1999), 67.

¹⁴⁷ Michela Wrong, *I Didn't Do It for You: How The World Betrayed a Small African Nation* (New York: HarperCollinsPublishers, 2005), 206–207.

¹⁴⁸ “Ethiopia, Kenya sign deal for new power grid” (<http://www.kassfm.co.ke>, Feb 08, 2010), 2 (accessed Feb 12, 2010).

¹⁴⁹ Okbazghi Yohannes, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Integrative Discourse* (Albany: State University of New York, 2008), 1.

have attempted to address their concerns through the NBI without a successful resolution thanks to stonewalling by Egypt and Sudan. In a worst-case scenario, the absence of a resolution could result in a downward spiral of violent measures on each state's part for its security and survival, especially should it perceive it has no other remaining alternative. Unilateralism may be the first step.

E. IMPACT OF REGIONALISM AND UNILATERALISM

Even as Egypt and Sudan continue to claim that the Nile treaties are sacrosanct, one can see more flexibility in their foreign policy – in the provision of grants to upstream states and the promotion of regional peace—perhaps in realization of its strategic vulnerability if the Aswan High Dam were to be attacked. Memory of Israel's 1967 threat of airstrike on the dam has to play a role in how Egypt reassesses its stance against the upstream states. As Elhance observes, were the Aswan dam to break, “. . . 110 billion gallons of water would be sent downstream in massive waves, destroying everything in its path in Egypt all the way to the Mediterranean Sea.”¹⁵⁰

Egypt's new strategy to sponsor development of alternative source water projects in upstream states thus makes sense. For example, between 1996 – 2001 Egypt provided a \$4.2 million grant to Kenya for groundwater wells. It has also provided \$13.9 million to Uganda in the form of equipment and machinery to combat aquatic weeds in Lakes Victoria, Kyoga and the Nile.¹⁵¹ This involvement in upstream states' water projects enables Egypt to monitor and control upstream states' use of the Nile through cooperation. Egypt's softened stance may also be due to the realization that, first, upstream hydropower facilities will not decrease the flow of the Nile, while having the positive effect of reducing sedimentation reaching Aswan High Dam. Second, availability

¹⁵⁰ Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace, 1999), 78–79.

¹⁵¹ Peter Kagwanja, “Calming the Waters: The East African Community and Conflict over the Nile Resources” (Pretoria: *Journal of Eastern African Studies*, 1; 3, 32–337, November 2007), 328 <http://dx.doi.org> (accessed Nov 12, 2009).

of hydropower to upstream states could also help them tap into underground water.¹⁵² Egypt's dominance appears to be an eroding force, helped by the evident shift of its economy from agriculture towards an increase in trade with other riparian states.¹⁵³ The Common Market for Eastern and Southern Africa (COMESA), of which all the co-riparian states are members, could boost cooperation among them.

Notably, Egypt has also been involved in the Darfur peace process and has contributed to the Peacekeeping Missions in Darfur and South Sudan, UNAMID and UNMIS, although its "strategic interests in the Nile remain intact."¹⁵⁴ The threat of Sudan splitting spells doom for Egypt's attempts at federation with the Sudan, something that could result in an even powerful downstream force just given the population, and economic and military might, the federation would have at its disposal.¹⁵⁵ Egypt's move to promote peace and unity in Sudan represents a "strategic decision to ensure that Sudan remains as one state bound by existing treaties on the Nile waters."¹⁵⁶ In the event that South Sudan votes to secede in the 2011 referendum, Egypt will have to broker another Nile water use deal with Southern Sudan since it will not be a party to the 1959 bilateral treaty. This will, instead, add strength to the upstream states' camp.

F. THE AFRICAN UNION (AU) ON SHARED WATER RESOURCES

The inauguration of the AU in 2002 as the primary means of promoting peace, security, and stability in Africa, saw the establishment of a 15-member Peace and

¹⁵² Ashok Swain, "Mission Not Yet Accomplished: Managing Water Resources in the Nile River Basin" (Journal of International Affairs, 61, 2: The Trustees of Columbia University in the City of New York, spring/summer 2008), 201–214 http://muse.jhu.edu/journals/sais_review/v022/22.2swain.html (accessed Nov 12, 2009), 206.

¹⁵³ "Facing Up to the Challenges of the Nile," *International Water Power and Dam Construction* 59, No. 9 (Sep 2008): 12–14.

¹⁵⁴ Peter Kagwanja, "Calming the Waters: The East African Community and Conflict over the Nile Resources" (Pretoria: Journal of Eastern African Studies, 1; 3, 321–337, Nov 2007), 328 <http://dx.doi.org> (accessed Nov 12, 2009).

¹⁵⁵ Arun P. Elhance, *Hydropolitics in the Third World: Conflict and Cooperation in International River Basins* (Washington DC: United States Institute of Peace, 1999), 64–65.

¹⁵⁶ Peter Kagwanja, "Calming the Waters: The East African Community and Conflict over the Nile Resources" (Pretoria: Journal of Eastern African Studies, 1; 3, 321–337, Nov 2007), 328 <http://dx.doi.org> (accessed Nov 12, 2009).

Security Council (PSC) in 2004. AU member countries anticipated that “this smaller committee of big minds”¹⁵⁷ would guarantee effective decision-making in conflict management,¹⁵⁸ including the provision of guidelines on the use and management of shared resources in ways that would reduce tensions. In Article V (2) of its convention on the conservation of nature and natural resources, the AU guides member states to consultations to resolve disputes on trans-boundary waters:

Where . . . water resources are shared by two or more of the Contracting States, the latter shall act in consultation, and if the need arises, set up inter-state Commissions to study and resolve problems from the joint use of these resources, and for the joint development and conservation thereof.¹⁵⁹

While the AU convention recommends strengthening regional organizations to address shared resources, and the establishment of an Inter-governmental Committee on Water for Africa,¹⁶⁰ it stops short of initiating a review of the contentious colonial-era treaties that are at the heart of the continuing Nile water dispute. Nonetheless, provisions of the AU inform the EAC and NBI, especially its offer to dispose of contentious matters relating to natural resources that may be brought to its attention by member states.¹⁶¹

G. CONCLUSION

In seeking to resolve the Nile use dispute, the NBI is building confidence among the co-riparian states by inculcating a shared vision of sustainable exploitation of the Nile. The NBI has not, however, been able to correct the skewed legal regime of water

¹⁵⁷ Benedikt Franke, *Security cooperation in Africa: A Reappraisal* (Colorado: First Forum Press, 2009), 141.

¹⁵⁸ *Ibid.*, 141, 143.

¹⁵⁹ African Union, “African Convention on the Conservation of Nature and Natural Resources” (CAB/LEG/24.1, 2003), 5. <http://www.africa-union.org/root/au/Documents/Treaties/> (accessed Feb 15, 2010).

¹⁶⁰ Peter Kagwanja, “Calming the Waters: The East African Community and Conflict over the Nile Resources” (Pretoria: *Journal of Eastern African Studies*, 1; 3, 321–337, Nov 2007), 332 <http://dx.doi.org> (accessed Nov 12, 2009).

¹⁶¹ African Union, “African Convention on the Conservation of Nature and Natural Resources” (CAB/LEG/24.1, 2003), 9–10. <http://www.africa-union.org/root/au/Documents/Treaties/> (accessed Feb 15, 2010).

use, thereby prompting the escalating tension between the EAC countries and Ethiopia on the one hand, and Egypt and Sudan on the other. The EAC regional structure suggests a possible move beyond state-centeredness, and could open the way to multilateralism as the member countries adopt a common front in the quest for equitable access to Nile water.

Tackling the Nile treaties question is far from over and, if unchecked, the issue of water rights in the Nile River Basin can yet intensify into potential regional conflict. Egypt's refusal to compromise has galvanized upstream states to act in concert to address their concerns over water rights. While it is commendable that Egypt has offered to help finance the pursuit of alternative technologies and conservation in these states, it falls short of a real solution and, as expected, has been met with skepticism by the upstream states. Perhaps it might be worth the effort for the NBI to consider inviting the AU to formulate an international African Charter of Trans-Boundary Waters to override the colonial-based laws.

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VI. CONCLUSION AND RECOMMENDATIONS

A. CONCLUSION

This study has brought to the fore the fact that the Nile basin is one of the potential “flashpoints in contemporary international relations.”¹⁶² According to Cooke and Downie, “the number and cost of African conflicts have declined over the course of the past decade”¹⁶³ However, with the rise in population, deteriorating climatic conditions with increased unpredictability and unreliability of rainfall and falling water levels in the Nile, there is a worsening situation of food insecurity, as well as poverty and unemployment as a result of underdeveloped economies. Consequently, interstate conflict among the Nile basin countries over Nile as a shared water resource is likely, as the demand-and supply-induced scarcity is exacerbated by the structural-induced scarcity emanating from the contested colonial-era treaties that favor Egypt (Figure 2). The circumstances of the likelihood of conflict are depicted in Table 1.

In spite of efforts towards a cooperative framework, water security as a “national concern” continues to override the common-good principle for the sake of a regional citizenry. Egypt built the Aswan High Dam instead of supporting the proposed Century Storage Scheme for the Great Lakes region despite the fact that the Century Storage Scheme promised lower evaporation rates and would have benefitted the entire region. Currently, Egypt is evasive about proposals for equitable utilization by the upstream states, arguing that such proposals should acknowledge Egypt’s historic rights. Egypt’s moves, then and now, are a product of fear of dependence—and its belief that dependence would constitute strategic weakness. It is Egypt’s position, played against the

¹⁶² Yohannes Okbazghi, *Water Resources and Inter-riparian Relations in the Nile Basin: The Search for an Integrative Discourse* (State University of New York: Albany, 2008), 6.

¹⁶³ Jennifer G. Cooke and Richard Downie, “African Conflicts and U.S. Diplomacy: Roles and Choices” (Center for Strategic and International Studies Africa Program and the American Academy of Diplomacy Report, January 2010), 3. <http://www.academyofdiplomacy.org/pdf> (accessed Jan 10, 2010).

upstream states' position of adopting a cooperative framework to supersede existing treaties and institutionalize the principle of equitable utilization that has led to the current stalemate in resolving the Nile dispute.

The international community has leverage to help find a solution to the Nile dispute. The international community's intervention is necessary to prevent conflict that would destabilize the region, add to the call for peace enforcement and peacekeeping support to the continent, and worsen refugee problems. As well, equitable utilization of the Nile water would reduce the food aid dependency by some upstream states on the international community. With some of the Nile basin countries highly indebted, pursuing a "debt-for-cooperation" swap might help unlock the current stalemate on the Nile treaties renegotiation. So far, the international community including, world organizations such as UNDP, UNEP, UN, and the World Bank, and the regional organizations such as the AU and EAC, have helped ameliorate the interstate tensions among the Nile basin countries through the provision of emergency food aid, technical assistance, and facilitation of conferences.

It is, after all, conflicting international water law principles that sustain the present Nile dispute. Egypt is determined to maintain the status quo by holding onto the principle of absolute territorial integrity (with the claim that a lower riparian state has a right to a river's natural flow), the principle of prior appropriation (whoever uses the water first establishes a claim or right to it), and the principle of no significant harm. The confluence of these principles supports Egypt's veto power over use of the Nile, as does its argument of total dependence on the Nile. The argument of the upstream states, on the other hand, rests on the principle of absolute sovereignty (absolute rights over rivers flowing through a country's territory), the principle of limited territorial sovereignty (reflecting riparian co-dependence), and the principle of equitable allocation. In the past, disputes between countries over water have been resolved through mediation or the International Court of Justice. A United States presidential envoy mediated the 1953 Israeli, Jordan, Lebanon, and Syria standoff over the right to use Jordan River water. In 1975, Saudi Arabia

mediated the Syria-Iraq dispute over the flow of the Euphrates River.¹⁶⁴ The International Court of Justice arbitrated the Danube river dispute between Hungary and Slovakia in 1997.

Despite several attempts, the upstream states in the Nile basin have not managed to form sufficiently robust organizations to renegotiate the Nile water agreements for better access to and use of the Nile's water. The lack of a resolution arbitration mechanism has left Egypt and Sudan to continue monopolizing the Nile. Yet, worsening climatic conditions and rising populations will remain major contributing factors to a decline in water availability throughout the Nile basin, a situation that has compelled some upstream states to embark on unilateral water projects on the Nile. The upstream states' vulnerability to water scarcity is increased because they lack projects to capture and store freshwater. The power asymmetry between upstream states and downstream states combines with the fact that the upstream states' actions can produce negative consequences for the more powerful downstream states, and thus can lead to armed conflict.

B. RECOMMENDATIONS

- To give impetus to the stalled upstream-downstream states negotiations, the Nile basin states should present the Nile water dispute to the AU for arbitration.
- Alongside pursuing renegotiation of the Nile water treaties, the riparian states should explore other sources of water such as underground water and rainwater harvesting to militate against deficiencies in their respective countries.
- The International Community should intervene more proactively in resolving the water dispute. The downstream states currently exercising influence in the basin should recognize the imperative to accept a water

¹⁶⁴ P. B. Anand, *Scarcity, Entitlements and Economics of Water in Developing Countries* (Cheltenham: Edgar Elgar publishers, 2007), 92.

regime in line with the interests of the whole basin, given the geographical configuration of the basin and the changing geopolitics.

- All of the Nile basin countries should work towards a basin-wide cooperative framework with sub-basin projects initiated according to regional factor endowments, thereby creating interdependence. Production of hydropower and food according to who has a comparative advantage will help realize the “virtual water” concept through trade.
- There is a need for individual countries to consider creating incentives for smaller families to slow rapid population growth.
- Each country should undertake measures that reduce the destruction of water catchment areas, including poverty reduction, a factor that drives people to misuse water catchment areas in their bid to secure a livelihood.
- Individual countries should implement laws to regulate/prohibit water pollution and degradation. Joint conservation policies and a joint water management system that provides for the resolution of conflicts should be engrained in the Nile Basin Initiative.
- Pursuit of desalination efforts by economically strong nations, particularly Egypt, and the adoption of efficient water technologies could help alleviate future water deficits.

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