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The effect of the Okavango River on Angola's economic stability and the effect of its policy on surrounding countries

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The Effect of the Okavango River on Angola's Economic Stability and the Effect of its Policy on Surrounding Countries

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Dedication

To all of my professors at James Madison University, who constantly inspire me and continue to expand my heart and mind. And to my husband Lonnie, thank you for providing me with unconditional love and support throughout this process.

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Abstract

This study examines natural resources as a source of international conflict. Without proper management of these resources, conflict will continue to occur. An overview of natural resources and how they pertain to conflict is examined using examples from different parts of the world. Then water conflicts are focused upon and how proposals and resolutions through legal framework and guidance from outside entities can help provide better usage practices. Furthermore, the Okavango River is researched and how Angola's use of the water effects the countries of Namibia and Botswana. In addition, future proposals to move forward and increase international water security as new elements including population growth pose a threat to security is examined.

Introduction

"Water, like religion and ideology has the power to move millions of people. Since the very birth of human civilization, people have moved to settle close to it. People move when there is too little of it. People move when there is too much of it. People journey down it. People write, sing and dance about it. People fight over it. And all people, everywhere and every day, need it."

-Mikhail Gorbachev

This study will examine international natural resource conflict. Natural resources such as oil, water, and rare earths are essential for the evolution of human society. In particular, water is a resource that humans cannot live without; therefore, it is crucial to preserve the supply. This research will use the Okavango River as the example of how water, a vital resource is being managed and protected for future generations.

This research is essential to the understanding of why natural resource conflicts occur, specifically water in particular as a source of conflict. Literature that focuses on proposals for resolving these disputes is critical in order to move forward in preventing these conflicts and potentially wars from occurring in the future. Therefore, this study is not only important for identifying effective ways to limit natural resource disputes, but also may be beneficial in terms of discovering correlations between water disagreements and policy such as international law and treaties that will assist in decreasing the rate of future conflicts.

An overview of international conflict will first be provided as it pertains to natural resources. This section will examine various proposals for resolving such disputes relevant to this study and position the proposals with regard to water in particular as a source of conflict.

This paper also contains three country-specific sections on Angola, Namibia, and Botswana that will provide a brief historical background, an overview of their resource need and usage in the context of the Okavango River, and information about future project or policies, which include the river. The analysis and conclusion section will connect all of the information from the previous sections together to determine the effect that the Okavango River has on Angola's economic stability and how that policy will affect Namibia and Botswana in the future and if possible conflict could arise.

Review of Literature

For centuries natural resources have sparked disputes and conflicts internationally and hindered global peace and security. As populations around the world increase so does resource consumption, which can have significant impacts on environments at the local, regional, and global level. "The consequences of these violent conflicts are typically devastating. In addition to the direct loss of life and land, resource conflicts inhibit economic development and weaken governments" (Kehl, 2010). Therefore, there is a clear need to protect and procure the natural resources so that there will be enough for future generations. "It is argued that environmental pressure and resource scarcity escalate violence and affect both national and international security" (Rustad & Binningsbo, 2012). My generalized definition of natural resources is those materials that are derived from the environment and are not manmade. These elements include land, water, oil, gas, diamonds as well as gems, agricultural products, timber, minerals, and narcotics. Particularly I am focusing on conflicts that involve diamonds, rare earths, minerals, and water.

There seems to be a strong correlation between water supply and a nation's security. Because international freshwater is shared, unequally divided, scarce, and has the potential of being mismanaged, nations often have two choices: conflict or cooperation (Eckstein, 2009). In the decades to come, tensions will arise as water sources become increasingly limited. In January 2008, while addressing business leaders at the World Economic Forum at Davos, Switzerland, UN Secretary Gernal Ban Ki-moon cautioned that water scarcity could spell an increase in future conflicts, and added that "[p]opulation growth will make the problem worse," (Eckstein, 2009). A further hindrance is that water, especially freshwater is not dispersed equally in patterns that specifically meet the needs of populations around the world. This is especially a concern when

water is a transboundary resource in which it cannot be easily owned. This is a critical element to understand conflict can certainly occur if vital needs for human survival are not met. “For example, while Canada enjoys an enviable annual availability of 91,420 m3 of water for each of its 32 million citizens, Algeria, which has a similar sized population, has a mere 440 m3 per year for each of its citizens” (Eckstein, 2009).

Resource-based conflicts can be very problematic due to some members in the dispute actually benefiting from the unsettled environment at hand. Therefore, they could be reluctant to end the conflict because they might be gaining access to valuable resources, acquiring trade routes or obtaining monetary funds. This kind of debacle could have a direct effect on the lives of citizens where the conflict is occurring making them vulnerable to situations or even effecting states economies in a negative way. For these reasons, it is critical for proposals and resolutions to be implemented that both parties of the conflict can agree on so that the dispute can cease and losses whether it be lives or resources be kept to a minimum. Whether scarcity or abundance of natural resources affects the risk of conflict is likely to depend on intervening factors that make a state more or less vulnerable. The stability of political and economic institutions can attribute to the risk since they directly operate with the distribution and management of resources. The bottom line is that when individuals are deprived of their livelihood due to resource scarcity then they are left no other choice but must fight as a means to survive.

The following section discusses natural resources initiating international conflict. The examples of Sierra Leone, the Democratic Republic of Congo, and China. Section 2 examines water in particular and how this natural resource creates international conflict. The Indus River, Nile River, and Tigris-Euphrates River disputes hone in on this particular resource. In Section 3 proposals and resolutions will be discussed such as various treaties and international law that

look to reduce or end international conflict as well as discussing the resolutions that resolved past international disputes. There are more conflicts that have originated from natural resources, however, I intend to focus specifically on international conflicts.

I. Natural Resource Conflict

Natural resource conflict has become more of a concern in recent decades as they have become more scarce. "Natural resources foster recurring cycles of armed conflict because they provide a revenue base for belligerents, increase claims for secession, and perpetuate state fragility through incentives for corruption and mismanagement" (Wennmann, 2011). If conflict reoccurs, it is even more significant for high value natural resources such as oil and minerals because it means heavy losses for all entities involved. Scholars have emphasized the importance of natural resources abundance as a factor to increase the risk of armed conflict (Wennmann, 2011). For countries, especially those that are underdeveloped or only in the developing stages, natural resource wealth can have a wide span of negative results on a country. For example, it can deteriorate the interaction between the economy and state-society, form the methods and motives of belligerents, and manipulate the objectives of armed conflict.

A. Sierra Leone

Sierra Leone, a West African nation is bordered to the north by Guinea and Liberia in the South. The nation gained its independence from the United Kingdom in 1961 but has faced many obstacles. Most recently, it was plagued by conflict and strife for over a decade due to its wealth of diamonds. Known as the Sierra Leone Civil War, which began in March of 1991 ended in 2002 when the past president Ahmad Tejan Kabbah declared it finished.

The conflict in Sierra Leone arose when the rebel army, the Revolutionary United Front (RUF) attempted to overthrow the government, which was run by Joseph Momoh at the time.

The RUF was originally comprised of Sierra Leoneans that wanted to imitate the work of Charles Taylor and his forces known as Charles Taylor's National Patriotic Front of Liberia (NPFL) as they had overthrown the Liberian government. "In Sierra Leone, Liberia's Charles Taylor helped organize and support the 1991 RUF invasion to gain access to Sierra Leone's diamond fields" (Ross, 2004). In addition, a former businessman who had been forced out of the diamond occupation also allocated funds to the rebel group. The RUF exploited these mineral resources and though initially they did not possess any resources to sell, their plan was to sell future mineral rights, which could be secured in combat. "There is circumstantial evidence that the RUF leadership traded this financial support for future diamond rights-in effect, using informal mining futures to purchase their assistance" (Ross, 2004). In addition, the president at the time Ahmad Tejan Kabbah sold $10 million in diamond fortunes to a Thai banker so that the government of Sierra Leone could hire a mercenary group called Sandline, based in London. Because both groups; the Sierra Leone government and the RUF mortgaged diamond fields, it only prolonged the war. This conflict reveals that there were many actors across international borders who were jockeying for access to the resource rich area known to have diamonds. Scholar Michael Ross argues that resource wealth increases the probability of civil war by enabling rebel groups to sell future exploitation rights in minerals they hope to capture (2004). Because of globalization and the ability to access natural resources such as diamonds in remote areas due to technological advances, it has allowed industries to maintain a high level of production. In the eleven year conflict, many parties were attempting to access the great wealth the diamond fields possessed, thus it seems at times advantageous for entities to continue fighting. In addition, outside parties such as corporations or transnational companies who want to enlarge their wealth and supply are not always concerned with how this transpires. The Eastern

and Southern districts of the country housed a very large expanse of alluvial diamonds. The Eastern district known as the Kono District and the Southern part are the Tongo Fields in the Kenema District. People who were part of the rural population of Sierra Leone experienced difficult times during the conflict. They encountered the dangers of kidnapping, murder, theft, or property destruction by both the RUF rebels and government soldiers. It greatly affected the people of the nation because not only did they fear for their lives, but they were forced from their homes and were required to adapt to situations in a conflict prevalent zone.

Negotiations were at first an uphill battle for United Nations peacekeepers. There are several factors that helped to being about a peace treaty in April 2001. At first, the Revolutionary United Front was very reluctant to end the conflict. However, after their leader Foday Sankoh was captured, evidence of extensive unlawful diamond dealing was discovered. This weakened the party. In addition, the RUF became more compliant when British troops were brought in to protect key areas of interest to the rebel group. The troops prevented the Revolutionary Union Front from further expansion. The peace treaty would be a big first step for the war-stricken nation. It would pose a challenge for all of the entities of the conflict to support a lasting peaceful transition. However, due to the cooperation of all parties in the disarmament process and the demobilization of sites, every district in Sierra Leone was deemed safe for people to resettle less than a year later in February 2002. The nation would still have a long road ahead in creating sustainable economic and political growth however, the country as a whole was taking definitive steps in the right direction.

There are two main themes of the Sierra Leone conflict that are essential to understanding this particular resource conflict. The first is that the war was directly linked to the struggle for resources, in this case diamonds. Both the government of Sierra Leone as well as the RUF sold

future access to diamonds to continue to fund their cause. The other main point is that the war in Sierra Leone was never limited to a single state. In fact, it was a portion of a much larger region where the movement of people, weapons, and resources was never hindered by boundaries. These two elements are important in understanding natural resources as a source of international conflict.

B. Democratic Republic of Congo

Located in central Africa, the Democratic Republic of Congo is the second largest country in Africa by area. The DRC has been plagued with conflict for decades but most recently in the late 1990's and early twenty-first century there has been much violence and devastation within the country. Known as the Second Congolese War, these disputes involved nine African nations, predominately Uganda and Rwanda. In 1997, prior to the war, Laurent Kabila with the aid of several countries including Rwanda, Angola, Eritrea, Uganda and Burundi seized the capital city Kinshasa while President Mobuto was outside the country (Klare, 2007). Zaire was renamed the Democratic Republic of Congo by the new president Kabila. The Second Congolese War officially began in August 1998 when troops from Rwanda and Uganda invaded the country with the goal of overthrowing President Kabila. They strategically wanted to replace him with a Rwandan-backed rebel group known as the RCD (Koubi et al. 2014). Their plan never came to fruition because it halted when Zimbabwe, Namibia, and Angola backed the DRC. Rwanda would retract to the eastern part of the country and control parts of the territory. "The Ugandan and Rwandan governments decided to organize, and fight alongside, rebels in the DRC partly because of the DRC's resource wealth" (Klare, 2007). The country has a vast wealth of minerals, which includes being the largest producer of cobalt ore as well as having large supplies of copper and diamonds. The Rwandan government believed that the outcome of resource looting from the

conflict would offset the costs of entering the war. “Once inside the DRC, the Rwandan army established well-disciplined procedures for extracting Congolese resources and using them to fund the military effort” (Dam-de Jong, 2013). Unlike the Sierra Leone case where each side was selling off mining rights for the future, Rwanda was able to exploit the DCR’s natural resources and collect them firsthand to fund their military efforts. Furthermore, the UN Panel of Experts found that Uganda’s decision to enter the war was influenced, in part, by at least three figures who were eager to profit from the occupation of resource-rich parts of the DRC (Dam-de Jong, 2013). Natural resources that generate large amounts of revenue help create funding for each side fighting which can exacerbate conflict. This is exactly what occurred in the DRC. The government and RCD both were benefiting from the extraction of resources which continued to negatively impact the country as a larger entity.

The Second Congolese War would prove to have devastating effects for the people of the Democratic Republic of Congo. The conflict resulted in the deaths of 5.4 million people, the majority occurring due to displacement, which led to unsanitary living conditions causing malaria, pneumonia, and malnutrition. Because of the DRC’s vast wealth of resources, it has long involved many outside actors who wish to gain from their ‘resource curse’. This mixed with political instability has stunted the economic growth and infrastructure of the country.

C. China

China controls approximately 90 percent of rare earths in the world. Rare earths are critical to humans because they allow for the evolution of technical advances and have become irreplaceable. China’s monopoly over these natural resources has given them an irrefutable power that allows them to use substantial authority over price and supply. “The sudden suspension of rare earth exports from China to Japan in September 2010 after a maritime dispute

near the contested Senkaku/Diaoyu islands proved a rude awakening to an understudied problem," (Ting & Seaman, 2014). China has been putting heavy controls over these resources, thus exercising substantial authority and a pronounced monopoly is apparent.

Unlike natural resources that are visible like oil and copper, rare minerals are invisible but because Earth is moving to a more high tech or modern industry era, these elements have become significant. Rare earths are represented on the Periodic table as the lanthanide group and are comprised of 17 metals. Japan and South Korea are two large importers of rare earths from China. These two countries are directly affected by the decisions China makes on supply and demand. Both South Korea and Japan have sought alternative solutions to decrease their Chinese rare earth dependency.

Japan is attempting to decrease their dependence on China. Tensions rose in 2011 over the Diaoyu Islands or Senkaku Islands in Japan. The islands have long been the source of dispute between the two countries because there is thought to be natural resources on them as well as in the surrounding seabed's. Even if this turns out to be false, it will most likely continue to fuel the rivalry between the biggest nations in East Asia. "In September of 2010, Japan arrested a Chinese fishing crew whose boat had collided with two Japanese Coast Guard vessels near the islands" (Ting & Seaman, 2013). Tensions arose between the two countries and as retaliation, China ceased all shipments of rare earth elements to Japan. More recently, the Japanese government declared a proposal to purchase the islands which were held by private investors. This infuriated China and their response was that serious consequences would occur. China has even gone as far to say that the islands are sacred Chinese territories. Because of these long heated disputes between the two countries, new mining operations of rare earths have expanded to the United States, Australia, and Malaysia (Francis & Krishnamurthy, 2014). As more mining

exploration occurs in East Asia, it is almost certain that more conflict between Japan and China will arise especially over these islands and the surrounding areas.

In Sierra Leone and the Democratic Republic of the Congo natural resources were being exploited. Whether it was the selling of future mineral rights in Sierra Leone by the government itself or the rebel army to outside parties or Rwanda and Uganda invading the country and establishing exploitation methods, all parties had direct contact with these resources to gain monetary value. The Chinese situation is a bit different as over the decades they have created a monopoly of which South Korea and Japan are almost solely dependent on them. In these three situations, natural resources were the source of conflict because there was something of material value to gain.

II. Water Resources

Water is vital to human welfare. Whether it is consumed for household needs and sanitation or for agriculture or industrial production, humans need it to survive. "Presently, over 1.4 billion people lack access to safe water and 76% of the world's population lives in water-stressed areas" (Spain, 2011). This proves to be of serious concern especially as other variables arise such as the evolution of climate change which will only add to water depletion. "By mid-century, the IPCC predicts that overall fresh water supplies will decline as storage in glaciers and snow cover disappears (Spain, 2011). This prediction will have direct effects on millions of people throughout the world as there is no substitute for water. "As global populations continue to grow exponentially, and as climate change threatens the quantity and quality of natural resources, the ability of nations to peacefully resolve conflicts over internationally distributed water resources will increasingly be a factor in stable and secure international relations" (Wolff, 2013). In this section, three water disputes will be outlined and discussed. They will reveal the

motives and reasons these conflicts occurred. The Indus River, Nile River, and Tigris-Euphrates Rivers will be examined.

A. Indus River

The Indus River is a vital waterway that flows through Asia. It predominately runs through Pakistan, but also travels through India and a small part of China. In this literature review, we will only be discussing conflicts between India and Pakistan due to the dominance of this dispute. "The Indus water dispute was an international water issue originating in the independence of India and Pakistan" (Yamamoto, 2008). Because of this, India and Pakistan have long debated various elements as it pertains to the River.

After the independence of Pakistan and India, there was immediate tension over the Indus River. India has claim to the upper part of the river and Pakistan has the lower area. The first contract was written in December of 1947 and stated that Pakistan must pay fees for their water supply. The resolution was to terminate at the end of March 1948. Conflict arose when Pakistan did not renew their agreement, thus India stopped their water supply (Yamamoto, 2008). During the next couple of years, Pakistan had to resort to other methods of water distribution in their country as the conflict progressed and claimed that India was trying to divert the waterways. An important element is this dispute is that the river provides key water for Pakistan's economy. Most of the nation's production of agricultural goods comes from the province of Punjab, the countries breadbasket, which heavily depends on the Indus River system. Furthermore, Pakistan uses the river system as its leading source of potable water. The International Court of Justice became involved over the dispute but each side revealed little cooperation and understanding toward each other's needs.

The second stage of the dispute, which occurred in the early 1950's involved the World Bank. Several plans were proposed to promote equal distribution of the water system which involved both countries creating a system of canals and dams to utilize the river more efficiently and not let it drain into the Arabian Sea. The World Bank would help with financial contributions for the canals and dams. After approximately three years of negotiation and countless plans and proposals, no agreement was reached. India has signed the agreement however Pakistan claimed that it could cause major water shortages to their regions. Therefore, tensions remained high as the river would continue to lack proper allocation.

The third stage would begin with India accusing Pakistan of a lack of cooperation as India wanted to carry out urgent projects dealing with the river but could not due to no agreement being reached. "India stated that Pakistan had 'rejected' the World Bank's proposals and that India had the right to reduce its supply of water to Pakistan" (Yamamoto, 2008). Because India was preparing to open the Bhakra canal in 1954, Pakistan voiced its concerns to the World Bank stating that it was highly probable a Pakistani national emergency would occur. Pakistan made conditional agreements expressing that more reports and surveys needed to be conducted to insure correct usage of the waterway. In was not until 1958 that further progress was made between the two countries. The turning point occurred when General Ayub Khan obtained power through a coup d'etat. After this event, Pakistan was willing to reach an agreement concerning the Indus River (Yamamoto, 2008). A new proposal would be created by the World Bank and each country would be visited to further the negotiation process. The Indus Waters Treaty was signed by both parties in late 1960 and helped alleviate Pakistani fear that India could not control the Indus Basin, which could potentially create famine and drought within the borders of Pakistan. The World Bank played a major part in the financing of this

endeavor and helped India construct dams and canals that would assist with the continual cooperation between the two countries.

Since the signing of this Treaty, neither country has engaged the other in further water conflicts. Over time, tensions and disagreements have occurred due to issues that involve climate change and legal framework. However, this is thought to be one of the most successful water treaties to date.

B. Nile River

The Nile River is the longest river in the work stretching over 4175 miles and traveling through nine countries. However, it flows northward, predominately through Ethiopia, Sudan, and Egypt, emptying in the Mediterranean. The Nile is best known as being vital in the growth and evolution of the Egyptian civilization. The river is renowned for creating fertile soil, thus cities and civilizations were built alongside the banks of the Nile.

During the colonial period in the late 19th century and early 20th centuries, Egypt, the main consumer of the river secured unhindered access to the water (Haftendorn, 2000). However, more than fifty years later, Egypt realized that water was beginning to be reallocated. "With the Nile Water Agreement, Sudan granted its consent to the construction of the Aswan Dam. In return, Egypt agreed to a number of measures to reduce the harmful effects of the construction and to regulate the water flow (Haftendorn, 2000). In addition, Egypt and Sudan agreed to build the Jonglei Canal. However, because of civil war and instability that has struck Sudan in the last several decades, this never came to fruition.

Several key factors regarding the Nile River produces Egyptian fear even more that their access to the Nile could become more limited. The first is that Sudan and Ethiopia reached an agreement in 1991 over the mutual use of the river. In addition, Ethiopia declared that it has full

intentions to build several dams in its highland region (Haftendorn, 2000). This announcement caused great concern within the Egyptian government, realizing that its direct use of the waters could be reduced. "In response to Ethiopia's announcements, Egypt has threatened to combat such an event with military measures" (Haftendorn, 2000). Because of Egypt's arid desert climate, the Nile waters are its livelihood for agricultural production, thus food security. Furthermore, Egypt being a lower lying state is seen at a clear disadvantage compared to Sudan and Ethiopia which are located more South towards the mouth of the river.

Another growing concern for Egypt is the dispersed population of Sudan. Because of the instability and civil conflict within Sudan, many Sudanese have been displaced, resettling on the banks of the Nile. This generates concern for Egypt as Sudan currently relies more heavily on the Nile. "Thus rather than rapid economic development, to which high water abstraction is often attributed and which has always aggravated Egypt's fears, it is the very failure of such development in Sudan that is actually now increasing Sudan's demand for Nile water" (Zain, 2008). What makes this matter even more complicated is not only the recovery of Sudan after brutal civil war, but it is a larger number of Sudanese that are relying on the Nile for their daily survival.

See Appendix A, which highlights the top twenty towns in Sudan and their population increases from 1956-1993. The cities which are located near the Nile River system are referred to as the riverine zone (RZ) and the remaining territory in Sudan will be labeled as non-riverine zones (NRZ). (Zain, 2008). The top five towns in population are in the riverine region and it is evident that there are far more riverine towns with higher populations than those non-riverine zones. Scholars have noted that population growth reduces water availability or causes water

stress and scarcity (Zain, 2008). It is observed that Sudan will continue to require more of the Nile waters, which will directly pose a threat to Egypt. From the table it is understood that recent population growth in the RZ region is apparent. "This is precisely because large numbers of farming and herding communities from the margins of the desert as well as from other ecological zones have now clustered on the RZ's irrigable lands" (Zain, 2008). Tensions between Egypt and Sudan will most likely arise in the years to come unless some formal agreement occurs which helps protect the people and land of Egypt.

C. Tigris-Euphrates

The Tigris and Euphrates Rivers flow parallel forming a major river system located in Western Asia. They originate in the eastern part of Turkey, which houses 90 percent of the water flow of the Euphrates and 50 percent of the Tigris and continues through Syria and Iraq, dispersing the remaining water into the Persian Gulf. Turkey clearly has the upper hand on the amount of water that originates in its country. "Turkey has to date only utilized a small part of this water resource. In contrast, the water needs of Iraq are almost totally dependent on the flow from the Euphrates and Tigris, while Syria depends heavily on the Euphrates. Both states need the Euphrates for human water-consumption, for irrigation projects and for the generation of electricity (Haftendorn, 2000). All three countries have constructed multiple dams to enhance their use of the river systems. This has created political tension among states and came to a head in the 1970's when the Assad Dam was built and military conflict was narrowly avoided between Syria and Iraq (Haftendorn, 2000). Turkey seems at an advantage because it does not rely as heavily on the Tigris and Euphrates river system like both Syria and Iraq. "Since 1975, Turkey's extensive dam and hydropower construction has reportedly reduced water flows into Iraq and Syria by approximately 80 percent and 40 percent respectively" (Odom & Wolf, 2011). This

Turkish program is entitled the Southeastern Anatolia Project. These are alarming numbers as both Syria and Iraq use the river for agricultural production as well as for human consumption.

Water management has been the target of concern for these three countries. Tensions will only exacerbate the relations between the three countries as there is not enough supply for the demand that each country desires. The two tables below further explain the relationship between supply and demand of each waterway.

Unproductive cooperation over water management means that tensions and disputes will continue unless an agreement or legal framework is created to protect each countries interest as it pertains to the Tigris-Euphrates Water System. "Water disputes in the region clearly stem from the mismatch of supply and demand" (Kibaroglu et al. 2008). Turkey's Southern Anatolia Program is expected to be complete in 2017, which will only heightened hostilities within the region.

With all there of these water conflicts, there is one common theme; the issue of supply and demand. Pakistan's economy relies heavily depends on the Indus River and fears that India could through dams and canals greatly reduce the amount of water that flows downstream into Pakistan. This is similar to the case of the Nile river where Sudan and Ethiopia reached an agreement in 1991 which discussed their mutual use of the river with Ethiopia constructing a dam in its highland region. . Because these two countries are upstream, Egypt could see a reduction in the amount of water that would flow downstream which could have direct effects on their agricultural production. The final example of the Tigris-Euphrates River System exposes tensions over supply and demand as well. The Turkish Southeastern Anatolia Project creates great concern for Syria and Iraq as they rely heavily on the river system. This project will reduce

the flow of water downstream for these two countries, which could only heightened the tensions that already exist.

III. Resolutions and Proposals

Participants in resource-based conflicts can actually benefit from the unsettled conditions because they are gaining wealth from the resource itself. Therefore, as resolutions and proposals are studied, we must take this fact into account and construct framework that will benefit all members. In this section, International Law is discussed as it pertains to resource conflicts. Furthermore, common building blocks for successful negotiations will be noted.

International law is loosely defined as a series of guidelines that is commonly accepted by nations and states. Its structure aids international relations by helping to establish a stable and organized environment. "Sovereignty defines nationhood and is the foundation of international law and institutions" (Bruch , 2012). State sovereignty means that nations have legal access to their natural resources and a direct responsibility to use these resources for the development of their nation including the betterment of people and society. International law must provide structural framework to break the link between national resources and armed conflict (Dam-de Jong, 2013). It is imperative that the necessary guidelines are in place so that governments and people will be better prepared for the changes in resources, especially water resources that are to come.

Future water resources are of great concern as new threats such as climate change will continue to challenge the world. Customary international law as it applies to transboundary water resources reveals, "cornerstone doctrines binding states to an equitable and reasonable utilization of transboundary surface or ground water resources, and ensuring that their activities result in no significant harm to other riparian states" (Eckstein, 2009). However, it seems that international

water law lacks the policies to meet the challenges of scarce water resources. What if a country needs these water resources for their people to survive? What would the lower lying nation be faced with if their water source was reduced significantly or depleted all together? "The link between water and a nation's security cannot be underestimated. When faced with the threat of demise, it is inevitable that people will fight for their survival and stand against anyone whose actions might challenge their existence" (Eckstein, 2009). Furthermore, few nations have taken the appropriate steps to respond to future impacts on domestic fresh water. This poses a threat of international security that will most likely have devastating effects unless legal framework and cooperation is established. A normative framework as to how nations should act according to their resources such as water is essential, however, outside institutions such as the World Bank and United Nations must implement these guidelines.

An approach of cooperation and trust must exist if current and future challenges are willing to be negotiated and solved. It is important to realize that there is no one size fits all solution when it comes to natural resources especially water supply. However, there are common building blocks that must be implemented for successful negotiation. International institutions should play the part of establishing norms and principles on the use of natural resources. Once these principles are established then they can further be examined on a case by case basis and implemented.

One principle which can help create stability is the promise of international development aid. "Recipient countries can use international financial aid to promote development, build infrastructure, increase government capacity to provide public services, and many other projects to increase economic and political stability" (Kehl, 2010). Many developing countries are known to hold prized resources, which makes them even more prone to conflict. Addressing these

conflicts by turning from an exploitation of natural resources generating economic stability is for the betterment of the land. Most developmental aid has contingencies, which allows for agencies like the World Bank to have power when dealing with nations or rebel groups. This aid can build infrastructure and stimulate a macroeconomic recovery.

Along with international development aid, cooperation is a vital principle that cannot be overlooked. A collaborative approach to the management of transboundary waters, as it related to a nation's shared fresh water resources, is directly related to the geographic and hydrologic relationship that the nation enjoys with its neighbors. It in no way internationalizes a country's fresh water resources, but rather reflects the reality that interrelated water resources can best be managed in an integrated and collaborative fashion (Eckstein, 2009). Currently cooperation between nations is infrequent. Therefore this is an element that must be addressed by third parties such as the Security Council and the World Bank. Because of the lack of cooperation, the result has been mismanagement and conservation of shared waters, which has sparked conflict and been detrimental to economic development, the environment, human health, and international relations.

Permanent institutions such as the World Bank and United Nations must accept a more leading role especially in the conflict-resolution and monitoring stage after negotiations have occurred. It is understood that nations are reluctant to give up their sovereign right. However, how successful an institution is on carrying out their objective heavily depends on how much power they are allocated. If power is not given to a third parties, then it is must harder to reach an agreement. Because it is not a one size fits all remedy to resource conflict, institutions must adapt and change their planning and implementation on a need specific basis. "The way ahead is to develop a loose legal framework to management policies and then address specific

resource-conflict links" (Rustad & Binningsbo, 2012). Furthermore, on-going mediation support must occur by the third party to help prevent any conflict or dispute from reoccurring. . In the end, international actors must assert power by providing incentives and constraints to alter the cost-benefit calculations of pursing cooperation versus conflict. Though there will be limitation and obstacles to every negotiation process, third parties will have a greater chance for creating an atmosphere where cooperation can occur.

The final building block to assist with the natural resource conflict battle is transparency and other anti-corruption regulations. These elements hold entities accountability for the use of their resource revenues. A type of monitoring system will assist with transparency in the future so that peacebuilding and economic growth can be realistic goals. However, transparency and regulations can only be carried out if there is an enforcement mechanism. "Therefore, it is important to increase accountability for government leaders and business executives who break the rules of resource production and consumption" (Kehl, 2010). Some examples of holding leaders accountable is through court trials if they commit human rights violations or break international trade rules. International actors can provide guidelines for holding entities accountable or they can contribute financially to help establish transparency procedures. Third parties can play a leading role in establishing proposals and regulations to help end natural resource conflicts.

IV. Conclusion

Resource conflicts disrupt global peace and international security. As future challenges pose new threats to natural resources, especially water sources, the international community must have regulations and a legal framework in place to combat conflicts.

Several natural resource conflicts have been discussed. Both in Sierra Leone and the Democratic Republic of Congo outside actors got involved to exploit their natural resources. In Sierra Leone, the Revolutionary United Front and the government of Sierra Leone sold future mineral rights to further each's cause. Those purchasing the future mineral rights wanted access to the diamond fields and exploited the circumstances. In the Democratic Republic of the Congo, Rwanda and Uganda got involved because they could exploit the wealth of minerals like cobalt and copper that the DRC held. However, in China, the Chinese had created a monopoly for rare earths, thus South Korea and Japan relied heavily. The dispute over the Diaoyu Islands or Senkaku Islands directly correlates with the monopoly and control China wants to continue to have.

Expanding populations and continuing economic development will continue to strain scarce water resources. In all three water cases, the issue of supply and demand was discussed. The Indus River dispute became very problematic when India cut off Pakistan's water supply because they halted negotiations. Furthermore, Egypt could see their water resources from the Nile greatly diminish as Ethiopia and Sudan construct dams and canals for the betterment of their purposes of use. Water management is a major concern for the Tigris-Euphrates water system as the lower lying of Syria and Iraq need the water resources for economic development and to fulfill basic human needs.

A legal framework, cooperation, and third party institutions must occur for better negation of resource conflicts in the future. Resource conflicts will continue to effect the global community unless we provide preventive process to address them.

Methods & Design

This study will use a comparative case study design to determine the effect the Okavango River has on Angola and the surrounding countries of Namibia and Botswana and to understand how prevalent conflict is for the region as it relates to the Okavango River. The comparative case study method is selected to examine contemporary events in which the selected behaviors cannot be controlled or manipulated, to draw connections between theory and observable trends and occurrences and phenomenon pertinent to the study. This study will examine the use of the Okavango River by the three nations of Angola, Namibia, and Botswana and how the countries effect each other and seek to identify a correlation between presence or absence of policy and oversight of the waterway and conflict in the region. The comparative case study design is the most effective design for this particular study given the highly contextual nature of the evidence that is essential to determine the correlations, if any, between the effect the Okavango River has on the three nations and the arguably subjective conclusions drawn from the research regarding the conflict over water in these three African countries. While the case-study design method is both relevant and beneficial for this particular study, this method of research design is not without limitations. Due to the nature of case studies themselves, a causal relationship cannot be established given that the research cannot be performed in an environment in which the variables can be controlled. Therefore, case study research can only attempt to display a correlation between these phenomena. For the purpose of this study, we are discussing the prevalence of conflict in the three countries of Angola, Namibia, and Botswana.

This case study will perform as a causality study and will draw conclusions and assess the likely causes and possible solutions of water resource conflicts in the Okavango River Basin. In doing so, it is guided by the following questions: Does each country have a stable

government? Is there cooperation between the countries that use the water system? Are there legal frameworks established that set standards to protect the waterway? Are there dams which hinder stream flow? Do third parties control the river system in any way? Is the supply and demand being met for each country? What type of economic stability does the waterway provide? What percentage of people in the country live near or directly use the waterway? The causality study is an applicable method in that it will generate hypotheses for future analysis based on the conclusions of this research. A causality approach will be most valuable in terms of understanding the climate for why conflicts occurs as it pertains to water as a scarce natural resource. There are limitations to this study which pertain to the lack of public records as well as both time and physical constraints of conducting interviews and gathering information in all three countries. Therefore, the information for this particular study will be predominately obtained from peer-reviewed journals, the United Nations and World Bank.

The Okavango River which runs through Angola, Namibia, and Botswana was selected for this study based on a number of related and unrelated conditions. There are quite a few significant similarities which these three countries share. The first parallel condition is Angola, Namibia, and Botswana is all can be identified as post-colonial states. Angola, which experienced the most colonial control lasted centuries under the Portuguese as they exploited its natural resources as well as human resources in the slave trade. Furthermore, Namibia came under German Imperialism and after the First World War, South Africa claimed rights to the land which hindered Namibia as they fell under the policies of apartheid. Botswana also dealt with colonization within their country as they were occupied by the British Commonwealth which ceased in 1966. In all three cases, this created an atmosphere for instability of traditional life and culture as well as potential political and economic instability.

While there are similarities between the three countries, there are also many differences as well. Angola, seems to be an outlier in the context that it after it gained its independence from Portugal, it dealt with civil war for twenty-seven years. This brutal civil war would result in millions of deaths, millions others would become refugees, and create an environment for political and economic instability. Though the countries of Namibia and Botswana would not gain independence without a fight, the aftermath of independence seemed to be more fruitful. Unlike Angola which had rebel leaders and groups fighting for power, Namibia came out of independence from South Africa with a multi-party system as well as a functioning infrastructure and strong administration. This is drastically different from Angola as they took several years to establish a constitution and still continue to house a corrupt and unstable government. Furthermore, Botswana was held under British rule which ceased in 1966. Like Namibia, it has seen a stable government and had numerous success cultivating on of the fastest growing economies especially with the discovery of natural resources such as diamonds.

This study is focusing on these three countries because they share the Okavango River which will be examined to determine if conflict is and will be prevalent in the region due to various factors such as supply and demand. This study will examine the intricacies of these countries and their use of the water system. However, because case studies are not performed in an environment in which variables can be controlled and kept constant, there will naturally be some variations given that no two cases are identical. For this study, Angola, Namibia, and Botswana have many similarities in that they are all post-colonial states as well as being developing nations, however there are differences in the sense that Angola endured a long colonial rule and a civil war that lasted almost three decades. This is very different from the

relatively stable governments and economies that Namibia and Botswana gained after their independence from South Africa and Britain, respectively.

Historical Overview

I. Angola

Angola is a country in Southern Africa which touches the Atlantic Ocean, and bordered by the Democratic Republic of Congo to the north, Namibia to the south, and Zambia to the east. The history of Angola, like many counties in Africa is inundated with conflict. It experienced a twenty-seven year civil war which began in 1975 and ended a little over a decade ago in 2002. During that time it suffered physical, social, and political strife which hindered its development for decades. The Portuguese colonized the country initially in the 15th century where they mostly settled along the coast for centuries. Inequalities grew between the Portuguese and the indigenous peoples as Angola became a major Portuguese trading region for slaves. Between 1580 and 1680, over a million Angolans were transported to Brazil. The slave trade in Angola lasted over 250 years and was finally abolished in 1836 (Francis & Krishnamurthy, 2014). Beginning in the 19th century, Angola would move inward establishing more of a presence throughout the interior of the country and Angolans showed much resistance. For centuries, the Portuguese would create an environment for oppression and exploitation of the indigenous peoples with only comprising a small portion of the population. The Portuguese as well as the British used the region for mining, railways to transport goods from the interior of Africa, as well as for agricultural purposes. The Angolans were used as a forced-labor system to further the Portuguese in their African endeavors.

In 1951, Angola would transition from a Portuguese colony to an overseas province, thus being termed the Overseas Province of Angola (Francis & Krishnamurthy, 2014) Angola still reigned in the region, however, that would soon change. In 1956, the socialist guerilla independence movement known as the People's Movement for the Liberation of Angola

(MPLA) was formed and would be based in Northern Congo (Francis & Krishnamurthy, 2014). Other rebel groups would be established to help with the war efforts. These included the National Front for the Liberation of Angola (FNLA) and the National Union for the Total Independence of Angola (UNITA) would prove to have major impacts on the independence of Angola. This would be the beginnings of a stand against the Portuguese oppression for centuries. Guerilla warfare would begin in the late 1950's with countless revolts on plantations and mining land leaving over 50,000 dead. The Angolan fight for independence, known as the Colonial War would last almost a decade and a half with the Portuguese finally seceding in 1974 (Warner & Meissner, 2008).

With the collapse of the Portuguese empire in Angola due in part to the Lisbon coup d'état, the country would face a bitter civil war which would last several decades as the three rebel parties, the FNLA, MPLA, and UNITA jockeyed for control on the country. When the Portuguese withdrew from Angola, a Marxist dictatorship was established. "Yet this new government was a failure because it could not foster political stability and economic growth (Warner & Meissner, 2008). The bitter civil war would claim millions of lives and numerous others would become refugees. As the war progressed, the UNITA and MPLA became the two opposing parties which continued to struggle for power. This civil war would also have an overwhelming impact on the political situation in Angola as corruption became prevalent with the evolution of the war. Ultimately, Angola's countless resources including human, natural, financial, and institutional dissipate.

The civil war would conclude with a ceasefire with UNITA being the major opposition party, but the MPLA claiming power. It would take almost 6 years later for any democratic processes to be established due to the fragile and unstable nature of the country. A new

Constitution of Angola would be implemented in 2010 which would give further power to the MPLA group. The corruption of the nation's bureaucratic institutions continues to be widespread due to its vast natural resource wealth as distinction between governance and business on the part of the political elite became distorted (Warner & Meissner, 2008). This would become an apparent theme with the progression of the new nation of Angola even as the United Nations and other institutions would aid the country who faced many obstacles including their serious humanitarian crisis.

II. Namibia

The country of Namibia is located in southern Africa who is bordered to the north by Angola and Zambia, to the east by Botswana, and South Africa to the south and the Atlantic Ocean to the west. The lands of Namibia have been claimed by indigenous peoples such as the Damara, Namaqua, and Bantu until under German Imperialism, it was claimed as a protectorate in 1884. After World War I, the League of Nations delegated the lands of Namibia to South Africa. South Africa would impose their policies of apartheid on the country (Kreamer, 2012). Due to rebellion and petitions by Africa leaders to the United Nations, it would directly take control and responsibility of the territory. However, the government of South Africa did still have some control over the country. Violence and rebellion continued to occur and after 106 years of German and South Africa rule, Namibia became independent on March 25, 1990, under a democratic multiparty constitution (Kreamer, 2012). Namibia has gained much stability and success since their independence. "Namibia inherited a well-functioning physical infrastructure, a market economy, rich natural resources, and a relatively strong public administration" (Kreamer, 2012). The country benefits from several natural resources including gold, silver, uranium and precious gems such as diamonds. However, with these strong components which

help to the stabilization of a country, they also were plagued with tremendous social and economic inequalities. This has resulted in an extremely dualistic society. “In addition, the country is vulnerable to short- and long-term environmental shocks as all major sources of growth depend heavily on Namibia’s fragile ecosystem” (Kreamer, 2012). All of these elements create an environment for difficult job stability, thus poverty and inequality remain a major concern.

III. Botswana

Botswana, unlike the other nations is a landlocked country in Southern Africa. It is bordered by Namibia to the northwest, South Africa to the South, and Zimbabwe to the East. Formerly a British protectorate known as Bechuanaland, it received the new name of Botswana after its independence from the British Commonwealth in 1966. Since its independence from British control, it has become guide and success story. In 1966, it was one of the poorest countries in Africa. “in the years that followed, supported by the discovery of diamonds, Botswana has been one of the fastest growing economies in the world and moved into the ranks of upper-middle income countries” (Madani et al., 2014). This boasts an incredible achievement as its gross domestic product (GDP) at one point was roughly $70. Currently, the country has seen an average annual rate of 4.6% between 1994 and 2011 (Kreamer, 2012).

The Botswana Democratic Party (BDP) has claimed power since the first elections which were held in 1965. Their established democracy which its developed constitution has carried out fair elections since its independence. “Botswana’s impressive track record of good governance and economic growth supported by prudent macroeconomic and fiscal management, stands in contrast to the country’s high levels of poverty and inequality and generally low human development indicators” (Kreamer, 2012). This means that for the majority, there has been

substantial development for the majority, however, there are still portions of the country that remain in poverty. This is especially prevalent in the rural areas. As a direct effect of these figures, Botswana has one of the highest income inequality in the world (Koubi et al. 2014). Though Botswana has made enormous progressive and still must continue to strive for further development.

Analysis

This section will analyze the eight different questions proposed in the methods and design section. Each question is vital in understanding the prevalence of conflict and proposing a framework to better manage the Okavango River.

A. Government Stability

Government stability directly impacts the use and development of the Okavango River System. Angola faces the devastation and aftermath of a twenty-seven year civil war, which has hindered all elements of development, including social, political, and economic. The civil war has prevented accurate data from being collected, which hinders government decisions and furthermore future proposed developments will produce less certainty as little raw historical data is known. The country continues to lack stability within their governmental structure. Further evidence of the lack of stability within Angola is a revised Constitution was adopted in 2010 with the potential to further legitimize and provide more strength to the government itself. This lack of stability unequivocally poses a threat to both Namibia and Botswana as Angola is located at the headwaters of the Okavango.

Contrary to Angola, Namibia boasts a much more stable government. After their independence in 1990 in which they were under South African rule, Namibia had little civil strife within the country and was able to achieve a strong public administration very quickly which proved advantageous as they were able to further development socially, politically, and economically.

Among the three countries, Botswana by far has the highest stability within their governmental structure. The Botswana Democratic Party (BDP) has been in power within the country since their first elections in 1965. Botswana continues to produce an elevated track

record of good governance. This proves advantageous in terms of the Okavango River System as the country can help offset the significant instability that Angola's government poses.

B. Demand and Use of Water System

In order to ensure the Okavango River system can sustain and satisfy future generations, "it should be guided by Integrated Water Resources Management (IWRM) principles, i.e. equity, efficiency and sustainability" (Mbaiwa, 2004). This is essential to the future growth of the river system. The water demand for each country was calculated, with Angola needing approximately 60%, followed by Namibia requiring 22%, and Botswana with the least demand of 18% (Mbaiwa, 2004). Furthermore it is noted that water demand will continue to rise for each country as populations increase in the years to come. In addition, Angola could see a further rise in demand as internally displaced Angolans returned back to the river to live on the resources provided by the water. This has been hindered due to the land mines that still are potentially active in some areas. However, resettlement will be most likely occur spontaneous and unplanned, therefore environmental problems are sure to emerge.

See Appendix B. The table reveals the estimated water demands and use patterns in Angola, Namibia, and Botswana. Angola predominately uses their water for subsistence (rural) and domestic (urban) use. Botswana's demand is more diversified through subsistence and agricultural activities making up roughly three-fourths of their use, while the last twenty-five percent is through domestic use, tourism, and stock watering. Namibia's greatest use of the Okavango is through agricultural activities. Subsistence and domestic use prove to be the other main demands for their water consumption.

C. Cooperation Among Nations

Water conflict within the region can only be avoided with proper planning and cooperation. Because these three countries remain in the developing stages as well as fourteen major ethnic groups with different cultural backgrounds inhabiting the Okavango River basin, they face even greater challenges. Due to the civil war in Angola, it has made cooperation by the riparian states difficult. Therefore, sustainable use of the resources of the Okavango River area highly dependent on political cooperation between Angola, Namibia, and Botswana. However, there have been steps taken to promote better water management by the three states. For example, the Permanent Okavango River Basin Water Commission (OKACOM) was founded in 1994 (Kgathi et al., 2006). The purpose of the commission is to provide the governments of each country with information concerning the transboundary issues in the basic and facilities the continual communication between the basin stakeholders. OKACOM is critical to the future success of the cooperation between states as it provides a legitimate partnership to help ensure the proper management of the water system.

D. Legal Frameworks

Legitimate structures are essential is holding each nation accountable as it relates to the river system. There have been four regional interstate frameworks that have been created to assist with water management. These are the Southern African Development Community's Protocol on Shared Water Courses, the Permanent Okavango River Basin Water Commission, and the Ramsar Convention on Wetlands of International Importance. It is important to note that there are a number of formal agreements in place which potentially form the basis for cooperative and sustainable resource use throughout the Basin. However, much depends on political will.

The Southern African Development Community (SADC) Protocol on Shared Water Courses was signed in 1995 and implemented in 1998 (Mbaiwa, 2004). Botswana and Namibia signed the agreement, however, Angola has yet to become a part of SADC. "The protocol is meant to bring water use in the region in line with international water law particularly the United Nations Convention on Non-Navigational Uses of International waters" (Mbaiwa, 2004). There are several significant points within the Protocol. These include that member-states within a shared watercourse system are obligated to establish close cooperation with their neighbors in all projects and utilize the water system in an equitable manner. In addition, "the protocol also states that a shared watercourse system shall be used and developed by member-states to attain its optimum utilization and for the benefits consistent with the adequate protection of the watercourse system" (Mbaiwa, 2004). The SADC Protocol aids the region in strengthening all water development within the region. The Protocol promotes cooperation within the region and between the three states which share the water of the river, however, it is the government's decision to abide by these guidelines, therefore political will is important in this matter.

The second legal framework that has been established is the Permanent Okavango River Basin Water Commission also known as OKACOM. This institute was established, "in partial reaction to the pressure on water resources but also as a reflection of the changing political context in the region" (Mbaiwa, 2004). Though OKACOM is relatively young in nature, the expectation is that it will become a major driving force in the sustainable development of the Okavango Basin and oversee all developments.

The Ramsar Convention on Wetlands of International Importance was ratified by Botswana in 1997 to encourage conservation. "The Ramsar Convention is an international agreement that seeks to promote awareness and cooperation in the conservation of threatened

wetlands, particularly ecosystems that support a wide diversity of species" (Mbaiwa, 2004). Namibia has ratified the Convention; however, Angola has not. It is essential that Angola become a partner in conservation as 94.5% of the river flow begins in Angola. Their partnership will help to limit potential violent conflict and disputes over water use. Through adherence to these protocols and agreements, Basin states can demonstrate their commitment to mutually beneficial and sustainable development in the Okavango River Basin.

E. Dams

River systems play a critical role in providing sustainable livelihoods of people living among them. "The Okavango Basin (ORB) remains of the least human-impacted basins in the African continent" (Mbaiwa, 2004). However, this could change drastically as socio-economic pressures pose a potential threat as all three countries as future development of dams may be inevitable.

The energy minister of Namibia, Mr. Jesaya Nyamu proposed a dam and hydropower plant to be constructed in the Western Caprivi region of the country. This proposition would cost an estimated $300 million and would provide electricity to a majority of the area (Kgathi et al., 2006). However, the new project never came to fruition as OKACOM and other stakeholders of the river disagreed with the plans. Future proposals for dams as well as other hydropower plants could emerge, but currently the river has no dams to speak of. It is one of the favorable aspects as it has endured very little change through human development.

F. Third Party Control

Surprisingly there is little third party control over the Okavango River. Because most of the farming in subsistence in the area, there are not any large corporations that are asserting large amounts of power on governments to develop policy around their requests and demands. In

addition, there are currently no dams or hydropower plants as previously stated which also limits the amount of third party control. OKACOM, which is a Commission to assist in communication between the three countries of Angola, Namibia, and Botswana is a guiding force to better manage the water resources of the river. However, it is not a major stakeholder, but merely an intermediary for the nations.

G. Economic Stability & Livelihoods

The Okavango River system is essential to the livelihoods of people groups within the Basin. There are already existing pressures concerning the use of the water system and these will most certainly increase as population growth and Angolan resettlement as well as other factors occur. Due to the high incidence of poverty in the basin, the majority of people depend on natural resources freely available from the river and surrounding areas to support their livelihoods (Kgathi et al., 2006). Poverty seems to be the most severe in the Angolan part of the basin, however, because this region has a sub-tropical climate, it has the most potential for rain-fed agriculture, growth of tourism, and hydropower generation in the upper catchment. On the contrary in Botswana and Namibia there is a semi-arid climate which requires both countries to depend on the Okavango much more for their agricultural endeavors and tourism industry.

The main natural resource-based livelihood activities in the Okavango Basin include arable farming, livestock farming, collection of veld products, basket making, fishing, and tourism. This reveals the underdeveloped region, thus the river directly impacts people groups as they need it for their daily existence. “It is estimated that in Angola there are 60,000 farmers involved in small scale arable farming and livestock farming, as compared to 18,000 and 8500 in Namibia and Botswana respectively” (Kgathi et al., 2006). The pristine nature of the river is very important to Botswana as tourism is the second most important economic activity after diamonds

in the nation. Botswana continues to initiate and develop water management structures as well as other outlines to keep the Okavango Delta from little development. Namibia has plans to use the river water to supply the central western parts of its nation, expand its irrigation arming projects in order to boost production of food and cash crops, and also to construct a hydro-power plant at Popa Falls (Kgathi et al., 2006). Namibia's plans will directly affect both Angola and Botswana, therefore conflict could arise between states as each has their own agenda. In the long-term, socio-economic pressures may result in irretrievable environmental breakdown and the consequent loss of domestic and global benefits. No matter what strategies are implemented for the Okavango, it will have an effect on all riparian states, whether it be positive or negative.

H. Direct Use of Okavango River

When deciding strategies and policies for sustainable water management, it is essential to understand the population distribution of the area that directly using the water system. According to Kgathi et al., approximately 600,000 people live in the Okavango Basin, with 58% residing in Angola, 27% living in Namibia, and 15% residing in Botswana (2006). Due to the headwaters being in Angola, this is important information to understand the prevalence of conflict in the area. In addition, because of the civil war in Angola, it is thought that there are over 200,000 internally displaced Angolans that may call the river system their home as they migrate back to the region. This will directly effect Namibia and Botswana as the supply of the Okavango river could decrease for these two countries due to the increase population. Furthermore, the population in Namibia has also enlarged as the area around the river has become a major food producing region (Kgathi et al., 2006). Furthermore, it is certain that these factors will either generate cooperation or conflict in the Okavango River Basin.

Conclusion

The Okavango River is an important source of livelihoods for the communities living around the basin. Angola predominately uses it for subsistence farming, Namibia for agricultural production, and Botswana for tourism. Because each country utilizes the water system in different ways, it is essential they address better water management practices. It is expected that the pressure on the river and its natural resources will increase in the future, primarily because of demographic changes and the increase in socio-economic needs in the basin, the peace process in Angola and the various development initiatives taking place in the basin states. Without enhanced legal framework and enforcement, the river will not be properly utilized, therefore scarcity of the resource could be exacerbated in the future.

Through analysis and examining the eight questions, it is apparent that cooperation among the riparian states must be strengthened. Furthermore, Angola unstable government will continue to prevent the country from appropriately addressing the issues concerning the river. Currently, there are no dams that hinder the flow of water, however, in the last several decades each country has proposed the construction of a dam at one time or another. Therefore, it is expected that new proposals will most likely include the erection of a dam.

This study examined the way in which the Okavango River effected the economic stability of Angola as well as its policy and how these elements effect Namibia and Botswana. The evidence suggests that due to its immense poverty, Angola depends on the water system for subsistence agriculture and the resources that the Okavango provides. Furthermore, it is evident that there are guidelines and institutions such as the OKACOM are put in place to better manage the Basin. However, these entities seem to have little enforcement as they are relatively new.

Further legitimacy will help them to be a driving force to enhance the cooperation, communication, and better management practices for the Angola, Namibia, and Botswana.

Sustainable utilization for the Okavango River will be no easy feat. There are numerous hindrances that will further the struggle between cooperation and conflict. These include:

1. The twenty-seven year civil war that Angola endured
2. Uncertain political will both within and across states
3. Lack of raw data for better water management practices due to underdevelopment and conflict
4. Inadequate legal frameworks which generate little enforcement
5. Communication problems due to different languages being spoken between the three nations.

These as well as many other barriers must be addressed for progress to be had. The Okavango River poses a significant opportunity to display that the sharing of water resources by riparian states can generate peace and sustainable development, instead of resource scarcity and conflict.

Appendix

Appendix A

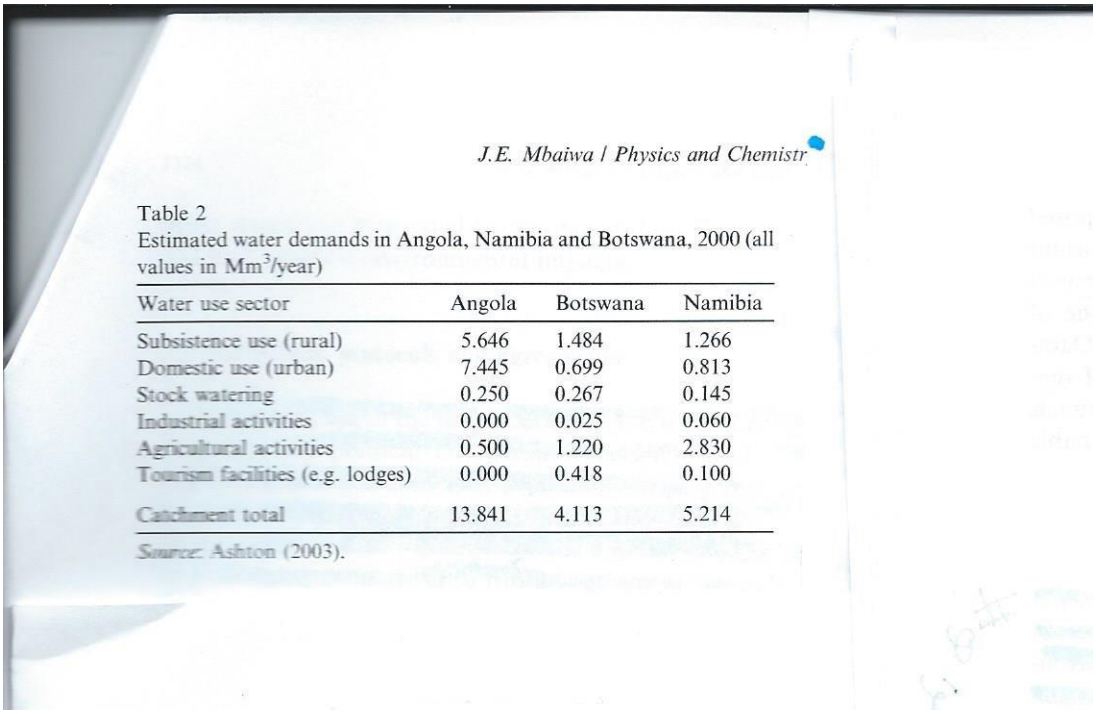

Table 2
Estimated water demands in Angola, Namibia and Botswana, 2000 (all values in Mm^3/year)

Water use sector	Angola	Botswana	Namibia
Subsistence use (rural)	5.646	1.484	1.266
Domestic use (urban)	7.445	0.699	0.813
Stock watering	0.250	0.267	0.145
Industrial activities	0.000	0.025	0.060
Agricultural activities	0.500	1.220	2.830
Tourism facilities (e.g. lodges)	0.000	0.418	0.100
Catchment total	13.841	4.113	5.214

Source: Ashton (2003).

Appendix B

Table 7.2 Population of the top 20 towns in Sudan (riverine and non-riverine) and their percentage increases, 1956–1993

Rank in 1993	Town	Location	Population ('000)				Percentage increases					
			1956	1973	1983	1993	1956–73	1973–83	1983–93	1956–83	1973–93	1956–93
1	Khartoum	RZ	93.1	349.1	760.7	1,063.2	274.97	117.90	39.77	717.08	204.55	1,042.00
2	Omdurman	RZ	113.6	309.5	513.5	1,361.8	172.45	65.91	165.20	352.02	340.00	1,098.77
3	Khartoum North	RZ	45.7	150.2	301.1	988.7	228.67	100.47	228.36	558.86	558.26	2,063.46
4	Wad Medani	RZ	47.7	118.0	243.3	465.0	147.38	106.19	91.12	410.06	294.07	874.84
5	Port Sudan	NRZ	47.6	135.1	246.5	450.0	183.82	82.46	82.56	417.86	233.09	845.38
6	Wau (US)	RZ	8.0	53.4	177.0	383.1	567.50	231.46	116.44	2,112.50	617.42	4,688.75
7	Juba (US)	RZ	10.7	56.7	155.1	334.1	429.91	173.54	115.41	1,349.53	489.24	3,022.43
8	Nyala	NRZ	12.3	63.3	152.6	329.5	414.63	141.07	115.92	1,140.65	420.54	2,578.86
9	Kassala	NRZ	40.6	100.5	158.6	257.9	147.54	57.81	62.61	290.64	156.62	535.22
10	El Obeid	NRZ	52.4	92.2	145.1	236.4	75.95	57.38	62.92	176.91	156.40	351.15
11	Kosti	RZ	22.7	60.6	102.3	173.2	166.96	68.81	69.31	350.66	185.81	663.00
12	Jineina	NRZ	11.8	38.6	77.3	165.9	227.12	100.26	114.62	555.08	329.79	1,305.93
13	Gedaref	NRZ	17.5	66.2	101.1	156.2	278.29	52.72	54.50	477.71	135.95	792.57
14	Aweil (US)	RZ	2.4	17.8	51.9	151.3	641.67	191.57	191.52	2,062.50	750.00	6,204.17
15	Yei (US)	RZ	–	12.0	41.4	144.0	–	245.00	247.83	–	1,100.00	–
16	Malakal (US)	RZ	9.7	37.1	76.1	136.3	282.47	105.12	79.11	684.54	267.39	1,305.15
17	Fasher	NRZ	26.2	54.5	80.7	131.5	108.02	48.07	62.95	208.02	141.28	401.91
18	Sinnaral Madina	RZ	8.1	32.6	64.6	128.5	302.47	98.16	98.92	697.53	294.17	1,486.42
19	Atbara	RZ	36.3	64.3	87.6	122.4	77.13	36.24	39.73	141.32	90.36	237.19
20	Yarol (US)	RZ	–	14.7	40.2	110.1	–	173.47	173.88	–	648.98	–
Top 20 towns[a]		RZ+NRZ	606.4	1,826.4	3,576.7	7,289.1	201.19	95.83	103.79	489.83	299.10	1,102.03
13 RZ towns[a]		RZ	398.0	1,276.0	2,614.8	5,561.7	220.60	104.92	112.70	556.98	335.87	1,297.41
7 NRZ towns[a]		NRZ	208.4	550.4	961.9	1,727.4	164.11	74.76	79.58	361.56	213.84	728.89
7 downstream towns[a]		DS-RZ	367.2	1,084.3	2,073.1	4,302.8	195.29	91.19	107.55	464.57	296.83	1,071.79
6 upstream towns[a]		US-RZ	30.8	191.7	541.7	1,258.9	522.40	182.58	132.40	1,658.77	556.70	3,987.34

Sources: 1956 population figures – Department of Statistics (1983); 1973, 1983 and 1993 population figures – Department of Statistics (1996: 160–161); percentage increases are computed.
Notes: US = upstream, which coincides with the territory of southern Sudan; DS = downstream.
[a] Computed.

Bibliography

Bruch, C., Boulicault, M., Talati, S., & Jensen, D. (2012, April). International Law, Natural Resources and Post-conflict Peacebuilding: From Rio to Rio+20 and Beyond. *Review of European Community & International Environmental Law, 21*(1), 44-62. doi: 10.1111/j.1467-9388.2012.00746.x

Dam-de Jong, D. (2013, January). From Engines for Conflict into Engines for Sustainable Development: The Potential of International Law to Address Predatory Exploitation of Natural Resources in Situations of Internal Armed Conflict. *Nordic Journal of International Law*, *82*(1), 155-177. doi: 10.1163/15718107-08201008

Eckstein, G. (2009, September). Water scarcity, conflict, and security in a climate change world: Challenges and opportunities for international law and policy. *Wisconsin International Law Journal*, *27*(3), 409-461. Retrieved December 3, 2014.

Francis, R. A., & Krishnamurthy, K. (2014, July). Human conflict and ecosystem services: Finding the environmental price of warfare. *International Affairs, 90*(4), 853-869. doi: 10.1111/1468-2346.12144

Haftendorn, H. (2000, February). Water and international conflict. *Third World Quarterly*, *21*(1), 51-68. doi: 10.1080/01436590013224

Kehl, J. (2010, October). Oil, Water, Blood and Diamonds:International Intervention in Resource Disputes. *International Negotiation, 15*(3), 391-412. doi: 10.1163/157180610X529609

Kgathi, D., Kniveton, D., Ringrose, S., Turton, A., Vanderpost, C., Lundqvist, J., & Seely, M. (2006, January 1). The Okavango; a river supporting its people, environment and economic development. *Journal of Hydrology, 331*, 3-17. doi: 10.1016/j.jhydrol.2006.04.048

Klare, M. T. (2007). Oil, Natural Gas, and Other Vital Resources. *New England Journal of Public Policy, 21*(2), 202-214. Retrieved December 3, 2014.

Kleinsteiber, M. (2013). Nationalism and Domestic Politics as Drivers of Maritime Conflict. *SAIS Review of International Affairs, 33*(2), 15-19. doi: 10.1353/sais.2013.0027

Koubi, V., Spilker, G., Böhmelt, T., & Bernauer, T. (2014, March). Do natural resources matter for interstate and intrastate armed conflict? *Journal of Peace Research, 51*(2), 227-243. doi: 10.1177/0022343313493455

Kreamer, D. K. (2012, December). The Past, Present, and Future of Water Conflict and International Security. *Journal of Contemporary Water Research & Education, 149*(1), 87-95. doi: 10.1111/j.1936-704X.2012.03130.x

Kreamer, D. K. (2012, December). Water and International Security. *Journal of Contemporary Water Research & Education, 149*(1), 1-3. doi: 10.1111/j.1936-704X.2012.03121.x

Madani, K., Rouhani, O. M., Mirchi, A., & Gholizadeh, S. (2014, January). A negotiation support system for resolving an international trans-boundary natural resource conflict. *Environmental Modelling & Software, 51,* 240-249. doi: 10.1016/j.envsoft.2013.09.029

Mbaiwa, J. E. (2004, January 1). Causes and possible solutions to water resource conflicts in the Okavango River Basin: The case of Angola, Namibia and Botswana. *Physics and Chemistry of the Earth, 29,* 1319-1326. doi: 10.1016/j.pce.2004.09.015

Odom, O., & Wolf, A. T. (2011, June). Institutional resilience and climate variability in international water treaties: The Jordan River Basin as 'proof-of-concept'. *Hydrological Sciences Journal/Journal Des Sciences Hydrologiques, 56*(4), 703-710. doi: 10.1080/02626667.2011.574138

Rare Earths: Future Elements of Conflict in Asia?, 37 Asian Studies Review 234-252.

Ravenhill, J. (2013, March). Resource insecurity and international institutions in the Asia-Pacific region. *Pacific Review, 26*(1), 39-64. doi: 10.1080/09512748.2013.755364

Ross, M. L. (2004). How Do Natural Resources Influence Civil War? Evidence from Thirteen Cases (Book). *International Organization, 58*(1), 35-67. doi: 10.1017/S002081830458102X

Rustad, S. A., & Binningsbø, H. M. (2012, July). A price worth fighting for? Natural resources and conflict recurrence. *Journal of Peace Research, 49*(4), 531-546. doi: 10.1177/0022343312444942

Silberfein, M. (2004). The Geopolitics of Conflict and Diamonds in Sierra Leone. *Geopolitics, 9*(1), 213-241. Retrieved December 3, 2014.

Spain, A. (2011, June). Beyond Adjudication: Resolving International Resource Disputes in an Era of Climate Change. *Stanford Environmental Law Journal, 30*(2), 343-390. Retrieved December 3, 2014.

Swatuk, L. A. (2003, January 1). State interests and multilateral cooperation: Thinking strategically about achieving 'wise use' of the Okavango Delta system. *Physics and Chemistry of the Earth, 28*, 897-905. doi: 10.1016/j.pce.2003.08.017

Water for people, water for life : A joint report by the twenty three UN agencies concerned with freshwater / World Water Assessment Programme. (The United Nations world water development report). (2003). New York : UNESCO Pub. : Berghahn Books, 2003.

Wennmann, A. (2011, April). Breaking the Conflict Trap? Addressing the Resource Curse in Peace Processes. *Global Governance, 17*(2), 265-279. Retrieved December 3, 2014.

Wolff, H. (2013). Roth, Dik and Linden Vincent (eds.) (2013): Controlling the Water: Matching Technology and Institutions in Irrigation Management in India and Nepal. *Quarterly Journal of International Agriculture, 52*(4), 373-375.

Yamamoto, S. (2008). The Indus Water Dispute. In N. Pachova (Ed.), *International Water Security* (pp. 9-34). New York: United Nations University Press

Zain, M. (2008). People's encroachment onto Sudan's Nile Banks and its impact on Egypt. In N. Pachova (Ed.), *International Water Security* (pp. 129-160). New York: United Nations University Press

Zakhirova, L. (2013, December). The International Politics of Water Security in Central Asia. *Europe-Asia Studies, 65*(10), 1994-2013. doi: 10.1080/09668136.2013.848647